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# Agricultural Irrigation and Water Use

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## Abstract

The 17 Western States, plus Arkansas, Florida, and Louisiana, account for 91 percent of all U.S. irrigated acreage, with the Western States alone contributing over 85 percent. This report integrates data on the distribution, characteristics, uses, and management of water resources from a wide variety of data sources. The report includes charts and tables on water use in irrigation; farm data comparing selected characteristics of irrigated and nonirrigated farms; and data on water application systems, sources of water, pump energy expenses by energy type, values of irrigated and nonirrigated land, and cash rents.

**Keywords:** Irrigation, irrigated farms, land values, land rent, precipitation, water use, water supply, irrigated crops, irrigation systems

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## Contents

|  | Page |
|--|------|
| Summary .....  | iii  |
| Glossary .....   | iv   |
| Conversion Factors .....                                       | vi   |
| Introduction .....   | 1    |
| Purpose of the Bulletin .....                                  | 1    |
| Data Sources .....   | 1    |
| Use of the Bulletin .....                                      | 2    |
| Highlights .....   | 2    |
| Total Water Use in the United States .....                     | 6    |
| Agricultural Water Use in the United States .....              | 10   |
| Irrigation in the United States .....                          | 11   |
| State Summaries .....  | 17   |
| Appendix--Descriptions, Definitions, and Sources of Data ..... | 114  |
| Land in Farms by Use .....                                     | 114  |
| Selected Characteristics .....                                 | 114  |
| Irrigated Acreage and Crops .....                              | 114  |
| Methods of Water Distribution .....                            | 115  |
| Sources of Water, Energy Expenses, and Onfarm Pumping .....    | 115  |
| Land Values and Cash Rent .....                                | 115  |
| Water Sources, Use, and Disposition, 1985 .....                | 116  |

## Summary

Irrigated cropland has been a major factor in the growth of U.S. agricultural productivity. According to 1987 census data, irrigated cropland amounted to 14.8 percent of harvested U.S. cropland, but accounted for 37.8 percent of the total value of crops produced. Irrigated farms tend to be larger and to have higher yields and capital investments than nonirrigated farms. On average, irrigated farms have more than twice as much invested in terms of capital, machinery, equipment, and buildings than nonirrigated farms.

The 20-inch isohyet line representing average annual precipitation runs from northwest Minnesota to southwest Texas, and divides the conterminous United States into moist, eastern America and arid, western America. In the drier regions of the West, agricultural activity depends on irrigation, while in the East's humid areas, irrigation is mostly supplementary.

Irrigated cropland in the dry regions of the West increased at a rapid pace after World War II, especially during the periods of favorable economic conditions with higher commodity prices. Improvements in deep-well water technology and adoption of center-pivot water delivery systems stimulated growth in privately developed ground water. This growth was especially pronounced in the Great Plains States, where the Ogallala Aquifer provided sufficient ground water for nearly two decades. However, the Ogallala Aquifer is experiencing varying degrees of depletion and irrigation is declining, particularly in the Texas High Plains region.

Increasing competition from urban and industrial water uses for declining supplies of ground water makes it unlikely that irrigation will expand much in the West. Efficiency improvements in water delivery and application systems appear to be the only option that will provide additional water for irrigation in the arid regions. However, some of these water-conserving technologies are expensive at present and cheaper costs in the future may allow only modest expansion in irrigation land use in the West.

Irrigation in humid regions has been increasing consistently during the last 10 years. The Northeast has had a 20-percent increase; the Lake States, a 10.75-percent increase; and the Southeast, a 5.2-percent increase between 1982 and 1987. Irrigation in the 31 humid States, while still a small proportion of humid area agriculture, has grown steadily. Since irrigation in humid areas is supplementary and uses far less water per acre than in the dry regions, it is likely to expand. Irrigation is not essential for most crops in humid areas, but it can improve yields and help mitigate the effects of drought.

## Glossary

**Commercial water use**--Water used for motels, hotels, restaurants, office buildings, and other commercial facilities and institutions, both civilian and military. The water may be obtained from a public supply or may be self-supplied.

**Consumptive use**--That part of water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment. Also referred to as water consumed or water depletion.

**Conveyance loss**--Water that is lost in transit from a pipe, canal, conduit, or ditch by leakage or evaporation. The water generally is not available for further use; however, leakage from an irrigation ditch, for example, may percolate to a ground-water source and be available for further use.

**Domestic water use**--Water used for household purposes, such as drinking, preparing food, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Also called residential water use. The water may be obtained from a public supply or may be self-supplied.

**Evapotranspiration**--A collective term that includes water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and by plant transpiration.

**Ground water**--Generally all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone (a zone in which all voids are filled with water) where the water is under pressure greater than atmospheric.

**Hydroelectric power water use**--Water used for the generation of electricity at plants where the turbine generators are driven by falling water; an instream use.

**Industrial water use**--Water used for industrial purposes, such as fabrication, processing, washing, and cooling, and includes use in such industries as steel, chemical and allied products, paper and allied products, mining, and petroleum refining. The water may be obtained from a public supply or may be self-supplied.

**Instream use**--Water use taking place within the stream channel for such purposes as hydroelectric power generation, navigation, water-quality

improvement, fish propagation, and recreation. Sometimes called nonwithdrawal use or in-channel use.

**Irrigation return flow**--The part of irrigation water that is not consumed by evapotranspiration and that migrates to an aquifer or surface-water body.

**Irrigation systems**--Generally, the controlled application of water to arable lands to supply water requirements of crops not satisfied by rainfall. Systems used include the following:

**Center-pivot**--Automated sprinkler irrigation achieved by rotating the sprinkler pipe or boom that supplies water to the sprinkler heads or nozzles at a radius from the center of the circular field to be irrigated. The pipe is supported above the crop by towers at fixed spacings and propelled by pneumatic, mechanical, hydraulic, or electric power on wheels or skids in fixed circular paths at uniform angular speeds. Water, which is delivered to the center or pivot point of the system, is applied at a uniform rate by a progressive increase of nozzle size from the pivot to the end of the line. The depth of water applied is determined by the rate of travel of the system. Single units are ordinarily about 1,250 to 1,300 feet long and irrigate about a 130-acre circular area.

**Drip**--An irrigation system in which water is applied directly to the root zone of plants by means of applicators (orifices, emitters, porous tubing, perforated pipe, and so forth) operated under low pressure. The applicators can be placed on or below the surface of the ground or can be suspended from supports.

**Flood**--An irrigation system in which the entire surface of the soil is covered by ponded water.

**Furrow**--An irrigation system of partial surface flooding normally used with clean-tilled crops where water is applied in furrows or rows of sufficient capacity to contain the flow.

**Gravity**--An irrigation system in which the water is not pumped but flows in ditches or pipes and is distributed by gravity.

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Source: Compiled from Wayne B. Solley, Charles F. Merk, Robert R. Pierce, *Estimated Use of Water in the United States in 1985*, Circular 1004, U.S. Geological Survey, 1988, and U.S. Geological Survey, *National Water Summary, 1987: Hydrologic Events and Water Supply and Use*, Water Supply Paper 2350, 1990.

**Sprinkler**--An irrigation system in which water is applied by means of perforated pipes or nozzles operated under pressure so as to form a spray pattern.

**Subirrigation**--An irrigation system in which water is applied below the ground surface either by raising the water table within or near the root zone or by using a buried perforated or porous pipe system that discharges directly into the root zone.

**Traveling gun**--A sprinkler irrigation system consisting of a single large nozzle that rotates and is self-propelled. "Traveling" refers to the fact that the base is on wheels and can be moved by the irrigator or affixed to a guide wire.

**Irrigation water use**--Artificial application of water on lands to assist in the growing of crops and pastures or to maintain vegetative growth in recreational lands, such as parks and golf courses.

**Livestock water use**--Water used for stock watering, feed lots, dairy operations, fish farming, and other onfarm needs. Livestock as used here includes cattle, sheep, goats, hogs, and poultry. Also included are such animal specialties as horses, rabbits, bees, pets, furbearing animals in captivity, and fish in captivity.

**Return flow**--Water that reaches a ground- or surface-water source after release from the point of use and thus becomes available for further use.

**Rural water use**--Water used in suburban or farm areas for domestic and livestock needs. The water generally is self-supplied, and includes domestic use, drinking water for livestock, and other uses such as dairy sanitation, evaporation from stock-watering ponds, and cleaning and waste disposal.

**Surface water**--An open body of water, such as a stream or lake.

**Transpiration**--Process by which water that is absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface.

## Conversion Factors

### Land Area and Water Flow

| Multiply                 | By       | To obtain                    |
|--------------------------|----------|------------------------------|
| <i>Area</i>              |          |                              |
| Acre                     | 43,560   | Square foot                  |
|                          | 4,047    | Square meter                 |
|                          | 0.001562 | Square mile                  |
| <i>Flow</i>              |          |                              |
| Million gallons per day  | 1,121    | 1,000 acre-feet per year     |
|                          | 0.6944   | 1,000 gallons per minute     |
|                          | 0.003785 | Million cubic meters per day |
| 1,000 acre-feet per year | 0.8921   | Million gallons per day      |
|                          | 0.001380 | 1,000 cubic feet per second  |
|                          | 0.6195   | 1,000 gallons per minute     |
|                          | 0.003377 | Million cubic meters per day |

### Water Relations in Depth-Volume Units

| Unit              |   | Approximations                       |
|-------------------|---|--------------------------------------|
| 1 million gallons | = | 3.07 acre-feet                       |
| 1 cubic foot      | = | 7.48 gallons                         |
| 1 acre-foot       | = | 325,851 gallons                      |
|                   | = | 43,560 cubic feet                    |
| 1 cubic mile      | = | 1.1 trillion gallons                 |
|                   |   | 3,379,200 acre-feet                  |
| 1 inch of rain    | = | 17.4 million gallons per square mile |
|                   | = | 27,200 gallons per acre              |

## Abbreviations

---

|                 |   |                         |    |   |                |
|-----------------|---|-------------------------|----|---|----------------|
| AF              | = | Acre-foot               | ME | = | Maine          |
| Bgd             | = | Billion gallons per day | MI | = | Michigan       |
| (D)             | = | Disclosure problem      | MN | = | Minnesota      |
| Ft <sup>2</sup> | = | Square foot             | MO | = | Missouri       |
| LP gas          | = | Liquefied petroleum gas | MS | = | Mississippi    |
| m <sup>2</sup>  | = | Square meter            | MT | = | Montana        |
| M.a.f.          | = | Million acre-feet       | NC | = | North Carolina |
| Mgd             | = | Million gallons per day | ND | = | North Dakota   |
| mi <sup>2</sup> | = | Square mile             | NE | = | Nebraska       |
| NA              | = | Not applicable          | NH | = | New Hampshire  |
| NR              | = | Not reported            | NJ | = | New Jersey     |
| T.a.f           | = | Thousand acre-feet      | NM | = | New Mexico     |
| AL              | = | Alabama                 | NV | = | Nevada         |
| AR              | = | Arkansas                | NY | = | New York       |
| AZ              | = | Arizona                 | OH | = | Ohio           |
| CA              | = | California              | OK | = | Oklahoma       |
| CO              | = | Colorado                | OR | = | Oregon         |
| CT              | = | Connecticut             | PA | = | Pennsylvania   |
| DE              | = | Delaware                | RI | = | Rhode Island   |
| FL              | = | Florida                 | SC | = | South Carolina |
| GA              | = | Georgia                 | SD | = | South Dakota   |
| IA              | = | Iowa                    | TN | = | Tennessee      |
| ID              | = | Idaho                   | TX | = | Texas          |
| IL              | = | Illinois                | UT | = | Utah           |
| IN              | = | Indiana                 | VA | = | Virginia       |
| KS              | = | Kansas                  | VT | = | Vermont        |
| KY              | = | Kentucky                | WA | = | Washington     |
| LA              | = | Louisiana               | WI | = | Wisconsin      |
| MA              | = | Massachusetts           | WV | = | West Virginia  |
| MD              | = | Maryland                | WY | = | Wyoming        |

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# Agricultural Irrigation and Water Use

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## Introduction

Irrigated agriculture plays a major role in the economies of many Western States, where 85 to 90 percent of the available water supply is used for irrigation. Irrigated land accounts for nearly 15 percent of harvested cropland acreage nationwide but contributes about 38 percent of the value of all crops produced, much of this from fruits, vegetables, and other specialty crops. Although irrigated cropland provided a substantial portion of farm income in 1987, there were only about 292,000 individual irrigators, 14 percent of all farmers. Four-fifths of the irrigators were located in the 17 Western States.

## Purpose of the Bulletin

The bulletin updates AIB-532, *Agriculture Irrigation and Water Supply, 1987*, and presents new data on irrigation and water use recently made available from several sources. Since AIB-532 was published in October 1987, new information from the four major sources of irrigation and water use data has become available and is summarized in this bulletin. Annual and multiyear data are presented in tables and charts to show the status and trends in irrigation and water use.

## Data Sources<sup>1</sup>

The U.S. Department of Commerce, Bureau of the Census, formerly published special irrigation summaries for each major census of agriculture. The special summaries for 1982 and 1987 were not published, but selected characteristics of irrigated farms were made part of the census for those years.

Since 1978, the agricultural census has been supplemented by a special survey of irrigators. The 1988 Farm and Ranch Irrigation Survey, published in 1990, is the most recent in that series. It is the only data source that relates irrigation water use to crops produced, sources of water, and types of technology used to apply irrigation water.

The Economic Research Service, U.S. Department of Agriculture, conducts and reports an annual survey of rural land sales. That survey provides consistent data on the value of dry and irrigated cropland, in addition to average rental rates for such land.

The U.S. Geological Survey publishes National Water Summary reports on numerous facets of water resources for each State and the Nation. Availability of these data on the distribution, characteristics, uses, and management of the Nation's water resources is not yet widely known. The 1987 report, published in 1990, focuses on water supply and use and is the most recent and last annual volume. Because of the large amount of data contained and the summary nature of the report, subsequent National Water Summary reports will be published every other year.

\*The authors are listed alphabetically and senior authorship is not assigned. Rajinder S. Bajwa, William M. Crosswhite, and John E. Hostetler are agricultural economists, and Olivia W. Wright is a graphics specialist, with the Resources and Technology Division, Economic Research Service, U.S. Department of Agriculture.

<sup>1</sup>Detailed information on data sources is presented in appendix A.

## Use of the Bulletin

Irrigation and agricultural water use data are presented in charts and tables for each of the 48 conterminous States and the United States.<sup>2</sup> A series of three charts and a table present information on (1) the extent and distribution of irrigated land in farms in 1987; (2) population distribution in 1985, which can be compared with the location of irrigation to anticipate future competition and conflict over limited water supplies; (3) water sources, use, and disposition in 1985, which compares agricultural water use with total water use in each State; and (4) acreage of principal irrigated crops and the proportion of the total crop being irrigated in 1987.

The series of charts and a full-page table on the facing page allow the reader to (1) compare trends in irrigated farms, cropland, and irrigated land; (2) identify each State's top five irrigated counties and their three major irrigated crops; (3) compare selected economic characteristics for average irrigated and nonirrigated farms from 1982 to 1987; (4) compare water application methods, sources of water, use of alternative energy sources for pumping, and costs of ground and off-farm surface water in 1984 and 1988; and (5) assess the difference in land value and rents paid for dry, irrigated, and grazing land.

## Highlights

Irrigation in the United States takes place mainly in the 17 Western States, plus Arkansas, Florida, and Louisiana. These 20 States account for 91 percent of all U.S. irrigated acreage and 82 percent of all irrigated farms. The 17 Western States alone contribute over 81 percent of the total irrigated land. Since 1982, irrigated acreage has increased 23 percent in the humid States, excluding Arkansas, Florida, and Louisiana.

In 1959, 9 percent of all farms reported some irrigated land. By 1987, that share had risen to 14 percent. During the same period, average area of irrigated land per farm had increased from 108 acres in 1959 to 159 acres, 20 acres below the all-time high of 179 acres in 1978. During the 1980's, the total number of irrigated acres and irrigated acres per farm fluctuated considerably due to the temporary idling of land associated with annual acreage reduction programs. Most of the Nation's irrigated land (90 percent) is harvested cropland, but many of the Mountain States

have irrigated pasture and land from which wild hay is cut to sustain livestock herds through the winter. This roughage never enters the market and, therefore, may appear unimportant, but without irrigation, neither it nor much of the livestock industry in these States would exist.

Irrigated farms tend to be more highly capitalized than nonirrigated farms (table 1). They produce significantly more crop and livestock value per farm and have higher expenditures for agricultural chemicals, energy, and labor. The average irrigated farm has over twice as much invested in land and buildings and twice the value of machinery and equipment, compared with nonirrigated farms. Farmland values declined significantly during the mid-1980's due to the financial crisis in agriculture brought on by crop surpluses, falling commodity prices, and bank foreclosures on overextended operations. Asset values of irrigated farms declined more than on nonirrigated farms.

An average irrigated farm produces 4-1/2 times the value of crops as average nonirrigated farms, but only 2-1/3 times the value of livestock and livestock product sales. An average irrigated farm uses more than twice the fertilizer and three times the pesticides used on nonirrigated farms. Energy expenditures per irrigated farm were more than three times as large as those for nonirrigated farms in 1982 and 1987, although energy use on both types of farms declined during this period. Irrigated farms generally produce more per acre than nonirrigated farms and account for most of the U.S. fruit and vegetable production. Irrigated farms tend to require more labor, hiring more than five times the general labor and specialized contract labor as nonirrigated farms.

Although the 17 Western States account for 81 percent of all irrigated land, the top 5 irrigation States (California, Nebraska, Texas, Idaho, and Colorado) contain over half of all irrigated acreage. They contain 46 percent of the irrigated farms, and 51 percent of the irrigated acreage, and they account for about 32 percent of the market value of sales from all U.S. farms. On a national basis, hay, corn, and wheat are the principal irrigated crops in terms of acreage. The top five irrigation States account for 43 percent of the

<sup>2</sup>U.S. data for 1987 represent all 50 States; that for 1984 and 1988 cover only the 48 conterminous States.

Table 1--Selected characteristics of irrigated farms

United States

## Land in farms

| Item               | Unit         | 1987       | 1982       | 1978       | 1974       | 1969       | 1964       |
|--------------------|--------------|------------|------------|------------|------------|------------|------------|
| Total cropland     | No. of farms | 1,848,574  | 2,010,609  | 2,081,604  | 2,157,511  | 2,521,659  | 2,907,265  |
| Harvested cropland | do.          | 1,643,633  | 1,809,756  | 1,904,602  | 1,954,700  | 2,219,631  | 2,701,694  |
| Irrigated land     | do.          | 291,628    | 278,277    | 280,779    | 236,733    | 257,147    | 297,387    |
| Harvested cropland | do.          | 269,131    | 256,463    | 259,651    | NA         | NA         | NA         |
| Total cropland     | 1,000 acres  | 443,318    | 445,362    | 453,874    | 440,039    | 458,990    | 434,232    |
| Harvested cropland | do.          | 282,224    | 326,306    | 317,146    | 303,002    | 273,016    | 286,892    |
| Irrigated land     | No. of acres | 46,386,201 | 49,002,433 | 50,349,906 | 41,243,023 | 39,121,693 | 37,056,083 |
| Harvested cropland | do.          | 41,767,756 | 44,433,008 | 43,679,819 | NA         | NA         | NA         |

## States with the largest irrigated acreage, 1987

| Item                   | Unit         | U.S.       | California | Nebraska  | Texas     | Idaho     | Colorado  |
|------------------------|--------------|------------|------------|-----------|-----------|-----------|-----------|
| Irrigated land         | No. of farms | 291,628    | 58,868     | 22,596    | 19,806    | 16,620    | 14,913    |
| Irrigated land         | No. of acres | 46,386,201 | 7,596,091  | 5,681,835 | 4,271,043 | 3,219,192 | 3,013,733 |
| Major irrigated crops: |              |            |            |           |           |           |           |
| Hay                    | do.          | 8,594,701  | 1,279,364  | 346,791   | 182,165   | 846,194   | 1,055,673 |
| Corn                   | do.          | 8,003,163  | 151,253    | 4,143,223 | 522,359   | 47,493    | 647,205   |
| Wheat                  | do.          | 3,731,218  | 418,181    | 109,274   | 652,746   | 587,736   | 195,472   |

## Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| Dollars                        |           |         |           |         |              |         |
| Land and buildings             | 289,387   | 345,869 | 546,007   | 716,248 | 247,676      | 293,669 |
| Machinery and equipment        | 41,227    | 41,919  | 68,790    | 72,354  | 36,752       | 37,648  |
| Farm products sold             | 65,165    | 58,858  | 153,417   | 142,713 | 50,836       | 46,969  |
| Crops, nursery, and greenhouse | 48,149    | 45,863  | 128,961   | 123,627 | 29,172       | 31,175  |
| Livestock and poultry          | 55,920    | 45,914  | 113,727   | 95,166  | 49,931       | 41,017  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,846     | 5,326   | 9,371     | 10,454  | 3,963        | 4,474   |
| Other agricultural chemicals   | 3,715     | 3,805   | 8,298     | 8,229   | 2,706        | 2,921   |
| Energy and petroleum products  | 3,820     | 4,483   | 9,364     | 11,349  | 2,917        | 3,517   |
| Hired labor                    | 13,278    | 9,704   | 38,642    | 29,380  | 7,062        | 5,516   |
| Contract labor                 | 6,773     | 7,922   | 16,274    | 18,815  | 2,891        | 2,820   |

## Irrigation methods, water sources, and pumping energy use

| Item                          | 1988    |            |         | 1984    |            |         |
|-------------------------------|---------|------------|---------|---------|------------|---------|
|                               | Farms   | Acres      | AF/acre | Farms   | Acres      | AF/acre |
| Number                        |         |            |         |         |            |         |
| Methods:                      |         |            |         |         |            |         |
| All sprinkler systems         | 110,981 | 18,423,869 | 1.3     | 104,641 | 16,877,412 | 1.3     |
| Center pivot                  | 52,798  | 11,441,405 | 1.2     | 32,442  | 9,370,614  | 1.2     |
| Mechanical move               | 22,768  | 3,110,359  | 1.2     | 25,475  | 3,355,164  | 1.2     |
| Hand move                     | 38,803  | 2,743,900  | 1.6     | 46,885  | 2,918,241  | 1.6     |
| Solid set and permanent       | 15,864  | 1,128,205  | 1.9     | 19,694  | 1,233,393  | 2.5     |
| All gravity systems           | 126,457 | 27,414,720 | 2.1     | 126,827 | 27,457,244 | 2.0     |
| Gated pipe                    | 46,003  | 8,460,705  | 1.6     | 42,826  | 8,363,825  | 1.4     |
| Ditch with siphon tube        | 51,824  | 9,229,405  | 2.4     | 59,255  | 10,051,246 | 2.3     |
| Flooding                      | 46,594  | 9,724,610  | 2.2     | 45,045  | 9,042,173  | 2.2     |
| Drip or trickle               | 15,155  | 866,731    | 1.8     | 11,651  | 837,624    | 1.9     |
| Subirrigation                 | 2,571   | 581,940    | 3.0     | 2,905   | 623,013    | 3.8     |
| Sources:                      |         |            |         |         |            |         |
| Wells                         | 111,682 | 26,774,017 | 1.4     | 100,703 | 24,286,826 | 1.4     |
| Onfarm surface sources        | 41,753  | 5,975,185  | 1.5     | 35,982  | 5,886,832  | 1.8     |
| Off-farm water suppliers      | 93,754  | 15,004,525 | 2.4     | 98,672  | 15,647,770 | 2.3     |
| Number                        |         |            | \$/acre | Number  |            |         |
| Onfarm energy use for pumping | 148,713 | 33,801,311 | 31      | 135,319 | 31,067,689 | 32      |
| Electricity                   | 105,227 | 18,991,265 | 38      | 96,324  | 18,106,589 | 35      |
| Natural gas                   | 17,296  | 5,657,430  | 28      | 15,519  | 5,800,547  | 34      |
| LP gas, propane, butane       | 13,906  | 1,874,920  | 19      | 12,668  | 1,804,629  | 22      |
| Diesel fuel                   | 33,784  | 7,040,733  | 18      | 30,339  | 5,193,599  | 24      |
| Gasoline and gasohol          | 7,940   | 236,963    | 18      | 6,057   | 162,325    | 23      |
| Off-farm water supply         | 93,754  | 15,004,525 | 34      | 98,672  | 15,647,770 | 26      |

## Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| Dollars            |                    |       |       |                   |      |      |
| Dry cropland       | 726                | 743   | 1,000 | 42                | 48   | NR   |
| Irrigated cropland | 1,573              | 1,648 | 2,138 | 83                | 83   | NR   |
| Grazing land       | 316                | 349   | 376   | 7                 | 8    | NR   |

# Main Features of Irrigation Systems and Practices

## Sprinkler Systems

*Solid Set* is a stationary sprinkler system often used in orchards. Supply pipelines are fixed, usually below the surface, and sprinkler nozzles are elevated above the surface.

*Hand Move* is a portable sprinkler system in which the irrigator moves the supply pipelines in sections from one position to the next.

*Side Roll* is a portable sprinkler system in which the pipeline acts as an axle for a series of large diameter wheels. An engine mounted in the center of the pipeline moves the system across the field.

*Center Pivot* is a self-propelled sprinkler system in which the pipeline is suspended above the field on a row of mobile towers. Water is pumped into the pipe at the center of the field, and the towers rotate slowly around the pivot point. Sprinkler nozzles mounted on the pipeline distribute water under pressure to the field as the pipeline rotates. This basic system has been adapted to both high (45 to 100 pounds per square inch) and low (15 to 45 pounds per square inch) pressure systems.

*LEPA (Low Energy Precision Application)* is an adaptation of the center pivot system that uses tubes extending down from the pipeline to apply water at low pressure below the plant canopy. Emitting the water close to the ground cuts water loss from evaporation and wind and increases application uniformity.

*Drip or Trickle Irrigation* uses small-diameter tubes placed above or below the field's surface near the plant's root zone. Water emitters in the tubes dispense water directly to the root zone, precluding runoff or deep percolation and minimizing evaporation.



Low-pressure center pivot



LEPA



Side roll



Drip-trickle

## **Gravity Systems**

*Ditch with Siphon Tubes* supplies water by siphoning water from the irrigation ditch to the field.

*Gated Pipe* supplies water through a series of openings in a supply pipe. This system has been improved to allow irrigators more control over timing and quantity of water flows.

*Surge Flow* delivers water to the furrow in timed releases. After a surge the soil forms a water seal permitting the next surge of water to travel further down the furrow. This technique significantly reduces the time needed for irrigation water to be distributed the full length of the field, reducing deep percolation and results in higher water application efficiency.

*Cablegation* delivers water to furrows automatically and sequentially using a plug attached to a cable inside the supply pipe. The water savings is based on the same principle as surge flow.

## **Water Management Practices**

*Precision Field Leveling* (also called laser leveling) grades a field so there is little variation in field contour. Precise leveling promotes uniform water application across the field.

*Limited Irrigation-Dryland Farming* irrigates only the upper end of the field leaving the lower end of the field solely dependent on rainfall. This technique minimizes or eliminates field runoff and reduces deep percolation and evaporative losses.

*Irrigation Scheduling* monitors soil moisture and climate to precisely regulate water applications. Monitoring soil moisture involves precision instruments (such as tensiometers, gypsum blocks, and neutron probes) which accurately measure the moisture available for plant growth. The operator delivers water to the field during critical crop growth stages in precise quantities.

*Furrow Diking* places dikes in the furrows to capture additional rainfall.

*Tailwater Reuse* captures field runoff in pits dug in low-lying areas of the farm and recirculates the water to the top of the field. Rising water costs have made tailwater reuse a popular conservation measure.



Ditch with siphon tubes



Gated pipe



Furrow diking

irrigated hay, 69 percent of the irrigated corn, and 53 percent of the irrigated wheat acreage. Nebraska alone contributes 52 percent of all irrigated acreage of corn, and the three crops (hay, corn, and wheat) occupy about 81 percent of all irrigated land in the State. Significant irrigated acreage in Idaho and Colorado is also committed to the top three irrigated crops, 46 percent and 63 percent, respectively. On the other hand, California and Texas have a much larger portion of their irrigated acreage devoted to fruit, vegetable, cotton, and hay production.

U.S. farmers use two major types of irrigation water application systems: sprinkler systems and gravity systems. Sprinkler systems tend to be more expensive but also generally are more efficient, in terms of water applied, than gravity systems. The acreage of sprinkler irrigation increased by 9 percent from 1984 to 1988 (table 1). Gravity irrigation acreage remained almost level during the same period, which allowed sprinkler systems to increase from 37 percent of all systems in 1984 to 39 percent in 1988. A relatively new, highly efficient, but very expensive application system--drip or trickle irrigation--expanded by 3-1/2 percent during the same period but still occupies less than a million acres.

Irrigation water comes from wells, surface sources on or adjacent to the farm, and off-farm suppliers such as irrigation districts. The principal source of water in the United States is from wells, at 56 percent, while the remaining 44 percent from surface sources comes from both onfarm sources (12 percent) and off-farm sources (32 percent). The Great Plains States depend more heavily on wells, while the remaining 11 Western States depend on off-farm surface sources.

Since both wells and onfarm surface water supplies must be pumped to deliver and apply water to crops, energy expenses for irrigation pumping can be quite large. Total energy expenses for irrigation pumping reached \$1.05 billion in 1988, up 5 percent from 1984. Average expenditures per acre were slightly lower in 1988 than in 1984, reflecting shifts to more efficient application systems and changes in the mix of irrigated crops. Of the five types of energy used for pumping irrigation water--electricity, natural gas, liquefied petroleum (LP) gas, diesel, and gasoline--electricity with 56 percent, diesel with 21 percent, and natural gas with 17 percent dominated in 1988. Electricity and natural gas declined in importance, while the use of diesel grew by 4 percent between 1984 and 1988.

Seven of the top 10 States in market value of products sold per irrigated farm were Eastern States, due to the significant number of irrigated farms growing high-valued crops (tables 2 and 3). Land values also tend to be much higher in Eastern States where demand for land for urban and other nonagricultural uses bids up land prices. The top 10 States, in terms of most of the other irrigation characteristics reported in this bulletin, turn out more as expected, with California, Texas, and Nebraska frequently at the top of the list.

## Total Water Use in the United States

Offstream water withdrawals in the United States increased from 180 billion gallons per day (bgd) in 1950 to a high of 440 bgd in 1980 (table 4). Total withdrawals declined in 1985 to 400 bgd. Large amounts of water were withdrawn in 1985 for industrial uses (216 bgd) and irrigation (140 bgd).

Total withdrawals of fresh water in the United States for all uses amounted to 338 bgd in 1985, 78 percent from surface sources (265 bgd) and 22 percent from ground water (73 bgd). Domestic and commercial uses took 10 percent, industrial and mining uses took another 9 percent, and thermoelectric power took 39 percent of total freshwater withdrawals. Nearly 73 percent of all withdrawals were returned for reuse, with the remaining 27 percent consumed. Agricultural uses accounted for 83 percent of the consumptive use of water in the United States in 1985.

Water use in agriculture includes the water applied in the irrigation of crops and the water used in livestock production. In 1985, agriculture accounted for 42 percent of all freshwater withdrawals in the United States, or a total of 141 billion gallons per day, of which 97 percent was for irrigation and 3 percent was for livestock production.

Availability of low-cost water has been a major factor in developing a productive agriculture in arid areas of the United States. In the West, public development of surface water supplies encouraged the growth of irrigated agriculture, while in the Plains States, private development of ground water provided the principal source of water for irrigation. In the humid East, irrigation of a small but growing acreage prevents crop losses from drought and frosts, improves productivity of sandy soils in the coastal plain, and increases the production and quality of high-value fruit, vegetable, and specialty crops.

Table 2--Top 10 States in irrigated agriculture in selected categories, 1987

| Item  | Unit            | Ranking by State |             |             |            |            |            |            |            |            |            |
|---|-----------------|------------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|
|   |                 | 1                | 2           | 3           | 4          | 5          | 6          | 7          | 8          | 9          | 10         |
| Number of farms:                              |                 |                  |             |             |            |            |            |            |            |            |            |
| All farms                                     | Thousands       | TX<br>188.8      | MO<br>106.1 | IA<br>105.2 | KY<br>92.5 | IL<br>88.8 | MN<br>85.1 | CA<br>83.2 | TN<br>79.7 | OH<br>79.3 | WI<br>75.1 |
| Irrigated farms                               | do.             | CA<br>58.9       | NE<br>22.6  | TX<br>19.8  | ID<br>16.6 | WA<br>15.4 | CO<br>14.9 | OR<br>14.4 | FL<br>12.0 | UT<br>11.1 | MT<br>9.5  |
| Percentage of farms with irrigated land       | Percent         | UT<br>79.2       | NV<br>73.4  | CA<br>70.7  | ID<br>68.8 | WY<br>56.7 | AZ<br>55.3 | CO<br>54.7 | NM<br>49.3 | WA<br>46.0 | OR<br>45.0 |
| Irrigated land                                | Million acres   | CA<br>7.6        | NE<br>5.7   | TX<br>4.3   | ID<br>3.2  | CO<br>3.0  | KS<br>2.5  | AR<br>2.4  | MT<br>2.0  | OR<br>1.6  | FL<br>1.6  |
| Percentage of harvested cropland irrigated    | Percent         | NV<br>99.6       | AZ<br>99.3  | CA<br>90.7  | UT<br>77.0 | WY<br>65.9 | ID<br>64.6 | FL<br>62.3 | NM<br>61.3 | CO<br>44.2 | OR<br>43.4 |
| Market value of agricultural products sold:   |                 |                  |             |             |            |            |            |            |            |            |            |
| All farms                                     | Billion dollars | CA<br>13.9       | TX<br>10.5  | IA<br>8.9   | NE<br>6.7  | KS<br>6.5  | IL<br>6.4  | MN<br>5.7  | WI<br>4.9  | FL<br>4.4  | IN<br>4.1  |
| Irrigated farms                               | do.             | CA<br>11.6       | NE<br>3.9   | TX<br>3.3   | FL<br>3.3  | KS<br>1.9  | WA<br>1.9  | ID<br>1.7  | CO<br>1.5  | OR<br>1.3  | AR<br>1.2  |
| Percentage of crops sold from irrigated farms | Percent         | NV<br>100.0      | AZ<br>99.9  | CA<br>98.8  | NM<br>93.7 | FL<br>92.7 | UT<br>92.5 | ID<br>87.4 | WY<br>86.8 | OR<br>80.3 | WA<br>79.8 |
| Market value of products sold per farm:       |                 |                  |             |             |            |            |            |            |            |            |            |
| Nonirrigated farms                            | 1,000 dollars   | CO<br>135        | DE<br>119   | AZ<br>112   | CA<br>97   | IA<br>84   | KS<br>74   | NE<br>72   | NM<br>70   | ID<br>70   | CT<br>70   |
| Irrigated farms                               | do.             | DE<br>355        | CT<br>319   | AZ<br>293   | FL<br>277  | KS<br>264  | MS<br>243  | PA<br>237  | WI<br>224  | IL<br>207  | SD<br>205  |
| Major irrigated crops:                        |                 |                  |             |             |            |            |            |            |            |            |            |
| Corn  | 1,000 acres     | NE<br>4,143      | KS<br>817   | CO<br>647   | TX<br>522  | SD<br>189  | MO<br>169  | MN<br>160  | CA<br>151  | GA<br>147  | MI<br>135  |
| Wheat   | do.             | TX<br>653        | KS<br>636   | ID<br>588   | CA<br>418  | WA<br>256  | CO<br>195  | MT<br>167  | OK<br>143  | OR<br>122  | NE<br>109  |
| Hay   | do.             | CA<br>1,279      | CO<br>1,056 | MT<br>999   | WY<br>848  | ID<br>846  | OR<br>637  | UT<br>581  | NV<br>477  | WA<br>382  | NE<br>347  |

Source: 1987 Census of Agriculture.

∞ Table 3--Top 10 States in irrigated agriculture in selected categories, 1988

| Item   | Unit              | Ranking by State |              |              |              |             |             |             |             |             |             |
|--|-------------------|------------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
|  |                   | 1                | 2            | 3            | 4            | 5           | 6           | 7           | 8           | 9           | 10          |
| Energy expense for onfarm pumping of irrigation water: |                   |                  |              |              |              |             |             |             |             |             |             |
| Total  | Million dollars   | CA<br>282.7      | TX<br>130.4  | NE<br>118.5  | ID<br>64.3   | KS<br>64.1  | AR<br>50.0  | CO<br>49.4  | AZ<br>49.0  | WA<br>32.1  | FL<br>23.9  |
| Electricity  | do.               | CA<br>266.4      | ID<br>63.1   | TX<br>53.1   | NE<br>52.7   | AZ<br>42.6  | CO<br>41.6  | WA<br>32.0  | AR<br>28.5  | OR<br>20.2  | KS<br>13.8  |
| Natural gas  | do.               | TX<br>68.4       | KS<br>40.9   | NE<br>20.2   | OK<br>7.2    | AZ<br>6.0   | NM<br>5.6   | CO<br>4.7   | LA<br>2.7   | AR<br>2.1   | CA<br>1.8   |
| Acreage irrigated by source of water:                  |                   |                  |              |              |              |             |             |             |             |             |             |
| Wells  | 1,000 acres       | NE<br>4,901      | CA<br>3,798  | TX<br>3,490  | KS<br>2,494  | AR<br>2,401 | CO<br>1,214 | ID<br>1,211 | MS<br>717   | FL<br>699   | MO<br>509   |
| Onfarm surface   | do.               | CA<br>679        | MT<br>583    | WY<br>470    | OR<br>448    | CO<br>397   | AR<br>355   | ID<br>286   | TX<br>249   | GA<br>227   | WA<br>218   |
| Off-farm suppliers                                     | do.               | CA<br>3,880      | CO<br>1,762  | ID<br>1,689  | MT<br>1,217  | WA<br>905   | WY<br>853   | UT<br>770   | TX<br>765   | NE<br>650   | OR<br>648   |
| Water applied in irrigation by source:                 |                   |                  |              |              |              |             |             |             |             |             |             |
| Total  | Million acre-feet | CA<br>23.3       | NE<br>6.5    | TX<br>6.3    | ID<br>6.1    | CO<br>5.6   | AR<br>3.8   | AZ<br>3.7   | WA<br>3.5   | KS<br>3.5   | MT<br>2.9   |
| Wells  | do.               | CA<br>10.0       | NE<br>5.4    | TX<br>4.3    | KS<br>3.3    | AR<br>3.3   | ID<br>2.0   | CO<br>1.8   | AZ<br>1.5   | FL<br>1.1   | MS<br>.9    |
| Onfarm surface   | do.               | CA<br>1.5        | MT<br>.8     | OR<br>.8     | WY<br>.7     | CO<br>.6    | AR<br>.56   | WA<br>.5    | LA<br>.33   | TX<br>.32   | NV<br>.28   |
| Off-farm suppliers                                     | do.               | CA<br>11.8       | ID<br>3.6    | CO<br>3.2    | WA<br>2.3    | AZ<br>2.1   | MT<br>1.9   | TX<br>1.7   | UT<br>1.6   | WY<br>1.5   | FL<br>1.4   |
| Irrigation water applied per acre                      | Acre-feet         | AZ<br>4.4        | CA<br>3.1    | NV<br>2.3    | WA<br>2.3    | UT<br>2.2   | NM<br>2.1   | OR<br>1.9   | FL<br>1.9   | ID<br>1.9   | CO<br>1.7   |
| Average land value per acre:                           |                   |                  |              |              |              |             |             |             |             |             |             |
| Dry land   | Dollar per acre   | RI<br>67,612     | MA<br>14,488 | CT<br>7,585  | NJ<br>6,855  | NH<br>3,404 | FL<br>2,299 | MD<br>2,023 | CA<br>2,000 | AZ<br>1,586 | PA<br>1,507 |
| Irrigated cropland                                     | do.               | RI<br>70,000     | MA<br>41,747 | NY<br>13,446 | CT<br>10,000 | FL<br>8,544 | AZ<br>3,256 | NJ<br>2,863 | MD<br>2,857 | CA<br>2,643 | DE<br>2,500 |

Source: 1987 Census of Agriculture.

Table 4--Estimated U.S. water use at 5-year intervals, 1950-85

| Item                           | 1950 <sup>1</sup> | 1955 <sup>1</sup> | 1960 <sup>2</sup> | 1965 <sup>2</sup> | 1970 <sup>3</sup> | 1975 <sup>4</sup> | 1980 <sup>4</sup> | 1985 <sup>4</sup> |
|--------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <i>Millions</i>                |                   |                   |                   |                   |                   |                   |                   |                   |
| Population                     | 150.7             | 164.0             | 179.3             | 193.8             | 205.9             | 216.4             | 229.6             | 242.4             |
| <i>Billion gallons per day</i> |                   |                   |                   |                   |                   |                   |                   |                   |
| Offstream use:                 |                   |                   |                   |                   |                   |                   |                   |                   |
| Total withdrawals              | 180.0             | 240.0             | 270.0             | 310.0             | 370.0             | 420.0             | 440.0             | 400.0             |
| Public supply                  | 14.0              | 17.0              | 21.0              | 24.0              | 27.0              | 29.0              | 34.0              | 37.0              |
| Rural domestic and livestock   | 3.6               | 3.6               | 3.6               | 4.0               | 4.5               | 5.9               | 5.6               | 7.8               |
| Irrigation                     | 89                | 110               | 110               | 120               | 130               | 140               | 150               | 140               |
| Industrial--                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Thermoelectric power           | 40                | 72                | 100               | 130               | 170               | 200               | 210               | 190               |
| Other industrial               | 37                | 39                | 38                | 46                | 47                | 45                | 45                | 31                |
| Source of water:               |                   |                   |                   |                   |                   |                   |                   |                   |
| Ground--                       |                   |                   |                   |                   |                   |                   |                   |                   |
| Fresh                          | 34                | 47                | 50                | 60                | 68                | 82                | 83 <sup>5</sup>   | 73                |
| Saline                         | —                 | .6                | .4                | .5                | 1                 | 1                 | .9                | .7                |
| Surface--                      |                   |                   |                   |                   |                   |                   |                   |                   |
| Fresh                          | 140               | 180               | 190               | 210               | 250               | 260               | 290               | 265               |
| Saline                         | 10                | 18                | 31                | 43                | 53                | 69                | 71                | 60                |
| Reclaimed sewage               | ---               | .2                | .6                | .7                | .5                | .5                | .5                | .6                |
| Consumptive use                | ---               | ---               | 61                | 77                | 87 <sup>6</sup>   | 96 <sup>6</sup>   | 100 <sup>6</sup>  | 92 <sup>6</sup>   |
| Instream use:                  |                   |                   |                   |                   |                   |                   |                   |                   |
| Hydroelectric power            | 1,100             | 1,500             | 2,000             | 2,300             | 2,800             | 3,300             | 3,300             | 3,100             |

--- = Not available.

<sup>1</sup>48 States and District of Columbia.

<sup>2</sup>50 States and District of Columbia.

<sup>3</sup>50 States, District of Columbia, and Puerto Rico.

<sup>4</sup>50 States, District of Columbia, Puerto Rico, and Virgin Islands.

<sup>5</sup>Revised.

<sup>6</sup>Freshwater only.

Source: Wayne B. Solley, Charles F. Merk, and Robert R. Pierce, *Estimated Use of Water in the United States in 1985*, Circular 1004, U.S. Geological Survey, 1988.

## Agricultural Water Use in the United States

Water use in agriculture includes the water applied in the irrigation of crops and water used in beef, dairy, poultry, and other livestock production. Agriculture accounted for about two-fifths (42 percent) of all freshwater withdrawals in the United States in 1985. Figure 1 provides an overview of the sources, use, and disposition of freshwater withdrawals for agricultural use in the United States in 1985.

Freshwater withdrawals for agriculture are used mainly for crop production, with 98.4 percent of surface water

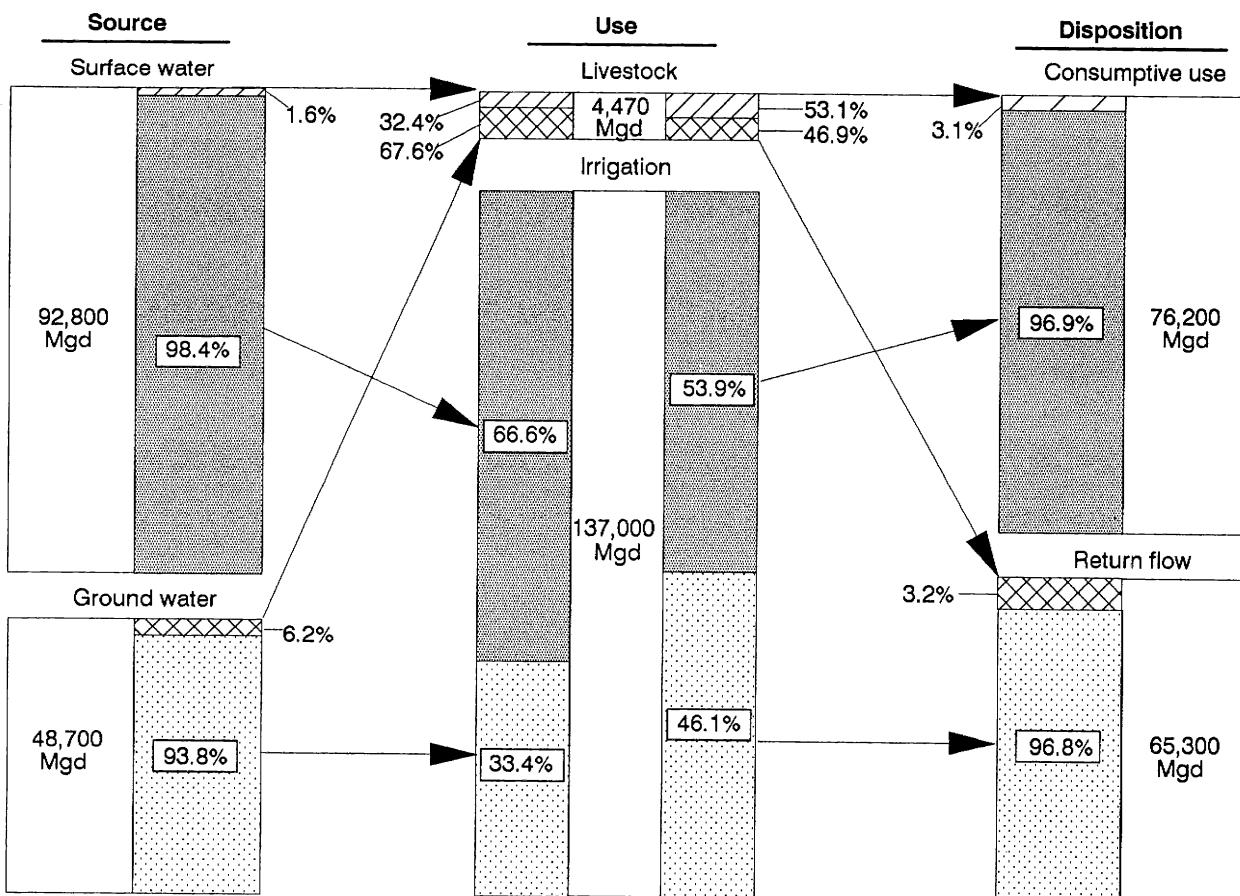
and 93.8 percent of ground water used in irrigating cropland. Agricultural uses are highly consumptive, with 53.9 percent of the water used in agriculture consumed through evaporation, transpiration, or incorporation in crops and other agricultural products.

Figure 2 highlights trends in irrigation water use. Total water use in irrigated agriculture increased during the period 1950-80, but declined by 7 percent in 1985. While surface water use increased slightly in 1985, declines in ground water use were more than offsetting.

Figure 1

### Source, use, and disposition of livestock and irrigation freshwater withdrawals in the United States, 1985

*Explanation: Surface sources provided 92,800 Mgd of water for agriculture, while ground water sources contributed 48,700 Mgd of water used in agriculture. Of the surface water, 98.4 percent went to irrigation and the remaining 1.6 percent was used by livestock. Total irrigation water use amounted to 137,000 Mgd, of which over one-half (53.9 percent) was consumptive use and the remaining 46.1 percent was return flow to ground water, streams, lakes, and oceans.*



Source: U.S. Geological Survey, *National Water Summary, 1987: Hydrologic Events and Water Supply and Use*, Water Supply Paper 2350, 1990.

Figure 3 spotlights the high percentage of irrigation water coming from surface sources and the high consumption of water used for irrigation. Conveyance losses are also high because of the long distances large amounts of irrigation water are moved.

### Irrigation in the United States

Irrigation agriculture makes up 4.8 percent of the land in farms, includes 14.8 percent of the harvested cropland, and produces 37.8 percent of the value of crops (fig. 4). Higher yields for irrigated crops, irrigation of high valued and/or specialty crops, and improved product quality with irrigation explain much of the relatively large economic contribution of irrigated agriculture.

The line of 20 inches of average annual rainfall that runs from northwest Minnesota to southwest Texas divides the conterminous United States about equally between irrigated and rainfed agriculture (fig. 5). Much of irrigated agriculture is located west of the line of 20 inches of average annual rainfall (fig. 6). Major irrigated States in the rainfed areas include Arkansas, Florida, and Louisiana.

Irrigated harvested cropland makes up a large percentage of the total harvested cropland in most Western States, Arkansas, and Florida (fig. 7). However, in recent years irrigated acreage has been increasing at a higher rate in the rainfed area than in much of the irrigated region (fig. 8).

Most major crops are irrigated to some degree, but the number of acres and percentage of acres irrigated vary widely from crop to crop (fig. 9). A summary of freshwater use and total water use by State is displayed in fig. 10.

Figure 2  
Trends in irrigation water use, 1950-85, by source

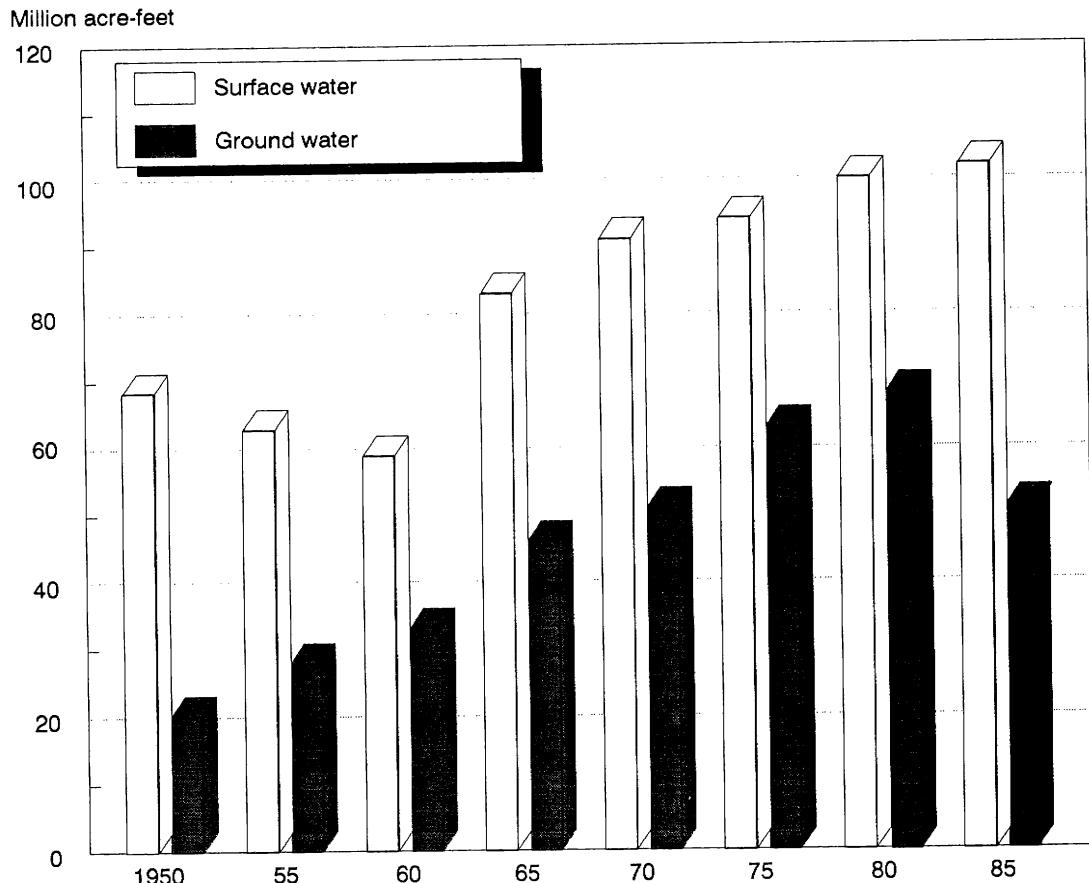
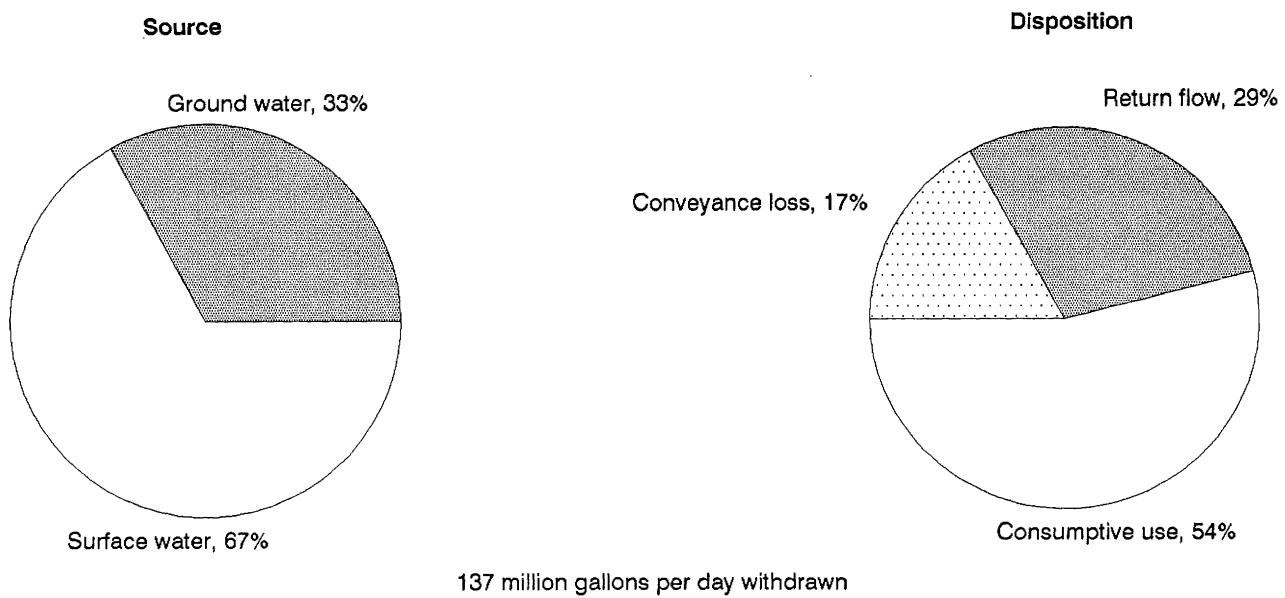
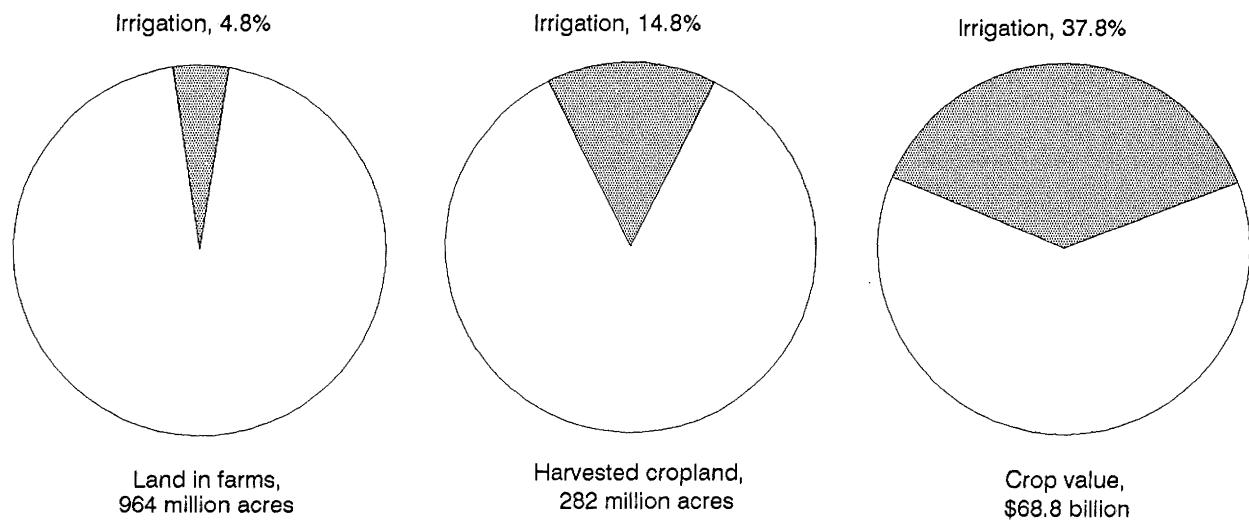


Figure 3  
**Irrigation water source and disposition, 1985**



Source: Wayne B. Solley, Charles F. Merk, and Robert R. Pierce, *Estimated Use of Water in the United States in 1985*, Circular 1004, U.S. Geological Survey, 1988, p. 22.

Figure 4  
**Irrigation and farm production, 1987**



Source: 1987 Census of Agriculture.

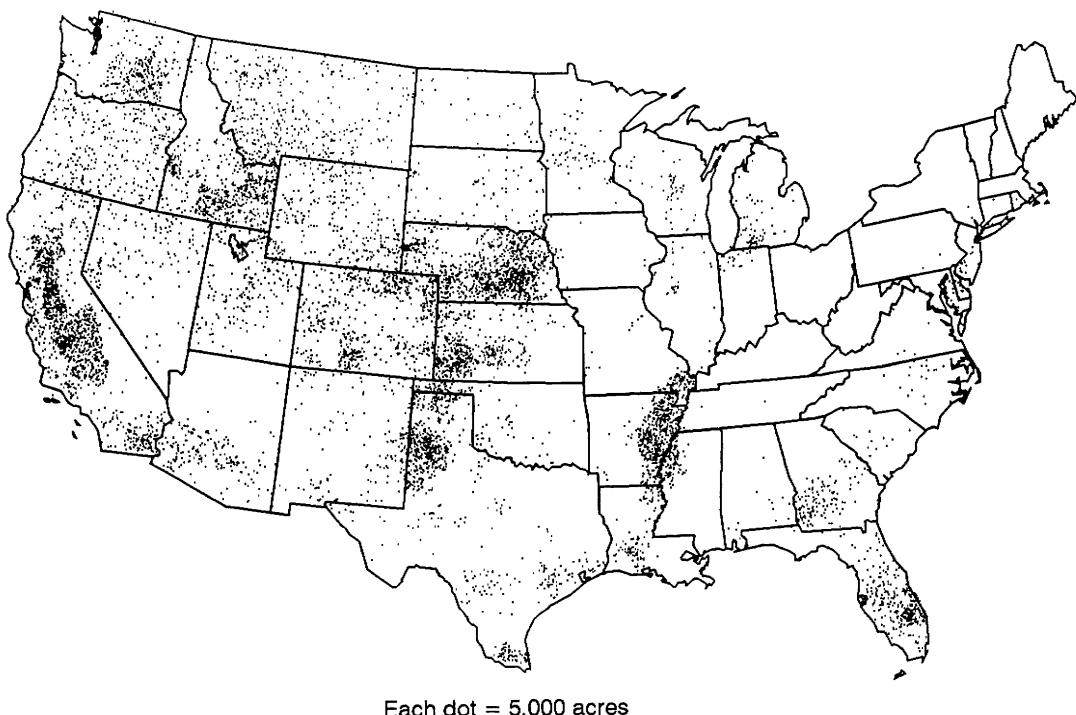
Figure 5  
**Humid and dry regions**



-- 20" -- = Line of equal average annual precipitation, in inches, 1951-80.  
The line of 20 inches of average annual rainfall is the boundary between the humid region and the dry region.

Source: Wayne B. Solley, Charles F. Merk, and Robert R. Pierce, *Estimated Use of Water in the United States in 1985*, Circular 1004, U.S. Geological Survey, 1988.

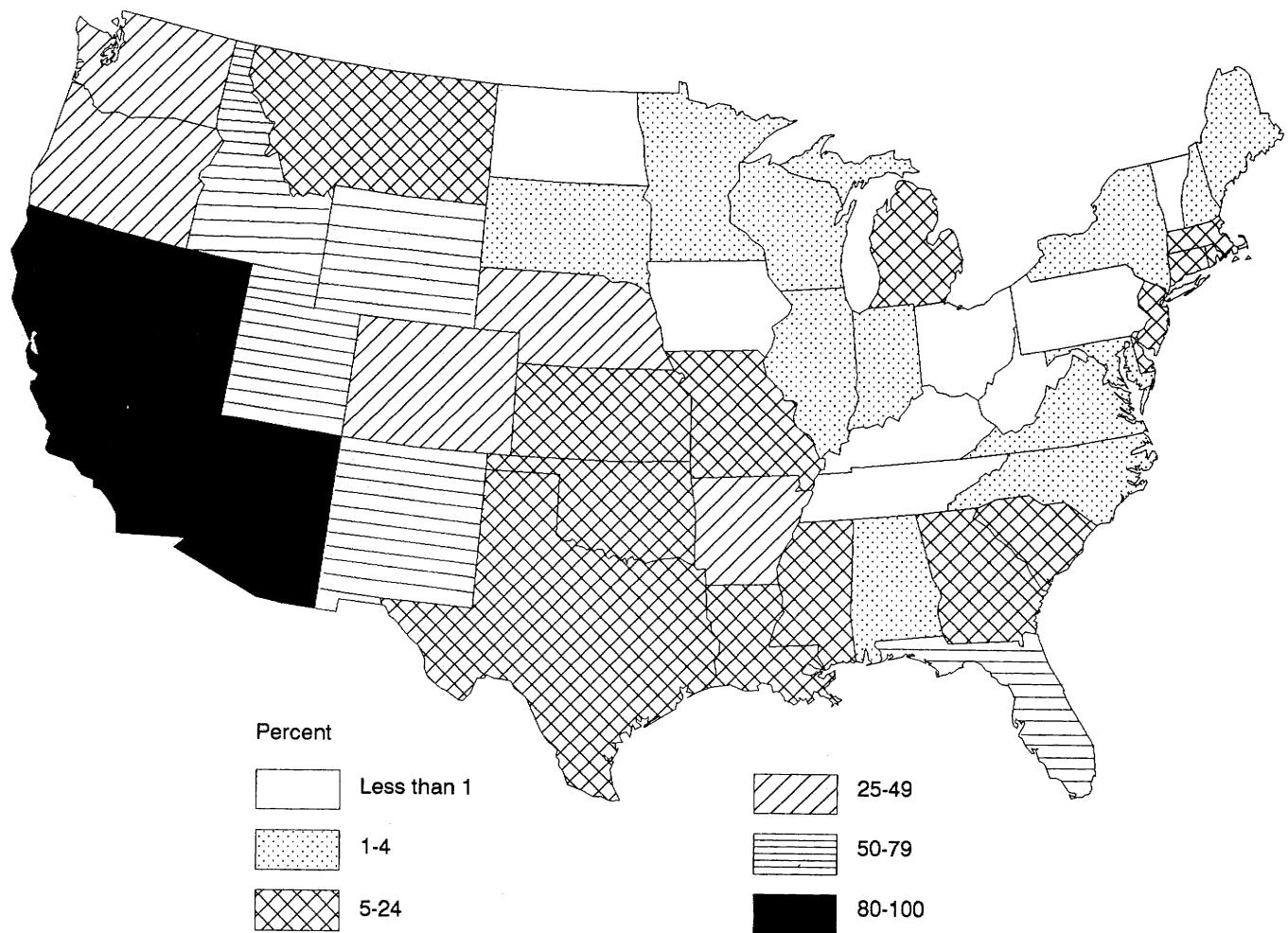
Figure 6  
**Distribution of irrigated acreage in the conterminous United States, 1987**



Source: 1987 Census of Agriculture.

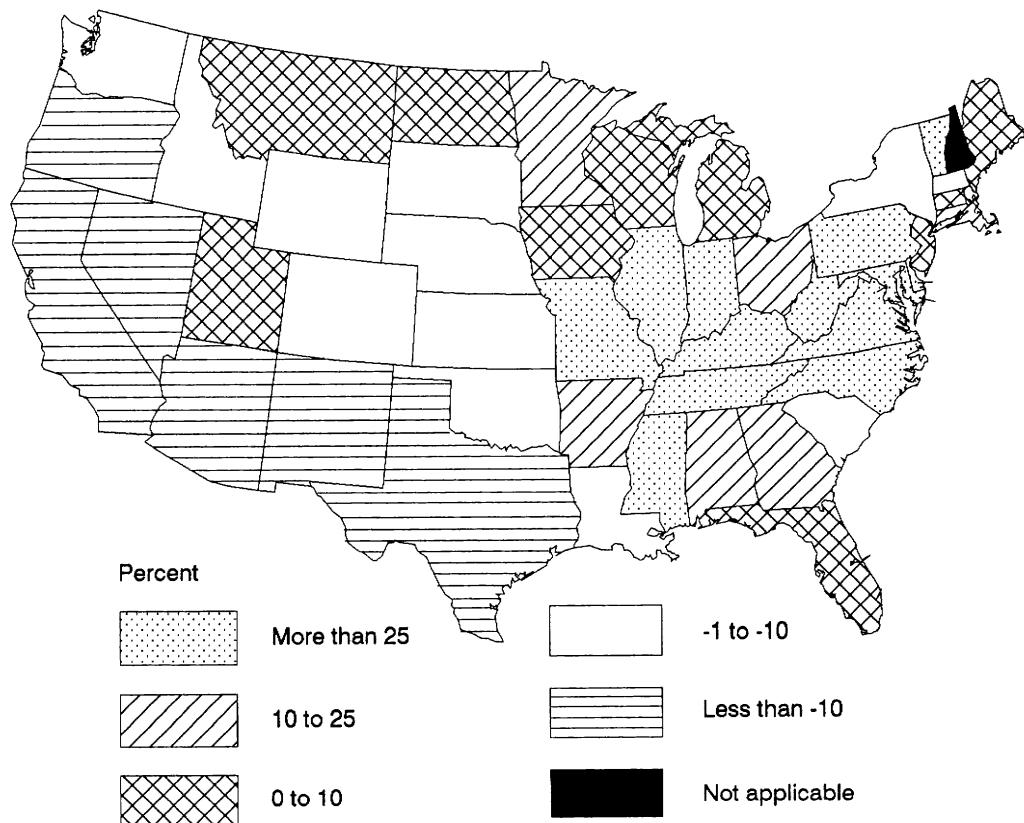
Figure 7

**Percentage of irrigated harvested cropland in the conterminous United States, 1987**



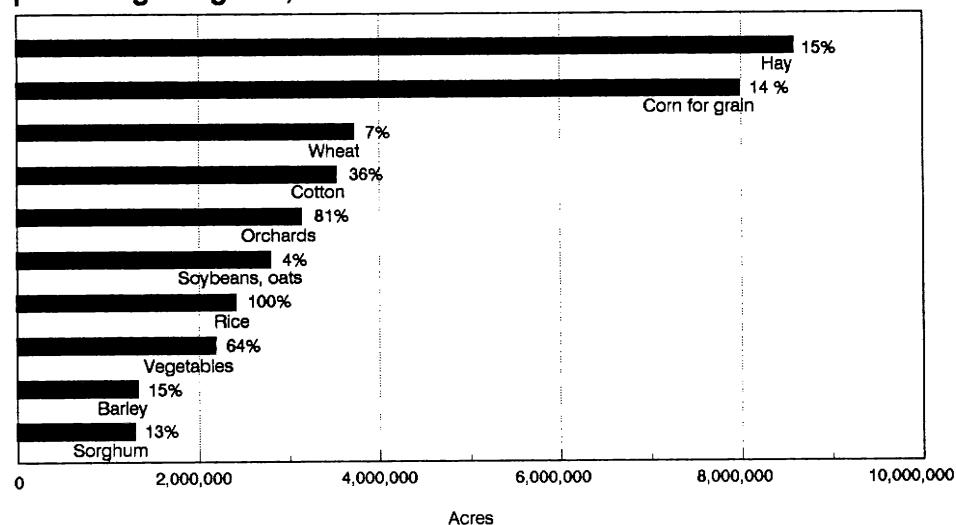
Source: Data from U.S. Bureau of the Census, 1987.

Figure 8  
Change in irrigated acreage, 1982-87



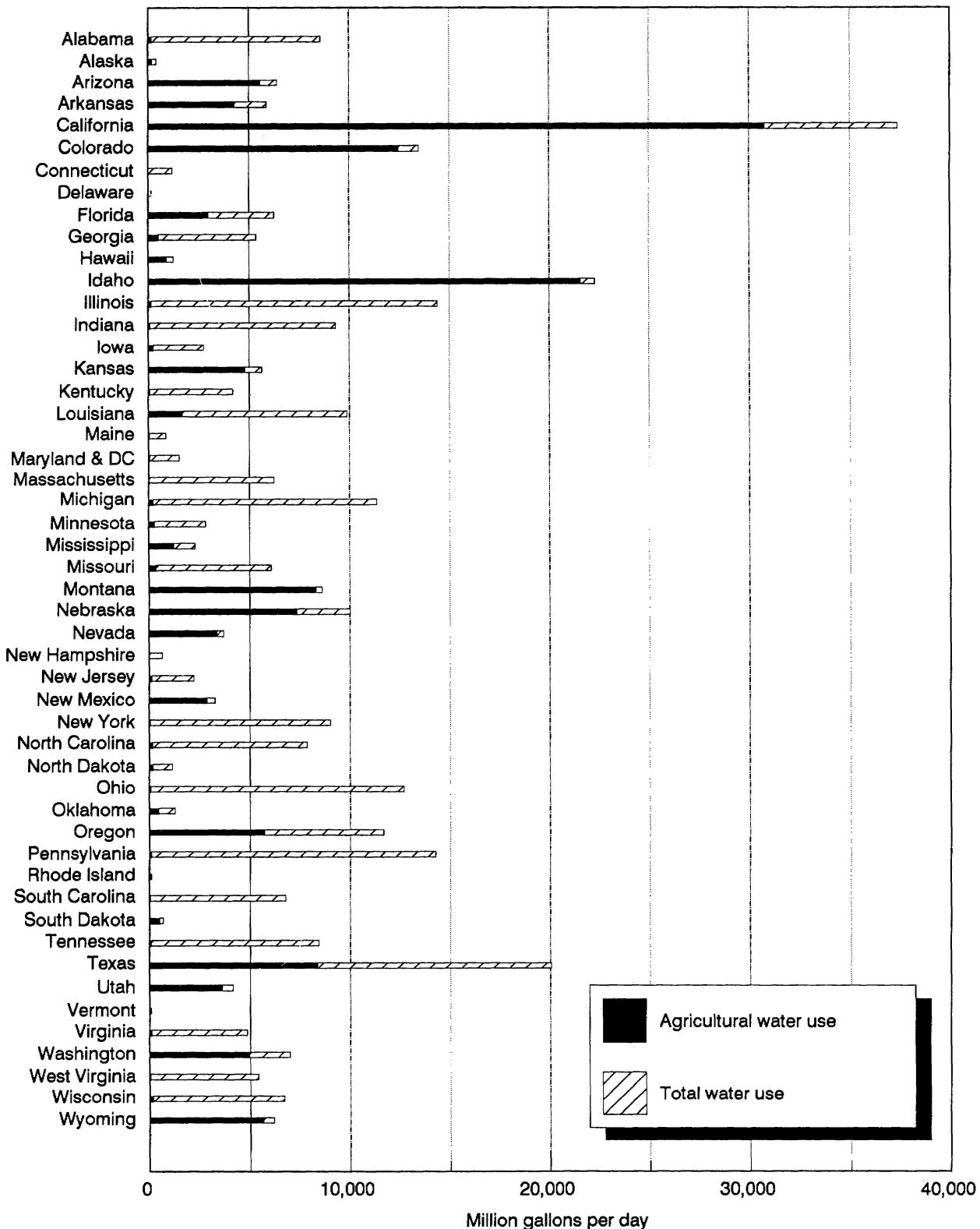
Source: Census of Agriculture, 1982-87.

Figure 9  
Acreage of principal irrigated crops and percentage irrigated, 1987



Source: 1987 Census of Agriculture.

Figure 10  
State summaries of freshwater use, 1985

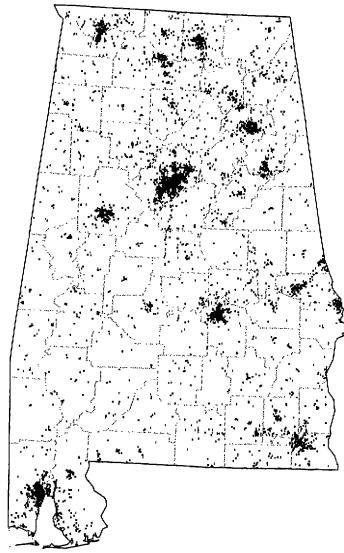


Source: U. S. Geological Survey, *National Water Summary, 1987: Hydrologic Events and Water Supply and Use*, Water Supply Paper 2350, 1990.

## **State Summaries**

# Alabama

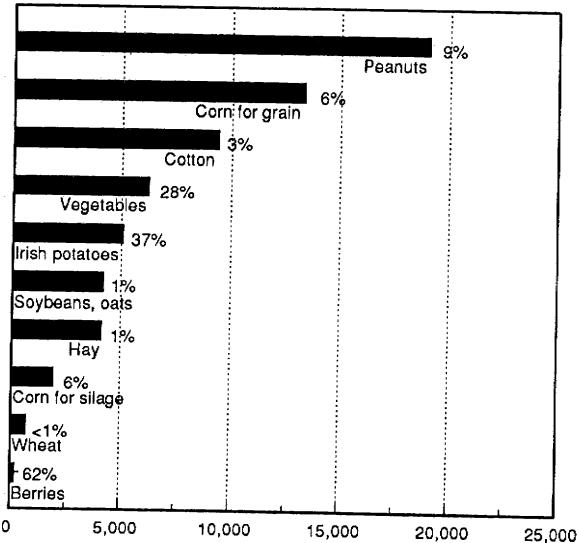
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 9.2                                 | 96                | 1                      |
| Ground              | 0.4                                 | 4                 | 25                     |
| Total               | 9.6                                 | 100               | 2                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                        |
| Surface             | 89.6                                | 49                | NA                     |
| Ground              | 95.2                                | 51                | NA                     |
| Total               | 184.8                               | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 77.3                                | 42                | NA                     |
| Other farm uses     | 107.5                               | 58                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 122.5                               | 66                | NA                     |
| Return flow         | 62.3                                | 34                | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Alabama

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 37,148 | 41,975 | 45,443 | 51,252 | 66,580 | 83,918 |
| Harvested cropland | do.          | 28,509 | 33,351 | 37,301 | 40,969 | 52,444 | 74,409 |
| Irrigated land     | do.          | 1,344  | 1,040  | 994    | 427    | 337    | 318    |
| Harvested cropland | do.          | 1,255  | 1,004  | 916    | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 4,497  | 5,106  | 5,449  | 5,296  | 5,789  | 5,119  |
| Harvested cropland | do.          | 2,232  | 3,265  | 3,364  | 2,794  | 2,706  | 2,990  |
| Irrigated land     | No. of acres | 84,054 | 66,020 | 58,581 | 13,909 | 11,058 | 11,768 |
| Harvested cropland | do.          | 75,894 | 63,448 | 54,960 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Baldwin | Houston | Coffee | Geneva | Henry |
|------------------------|--------------|--------|---------|---------|--------|--------|-------|
| Irrigated land         | No. of farms | 1,344  | 109     | 64      | 60     | 65     | 26    |
| Irrigated land         | No. of acres | 84,057 | 13,596  | 7,276   | 4,701  | 4,114  | 4,082 |
| Major irrigated crops: |              |        |         |         |        |        |       |
| Peanuts                | do.          | 19,060 | NA      | 3,477   | 3,261  | 3,066  | 2,734 |
| Corn                   | do.          | 13,351 | 1,510   | 2,391   | 1,309  | 627    | 919   |
| Cotton                 | do.          | 9,427  | NA      | NA      | NA     | NA     | 301   |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 168,161   | 171,210 | 414,658   | 409,869 | 161,005      | 165,487 |
| Machinery and equipment        | 25,831    | 24,151  | 86,157    | 70,733  | 24,075       | 23,032  |
| Farm products sold             | 44,053    | 35,175  | 165,506   | 134,812 | 40,169       | 32,989  |
| Crops, nursery, and greenhouse | 32,856    | 30,938  | 146,756   | 124,149 | 23,522       | 26,415  |
| Livestock and poultry          | 41,755    | 30,161  | 88,321    | 52,638  | 40,897       | 29,834  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,187     | 3,641   | 11,036    | 10,835  | 2,860        | 3,402   |
| Other agricultural chemicals   | 3,651     | 4,220   | 10,923    | 8,279   | 3,181        | 3,944   |
| Energy and petroleum products  | 2,105     | 2,359   | 9,478     | 10,125  | 1,886        | 2,172   |
| Hired labor                    | 7,821     | 5,366   | 47,198    | 30,481  | 5,907        | 4,353   |
| Contract labor                 | 4,123     | 3,043   | 13,926    | 11,156  | 3,370        | 2,151   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 03, South Atlantic Gulf

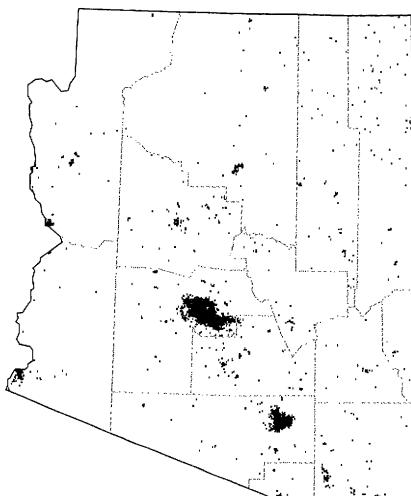
| Item                          | 1988          |           |         | 1984          |           |         |
|-------------------------------|---------------|-----------|---------|---------------|-----------|---------|
|                               | Farms         | Acres     | AF/acre | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |               |           |         |               |           |         |
| Methods:                      |               |           |         |               |           |         |
| All sprinkler systems         | 13,837        | 1,265,350 | 0.8     | 8,887         | 904,024   | 0.7     |
| Center pivot                  | 6,322         | 661,593   | 0.9     | 1,938         | 380,757   | 0.7     |
| Mechanical move               | 2,432         | 296,183   | 0.5     | 2,723         | 241,098   | 0.5     |
| Hand move                     | 3,635         | 119,964   | 0.6     | 20,352        | 56,675    | 0.6     |
| Solid set and permanent       | 2,583         | 187,610   | 1.5     | 2,788         | 225,495   | 1.4     |
| All gravity systems           | 1,556         | 777,181   | 1.6     | 1,447         | 620,636   | 1.8     |
| Gated pipe                    | 211           | 21,326    | 0.9     | 137           | 25,028    | 1.3     |
| Ditch with siphon tube        | 520           | 149,441   | 1.2     | 553           | 161,804   | 1.9     |
| Flooding                      | 836           | 606,414   | 1.7     | 789           | 433,804   | 1.9     |
| Drip or trickle               | 2,751         | 327,958   | 1.6     | 1,989         | 243,723   | 1.3     |
| Subirrigation                 | 148           | 220,468   | 4.1     | 100           | 246,712   | 4.6     |
| Sources:                      |               |           |         |               |           |         |
| Wells                         | 8,864         | 1,281,282 | 1.2     | 7,391         | 1,093,214 | 1.2     |
| Onfarm surface sources        | 8,119         | 630,540   | 0.8     | 4,146         | 410,299   | 0.9     |
| Off-farm water suppliers      | 1,247         | 556,348   | 3.1     | 290           | 478,335   | 3.5     |
|                               | <i>Number</i> |           |         | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 13,818        | 2,210,114 | 18      | 10,142        | 1,815,951 | 22      |
| Electricity                   | 6,309         | 733,196   | 22      | 5,134         | 658,340   | 25      |
| Natural gas                   | 4             | 287       | 56      | 64            | 7,335     | 47      |
| LP gas, propane, butane       | 1,628         | 91,982    | 24      | 607           | 51,882    | 32      |
| Diesel fuel                   | 5,945         | 1,358,762 | 16      | 4,862         | 1,072,794 | 19      |
| Gasoline and gasohol          | 1,850         | 25,887    | 35      | 907           | 25,600    | 18      |
| Off-farm water supply         | 1,247         | 556,348   | 27      | 290           | 478,335   | 22      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 684                | 624  | 731   | 36                | 31   | 33   |
| Irrigated cropland | 765                | 599  | 1,239 | 77                | 40   | 45   |
| Grazing land       | 461                | 430  | 491   | 16                | 12   | 14   |

# Arizona

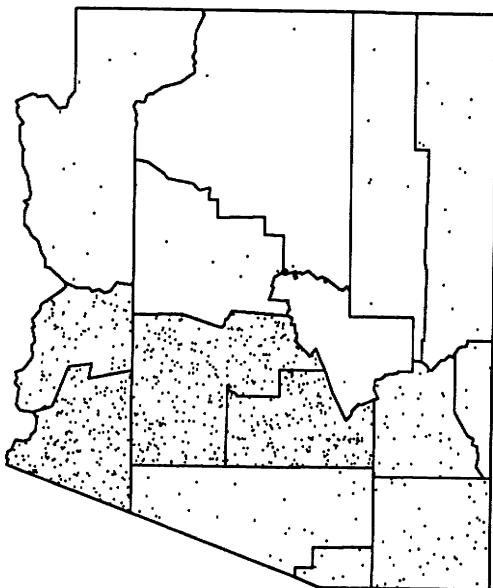
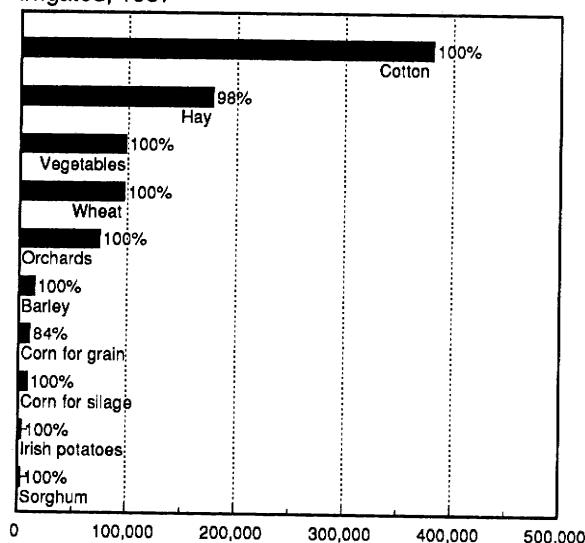
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricul-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|-----------------------------|
|                     |                                     |                   | Percent                     |
| <b>Sources:</b>     |                                     |                   |                             |
| Surface             | 3.7                                 | 52                | 92                          |
| Ground              | 3.5                                 | 48                | 82                          |
| Total               | 7.2                                 | 100               | 87                          |
| <b>Agriculture:</b> |                                     |                   |                             |
| <b>Sources—</b>     |                                     |                   |                             |
| Surface             | 3.4                                 | 55                | NA                          |
| Ground              | 2.8                                 | 45                | NA                          |
| Total               | 6.3                                 | 100               | NA                          |
| <b>Use—</b>         |                                     |                   |                             |
| Irrigation          | 6.2                                 | 99                | NA                          |
| Other farm uses     | 0.1                                 | 1                 | NA                          |
| <b>Disposition—</b> |                                     |                   |                             |
| Consumptive use     | 3.6                                 | 57                | NA                          |
| Return flow         | 2.7                                 | 43                | NA                          |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Arizona

### Land in farms

| Item               | Unit         | 1987    | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|---------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 4,840   | 4,948     | 4,472     | 4,244     | 4,189     | 4,890     |
| Harvested cropland | do.          | 3,646   | 3,838     | 3,579     | 3,533     | 3,354     | 4,191     |
| Irrigated land     | do.          | 4,241   | 4,437     | 4,185     | 3,828     | 3,709     | 4,697     |
| Harvested cropland | do.          | 3,585   | 3,767     | 3,515     | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 1,454   | 1,480     | 1,544     | 1,505     | 1,631     | 1,590     |
| Harvested cropland | do.          | 866     | 1,047     | 1,107     | 1,097     | 1,079     | 1,025     |
| Irrigated land     | No. of acres | 913,841 | 1,097,825 | 1,195,727 | 1,153,478 | 1,177,618 | 1,125,376 |
| Harvested cropland | do.          | 859,654 | 1,042,527 | 1,102,502 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Maricopa | Yuma    | Pinal   | La Paz | Cochise |
|------------------------|--------------|---------|----------|---------|---------|--------|---------|
| Irrigated land         | No. of farms | 4,241   | 1,442    | 548     | 562     | 92     | 357     |
| Irrigated land         | No. of acres | 913,841 | 275,592  | 192,452 | 189,691 | 82,345 | 49,012  |
| Major irrigated crops: |              |         |          |         |         |        |         |
| Cotton                 | do.          | 381,733 | 144,219  | 34,849  | 127,639 | 16,361 | 17,206  |
| Hay                    | do.          | 178,577 | 47,239   | 42,840  | 14,584  | 42,630 | 7,044   |
| Vegetables             | do.          | 98,138  | 22,683   | 49,796  | 5,613   | 12,401 | 2,690   |

### Average value per farm

| Item                           | All farms |           | Irrigated |           | Nonirrigated |           |
|--------------------------------|-----------|-----------|-----------|-----------|--------------|-----------|
|                                | 1987      | 1982      | 1987      | 1982      | 1987         | 1982      |
| <i>Dollars</i>                 |           |           |           |           |              |           |
| Land and buildings             | 1,317,765 | 1,496,334 | 1,509,676 | 1,697,688 | 1,077,848    | 1,191,333 |
| Machinery and equipment        | 55,702    | 56,069    | 80,002    | 78,392    | 25,418       | 22,803    |
| Farm products sold             | 212,354   | 208,197   | 293,370   | 240,336   | 112,125      | 158,926   |
| Crops, nursery, and greenhouse | 305,097   | 278,415   | 307,849   | 282,296   | 28,966       | 20,744    |
| Livestock and poultry          | 162,853   | 160,371   | 216,226   | 131,525   | 133,029      | 183,147   |
| Selected production expenses:  |           |           |           |           |              |           |
| Commercial fertilizers         | 16,804    | 20,103    | 17,339    | 20,522    | 1,359        | 210       |
| Other agricultural chemicals   | 18,557    | 25,575    | 21,574    | 26,224    | 561          | 458       |
| Energy and petroleum product   | 12,013    | 15,259    | 17,639    | 22,751    | 4,321        | 3,935     |
| Hired labor                    | 57,981    | 44,724    | 71,467    | 55,650    | 27,434       | 19,875    |
| Contract labor                 | 23,352    | 30,270    | 28,850    | 36,009    | 4,238        | 3,106     |

### Irrigation methods, water sources, and pumping energy use

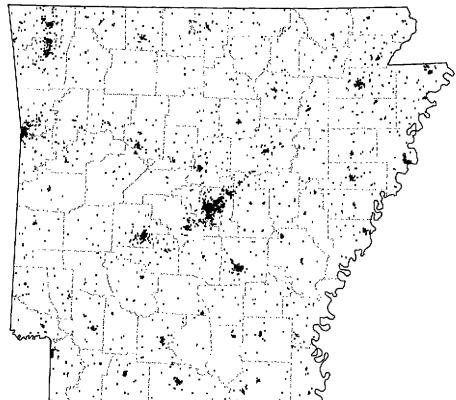
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 524   | 73,196  | 3.3            | 529           | 74,140  | 4.3     |
| Center pivot                  | 129   | 27,012  | 2.8            | 134           | 28,387  | 4.5     |
| Mechanical move               | 34    | 18,232  | NA             | 120           | 25,058  | 4.6     |
| Hand move                     | 367   | 22,066  | 3.0            | 236           | 14,970  | 2.4     |
| Solid set and permanent       | 26    | 5,886   | 2.8            | 134           | 5,725   | 3.9     |
| All gravity systems           | 3,050 | 762,687 | 4.5            | 2,937         | 776,363 | 4.5     |
| Gated pipe                    | 232   | 44,945  | 4.7            | 297           | 42,146  | 4.8     |
| Ditch with siphon tube        | 1,766 | 603,783 | 4.6            | 1,896         | 611,993 | 4.6     |
| Flooding                      | 1,182 | 113,959 | 4.5            | 951           | 122,224 | 3.8     |
| Drip or trickle               | 132   | 14,211  | 2.2            | 201           | 50,561  | 1.6     |
| Subirrigation                 | 7     | 1,816   | 3.3            | NA            | NA      | NA      |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 1,170 | 404,455 | 4.0            | 1,520         | 523,871 | 4.3     |
| Onfarm surface sources        | 444   | 71,361  | 2.1            | 177           | 23,384  | 4.4     |
| Off-farm water suppliers      | 2,364 | 472,238 | 4.6            | 1,994         | 374,556 | 4.6     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 1,328 | 465,613 | 105            | 1,611         | 578,302 | 107     |
| Electricity                   | 1,100 | 388,749 | 110            | 1,320         | 474,502 | 104     |
| Natural gas                   | 160   | 59,712  | 100            | 211           | 77,467  | 151     |
| LP gas, propane, butane       | 24    | 2,720   | 21             | 73            | 7,026   | 31      |
| Diesel fuel                   | 109   | 12,316  | 23             | 187           | 18,475  | 39      |
| Gasoline and gasohol          | 124   | 2,116   | 13             | 30            | 832     | 26      |
| Off-farm water supply         | 2,364 | 472,238 | 89             | 1,994         | 374,556 | 47      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,586              | 1,494 | 1,726 | 49                | NA   | NA   |
| Irrigated cropland | 3,256              | 2,881 | 2,884 | 113               | 126  | 92   |
| Grazing land       | 287                | 321   | 182   | 4                 | 4    | 1    |

# Arkansas

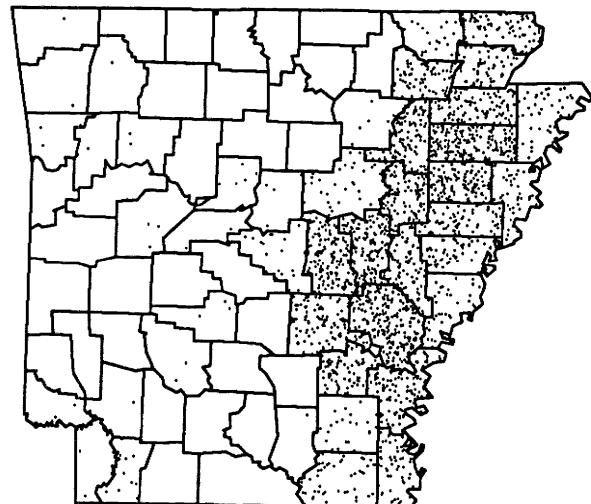
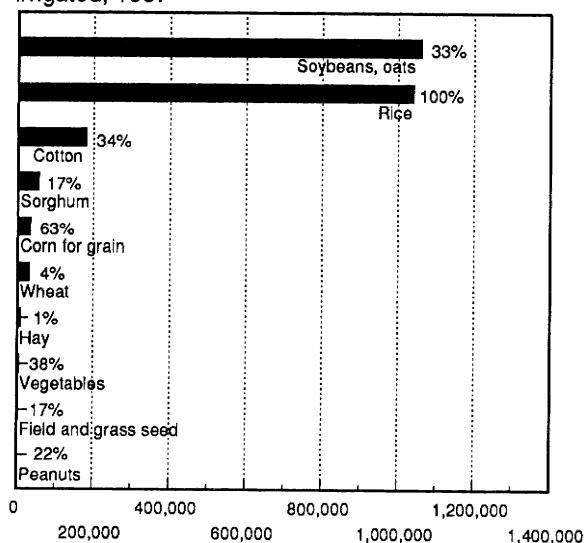
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |   |
|---------------------|------------------------------|-------------------|------------------------|---|
|                     |                              |                   | Percent                | — |
| <b>Sources:</b>     |                              |                   |                        |   |
| Surface             | 2.3                          | 36                | 35                     |   |
| Ground              | 4.3                          | 64                | 94                     |   |
| Total               | 6.6                          | 100               | 73                     |   |
| <b>Agriculture:</b> |                              |                   |                        |   |
| <b>Sources—</b>     |                              |                   |                        |   |
| Surface             | 0.8                          | 17                | NA                     |   |
| Ground              | 4.0                          | 83                | NA                     |   |
| Total               | 4.8                          | 100               | NA                     |   |
| <b>Use—</b>         |                              |                   |                        |   |
| Irrigation          | 4.3                          | 90                | NA                     |   |
| Other farm uses     | 0.5                          | 10                | NA                     |   |
| <b>Disposition—</b> |                              |                   |                        |   |
| Consumptive use     | 3.5                          | 72                | NA                     |   |
| Return flow         | 1.3                          | 28                | NA                     |   |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Arkansas

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974    | 1969      | 1964    |
|--------------------|--------------|-----------|-----------|-----------|---------|-----------|---------|
| Total cropland     | No. of farms | 40,536    | 43,228    | 45,552    | 45,524  | 54,236    | 66,591  |
| Harvested cropland | do.          | 32,248    | 34,725    | 37,245    | 35,362  | 40,952    | 55,518  |
| Irrigated land     | do.          | 7,269     | 6,678     | 6,302     | 4,673   | 5,728     | 6,220   |
| Harvested cropland | do.          | 7,187     | 6,621     | 6,190     | NA      | NA        | NA      |
| Total cropland     | 1,000 acres  | 9,950     | 10,043    | 10,330    | 9,652   | 9,987     | 8,525   |
| Harvested cropland | do.          | 6,477     | 7,484     | 7,572     | 6,639   | 6,805     | 6,088   |
| Irrigated land     | No. of acres | 2,406,338 | 2,022,695 | 1,683,413 | 948,910 | 1,010,200 | 974,297 |
| Harvested cropland | do.          | 2,396,987 | 2,019,406 | 1,673,595 | NA      | NA        | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Arkansas | Poinsett | Lonoke  | Prairie | Cross   |
|------------------------|--------------|-----------|----------|----------|---------|---------|---------|
| Irrigated land         | No. of farms | 7,269     | 493      | 439      | 404     | 352     | 344     |
| Irrigated land         | No. of acres | 2,406,338 | 245,006  | 190,500  | 166,708 | 143,336 | 136,927 |
| Major irrigated crops: |              |           |          |          |         |         |         |
| Rice                   | do.          | 1,041,433 | 88,193   | 90,102   | 60,118  | 51,356  | 64,080  |
| Soybeans               | do.          | 1,060,054 | 145,613  | 92,939   | 87,422  | 85,447  | 69,079  |
| Cotton                 | do.          | 182,103   | NA       | 3,256    | 15,518  | 849     | NA      |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 225,604   | 286,402 | 637,770   | 937,554 | 155,672      | 187,797 |
| Machinery and equipment        | 34,505    | 35,483  | 107,401   | 126,830 | 22,129       | 21,642  |
| Farm products sold             | 68,825    | 55,943  | 150,920   | 160,145 | 54,261       | 40,072  |
| Crops, nursery, and greenhouse | 78,152    | 77,650  | 148,791   | 157,444 | 22,705       | 30,467  |
| Livestock and poultry          | 58,695    | 39,733  | 45,649    | 36,489  | 59,141       | 39,851  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,877     | 5,372   | 13,113    | 13,932  | 1,870        | 2,326   |
| Other agricultural chemicals   | 5,956     | 7,813   | 13,549    | 13,982  | 2,014        | 3,741   |
| Energy and petroleum products  | 4,073     | 4,598   | 14,397    | 19,727  | 2,239        | 2,290   |
| Hired labor                    | 11,479    | 9,336   | 19,646    | 19,754  | 8,208        | 5,536   |
| Contract labor                 | 3,749     | 2,540   | 5,396     | 5,251   | 3,381        | 2,159   |

### Irrigation methods, water sources, and pumping energy use

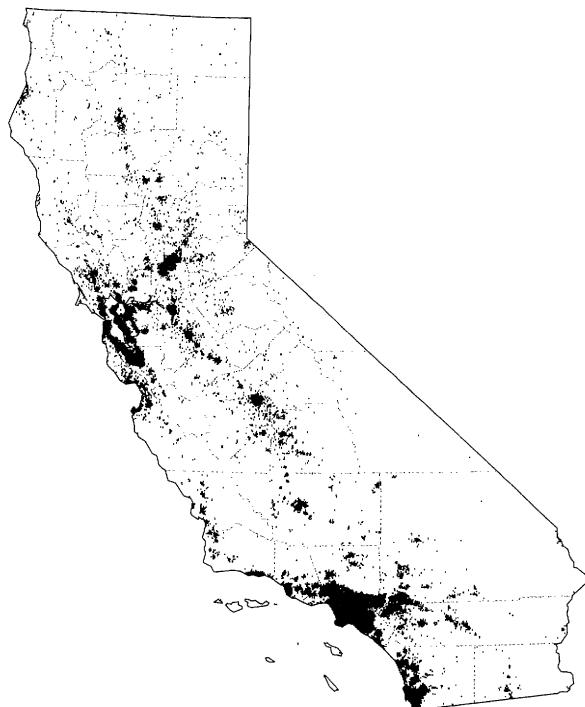
| Item                          | 1988  |           |                | 1984          |           |         |
|-------------------------------|-------|-----------|----------------|---------------|-----------|---------|
|                               | Farms | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |       |           |                |               |           |         |
| Methods:                      |       |           |                |               |           |         |
| All sprinkler systems         | 739   | 330,534   | 0.7            | 725           | 159,546   | 0.9     |
| Center pivot                  | 485   | 244,195   | 0.6            | 214           | 79,735    | 0.8     |
| Mechanical move               | 65    | 18,985    | NA             | 128           | 16,940    | 2.3     |
| Hand move                     | 64    | 12,570    | NA             | 198           | 7,728     | 1.5     |
| Solid set and permanent       | 173   | 54,784    | 0.7            | 214           | 55,143    | 0.7     |
| All gravity systems           | 5,387 | 2,403,929 | 1.5            | 4,154         | 1,726,932 | 1.4     |
| Gated pipe                    | 1,525 | 512,665   | 1.8            | 828           | 228,301   | 0.6     |
| Ditch with siphon tube        | 782   | 213,298   | 2.0            | 725           | 181,838   | 2.0     |
| Flooding                      | 4,598 | 1,677,966 | 1.4            | 3,458         | 1,316,793 | 1.5     |
| Drip or trickle               | 33    | 2,805     | NA             | 235           | 2,311     | 0.5     |
| Subirrigation                 | 79    | 41,402    | 0.7            | 66            | 10,300    | 2.2     |
| Sources:                      |       |           |                |               |           |         |
| Wells                         | 4,747 | 2,401,084 | 1.3            | 4,231         | 1,666,365 | 1.4     |
| Onfarm surface sources        | 1,281 | 354,529   | 2.3            | 967           | 215,311   | 1.6     |
| Off-farm water suppliers      | 711   | 47,026    | 0.5            | 83            | 11,903    | 2.2     |
| <i>Number</i>                 |       |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 4,913 | 2,735,539 | 18             | 4,736         | 1,845,881 | 21      |
| Electricity                   | 3,696 | 1,170,583 | 24             | 3,360         | 951,228   | 23      |
| Natural gas                   | 468   | 113,914   | 18             | 397           | 94,833    | 18      |
| LP gas, propane, butane       | 1,462 | 273,050   | 16             | 1,259         | 188,597   | 25      |
| Diesel fuel                   | 2,739 | 1,161,955 | 13             | 2,237         | 611,170   | 18      |
| Gasoline and gasohol          | 83    | 16,037    | 7              | 53            | 53        | 35      |
| Off-farm water supply         | 711   | 47,026    | 1              | 83            | 11,903    | 34      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 599                | 633  | 891   | 36                | 39   | 45   |
| Irrigated cropland | 802                | 870  | 1,233 | 67                | 64   | 70   |
| Grazing land       | 436                | 438  | 529   | 15                | 13   | 13   |

# California

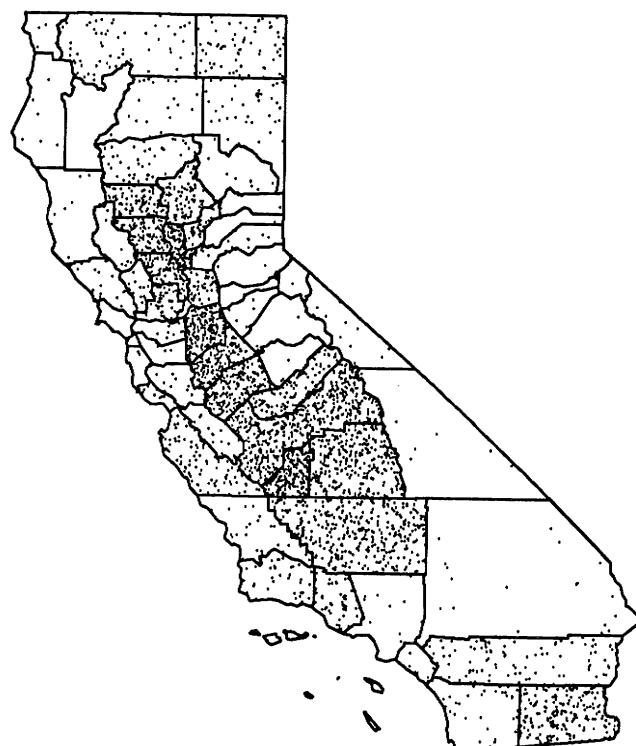
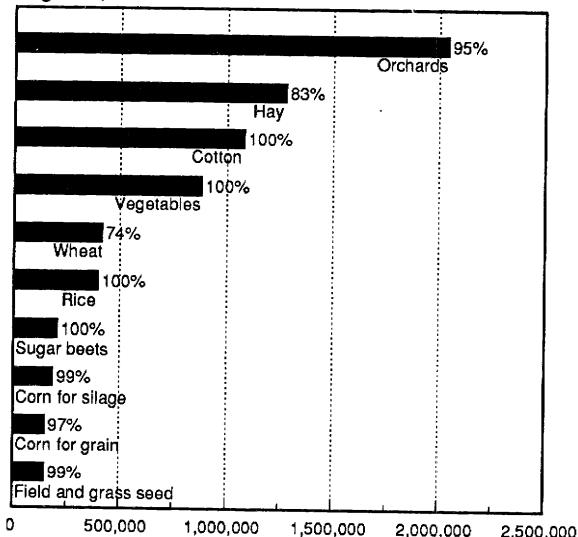
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 25.3                                | 60                | 90                     |
| Ground              | 16.6                                | 40                | 70                     |
| Total               | 41.9                                | 100               | 82                     |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 22.8                                | 66                | NA                     |
| Ground              | 11.7                                | 34                | NA                     |
| Total               | 34.5                                | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 34.3                                | 99                | NA                     |
| Other farm uses     | 0.2                                 | 1                 | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 21.8                                | 63                | NA                     |
| Return flow         | 12.7                                | 37                | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 2,000 acres

# Selected Characteristics of Irrigated Farms

California

## Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 68,266    | 67,916    | 63,663    | 59,192    | 66,016    | 69,386    |
| Harvested cropland | do.          | 59,259    | 59,048    | 56,253    | 52,754    | 56,677    | 62,078    |
| Irrigated land     | do.          | 58,868    | 58,389    | 55,627    | 47,160    | 51,050    | 59,429    |
| Harvested cropland | do.          | 52,780    | 51,431    | 49,181    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 10,895    | 11,257    | 11,455    | 10,630    | 11,245    | 11,815    |
| Harvested cropland | do.          | 7,676     | 8,765     | 8,804     | 8,307     | 7,649     | 7,846     |
| Irrigated land     | No. of acres | 7,596,091 | 8,460,508 | 8,505,824 | 7,748,709 | 7,240,131 | 7,598,698 |
| Harvested cropland | do.          | 6,964,100 | 7,787,078 | 7,637,056 | NA        | NA        | NA        |

## Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Fresno    | Kern    | Tulare  | Kings   | San Joaquin |
|------------------------|--------------|-----------|-----------|---------|---------|---------|-------------|
| Irrigated land         | No. of farms | 58,868    | 6,597     | 1,581   | 5,196   | 997     | 3,697       |
| Irrigated land         | No. of acres | 7,596,091 | 1,011,320 | 747,022 | 596,761 | 476,037 | 448,511     |
| Major irrigated crops: |              |           |           |         |         |         |             |
| Orchards               | do.          | 2,045,346 | 343,939   | 218,478 | 262,681 | 24,617  | 141,855     |
| Hay                    | do.          | 1,279,364 | 91,526    | 95,095  | 92,683  | 38,474  | 70,680      |
| Cotton                 | do.          | 1,083,811 | 306,603   | 275,404 | 131,758 | 234,104 | NA          |

## Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 583,668   | 746,577 | 640,476   | 846,339 | 442,462      | 506,603 |
| Machinery and equipment        | 49,223    | 47,361  | 59,158    | 58,403  | 24,509       | 20,966  |
| Farm products sold             | 167,300   | 151,479 | 196,379   | 175,909 | 96,998       | 92,227  |
| Crops, nursery, and greenhouse | 181,344   | 168,665 | 195,424   | 184,445 | 25,486       | 23,242  |
| Livestock and poultry          | 151,860   | 129,504 | 179,161   | 139,076 | 130,667      | 120,750 |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 9,577     | 10,208  | 10,094    | 10,781  | 2,295        | 2,181   |
| Other agricultural chemicals   | 10,354    | 10,862  | 11,603    | 11,616  | 1,550        | 1,510   |
| Energy and petroleum products  | 9,179     | 9,091   | 11,233    | 11,621  | 3,681        | 2,999   |
| Hired labor                    | 60,173    | 45,418  | 67,433    | 52,297  | 25,979       | 16,419  |
| Contract labor                 | 21,921    | 22,798  | 24,171    | 25,376  | 5,862        | 3,932   |

## Irrigation methods, water sources, and pumping energy use

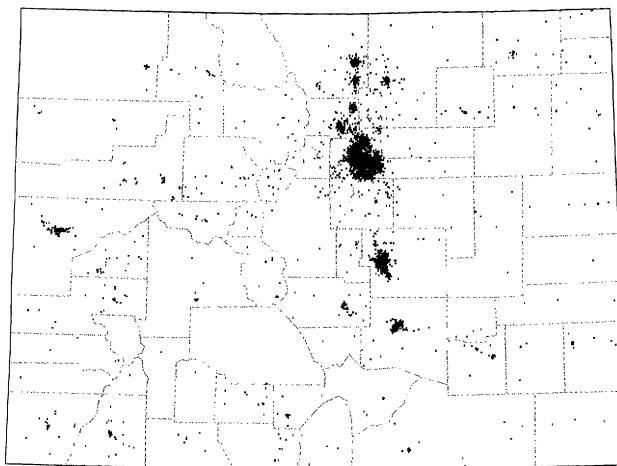
| Item                          | 1988          |           |         | 1984           |           |         |
|-------------------------------|---------------|-----------|---------|----------------|-----------|---------|
|                               | Farms         | Acres     | AF/acre | Farms          | Acres     | AF/acre |
| <i>Number</i>                 |               |           |         |                |           |         |
| Methods:                      |               |           |         |                |           |         |
| All sprinkler systems         | 16,698        | 1,747,231 | 2.5     | 19,858         | 1,901,576 | 2.2     |
| Center pivot                  | 6,509         | 336,176   | 2.4     | 1,982          | 81,764    | 2.2     |
| Mechanical move               | 1,550         | 229,332   | 3.1     | 1,594          | 256,359   | 2.8     |
| Hand move                     | 5,253         | 711,368   | 2.4     | 9,961          | 953,678   | 2.7     |
| Solid set and permanent       | 5,458         | 470,355   | 2.4     | 8,935          | 609,755   | 2.7     |
| All gravity systems           | 27,306        | 5,594,321 | 3.3     | 27,759         | 5,773,788 | 3.3     |
| Gated pipe                    | 4,251         | 812,467   | 3.6     | 5,492          | 902,710   | 3.6     |
| Ditch with siphon tube        | 8,694         | 2,070,118 | 3.2     | 8,080          | 2,180,165 | 3.2     |
| Flooding                      | 17,311        | 2,711,736 | 3.2     | 17,244         | 2,690,913 | 3.2     |
| Drip or trickle               | 8,759         | 359,843   | 2.2     | 6,812          | 449,604   | 2.3     |
| Subirrigation                 | 616           | 75,515    | 3.0     | 134            | 13,645    | 3.3     |
| Sources:                      |               |           |         |                |           |         |
| Wells                         | 28,092        | 3,798,095 | 2.8     | 25,120         | 3,113,085 | 2.8     |
| Onfarm surface sources        | 2,819         | 678,595   | 2.2     | 3,448          | 684,855   | 2.4     |
| Off-farm water suppliers      | 23,487        | 3,879,664 | 3.5     | 27,931         | 4,620,677 | 3.2     |
|                               | <i>Number</i> |           |         | <i>\$/acre</i> |           |         |
| Onfarm energy use for pumping | 32,170        | 5,149,173 | 55      | 29,966         | 4,751,117 | 48      |
| Electricity                   | 31,425        | 4,568,367 | 58      | 28,180         | 4,245,221 | 50      |
| Natural gas                   | 126           | 33,251    | 53      | 185            | 76,007    | 75      |
| LP gas, propane, butane       | 136           | 53,648    | 22      | 239            | 54,434    | 22      |
| Diesel fuel                   | 1,385         | 479,733   | 27      | 1,958          | 364,078   | 27      |
| Gasoline and gasohol          | 106           | 14,174    | 33      | 616            | 11,337    | 43      |
| Off-farm water supply         | 23,487        | 3,879,664 | 72      | 27,931         | 4,620,677 | 50      |

## Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 2,000              | 1,541 | 2,648 | 30                | 29   | 40   |
| Irrigated cropland | 2,643              | 2,944 | 4,093 | 130               | 123  | 154  |
| Grazing land       | 1,005              | 1,097 | 1,352 | 12                | 11   | 14   |

# Colorado

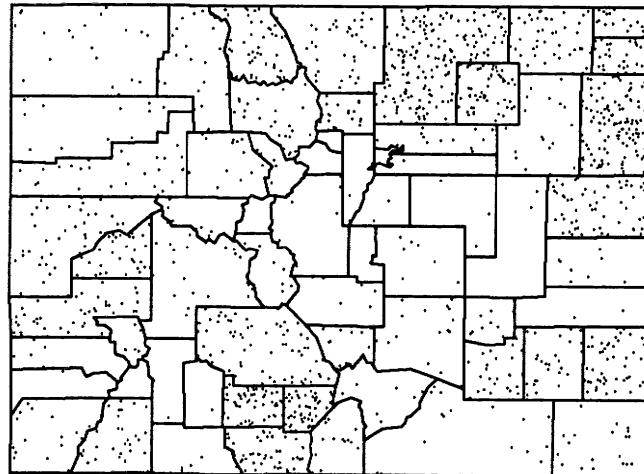
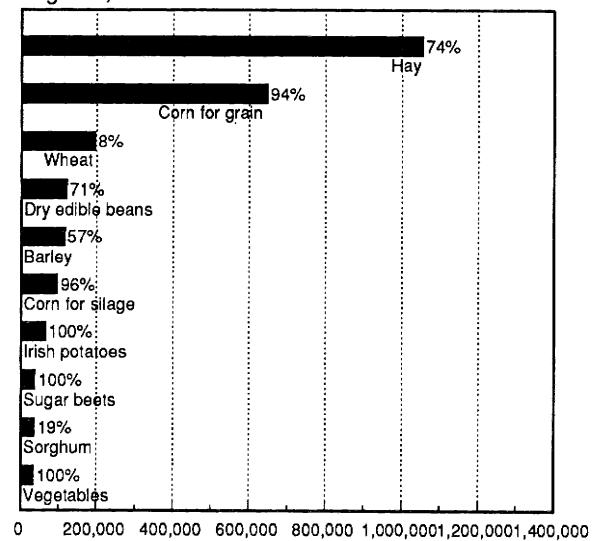
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 12.5                                | 83                | 92                     |
| Ground              | 2.6                                 | 17                | 93                     |
| Total               | 15.1                                | 100               | 92                     |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 11.6                                | 83                | NA                     |
| Ground              | 2.4                                 | 17                | NA                     |
| Total               | 14.0                                | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 13.9                                | 99                | NA                     |
| Other farm uses     | 0.1                                 | 1                 | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 5.2                                 | 37                | NA                     |
| Return flow         | 8.8                                 | 63                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 2,000 acres

## Selected Characteristics of Irrigated Farms

Colorado

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 22,334    | 22,421    | 23,341    | 22,792    | 24,754    | 27,103    |
| Harvested cropland | do.          | 19,446    | 20,061    | 21,217    | 21,049    | 22,476    | 24,938    |
| Irrigated land     | do.          | 14,913    | 15,232    | 16,016    | 14,687    | 15,567    | 18,317    |
| Harvested cropland | do.          | 13,557    | 14,080    | 14,941    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 10,989    | 10,552    | 10,607    | 10,513    | 10,773    | 10,740    |
| Harvested cropland | do.          | 5,522     | 6,037     | 5,845     | 5,957     | 5,266     | 4,726     |
| Irrigated land     | No. of acres | 3,013,773 | 3,200,942 | 3,430,860 | 2,873,692 | 2,894,984 | 2,690,018 |
| Harvested cropland | do.          | 2,442,358 | 2,656,328 | 2,726,221 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Weld    | Yuma    | Saguache | Kit Carson | Morgan  |
|------------------------|--------------|-----------|---------|---------|----------|------------|---------|
| Irrigated land         | No. of farms | 14,913    | 1,860   | 494     | 209      | 320        | 500     |
| Irrigated land         | No. of acres | 3,013,773 | 358,565 | 246,116 | 136,553  | 124,475    | 119,494 |
| Major irrigated crops: |              |           |         |         |          |            |         |
| Hay                    | do.          | 1,055,673 | 84,038  | 10,061  | 51,915   | 7,906      | 19,164  |
| Corn                   | do.          | 647,205   | 117,941 | 167,668 | NA       | 56,775     | 60,155  |
| Wheat for grain        | do.          | 195,472   | 11,531  | 16,856  | 12,382   | 35,483     | 6,578   |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 458,906   | 562,479 | 525,320   | 672,542 | 375,965      | 425,751 |
| Machinery and equipment        | 49,534    | 51,457  | 56,208    | 60,883  | 41,209       | 39,788  |
| Farm products sold             | 115,201   | 108,476 | 98,868    | 112,775 | 134,889      | 102,964 |
| Crops, nursery, and greenhouse | 52,734    | 56,791  | 62,470    | 66,414  | 33,006       | 37,683  |
| Livestock and poultry          | 132,920   | 112,612 | 90,931    | 104,107 | 180,046      | 122,884 |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 6,051     | 6,672   | 6,473     | 7,332   | 4,767        | 4,106   |
| Other agricultural chemicals   | 3,559     | 3,426   | 3,649     | 3,728   | 3,365        | 2,394   |
| Energy and petroleum products  | 5,903     | 6,792   | 7,190     | 8,849   | 4,215        | 4,253   |
| Hired labor                    | 17,321    | 12,577  | 16,642    | 13,874  | 18,724       | 9,831   |
| Contract labor                 | 5,068     | 4,413   | 5,361     | 4,858   | 4,426        | 3,162   |

### Irrigation methods, water sources, and pumping energy use

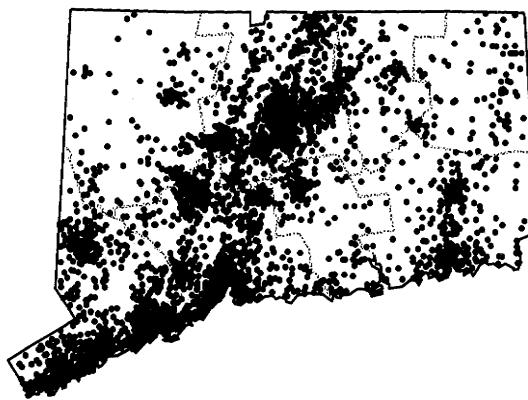
| Item                          | 1988   |           |                | 1984          |           |                |
|-------------------------------|--------|-----------|----------------|---------------|-----------|----------------|
|                               | Farms  | Acres     | AF/acre        | Farms         | Acres     | AF/acre        |
| <i>Number</i>                 |        |           |                |               |           |                |
| Methods:                      |        |           |                |               |           |                |
| All sprinkler systems         | 3,057  | 921,385   | 1.5            | 3,584         | 1,110,300 | 1.5            |
| Center pivot                  | 2,110  | 813,762   | 1.5            | 1,979         | 925,950   | 1.5            |
| Mechanical move               | 324    | 22,326    | 1.5            | 831           | 115,895   | 0.8            |
| Hand move                     | 893    | 82,333    | 1.1            | 895           | 47,840    | 1.6            |
| Solid set and permanent       | 232    | 2,964     | NA             | 221           | 20,615    | 1.4            |
| All gravity systems           | 10,739 | 2,316,841 | 1.9            | 11,740        | 2,082,242 | 1.7            |
| Gated pipe                    | 2,441  | 295,056   | 1.5            | 3,349         | 417,063   | 1.5            |
| Ditch with siphon tube        | 7,382  | 1,228,504 | 1.8            | 8,730         | 1,245,417 | 1.6            |
| Flooding                      | 2,884  | 793,281   | 2.0            | 2,225         | 419,762   | 1.9            |
| Drip or trickle               | 44     | 264       | NA             | 96            | 3,567     | NA             |
| Subirrigation                 | 276    | 33,378    | 1.0            | 134           | 13,645    | 3.3            |
| Sources:                      |        |           |                |               |           |                |
| Wells                         | 3,835  | 1,214,415 | 1.6            | 4,338         | 1,397,906 | 1.4            |
| Onfarm surface sources        | 1,903  | 396,636   | 1.5            | 1,337         | 427,493   | 1.7            |
| Off-farm water suppliers      | 8,654  | 1,761,971 | 1.9            | 9,629         | 1,435,616 | 1.8            |
| <i>Number</i>                 |        |           | <i>\$/acre</i> | <i>Number</i> |           | <i>\$/acre</i> |
| Onfarm energy use for pumping | 4,723  | 1,445,164 | 34             | 5,631         | 1,572,532 | 36             |
| Electricity                   | 4,157  | 1,239,603 | 34             | 4,371         | 1,279,053 | 36             |
| Natural gas                   | 385    | 124,231   | 38             | 405           | 193,755   | 39             |
| LP gas, propane, butane       | 371    | 37,054    | 52             | 263           | 37,026    | 22             |
| Diesel fuel                   | 354    | 34,741    | 30             | 868           | 58,581    | 27             |
| Gasoline and gasohol          | 149    | 9,535     | 12             | 230           | 4,117     | 15             |
| Off-farm water supply         | 8,654  | 1,761,971 | 10             | 9,629         | 1,435,616 | 9              |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 298                | 319   | 407   | 15                | 13   | 12   |
| Irrigated cropland | 1,136              | 1,340 | 1,578 | 62                | 63   | 85   |
| Grazing land       | 183                | 228   | 252   | 5                 | 4    | 4    |

# Connecticut

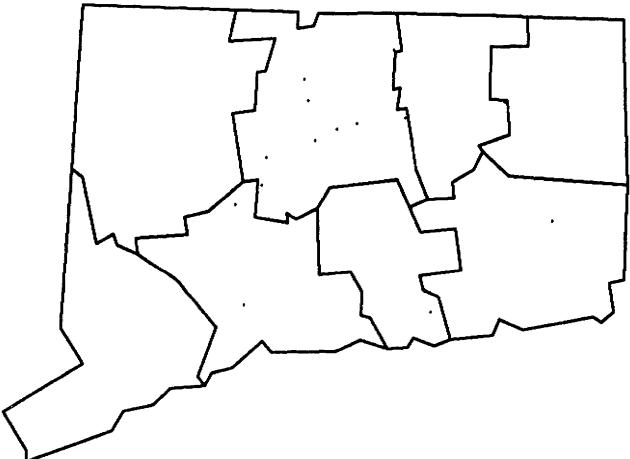
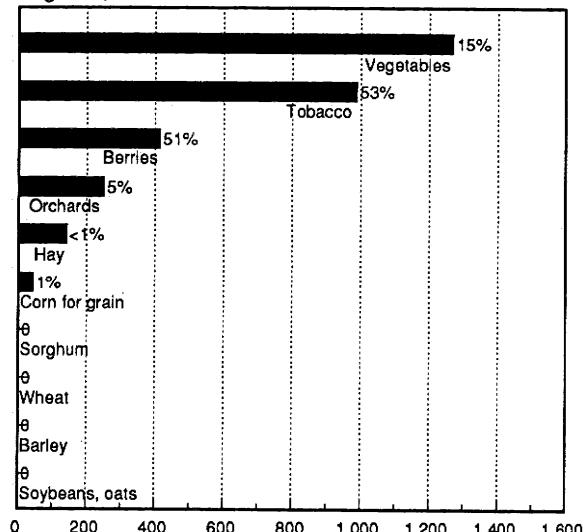
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricult-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------------|
|                     |                                     |                   | —Percent—                    |
| <b>Sources:</b>     |                                     |                   |                              |
| Surface             | 1.2                                 | 88                | 0                            |
| Ground              | 0.1                                 | 12                | 5                            |
| Total               | 1.3                                 | 100               | 1                            |
| <b>Agriculture:</b> |                                     |                   |                              |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                              |
| Surface             | 5.1                                 | 41                | NA                           |
| Ground              | 7.2                                 | 59                | NA                           |
| Total               | 12.3                                | 100               | NA                           |
| <b>Use—</b>         |                                     |                   |                              |
| Irrigation          | 3.0                                 | 25                | NA                           |
| Other farm uses     | 9.3                                 | 75                | NA                           |
| <b>Disposition—</b> |                                     |                   |                              |
| Consumptive use     | 5.0                                 | 41                | NA                           |
| Return flow         | 7.3                                 | 59                | NA                           |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

# Selected Characteristics of Irrigated Farms

Connecticut

## Land in farms

| Item               | Unit         | 1987  | 1982  | 1978  | 1974  | 1969  | 1964   |
|--------------------|--------------|-------|-------|-------|-------|-------|--------|
| Total cropland     | No. of farms | 3,163 | 3,326 | 3,226 | 3,139 | 3,907 | 5,263  |
| Harvested cropland | do.          | 2,876 | 3,062 | 3,009 | 2,959 | 3,444 | 4,833  |
| Irrigated land     | do.          | 430   | 367   | 298   | 319   | 243   | 381    |
| Harvested cropland | do.          | 423   | 359   | 295   | NA    | NA    | NA     |
| Total cropland     | 1,000 acres  | 210   | 225   | 232   | 227   | 252   | 288    |
| Harvested cropland | do.          | 154   | 171   | 170   | 159   | 162   | 206    |
| Irrigated land     | No. of acres | 7,245 | 6,695 | 6,927 | 7,474 | 8,937 | 14,452 |
| Harvested cropland | do.          | 6,840 | 6,650 | 6,854 | NA    | NA    | NA     |

## Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Hartford | New Haven | Middlesex | New London | Tolland |
|------------------------|--------------|-------|----------|-----------|-----------|------------|---------|
| Irrigated land         | No. of farms | 430   | 139      | 82        | 22        | 41         | 41      |
| Irrigated land         | No. of acres | 7,245 | 4,656    | 777       | 619       | 443        | 294     |
| Major irrigated crops: |              |       |          |           |           |            |         |
| Vegetables             | do.          | 1,270 | 423      | 586       | NA        | 104        | 77      |
| Tobacco                | do.          | 989   | D        | NA        | NA        | NA         | NA      |
| Berries                | do.          | 415   | 178      | 92        | D         | 24         | 53      |

## Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 467,677   | 316,317 | 757,936   | 449,350 | 428,994      | 302,345 |
| Machinery and equipment        | 36,996    | 33,925  | 64,287    | 73,594  | 33,359       | 29,759  |
| Farm products sold             | 99,917    | 76,005  | 319,099   | 217,217 | 69,997       | 60,704  |
| Crops, nursery, and greenhouse | 85,451    | 53,828  | 320,495   | 222,028 | 20,342       | 15,482  |
| Livestock and poultry          | 94,766    | 79,062  | 46,357    | 30,686  | 96,489       | 80,151  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,430     | 3,345   | 7,621     | 6,695   | 2,630        | 2,809   |
| Other agricultural chemicals   | 2,717     | 2,028   | 7,282     | 4,617   | 1,618        | 1,429   |
| Energy and petroleum products  | 4,825     | 5,521   | 14,299    | 22,563  | 3,440        | 3,721   |
| Hired labor                    | 47,890    | 26,949  | 165,036   | 108,504 | 22,147       | 12,999  |
| Contract labor                 | 14,565    | 8,077   | 37,643    | 13,417  | 8,581        | 6,150   |

## Irrigation methods, water sources, and pumping energy use: Water Resources Region 01, New England

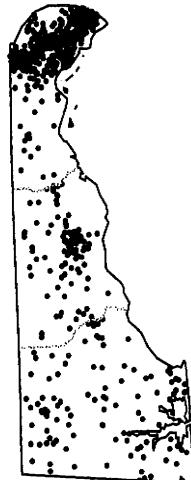
| Item                          | 1988          |        |         | 1984           |        |         |
|-------------------------------|---------------|--------|---------|----------------|--------|---------|
|                               | Farms         | Acres  | AF/acre | Farms          | Acres  | AF/acre |
| <i>Number</i>                 |               |        |         |                |        |         |
| Methods:                      |               |        |         |                |        |         |
| All sprinkler systems         | 967           | 24,233 | 0.8     | 886            | 24,127 | 1.1     |
| Center pivot                  | 611           | 11,411 | 1.3     | 196            | 5,039  | 1.1     |
| Mechanical move               | 13            | 1,046  | 0.3     | 36             | 2,548  | 0.4     |
| Hand move                     | 95            | 2,325  | 0.3     | 373            | 6,670  | 0.5     |
| Solid set and permanent       | 258           | 9,421  | 0.5     | 335            | 9,870  | 1.7     |
| All gravity systems           | 188           | 11,714 | NA      | 87             | 2,683  | 1.5     |
| Gated pipe                    | 23            | 391    | NA      | 6              | 174    | 0.0     |
| Ditch with siphon tube        | 26            | 2,928  | NA      | 41             | 1,455  | 1.5     |
| Flooding                      | 139           | 8,395  | NA      | 44             | 1,054  | 1.2     |
| Drip or trickle               | 0             | 0      | 0.0     | 75             | 679    | 0.6     |
| Subirrigation                 | 0             | 0      | 0.0     | 0              | 0      | 0.0     |
| Sources:                      |               |        |         |                |        |         |
| Wells                         | 324           | 3,698  | 0.5     | 178            | 2,966  | 0.9     |
| Onfarm surface sources        | 844           | 21,566 | 3.9     | 731            | 21,261 | 1.0     |
| Off-farm water suppliers      | 26            | 102    | NA      | 76             | 869    | 0.5     |
|                               | <i>Number</i> |        |         | <i>\$/acre</i> |        |         |
| Onfarm energy use for pumping | 942           | 24,312 | 48      | 789            | 22,988 | 54      |
| Electricity                   | 273           | 5,958  | 68      | 279            | 5,612  | 94      |
| Natural gas                   | 0             | 0      | 0       | 9              | 174    | 87      |
| LP gas, propane, butane       | 310           | 7,418  | 53      | 147            | 6,203  | 51      |
| Diesel fuel                   | 130           | 6,599  | 35      | 190            | 6,392  | 29      |
| Gasoline and gasohol          | 444           | 4,337  | 29      | 379            | 4,607  | 44      |
| Off-farm water supply         | 26            | 102    | 84      | 76             | 869    | 36      |

## Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 7,585              | 4,402 | 4,474 | 46                | 56   | 40   |
| Irrigated cropland | 10,000             | NR    | NR    | 50                | 50   | NR   |
| Grazing land       | 5,141              | 1,928 | 1,746 | 21                | 18   | 16   |

# Delaware

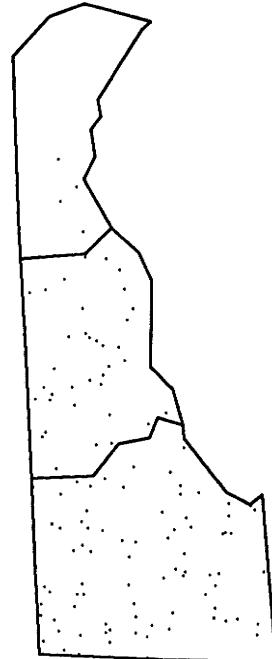
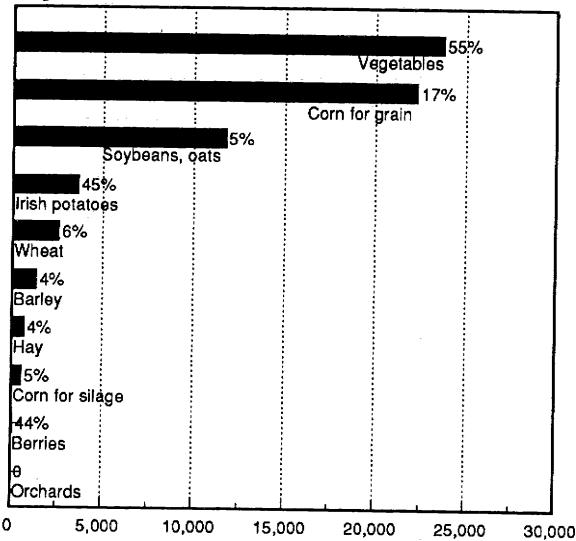
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricul-<br>ture's<br>share |           |
|---------------------|-------------------------------------|-------------------|-----------------------------|-----------|
|                     |                                     |                   | Percent                     | —Percent— |
| <b>Sources:</b>     |                                     |                   |                             |           |
| Surface             | 0.1                                 | 43                | 13                          |           |
| Ground              | 0.1                                 | 57                | 26                          |           |
| Total               | 0.2                                 | 100               | 21                          |           |
| <b>Agriculture:</b> |                                     |                   |                             |           |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                             |           |
| Surface             | 8.8                                 | 28                | NA                          |           |
| Ground              | 22.5                                | 72                | NA                          |           |
| Total               | 31.3                                | 100               | NA                          |           |
| <b>Use—</b>         |                                     |                   |                             |           |
| Irrigation          | 30.2                                | 96                | NA                          |           |
| Other farm uses     | 1.1                                 | 4                 | NA                          |           |
| <b>Disposition—</b> |                                     |                   |                             |           |
| Consumptive use     | 31.3                                | 100               | NA                          |           |
| Return flow         | 0.0                                 | 0                 | NA                          |           |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Delaware

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 2,397  | 2,843  | 2,929  | 2,912  | 3,249  | 3,845  |
| Harvested cropland | do.          | 2,172  | 2,700  | 2,806  | 2,792  | 3,052  | 3,646  |
| Irrigated land     | do.          | 384    | 323    | 255    | 154    | 164    | 158    |
| Harvested cropland | do.          | 375    | 318    | 252    | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 501    | 521    | 530    | 486    | 505    | 500    |
| Harvested cropland | do.          | 442    | 500    | 497    | 452    | 423    | 419    |
| Irrigated land     | No. of acres | 60,812 | 44,168 | 33,725 | 19,879 | 20,421 | 17,542 |
| Harvested cropland | do.          | 60,744 | 44,014 | 33,429 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Sussex | Kent   | New Castle |
|------------------------|--------------|--------|--------|--------|------------|
| Irrigated land         | No. of farms | 384    | 227    | 113    | 44         |
| Irrigated land         | No. of acres | 60,812 | 40,228 | 18,521 | 2,063      |
| Major irrigated crops: |              |        |        |        |            |
| Vegetables             | do.          | 23,775 | 11,162 | 11,796 | 817        |
| Corn                   | do.          | 22,314 | 18,250 | NA     | NA         |
| Soybeans               | do.          | 11,763 | 9,603  | 1,860  | 300        |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 369,751   | 364,843 | 803,602   | 944,350 | 295,759      | 312,402 |
| Machinery and equipment        | 53,447    | 46,012  | 128,590   | 138,860 | 40,591       | 37,609  |
| Farm products sold             | 149,553   | 111,013 | 355,023   | 295,552 | 118,995      | 91,243  |
| Crops, nursery, and greenhouse | 48,252    | 44,093  | 164,935   | 151,120 | 21,459       | 28,614  |
| Livestock and poultry          | 209,563   | 150,194 | 438,439   | 338,362 | 183,243      | 133,528 |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 8,745     | 9,125   | 18,565    | 25,473  | 5,953        | 7,142   |
| Other agricultural chemicals   | 5,675     | 5,281   | 13,343    | 15,522  | 3,713        | 3,992   |
| Energy and petroleum products  | 5,070     | 5,436   | 12,310    | 17,065  | 3,725        | 4,380   |
| Hired labor                    | 18,172    | 12,239  | 43,723    | 39,088  | 10,520       | 8,155   |
| Contract labor                 | 15,929    | 7,240   | 36,508    | 25,436  | 6,057        | 2,171   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

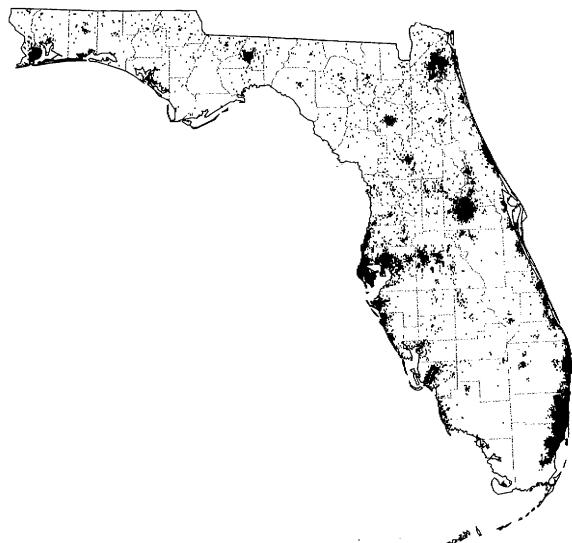
| Item                          | 1988  |         |         | 1984  |         |         |
|-------------------------------|-------|---------|---------|-------|---------|---------|
|                               | Farms | Acres   | AF/acre | Farms | Acres   | AF/acre |
| <i>Number</i>                 |       |         |         |       |         |         |
| Methods:                      |       |         |         |       |         |         |
| All sprinkler systems         | 2,482 | 255,416 | 0.6     | 2,209 | 183,188 | 0.5     |
| Center pivot                  | 817   | 105,830 | 0.6     | 403   | 70,560  | 0.6     |
| Mechanical move               | 672   | 94,424  | 0.4     | 525   | 56,114  | 0.3     |
| Hand move                     | 1,235 | 46,357  | 0.4     | 1,399 | 49,996  | 0.5     |
| Solid set and permanent       | 86    | 8,805   | 0.8     | 179   | 6,428   | 1.4     |
| All gravity systems           | 19    | 1,660   | 0.9     | 38    | 6,228   | 0.0     |
| Gated pipe                    | 0     | 0       | 0.0     | 29    | 3,510   | 0.0     |
| Ditch with siphon tube        | 10    | 1,390   | 0.9     | 0     | 0       | 0.0     |
| Flooding                      | 9     | 270     | NA      | 9     | 2,718   | 0.0     |
| Drip or trickle               | 209   | NA      | 1.1     | 156   | 2,646   | 0.5     |
| Subirrigation                 | 2     | NA      | NA      | 10    | 1,515   | 0.0     |
| Sources:                      |       |         |         |       |         |         |
| Wells                         | 762   | 126,525 | 0.8     | 1,065 | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920 | 137,469 | 0.5     | 1,288 | 76,946  | 0.6     |
| Off-farm water suppliers      | 67    | 4,076   | 0.3     | 149   | 2,075   | 0.6     |
| <i>Number</i>                 |       |         |         |       |         |         |
| <i>\$/acre</i>                |       |         |         |       |         |         |
| Onfarm energy use for pumping | 2,440 | 246,466 | 19      | 2,097 | 175,259 | 20      |
| Electricity                   | 537   | 49,109  | 21      | 496   | 41,735  | 25      |
| Natural gas                   | 0     | 0       | 0       | 0     | 0       | 0       |
| LP gas, propane, butane       | 51    | 6,729   | 13      | 103   | 11,538  | 19      |
| Diesel fuel                   | 1,460 | 167,116 | 18      | 831   | 90,185  | 16      |
| Gasoline and gasohol          | 868   | 23,512  | 28      | 990   | 31,801  | 25      |
| Off-farm water supply         | 67    | 4,076   | 21      | 149   | 2,075   | 56      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,152              | 1,029 | 1,430 | 44                | 67   | NR   |
| Irrigated cropland | 2,500              | NR    | NR    | 95                | 110  | NR   |
| Grazing land       | 1,500              | 593   | NR    | 45                | 35   | NR   |

# Florida

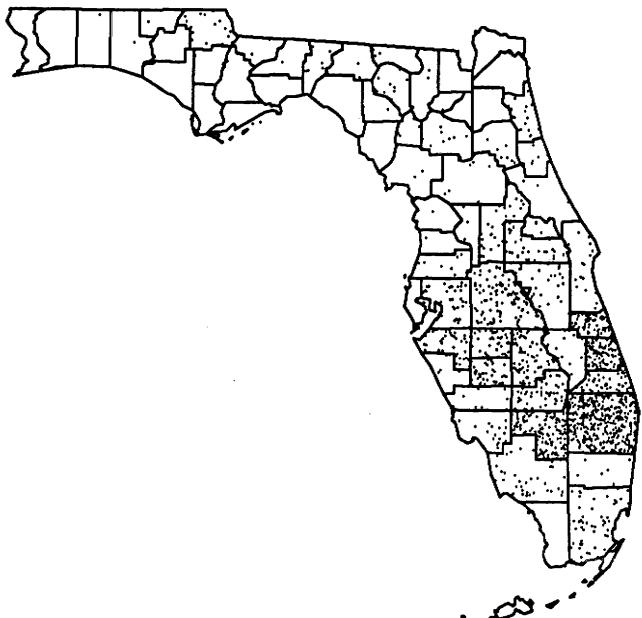
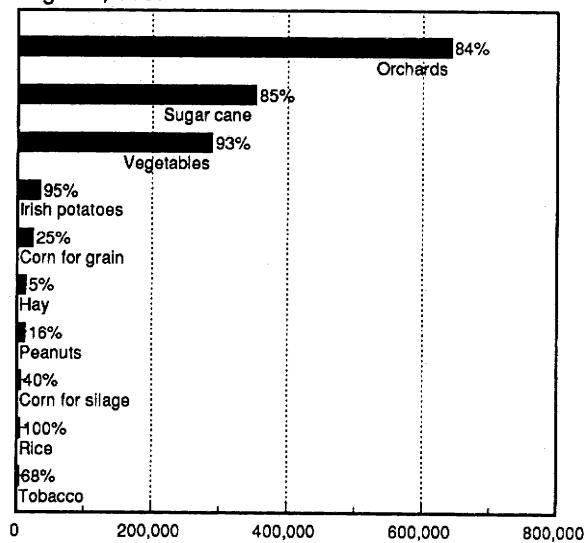
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |           |
|---------------------|------------------------------|-------------------|------------------------|-----------|
|                     |                              |                   | Percent                | —Percent— |
| <b>Sources:</b>     |                              |                   |                        |           |
| Surface             | 2.5                          | 35                | 60                     |           |
| Ground              | 4.5                          | 65                | 41                     |           |
| Total               | 7.0                          | 100               | 48                     |           |
| <b>Agriculture:</b> |                              |                   |                        |           |
| <b>Sources—</b>     |                              |                   |                        |           |
| Surface             | 1.5                          | 45                | NA                     |           |
| Ground              | 1.8                          | 55                | NA                     |           |
| Total               | 3.3                          | 100               | NA                     |           |
| <b>Use—</b>         |                              |                   |                        |           |
| Irrigation          | 3.2                          | 98                | NA                     |           |
| Other farm uses     | 0.1                          | 2                 | NA                     |           |
| <b>Disposition—</b> |                              |                   |                        |           |
| Consumptive use     | 2.3                          | 70                | NA                     |           |
| Return flow         | 1.0                          | 30                | NA                     |           |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Florida

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 29,386    | 30,565    | 31,548    | 28,658    | 30,921    | 35,478    |
| Harvested cropland | do.          | 22,677    | 24,396    | 26,212    | 23,620    | 25,139    | 32,425    |
| Irrigated land     | do.          | 11,981    | 10,550    | 10,358    | 7,749     | 7,373     | 8,129     |
| Harvested cropland | do.          | 11,515    | 10,052    | 9,702     | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 3,791     | 4,094     | 4,299     | 3,722     | 3,774     | 3,581     |
| Harvested cropland | do.          | 2,241     | 2,643     | 2,706     | 2,304     | 2,234     | 2,204     |
| Irrigated land     | No. of acres | 1,622,750 | 1,585,080 | 1,979,814 | 1,558,735 | 1,365,206 | 1,217,192 |
| Harvested cropland | do.          | 1,395,612 | 1,303,315 | 1,336,725 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Palm Beach | Hendry  | Polk    | St. Lucie | Indian River |
|------------------------|--------------|-----------|------------|---------|---------|-----------|--------------|
| Irrigated land         | No. of farms | 11,981    | 567        | 189     | 1,369   | 355       | 405          |
| Irrigated land         | No. of acres | 1,622,750 | 422,619    | 144,808 | 114,996 | 109,809   | 83,771       |
| Major irrigated crops: |              |           |            |         |         |           |              |
| Orchards               | do.          | 642,496   | 12,814     | 57,271  | 103,966 | 84,732    | 65,948       |
| Sugarcane              | do.          | 343,167   | 303,800    | 23,825  | NA      | NA        | NA           |
| Vegetables             | do.          | 288,498   | 84,996     | 8,175   | 885     | 359       | NA           |

### Average value per farm

| Item                           | All farms |         | Irrigated |           | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|-----------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982      | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |           |              |         |
| Land and buildings             | 543,830   | 552,586 | 920,409   | 1,056,665 | 353,455      | 346,188 |
| Machinery and equipment        | 34,799    | 30,895  | 64,055    | 61,840    | 20,344       | 18,393  |
| Farm products sold             | 119,033   | 96,889  | 277,388   | 235,851   | 41,831       | 40,070  |
| Crops, nursery, and greenhouse | 187,299   | 130,078 | 292,058   | 240,965   | 33,892       | 27,894  |
| Livestock and poultry          | 51,880    | 50,452  | 100,882   | 94,447    | 44,945       | 43,684  |
| Selected production expenses:  |           |         |           |           |              |         |
| Commercial fertilizers         | 8,451     | 8,478   | 14,917    | 16,281    | 2,948        | 3,736   |
| Other agricultural chemicals   | 11,055    | 9,920   | 18,134    | 15,510    | 2,815        | 3,413   |
| Energy and petroleum products  | 4,883     | 4,936   | 10,411    | 11,608    | 2,061        | 2,196   |
| Hired labor                    | 55,929    | 36,994  | 98,566    | 74,105    | 16,135       | 10,906  |
| Contract labor                 | 32,151    | 35,882  | 50,340    | 60,588    | 4,833        | 5,588   |

### Irrigation methods, water sources, and pumping energy use

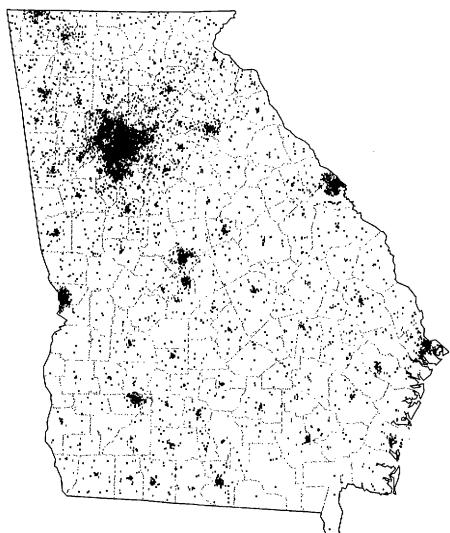
| Item                          | 1988  |           |                | 1984          |           |         |
|-------------------------------|-------|-----------|----------------|---------------|-----------|---------|
|                               | Farms | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |       |           |                |               |           |         |
| Methods:                      |       |           |                |               |           |         |
| All sprinkler systems         | 4,817 | 382,950   | 1.3            | 3,870         | 394,527   | 1.0     |
| Center pivot                  | 2,094 | 127,407   | 1.4            | 548           | 58,277    | 1.0     |
| Mechanical move               | 610   | 81,222    | 0.8            | 702           | 103,450   | 0.6     |
| Hand move                     | 414   | 13,244    | 1.6            | 553           | 26,672    | 1.1     |
| Solid set and permanent       | 1,982 | 161,077   | 1.4            | 2,365         | 206,128   | 1.4     |
| All gravity systems           | 1,060 | 758,702   | 1.6            | 1,228         | 619,723   | 1.8     |
| Gated pipe                    | 77    | 12,016    | 1.2            | 137           | 25,028    | 1.3     |
| Ditch with siphon tube        | 260   | 148,701   | 1.2            | 425           | 160,982   | 1.9     |
| Flooding                      | 734   | 597,985   | 1.7            | 698           | 433,713   | 1.9     |
| Drip or trickle               | 1,956 | 272,212   | 1.7            | 1,670         | 220,304   | 1.0     |
| Subirrigation                 | 136   | 217,993   | 4.2            | 99            | 245,462   | 4.6     |
| Sources:                      |       |           |                |               |           |         |
| Wells                         | 5,735 | 769,846   | 1.4            | 5,361         | 789,307   | 1.4     |
| Onfarm surface sources        | 1,352 | 188,427   | 1.4            | 521           | 182,272   | 1.5     |
| Off-farm water suppliers      | 457   | 543,257   | 3.1            | 289           | 477,185   | 3.5     |
| <i>Number</i>                 |       |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 6,308 | 1,349,225 | 18             | 5,641         | 1,333,188 | 22      |
| Electricity                   | 3,458 | 476,744   | 22             | 3,738         | 522,361   | 26      |
| Natural gas                   | 1     | NA        | NA             | 64            | 7,335     | 47      |
| LP gas, propane, butane       | 477   | 24,540    | 30             | 407           | 35,717    | 29      |
| Diesel fuel                   | 2,408 | 839,543   | 15             | 2,046         | 754,297   | 19      |
| Gasoline and gasohol          | 811   | 8,291     | 43             | 359           | 13,480    | 20      |
| Off-farm water supply         | 457   | 543,257   | 28             | 289           | 477,185   | 22      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 2,299              | 2,197 | 2,400 | 45                | 35   | 39   |
| Irrigated cropland | 8,544              | 7,212 | 9,114 | 200               | 211  | 178  |
| Grazing land       | 1,659              | 1,651 | 1,773 | 15                | 17   | 16   |

# Georgia

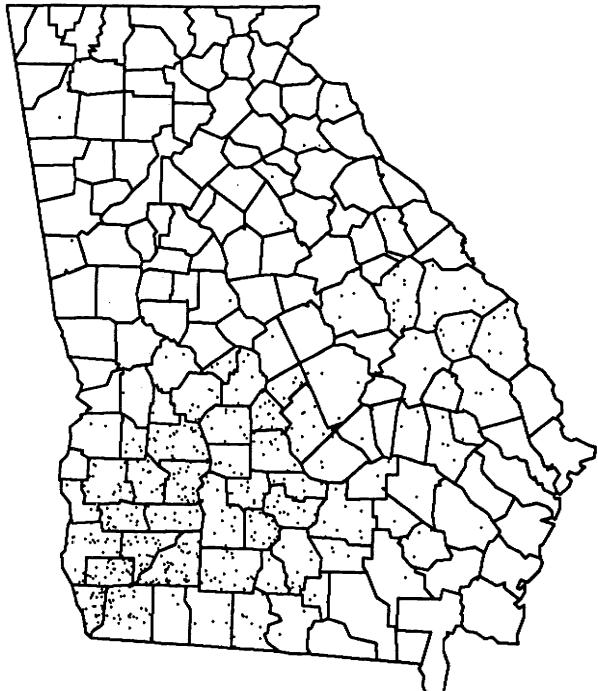
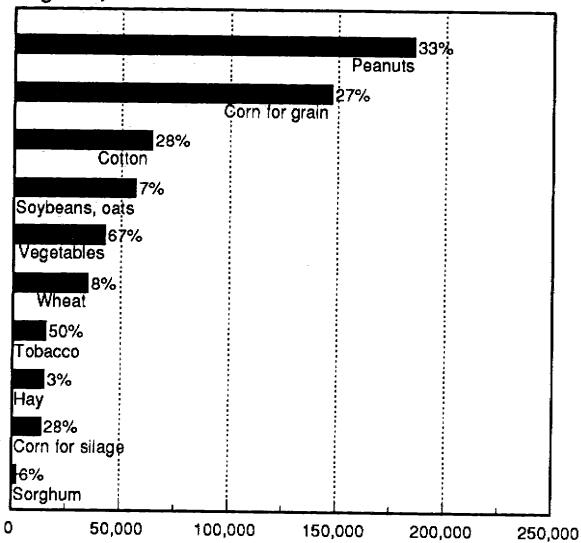
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 4.9                                 | 81                | 4                      |
| Ground              | 1.1                                 | 19                | 33                     |
| Total               | 6.0                                 | 100               | 9                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 186.9                               | 33                | NA                     |
| Ground              | 374.3                               | 67                | NA                     |
| Total               | 561.2                               | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 507.4                               | 90                | NA                     |
| Other farm uses     | 53.8                                | 10                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 560.6                               | 100               | NA                     |
| Return flow         | 0.6                                 | 0                 | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Georgia

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969   | 1964   |
|--------------------|--------------|---------|---------|---------|---------|--------|--------|
| Total cropland     | No. of farms | 37,689  | 43,390  | 46,529  | 49,723  | 61,277 | 74,033 |
| Harvested cropland | do.          | 30,301  | 35,650  | 39,312  | 40,732  | 47,340 | 65,059 |
| Irrigated land     | do.          | 4,985   | 4,443   | 4,568   | 2,138   | 3,510  | 6,907  |
| Harvested cropland | do.          | 4,849   | 4,386   | 4,451   | NA      | NA     | NA     |
| Total cropland     | 1,000 acres  | 5,780   | 6,531   | 6,828   | 6,475   | 6,835  | 6,367  |
| Harvested cropland | do.          | 3,298   | 4,761   | 4,688   | 4,161   | 3,651  | 3,951  |
| Irrigated land     | No. of acres | 640,256 | 575,306 | 462,850 | 112,271 | 78,630 | 64,112 |
| Harvested cropland | do.          | 627,311 | 567,378 | 452,431 | NA      | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Mitchell | Decatur | Miller | Sumter | Seminole |
|------------------------|--------------|---------|----------|---------|--------|--------|----------|
| Irrigated land         | No. of farms | 4,985   | 193      | 110     | 154    | 84     | 78       |
| Irrigated land         | No. of acres | 640,256 | 45,621   | 33,454  | 29,684 | 27,033 | 26,962   |
| Major irrigated crops: |              |         |          |         |        |        |          |
| Peanuts                | do.          | 185,593 | 12,086   | 10,630  | 13,464 | 5,910  | 10,436   |
| Corn                   | do.          | 147,208 | 8,926    | 10,607  | 8,024  | 5,186  | 6,790    |
| Cotton                 | do.          | 64,116  | 7,402    | 944     | 967    | 2,069  | 3,381    |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 226,217   | 225,092 | 494,018   | 604,783 | 192,905      | 188,698 |
| Machinery and equipment        | 32,477    | 31,013  | 88,674    | 92,563  | 25,466       | 25,104  |
| Farm products sold             | 64,626    | 55,766  | 162,954   | 160,374 | 51,917       | 45,481  |
| Crops, nursery, and greenhouse | 51,493    | 47,902  | 135,995   | 130,455 | 25,399       | 30,907  |
| Livestock and poultry          | 58,016    | 44,316  | 76,815    | 66,744  | 56,436       | 42,669  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 5,438     | 6,085   | 15,618    | 17,408  | 3,519        | 4,415   |
| Other agricultural chemicals   | 5,016     | 5,619   | 13,657    | 12,411  | 2,743        | 3,948   |
| Energy and petroleum products  | 3,410     | 3,823   | 11,069    | 13,972  | 2,411        | 2,847   |
| Hired labor                    | 12,325    | 8,117   | 30,130    | 19,083  | 8,193        | 5,990   |
| Contract labor                 | 5,846     | 4,837   | 12,303    | 12,527  | 4,141        | 3,237   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 03, South Atlantic Gulf

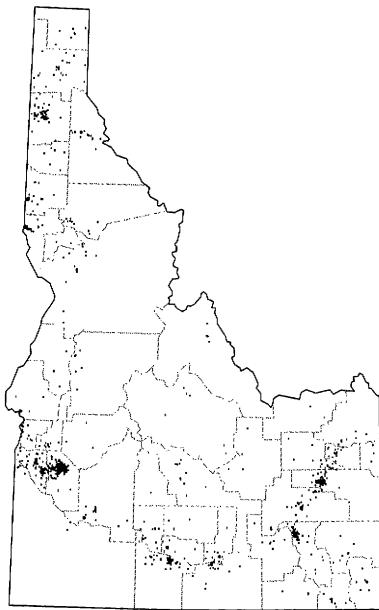
| Item                          | 1988          |           |         | 1984           |           |         |
|-------------------------------|---------------|-----------|---------|----------------|-----------|---------|
|                               | Farms         | Acres     | AF/Acre | Farms          | Acres     | AF/Acre |
| <i>Number</i>                 |               |           |         |                |           |         |
| Methods:                      |               |           |         |                |           |         |
| All sprinkler systems         | 13,837        | 1,265,350 | 0.8     | 8,887          | 904,024   | 0.7     |
| Center pivot                  | 6,322         | 661,593   | 0.9     | 1,938          | 380,757   | 0.7     |
| Mechanical move               | 2,432         | 296,183   | 0.5     | 2,723          | 241,098   | 0.5     |
| Hand move                     | 3,635         | 119,964   | 0.6     | 2,352          | 56,675    | 0.6     |
| Solid set and permanent       | 2,583         | 187,610   | 1.5     | 2,788          | 225,494   | 1.4     |
| All gravity systems           | 1,556         | 777,181   | 1.6     | 1,447          | 620,636   | 1.8     |
| Gated pipe                    | 211           | 21,326    | 0.9     | 137            | 25,028    | 1.3     |
| Ditch with siphon tube        | 520           | 149,441   | 1.2     | 553            | 161,804   | 1.9     |
| Flooding                      | 836           | 606,414   | 1.7     | 789            | 433,804   | 1.9     |
| Drip or trickle               | 2,751         | 327,958   | 1.6     | 1,989          | 243,723   | 1.3     |
| Subirrigation                 | 148           | 220,468   | 4.1     | 100            | 246,712   | 4.6     |
| Sources:                      |               |           |         |                |           |         |
| Wells                         | 8,864         | 1,281,282 | 1.2     | 7,391          | 1,093,214 | 1.2     |
| Onfarm surface sources        | 8,119         | 630,540   | 0.8     | 4,146          | 410,299   | 0.9     |
| Off-farm water suppliers      | 1,247         | 556,348   | 3.1     | 290            | 478,335   | 3.5     |
|                               | <i>Number</i> |           |         | <i>\$/acre</i> |           |         |
| Onfarm energy use for pumping | 13,818        | 2,210,114 | 18      | 10,142         | 1,815,951 | 22      |
| Electricity                   | 6,309         | 733,196   | 22      | 5,134          | 658,340   | 25      |
| Natural gas                   | 4             | 287       | 56      | 64             | 7,335     | 47      |
| LP gas, propane, butane       | 1,628         | 91,982    | 24      | 607            | 51,882    | 32      |
| Diesel fuel                   | 5,945         | 1,358,762 | 16      | 4,862          | 1,072,794 | 19      |
| Gasoline and gasohol          | 1,850         | 25,887    | 35      | 907            | 25,600    | 18      |
| Off-farm water supply         | 1,247         | 556,348   | 27      | 290            | 478,335   | 22      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 693                | 643  | 714   | 31                | 27   | 29   |
| Irrigated cropland | 815                | 831  | 1,064 | 75                | 59   | 68   |
| Grazing land       | 767                | 676  | 633   | 21                | 18   | 18   |

# Idaho

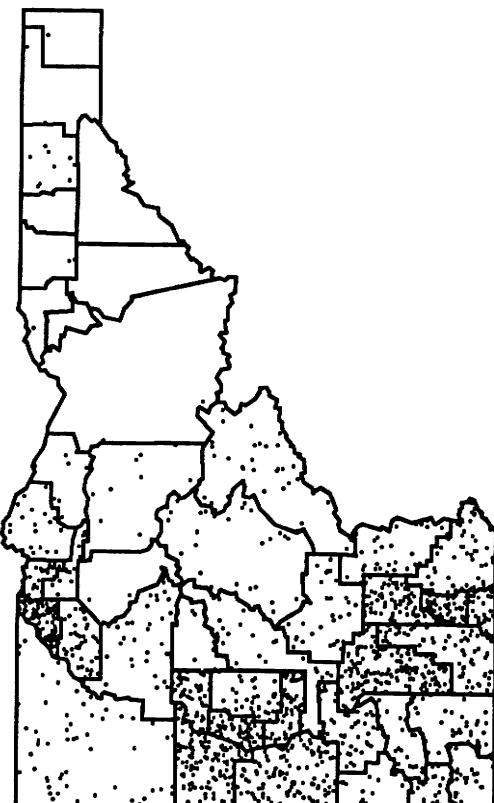
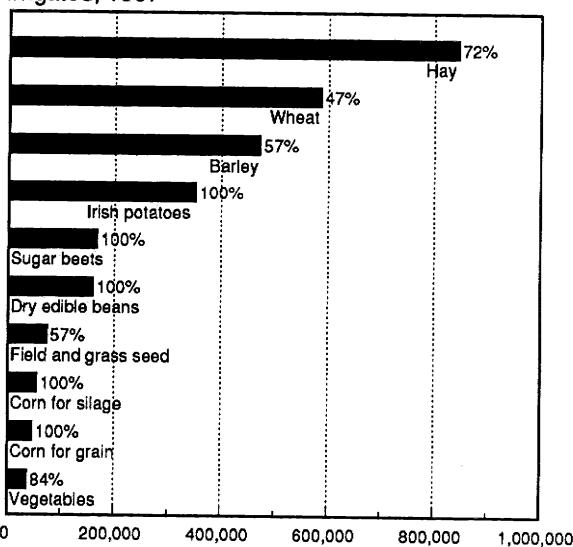
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share |
|---------------------|---------------------------|----------------|---------------------|
|                     | <i>M.a.f. — Percent</i>   |                |                     |
| <b>Sources:</b>     |                           |                |                     |
| Surface             | 19.6                      | 79             | 99                  |
| Ground              | 5.4                       | 21             | 91                  |
| Total               | 25.0                      | 100            | 97                  |
| <b>Agriculture:</b> |                           |                |                     |
| <b>Sources—</b>     |                           |                |                     |
| Surface             | 19.3                      | 80             | NA                  |
| Ground              | 4.9                       | 20             | NA                  |
| Total               | 24.2                      | 100            | NA                  |
| <b>Use—</b>         |                           |                |                     |
| Irrigation          | 23.1                      | 95             | NA                  |
| Other farm uses     | 1.1                       | 5              | NA                  |
| <b>Disposition—</b> |                           |                |                     |
| Consumptive use     | 5.9                       | 24             | NA                  |
| Return flow         | 18.3                      | 76             | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 2,000 acres

## Selected Characteristics of Irrigated Farms

Idaho

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 21,085    | 22,031    | 22,545    | 22,312    | 23,734    | 27,660    |
| Harvested cropland | do.          | 18,270    | 19,596    | 20,815    | 20,854    | 21,640    | 25,636    |
| Irrigated land     | do.          | 16,620    | 17,355    | 18,215    | 16,825    | 17,840    | 22,251    |
| Harvested cropland | do.          | 14,308    | 15,470    | 16,523    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 6,742     | 6,484     | 6,540     | 6,248     | 6,172     | 5,878     |
| Harvested cropland | do.          | 4,349     | 4,888     | 4,821     | 4,531     | 3,955     | 3,935     |
| Irrigated land     | No. of acres | 3,219,192 | 3,450,443 | 3,475,392 | 2,859,047 | 2,760,852 | 2,801,500 |
| Harvested cropland | do.          | 2,811,354 | 3,037,603 | 2,950,963 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Bingham | Twin Falls | Cassia  | Canyon  | Jefferson |
|------------------------|--------------|-----------|---------|------------|---------|---------|-----------|
| Irrigated land         | No. of farms | 16,620    | 1,227   | 1,351      | 723     | 1,745   | 712       |
| Irrigated land         | No. of acres | 3,219,192 | 306,187 | 272,367    | 237,169 | 213,013 | 170,453   |
| Major irrigated crops: |              |           |         |            |         |         |           |
| Hay                    | do.          | 846,194   | 49,214  | 57,495     | 47,389  | 34,550  | 72,101    |
| Wheat for grain        | do.          | 587,736   | 122,719 | 38,976     | 68,070  | 23,081  | 28,608    |
| Barley for grain       | do.          | 473,401   | 31,994  | 29,984     | 31,560  | 13,799  | 39,104    |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 336,615   | 459,965 | 357,928   | 484,993 | 289,134      | 400,027 |
| Machinery and equipment        | 55,327    | 59,016  | 62,368    | 64,524  | 39,582       | 45,894  |
| Farm products sold             | 94,002    | 90,297  | 104,827   | 101,559 | 70,085       | 63,738  |
| Crops, nursery, and greenhouse | 78,291    | 77,740  | 85,051    | 83,200  | 50,414       | 55,445  |
| Livestock and poultry          | 75,157    | 61,679  | 75,412    | 64,057  | 74,650       | 56,444  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 11,320    | 11,525  | 11,898    | 11,819  | 8,935        | 10,295  |
| Other agricultural chemicals   | 4,448     | 4,158   | 4,436     | 3,876   | 4,494        | 5,296   |
| Energy and petroleum products  | 6,440     | 6,988   | 7,726     | 8,290   | 3,379        | 3,878   |
| Hired labor                    | 16,214    | 12,177  | 17,814    | 13,244  | 11,353       | 8,773   |
| Contract labor                 | 5,516     | 6,363   | 6,112     | 6,914   | 2,725        | 2,647   |

### Irrigation methods, water sources, and pumping energy use

| Item                          | 1988   |           |         | 1984   |           |         |
|-------------------------------|--------|-----------|---------|--------|-----------|---------|
|                               | Farms  | Acres     | AF/acre | Farms  | Acres     | AF/acre |
| <i>Number</i>                 |        |           |         |        |           |         |
| Methods:                      |        |           |         |        |           |         |
| All sprinkler systems         | 7,274  | 1,865,327 | 1.7     | 7,043  | 1,738,862 | 1.5     |
| Center pivot                  | 1,664  | 625,299   | 1.6     | 952    | 368,599   | 1.2     |
| Mechanical move               | 2,464  | 496,244   | 2.1     | 3,286  | 692,228   | 1.2     |
| Hand move                     | 5,292  | 691,746   | 1.7     | 5,173  | 641,954   | 1.2     |
| Solid set and permanent       | 984    | 52,038    | NA      | 649    | 36,081    | 8.8     |
| All gravity systems           | 11,079 | 1,288,642 | 2.2     | 11,658 | 1,533,421 | 1.8     |
| Gated pipe                    | 3,724  | 161,062   | 1.5     | 3,296  | 141,272   | 1.9     |
| Ditch with siphon tube        | 7,301  | 733,076   | 2.4     | 8,045  | 919,825   | 1.8     |
| Flooding                      | 2,434  | 394,504   | 1.7     | 3,594  | 472,324   | 1.6     |
| Drip or trickle               | 45     | 12,506    | NA      | 28     | 4,480     | NA      |
| Subirrigation                 | 265    | 32,732    | 3.5     | 215    | 31,105    | 4.7     |
| Sources:                      |        |           |         |        |           |         |
| Wells                         | 2,878  | 1,211,033 | 1.6     | 3,095  | 1,060,136 | 1.3     |
| Onfarm surface sources        | 1,353  | 286,495   | 1.6     | 1,756  | 284,293   | 1.5     |
| Off-farm water suppliers      | 12,605 | 1,688,909 | 2.2     | 12,581 | 1,958,869 | 1.8     |
| <i>Number</i>                 |        |           |         |        |           |         |
| Onfarm energy use for pumping |        |           |         |        |           |         |
| Electricity                   | 6,520  | 1,843,381 | 35      | 6,473  | 1,716,175 | 27      |
| Natural gas                   | 6,022  | 1,754,031 | 36      | 5,598  | 1,621,366 | 27      |
| LP gas, propane, butane       | 34     | 18,133    | 16      | 28     | 8,400     | 10      |
| Diesel fuel                   | 51     | 6,868     | 21      | 128    | 22,500    | 18      |
| Gasoline and gasohol          | 491    | 54,763    | 14      | 751    | 60,759    | 18      |
| Off-farm water supply         | 110    | 9,586     | 6       | 198    | 3,150     | 11      |
|                               | 12,605 | 1,688,909 | 19      | 12,581 | 1,958,869 | 14      |

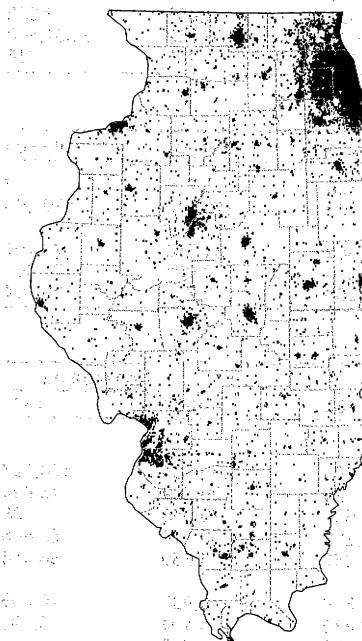
### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 464                | 487   | 620   | 39                | 31   | 38   |
| Irrigated cropland | 931                | 1,147 | 1,618 | 79                | 87   | 104  |
| Grazing land       | 151                | 238   | 326   | 13                | 21   | 25   |

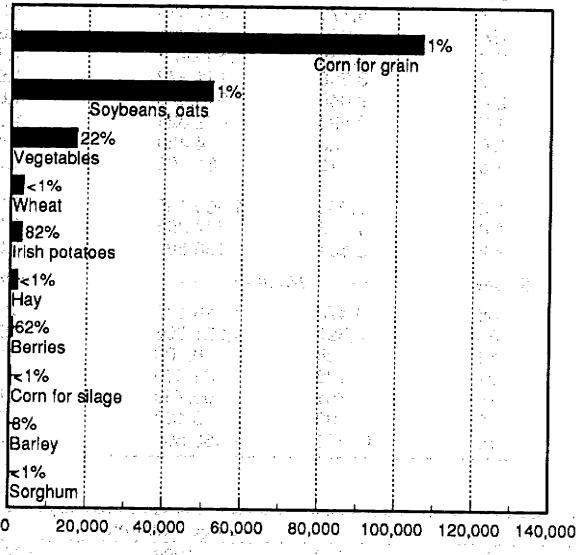
# Illinois

## Distribution of population, 1985

Each dot = 1,000 people



## Acres of principal irrigated crops and proportion irrigated, 1987



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share |
|---------------------|---------------------------|----------------|---------------------|
| <b>Sources:</b>     |                           |                |                     |
| Surface             | 15.2                      | 94             | 0                   |
| Ground              | 1.0                       | 6              | 14                  |
| Total               | 16.2                      | 100            | 1                   |
| <b>Agriculture:</b> |                           |                |                     |
| <b>Sources—</b>     |                           |                |                     |
| Surface             | 0.0                       | 0              | NA                  |
| Ground              | 144.5                     | 100            | NA                  |
| Total               | 144.5                     | 100            | NA                  |
| <b>Use—</b>         |                           |                |                     |
| Irrigation          | 79.5                      | 55             | NA                  |
| Other farm uses     | 65.0                      | 45             | NA                  |
| <b>Disposition—</b> |                           |                |                     |
| Consumptive use     | 134.8                     | 93             | NA                  |
| Return flow         | 9.7                       | 7              | NA                  |



## Distribution of irrigated acreage, 1987

Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Illinois

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 83,056  | 92,250  | 99,624  | 106,639 | 117,871 | 127,091 |
| Harvested cropland | do.          | 79,986  | 89,124  | 96,432  | 102,729 | 111,954 | 123,174 |
| Irrigated land     | do.          | 1,635   | 1,182   | 1,146   | 650     | 822     | 327     |
| Harvested cropland | do.          | 1,596   | 1,170   | 1,112   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 25,102  | 24,748  | 25,159  | 24,400  | 24,829  | 23,868  |
| Harvested cropland | do.          | 20,102  | 23,008  | 22,676  | 21,518  | 19,352  | 20,058  |
| Irrigated land     | No. of acres | 208,105 | 166,012 | 129,943 | 53,777  | 50,906  | 14,375  |
| Harvested cropland | do.          | 205,469 | 163,112 | 128,206 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Mason  | Tazewell | Whiteside | Henderson | Kankakee |
|------------------------|--------------|---------|--------|----------|-----------|-----------|----------|
| Irrigated land         | No. of farms | 1,635   | 215    | 84       | 97        | 38        | 56       |
| Irrigated land         | No. of acres | 208,105 | 59,962 | 16,390   | 14,167    | 9,299     | 7,822    |
| Major irrigated crops: |              |         |        |          |           |           |          |
| Corn                   | do.          | 106,672 | 25,650 | 8,407    | 9,716     | 6,277     | 3,453    |
| Soybeans               | do.          | 52,236  | 20,269 | 5,674    | 3,839     | 2,506     | 308      |
| Vegetables             | do.          | 17,279  | 2,986  | 1,450    | 270       | NA        | 1,812    |

### Average value per farm

| Item                           | Unit | All farms |         | Irrigated |           | Nonirrigated |         |
|--------------------------------|------|-----------|---------|-----------|-----------|--------------|---------|
|                                |      | 1987      | 1982    | 1987      | 1982      | 1987         | 1982    |
| <i>Dollars</i>                 |      |           |         |           |           |              |         |
| Land and buildings             |      | 402,970   | 538,886 | 674,052   | 1,158,233 | 398,053      | 531,631 |
| Machinery and equipment        |      | 60,935    | 61,982  | 108,315   | 121,222   | 60,082       | 61,287  |
| Farm products sold             |      | 71,822    | 74,262  | 206,689   | 239,676   | 69,292       | 72,252  |
| Crops, nursery, and greenhouse |      | 55,906    | 61,432  | 183,586   | 215,282   | 53,120       | 59,287  |
| Livestock and poultry          |      | 48,767    | 41,531  | 97,099    | 98,635    | 48,256       | 41,118  |
| Selected production expenses:  |      |           |         |           |           |              |         |
| Commercial fertilizers         |      | 7,910     | 9,423   | 16,268    | 19,839    | 7,743        | 9,280   |
| Other agricultural chemicals   |      | 4,597     | 4,618   | 9,402     | 10,008    | 4,503        | 4,545   |
| Energy and petroleum products  |      | 4,597     | 5,785   | 13,145    | 18,793    | 4,440        | 5,632   |
| Hired labor                    |      | 7,969     | 6,248   | 57,315    | 48,768    | 6,573        | 5,362   |
| Contract labor                 |      | 2,711     | 3,291   | 10,203    | 18,352    | 2,467        | 2,727   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 07, Upper Mississippi

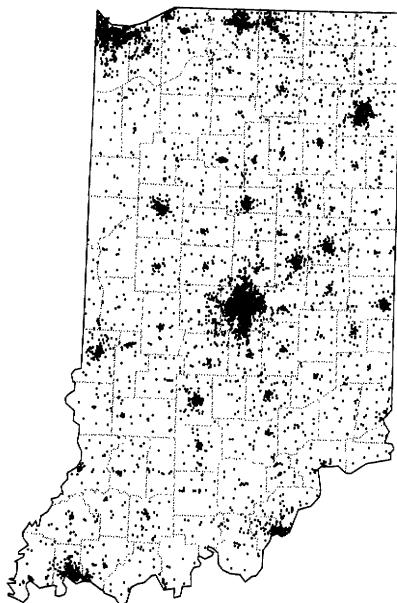
| Item                          |  | 1988  |         |                | 1984          |         |         |
|-------------------------------|--|-------|---------|----------------|---------------|---------|---------|
|                               |  | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |  |       |         |                |               |         |         |
| Methods:                      |  |       |         |                |               |         |         |
| All sprinkler systems         |  | 3,557 | 755,893 | 0.9            | 2,980         | 593,946 | 0.8     |
| Center pivot                  |  | 2,316 | 593,502 | 0.9            | 1,897         | 474,203 | 0.8     |
| Mechanical move               |  | 952   | 114,128 | 0.7            | 909           | 83,062  | 0.5     |
| Hand move                     |  | 523   | 26,911  | 0.8            | 324           | 19,538  | 1.4     |
| Solid set and permanent       |  | 311   | 21,352  | 1.7            | 399           | 17,143  | 2.3     |
| All gravity systems           |  | 278   | 23,542  | 0.8            | 35            | 2,450   | NA      |
| Gated pipe                    |  | 208   | 12,438  | 0.6            | 35            | 2,450   | NA      |
| Ditch with siphon tube        |  | 59    | 9,596   | 1.2            | NA            | NA      | NA      |
| Flooding                      |  | 15    | 1,508   | NA             | NA            | NA      | NA      |
| Drip or trickle               |  | 149   | 1,963   | 0.5            | 36            | 720     | 0.3     |
| Subirrigation                 |  | 36    | 8,092   | 1.1            | 1             | D       | NA      |
| Sources:                      |  |       |         |                |               |         |         |
| Wells                         |  | 2,732 | 638,774 | 0.9            | 2,206         | 482,201 | 0.7     |
| Onfarm surface sources        |  | 1,260 | 116,957 | 0.9            | 955           | 99,923  | 1.0     |
| Off-farm water suppliers      |  | 119   | 19,873  | 0.9            | 108           | 2,016   | 1.4     |
| <i>Number</i>                 |  |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping |  | 3,581 | 748,931 | 22             | 2,936         | 569,361 | 19      |
| Electricity                   |  | 2,015 | 434,187 | 23             | 1,932         | 392,425 | 17      |
| Natural gas                   |  | 45    | 7,887   | 17             | NA            | NA      | NA      |
| LP gas, propane, butane       |  | 198   | 27,022  | 17             | 1,911         | 368,491 | 21      |
| Diesel fuel                   |  | 1,697 | 275,315 | 20             | 1,055         | 122,097 | 23      |
| Gasoline and gasohol          |  | 185   | 4,520   | 33             | 208           | 15,039  | 40      |
| Off-farm water supply         |  | 119   | 19,873  | 5              | 108           | 2,016   | 59      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,183              | 1,247 | 1,863 | 83                | 100  | 111  |
| Irrigated cropland | 843                | 954   | 1,688 | 102               | 100  | 108  |
| Grazing land       | 332                | 406   | 644   | 21                | 22   | 27   |

# Indiana

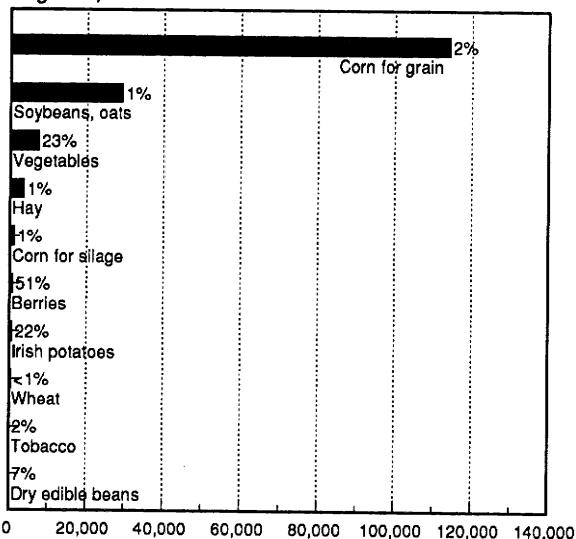
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total | Agriculture's share |
|---------------------|----------------------------------|----------------|---------------------|
|                     |                                  |                | <i>Percent</i>      |
| <b>Sources:</b>     |                                  |                |                     |
| Surface             | 9.8                              | 93             | 0                   |
| Ground              | 0.7                              | 7              | 13                  |
| Total               | 10.5                             | 100            | 1                   |
| <b>Agriculture:</b> |                                  |                |                     |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>  |                     |
| Surface             | 12.1                             | 11             | NA                  |
| Ground              | 94.3                             | 89             | NA                  |
| Total               | 106.4                            | 100            | NA                  |
| <b>Use—</b>         |                                  |                |                     |
| Irrigation          | 52.6                             | 49             | NA                  |
| Other farm uses     | 53.8                             | 51             | NA                  |
| <b>Disposition—</b> |                                  |                |                     |
| Consumptive use     | 98.2                             | 92             | NA                  |
| Return flow         | 8.2                              | 8              | NA                  |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Indiana

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978   | 1974   | 1969   | 1964    |
|--------------------|--------------|---------|---------|--------|--------|--------|---------|
| Total cropland     | No. of farms | 65,529  | 71,836  | 78,174 | 84,277 | 96,360 | 102,137 |
| Harvested cropland | do.          | 61,689  | 68,040  | 74,450 | 80,195 | 88,350 | 95,846  |
| Irrigated land     | do.          | 1,481   | 1,206   | 901    | 633    | 682    | 558     |
| Harvested cropland | do.          | 1,441   | 1,187   | 856    | NA     | NA     | NA      |
| Total cropland     | 1,000 acres  | 13,593  | 13,331  | 13,539 | 13,198 | 13,552 | 13,317  |
| Harvested cropland | do.          | 10,726  | 12,136  | 11,809 | 11,234 | 9,670  | 10,299  |
| Irrigated land     | No. of acres | 169,703 | 131,987 | 75,173 | 33,385 | 33,580 | 16,924  |
| Harvested cropland | do.          | 167,706 | 131,251 | 73,829 | NA     | NA     | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Elkhart | LaGrange | La Porte | Fulton | St. Joseph |
|------------------------|--------------|---------|---------|----------|----------|--------|------------|
| Irrigated land         | No. of farms | 1,481   | 129     | 81       | 78       | 57     | 71         |
| Irrigated land         | No. of acres | 169,703 | 19,866  | 18,561   | 15,607   | 11,449 | 10,632     |
| Major irrigated crops: |              |         |         |          |          |        |            |
| Corn                   | do.          | 114,254 | 13,379  | 12,883   | 10,325   | 7,767  | 6,434      |
| Soybeans               | do.          | 29,102  | 3,792   | 3,737    | 2,924    | 2,624  | 2,249      |
| Vegetables             | do.          | 7,317   | NA      | NA       | 763      | 0      | 446        |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 265,446   | 338,549 | 518,875   | 832,559 | 259,757      | 331,130 |
| Machinery and equipment        | 44,502    | 45,033  | 100,782   | 117,425 | 43,235       | 43,943  |
| Farm products sold             | 57,693    | 54,767  | 183,635   | 203,236 | 54,991       | 52,410  |
| Crops, nursery, and greenhouse | 39,334    | 40,568  | 129,044   | 147,840 | 36,909       | 38,456  |
| Livestock and poultry          | 48,180    | 38,724  | 157,176   | 139,658 | 46,638       | 37,560  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 6,442     | 7,770   | 13,802    | 20,361  | 6,246        | 7,540   |
| Other agricultural chemicals   | 3,450     | 3,316   | 7,861     | 9,308   | 3,331        | 3,209   |
| Energy and petroleum products  | 3,502     | 4,302   | 11,096    | 17,987  | 3,325        | 4,095   |
| Hired labor                    | 7,808     | 5,747   | 38,256    | 35,328  | 6,644        | 4,937   |
| Contract labor                 | 3,422     | 3,776   | 5,576     | 25,487  | 3,312        | 2,994   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 05, Ohio

| Item                          | 1988          |         |         | 1984           |        |         |
|-------------------------------|---------------|---------|---------|----------------|--------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres  | AF/acre |
| <i>Number</i>                 |               |         |         |                |        |         |
| Methods:                      |               |         |         |                |        |         |
| All sprinkler systems         | 2,746         | 127,507 | 0.7     | 2,036          | 80,547 | 0.5     |
| Center pivot                  | 1,153         | 75,202  | 0.8     | 554            | 47,893 | 0.6     |
| Mechanical move               | 155           | 26,644  | 0.4     | 279            | 17,468 | 0.4     |
| Hand move                     | 1,495         | 23,815  | 0.6     | 1,182          | 13,319 | 0.5     |
| Solid set and permanent       | 25            | 1,846   | 0.2     | 151            | 1,867  | 0.6     |
| All gravity systems           | 0             | 0       | 0.0     | 49             | 1,227  | 0.8     |
| Gated pipe                    | 0             | 0       | 0.0     | 8              | 300    | 0.5     |
| Ditch with siphon tube        | 0             | 0       | 0.0     | 27             | 497    | 0.8     |
| Flooding                      | 0             | 0       | 0.0     | 14             | 430    | 0.7     |
| Drip or trickle               | 75            | 1,134   | 0.0     | 28             | 146    | 0.8     |
| Subirrigation                 | 49            | 4,459   | 0.9     | 2              | NA     | NA      |
| Sources:                      |               |         |         |                |        |         |
| Wells                         | 1,075         | 73,681  | 0.8     | 422            | 52,879 | 0.5     |
| Onfarm surface sources        | 1,724         | 53,342  | 0.6     | 1,610          | 27,769 | 0.5     |
| Off-farm water suppliers      | 98            | 4,519   | 0.8     | 108            | 1,083  | 1.1     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |        |         |
| Onfarm energy use for pumping | 2,682         | 126,055 | 26      | 1,415          | 74,749 | 22      |
| Electricity                   | 961           | 49,059  | 41      | 353            | 35,830 | 22      |
| Natural gas                   | 7             | 1,085   | 16      | 6              | 496    | 8       |
| LP gas, propane, butane       | 26            | 6,965   | 17      | 64             | 4,925  | 25      |
| Diesel fuel                   | 1,693         | 62,102  | 16      | 865            | 31,141 | 22      |
| Gasoline and gasohol          | 335           | 6,844   | 27      | 232            | 2,402  | 32      |
| Off-farm water supply         | 98            | 4,519   | NA      | 108            | 1,083  | 39      |

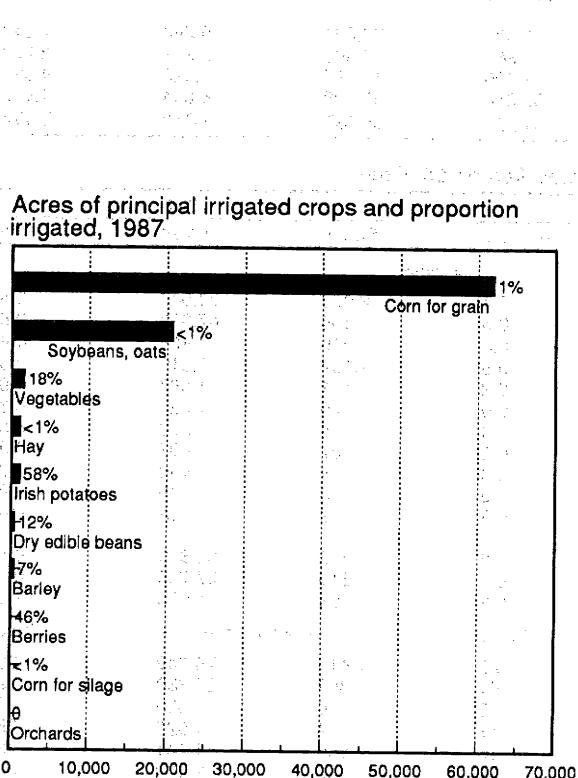
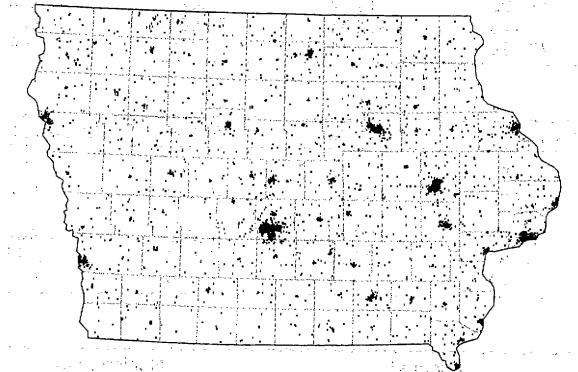
### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 977                | 1,044 | 1,514 | 71                | 87   | 100  |
| Irrigated cropland | 1,299              | 1,507 | 1,712 | 102               | 91   | 104  |
| Grazing land       | 417                | 448   | 601   | 26                | 25   | 31   |

Iowa

### Distribution of population, 1985

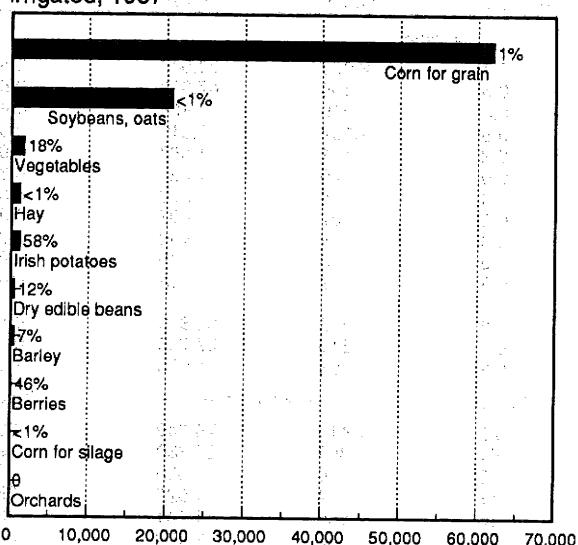
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

Each dot = 1,000 people

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total<br><i>Percent</i> | Agriculture's share<br><i>Percent</i> |
|---------------------|----------------------------------|----------------------------------|---------------------------------------|
| <b>Sources:</b>     |                                  |                                  |                                       |
| Surface             | 2.3                              | 76                               | 3                                     |
| Ground              | 0.8                              | 24                               | 28                                    |
| <b>Total</b>        | <b>3.1</b>                       | <b>100</b>                       | <b>9</b>                              |
| <b>Agriculture:</b> |                                  |                                  |                                       |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>                    |                                       |
| Surface             | 57.8                             | 22                               | NA                                    |
| Ground              | 209.9                            | 78                               | NA                                    |
| <b>Total</b>        | <b>267.7</b>                     | <b>100</b>                       | <b>NA</b>                             |
| <b>Use—</b>         |                                  |                                  |                                       |
| Irrigation          | 75.0                             | 28                               | NA                                    |
| Other farm uses     | 192.7                            | 72                               | NA                                    |
| <b>Disposition—</b> |                                  |                                  |                                       |
| Consumptive use     | 267.4                            | 99                               | NA                                    |
| Return flow         | 0.3                              | 1                                | NA                                    |



## Selected Characteristics of Irrigated Farms

Iowa

### Land in farms

| Item               | Unit         | 1987   | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|--------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 96,749 | 106,859 | 114,391 | 120,559 | 134,143 | 148,055 |
| Harvested cropland | do.          | 92,878 | 103,644 | 111,379 | 116,863 | 128,791 | 143,701 |
| Irrigated land     | do.          | 851    | 616     | 739     | 348     | 269     | 291     |
| Harvested cropland | do.          | 825    | 608     | 708     | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 27,291 | 27,581  | 28,064  | 27,278  | 27,739  | 26,356  |
| Harvested cropland | do.          | 20,484 | 24,138  | 23,622  | 23,085  | 19,287  | 19,952  |
| Irrigated land     | No. of acres | 92,247 | 91,427  | 100,770 | 39,417  | 20,664  | 21,528  |
| Harvested cropland | do.          | 91,598 | 91,175  | 97,681  | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Monona | Harrison | Sioux  | Woodbury | Palo Alto |
|------------------------|--------------|-------|--------|----------|--------|----------|-----------|
| Irrigated land         | No. of farms |       | 851    | 90       | 78     | 59       | 25        |
| Irrigated land         | No. of acres |       | 92,247 | 25,152   | 15,933 | 8,639    | 4,930     |
| Major irrigated crops: |              |       |        |          |        |          |           |
| Corn                   | do.          |       | 62,099 | 17,551   | 9,998  | 7,716    | 3,564     |
| Soybeans               | do.          |       | 20,304 | 7,140    | 5,260  | 748      | 1,098     |
| Vegetables             | do.          |       | 1,619  | 0        | 0      | 0        | NA        |

### Average value per farm

| Item                           | Unit | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|------|-----------|---------|-----------|---------|--------------|---------|
|                                |      | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |      |           |         |           |         |              |         |
| Land and buildings             |      | 283,597   | 471,011 | 442,449   | 780,292 | 282,338      | 469,194 |
| Machinery and equipment        |      | 52,844    | 58,398  | 71,565    | 97,117  | 52,695       | 58,170  |
| Farm products sold             |      | 84,872    | 85,163  | 162,773   | 231,964 | 84,236       | 84,375  |
| Crops, nursery, and greenhouse |      | 43,604    | 44,849  | 111,748   | 134,355 | 42,929       | 44,272  |
| Livestock and poultry          |      | 72,706    | 66,413  | 141,492   | 219,211 | 72,392       | 65,896  |
| Selected production expenses:  |      |           |         |           |         |              |         |
| Commercial fertilizers         |      | 5,626     | 6,496   | 8,234     | 11,628  | 5,603        | 6,460   |
| Other agricultural chemicals   |      | 3,577     | 3,785   | 6,199     | 7,173   | 3,555        | 3,762   |
| Energy and petroleum products  |      | 4,375     | 5,815   | 8,284     | 12,300  | 4,344        | 5,776   |
| Hired labor                    |      | 5,751     | 4,640   | 25,696    | 22,827  | 5,544        | 4,479   |
| Contract labor                 |      | 2,604     | 2,341   | 6,105     | 8,042   | 2,515        | 2,224   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 07, Upper Mississippi

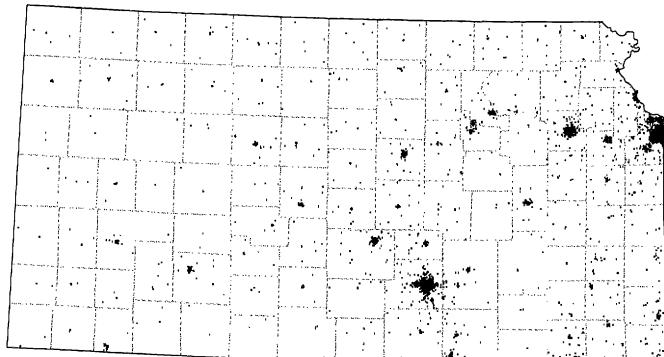
| Item                          | Farms | Acres   | AF/acre | 1988           |         | 1984          |         |
|-------------------------------|-------|---------|---------|----------------|---------|---------------|---------|
|                               |       |         |         | Farms          | Acres   | AF/acre       | AF/acre |
| <i>Number</i>                 |       |         |         |                |         |               |         |
| Methods:                      |       |         |         |                |         |               |         |
| All sprinkler systems         | 3,557 | 755,893 | 0.9     | 2,980          | 593,946 | 0.8           |         |
| Center pivot                  | 2,316 | 593,502 | 0.9     | 1,897          | 474,203 | 0.8           |         |
| Mechanical move               | 952   | 114,128 | 0.7     | 909            | 83,062  | 0.5           |         |
| Hand move                     | 523   | 26,911  | 0.8     | 324            | 19,538  | 1.4           |         |
| Solid set and permanent       | 311   | 21,352  | 1.7     | 399            | 17,143  | 2.3           |         |
| All gravity systems           | 278   | 23,542  | 0.8     | 35             | 2,450   | NA            |         |
| Gated pipe                    | 208   | 12,438  | 0.6     | 35             | 2,450   | NA            |         |
| Ditch with siphon tube        | 59    | 9,596   | 1.2     | NA             | NA      | NA            |         |
| Flooding                      | 15    | 1,508   | NA      | NA             | NA      | NA            |         |
| Drip or trickle               | 149   | 1,963   | 0.5     | 36             | 720     | 0.3           |         |
| Subirrigation                 | 36    | 8,092   | 1.1     | 1              | NA      | NA            |         |
| Sources:                      |       |         |         |                |         |               |         |
| Wells                         | 2,732 | 638,774 | 0.9     | 2,206          | 482,201 | 0.7           |         |
| Onfarm surface sources        | 1,260 | 116,957 | 0.9     | 955            | 99,923  | 1.0           |         |
| Off-farm water suppliers      | 119   | 19,873  | 0.9     | 108            | 2,016   | 1.4           |         |
| <i>Number</i>                 |       |         |         | <i>\$/acre</i> |         | <i>Number</i> |         |
| Onfarm energy use for pumping |       |         |         |                |         |               |         |
| Electricity                   | 3,581 | 748,931 | 22      | 2,936          | 569,361 | 19            |         |
| Natural gas                   | 2,015 | 434,187 | 23      | 1,932          | 392,425 | 17            |         |
| LP gas, propane, butane       | 45    | 7,887   | 17      | NA             | NA      | NA            |         |
| Diesel fuel                   | 198   | 27,022  | 17      | 283            | 39,800  | 22            |         |
| Gasoline and gasohol          | 1,697 | 275,315 | 20      | 1,055          | 122,097 | 23            |         |
| Off-farm water supply         | 185   | 4,520   | 33      | 208            | 15,039  | 40            |         |
|                               | 119   | 19,873  | 5       | 108            | 2,016   | 59            |         |

### Land values and cash rent per acre

| Item               | 1988  | 1986  | 1984  | Average land value |      |      |
|--------------------|-------|-------|-------|--------------------|------|------|
|                    |       |       |       | 1988               | 1986 | 1984 |
| <i>Dollars</i>     |       |       |       |                    |      |      |
| Dry cropland       | 947   | 922   | 1,621 | 85                 | 88   | 111  |
| Irrigated cropland | 1,040 | 1,075 | 1,424 | 98                 | 97   | 112  |
| Grazing land       | 312   | 317   | 537   | 26                 | 27   | 35   |

# Kansas

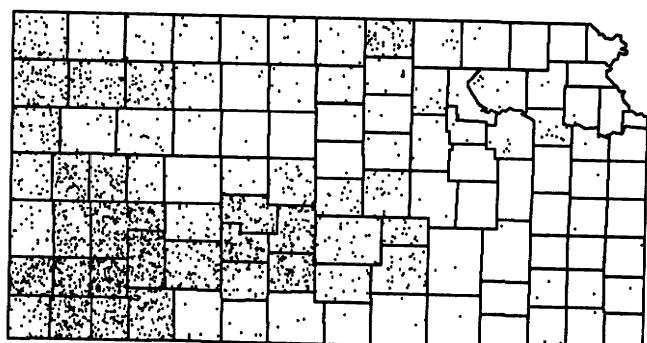
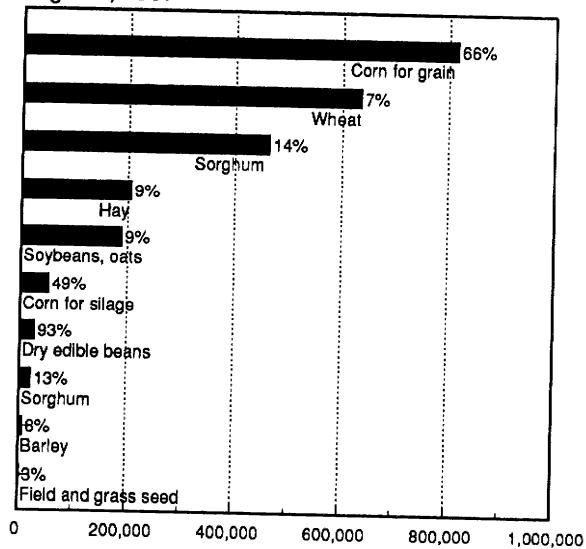
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |
|---------------------|------------------------------|-------------------|------------------------|
|                     |                              |                   | Percent                |
| <b>Sources:</b>     |                              |                   |                        |
| Surface             | 1.0                          | 15                | 33                     |
| Ground              | 5.3                          | 85                | 94                     |
| Total               | 6.3                          | 100               | 85                     |
| <b>Agriculture:</b> |                              |                   |                        |
| <b>Sources—</b>     |                              |                   |                        |
| Surface             | 0.3                          | 6                 | NA                     |
| Ground              | 5.1                          | 94                | NA                     |
| Total               | 5.4                          | 100               | NA                     |
| <b>Use—</b>         |                              |                   |                        |
| Irrigation          | 5.3                          | 99                | NA                     |
| Other farm uses     | 0.1                          | 1                 | NA                     |
| <b>Disposition—</b> |                              |                   |                        |
| Consumptive use     | 5.1                          | 94                | NA                     |
| Return flow         | 0.3                          | 6                 | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Kansas

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 61,615    | 66,481    | 68,430    | 74,306    | 80,455    | 86,535    |
| Harvested cropland | do.          | 57,822    | 62,860    | 64,862    | 70,573    | 76,110    | 84,171    |
| Irrigated land     | do.          | 7,352     | 7,257     | 7,961     | 6,710     | 6,271     | 5,102     |
| Harvested cropland | do.          | 7,268     | 7,211     | 7,827     | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 31,385    | 30,599    | 29,843    | 29,984    | 31,768    | 29,421    |
| Harvested cropland | do.          | 17,729    | 20,187    | 18,988    | 19,871    | 17,649    | 18,160    |
| Irrigated land     | No. of acres | 2,463,073 | 2,675,167 | 2,685,757 | 2,010,385 | 1,522,317 | 1,004,210 |
| Harvested cropland | do.          | 2,408,176 | 2,639,024 | 2,546,894 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Finney  | Haskell | Gray    | Stevens | Stanton |
|------------------------|--------------|-----------|---------|---------|---------|---------|---------|
| Irrigated land         | No. of farms | 7,352     | 283     | 223     | 304     | 166     | 168     |
| Irrigated land         | No. of acres | 2,463,073 | 184,177 | 154,476 | 154,369 | 119,752 | 112,728 |
| Major irrigated crops: |              |           |         |         |         |         |         |
| Corn for grain         | do.          | 816,992   | 49,215  | 55,319  | 50,995  | 25,408  | 30,360  |
| Wheat for grain        | do.          | 635,524   | 61,592  | 60,292  | 47,179  | 48,669  | 51,671  |
| Sorghum for grain      | do.          | 464,119   | 28,229  | 23,034  | 28,627  | 35,128  | 20,217  |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 278,047   | 384,197 | 641,180   | 891,850 | 235,418      | 328,935 |
| Machinery and equipment        | 50,411    | 52,304  | 118,009   | 125,710 | 42,451       | 44,332  |
| Farm products sold             | 94,441    | 84,442  | 264,142   | 253,905 | 74,064       | 65,825  |
| Crops, nursery, and greenhouse | 32,712    | 37,736  | 91,061    | 113,228 | 23,340       | 26,956  |
| Livestock and poultry          | 104,247   | 78,293  | 317,616   | 235,949 | 83,533       | 63,613  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,529     | 5,128   | 10,857    | 13,241  | 3,468        | 3,903   |
| Other agricultural chemicals   | 2,699     | 2,787   | 6,333     | 6,641   | 2,085        | 1,999   |
| Energy and petroleum products  | 4,547     | 5,648   | 13,941    | 18,926  | 3,405        | 4,204   |
| Hired labor                    | 9,147     | 6,070   | 18,761    | 14,801  | 7,075        | 4,327   |
| Contract labor                 | 3,006     | 2,428   | 4,461     | 4,063   | 2,660        | 2,009   |

### Irrigation methods, water sources, and pumping energy use

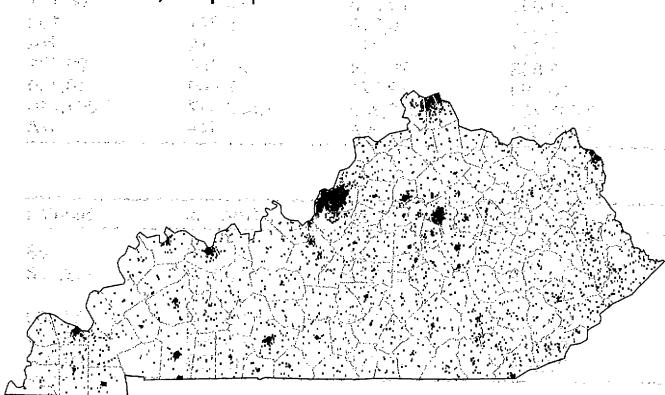
| Item                          | 1988  |           |                | 1984          |           |         |
|-------------------------------|-------|-----------|----------------|---------------|-----------|---------|
|                               | Farms | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |       |           |                |               |           |         |
| Methods:                      |       |           |                |               |           |         |
| All sprinkler systems         | 3,529 | 1,245,836 | 1.2            | 3,462         | 950,247   | 1.3     |
| Center pivot                  | 3,122 | 1,202,153 | 1.1            | 2,630         | 893,752   | 1.3     |
| Mechanical move               | 139   | 29,290    | NA             | 659           | 39,038    | 1.3     |
| Hand move                     | 405   | 3,970     | 2.0            | 419           | 15,697    | 0.5     |
| Solid set and permanent       | 8     | 10,423    | NA             | 44            | 1,760     | NA      |
| All gravity systems           | 5,297 | 1,424,907 | 1.5            | 4,297         | 1,391,282 | 1.3     |
| Gated pipe                    | 4,639 | 1,321,604 | 1.5            | 4,046         | 1,208,057 | 1.3     |
| Ditch with siphon tube        | 819   | 61,452    | 1.2            | 688           | 119,899   | 1.8     |
| Flooding                      | 59    | 41,851    | NA             | 203           | 63,326    | 1.5     |
| Drip or trickle               | 7     | 119       | NA             | 88            | 547       | NA      |
| Subirrigation                 | 0     | 0         | NA             | 0             | 0         | 0.0     |
| Sources:                      |       |           |                |               |           |         |
| Wells                         | 6,315 | 2,493,823 | 1.3            | 5,660         | 2,139,026 | 1.4     |
| Onfarm surface sources        | 255   | 51,656    | 1.2            | 462           | 45,508    | 0.9     |
| Off-farm water suppliers      | 739   | 70,466    | 1.3            | 536           | 138,206   | 1.3     |
| <i>Number</i>                 |       |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 6,565 | 2,604,096 | 25             | 5,966         | 2,263,244 | 22      |
| Electricity                   | 1,848 | 471,850   | 29             | 2,284         | 478,783   | 28      |
| Natural gas                   | 4,260 | 1,753,671 | 23             | 2,819         | 1,392,685 | 19      |
| LP gas, propane, butane       | 1,103 | 105,512   | 22             | 1,413         | 139,278   | 26      |
| Diesel fuel                   | 1,037 | 270,822   | 26             | 1,286         | 244,498   | 26      |
| Gasoline and gasohol          | 85    | 2,241     | 16             | 227           | 8,000     | 15      |
| Off-farm water supply         | 739   | 70,466    | 17             | 536           | 138,206   | 12      |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 370                | 382  | 573  | 29                | 27   | 32   |
| Irrigated cropland | 548                | 592  | 781  | 58                | 55   | 59   |
| Grazing land       | 184                | 193  | 295  | 10                | 10   | 11   |

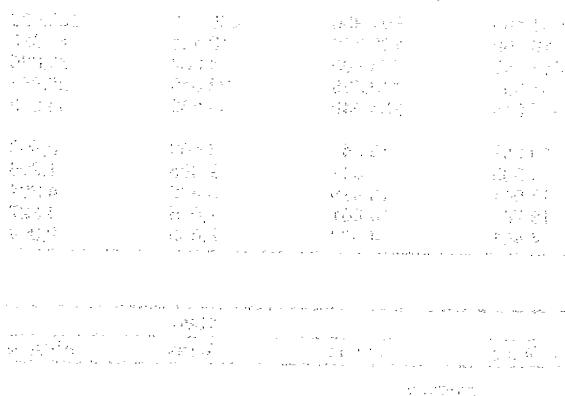
# Kentucky

Distribution of population, 1985  
Each dot = 1,000 people

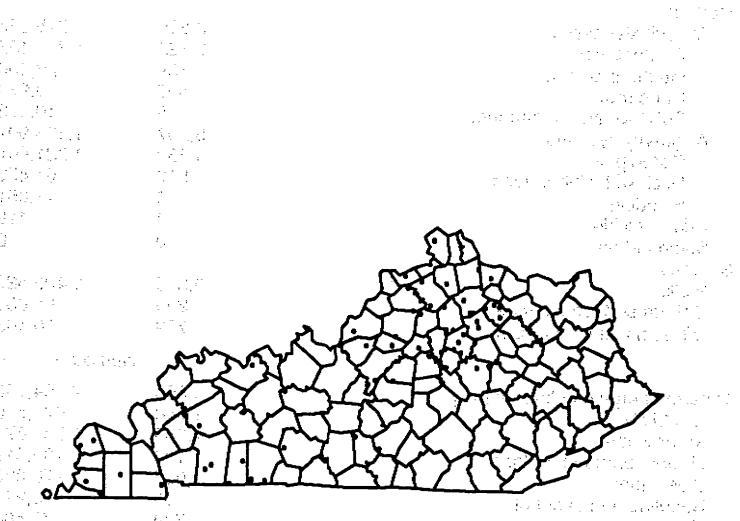
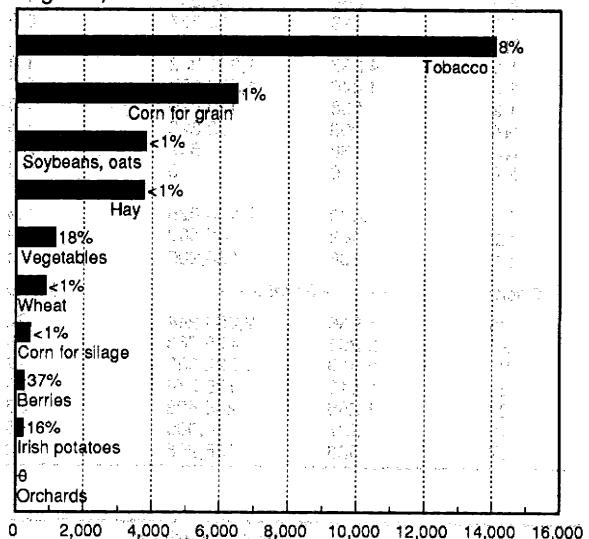


## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total<br>Percent | Agriculture's share |
|---------------------|---------------------------|---------------------------|---------------------|
| <b>Sources:</b>     |                           |                           |                     |
| Surface             | 4.5                       | 95                        | 1                   |
| Ground              | 0.2                       | 5                         | 1                   |
| <b>Total</b>        | <b>4.7</b>                | <b>100</b>                | <b>1</b>            |
| <b>Agriculture:</b> |                           |                           |                     |
| <b>Sources—</b>     |                           |                           |                     |
| Surface             | 61.8                      | 95                        | NA                  |
| Ground              | 3.1                       | 5                         | NA                  |
| <b>Total</b>        | <b>65.0</b>               | <b>100</b>                | <b>NA</b>           |
| <b>Use—</b>         |                           |                           |                     |
| Irrigation          | 8.6                       | 13                        | NA                  |
| Other farm uses     | 56.3                      | 87                        | NA                  |
| <b>Disposition—</b> |                           |                           |                     |
| Consumptive use     | 64.6                      | 99                        | NA                  |
| Return flow         | 0.4                       | 1                         | NA                  |



Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Kentucky

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969    | 1964    |
|--------------------|--------------|--------|--------|--------|--------|---------|---------|
| Total cropland     | No. of farms | 88,664 | 98,331 | 99,347 | 99,168 | 119,145 | 130,723 |
| Harvested cropland | do.          | 83,097 | 93,082 | 94,497 | 92,468 | 106,561 | 123,100 |
| Irrigated land     | do.          | 3,733  | 2,815  | 2,137  | 1,910  | 4,467   | 2,708   |
| Harvested cropland | do.          | 3,624  | 2,782  | 2,078  | NA     | NA      | NA      |
| Total cropland     | 1,000 acres  | 8,900  | 8,960  | 9,298  | 8,803  | 9,443   | 9,364   |
| Harvested cropland | do.          | 4,250  | 4,836  | 4,512  | 3,701  | 3,128   | 3,473   |
| Irrigated land     | No. of acres | 37,693 | 22,707 | 13,770 | 10,920 | 19,587  | 14,405  |
| Harvested cropland | do.          | 31,903 | 21,503 | 12,345 | NA     | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Nicholas | Scott | Fayette | Harrison | Owen  |
|------------------------|--------------|--------|----------|-------|---------|----------|-------|
| Irrigated land         | No. of farms | 3,733  | 61       | 212   | 76      | 299      | 216   |
| Irrigated land         | No. of acres | 37,693 | 1,945    | 1,820 | 1,786   | 1,672    | 1,172 |
| Major irrigated crops: |              |        |          |       |         |          |       |
| Tobacco                | do.          | 14,087 | 324      | 1,555 | 811     | 1,367    | 855   |
| Corn for grain         | do.          | 6,517  | NA       | 26    | NA      | NA       | 73    |
| Soybeans               | do.          | 3,840  | NA       | NA    | NA      | NA       | NA    |

### Average value per farm

| Item                           | Unit | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|------|-----------|---------|-----------|---------|--------------|---------|
|                                |      | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |      |           |         |           |         |              |         |
| Land and buildings             |      | 135,696   | 144,427 | 251,852   | 255,336 | 130,595      | 141,105 |
| Machinery and equipment        |      | 22,670    | 22,001  | 37,921    | 34,683  | 21,999       | 21,621  |
| Farm products sold             |      | 22,450    | 23,385  | 58,341    | 52,164  | 20,940       | 22,565  |
| Crops, nursery, and greenhouse |      | 12,286    | 16,086  | 30,356    | 36,000  | 11,335       | 15,408  |
| Livestock and poultry          |      | 20,743    | 16,680  | 44,685    | 27,309  | 19,687       | 16,373  |
| Selected production expenses:  |      |           |         |           |         |              |         |
| Commercial fertilizers         |      | 1,653     | 1,613   | 2,445     | 1,861   | 1,612        | 1,604   |
| Other agricultural chemicals   |      | 893       | 1,181   | 1,328     | 1,294   | 867          | 1,176   |
| Energy and petroleum products  |      | 1,302     | 1,630   | 2,651     | 3,149   | 1,241        | 1,585   |
| Hired labor                    |      | 3,534     | 3,325   | 11,552    | 8,031   | 3,060        | 3,141   |
| Contract labor                 |      | 1,921     | 2,118   | 3,643     | 4,717   | 1,770        | 1,961   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 05, Ohio

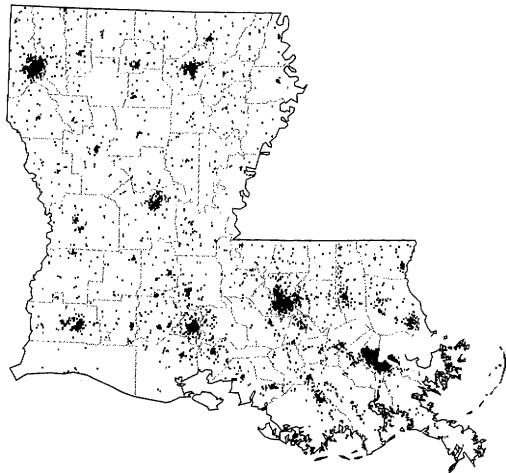
| Item                          | 1988  |         |         | 1984  |        |         |
|-------------------------------|-------|---------|---------|-------|--------|---------|
|                               | Farms | Acres   | AF/acre | Farms | Acres  | AF/acre |
| <i>Number</i>                 |       |         |         |       |        |         |
| Methods:                      |       |         |         |       |        |         |
| All sprinkler systems         | 2,746 | 127,507 | 0.7     | 2,036 | 80,547 | 0.5     |
| Center pivot                  | 1,153 | 75,202  | 0.8     | 554   | 47,893 | 0.6     |
| Mechanical move               | 155   | 26,644  | 0.4     | 279   | 17,468 | 0.4     |
| Hand move                     | 1,495 | 23,815  | 0.6     | 1,182 | 13,319 | 0.5     |
| Solid set and permanent       | 25    | 1,846   | 0.2     | 151   | 1,867  | 0.6     |
| All gravity systems           | 0     | 0       | 0.0     | 49    | 1,227  | 0.8     |
| Gated pipe                    | 0     | 0       | 0.0     | 8     | 300    | 0.5     |
| Ditch with siphon tube        | 0     | 0       | 0.0     | 27    | 497    | 0.8     |
| Flooding                      | 0     | 0       | 0.0     | 14    | 430    | 0.7     |
| Drip or trickle               | 75    | 1,134   | 0.0     | 28    | 146    | 0.8     |
| Subirrigation                 | 49    | 4,459   | 0.9     | 2     | D      | NA      |
| Sources:                      |       |         |         |       |        |         |
| Wells                         | 1,075 | 73,681  | 0.8     | 422   | 52,879 | 0.5     |
| Onfarm surface sources        | 1,724 | 53,342  | 0.6     | 1,610 | 27,769 | 0.5     |
| Off-farm water suppliers      | 98    | 4,519   | 0.8     | 108   | 1,083  | 1.1     |
| <i>Number</i>                 |       |         |         |       |        |         |
|                               |       |         | \$/acre |       |        | \$/acre |
| Onfarm energy use for pumping | 2,682 | 126,055 | 26      | 1,415 | 74,749 | 22      |
| Electricity                   | 961   | 49,059  | 41      | 353   | 35,830 | 22      |
| Natural gas                   | 7     | 1,085   | 16      | 6     | 496    | 8       |
| LP gas, propane, butane       | 26    | 6,965   | 17      | 64    | 4,925  | 25      |
| Diesel fuel                   | 1,693 | 62,102  | 16      | 865   | 31,141 | 22      |
| Gasoline and gasohol          | 335   | 6,844   | 27      | 232   | 2,402  | 32      |
| Off-farm water supply         | 98    | 4,519   | NA      | 108   | 1,083  | 39      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 841                | 876   | 1,199 | 49                | 50   | 56   |
| Irrigated cropland | 1,000              | 1,217 | NR    | 100               | NR   | NR   |
| Grazing land       | 496                | 493   | 666   | 21                | 21   | 22   |

# Louisiana

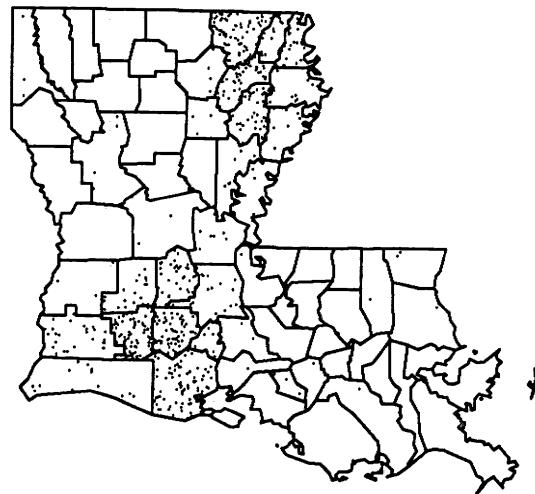
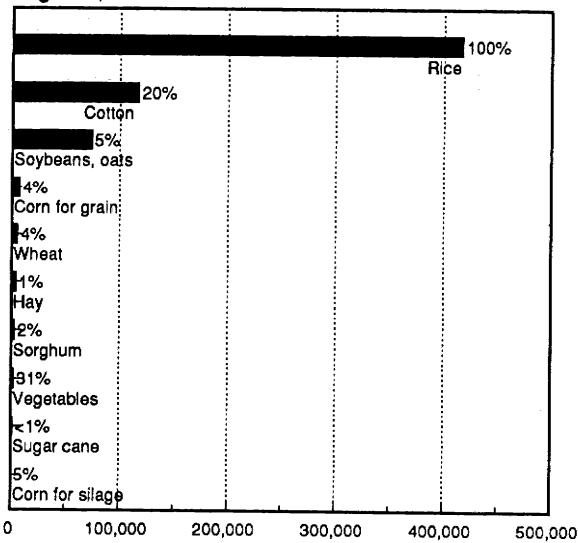
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricul-                     |
|---------------------|-------------------------------------|-------------------|------------------------------|
|                     |                                     |                   | ture's<br>share<br>—Percent— |
| <b>Sources:</b>     |                                     |                   |                              |
| Surface             | 9.5                                 | 86                | 11                           |
| Ground              | 1.6                                 | 14                | 55                           |
| Total               | 11.1                                | 100               | 17                           |
| <b>Agriculture:</b> |                                     |                   |                              |
| <b>Sources—</b>     |                                     |                   |                              |
| Surface             | 1.0                                 | 53                | NA                           |
| Ground              | 0.9                                 | 47                | NA                           |
| Total               | 1.9                                 | 100               | NA                           |
| <b>Use—</b>         |                                     |                   |                              |
| Irrigation          | 1.7                                 | 88                | NA                           |
| Other farm uses     | 0.2                                 | 12                | NA                           |
| <b>Disposition—</b> |                                     |                   |                              |
| Consumptive use     | 1.8                                 | 94                | NA                           |
| Return flow         | 0.1                                 | 6                 | NA                           |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Louisiana

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 23,273  | 27,424  | 28,351  | 30,067  | 37,921  | 50,000  |
| Harvested cropland | do.          | 18,644  | 21,991  | 23,528  | 23,525  | 29,210  | 41,419  |
| Irrigated land     | do.          | 3,929   | 3,693   | 3,799   | 3,777   | 4,611   | 4,844   |
| Harvested cropland | do.          | 3,846   | 3,644   | 3,710   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 5,563   | 6,093   | 6,344   | 5,590   | 5,842   | 4,864   |
| Harvested cropland | do.          | 3,600   | 4,699   | 4,839   | 3,628   | 3,443   | 2,673   |
| Irrigated land     | No. of acres | 646,677 | 693,698 | 681,056 | 701,587 | 701,692 | 580,687 |
| Harvested cropland | do.          | 634,834 | 686,489 | 668,355 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Vermilion | Jeff. Davis | Morehouse | Acadia | Evangeline |
|------------------------|--------------|---------|-----------|-------------|-----------|--------|------------|
| Irrigated land         | No. of farms | 3,929   | 520       | 346         | 218       | 408    | 225        |
| Irrigated land         | No. of acres | 646,677 | 82,911    | 82,612      | 78,539    | 69,857 | 39,056     |
| Major irrigated crops: |              |         |           |             |           |        |            |
| Rice                   | do.          | 417,411 | 72,395    | 73,067      | 30,627    | 64,367 | 33,839     |
| Cotton                 | do.          | 117,837 | 0         | 0           | 30,769    | 0      | 0          |
| Soybeans for beans     | do.          | 74,326  | 6,001     | 8,723       | 13,504    | 5,227  | 5,075      |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 268,630   | 381,817 | 502,700   | 876,142 | 230,716      | 319,683 |
| Machinery and equipment        | 38,323    | 43,528  | 81,166    | 108,987 | 31,379       | 35,281  |
| Farm products sold             | 49,000    | 44,469  | 104,892   | 111,288 | 39,624       | 35,635  |
| Crops, nursery, and greenhouse | 79,353    | 70,822  | 106,959   | 113,418 | 66,579       | 56,657  |
| Livestock and poultry          | 23,727    | 20,632  | 15,408    | 13,135  | 24,245       | 21,034  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 5,035     | 4,955   | 9,997     | 12,425  | 3,698        | 3,358   |
| Other agricultural chemicals   | 7,572     | 9,358   | 12,150    | 13,932  | 6,197        | 7,955   |
| Energy and petroleum products  | 3,453     | 4,435   | 8,596     | 13,810  | 2,586        | 3,248   |
| Hired labor                    | 11,254    | 9,204   | 17,009    | 14,576  | 9,691        | 8,004   |
| Contract labor                 | 2,735     | 2,829   | 5,042     | 3,769   | 2,222        | 2,652   |

### Irrigation methods, water sources, and pumping energy use

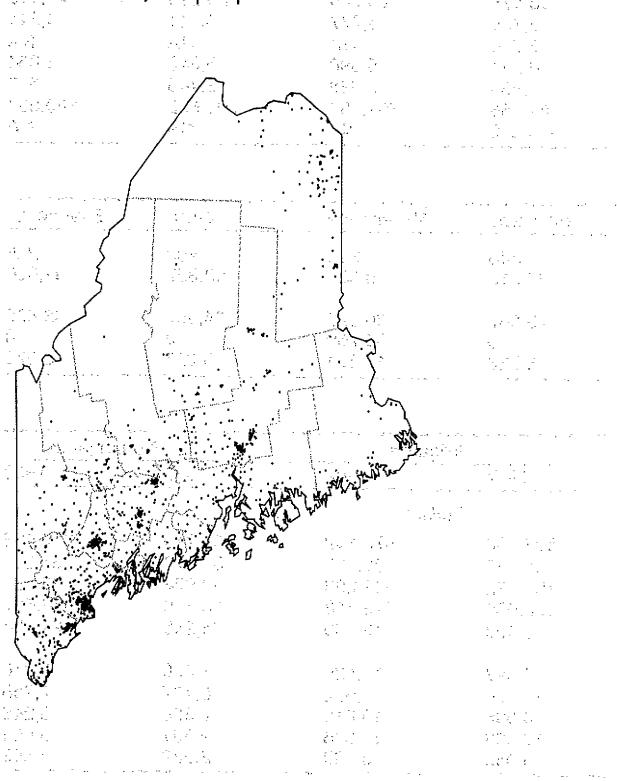
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 320   | 103,444 | 0.7            | 416           | 86,571  | 0.9     |
| Center pivot                  | 243   | 77,234  | 0.9            | 342           | 69,299  | 1.1     |
| Mechanical move               | 77    | 17,590  | 0.2            | 39            | 11,760  | NA      |
| Hand move                     | 0     | 0       | NA             | 37            | 259     | 0.8     |
| Solid set and permanent       | 31    | 8,620   | 1.0            | 13            | 5,253   | 2.0     |
| All gravity systems           | 2,150 | 554,472 | 1.8            | 2,017         | 503,739 | 1.7     |
| Gated pipe                    | 367   | 92,810  | 1.5            | 341           | 82,941  | 1.3     |
| Ditch with siphon tube        | 538   | 69,578  | 2.0            | 453           | 103,775 | 1.5     |
| Flooding                      | 1,477 | 392,084 | 1.8            | 1,401         | 317,023 | 1.9     |
| Drip or trickle               | 668   | 4,557   | 1.8            | 25            | 461     | NA      |
| Subirrigation                 | 68    | 13,162  | 1.9            | 22            | 1,320   | NA      |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 2,110 | 472,073 | 1.5            | 1,759         | 393,704 | 1.6     |
| Onfarm surface sources        | 1,030 | 193,176 | 1.7            | 721           | 179,625 | 1.9     |
| Off-farm water suppliers      | 329   | 20,652  | 1.8            | 125           | 17,877  | 1.8     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 2,826 | 647,243 | 17             | 2,250         | 520,211 | 23      |
| Electricity                   | 724   | 98,014  | 16             | 693           | 106,482 | 18      |
| Natural gas                   | 667   | 104,320 | 26             | 673           | 122,077 | 28      |
| LP gas, propane, butane       | 210   | 30,078  | 19             | 328           | 43,569  | 39      |
| Diesel fuel                   | 2,046 | 414,831 | 14             | 1,237         | 246,643 | 19      |
| Gasoline and gasohol          | NA    | NA      | NA             | 36            | 1,440   | 2       |
| Off-farm water supply         | 329   | 20,652  | 34             | 125           | 17,877  | 54      |

### Land values and cash rent per acre

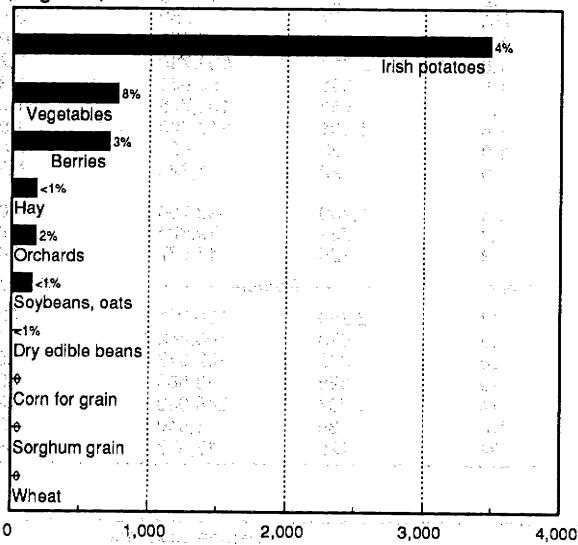
| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 886                | 1,364 | 1,840 | 43                | 43   | 47   |
| Irrigated cropland | 820                | 1,053 | 1,604 | 48                | 47   | 53   |
| Grazing land       | 822                | 1,387 | 1,490 | 11                | 12   | 14   |

# Maine

Distribution of population, 1985  
Each dot = 1,000 people



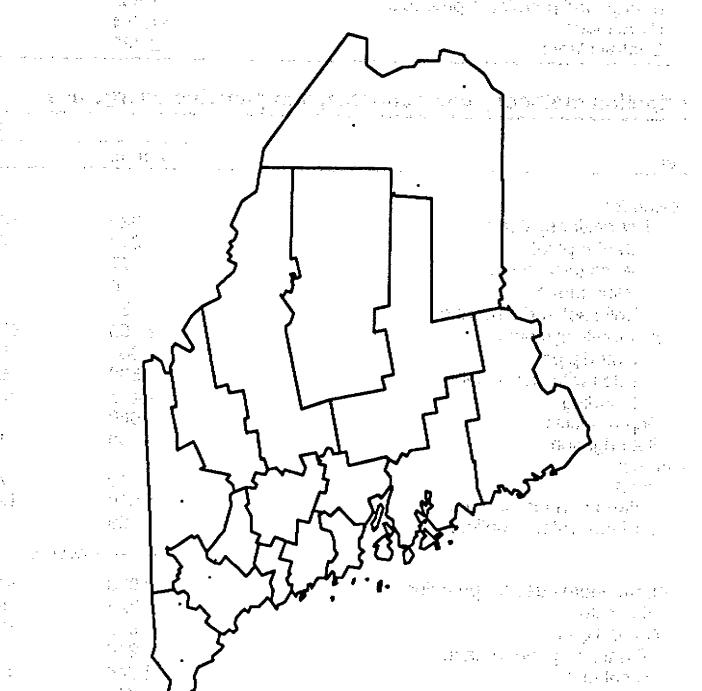
Acres of principal irrigated crops and proportion irrigated, 1987



0 1,000 2,000 3,000 4,000

## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |   |
|---------------------|---------------------------|-------------------|------------------------|---|
|                     |                           |                   | Percent                | — |
| <b>Sources:</b>     |                           |                   |                        |   |
| Surface             | 0.9                       | 92                | 4                      |   |
| Ground              | 0.1                       | 8                 | 5                      |   |
| <b>Total</b>        | <b>1.0</b>                | <b>100</b>        | <b>4</b>               |   |
| <b>Agriculture:</b> |                           |                   |                        |   |
| <b>Sources—</b>     |                           |                   |                        |   |
| Surface             | 31.1                      | 90                | NA                     |   |
| Ground              | 3.6                       | 10                | NA                     |   |
| <b>Total</b>        | <b>34.7</b>               | <b>100</b>        | <b>NA</b>              |   |
| <b>Use—</b>         |                           |                   |                        |   |
| Irrigation          | 2.1                       | 6                 | NA                     |   |
| Other farm uses     | 32.6                      | 94                | NA                     |   |
| <b>Disposition—</b> |                           |                   |                        |   |
| Consumptive use     | 29.8                      | 86                | NA                     |   |
| Return flow         | 4.9                       | 14                | NA                     |   |



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Maine

### Land in farms

| Item               | Unit         | 1987  | 1982  | 1978  | 1974  | 1969  | 1964   |
|--------------------|--------------|-------|-------|-------|-------|-------|--------|
| Total cropland     | No. of farms | 5,919 | 6,591 | 6,402 | 6,032 | 7,253 | 12,020 |
| Harvested cropland | do.          | 5,486 | 6,138 | 6,064 | 5,631 | 6,519 | 11,007 |
| Irrigated land     | do.          | 359   | 200   | 255   | 176   | 115   | 206    |
| Harvested cropland | do.          | 352   | 199   | 246   | NA    | NA    | NA     |
| Total cropland     | 1,000 acres  | 592   | 611   | 650   | 642   | 707   | 894    |
| Harvested cropland | do.          | 411   | 457   | 463   | 450   | 458   | 594    |
| Irrigated land     | No. of acres | 6,065 | 5,831 | 7,013 | 6,211 | 5,526 | 4,157  |
| Harvested cropland | do.          | 5,998 | 5,825 | 6,479 | NA    | NA    | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Aroostook | York  | Cumberland | Penobscot | Oxford |
|------------------------|--------------|-------|-----------|-------|------------|-----------|--------|
| Irrigated land         | No. of farms |       | 359       | 36    | 54         | 56        | 30     |
| Irrigated land         | No. of acres |       | 6,065     | 2,135 | 869        | 684       | 584    |
| Major irrigated crops: |              |       |           |       |            |           |        |
| Irish potatoes         | do.          |       | 3,485     | 1,965 | NA         | NA        | 512    |
| Vegetables             | do.          |       | 776       | NA    | 137        | 289       | NA     |
| Berries                | do.          |       | 711       | 1     | 191        | 26        | NA     |
|                        |              |       |           |       |            |           | 41     |

### Average value per farm

| Item                           | Unit | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|------|-----------|---------|-----------|---------|--------------|---------|
|                                |      | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |      |           |         |           |         |              |         |
| Land and buildings             |      | 210,777   | 150,487 | 274,510   | 292,309 | 206,904      | 147,129 |
| Machinery and equipment        |      | 38,325    | 33,916  | 63,283    | 70,336  | 36,808       | 33,049  |
| Farm products sold             |      | 64,681    | 57,034  | 81,042    | 113,919 | 63,687       | 55,362  |
| Crops, nursery, and greenhouse |      | 41,295    | 36,879  | 80,643    | 112,083 | 37,291       | 32,957  |
| Livestock and poultry          |      | 75,025    | 63,699  | 9,358     | 28,089  | 76,385       | 64,101  |
| Selected production expenses:  |      |           |         |           |         |              |         |
| Commercial fertilizers         |      | 5,054     | 5,598   | 6,061     | 11,331  | 4,961        | 5,377   |
| Other agricultural chemicals   |      | 4,252     | 3,648   | 5,364     | 7,397   | 4,119        | 3,465   |
| Energy and petroleum products  |      | 3,487     | 3,832   | 5,599     | 11,531  | 3,356        | 3,647   |
| Hired labor                    |      | 16,606    | 13,385  | 29,981    | 33,534  | 15,657       | 12,663  |
| Contract labor                 |      | 5,494     | 8,028   | 6,052     | 65,900  | 5,456        | 5,191   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 01, New England

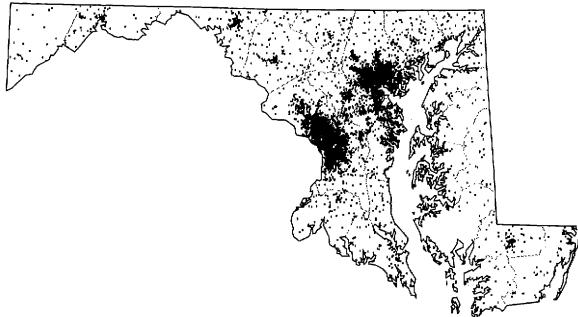
| Item                           | Farms | Acres  | AF/acre | 1988  |        |         | 1984  |       |         |
|--------------------------------|-------|--------|---------|-------|--------|---------|-------|-------|---------|
|                                |       |        |         | Farms | Acres  | AF/acre | Farms | Acres | AF/acre |
| <i>Methods:</i>                |       |        |         |       |        |         |       |       |         |
| All sprinkler systems          | 967   | 24,233 | 0.8     | 886   | 24,127 | 1.1     |       |       |         |
| Center pivot                   | 611   | 11,411 | 1.3     | 196   | 5,039  | 1.1     |       |       |         |
| Mechanical move                | 13    | 1,046  | 0.3     | 36    | 2,548  | 0.4     |       |       |         |
| Hand move                      | 95    | 2,325  | 0.3     | 373   | 6,670  | 0.5     |       |       |         |
| Solid set and permanent        | 258   | 9,421  | 0.5     | 335   | 9,870  | 1.7     |       |       |         |
| All gravity systems            | 188   | 11,714 | NA      | 87    | 2,683  | 1.5     |       |       |         |
| Gated pipe                     | 23    | 391    | NA      | 6     | 174    | NA      |       |       |         |
| Ditch with siphon tube         | 26    | 2,928  | NA      | 41    | 1,455  | 1.5     |       |       |         |
| Flooding                       | 139   | 8,395  | NA      | 44    | 1,054  | 1.2     |       |       |         |
| Drip or trickle                | 0     | 0      | 0.0     | 75    | 679    | 0.6     |       |       |         |
| Subirrigation                  | 0     | 0      | 0.0     | 0     | 0      | 0.0     |       |       |         |
| Sources:                       |       |        |         |       |        |         |       |       |         |
| Wells                          | 324   | 3,698  | 0.5     | 178   | 2,966  | 0.9     |       |       |         |
| Onfarm surface sources         | 844   | 21,566 | 3.9     | 731   | 21,261 | 1.0     |       |       |         |
| Off-farm water suppliers       | 26    | 102    | NA      | 76    | 869    | 0.5     |       |       |         |
|                                |       |        |         |       |        |         |       |       |         |
| Onfarm energy use for pumping: |       |        |         |       |        |         |       |       |         |
| Electricity                    | 942   | 24,312 | 48      | 789   | 22,988 | 54      |       |       |         |
| Natural gas                    | 273   | 5,958  | 68      | 279   | 5,612  | 94      |       |       |         |
| LP gas, propane, butane        | 0     | 0      | 0       | 9     | 174    | 87      |       |       |         |
| Diesel fuel                    | 310   | 7,418  | 53      | 147   | 6,203  | 51      |       |       |         |
| Gasoline and gasohol           | 130   | 6,599  | 35      | 190   | 6,392  | 29      |       |       |         |
| Off-farm water supply          | 444   | 4,337  | 29      | 379   | 4,607  | 44      |       |       |         |
|                                | 26    | 102    | 84      | 76    | 869    | 36      |       |       |         |

### Land values and cash rent per acre

| Item               | 1988 | 1986 | 1984 | Average land value |    |    | Average cash rent |    |    |
|--------------------|------|------|------|--------------------|----|----|-------------------|----|----|
|                    |      |      |      | Dollars            |    |    | Dollars           |    |    |
| Dry cropland       | 794  | 528  | 513  | 32                 | 27 | 26 | NR                | NR | NR |
| Irrigated cropland | 500  | NR   | NR   | NR                 | NR | NR | 11                | 11 | 13 |
| Grazing land       | 496  | 309  | 271  | 14                 |    |    |                   |    |    |

# Maryland

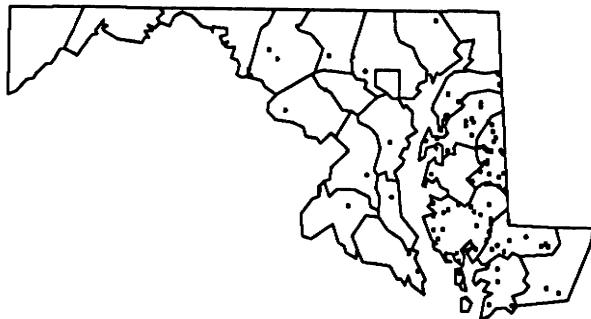
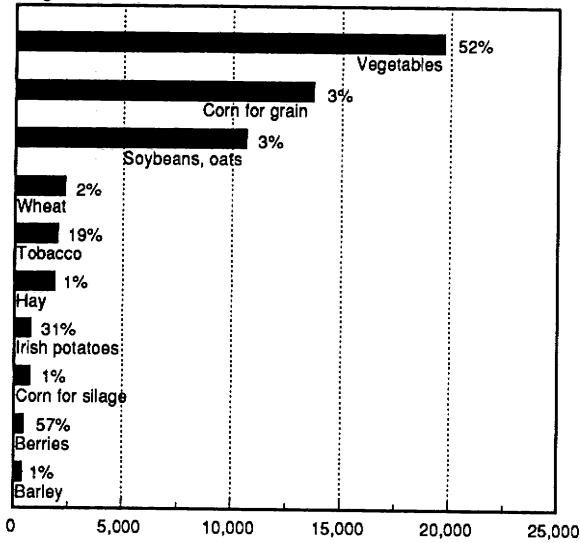
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricult-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------------|
|                     |                                     |                   | <i>Percent</i>               |
| <b>Sources:</b>     |                                     |                   |                              |
| Surface             | 1.5                                 | 86                | 2                            |
| Ground              | 0.2                                 | 14                | 15                           |
| Total               | 1.7                                 | 100               | 4                            |
| <b>Agriculture:</b> |                                     |                   |                              |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                              |
| Surface             | 27.3                                | 43                | NA                           |
| Ground              | 36.5                                | 57                | NA                           |
| Total               | 63.8                                | 100               | NA                           |
| <b>Use—</b>         |                                     |                   |                              |
| Irrigation          | 38.0                                | 60                | NA                           |
| Other farm uses     | 25.8                                | 40                | NA                           |
| <b>Disposition—</b> |                                     |                   |                              |
| Consumptive use     | 51.0                                | 80                | NA                           |
| Return flow         | 12.8                                | 20                | NA                           |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Maryland

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 13,200 | 14,719 | 14,384 | 14,058 | 15,797 | 19,553 |
| Harvested cropland | do.          | 11,960 | 13,672 | 13,663 | 13,183 | 14,454 | 18,685 |
| Irrigated land     | do.          | 1,074  | 845    | 616    | 499    | 536    | 467    |
| Harvested cropland | do.          | 1,040  | 826    | 595    | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 1,745  | 1,799  | 1,810  | 1,776  | 1,819  | 1,866  |
| Harvested cropland | do.          | 1,347  | 1,529  | 1,477  | 1,439  | 1,301  | 1,421  |
| Irrigated land     | No. of acres | 50,762 | 38,556 | 28,467 | 22,629 | 21,501 | 15,996 |
| Harvested cropland | do.          | 50,077 | 38,219 | 28,023 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Caroline | Dorchester | Queen Annes | Wicomico | Kent  |
|------------------------|--------------|--------|----------|------------|-------------|----------|-------|
| Irrigated land         | No. of farms | 1,074  | 130      | 79         | 47          | 86       | 19    |
| Irrigated land         | No. of acres | 50,762 | 13,279   | 11,279     | 5,196       | 4,957    | 3,439 |
| Major irrigated crops: |              |        |          |            |             |          |       |
| Vegetables             | do.          | 19,724 | 5,504    | 4,494      | 2,020       | 1,550    | 1,545 |
| Corn                   | do.          | 13,728 | 5,104    | 3,455      | 2,448       | 1,417    | 396   |
| Soybeans for beans     | do.          | 10,652 | 3,238    | 4,480      | 604         | 1,137    | NA    |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 366,788   | 332,301 | 473,812   | 585,774 | 357,300      | 316,068 |
| Machinery and equipment        | 44,656    | 40,853  | 74,306    | 62,834  | 42,019       | 39,444  |
| Farm products sold             | 66,937    | 63,600  | 130,042   | 140,518 | 61,991       | 59,363  |
| Crops, nursery, and greenhouse | 27,120    | 30,745  | 96,079    | 107,056 | 18,591       | 24,590  |
| Livestock and poultry          | 86,396    | 73,213  | 128,502   | 120,648 | 84,758       | 71,904  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,908     | 6,086   | 8,331     | 9,743   | 4,494        | 5,774   |
| Other agricultural chemicals   | 2,825     | 2,783   | 5,722     | 4,928   | 2,458        | 2,569   |
| Energy and petroleum products  | 3,397     | 3,818   | 7,365     | 8,315   | 3,033        | 3,532   |
| Hired labor                    | 13,634    | 9,363   | 31,691    | 23,916  | 10,910       | 7,995   |
| Contract labor                 | 6,367     | 5,389   | 13,598    | 16,046  | 5,146        | 3,795   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

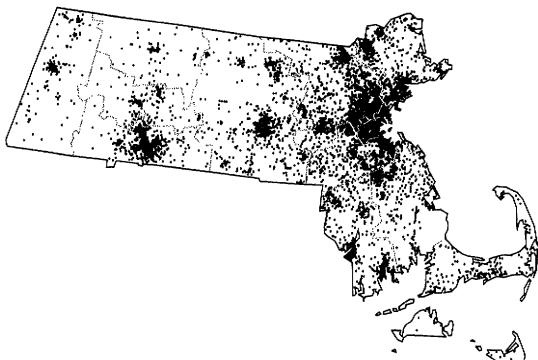
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 2,482 | 255,416 | 0.6            | 2,209         | 183,188 | 0.5     |
| Center pivot                  | 817   | 105,830 | 0.6            | 403           | 70,560  | 0.6     |
| Mechanical move               | 672   | 94,424  | 0.4            | 525           | 56,114  | 0.3     |
| Hand move                     | 1,235 | 46,357  | 0.4            | 1,399         | 49,996  | 0.5     |
| Solid set and permanent       | 86    | 8,805   | 0.8            | 179           | 6,428   | 1.4     |
| All gravity systems           | 19    | 1,660   | 0.9            | 38            | 6,228   | 0.0     |
| Gated pipe                    | 0     | 0       | 0.0            | 29            | 3,510   | 0.0     |
| Ditch with siphon tube        | 10    | 1,390   | 0.9            | 0             | 0       | 0.0     |
| Flooding                      | 9     | 270     | NA             | 9             | 2,718   | 0.0     |
| Drip or trickle               | 209   | NA      | 1.1            | 156           | 2,646   | 0.5     |
| Subirrigation                 | 2     | NA      | NA             | 10            | 1,515   | 0.0     |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 792   | 126,525 | 0.8            | 1,065         | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920 | 137,469 | 0.5            | 1,288         | 76,946  | 0.6     |
| Off-farm water suppliers      | 67    | 4,076   | 0.3            | 149           | 2,075   | 0.6     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 2,440 | 246,466 | 19             | 2,097         | 175,259 | 20      |
| Electricity                   | 537   | 49,109  | 21             | 496           | 41,735  | 25      |
| Natural gas                   | 0     | 0       | 0              | 0             | 0       | 0       |
| LP gas, propane, butane       | 51    | 6,729   | 13             | 103           | 11,538  | 19      |
| Diesel fuel                   | 1,460 | 167,116 | 18             | 831           | 90,185  | 16      |
| Gasoline and gasohol          | 868   | 23,512  | 28             | 990           | 31,801  | 25      |
| Off-farm water supply         | 67    | 4,076   | 21             | 149           | 2,075   | 56      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 2,023              | 1,724 | 2,013 | 41                | 54   | 51   |
| Irrigated cropland | 2,857              | 2,378 | 2,272 | 83                | 132  | 143  |
| Grazing land       | 1,621              | 1,041 | 1,014 | 16                | 18   | 20   |

# Massachusetts

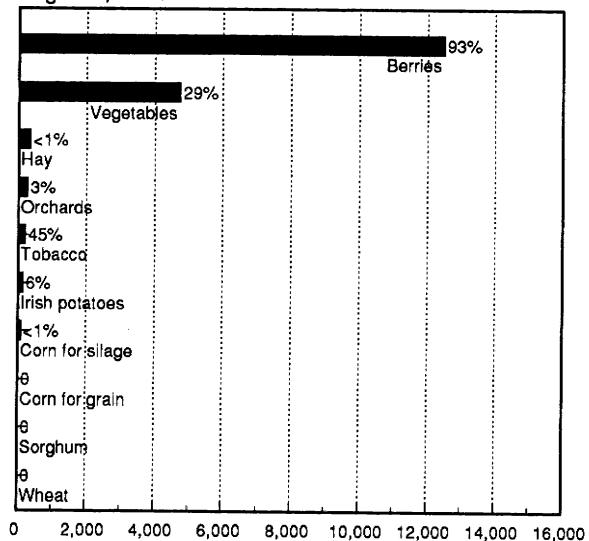
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total | Agriculture's share |
|---------------------|----------------------------------|----------------|---------------------|
|                     | <i>Percent</i>                   |                |                     |
| <b>Sources:</b>     |                                  |                |                     |
| Surface             | 6.6                              | 95             | 0                   |
| Ground              | 0.4                              | 5              | 1                   |
| Total               | 7.0                              | 100            | 0                   |
| <b>Agriculture:</b> |                                  |                |                     |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>  |                     |
| Surface             | 15.1                             | 75             | NA                  |
| Ground              | 5.0                              | 25             | NA                  |
| Total               | 20.1                             | 100            | NA                  |
| <b>Use—</b>         |                                  |                |                     |
| Irrigation          | 17.9                             | 89             | NA                  |
| Other farm uses     | 2.2                              | 11             | NA                  |
| <b>Disposition—</b> |                                  |                |                     |
| Consumptive use     | 19.5                             | 97             | NA                  |
| Return flow         | 0.6                              | 3              | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Massachusetts

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 5,654  | 4,941  | 4,645  | 4,212  | 5,168  | 7,101  |
| Harvested cropland | do.          | 5,084  | 4,608  | 4,397  | 4,032  | 4,669  | 6,498  |
| Irrigated land     | do.          | 1,316  | 1,000  | 966    | 879    | 925    | 1,229  |
| Harvested cropland | do.          | 1,290  | 989    | 959    | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 273    | 266    | 277    | 257    | 280    | 348    |
| Harvested cropland | do.          | 195    | 198    | 197    | 188    | 190    | 234    |
| Irrigated land     | No. of acres | 20,158 | 17,331 | 16,753 | 18,512 | 18,850 | 24,178 |
| Harvested cropland | do.          | 19,566 | 17,012 | 16,588 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Plymouth | Bristol | Barnstable | Middlesex | Franklin |
|------------------------|--------------|--------|----------|---------|------------|-----------|----------|
| Irrigated land         | No. of farms | 1,316  | 465      | 136     | 112        | 129       | 47       |
| Irrigated land         | No. of acres | 20,158 | 11,028   | 1,699   | 1,265      | 1,253     | 941      |
| Major irrigated crops: |              |        |          |         |            |           |          |
| Berries                | do.          | 12,499 | 10,586   | 391     | 934        | 19        | 39       |
| Vegetables             | do.          | 4,750  | 187      | 821     | 228        | 861       | 446      |
| Hay                    | do.          | 339    | 78       | NA      | NA         | 0         | 0        |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 346,530   | 205,677 | 399,533   | 275,900 | 330,201      | 188,243 |
| Machinery and equipment        | 32,039    | 28,429  | 51,375    | 42,250  | 26,071       | 24,997  |
| Farm products sold             | 54,772    | 52,108  | 134,018   | 102,411 | 33,489       | 40,678  |
| Crops, nursery, and greenhouse | 56,507    | 42,769  | 136,132   | 102,207 | 16,521       | 17,072  |
| Livestock and poultry          | 42,500    | 48,901  | 14,440    | 12,690  | 44,281       | 50,804  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 2,321     | 2,179   | 2,902     | 2,342   | 2,005        | 2,112   |
| Other agricultural chemicals   | 2,418     | 1,989   | 3,813     | 2,965   | 1,412        | 1,417   |
| Energy and petroleum products  | 3,072     | 4,311   | 6,047     | 8,703   | 2,127        | 3,224   |
| Hired labor                    | 30,471    | 17,873  | 50,374    | 33,812  | 17,774       | 13,019  |
| Contract labor                 | 7,713     | 6,070   | 12,874    | 7,830   | 3,908        | 4,165   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 01, New England

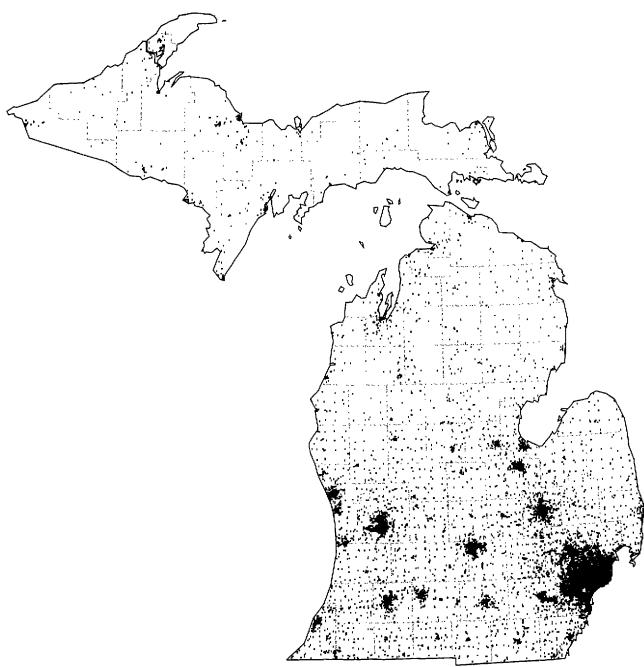
| Item                          | 1988          |        |         | 1984           |        |         |
|-------------------------------|---------------|--------|---------|----------------|--------|---------|
|                               | Farms         | Acres  | AF/acre | Farms          | Acres  | AF/acre |
| <i>Number</i>                 |               |        |         |                |        |         |
| Methods:                      |               |        |         |                |        |         |
| All sprinkler systems         | 967           | 24,233 | 0.8     | 886            | 24,127 | 1.1     |
| Center pivot                  | 611           | 11,411 | 1.3     | 196            | 5,039  | 1.1     |
| Mechanical move               | 13            | 1,046  | 0.3     | 36             | 2,548  | 0.4     |
| Hand move                     | 95            | 2,325  | 0.3     | 373            | 6,670  | 0.5     |
| Solid set and permanent       | 258           | 9,421  | 0.5     | 335            | 9,870  | 1.7     |
| All gravity systems           | 188           | 11,714 | NA      | 87             | 2,683  | 1.5     |
| Gated pipe                    | 23            | 391    | NA      | 6              | 174    | NA      |
| Ditch with siphon tube        | 26            | 2,928  | NA      | 41             | 1,455  | 1.5     |
| Flooding                      | 139           | 8,395  | NA      | 44             | 1,054  | 1.2     |
| Drip or trickle               | 0             | 0      | 0.0     | 75             | 679    | 0.6     |
| Subirrigation                 | 0             | 0      | 0.0     | 0              | 0      | 0.0     |
| Sources:                      |               |        |         |                |        |         |
| Wells                         | 324           | 3,698  | 0.5     | 178            | 2,966  | 0.9     |
| Onfarm surface sources        | 844           | 21,566 | 3.9     | 731            | 21,261 | 1.0     |
| Off-farm water suppliers      | 26            | 102    | NA      | 76             | 869    | 0.5     |
|                               | <i>Number</i> |        |         | <i>\$/acre</i> |        |         |
| Onfarm energy use for pumping | 942           | 24,312 | 48      | 789            | 22,988 | 54      |
| Electricity                   | 273           | 5,958  | 68      | 279            | 5,612  | 94      |
| Natural gas                   | 0             | 0      | 0       | 9              | 174    | 87      |
| LP gas, propane, butane       | 310           | 7,418  | 53      | 147            | 6,203  | 51      |
| Diesel fuel                   | 130           | 6,599  | 35      | 190            | 6,392  | 29      |
| Gasoline and gasohol          | 444           | 4,337  | 29      | 379            | 4,607  | 44      |
| Off-farm water supply         | 26            | 102    | 84      | 76             | 869    | 36      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 14,488             | 6,287 | 5,412 | 56                | 47   | 47   |
| Irrigated cropland | 41,747             | NR    | NR    | 75                | NR   | NR   |
| Grazing land       | 8,539              | 2,136 | 2,543 | 18                | 16   | 18   |

# Michigan

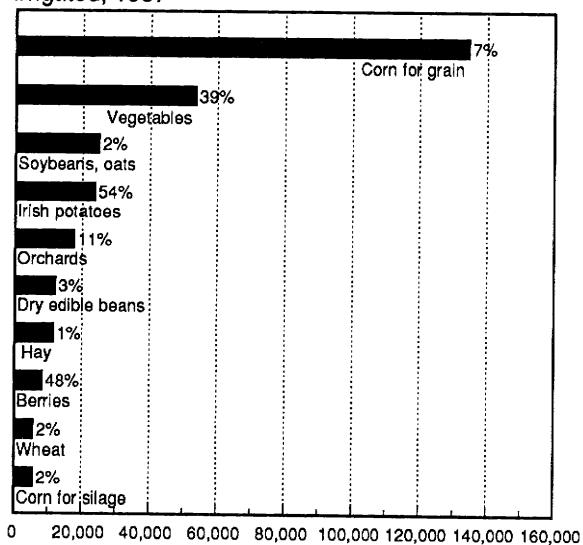
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share |
|---------------------|---------------------------|----------------|---------------------|
|                     |                           |                | Percent             |
| <b>Sources:</b>     |                           |                |                     |
| Surface             | 12.1                      | 95             | 1                   |
| Ground              | 0.7                       | 5              | 19                  |
| Total               | 12.8                      | 100            | 2                   |
| <b>Agriculture:</b> |                           |                |                     |
| <b>Sources—</b>     |                           | <i>T.a.f.</i>  |                     |
| Surface             | 139.2                     | 53             | NA                  |
| Ground              | 124.0                     | 47             | NA                  |
| Total               | 263.2                     | 100            | NA                  |
| <b>Use—</b>         |                           |                |                     |
| Irrigation          | 235.2                     | 89             | NA                  |
| Other farm uses     | 28.0                      | 11             | NA                  |
| <b>Disposition—</b> |                           |                |                     |
| Consumptive use     | 259.8                     | 99             | NA                  |
| Return flow         | 3.4                       | 1              | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Michigan

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974   | 1969   | 1964   |
|--------------------|--------------|---------|---------|---------|--------|--------|--------|
| Total cropland     | No. of farms | 48,653  | 56,321  | 59,080  | 62,914 | 75,656 | 91,560 |
| Harvested cropland | do.          | 46,017  | 53,738  | 57,294  | 60,836 | 70,605 | 87,947 |
| Irrigated land     | do.          | 3,755   | 3,179   | 3,157   | 2,036  | 2,150  | 2,041  |
| Harvested cropland | do.          | 3,684   | 3,150   | 3,101   | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 8,181   | 8,458   | 8,382   | 8,005  | 8,580  | 9,455  |
| Harvested cropland | do.          | 6,172   | 7,256   | 6,774   | 6,318  | 5,502  | 6,738  |
| Irrigated land     | No. of acres | 314,953 | 285,983 | 225,928 | 96,839 | 77,097 | 48,991 |
| Harvested cropland | do.          | 312,073 | 284,047 | 222,666 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | St. Joseph | Montcalm | Van Buren | Branch | Kalamazoo |
|------------------------|--------------|---------|------------|----------|-----------|--------|-----------|
| Irrigated land         | No. of farms | 3,755   | 229        | 142      | 174       | 135    | 146       |
| Irrigated land         | No. of acres | 314,953 | 58,989     | 28,987   | 23,763    | 22,965 | 15,162    |
| Major irrigated crops: |              |         |            |          |           |        |           |
| Corn                   | do.          | 134,704 | 44,080     | 8,062    | 4,748     | 15,138 | 9,810     |
| Vegetables             | do.          | 53,780  | 812        | 2,273    | 11,007    | 427    | 1,738     |
| Soybeans for beans     | do.          | 24,078  | 9,957      | NA       | 661       | 4,017  | 2,271     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 196,065   | 228,238 | 394,473   | 469,148 | 180,836      | 213,823 |
| Machinery and equipment        | 45,954    | 45,711  | 100,147   | 99,166  | 41,787       | 42,506  |
| Farm products sold             | 49,736    | 44,123  | 170,754   | 166,209 | 40,152       | 37,128  |
| Crops, nursery, and greenhouse | 34,517    | 30,983  | 141,174   | 135,553 | 22,999       | 23,115  |
| Livestock and poultry          | 49,667    | 39,787  | 146,550   | 129,516 | 46,087       | 37,224  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 5,215     | 5,629   | 10,165    | 12,062  | 4,719        | 5,138   |
| Other agricultural chemicals   | 3,380     | 3,044   | 9,807     | 9,001   | 2,697        | 2,518   |
| Energy and petroleum products  | 3,468     | 3,911   | 11,080    | 13,221  | 2,863        | 3,352   |
| Hired labor                    | 13,370    | 8,640   | 49,342    | 33,850  | 7,880        | 5,642   |
| Contract labor                 | 5,962     | 5,755   | 17,223    | 20,173  | 3,913        | 3,442   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 04, Great Lakes

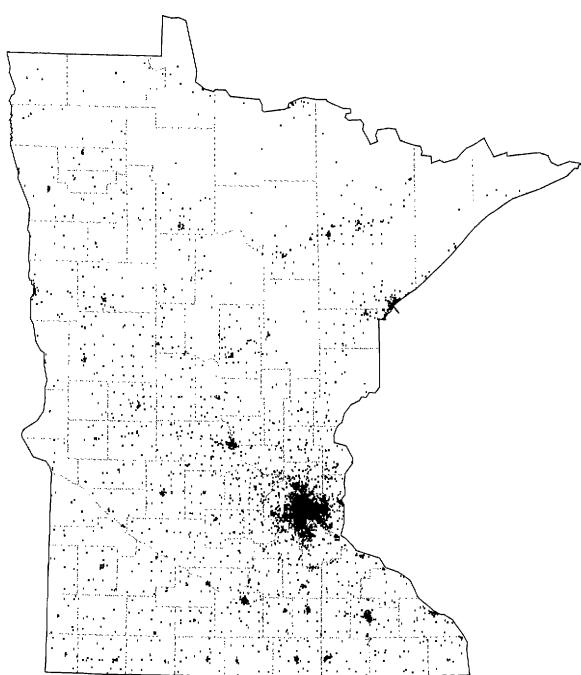
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 2,967 | 450,551 | 0.7            | 2,883         | 435,517 | 0.7     |
| Center pivot                  | 1,214 | 238,305 | 0.8            | 970           | 217,712 | 0.9     |
| Mechanical move               | 1,059 | 154,851 | 0.6            | 1,291         | 167,404 | 0.5     |
| Hand move                     | 1,085 | 42,863  | 0.7            | 926           | 36,130  | 0.5     |
| Solid set and permanent       | 386   | 14,532  | 0.7            | 477           | 14,271  | 0.7     |
| All gravity systems           | 42    | 2,807   | 1.1            | 38            | 2,003   | 0.7     |
| Gated pipe                    | 3     | 800     | 1.4            | 17            | 800     | 0.6     |
| Ditch with siphon tube        | 15    | 632     | NA             | 12            | 420     | NA      |
| Flooding                      | 24    | 1,375   | 1.5            | 9             | 783     | 0.7     |
| Drip or trickle               | 400   | 11,993  | 0.5            | 338           | 11,366  | 0.4     |
| Subirrigation                 | 193   | 10,490  | 1.6            | 37            | 2,330   | 1.5     |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 1,732 | 259,864 | 0.8            | 1,597         | 265,261 | 0.6     |
| Onfarm surface sources        | 1,823 | 195,925 | 0.6            | 1,771         | 175,356 | 0.6     |
| Off-farm water suppliers      | 90    | 18,789  | 0.8            | 71            | 8,518   | 3.8     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 3,045 | 452,647 | 23             | 2,928         | 437,010 | 25      |
| Electricity                   | 1,708 | 226,994 | 28             | 1,522         | 245,612 | 27      |
| Natural gas                   | 7     | 1,790   | 9              | 15            | 2,513   | 16      |
| LP gas, propane, butane       | 131   | 13,697  | 23             | 163           | 15,785  | 14      |
| Diesel fuel                   | 1,291 | 197,583 | 19             | 1,268         | 159,174 | 22      |
| Gasoline and gasohol          | 641   | 12,583  | 23             | 563           | 13,926  | 29      |
| Off-farm water supply         | 90    | 18,789  | 6              | 71            | 8,518   | 3       |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 685                | 761   | 968   | 39                | 52   | 55   |
| Irrigated cropland | 951                | 1,048 | 1,182 | 79                | 82   | 94   |
| Grazing land       | 307                | 324   | 385   | 11                | 15   | 16   |

# Minnesota

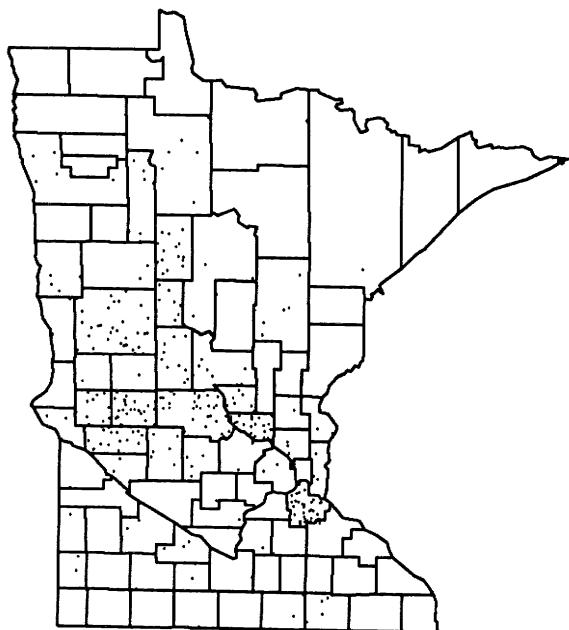
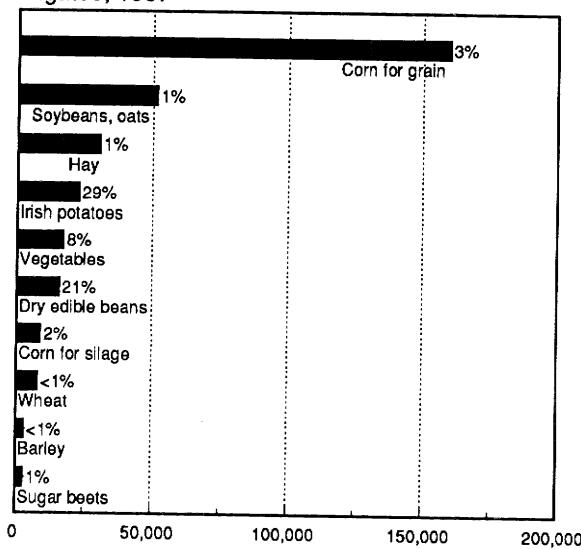
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricult-<br>ure's<br>share |
|---------------------|-------------------------------------|-------------------|-----------------------------|
|                     |                                     |                   | Percent                     |
| <b>Sources:</b>     |                                     |                   |                             |
| Surface             | 2.4                                 | 76                | 4                           |
| Ground              | 0.8                                 | 24                | 27                          |
| Total               | 3.2                                 | 100               | 10                          |
| <b>Agriculture:</b> |                                     |                   |                             |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                             |
| Surface             | 99.3                                | 32                | NA                          |
| Ground              | 211.0                               | 68                | NA                          |
| Total               | 310.3                               | 100               | NA                          |
| <b>Use—</b>         |                                     |                   |                             |
| Irrigation          | 234.1                               | 75                | NA                          |
| Other farm uses     | 76.2                                | 25                | NA                          |
| <b>Disposition—</b> |                                     |                   |                             |
| Consumptive use     | 288.9                               | 93                | NA                          |
| Return flow         | 21.4                                | 7                 | NA                          |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Minnesota

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974   | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|--------|---------|---------|
| Total cropland     | No. of farms | 79,461  | 88,399  | 94,255  | 95,160 | 106,665 | 127,259 |
| Harvested cropland | do.          | 76,537  | 85,948  | 92,257  | 92,776 | 102,876 | 124,424 |
| Irrigated land     | do.          | 2,425   | 2,172   | 2,031   | 853    | 575     | 470     |
| Harvested cropland | do.          | 2,400   | 2,156   | 1,991   | NA     | NA      | NA      |
| Total cropland     | 1,000 acres  | 21,876  | 22,189  | 22,577  | 21,321 | 22,261  | 22,243  |
| Harvested cropland | do.          | 16,635  | 19,723  | 19,123  | 17,896 | 15,649  | 17,515  |
| Irrigated land     | No. of acres | 353,504 | 315,376 | 271,704 | 77,823 | 36,365  | 17,510  |
| Harvested cropland | do.          | 348,500 | 312,667 | 268,405 | NA     | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Dakota | Stearns | Otter Tail | Pope   | Sherburne |
|------------------------|--------------|---------|--------|---------|------------|--------|-----------|
| Irrigated land         | No. of farms | 2,425   | 203    | 214     | 185        | 127    | 121       |
| Irrigated land         | No. of acres | 353,504 | 39,425 | 34,630  | 34,026     | 28,457 | 23,629    |
| Major irrigated crops: |              |         |        |         |            |        |           |
| Corn                   | do.          | 160,134 | 22,033 | 17,530  | 13,969     | 16,433 | 10,128    |
| Soybeans for beans     | do.          | 46,978  | 6,648  | 4,348   | 1,242      | 6,610  | 4,067     |
| Hay                    | do.          | 30,686  | 3,216  | 5,393   | 6,213      | 1,764  | 1,400     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 218,808   | 342,593 | 374,333   | 574,477 | 214,599      | 337,323 |
| Machinery and equipment        | 55,741    | 60,671  | 103,326   | 115,148 | 54,453       | 59,433  |
| Farm products sold             | 66,719    | 62,932  | 143,191   | 146,451 | 64,475       | 60,965  |
| Crops, nursery, and greenhouse | 40,616    | 39,539  | 94,152    | 93,016  | 38,600       | 37,914  |
| Livestock and poultry          | 59,016    | 50,268  | 110,688   | 101,539 | 57,801       | 49,216  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 5,242     | 5,665   | 10,756    | 11,413  | 5,056        | 5,492   |
| Other agricultural chemicals   | 3,480     | 3,568   | 6,385     | 6,457   | 3,381        | 3,482   |
| Energy and petroleum products  | 4,324     | 5,671   | 9,566     | 13,155  | 4,180        | 5,500   |
| Hired labor                    | 6,462     | 5,138   | 22,563    | 18,489  | 5,840        | 4,682   |
| Contract labor                 | 3,018     | 3,059   | 7,425     | 5,724   | 2,769        | 2,922   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 07, Upper Mississippi

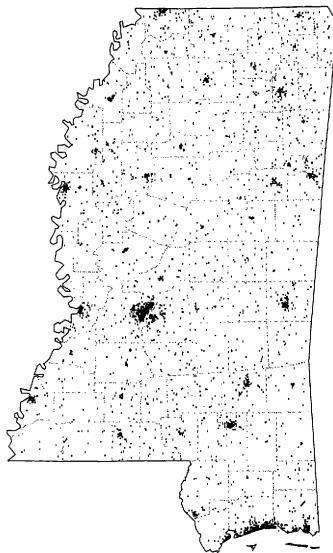
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 3,557 | 755,893 | 0.9            | 2,980         | 593,946 | 0.8     |
| Center pivot                  | 2,316 | 593,502 | 0.9            | 1,897         | 474,203 | 0.8     |
| Mechanical move               | 952   | 114,128 | 0.7            | 909           | 83,062  | 0.5     |
| Hand move                     | 523   | 26,911  | 0.8            | 324           | 19,538  | 1.4     |
| Solid set and permanent       | 311   | 21,352  | 1.7            | 399           | 17,143  | 2.3     |
| All gravity systems           | 278   | 23,542  | 0.8            | 35            | 2,450   | NA      |
| Gated pipe                    | 208   | 12,438  | 0.6            | 35            | 2,450   | NA      |
| Ditch with siphon tube        | 59    | 9,596   | 1.2            | NA            | NA      | NA      |
| Flooding                      | 15    | 1,508   | NA             | NA            | NA      | NA      |
| Drip or trickle               | 149   | 1,963   | 0.5            | 36            | 720     | 0.3     |
| Subirrigation                 | 36    | 8,092   | 1.1            | 1             | D       | NA      |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 2,732 | 638,774 | 0.9            | 2,206         | 482,201 | 0.7     |
| Onfarm surface sources        | 1,260 | 116,957 | 0.9            | 955           | 99,923  | 1.0     |
| Off-farm water suppliers      | 119   | 19,873  | 0.9            | 108           | 2,016   | 1.4     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 3,581 | 748,931 | 22             | 2,936         | 569,361 | 19      |
| Electricity                   | 2,015 | 434,187 | 23             | 1,932         | 392,425 | 17      |
| Natural gas                   | 45    | 7,887   | 17             | NA            | NA      | NA      |
| LP gas, propane, butane       | 198   | 27,022  | 17             | 1,911         | 368,491 | 21      |
| Diesel fuel                   | 1,697 | 275,315 | 20             | 1,055         | 122,097 | 23      |
| Gasoline and gasohol          | 185   | 4,520   | 33             | 208           | 15,039  | 40      |
| Off-farm water supply         | 119   | 19,873  | 5              | 108           | 2,016   | 59      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 594                | 638  | 1,056 | 45                | 57   | 72   |
| Irrigated cropland | 757                | 913  | 1,186 | 81                | 86   | 96   |
| Grazing land       | 180                | 209  | 339   | 13                | 14   | 17   |

# Mississippi

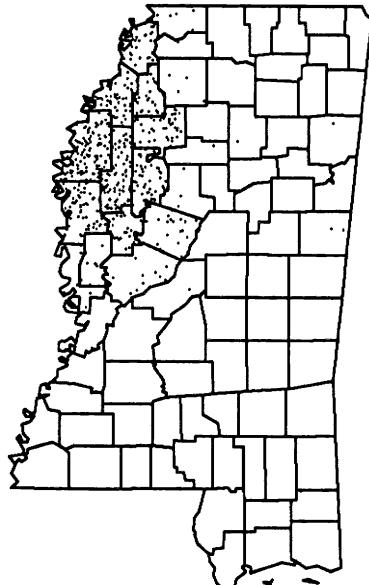
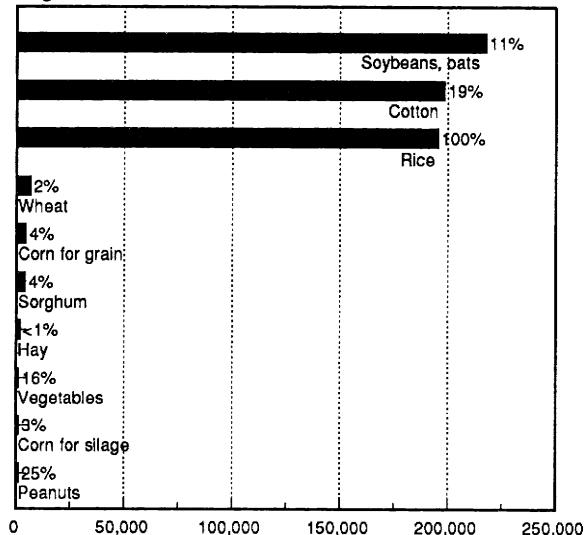
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricul-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|-----------------------------|
|                     |                                     |                   | Percent                     |
| <b>Sources:</b>     |                                     |                   |                             |
| Surface             | 0.8                                 | 32                | 24                          |
| Ground              | 1.8                                 | 68                | 70                          |
| Total               | 2.6                                 | 100               | 55                          |
| <b>Agriculture:</b> |                                     |                   |                             |
| <b>Sources—</b>     |                                     |                   |                             |
| Surface             | 0.2                                 | 14                | NA                          |
| Ground              | 1.2                                 | 86                | NA                          |
| Total               | 1.4                                 | 100               | NA                          |
| <b>Use—</b>         |                                     |                   |                             |
| Irrigation          | 1.0                                 | 70                | NA                          |
| Other farm uses     | 0.4                                 | 30                | NA                          |
| <b>Disposition—</b> |                                     |                   |                             |
| Consumptive use     | 0.5                                 | 38                | NA                          |
| Return flow         | 0.9                                 | 62                | NA                          |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Mississippi

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 29,785  | 37,476  | 40,373  | 49,530  | 66,853  | 96,998  |
| Harvested cropland | do.          | 24,305  | 31,122  | 34,189  | 40,007  | 53,266  | 88,229  |
| Irrigated land     | do.          | 2,012   | 1,462   | 1,139   | 673     | 987     | 857     |
| Harvested cropland | do.          | 1,936   | 1,438   | 1,075   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 6,748   | 7,745   | 8,119   | 8,040   | 8,189   | 6,565   |
| Harvested cropland | do.          | 4,273   | 5,800   | 5,849   | 4,793   | 4,752   | 4,400   |
| Irrigated land     | No. of acres | 636,842 | 430,901 | 308,694 | 161,611 | 149,920 | 123,398 |
| Harvested cropland | do.          | 632,791 | 429,447 | 305,481 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Bolivar | Sunflower | Washington | Coahoma | Leflore |
|------------------------|--------------|---------|---------|-----------|------------|---------|---------|
| Irrigated land         | No. of farms | 2,012   | 269     | 234       | 157        | 100     | 112     |
| Irrigated land         | No. of acres | 636,842 | 137,385 | 90,260    | 66,616     | 55,557  | 50,540  |
| Major irrigated crops: |              |         |         |           |            |         |         |
| Soybeans for beans     | do.          | 217,827 | 61,420  | 21,438    | 23,749     | 22,110  | 17,337  |
| Cotton                 | do.          | 198,549 | 16,576  | 38,689    | 15,175     | 18,804  | 19,308  |
| Rice                   | do.          | 195,505 | 58,068  | 28,604    | 26,251     | 11,213  | 13,508  |

### Average value per farm

| Item                           | All farms |         | Irrigated |           | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|-----------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982      | 1987         | 1982    |
| Dollars                        |           |         |           |           |              |         |
| Land and buildings             | 215,209   | 257,819 | 852,547   | 1,321,167 | 176,795      | 219,167 |
| Machinery and equipment        | 34,900    | 35,083  | 136,307   | 173,264   | 28,778       | 30,057  |
| Farm products sold             | 54,672    | 45,231  | 243,260   | 271,097   | 42,838       | 37,168  |
| Crops, nursery, and greenhouse | 69,499    | 64,670  | 245,417   | 276,174   | 41,222       | 46,660  |
| Livestock and poultry          | 38,812    | 26,433  | 102,002   | 56,411    | 37,715       | 26,073  |
| Selected production expenses:  |           |         |           |           |              |         |
| Commercial fertilizers         | 4,025     | 4,089   | 14,938    | 15,050    | 3,095        | 3,529   |
| Other agricultural chemicals   | 7,857     | 9,606   | 33,755    | 33,339    | 4,742        | 7,336   |
| Energy and petroleum products  | 3,272     | 3,896   | 17,971    | 28,063    | 2,360        | 3,011   |
| Hired labor                    | 10,888    | 9,148   | 37,417    | 36,413    | 7,491        | 6,925   |
| Contract labor                 | 3,419     | 2,745   | 7,229     | 11,223    | 2,876        | 2,204   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 08, Lower Mississippi

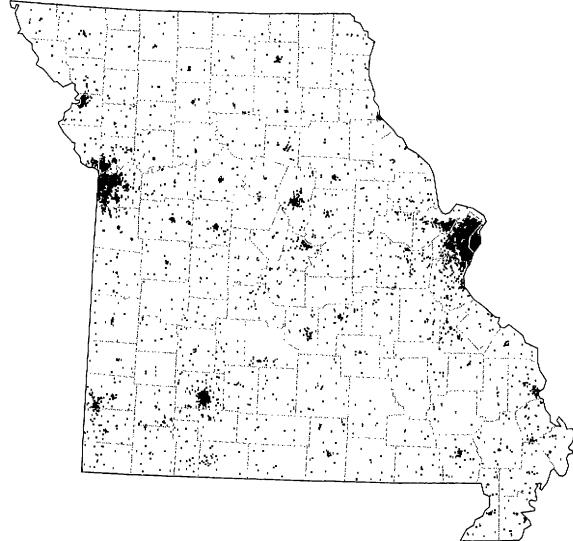
| Item                          | 1988  |           |         | 1984   |           |         |
|-------------------------------|-------|-----------|---------|--------|-----------|---------|
|                               | Farms | Acres     | AF/acre | Farms  | Acres     | AF/acre |
| Number                        |       |           |         |        |           |         |
| Methods:                      |       |           |         |        |           |         |
| All sprinkler systems         | 1,977 | 771,968   | 0.7     | 1,439  | 426,219   | 0.8     |
| Center pivot                  | 1,573 | 628,087   | 0.7     | 985    | 319,232   | 0.8     |
| Mechanical move               | 269   | 56,412    | 0.3     | 163    | 33,426    | 0.7     |
| Hand move                     | 50    | 15,102    | NA      | 100    | 4,885     | 0.2     |
| Solid set and permanent       | 244   | 72,367    | 0.8     | 239    | 68,676    | 1.0     |
| All gravity systems           | 8,614 | 3,495,595 | 1.5     | 7,145  | 2,586,918 | 1.4     |
| Gated pipe                    | 3,125 | 1,046,177 | 1.2     | 2,027  | 528,037   | 0.9     |
| Ditch with siphon tube        | 1,433 | 326,262   | 2.0     | 1,258  | 310,265   | 1.6     |
| Flooding                      | 6,030 | 2,123,156 | 1.6     | 5,020  | 1,748,616 | 1.6     |
| Drip or trickle               | 466   | 12,395    | 1.4     | 196    | 3,502     | 0.5     |
| Subirrigation                 | 137   | 53,965    | 1.2     | 104    | 17,220    | 2.2     |
| Sources:                      |       |           |         |        |           |         |
| Wells                         | 8,508 | 3,763,587 | 1.3     | 7,172  | 2,596,689 | 1.3     |
| Onfarm surface sources        | 2,134 | 524,572   | 1.8     | 1,680  | 395,971   | 1.7     |
| Off-farm water suppliers      | 1,057 | 72,366    | 0.9     | 144    | 29,655    | 2.0     |
| Number                        |       |           | \$/acre | Number |           |         |
| Onfarm energy use for pumping | 9,312 | 4,259,523 | 16      | 8,058  | 2,900,523 | 20      |
| Electricity                   | 4,972 | 1,488,702 | 22      | 4,631  | 1,246,185 | 22      |
| Natural gas                   | 1,154 | 223,243   | 22      | 1,033  | 191,980   | 25      |
| LP gas, propane, butane       | 2,228 | 498,399   | 13      | 1,911  | 368,491   | 21      |
| Diesel fuel                   | 6,017 | 2,042,815 | 13      | 4,059  | 1,091,072 | 16      |
| Gasoline and gasohol          | 85    | 6,364     | 7       | 119    | 2,795     | 4       |
| Off-farm water supply         | 1,057 | 72,366    | 11      | 144    | 29,655    | 45      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| Dollars            |                    |       |       |                   |      |      |
| Dry cropland       | 591                | 654   | 837   | 32                | 35   | 46   |
| Irrigated cropland | 935                | 1,028 | 1,459 | 69                | 64   | 65   |
| Grazing land       | 418                | 460   | 578   | 13                | 11   | 13   |

# Missouri

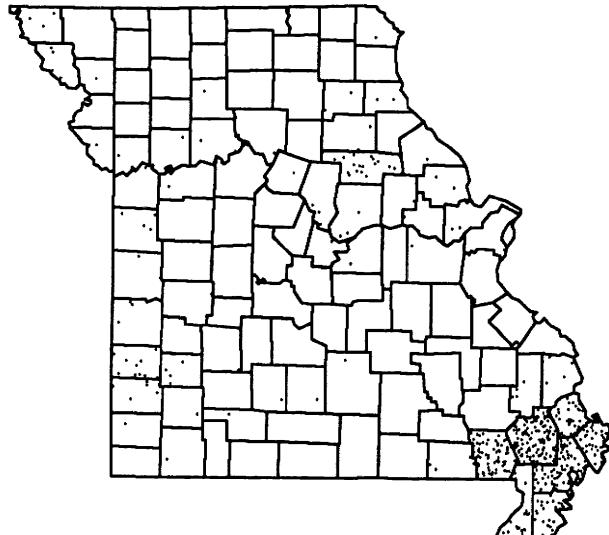
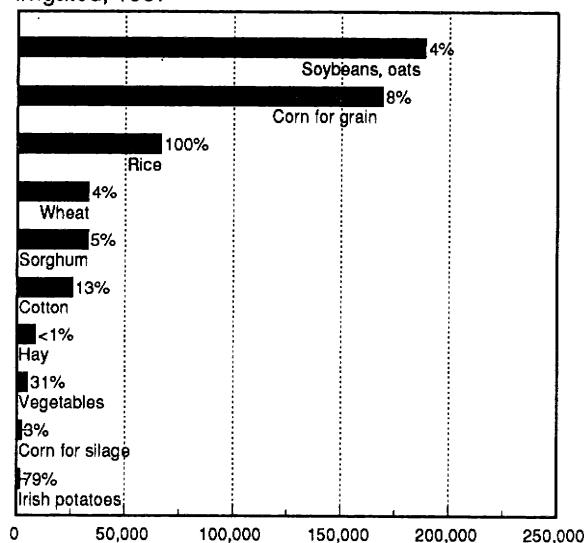
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 6.1                                 | 90                | 1                      |
| Ground              | 0.7                                 | 10                | 46                     |
| Total               | 6.8                                 | 100               | 6                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 0.1                                 | 15                | NA                     |
| Ground              | 0.3                                 | 85                | NA                     |
| Total               | 0.4                                 | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 0.3                                 | 88                | NA                     |
| Other farm uses     | 0.1                                 | 12                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 0.3                                 | 75                | NA                     |
| Return flow         | 0.1                                 | 25                | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Missouri

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 93,434  | 100,593 | 105,339 | 107,673 | 127,337 | 134,608 |
| Harvested cropland | do.          | 80,396  | 86,837  | 92,385  | 93,357  | 105,853 | 119,569 |
| Irrigated land     | do.          | 2,823   | 2,037   | 2,136   | 1,310   | 1,386   | 822     |
| Harvested cropland | do.          | 2,754   | 2,004   | 2,069   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 19,378  | 19,376  | 20,283  | 19,339  | 20,955  | 17,960  |
| Harvested cropland | do.          | 11,655  | 12,725  | 12,434  | 11,765  | 10,036  | 11,068  |
| Irrigated land     | No. of acres | 534,795 | 402,914 | 320,387 | 150,446 | 155,862 | 59,426  |
| Harvested cropland | do.          | 529,342 | 400,668 | 316,607 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Stoddard | New Madrid | Butler | Mississippi | Scott  |
|------------------------|--------------|---------|----------|------------|--------|-------------|--------|
| Irrigated land         | No. of farms | 2,823   | 376      | 256        | 304    | 101         | 106    |
| Irrigated land         | No. of acres | 534,795 | 139,272  | 81,289     | 74,315 | 36,641      | 30,135 |
| Major irrigated crops: |              |         |          |            |        |             |        |
| Soybeans for beans     | do.          | 188,785 | 46,140   | 31,506     | 21,449 | 14,948      | 10,677 |
| Corn                   | do.          | 169,151 | 50,693   | 27,673     | 5,695  | 14,009      | 12,465 |
| Rice                   | do.          | 66,666  | 21,546   | 1,615      | 37,858 | NA          | NA     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 175,612   | 223,247 | 552,473   | 798,552 | 165,338      | 212,936 |
| Machinery and equipment        | 28,432    | 30,450  | 88,881    | 108,441 | 26,783       | 29,050  |
| Farm products sold             | 34,353    | 32,076  | 132,918   | 144,696 | 31,659       | 29,998  |
| Crops, nursery, and greenhouse | 27,974    | 27,384  | 120,451   | 129,772 | 23,070       | 23,770  |
| Livestock and poultry          | 26,889    | 23,201  | 64,648    | 61,461  | 26,464       | 22,884  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,599     | 4,048   | 12,419    | 15,512  | 3,238        | 3,704   |
| Other agricultural chemicals   | 2,732     | 2,911   | 8,027     | 8,887   | 2,444        | 2,677   |
| Energy and petroleum products  | 2,291     | 2,750   | 9,359     | 13,593  | 2,089        | 2,554   |
| Hired labor                    | 5,094     | 4,355   | 22,431    | 20,166  | 4,105        | 3,678   |
| Contract labor                 | 2,133     | 1,844   | 8,707     | 3,385   | 1,744        | 1,782   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 08, Lower Mississippi

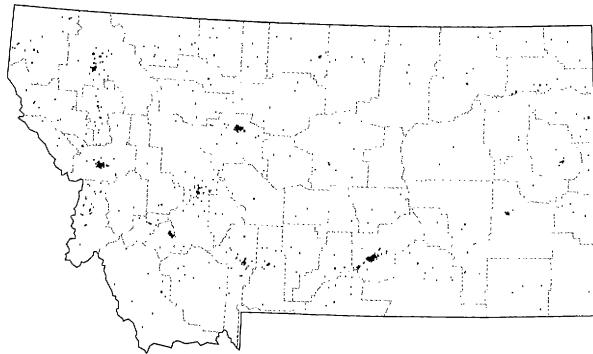
| Item                          | 1988  |           |                | 1984          |           |         |
|-------------------------------|-------|-----------|----------------|---------------|-----------|---------|
|                               | Farms | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |       |           |                |               |           |         |
| Methods:                      |       |           |                |               |           |         |
| All sprinkler systems         | 1,977 | 771,968   | 0.7            | 1,439         | 426,219   | 0.8     |
| Center pivot                  | 1,573 | 628,087   | 0.7            | 985           | 319,232   | 0.8     |
| Mechanical move               | 269   | 56,412    | 0.3            | 163           | 33,426    | 0.7     |
| Hand move                     | 50    | 15,102    | NA             | 100           | 4,885     | 0.2     |
| Solid set and permanent       | 244   | 72,367    | 0.8            | 239           | 68,676    | 1.0     |
| All gravity systems           | 8,614 | 3,495,595 | 1.5            | 7,145         | 2,586,918 | 1.4     |
| Gated pipe                    | 3,125 | 1,046,177 | 1.2            | 2,027         | 528,037   | 0.9     |
| Ditch with siphon tube        | 1,433 | 326,262   | 2.0            | 1,258         | 310,265   | 1.6     |
| Flooding                      | 6,030 | 2,123,156 | 1.6            | 5,020         | 1,748,616 | 1.6     |
| Drip or trickle               | 466   | 12,395    | 1.4            | 196           | 3,502     | 0.5     |
| Subirrigation                 | 137   | 53,965    | 1.2            | 104           | 17,220    | 2.2     |
| Sources:                      |       |           |                |               |           |         |
| Wells                         | 8,508 | 3,763,587 | 1.3            | 7,172         | 2,596,689 | 1.3     |
| Onfarm surface sources        | 2,134 | 524,572   | 1.8            | 1,680         | 395,971   | 1.7     |
| Off-farm water suppliers      | 1,057 | 72,366    | 0.9            | 144           | 29,655    | 2.0     |
| <i>Number</i>                 |       |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 9,312 | 4,259,523 | 16             | 8,058         | 2,900,523 | 20      |
| Electricity                   | 4,972 | 1,488,702 | 22             | 4,631         | 1,246,185 | 22      |
| Natural gas                   | 1,154 | 223,243   | 22             | 1,033         | 191,980   | 25      |
| LP gas, propane, butane       | 2,228 | 498,399   | 13             | 1,911         | 368,491   | 21      |
| Diesel fuel                   | 6,017 | 2,042,815 | 13             | 4,059         | 1,091,072 | 16      |
| Gasoline and gasohol          | 85    | 6,364     | 7              | 119           | 2,795     | 4       |
| Off-farm water supply         | 1,057 | 72,366    | 11             | 144           | 29,655    | 45      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 589                | 596   | 840   | 50                | 52   | 63   |
| Irrigated cropland | 778                | 1,044 | 1,527 | 83                | 84   | 94   |
| Grazing land       | 339                | 343   | 485   | 19                | 19   | 22   |

# Montana

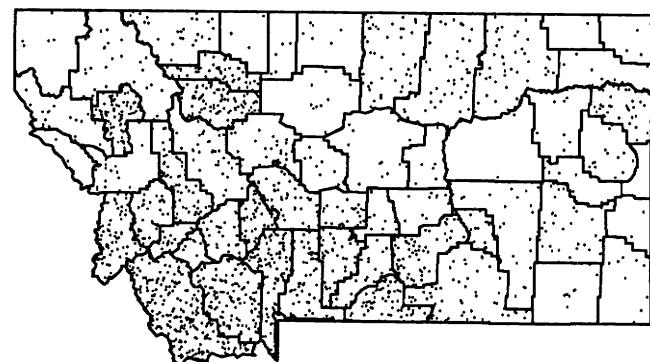
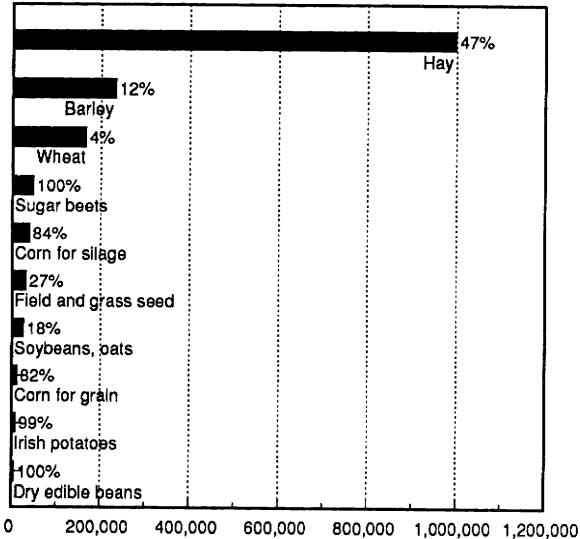
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |
|---------------------|------------------------------|-------------------|------------------------|
|                     |                              |                   | Percent                |
| <b>Sources:</b>     |                              |                   |                        |
| Surface             | 9.5                          | 98                | 98                     |
| Ground              | 0.2                          | 2                 | 47                     |
| Total               | 9.7                          | 100               | 97                     |
| <b>Agriculture:</b> |                              |                   |                        |
| <b>Sources—</b>     |                              |                   |                        |
| Surface             | 9.3                          | 99                | NA                     |
| Ground              | 0.1                          | 1                 | NA                     |
| Total               | 9.4                          | 100               | NA                     |
| <b>Use—</b>         |                              |                   |                        |
| Irrigation          | 9.3                          | 99                | NA                     |
| Other farm uses     | 0.1                          | 1                 | NA                     |
| <b>Disposition—</b> |                              |                   |                        |
| Consumptive use     | 2.0                          | 22                | NA                     |
| Return flow         | 7.4                          | 78                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Montana

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 21,064    | 20,717    | 21,437    | 21,368    | 22,709    | 25,212    |
| Harvested cropland | do.          | 19,267    | 19,279    | 20,313    | 20,376    | 21,404    | 24,308    |
| Irrigated land     | do.          | 9,520     | 9,226     | 9,384     | 8,714     | 9,197     | 10,843    |
| Harvested cropland | do.          | 8,495     | 8,282     | 8,532     | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 17,830    | 16,452    | 16,233    | 15,446    | 16,109    | 15,388    |
| Harvested cropland | do.          | 9,128     | 9,366     | 8,741     | 8,427     | 7,937     | 7,813     |
| Irrigated land     | No. of acres | 1,996,882 | 2,023,003 | 2,069,531 | 1,759,040 | 1,841,421 | 1,893,360 |
| Harvested cropland | do.          | 1,541,977 | 1,537,067 | 1,500,981 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Beaverhead | Madison | Gallatin | Teton  | Lake   |
|------------------------|--------------|-----------|------------|---------|----------|--------|--------|
| Irrigated land         | No. of farms | 9,520     | 288        | 348     | 477      | 312    | 747    |
| Irrigated land         | No. of acres | 1,996,882 | 247,743    | 124,831 | 99,806   | 99,509 | 90,202 |
| Major irrigated crops: |              |           |            |         |          |        |        |
| Hay                    | do.          | 999,141   | 126,899    | 85,653  | 47,492   | 29,460 | 43,104 |
| Barley for grain       | do.          | 233,324   | 7,857      | 8,205   | 19,650   | 38,125 | 6,626  |
| Wheat for grain        | do.          | 166,759   | 4,559      | 3,332   | 11,371   | 14,271 | 5,656  |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 505,526   | 677,995 | 597,565   | 772,626 | 447,824      | 618,869 |
| Machinery and equipment        | 60,754    | 66,632  | 60,356    | 66,924  | 61,004       | 66,451  |
| Farm products sold             | 62,980    | 65,641  | 78,669    | 75,333  | 53,054       | 59,407  |
| Crops, nursery, and greenhouse | 43,841    | 53,361  | 38,760    | 44,277  | 47,189       | 58,957  |
| Livestock and poultry          | 53,628    | 45,880  | 71,639    | 60,197  | 39,910       | 34,631  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 6,475     | 7,267   | 5,366     | 6,135   | 7,494        | 8,307   |
| Other agricultural chemicals   | 4,236     | 3,768   | 3,067     | 2,840   | 4,972        | 4,321   |
| Energy and petroleum products  | 5,365     | 6,717   | 5,917     | 7,390   | 5,012        | 6,300   |
| Hired labor                    | 10,997    | 8,275   | 14,308    | 10,110  | 8,371        | 6,786   |
| Contract labor                 | 2,870     | 2,899   | 3,049     | 3,012   | 2,696        | 2,792   |

### Irrigation methods, water sources, and pumping energy use

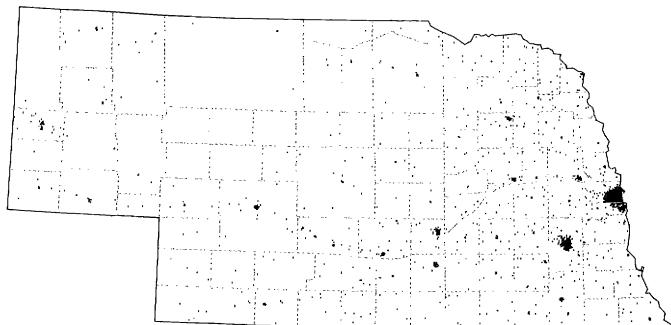
| Item                          | 1988  |           |                | 1984          |           |         |
|-------------------------------|-------|-----------|----------------|---------------|-----------|---------|
|                               | Farms | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |       |           |                |               |           |         |
| Methods:                      |       |           |                |               |           |         |
| All sprinkler systems         | 3,294 | 598,806   | 1.4            | 3,964         | 565,096   | 1.5     |
| Center pivot                  | 542   | 176,191   | 0.9            | 427           | 143,227   | 1.6     |
| Mechanical move               | 1,407 | 257,254   | 1.8            | 1,740         | 249,245   | 0.9     |
| Hand move                     | 2,254 | 161,041   | 2.0            | 2,736         | 157,677   | 1.5     |
| Solid set and permanent       | 39    | 4,320     | NA             | 177           | 14,947    | 0.8     |
| All gravity systems           | 5,397 | 1,242,799 | 1.6            | 5,358         | 1,298,264 | 1.8     |
| Gated pipe                    | 1,071 | 97,587    | 1.5            | 658           | 82,505    | 1.6     |
| Ditch with siphon tube        | 3,738 | 668,299   | 1.6            | 3,144         | 635,675   | 1.9     |
| Flooding                      | 1,513 | 476,913   | 1.4            | 2,134         | 580,084   | 1.9     |
| Drip or trickle               | 102   | 20,945    | 0.2            | 0             | 0         | NA      |
| Subirrigation                 | 299   | 51,894    | 1.0            | 315           | 64,362    | 1.7     |
| Sources:                      |       |           |                |               |           |         |
| Wells                         | 899   | 130,145   | 1.1            | 534           | 56,024    | 1.0     |
| Onfarm surface sources        | 1,699 | 583,543   | 1.5            | 2,882         | 766,567   | 2.3     |
| Off-farm water suppliers      | 5,841 | 1,217,090 | 1.6            | 4,967         | 1,083,423 | 1.5     |
| <i>Number</i>                 |       |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 3,232 | 628,777   | 15             | 3,232         | 524,962   | 13      |
| Electricity                   | 2,772 | 579,836   | 15             | 2,747         | 454,378   | 13      |
| Natural gas                   | 38    | 4,465     | 18             | 61            | 23,624    | 6       |
| LP gas, propane, butane       | 40    | 7,022     | 8              | 41            | 4,245     | 24      |
| Diesel fuel                   | 413   | 26,832    | 12             | 502           | 35,510    | 13      |
| Gasoline and gasohol          | 257   | 10,622    | 3              | 101           | 7,205     | 7       |
| Off-farm water supply         | 5,841 | 1,217,090 | 10             | 4,967         | 1,083,423 | 8       |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 255                | 299  | 414   | 20                | 21   | 21   |
| Irrigated cropland | 693                | 801  | 1,149 | 50                | 53   | 57   |
| Grazing land       | 76                 | 100  | 146   | 3                 | 5    | 3    |

# Nebraska

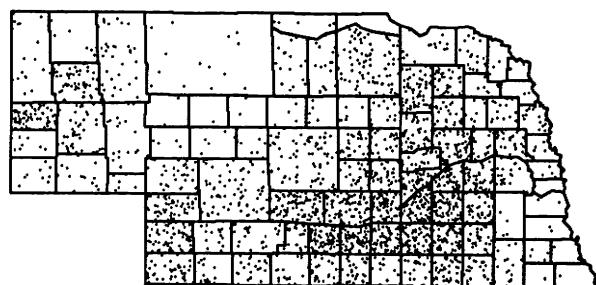
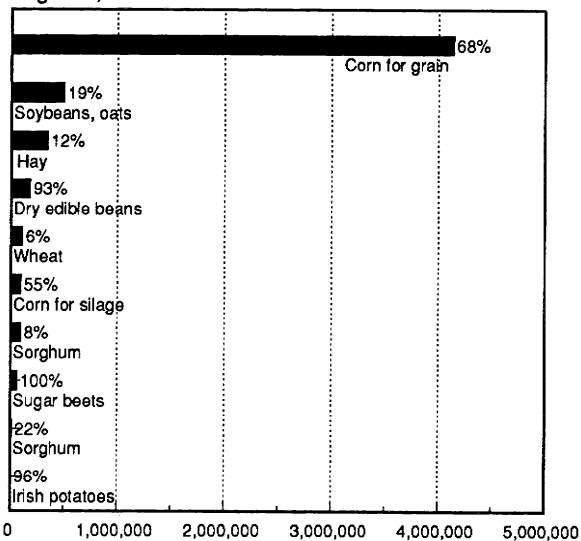
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 5.0                                 | 44                | 47                     |
| Ground              | 6.3                                 | 56                | 95                     |
| Total               | 11.2                                | 100               | 74                     |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 2.3                                 | 28                | NA                     |
| Ground              | 5.9                                 | 72                | NA                     |
| Total               | 8.2                                 | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 8.2                                 | 99                | NA                     |
| Other farm uses     | 0.1                                 | 1                 | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 5.3                                 | 65                | NA                     |
| Return flow         | 2.9                                 | 35                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 2,000 acres

## Selected Characteristics of Irrigated Farms

Nebraska

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 53,500    | 54,475    | 58,594    | 63,040    | 67,197    | 75,386    |
| Harvested cropland | do.          | 51,175    | 52,497    | 56,644    | 60,660    | 64,669    | 73,758    |
| Irrigated land     | do.          | 22,596    | 22,190    | 23,862    | 20,331    | 19,440    | 18,833    |
| Harvested cropland | do.          | 22,488    | 22,094    | 23,673    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 23,320    | 22,434    | 22,274    | 22,213    | 22,223    | 22,100    |
| Harvested cropland | do.          | 15,276    | 17,076    | 16,372    | 16,309    | 14,023    | 15,229    |
| Irrigated land     | No. of acres | 5,681,835 | 6,039,292 | 5,682,931 | 3,966,930 | 2,857,247 | 2,169,317 |
| Harvested cropland | do.          | 5,561,530 | 5,948,974 | 5,491,725 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Hamilton | Dawson  | Phelps  | York    | Buffalo |
|------------------------|--------------|-----------|----------|---------|---------|---------|---------|
| Irrigated land         | No. of farms | 22,596    | 628      | 656     | 491     | 651     | 752     |
| Irrigated land         | No. of acres | 5,681,835 | 197,490  | 195,082 | 187,427 | 176,233 | 175,190 |
| Major irrigated crops: |              |           |          |         |         |         |         |
| Corn                   | do.          | 4,143,223 | 175,014  | 149,659 | 168,822 | 152,082 | 143,984 |
| Soybeans for beans     | do.          | 487,356   | 14,819   | 17,027  | 8,107   | 16,776  | 20,089  |
| Hay                    | do.          | 346,791   | 1,974    | 16,482  | 4,139   | 844     | 5,901   |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 344,253   | 532,741 | 525,342   | 811,930 | 238,780      | 367,681 |
| Machinery and equipment        | 58,799    | 68,007  | 91,741    | 106,272 | 39,589       | 45,604  |
| Farm products sold             | 110,197   | 109,984 | 174,341   | 185,903 | 71,960       | 65,712  |
| Crops, nursery, and greenhouse | 46,280    | 51,211  | 71,253    | 80,701  | 24,440       | 27,587  |
| Livestock and poultry          | 107,045   | 92,518  | 164,325   | 149,911 | 76,782       | 60,631  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 6,226     | 7,571   | 9,333     | 11,344  | 3,117        | 3,787   |
| Other agricultural chemicals   | 3,439     | 3,778   | 5,120     | 5,189   | 2,005        | 2,395   |
| Energy and petroleum products  | 6,218     | 7,892   | 10,666    | 13,509  | 3,522        | 4,589   |
| Hired labor                    | 10,188    | 7,162   | 13,904    | 10,200  | 6,784        | 4,437   |
| Contract labor                 | 3,368     | 2,923   | 4,052     | 3,247   | 2,573        | 2,577   |

### Irrigation methods, water sources, and pumping energy use

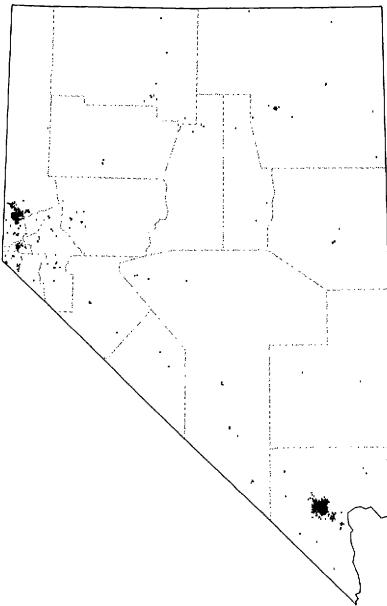
| Item                          | 1988   |           |                | 1984          |           |         |
|-------------------------------|--------|-----------|----------------|---------------|-----------|---------|
|                               | Farms  | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |        |           |                |               |           |         |
| Methods:                      |        |           |                |               |           |         |
| All sprinkler systems         | 12,194 | 3,057,984 | 1.0            | 10,724        | 2,987,744 | 1.0     |
| Center pivot                  | 10,055 | 2,816,185 | 1.0            | 9,419         | 2,778,200 | 1.1     |
| Mechanical move               | 2,497  | 208,306   | 0.8            | 1,780         | 160,084   | 0.5     |
| Hand move                     | 738    | 29,179    | 0.3            | 1,017         | 49,215    | 0.3     |
| Solid set and permanent       | 214    | 4,314     | NA             | 3             | 245       | NA      |
| All gravity systems           | 13,926 | 2,743,550 | 1.3            | 13,766        | 2,814,136 | 1.2     |
| Gated pipe                    | 12,429 | 2,241,950 | 1.3            | 12,143        | 2,242,283 | 1.1     |
| Ditch with siphon tube        | 3,012  | 482,752   | 1.5            | 3,996         | 485,893   | 1.4     |
| Flooding                      | 138    | 18,848    | 0.9            | 391           | 85,960    | 1.0     |
| Drip or trickle               | 0      | 0         | 0.0            | 0             | 0         | NA      |
| Subirrigation                 | 53     | 5,300     | NA             | 393           | 79,690    | NA      |
| Sources:                      |        |           |                |               |           |         |
| Wells                         | 16,935 | 4,901,353 | 1.1            | 172,207       | 5,018,952 | 1.0     |
| Onfarm surface sources        | 2,495  | 169,435   | 0.9            | 1,756         | 162,678   | 1.1     |
| Off-farm water suppliers      | 3,437  | 650,397   | 1.6            | 3,372         | 692,265   | 1.4     |
| <i>Number</i>                 |        |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 18,421 | 5,260,251 | 23             | 172,271       | 5,297,147 | 24      |
| Electricity                   | 10,259 | 2,257,005 | 23             | 9,373         | 2,205,645 | 25      |
| Natural gas                   | 4,503  | 902,552   | 22             | 3,852         | 1,002,163 | 19      |
| LP gas, propane, butane       | 5,545  | 708,645   | 20             | 5,455         | 802,578   | 19      |
| Diesel fuel                   | 7,567  | 1,327,906 | 23             | 7,198         | 1,262,408 | 31      |
| Gasoline and gasohol          | 1,593  | 64,143    | 11             | 744           | 24,353    | 11      |
| Off-farm water supply         | 3,437  | 650,397   | 16             | 3,372         | 692,265   | 15      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 454                | 435  | 711   | 35                | 43   | 53   |
| Irrigated cropland | 859                | 859  | 1,369 | 83                | 87   | 113  |
| Grazing land       | 96                 | 104  | 182   | 6                 | 8    | 12   |

# Nevada

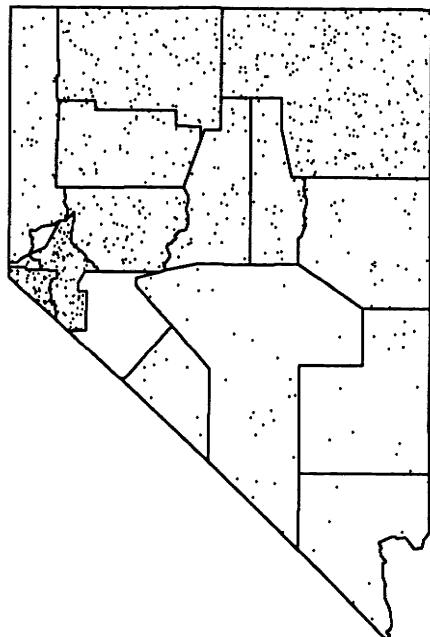
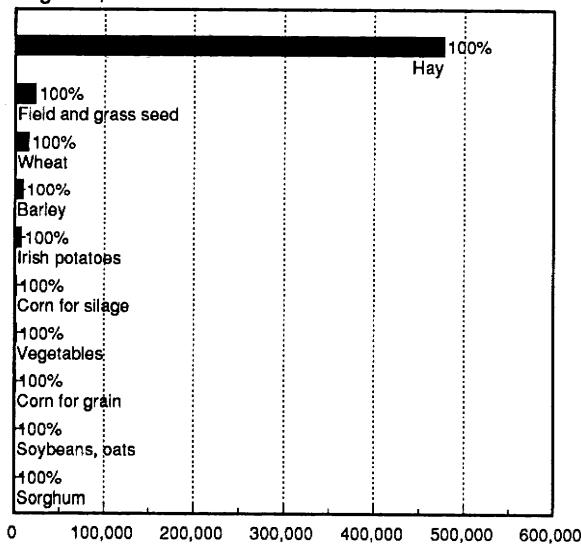
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 3.2                                 | 76                | 93                     |
| Ground              | 1.0                                 | 24                | 83                     |
| Total               | 4.2                                 | 100               | 90                     |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 2.9                                 | 78                | NA                     |
| Ground              | 0.9                                 | 22                | NA                     |
| Total               | 3.8                                 | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 3.7                                 | 99                | NA                     |
| Other farm uses     | 0.1                                 | 1                 | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 2.0                                 | 51                | NA                     |
| Return flow         | 1.8                                 | 49                | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Nevada

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 2,317   | 2,227   | 2,120   | 1,857   | 1,855   | 1,993   |
| Harvested cropland | do.          | 1,884   | 1,895   | 1,855   | 1,665   | 1,648   | 1,854   |
| Irrigated land     | No. of farms | 2,221   | 2,154   | 2,086   | 1,794   | 1,768   | 2,018   |
| Harvested cropland | do.          | 1,883   | 1,895   | 1,855   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 803     | 862     | 829     | 753     | 749     | 774     |
| Harvested cropland | do.          | 526     | 605     | 585     | 551     | 521     | 507     |
| Irrigated land     | No. of acres | 778,977 | 829,761 | 881,151 | 777,510 | 752,696 | 824,511 |
| Harvested cropland | do.          | 524,067 | 602,082 | 585,486 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Elko    | Humboldt | Lyon   | Churchill | Pershing |
|------------------------|--------------|---------|---------|----------|--------|-----------|----------|
| Irrigated land         | No. of farms | 2,221   | 248     | 156      | 279    | 477       | 93       |
| Irrigated land         | No. of acres | 778,977 | 235,188 | 100,972  | 93,218 | 62,539    | 42,796   |
| Major irrigated crops: |              |         |         |          |        |           |          |
| Hay                    | do.          | 477,346 | 164,349 | 64,655   | 48,207 | 38,907    | 23,948   |
| Wheat                  | do.          | 15,052  | NA      | 4,667    | 1,515  | 2,088     | 5,377    |
| Field and grass seeds  | do.          | 12,977  | 0       | 3,553    | 0      | 0         | 7,113    |

### Average value per farm

| Item                           | All farms |         | Irrigated |           | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|-----------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982      | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |           |              |         |
| Land and buildings             | 749,936   | 925,540 | 891,929   | 1,069,729 | 331,906      | 400,389 |
| Machinery and equipment        | 52,474    | 52,928  | 64,218    | 62,283    | 17,642       | 19,470  |
| Farm products sold             | 82,741    | 74,506  | 103,045   | 85,595    | 26,793       | 32,230  |
| Crops, nursery, and greenhouse | 65,813    | 64,005  | 65,813    | 64,005    | 0            | 0       |
| Livestock and poultry          | 77,402    | 63,944  | 95,617    | 71,936    | 32,919       | 38,017  |
| Selected production expenses:  |           |         |           |           |              |         |
| Commercial fertilizers         | 6,901     | 6,512   | 6,985     | 6,621     | 200          | 1,118   |
| Other agricultural chemicals   | 3,960     | 4,860   | 4,310     | 4,916     | 606          | 143     |
| Energy and petroleum products  | 7,577     | 8,523   | 9,079     | 10,261    | 2,520        | 2,308   |
| Hired labor                    | 27,042    | 17,189  | 30,149    | 17,748    | 9,401        | 12,942  |
| Contract labor                 | 6,173     | 5,677   | 6,731     | 6,199     | 2,019        | 1,500   |

### Irrigation methods, water sources, and pumping energy use

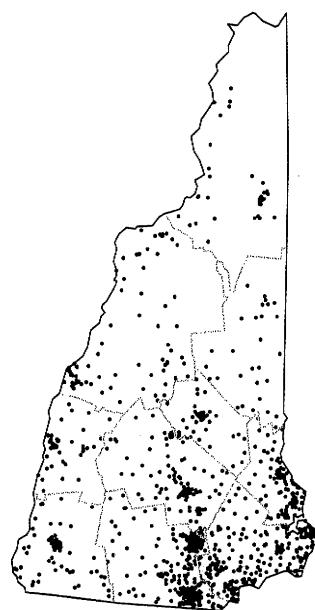
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 521   | 128,948 | 2.6            | 459           | 122,975 | 2.5     |
| Center pivot                  | 249   | 62,389  | 2.4            | 130           | 38,625  | 2.6     |
| Mechanical move               | 290   | 45,849  | 2.5            | 289           | 56,936  | 2.9     |
| Hand move                     | 71    | 8,493   | 3.9            | 157           | 16,793  | 2.6     |
| Solid set and permanent       | 29    | 12,217  | NA             | 41            | 10,621  | 3.5     |
| All gravity systems           | 1,740 | 442,060 | 2.2            | 1,560         | 567,228 | 2.6     |
| Gated pipe                    | 131   | 20,003  | 3.2            | 117           | 20,197  | 3.2     |
| Ditch with siphon tube        | 596   | 158,853 | 2.1            | 781           | 190,168 | 2.7     |
| Flooding                      | 1,117 | 263,204 | 2.2            | 796           | 356,863 | 2.6     |
| Drip or trickle               | 6     | 760     | NA             | 13            | 26      | NA      |
| Subirrigation                 | 30    | 7,917   | 2.0            | 49            | 12,725  | 1.5     |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 725   | 206,294 | 2.6            | 588           | 174,631 | 2.7     |
| Onfarm surface sources        | 423   | 187,107 | 1.5            | 470           | 254,208 | 2.2     |
| Off-farm water suppliers      | 1,128 | 209,811 | 2.4            | 1,008         | 277,134 | 3.0     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 791   | 229,064 | 37             | 703           | 197,467 | 45      |
| Electricity                   | 732   | 206,565 | 37             | 561           | 171,000 | 42      |
| Natural gas                   | NA    | NA      | NA             | 0             | 0       | NA      |
| LP gas, propane, butane       | 6     | 540     | 2              | 0             | 0       | NA      |
| Diesel fuel                   | 79    | 20,479  | 38             | 156           | 25,828  | 64      |
| Gasoline and gasohol          | 16    | 1,480   | 5              | 6             | 639     | 8       |
| Off-farm water supply         | 1,128 | 209,811 | 20             | 1,008         | 277,134 | 12      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 382                | 382   | NR    | 7                 | NR   | NR   |
| Irrigated cropland | 1,050              | 1,126 | 1,251 | 72                | 64   | 63   |
| Grazing land       | 277                | 308   | 454   | 22                | 17   | 20   |

# New Hampshire

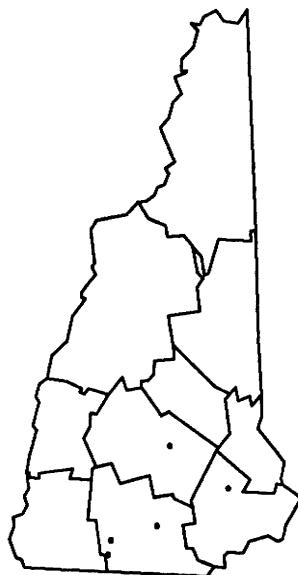
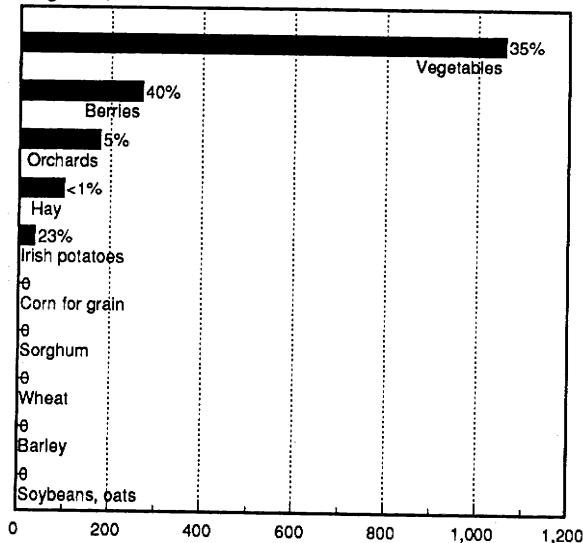
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 0.7                                 | 88                | 0                      |
| Ground              | 0.1                                 | 12                | 1                      |
| Total               | 0.8                                 | 100               | 0                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                        |
| Surface             | 1.4                                 | 69                | NA                     |
| Ground              | 0.6                                 | 31                | NA                     |
| Total               | 2.0                                 | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 0.7                                 | 33                | NA                     |
| Other farm uses     | 1.3                                 | 67                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 0.9                                 | 45                | NA                     |
| Return flow         | 1.1                                 | 55                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

New Hampshire

### Land in farms

| Item               | Unit         | 1987  | 1982  | 1978  | 1974  | 1969  | 1964  |
|--------------------|--------------|-------|-------|-------|-------|-------|-------|
| Total cropland     | No. of farms | 2,255 | 2,493 | 2,367 | 2,273 | 2,635 | 4,303 |
| Harvested cropland | do.          | 2,044 | 2,282 | 2,232 | 2,128 | 2,352 | 3,895 |
| Irrigated land     | do.          | 253   | 176   | 163   | 119   | 93    | 159   |
| Harvested cropland | do.          | 253   | 172   | 160   | NA    | NA    | NA    |
| Total cropland     | 1,000 acres  | 148   | 155   | 173   | 171   | 189   | 254   |
| Harvested cropland | do.          | 107   | 117   | 125   | 118   | 116   | 168   |
| Irrigated land     | No. of acres | 2,948 | 1,307 | 1,747 | 2,130 | 1,510 | 2,648 |
| Harvested cropland | do.          | NA    | 1,272 | 1,721 | NA    | NA    | NA    |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Hillsborough | Merrimack | Rockingham | Strafford | Sullivan |
|------------------------|--------------|-------|--------------|-----------|------------|-----------|----------|
| Irrigated land         | No. of farms | 253   | 39           | 39        | 1          | 25        | 20       |
| Irrigated land         | No. of acres | 2,948 | 1,374        | 648       | 392        | 177       | 94       |
| Major irrigated crops: |              |       |              |           |            |           |          |
| Vegetables             | do.          | 1,061 | 591          | 65        | 246        | 71        | 2        |
| Berries                | do.          | 268   | 53           | 31        | 40         | 47        | 30       |
| Orchards               | do.          | 177   | NA           | NA        | NA         | 19        | NA       |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 358,279   | 201,171 | 413,420   | 251,753 | 351,995      | 197,849 |
| Machinery and equipment        | 33,905    | 28,005  | 45,896    | 41,359  | 32,538       | 27,128  |
| Farm products sold             | 42,585    | 37,185  | 101,878   | 90,028  | 35,953       | 33,582  |
| Crops, nursery, and greenhouse | 26,265    | 19,456  | 99,747    | 89,910  | 9,571        | 9,553   |
| Livestock and poultry          | 47,345    | 42,325  | 16,750    | 18,039  | 48,518       | 43,032  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 2,096     | 2,070   | 2,224     | 2,239   | 2,072        | 2,047   |
| Other agricultural chemicals   | 1,478     | 1,529   | 2,740     | 3,090   | 1,124        | 1,225   |
| Energy and petroleum products  | 3,089     | 3,308   | 7,020     | 11,312  | 2,598        | 2,781   |
| Hired labor                    | 19,545    | 11,577  | 51,241    | 31,984  | 14,020       | 9,110   |
| Contract labor                 | 4,690     | 3,682   | 11,074    | 11,667  | 2,734        | 2,647   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 01, New England

| Item                          | 1988  |        |         | 1984           |        |               |  |                |  |
|-------------------------------|-------|--------|---------|----------------|--------|---------------|--|----------------|--|
|                               | Farms | Acres  | AF/acre | Farms          | Acres  | AF/acre       |  |                |  |
| <i>Number</i>                 |       |        |         |                |        |               |  |                |  |
| Methods:                      |       |        |         |                |        |               |  |                |  |
| All sprinkler systems         | 967   | 24,233 | 0.8     | 886            | 24,127 | 1.1           |  |                |  |
| Center pivot                  | 611   | 11,411 | 1.3     | 196            | 5,039  | 1.1           |  |                |  |
| Mechanical move               | 13    | 1,046  | 0.3     | 36             | 2,548  | 0.4           |  |                |  |
| Hand move                     | 95    | 2,325  | 0.3     | 373            | 6,670  | 0.5           |  |                |  |
| Solid set and permanent       | 258   | 9,421  | 0.5     | 335            | 9,870  | 1.7           |  |                |  |
| All gravity systems           | 188   | 11,714 | NA      | 87             | 2,683  | 1.5           |  |                |  |
| Gated pipe                    | 23    | 391    | NA      | 6              | 174    | 0.0           |  |                |  |
| Ditch with siphon tube        | 26    | 2,928  | NA      | 41             | 1,455  | 1.5           |  |                |  |
| Flooding                      | 139   | 8,395  | NA      | 44             | 1,054  | 1.2           |  |                |  |
| Drip or trickle               | 0     | 0      | 0.0     | 75             | 679    | 0.6           |  |                |  |
| Subirrigation                 | 0     | 0      | 0.0     | 0              | 0      | 0.0           |  |                |  |
| Sources:                      |       |        |         |                |        |               |  |                |  |
| Wells                         | 324   | 3,698  | 0.5     | 178            | 2,966  | 0.9           |  |                |  |
| Onfarm surface sources        | 844   | 21,566 | 3.9     | 731            | 21,261 | 1.0           |  |                |  |
| Off-farm water suppliers      | 26    | 102    | NA      | 76             | 869    | 0.5           |  |                |  |
| <i>Number</i>                 |       |        |         | <i>\$/acre</i> |        | <i>Number</i> |  | <i>\$/acre</i> |  |
| Onfarm energy use for pumping | 942   | 24,312 | 48      | 789            | 22,988 | 54            |  |                |  |
| Electricity                   | 273   | 5,958  | 68      | 279            | 5,612  | 94            |  |                |  |
| Natural gas                   | 0     | 0      | 0       | 9              | 174    | 87            |  |                |  |
| LP gas, propane, butane       | 310   | 7,418  | 53      | 147            | 6,203  | 51            |  |                |  |
| Diesel fuel                   | 130   | 6,599  | 35      | 190            | 6,392  | 29            |  |                |  |
| Gasoline and gasohol          | 444   | 4,337  | 29      | 379            | 4,607  | 44            |  |                |  |
| Off-farm water supply         | 26    | 102    | 84      | 76             | 869    | 36            |  |                |  |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 3,404              | 2,800 | 1,473 | 49                | 38   | 35   |
| Irrigated cropland | NR                 | NR    | NR    | NR                | NR   | NR   |
| Grazing land       | 2,837              | 666   | 863   | 17                | 13   | 12   |

# New Jersey

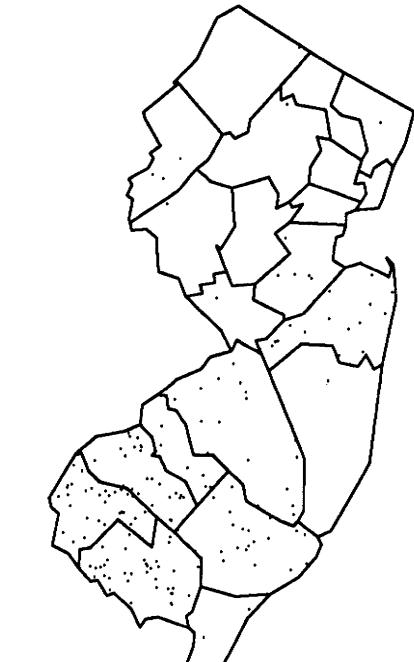
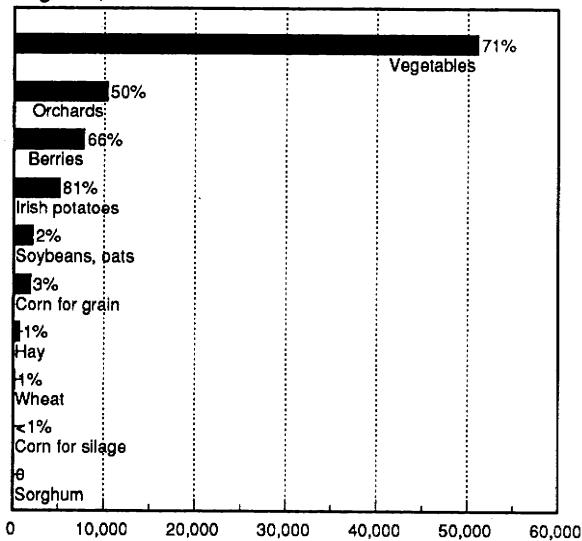
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |
|---------------------|------------------------------|-------------------|------------------------|
|                     |                              |                   | Percent                |
| <b>Sources:</b>     |                              |                   |                        |
| Surface             | 1.8                          | 73                | 6                      |
| Ground              | 0.7                          | 27                | 6                      |
| Total               | 2.5                          | 100               | 6                      |
| <b>Agriculture:</b> |                              |                   |                        |
| <b>Sources—</b>     |                              | <b>T.a.f.</b>     |                        |
| Surface             | 106.2                        | 74                | NA                     |
| Ground              | 38.3                         | 27                | NA                     |
| Total               | 144.5                        | 100               | NA                     |
| <b>Use—</b>         |                              |                   |                        |
| Irrigation          | 141.0                        | 98                | NA                     |
| Other farm uses     | 3.5                          | 2                 | NA                     |
| <b>Disposition—</b> |                              |                   |                        |
| Consumptive use     | 130.1                        | 90                | NA                     |
| Return flow         | 14.4                         | 10                | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

# Selected Characteristics of Irrigated Farms

New Jersey

## Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 8,268  | 7,658  | 7,529  | 7,001  | 7,748  | 9,690  |
| Harvested cropland | do.          | 7,288  | 6,940  | 7,016  | 6,653  | 6,981  | 8,759  |
| Irrigated land     | do.          | 1,846  | 1,681  | 1,648  | 1,581  | 1,509  | 2,009  |
| Harvested cropland | do.          | 1,805  | 1,659  | 1,623  | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 643    | 670    | 709    | 675    | 707    | 776    |
| Harvested cropland | do.          | 485    | 570    | 584    | 541    | 496    | 560    |
| Irrigated land     | No. of acres | 91,208 | 83,049 | 77,159 | 89,321 | 71,967 | 96,433 |
| Harvested cropland | do.          | 89,961 | 81,840 | 75,450 | NA     | NA     | NA     |

## Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Cumberland | Salem  | Gloucester | Atlantic | Burlington |
|------------------------|--------------|--------|------------|--------|------------|----------|------------|
| Irrigated land         | No. of farms | 1,846  | 281        | 154    | 212        | 229      | 183        |
| Irrigated land         | No. of acres | 91,208 | 19,373     | 17,251 | 13,664     | 11,030   | 9,194      |
| Major irrigated crops: |              |        |            |        |            |          |            |
| Vegetables             | do.          | 51,173 | 15,117     | 12,233 | 7,714      | 4,917    | 3,205      |
| Orchards               | do.          | 10,377 | NA         | NA     | 4,857      | 1,464    | 452        |
| Berries                | do.          | 7,802  | 39         | 15     | 95         | 2,542    | 3,866      |

## Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 396,198   | 343,137 | 471,456   | 414,885 | 376,248      | 324,150 |
| Machinery and equipment        | 37,768    | 36,291  | 73,363    | 60,388  | 28,307       | 29,909  |
| Farm products sold             | 54,916    | 52,672  | 162,851   | 138,215 | 27,189       | 30,871  |
| Crops, nursery, and greenhouse | 59,839    | 54,316  | 163,483   | 138,636 | 17,338       | 21,965  |
| Livestock and poultry          | 32,790    | 31,290  | 29,627    | 23,652  | 32,973       | 31,704  |
| Selected production expense .: |           |         |           |         |              |         |
| Commercial fertilizers         | 4,138     | 4,871   | 7,526     | 6,897   | 2,713        | 4,047   |
| Other agricultural chemicals   | 3,329     | 3,210   | 6,870     | 5,745   | 1,649        | 1,978   |
| Energy and petroleum products  | 3,373     | 4,519   | 8,493     | 11,033  | 1,980        | 2,797   |
| Hired labor                    | 30,913    | 18,817  | 62,132    | 41,248  | 11,834       | 8,274   |
| Contract labor                 | 16,297    | 20,588  | 35,319    | 40,219  | 3,617        | 5,340   |

## Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

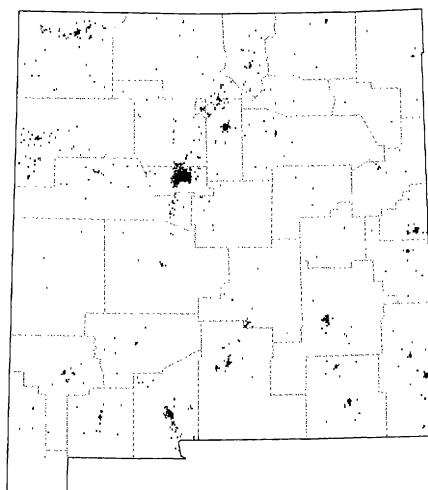
| Item                          | 1988          |         |         | 1984           |         |         |
|-------------------------------|---------------|---------|---------|----------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |                |         |         |
| Methods:                      |               |         |         |                |         |         |
| All sprinkler systems         | 2,482         | 255,416 | 0.6     | 2,209          | 183,188 | 0.5     |
| Center pivot                  | 817           | 105,830 | 0.6     | 403            | 70,560  | 0.6     |
| Mechanical move               | 672           | 94,424  | 0.4     | 525            | 56,114  | 0.3     |
| Hand move                     | 1,235         | 46,357  | 0.4     | 1,399          | 49,996  | 0.5     |
| Solid set and permanent       | 86            | 8,805   | 0.8     | 179            | 6,428   | 1.4     |
| All gravity systems           | 19            | 1,660   | 0.9     | 38             | 6,228   | 0.0     |
| Gated pipe                    | 0             | 0       | 0.0     | 29             | 3,510   | 0.0     |
| Ditch with siphon tube        | 10            | 1,390   | 0.9     | 0              | 0       | 0.0     |
| Flooding                      | 9             | 270     | NA      | 9              | 2,718   | 0.0     |
| Drip or trickle               | 209           | NA      | 1.1     | 156            | 2,646   | 0.5     |
| Subirrigation                 | 2             | NA      | NA      | 10             | 1,515   | 0.0     |
| Sources:                      |               |         |         |                |         |         |
| Wells                         | 792           | 126,525 | 0.8     | 1,065          | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920         | 137,469 | 0.5     | 1,288          | 76,946  | 0.6     |
| Off-farm water suppliers      | 67            | 4,076   | 0.3     | 149            | 2,075   | 0.6     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |         |         |
| Onfarm energy use for pumping | 2,440         | 246,466 | 19      | 2,097          | 175,259 | 20      |
| Electricity                   | 537           | 49,109  | 21      | 496            | 41,735  | 25      |
| Natural gas                   | 0             | 0       | 0       | 0              | 0       | 0       |
| LP gas, propane, butane       | 51            | 6,729   | 13      | 103            | 11,538  | 19      |
| Diesel fuel                   | 1,460         | 167,116 | 18      | 831            | 90,185  | 16      |
| Gasoline and gasohol          | 868           | 23,512  | 28      | 990            | 31,801  | 25      |
| Off-farm water supply         | 67            | 4,076   | 21      | 149            | 2,075   | 56      |

## Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 6,855              | 3,688 | 2,762 | 35                | 43   | 46   |
| Irrigated cropland | 2,863              | 2,230 | 1,929 | 66                | 77   | 69   |
| Grazing land       | 2,996              | 2,571 | 1,939 | 23                | 26   | 30   |

# New Mexico

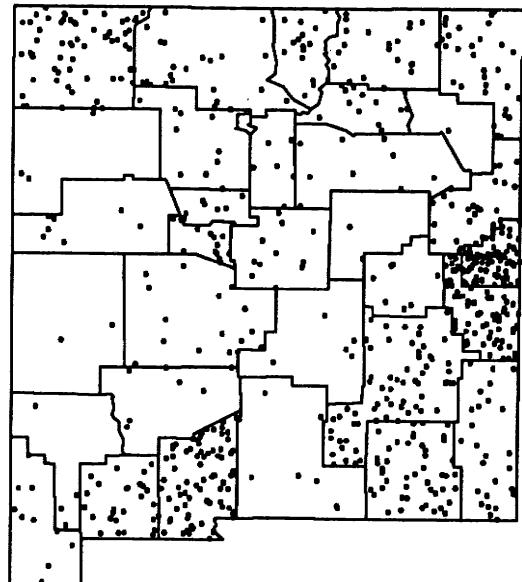
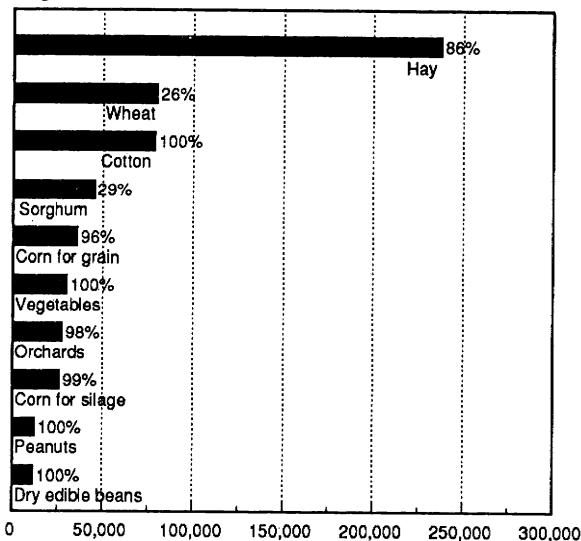
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share |
|---------------------|---------------------------|----------------|---------------------|
|                     | <i>M.a.f. — Percent —</i> |                |                     |
| <b>Sources:</b>     |                           |                |                     |
| Surface             | 2.0                       | 549            | 5                   |
| Ground              | 1.7                       | 46             | 79                  |
| Total               | 3.7                       | 100            | 87                  |
| <b>Agriculture:</b> |                           |                |                     |
| <b>Sources—</b>     |                           |                |                     |
| Surface             | 1.9                       | 59             | NA                  |
| Ground              | 1.3                       | 41             | NA                  |
| Total               | 3.2                       | 100            | NA                  |
| <b>Use—</b>         |                           |                |                     |
| Irrigation          | 3.1                       | 98             | NA                  |
| Other farm uses     | 0.1                       | 2              | NA                  |
| <b>Disposition—</b> |                           |                |                     |
| Consumptive use     | 1.5                       | 46             | NA                  |
| Return flow         | 1.7                       | 54             | NA                  |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

New Mexico

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 9,429   | 9,196   | 8,597   | 8,041   | 8,308   | 10,742  |
| Harvested cropland | do.          | 7,269   | 7,395   | 7,016   | 6,393   | 6,700   | 8,828   |
| Irrigated land     | do.          | 7,022   | 6,918   | 6,554   | 5,714   | 5,698   | 8,274   |
| Harvested cropland | do.          | 6,210   | 6,225   | 5,919   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 2,279   | 2,234   | 2,257   | 2,187   | 2,282   | 2,271   |
| Harvested cropland | do.          | 989     | 1,297   | 1,209   | 976     | 1,008   | 906     |
| Irrigated land     | No. of acres | 718,449 | 807,206 | 890,610 | 867,325 | 822,637 | 812,723 |
| Harvested cropland | do.          | 606,344 | 702,040 | 733,715 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Curry  | Dona Ana | Roosevelt | Chaves | San Juan |
|------------------------|--------------|---------|--------|----------|-----------|--------|----------|
| Irrigated land         | No. of farms | 7,022   | 247    | 962      | 287       | 297    | 465      |
| Irrigated land         | No. of acres | 718,449 | 85,456 | 78,078   | 72,043    | 64,724 | 63,431   |
| Major irrigated crops: |              |         |        |          |           |        |          |
| Hay                    | do.          | 237,919 | 4,299  | 16,152   | 7,454     | 32,707 | 23,504   |
| Wheat for grain        | do.          | 80,235  | 32,107 | 2,493    | 13,334    | 1,788  | NA       |
| Cotton                 | do.          | 79,135  | 1,430  | 23,375   | 10,496    | 12,062 | 0        |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 582,012   | 618,708 | 542,486   | 610,499 | 619,002      | 627,226 |
| Machinery and equipment        | 33,093    | 32,053  | 42,438    | 39,626  | 24,422       | 24,277  |
| Farm products sold             | 74,399    | 63,079  | 79,045    | 60,582  | 69,885       | 65,711  |
| Crops, nursery, and greenhouse | 51,393    | 46,726  | 55,798    | 50,803  | 24,143       | 27,488  |
| Livestock and poultry          | 79,703    | 62,839  | 78,928    | 50,737  | 80,204       | 71,680  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 5,325     | 4,823   | 5,535     | 4,864   | 3,638        | 4,237   |
| Other agricultural chemicals   | 2,846     | 2,935   | 2,944     | 2,893   | 2,587        | 3,154   |
| Energy and petroleum products  | 4,715     | 4,985   | 5,892     | 6,438   | 3,554        | 3,485   |
| Hired labor                    | 17,596    | 11,382  | 19,648    | 12,794  | 15,025       | 9,541   |
| Contract labor                 | 8,112     | 7,423   | 12,005    | 9,972   | 2,892        | 3,002   |

### Irrigation methods, water sources, and pumping energy use

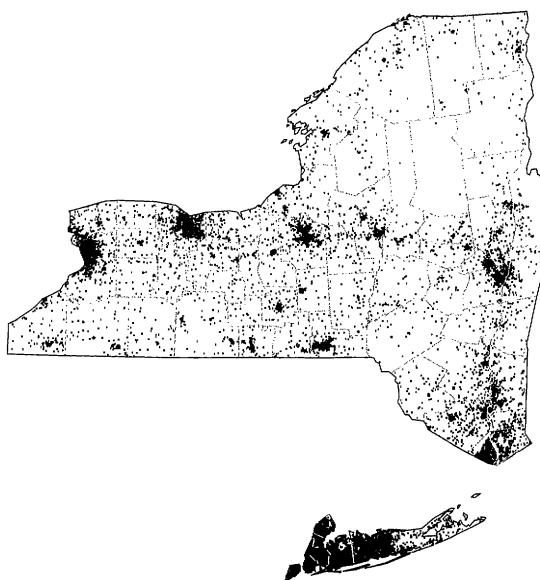
| Item                          | 1988          |         |         | 1984          |         |         |
|-------------------------------|---------------|---------|---------|---------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |               |         |         |
| Methods:                      |               |         |         |               |         |         |
| All sprinkler systems         | 1,011         | 265,618 | 1.5     | 1,550         | 221,686 | 1.8     |
| Center pivot                  | 576           | 210,434 | 1.4     | 565           | 163,687 | 1.9     |
| Mechanical move               | 412           | 46,827  | 2.2     | 375           | 39,627  | 1.8     |
| Hand move                     | 263           | 5,712   | 1.0     | 634           | 15,062  | 1.1     |
| Solid set and permanent       | 8             | 2,645   | 2.0     | 81            | 3,310   | 2.3     |
| All gravity systems           | 4,763         | 433,818 | 2.4     | 4,944         | 455,252 | 2.5     |
| Gated pipe                    | 663           | 86,951  | 1.7     | 709           | 72,847  | 1.8     |
| Ditch with siphon tube        | 2,963         | 248,263 | 2.5     | 3,347         | 273,717 | 2.5     |
| Flooding                      | 1,508         | 98,604  | 2.4     | 1,130         | 108,688 | 2.5     |
| Drip or trickle               | 330           | 7,414   | 2.2     | 157           | 3,006   | 1.8     |
| Subirrigation                 | 8             | 2,108   | 3.5     | 130           | 4,597   | 3.1     |
| Sources:                      |               |         |         |               |         |         |
| Wells                         | 2,143         | 445,988 | 1.9     | 2,412         | 442,182 | 2.1     |
| Onfarm surface sources        | 780           | 51,511  | 1.7     | 670           | 38,917  | 1.4     |
| Off-farm water suppliers      | 3,041         | 214,935 | 2.3     | 3,556         | 221,316 | 2.3     |
|                               | <i>Number</i> |         |         | <i>Number</i> |         |         |
|                               |               |         |         |               |         |         |
| Onfarm energy use for pumping | 2,317         | 481,100 | 41      | 2,631         | 489,552 | 48      |
| Electricity                   | 1,587         | 271,946 | 48      | 1,721         | 268,706 | 52      |
| Natural gas                   | 658           | 173,124 | 32      | 678           | 185,228 | 42      |
| LP gas, propane, butane       | 102           | 13,163  | 19      | 175           | 12,643  | 33      |
| Diesel fuel                   | 170           | 21,463  | 29      | 479           | 22,720  | 56      |
| Gasoline and gasohol          | 89            | 1,404   | 15      | 16            | 255     | 17      |
| Off-farm water supply         | 3,041         | 214,935 | 26      | 3,556         | 221,316 | 22      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 391                | 375   | 392   | 23                | 14   | 11   |
| Irrigated cropland | 2,293              | 2,604 | 2,489 | 78                | 69   | 69   |
| Grazing land       | 226                | 219   | 195   | 2                 | 3    | 8    |

# New York

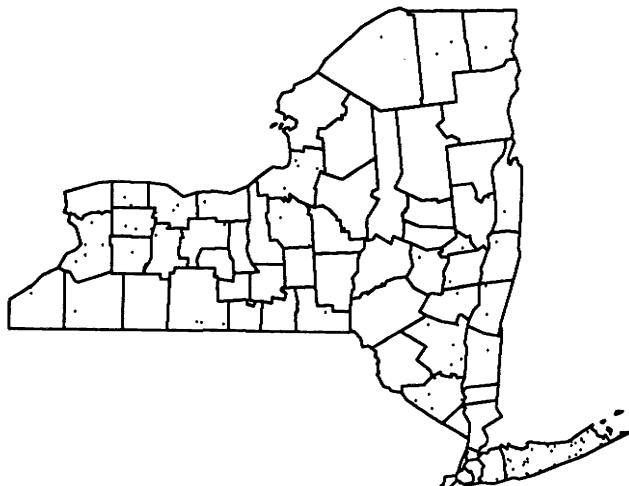
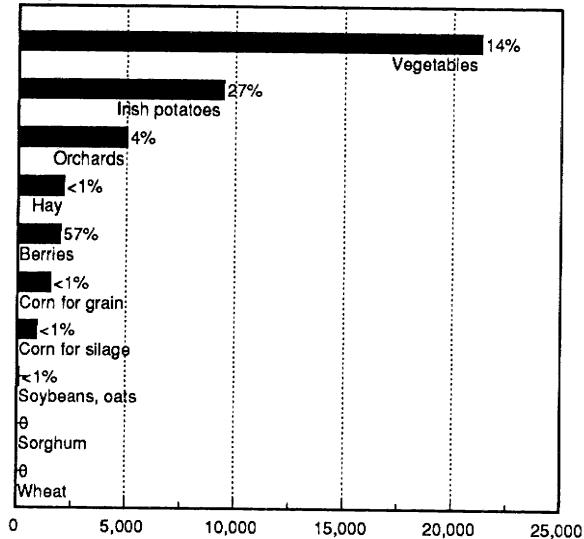
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | —Percent—              |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 8.9                                 | 88                | 0                      |
| Ground              | 1.2                                 | 12                | 3                      |
| Total               | 10.1                                | 100               | 1                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                        |
| Surface             | 28.3                                | 44                | NA                     |
| Ground              | 35.6                                | 56                | NA                     |
| Total               | 63.9                                | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 42.6                                | 67                | NA                     |
| Other farm uses     | 21.3                                | 33                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 61.7                                | 97                | NA                     |
| Return flow         | 2.2                                 | 3                 | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

New York

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 35,680 | 40,276 | 41,879 | 42,675 | 49,768 | 64,266 |
| Harvested cropland | do.          | 33,664 | 38,509 | 40,647 | 41,121 | 46,518 | 61,978 |
| Irrigated land     | do.          | 1,992  | 1,713  | 1,715  | 1,447  | 1,393  | 1,917  |
| Harvested cropland | do.          | 1,945  | 1,694  | 1,677  | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 5,382  | 5,698  | 5,941  | 5,788  | 6,082  | 6,470  |
| Harvested cropland | do.          | 3,900  | 4,430  | 4,349  | 4,156  | 3,836  | 4,743  |
| Irrigated land     | No. of acres | 50,920 | 52,125 | 56,106 | 54,580 | 55,491 | 79,193 |
| Harvested cropland | do.          | 48,613 | 50,673 | 54,660 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Suffolk | Orange | Ulster | Erie  | Monroe |
|------------------------|--------------|--------|---------|--------|--------|-------|--------|
| Irrigated land         | No. of farms | 1,992  | 447     | 67     | 70     | 125   | 81     |
| Irrigated land         | No. of acres | 50,920 | 18,640  | 3,427  | 2,600  | 2,366 | 1,785  |
| Major irrigated crops: |              |        |         |        |        |       |        |
| Vegetables             | do.          | 21,314 | 5,963   | 1,906  | 661    | 1,280 | 1,336  |
| Irish potatoes         | do.          | 9,475  | 6,659   | 111    | NA     | 181   | NA     |
| Orchards               | do.          | 5,027  | 951     | 211    | 1,715  | 17    | 31     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 218,934   | 177,988 | 369,084   | 311,886 | 210,753      | 172,169 |
| Machinery and equipment        | 49,087    | 47,561  | 79,701    | 71,758  | 47,416       | 46,510  |
| Farm products sold             | 64,697    | 57,501  | 157,353   | 137,679 | 59,534       | 54,109  |
| Crops, nursery, and greenhouse | 37,099    | 31,673  | 156,218   | 134,048 | 23,750       | 22,726  |
| Livestock and poultry          | 69,682    | 60,921  | 50,649    | 48,472  | 69,923       | 61,029  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,940     | 4,054   | 6,635     | 6,744   | 3,738        | 3,888   |
| Other agricultural chemicals   | 2,755     | 2,457   | 7,465     | 7,378   | 2,352        | 2,110   |
| Energy and petroleum products  | 4,337     | 4,798   | 10,669    | 13,358  | 3,980        | 4,425   |
| Hired labor                    | 16,633    | 12,499  | 64,929    | 44,371  | 12,910       | 10,426  |
| Contract labor                 | 6,235     | 7,032   | 20,948    | 19,802  | 4,861        | 5,655   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

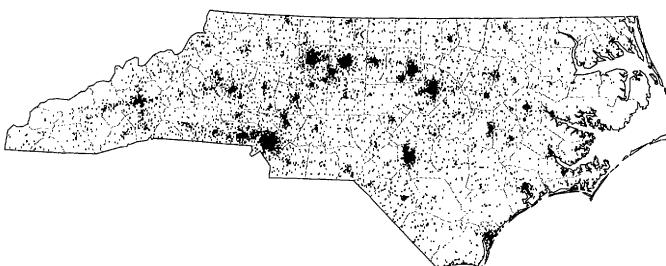
| Item                          | 1988          |         |         | 1984           |         |         |
|-------------------------------|---------------|---------|---------|----------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |                |         |         |
| Methods:                      |               |         |         |                |         |         |
| All sprinkler systems         | 2,482         | 255,416 | 0.6     | 2,209          | 183,188 | 0.5     |
| Center pivot                  | 817           | 105,830 | 0.6     | 403            | 70,560  | 0.6     |
| Mechanical move               | 672           | 94,424  | 0.4     | 525            | 56,114  | 0.3     |
| Hand move                     | 1,235         | 46,357  | 0.4     | 1,399          | 49,996  | 0.5     |
| Solid set and permanent       | 86            | 8,805   | 0.8     | 179            | 6,428   | 1.4     |
| All gravity systems           | 19            | 1,660   | 0.9     | 38             | 6,228   | 0.0     |
| Gated pipe                    | 0             | 0       | 0.0     | 29             | 3,510   | 0.0     |
| Ditch with siphon tube        | 10            | 1,390   | 0.9     | 0              | 0       | 0.0     |
| Flooding                      | 9             | 270     | NA      | 9              | 2,718   | 0.0     |
| Drip or trickle               | 209           | NA      | 1.1     | 156            | 2,646   | 0.5     |
| Subirrigation                 | 2             | NA      | NA      | 10             | 1,515   | 0.0     |
| Sources:                      |               |         |         |                |         |         |
| Wells                         | 792           | 126,525 | 0.8     | 1,065          | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920         | 137,469 | 0.5     | 1,288          | 76,946  | 0.6     |
| Off-farm water suppliers      | 67            | 4,076   | 0.3     | 149            | 2,075   | 0.6     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |         |         |
| Onfarm energy use for pumping | 2,440         | 246,466 | 19      | 2,097          | 175,259 | 20      |
| Electricity                   | 537           | 49,109  | 21      | 496            | 41,735  | 25      |
| Natural gas                   | 0             | 0       | 0       | 0              | 0       | 0       |
| LP gas, propane, butane       | 51            | 6,729   | 13      | 103            | 11,538  | 19      |
| Diesel fuel                   | 1,460         | 167,116 | 18      | 831            | 90,185  | 16      |
| Gasoline and gasohol          | 868           | 23,512  | 28      | 990            | 31,801  | 25      |
| Off-farm water supply         | 67            | 4,076   | 21      | 149            | 2,075   | 56      |

### Land values and cash rent per acre

| Item               | Average land value |        |       | Average cash rent |      |      |
|--------------------|--------------------|--------|-------|-------------------|------|------|
|                    | 1988               | 1986   | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |        |       |                   |      |      |
| Dry cropland       | 840                | 731    | 642   | 32                | 31   | 29   |
| Irrigated cropland | 13,446             | 10,961 | 4,621 | 134               | 98   | 88   |
| Grazing land       | 379                | 280    | 245   | 12                | 12   | 11   |

# North Carolina

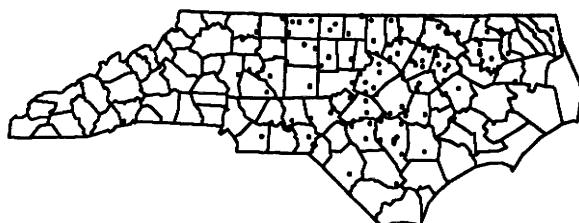
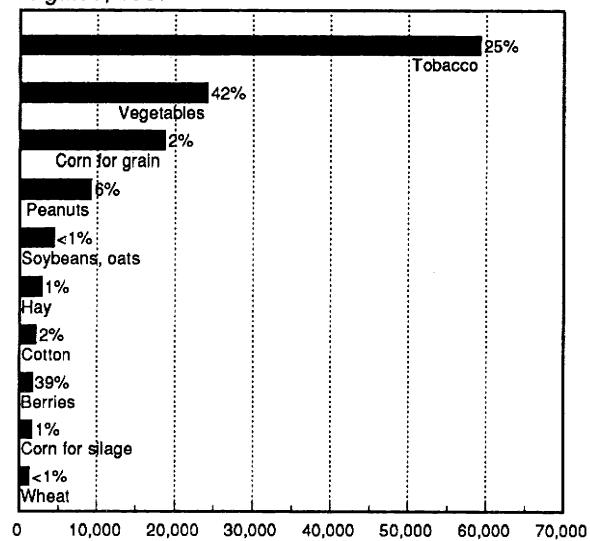
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total       | Agriculture's share |
|---------------------|----------------------------------|----------------------|---------------------|
|                     |                                  |                      | —Percent—           |
| <b>Sources:</b>     |                                  |                      |                     |
| Surface             | 8.3                              | 94                   | 2                   |
| Ground              | 0.5                              | 6                    | 9                   |
| Total               | 8.8                              | 100                  | 2                   |
| <b>Agriculture:</b> |                                  |                      |                     |
| <b>Sources—</b>     |                                  | <b><i>T.a.f.</i></b> |                     |
| Surface             | 143.3                            | 77                   | NA                  |
| Ground              | 43.8                             | 23                   | NA                  |
| Total               | 187.1                            | 100                  | NA                  |
| <b>Use—</b>         |                                  |                      |                     |
| Irrigation          | 147.9                            | 79                   | NA                  |
| Other farm uses     | 39.2                             | 21                   | NA                  |
| <b>Disposition—</b> |                                  |                      |                     |
| Consumptive use     | 179.8                            | 96                   | NA                  |
| Return flow         | 7.3                              | 4                    | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

# Selected Characteristics of Irrigated Farms

North Carolina

## Land in farms

| Item               | Unit         | 1987    | 1982   | 1978   | 1974   | 1969    | 1964    |
|--------------------|--------------|---------|--------|--------|--------|---------|---------|
| Total cropland     | No. of farms | 54,972  | 68,439 | 77,836 | 87,862 | 113,506 | 143,134 |
| Harvested cropland | do.          | 50,108  | 63,392 | 73,870 | 82,844 | 102,316 | 137,737 |
| Irrigated land     | do.          | 6,445   | 4,026  | 6,082  | 4,002  | 5,170   | 12,583  |
| Harvested cropland | do.          | 6,318   | 3,969  | 5,959  | NA     | NA      | NA      |
| Total cropland     | 1,000 acres  | 5,716   | 5,950  | 6,049  | 5,753  | 5,967   | 5,782   |
| Harvested cropland | do.          | 3,779   | 4,659  | 4,467  | 4,075  | 3,472   | 3,986   |
| Irrigated land     | No. of acres | 137,858 | 81,078 | 89,861 | 51,340 | 59,153  | 96,874  |
| Harvested cropland | do.          | 135,368 | 79,607 | 87,415 | NA     | NA      | NA      |

## Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Nash   | Edgecombe | Sampson | Bertie | Wake  |
|------------------------|--------------|---------|--------|-----------|---------|--------|-------|
| Irrigated land         | No. of farms | 6,445   | 150    | 69        | 210     | 40     | 314   |
| Irrigated land         | No. of acres | 137,858 | 11,395 | 7,932     | 7,920   | 6,687  | 5,835 |
| Major irrigated crops: |              |         |        |           |         |        |       |
| Tobacco                | do.          | 59,285  | 3,118  | 1,104     | 1,062   | 295    | 4,545 |
| Vegetables             | do.          | 23,586  | 5,811  | 888       | 5,357   | 75     | 107   |
| Corn                   | do.          | 18,750  | 578    | 2,199     | 505     | 2,761  | 50    |

## Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 199,781   | 187,840 | 318,321   | 298,910 | 185,187      | 181,746 |
| Machinery and equipment        | 30,403    | 28,932  | 53,189    | 51,374  | 27,592       | 27,696  |
| Farm products sold             | 59,737    | 48,093  | 99,126    | 86,647  | 54,932       | 45,835  |
| Crops, nursery, and greenhouse | 36,408    | 36,043  | 77,205    | 73,854  | 28,750       | 33,009  |
| Livestock and poultry          | 67,170    | 45,028  | 74,604    | 47,902  | 66,634       | 44,923  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,819     | 4,110   | 5,877     | 6,415   | 3,502        | 3,955   |
| Other agricultural chemicals   | 2,700     | 2,620   | 4,321     | 3,367   | 2,413        | 2,556   |
| Energy and petroleum products  | 3,421     | 3,855   | 7,429     | 8,698   | 2,907        | 3,587   |
| Hired labor                    | 10,650    | 7,700   | 18,410    | 14,535  | 9,030        | 7,067   |
| Contract labor                 | 5,921     | 5,133   | 8,577     | 10,222  | 5,274        | 4,536   |

## Irrigation methods, water sources, and pumping energy use: Water Resources Region 03, South Atlantic Gulf

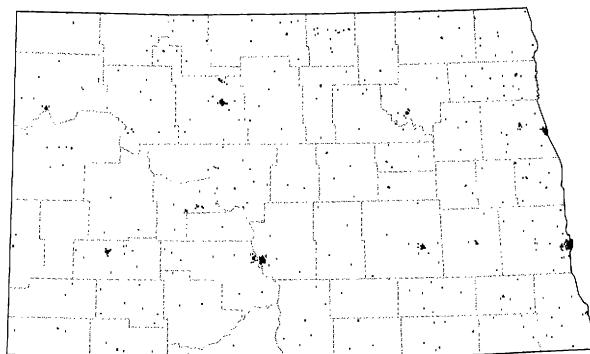
| Item                          | 1988          |           |                | 1984          |           |                |
|-------------------------------|---------------|-----------|----------------|---------------|-----------|----------------|
|                               | Farms         | Acres     | AF/acre        | Farms         | Acres     | AF/acre        |
| <i>Number</i>                 |               |           |                |               |           |                |
| Methods:                      |               |           |                |               |           |                |
| All sprinkler systems         | 13,837        | 1,265,350 | 0.8            | 8,887         | 904,024   | 0.7            |
| Center pivot                  | 6,322         | 661,593   | 0.9            | 1,938         | 380,757   | 0.7            |
| Mechanical move               | 2,432         | 296,183   | 0.5            | 2,723         | 241,098   | 0.5            |
| Hand move                     | 3,635         | 119,964   | 0.6            | 2,352         | 56,675    | 0.6            |
| Solid set and permanent       | 2,583         | 187,610   | 1.5            | 2,788         | 225,494   | 1.4            |
| All gravity systems           | 1,556         | 777,181   | 1.6            | 1,447         | 620,636   | 1.8            |
| Gated pipe                    | 211           | 21,326    | 0.9            | 137           | 25,028    | 1.3            |
| Ditch with siphon tube        | 520           | 149,441   | 1.2            | 553           | 161,804   | 1.9            |
| Flooding                      | 836           | 606,414   | 1.7            | 789           | 433,804   | 1.9            |
| Drip or trickle               | 2,751         | 327,958   | 1.6            | 1,989         | 243,723   | 1.3            |
| Subirrigation                 | 148           | 220,468   | 4.1            | 100           | 246,712   | 4.6            |
| Sources:                      |               |           |                |               |           |                |
| Wells                         | 8,864         | 1,281,282 | 1.2            | 7,391         | 1,093,214 | 1.2            |
| Onfarm surface sources        | 8,119         | 630,540   | 0.8            | 4,146         | 410,299   | 0.9            |
| Off-farm water suppliers      | 1,247         | 556,348   | 3.1            | 290           | 478,335   | 3.5            |
|                               | <i>Number</i> |           | <i>\$/acre</i> | <i>Number</i> |           | <i>\$/acre</i> |
| Onfarm energy use for pumping | 13,818        | 2,210,114 | 18             | 10,142        | 1,815,951 | 22             |
| Electricity                   | 6,309         | 733,196   | 22             | 5,134         | 658,340   | 25             |
| Natural gas                   | 4             | 287       | 56             | 64            | 7,335     | 47             |
| LP gas, propane, butane       | 1,628         | 91,982    | 24             | 607           | 51,882    | 32             |
| Diesel fuel                   | 5,945         | 1,358,762 | 16             | 4,862         | 1,072,794 | 19             |
| Gasoline and gasohol          | 1,850         | 25,887    | 35             | 907           | 25,600    | 18             |
| Off-farm water supply         | 1,247         | 556,348   | 27             | 290           | 478,335   | 22             |

## Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,148              | 1,064 | 1,323 | 45                | 34   | 39   |
| Irrigated cropland | 1,180              | 1,130 | 1,070 | 51                | 24   | 15   |
| Grazing land       | 1,054              | 937   | 894   | 25                | 19   | 20   |

# North Dakota

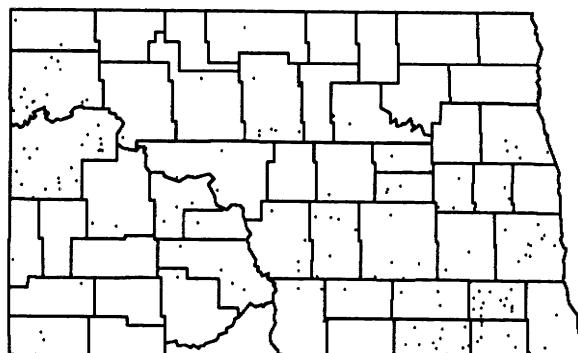
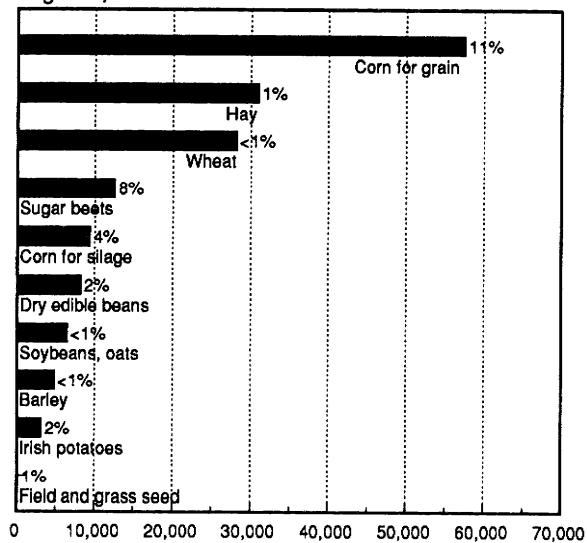
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricul-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|-----------------------------|
|                     |                                     |                   | Percent                     |
| <b>Sources:</b>     |                                     |                   |                             |
| Surface             | 1.2                                 | 89                | 10                          |
| Ground              | 0.1                                 | 11                | 61                          |
| Total               | 1.3                                 | 100               | 15                          |
| <b>Agriculture:</b> |                                     |                   |                             |
| <i>Sources—</i>     |                                     | <i>T.a.f.</i>     |                             |
| Surface             | 110.8                               | 56                | NA                          |
| Ground              | 86.3                                | 44                | NA                          |
| Total               | 197.1                               | 100               | NA                          |
| <b>Use—</b>         |                                     |                   |                             |
| Irrigation          | 172.5                               | 88                | NA                          |
| Other farm uses     | 24.6                                | 13                | NA                          |
| <b>Disposition—</b> |                                     |                   |                             |
| Consumptive use     | 163.4                               | 83                | NA                          |
| Return flow         | 33.7                                | 17                | NA                          |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

North Dakota

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974   | 1969   | 1964   |
|--------------------|--------------|---------|---------|---------|--------|--------|--------|
| Total cropland     | No. of farms | 33,179  | 34,693  | 38,936  | 41,301 | 44,581 | 47,748 |
| Harvested cropland | do.          | 32,360  | 34,031  | 38,388  | 40,643 | 43,606 | 47,070 |
| Irrigated land     | do.          | 809     | 762     | 792     | 510    | 480    | 442    |
| Harvested cropland | do.          | 789     | 749     | 744     | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 28,208  | 28,116  | 28,606  | 29,185 | 29,459 | 27,446 |
| Harvested cropland | do.          | 18,364  | 20,308  | 18,979  | 19,207 | 17,175 | 17,695 |
| Irrigated land     | No. of acres | 168,013 | 162,643 | 141,434 | 70,891 | 63,238 | 50,548 |
| Harvested cropland | do.          | 162,078 | 160,726 | 136,219 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | McKenzie | Ransom | Williams | Cass   | Dickey |
|------------------------|--------------|---------|----------|--------|----------|--------|--------|
| Irrigated land         | No. of farms | 809     | 93       | 44     | 55       | 29     | 42     |
| Irrigated land         | No. of acres | 168,013 | 21,501   | 15,333 | 14,811   | 11,642 | 11,582 |
| Major irrigated crops: |              |         |          |        |          |        |        |
| Corn for grain         | do.          | 57,562  | 708      | 11,033 | 70       | 7,899  | 7,835  |
| Hay                    | do.          | 31,050  | 3,424    | 1,089  | 3,725    | NA     | 535    |
| Wheat                  | do.          | 28,214  | 4,761    | 685    | 5,244    | 1,430  | 984    |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 366,475   | 486,939 | 615,027   | 852,949 | 361,072      | 479,103 |
| Machinery and equipment        | 77,505    | 84,156  | 123,677   | 137,074 | 76,501       | 83,031  |
| Farm products sold             | 62,007    | 62,977  | 132,561   | 135,168 | 60,351       | 61,435  |
| Crops, nursery, and greenhouse | 49,817    | 55,745  | 91,263    | 98,919  | 48,768       | 54,779  |
| Livestock and poultry          | 35,493    | 25,815  | 78,579    | 68,063  | 34,350       | 24,750  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 7,366     | 7,578   | 11,810    | 12,542  | 7,242        | 7,433   |
| Other agricultural chemicals   | 5,080     | 4,768   | 7,688     | 7,198   | 5,017        | 4,714   |
| Energy and petroleum products  | 6,081     | 7,858   | 11,340    | 15,488  | 5,965        | 7,695   |
| Hired labor                    | 6,225     | 5,493   | 13,098    | 12,505  | 5,997        | 5,255   |
| Contract labor                 | 2,676     | 3,092   | 6,406     | 4,635   | 2,483        | 2,982   |

### Irrigation methods, water sources, and pumping energy use

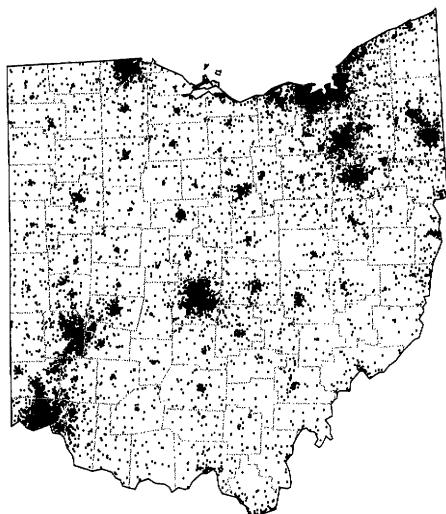
| Item                          | 1988          |         |         | 1984          |         |         |
|-------------------------------|---------------|---------|---------|---------------|---------|---------|
|                               | Farms         | , Acres | AF/acre | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |               |         |         |
| Methods:                      |               |         |         |               |         |         |
| All sprinkler systems         | 394           | 119,665 | 1.0     | 437           | 100,259 | 0.9     |
| Center pivot                  | 305           | 106,215 | 1.0     | 311           | 92,759  | 0.9     |
| Mechanical move               | 15            | 7,670   | NA      | 75            | 6,404   | 0.6     |
| Hand move                     | 89            | 4,424   | 1.1     | 56            | 1,096   | 0.6     |
| Solid set and permanent       | 9             | 1,356   | NA      | 0             | 0       | NA      |
| All gravity systems           | 228           | 49,313  | 1.4     | 180           | 43,871  | 1.4     |
| Gated pipe                    | 114           | 9,236   | 1.1     | 45            | 5,589   | 1.1     |
| Ditch with siphon tube        | 156           | 32,666  | 1.9     | 118           | 31,099  | 1.4     |
| Flooding                      | 63            | 7,411   | 1.2     | 59            | 7,183   | 1.4     |
| Drip or trickle               | 0             | 0       | 0.0     | 2             | D       | NA      |
| Subirrigation                 | 0             | 0       | 0.0     | 0             | 0       | NA      |
| Sources:                      |               |         |         |               |         |         |
| Wells                         | 265           | 91,318  | 1.0     | 271           | 79,978  | 0.9     |
| Onfarm surface sources        | 196           | 32,885  | 1.0     | 210           | 32,943  | 1.0     |
| Off-farm water suppliers      | 146           | 42,818  | 1.4     | 128           | 31,149  | 1.5     |
|                               | <i>Number</i> |         |         | <i>Number</i> |         |         |
|                               |               |         |         |               |         |         |
| Onfarm energy use for pumping | 498           | 123,577 | 21      | 475           | 114,033 | 18      |
| Electricity                   | 293           | 97,556  | 23      | 309           | 95,470  | 20      |
| Natural gas                   | 2             | NA      | 0       | 0             | 0       | NA      |
| LP gas, propane, butane       | 92            | 5,061   | 20      | 27            | 1,244   | 17      |
| Diesel fuel                   | 168           | 19,590  | 13      | 135           | 16,167  | 11      |
| Gasoline and gasohol          | 24            | 570     | 17      | 32            | 1,152   | 16      |
| Off-farm water supply         | 146           | 42,818  | 12      | 128           | 31,149  | 13      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 324                | 393  | 481   | 23                | 31   | 32   |
| Irrigated cropland | 709                | 893  | 1,169 | 61                | 69   | 76   |
| Grazing land       | 109                | 125  | 166   | 7                 | 7    | 7    |

# Ohio

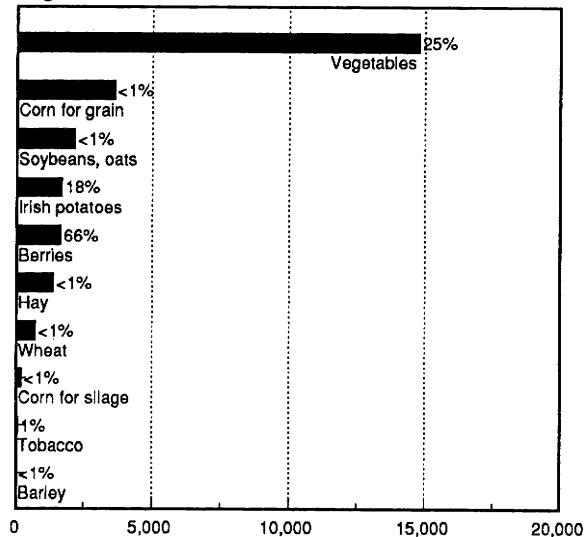
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total<br><i>Percent</i> | Agriculture's share |
|---------------------|----------------------------------|----------------------------------|---------------------|
| <b>Sources:</b>     |                                  |                                  |                     |
| Surface             | 13.5                             | 94                               | 0                   |
| Ground              | 0.8                              | 64                               |                     |
| Total               | 14.3                             | 100                              | 0                   |
| <b>Agriculture:</b> |                                  |                                  |                     |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>                    |                     |
| Surface             | 28.0                             | 44                               | NA                  |
| Ground              | 35.8                             | 56                               | NA                  |
| Total               | 63.8                             | 100                              | NA                  |
| <b>Use—</b>         |                                  |                                  |                     |
| Irrigation          | 19.0                             | 30                               | NA                  |
| Other farm uses     | 44.8                             | 70                               | NA                  |
| <b>Disposition—</b> |                                  |                                  |                     |
| Consumptive use     | 61.8                             | 97                               | NA                  |
| Return flow         | 2.0                              | 3                                | NA                  |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Ohio

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969    | 1964    |
|--------------------|--------------|--------|--------|--------|--------|---------|---------|
| Total cropland     | No. of farms | 74,376 | 82,069 | 85,585 | 89,231 | 105,854 | 115,274 |
| Harvested cropland | do.          | 70,577 | 78,363 | 82,515 | 85,790 | 98,271  | 110,194 |
| Irrigated land     | do.          | 1,562  | 1,152  | 1,103  | 981    | 1,024   | 750     |
| Harvested cropland | do.          | 1,516  | 1,132  | 1,059  | NA     | NA      | NA      |
| Total cropland     | 1,000 acres  | 11,920 | 11,824 | 12,081 | 11,766 | 12,447  | 11,864  |
| Harvested cropland | do.          | 9,298  | 10,396 | 10,214 | 9,680  | 8,515   | 9,276   |
| Irrigated land     | No. of acres | 32,472 | 27,688 | 24,970 | 22,115 | 22,087  | 17,405  |
| Harvested cropland | do.          | 31,247 | 27,338 | 24,243 | NA     | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Huron | Lucas | Champaign | Clark | Miami |
|------------------------|--------------|--------|-------|-------|-----------|-------|-------|
| Irrigated land         | No. of farms | 1,562  | 14    | 56    | 19        | 21    | 21    |
| Irrigated land         | No. of acres | 32,472 | 3,471 | 1,903 | 1,902     | 1,727 | 1,513 |
| Major irrigated crops: |              |        |       |       |           |       |       |
| Vegetables             | do.          | 12,339 | 3,256 | NA    | NA        | 94    | NA    |
| Corn                   | do.          | 3,621  | 0     | NA    | 477       | NA    | 388   |
| Soybeans for beans     | do.          | 1,849  | NA    | NA    | 318       | 0     | NA    |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 227,341   | 267,899 | 281,723   | 374,653 | 226,181      | 266,457 |
| Machinery and equipment        | 39,979    | 39,415  | 63,057    | 60,783  | 39,485       | 39,126  |
| Farm products sold             | 43,317    | 38,966  | 178,412   | 169,340 | 40,602       | 37,215  |
| Crops, nursery, and greenhouse | 30,153    | 28,782  | 174,711   | 166,571 | 26,375       | 26,397  |
| Livestock and poultry          | 37,476    | 30,175  | 58,117    | 47,403  | 37,315       | 30,092  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,649     | 5,472   | 4,734     | 6,052   | 4,647        | 5,464   |
| Other agricultural chemicals   | 2,696     | 2,452   | 4,443     | 4,557   | 2,650        | 2,416   |
| Energy and petroleum products  | 2,706     | 3,271   | 10,511    | 18,285  | 2,532        | 3,067   |
| Hired labor                    | 8,510     | 6,042   | 68,913    | 63,446  | 5,863        | 4,515   |
| Contract labor                 | 3,192     | 3,480   | 9,762     | 17,074  | 2,797        | 3,000   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 04, Great Lakes

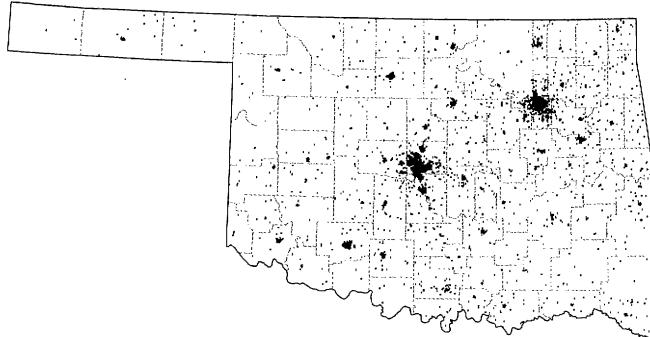
| Item                          | 1988          |         |         | 1984           |         |         |
|-------------------------------|---------------|---------|---------|----------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |                |         |         |
| Methods:                      |               |         |         |                |         |         |
| All sprinkler systems         | 2,967         | 450,551 | 0.7     | 2,883          | 435,517 | 0.7     |
| Center pivot                  | 1,214         | 238,305 | 0.8     | 970            | 217,712 | 0.9     |
| Mechanical move               | 1,059         | 154,851 | 0.6     | 1,291          | 167,404 | 0.5     |
| Hand move                     | 1,085         | 42,863  | 0.7     | 926            | 36,130  | 0.5     |
| Solid set and permanent       | 386           | 14,532  | 0.7     | 477            | 14,271  | 0.7     |
| All gravity systems           | 42            | 2,807   | 1.1     | 38             | 2,003   | 0.7     |
| Gated pipe                    | 3             | 800     | 1.4     | 17             | 800     | 0.6     |
| Ditch with siphon tube        | 15            | 632     | NA      | 12             | 420     | NA      |
| Flooding                      | 24            | 1,375   | 1.5     | 9              | 783     | 0.7     |
| Drip or trickle               | 400           | 11,993  | 0.5     | 338            | 11,366  | 0.4     |
| Subirrigation                 | 193           | 10,490  | 1.6     | 37             | 2,330   | 1.5     |
| Sources:                      |               |         |         |                |         |         |
| Wells                         | 1,732         | 259,864 | 0.8     | 1,597          | 265,261 | 0.6     |
| Onfarm surface sources        | 1,823         | 195,925 | 0.6     | 1,771          | 175,356 | 0.6     |
| Off-farm water suppliers      | 90            | 18,789  | 0.8     | 71             | 8,518   | 3.8     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |         |         |
| Onfarm energy use for pumping | 3,045         | 452,647 | 23      | 2,928          | 437,010 | 25      |
| Electricity                   | 1,708         | 226,994 | 28      | 1,522          | 245,612 | 27      |
| Natural gas                   | 7             | 1,790   | 9       | 15             | 2,513   | 16      |
| LP gas, propane, butane       | 131           | 13,697  | 23      | 163            | 15,785  | 14      |
| Diesel fuel                   | 1,291         | 197,583 | 19      | 1,268          | 159,174 | 22      |
| Gasoline and gasohol          | 641           | 12,583  | 23      | 563            | 13,926  | 29      |
| Off-farm water supply         | 90            | 18,789  | 6       | 71             | 8,518   | 3       |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 981                | 1,042 | 1,409 | 56                | 72   | 83   |
| Irrigated cropland | NR                 | NR    | NR    | NR                | NR   | NR   |
| Grazing land       | 384                | 392   | 490   | 17                | 17   | 21   |

# Oklahoma

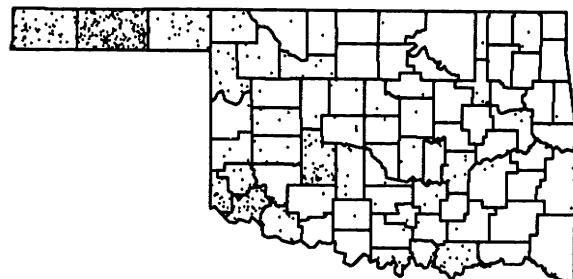
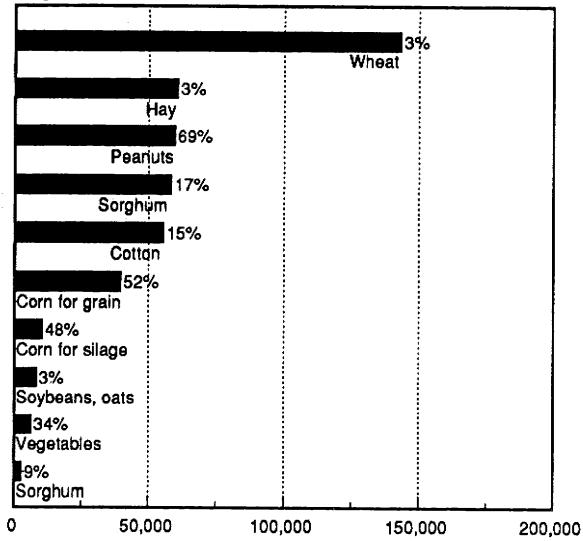
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agriculture's<br>share |
|---------------------|------------------------------|-------------------|------------------------|
|                     |                              |                   | Percent                |
| <b>Sources:</b>     |                              |                   |                        |
| Surface             | 0.8                          | 56                | 10                     |
| Ground              | 0.6                          | 45                | 67                     |
| Total               | 1.4                          | 100               | 35                     |
| <b>Agriculture:</b> |                              |                   |                        |
| <b>Sources—</b>     |                              |                   |                        |
| Surface             | 0.1                          | 15                | NA                     |
| Ground              | 0.4                          | 85                | NA                     |
| Total               | 0.5                          | 100               | NA                     |
| <b>Use—</b>         |                              |                   |                        |
| Irrigation          | 0.5                          | 99                | NA                     |
| Other farm uses     | 0.0                          | 1                 | NA                     |
| <b>Disposition—</b> |                              |                   |                        |
| Consumptive use     | 0.5                          | 98                | NA                     |
| Return flow         | 0.0                          | 2                 | NA                     |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Oklahoma

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 55,783  | 57,562  | 59,471  | 59,105  | 68,888  | 67,174  |
| Harvested cropland | do.          | 43,522  | 45,825  | 48,168  | 47,123  | 52,940  | 59,360  |
| Irrigated land     | do.          | 3,029   | 3,069   | 3,770   | 3,454   | 3,809   | 2,673   |
| Harvested cropland | do.          | 2,809   | 2,877   | 3,467   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 14,443  | 14,214  | 14,366  | 14,667  | 15,658  | 13,010  |
| Harvested cropland | do.          | 7,319   | 8,961   | 8,585   | 8,990   | 8,265   | 8,344   |
| Irrigated land     | No. of acres | 478,437 | 492,077 | 601,723 | 515,104 | 524,065 | 302,081 |
| Harvested cropland | do.          | 448,809 | 468,043 | 512,484 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Texas   | Cimarron | Caddo  | Jackson | Beaver |
|------------------------|--------------|---------|---------|----------|--------|---------|--------|
| Irrigated land         | No. of farms | 3,029   | 282     | 129      | 345    | 197     | 106    |
| Irrigated land         | No. of acres | 478,437 | 157,645 | 46,840   | 44,439 | 36,996  | 22,489 |
| Major irrigated crops: |              |         |         |          |        |         |        |
| Wheat for grain        | do.          | 143,400 | 79,513  | 20,088   | 4,267  | 2,657   | 10,364 |
| Hay                    | do.          | 60,590  | 9,284   | 3,707    | 3,362  | 1,408   | 4,058  |
| Peanuts for nuts       | do.          | 59,650  | 0       | 0        | 28,216 | 278     | 0      |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 215,024   | 311,642 | 447,321   | 624,030 | 204,882      | 298,336 |
| Machinery and equipment        | 29,465    | 32,109  | 81,821    | 87,732  | 27,172       | 29,745  |
| Farm products sold             | 38,658    | 34,886  | 146,951   | 121,088 | 33,777       | 31,077  |
| Crops, nursery, and greenhouse | 22,283    | 27,617  | 80,031    | 74,559  | 16,265       | 23,008  |
| Livestock and poultry          | 36,553    | 28,185  | 118,565   | 77,985  | 33,587       | 26,300  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,052     | 3,459   | 7,022     | 7,370   | 2,725        | 3,154   |
| Other agricultural chemicals   | 1,913     | 1,857   | 5,033     | 3,718   | 1,621        | 1,600   |
| Energy and petroleum products  | 2,354     | 2,921   | 8,488     | 11,322  | 2,074        | 2,562   |
| Hired labor                    | 5,621     | 4,348   | 22,372    | 16,792  | 4,200        | 3,419   |
| Contract labor                 | 2,292     | 2,188   | 4,910     | 4,717   | 2,061        | 1,911   |

### Irrigation methods, water sources, and pumping energy use

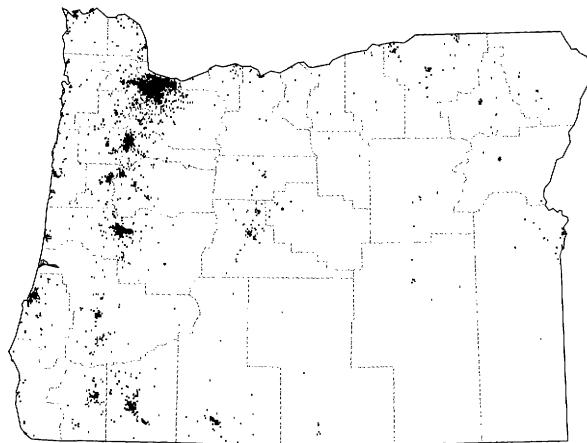
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 1,140 | 247,865 | 0.9            | 1,488         | 239,479 | 1.2     |
| Center pivot                  | 657   | 165,344 | 0.8            | 587           | 157,681 | 1.1     |
| Mechanical move               | 427   | 67,071  | 0.8            | 733           | 69,515  | 1.3     |
| Hand move                     | 209   | 12,664  | 0.8            | 344           | 10,036  | 1.0     |
| Solid set and permanent       | 55    | 2,786   | NA             | 43            | 2,247   | 0.6     |
| All gravity systems           | 944   | 238,295 | 1.2            | 688           | 212,175 | 1.2     |
| Gated pipe                    | 771   | 173,601 | 1.2            | 498           | 151,938 | 1.3     |
| Ditch with siphon tube        | 198   | 48,691  | 1.4            | 162           | 43,350  | 1.2     |
| Flooding                      | 47    | 16,003  | 0.6            | 62            | 16,887  | 1.7     |
| Drip or trickle               | 206   | 5,454   | 2.4            | 79            | NA      | NA      |
| Subirrigation                 | 0     | 0       | 0.0            | 0             | 0       | 0.0     |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 1,401 | 393,220 | 1.1            | 1,482         | 363,680 | 1.4     |
| Onfarm surface sources        | 402   | 41,263  | 0.7            | 386           | 31,422  | 1.0     |
| Off-farm water suppliers      | 283   | 57,523  | 1.4            | 247           | 44,517  | 1.2     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 1,669 | 442,742 | 25             | 1,836         | 407,332 | 29      |
| Electricity                   | 684   | 88,903  | 31             | 653           | 118,369 | 29      |
| Natural gas                   | 842   | 274,471 | 26             | 693           | 227,361 | 28      |
| LP gas, propane, butane       | 285   | 27,906  | 22             | 343           | 33,259  | 26      |
| Diesel fuel                   | 237   | 51,384  | 7              | 405           | 28,292  | 45      |
| Gasoline and gasohol          | 39    | 78      | 88             | 34            | 51      | 17      |
| Off-farm water supply         | 283   | 57,523  | 24             | 247           | 44,517  | 18      |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 455                | 535  | 754  | 27                | 27   | 31   |
| Irrigated cropland | 556                | 584  | 771  | 44                | 39   | 49   |
| Grazing land       | 289                | 338  | 432  | 9                 | 9    | 9    |

# Oregon

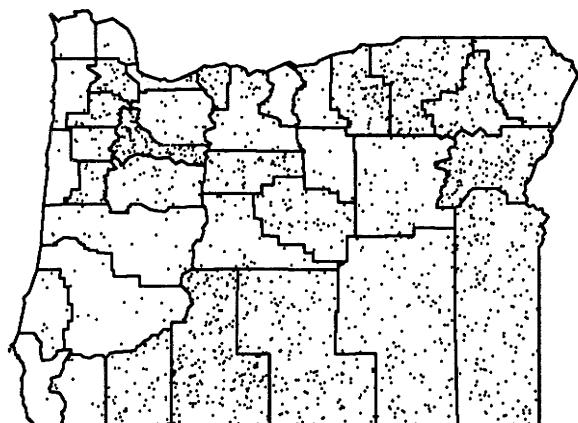
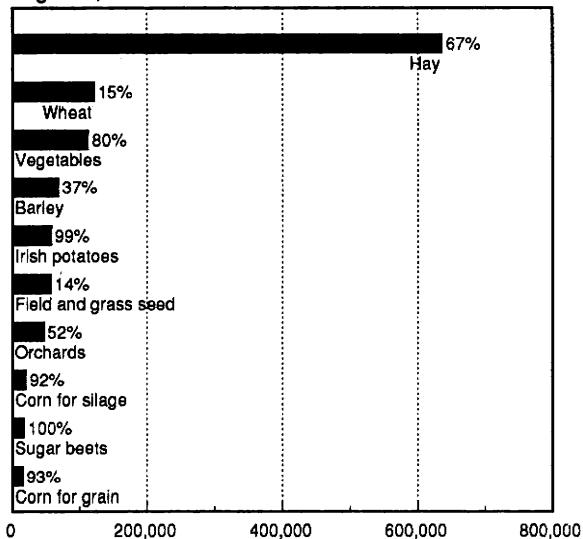
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricult-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------------|
|                     |                                     |                   | Percent                      |
| <b>Sources:</b>     |                                     |                   |                              |
| Surface             | 6.6                                 | 9                 | 089                          |
| Ground              | 0.7                                 | 10                | 72                           |
| Total               | 7.3                                 | 100               | 88                           |
| <b>Agriculture:</b> |                                     |                   |                              |
| <b>Sources—</b>     |                                     |                   |                              |
| Surface             | 5.9                                 | 92                | NA                           |
| Ground              | 0.5                                 | 8                 | NA                           |
| Total               | 6.4                                 | 100               | NA                           |
| <b>Use—</b>         |                                     |                   |                              |
| Irrigation          | 6.4                                 | 100               | NA                           |
| Other farm uses     | 0.0                                 | 0                 | NA                           |
| <b>Disposition—</b> |                                     |                   |                              |
| Consumptive use     | 2.8                                 | 43                | NA                           |
| Return flow         | 3.6                                 | 57                | NA                           |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Oregon

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 27,318    | 29,300    | 25,809    | 24,875    | 26,604    | 34,763    |
| Harvested cropland | do.          | 21,712    | 23,719    | 22,007    | 21,636    | 22,117    | 29,981    |
| Irrigated land     | do.          | 14,411    | 15,334    | 13,659    | 11,791    | 12,014    | 15,869    |
| Harvested cropland | do.          | 11,682    | 12,398    | 11,327    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 5,236     | 5,237     | 5,101     | 5,075     | 5,198     | 5,282     |
| Harvested cropland | do.          | 2,833     | 3,306     | 3,210     | 3,213     | 2,894     | 3,050     |
| Irrigated land     | No. of acres | 1,648,205 | 1,807,882 | 1,880,833 | 1,561,438 | 1,519,421 | 1,607,659 |
| Harvested cropland | do.          | 1,228,388 | 1,376,498 | 1,320,501 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Klamath | Malheur | Lake    | Harney  | Umatilla |
|------------------------|--------------|-----------|---------|---------|---------|---------|----------|
| Irrigated land         | No. of farms | 14,411    | 801     | 1,101   | 264     | 267     | 940      |
| Irrigated land         | No. of acres | 1,648,205 | 212,183 | 193,271 | 155,458 | 137,067 | 111,657  |
| Major irrigated crops: |              |           |         |         |         |         |          |
| Hay                    | do.          | 636,831   | 59,896  | 75,304  | NA      | 82,518  | 27,728   |
| Wheat for grain        | do.          | 122,133   | 6,512   | 21,351  | 1,478   | 838     | 24,890   |
| Vegetables             | do.          | 113,217   | NA      | 13,921  | 0       | NA      | 8,687    |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 299,755   | 371,644 | 387,154   | 490,003 | 226,372      | 275,385 |
| Machinery and equipment        | 37,982    | 37,044  | 51,324    | 50,543  | 26,761       | 26,041  |
| Farm products sold             | 57,664    | 48,129  | 90,843    | 77,200  | 30,502       | 24,359  |
| Crops, nursery, and greenhouse | 69,829    | 59,751  | 95,480    | 78,630  | 33,290       | 33,737  |
| Livestock and poultry          | 37,130    | 29,283  | 52,928    | 45,952  | 26,126       | 16,954  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 5,671     | 5,886   | 7,042     | 7,225   | 3,798        | 4,065   |
| Other agricultural chemicals   | 4,397     | 3,818   | 6,397     | 5,000   | 2,391        | 2,431   |
| Energy and petroleum products  | 3,535     | 3,583   | 5,490     | 5,712   | 1,815        | 1,842   |
| Hired labor                    | 19,633    | 13,783  | 29,457    | 20,095  | 7,569        | 5,489   |
| Contract labor                 | 5,549     | 4,995   | 7,860     | 6,480   | 2,350        | 2,732   |

### Irrigation methods, water sources, and pumping energy use

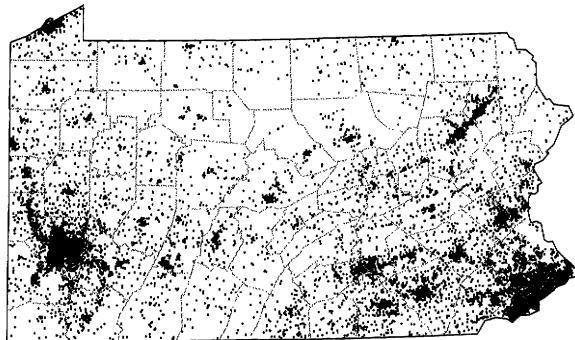
| Item                          | 1988  |         |                | 1984          |         |         |
|-------------------------------|-------|---------|----------------|---------------|---------|---------|
|                               | Farms | Acres   | AF/acre        | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |       |         |                |               |         |         |
| Methods:                      |       |         |                |               |         |         |
| All sprinkler systems         | 7,888 | 832,814 | 1.6            | 8,359         | 855,675 | 1.5     |
| Center pivot                  | 1,682 | 246,819 | 2.0            | 632           | 213,138 | 2.2     |
| Mechanical move               | 1,873 | 290,936 | 1.2            | 1,892         | 284,487 | 1.3     |
| Hand move                     | 5,229 | 246,640 | 1.4            | 7,099         | 315,857 | 1.3     |
| Solid set and permanent       | 1,229 | 48,419  | 2.0            | 624           | 42,193  | 2.2     |
| All gravity systems           | 3,814 | 643,056 | 2.1            | 5,675         | 906,828 | 2.2     |
| Gated pipe                    | 825   | 40,571  | 2.8            | 821           | 30,806  | 2.5     |
| Ditch with siphon tube        | 2,179 | 298,036 | 2.3            | 3,201         | 337,864 | 2.4     |
| Flooding                      | 1,468 | 304,449 | 2.1            | 2,309         | 538,158 | 2.0     |
| Drip or trickle               | 118   | 2,052   | NA             | 24            | 12,169  | 1.8     |
| Subirrigation                 | 91    | 15,272  | 1.6            | 198           | 29,013  | 2.1     |
| Sources:                      |       |         |                |               |         |         |
| Wells                         | 2,841 | 397,258 | 1.5            | 3,083         | 366,162 | 1.5     |
| Onfarm surface sources        | 3,232 | 448,463 | 2.1            | 3,438         | 628,695 | 2.0     |
| Off-farm water suppliers      | 5,416 | 647,949 | 2.0            | 6,718         | 803,386 | 2.2     |
| <i>Number</i>                 |       |         | <i>\$/acre</i> | <i>Number</i> |         |         |
| Onfarm energy use for pumping | 6,728 | 800,420 | 26             | 7,078         | 827,968 | 21      |
| Electricity                   | 6,208 | 751,425 | 27             | 6,769         | 803,804 | 21      |
| Natural gas                   | 2     | NA      | NA             | 9             | 4,180   | 25      |
| LP gas, propane, butane       | 6     | 300     | 30             | 12            | 2,245   | 34      |
| Diesel fuel                   | 243   | 38,343  | 13             | 357           | 16,539  | 20      |
| Gasoline and gasohol          | 409   | 8,786   | 23             | 57            | 1,200   | 27      |
| Off-farm water supply         | 5,416 | 647,949 | 15             | 6,718         | 803,386 | 18      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 684                | 670   | 890   | 42                | 43   | 46   |
| Irrigated cropland | 1,211              | 1,157 | 1,711 | 83                | 101  | 102  |
| Grazing land       | 137                | 138   | 243   | 8                 | 13   | 18   |

# Pennsylvania

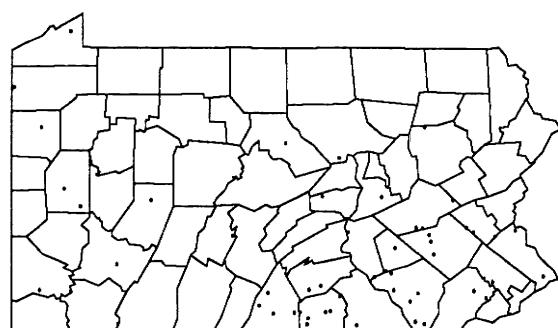
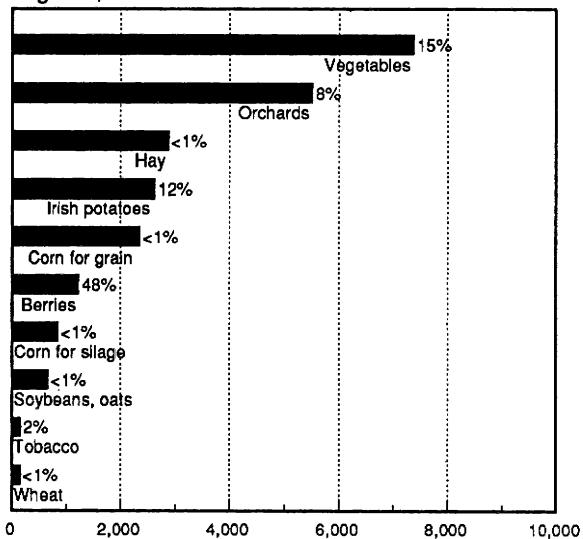
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total | Agriculture's share |
|---------------------|----------------------------------|----------------|---------------------|
|                     | <i>Percent</i>                   |                |                     |
| <b>Sources:</b>     |                                  |                |                     |
| Surface             | 15.1                             | 94             | 0                   |
| Ground              | 0.9                              | 6              | 8                   |
| Total               | 16.0                             | 100            | 1                   |
| <b>Agriculture:</b> |                                  |                |                     |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>  |                     |
| Surface             | 19.7                             | 22             | NA                  |
| Ground              | 71.0                             | 78             | NA                  |
| Total               | 90.7                             | 100            | NA                  |
| <b>Use—</b>         |                                  |                |                     |
| Irrigation          | 12.3                             | 14             | NA                  |
| Other farm uses     | 78.4                             | 86             | NA                  |
| <b>Disposition—</b> |                                  |                |                     |
| Consumptive use     | 80.4                             | 89             | NA                  |
| Return flow         | 10.3                             | 11             | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Pennsylvania

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 48,546 | 52,795 | 54,208 | 51,709 | 60,189 | 79,917 |
| Harvested cropland | do.          | 46,157 | 50,423 | 52,406 | 49,744 | 56,361 | 76,600 |
| Irrigated land     | do.          | 2,208  | 1,548  | 1,297  | 992    | 936    | 1,006  |
| Harvested cropland | do.          | 2,169  | 1,526  | 1,259  | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 5,398  | 5,546  | 5,688  | 5,283  | 5,598  | 6,043  |
| Harvested cropland | do.          | 4,080  | 4,364  | 4,264  | 3,885  | 3,687  | 4,534  |
| Irrigated land     | No. of acres | 29,505 | 18,139 | 14,662 | 17,734 | 18,697 | 22,734 |
| Harvested cropland | do.          | 28,436 | 17,692 | 13,848 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Lancaster | Adams | Franklin | Schuylkill | Berks |
|------------------------|--------------|--------|-----------|-------|----------|------------|-------|
| Irrigated land         | No. of farms | 2,208  | 328       | 65    | 69       | 63         | 158   |
| Irrigated land         | No. of acres | 29,505 | 4,056     | 2,939 | 2,071    | 1,369      | 1,344 |
| Major irrigated crops: |              |        |           |       |          |            |       |
| Vegetables             | do.          | 7,349  | 1,262     | 169   | 189      | 548        | 257   |
| Orchards               | do.          | 5,519  | 49        | 2,101 | 1,075    | NA         | 553   |
| Hay                    | do.          | 2,881  | 510       | 145   | 232      | 0          | 100   |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 239,333   | 225,794 | 394,740   | 472,488 | 231,847      | 219,151 |
| Machinery and equipment        | 41,641    | 38,624  | 71,198    | 75,258  | 40,216       | 37,636  |
| Farm products sold             | 59,701    | 51,287  | 237,169   | 240,396 | 51,759       | 45,864  |
| Crops, nursery, and greenhouse | 26,969    | 22,765  | 212,119   | 225,412 | 13,309       | 13,192  |
| Livestock and poultry          | 60,320    | 50,565  | 105,842   | 85,138  | 59,416       | 50,206  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,091     | 3,206   | 6,717     | 5,788   | 2,884        | 3,135   |
| Other agricultural chemicals   | 1,654     | 1,421   | 5,355     | 4,885   | 1,422        | 1,290   |
| Energy and petroleum products  | 3,460     | 3,642   | 14,220    | 22,644  | 2,923        | 3,127   |
| Hired labor                    | 15,790    | 11,619  | 102,561   | 104,866 | 9,023        | 6,795   |
| Contract labor                 | 6,885     | 5,684   | 21,924    | 14,358  | 4,548        | 3,944   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

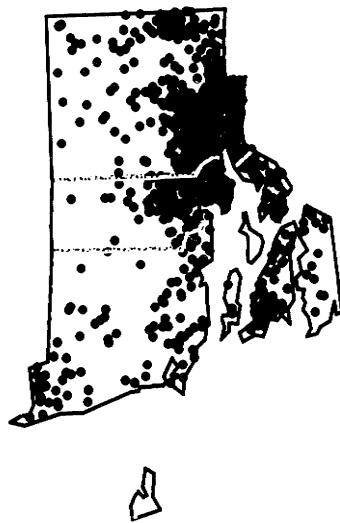
| Item                          | 1988          |         |         | 1984           |         |         |
|-------------------------------|---------------|---------|---------|----------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |                |         |         |
| Methods:                      |               |         |         |                |         |         |
| All sprinkler systems         | 2,482         | 255,416 | 0.6     | 2,209          | 183,188 | 0.5     |
| Center pivot                  | 817           | 105,830 | 0.6     | 403            | 70,560  | 0.6     |
| Mechanical move               | 672           | 94,424  | 0.4     | 525            | 56,114  | 0.3     |
| Hand move                     | 1,235         | 46,357  | 0.4     | 1,399          | 49,996  | 0.5     |
| Solid set and permanent       | 86            | 8,805   | 0.8     | 179            | 6,428   | 1.4     |
| All gravity systems           | 19            | 1,660   | 0.9     | 38             | 6,228   | 0.0     |
| Gated pipe                    | 0             | 0       | 0.0     | 29             | 3,510   | 0.0     |
| Ditch with siphon tube        | 10            | 1,390   | 0.9     | 0              | 0       | 0.0     |
| Flooding                      | 9             | 270     | NA      | 9              | 2,718   | 0.0     |
| Drip or trickle               | 209           | NA      | 1.1     | 156            | 2,646   | 0.5     |
| Subirrigation                 | 2             | NA      | NA      | 10             | 1,515   | 0.0     |
| Sources:                      |               |         |         |                |         |         |
| Wells                         | 792           | 126,525 | 0.8     | 1,065          | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920         | 137,469 | 0.5     | 1,288          | 76,946  | 0.6     |
| Off-farm water suppliers      | 67            | 4,076   | 0.3     | 149            | 2,075   | 0.6     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |         |         |
| Onfarm energy use for pumping | 2,440         | 246,466 | 19      | 2,097          | 175,259 | 20      |
| Electricity                   | 537           | 49,109  | 21      | 496            | 41,735  | 25      |
| Natural gas                   | 0             | 0       | 0       | 0              | 0       | 0       |
| LP gas, propane, butane       | 51            | 6,729   | 13      | 103            | 11,538  | 19      |
| Diesel fuel                   | 1,460         | 167,116 | 18      | 831            | 90,185  | 16      |
| Gasoline and gasohol          | 868           | 23,512  | 28      | 990            | 31,801  | 25      |
| Off-farm water cost           | 67            | 4,076   | 21      | 149            | 2,075   | 56      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,507              | 1,342 | 1,513 | 36                | 37   | 37   |
| Irrigated cropland | NR                 | NR    | NR    | 60                | NR   | NR   |
| Grazing land       | 665                | 556   | 608   | 13                | 14   | 13   |

# Rhode Island

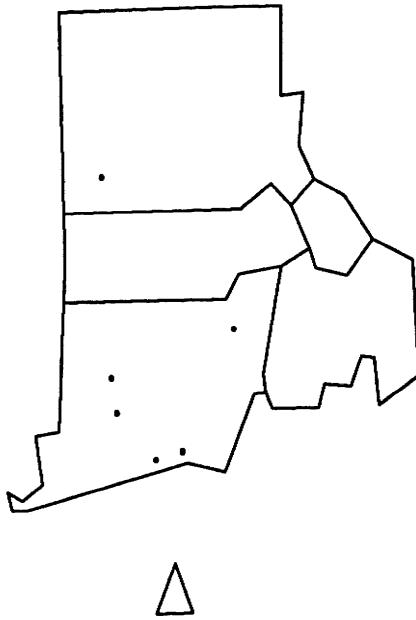
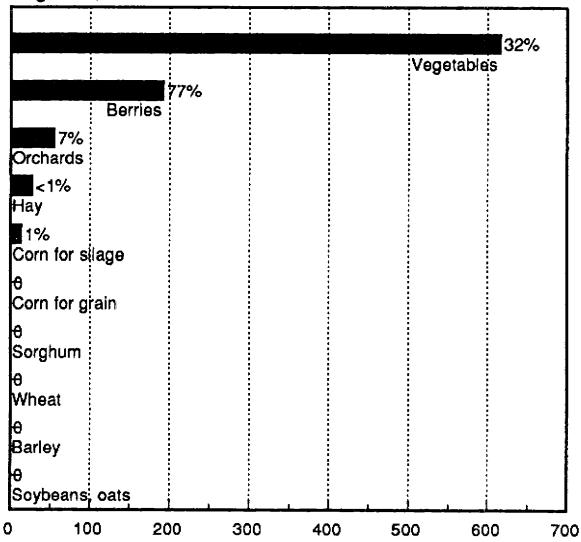
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 0.1                                 | 82                | 3                      |
| Ground              | 0.0                                 | 19                | 7                      |
| Total               | 0.2                                 | 100               | 4                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                        |
| Surface             | 4.3                                 | 68                | NA                     |
| Ground              | 2.1                                 | 32                | NA                     |
| Total               | 6.4                                 | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 3.8                                 | 60                | NA                     |
| Other farm uses     | 2.6                                 | 40                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 6.0                                 | 94                | NA                     |
| Return flow         | 0.4                                 | 6                 | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Rhode Island

### Land in farms

| Item               | Unit         | 1987  | 1982  | 1978  | 1974  | 1969  | 1964  |
|--------------------|--------------|-------|-------|-------|-------|-------|-------|
| Total cropland     | No. of farms | 597   | 655   | 624   | 543   | 604   | 941   |
| Harvested cropland | do.          | 523   | 576   | 560   | 512   | 543   | 825   |
| Irrigated land     | do.          | 105   | 84    | 78    | 73    | 60    | 66    |
| Harvested cropland | do.          | 99    | 84    | 77    | NA    | NA    | NA    |
| Total cropland     | 1,000 acres  | 26    | 28    | 32    | 29    | 32    | 45    |
| Harvested cropland | do.          | 18    | 21    | 24    | 21    | 22    | 29    |
| Irrigated land     | No. of acres | 3,494 | 2,224 | 2,801 | 2,336 | 1,925 | 1,428 |
| Harvested cropland | do.          | 3,116 | 1,828 | 2,798 | NA    | NA    | NA    |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Washington | Providence | Newport | Kent | Bristol |
|------------------------|--------------|-------|------------|------------|---------|------|---------|
| Irrigated land         | No. of farms | 105   | 41         | 28         | 20      | 11   | 5       |
| Irrigated land         | No. of acres | 3,494 | 2,749      | 375        | 247     | 97   | 26      |
| Major irrigated crops: |              |       |            |            |         |      |         |
| Vegetables             | do.          | 617   | 273        | 208        | NA      | NA   | NA      |
| Berries                | do.          | 193   | 82         | NA         | NA      | NA   | NA      |
| Orchards               | do.          | 56    | NA         | NA         | 0       | 0    | 0       |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 420,279   | 237,141 | 803,721   | 521,029 | 339,624      | 207,936 |
| Machinery and equipment        | 35,918    | 25,893  | 87,324    | 79,859  | 25,086       | 20,324  |
| Farm products sold             | 53,903    | 41,726  | 209,866   | 150,454 | 26,426       | 27,544  |
| Crops, nursery, and greenhouse | 72,317    | 49,425  | 226,000   | 150,512 | 17,511       | 20,340  |
| Livestock and poultry          | 30,919    | 31,377  | 6,278     | 17,412  | 32,220       | 32,013  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,346     | 2,522   | 6,590     | 7,355   | 2,261        | 1,742   |
| Other agricultural chemicals   | 2,192     | 2,286   | 4,030     | 6,197   | 1,471        | 1,212   |
| Energy and petroleum products  | 2,942     | 3,276   | 8,205     | 13,779  | 1,747        | 2,189   |
| Hired labor                    | 44,561    | 20,665  | 109,292   | 78,857  | 11,739       | 7,700   |
| Contract labor                 | 8,045     | 2,810   | 12,516    | 4,889   | 4,086        | 2,242   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 01, New England

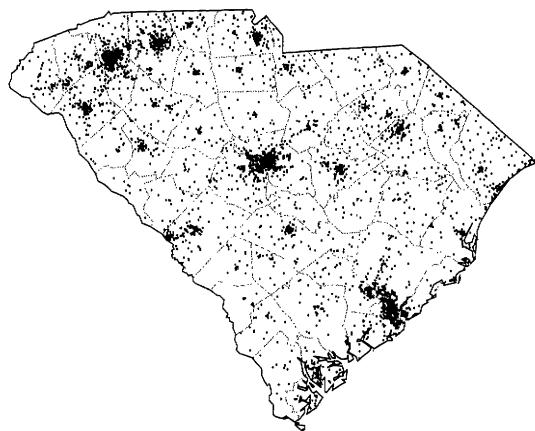
| Item                          | 1988          |        |         | 1984          |        |         |
|-------------------------------|---------------|--------|---------|---------------|--------|---------|
|                               | Farms         | Acres  | AF/acre | Farms         | Acres  | AF/acre |
| <i>Number</i>                 |               |        |         |               |        |         |
| Methods:                      |               |        |         |               |        |         |
| All sprinkler systems         | 967           | 24,233 | 0.8     | 886           | 24,127 | 1.1     |
| Center pivot                  | 611           | 11,411 | 1.3     | 196           | 5,039  | 1.1     |
| Mechanical move               | 13            | 1,046  | 0.3     | 36            | 2,548  | 0.4     |
| Hand move                     | 95            | 2,325  | 0.3     | 373           | 6,670  | 0.5     |
| Solid set and permanent       | 258           | 9,421  | 0.5     | 335           | 9,870  | 1.7     |
| All gravity systems           | 188           | 11,714 | NA      | 87            | 2,683  | 1.5     |
| Gated pipe                    | 23            | 391    | NA      | 6             | 174    | 0.0     |
| Ditch with siphon tube        | 26            | 2,928  | NA      | 41            | 1,455  | 1.5     |
| Flooding                      | 139           | 8,395  | NA      | 44            | 1,054  | 1.2     |
| Drip or trickle               | 0             | 0      | 0.0     | 75            | 679    | 0.6     |
| Subirrigation                 | 0             | 0      | 0.0     | 0             | 0      | 0.0     |
| Sources:                      |               |        |         |               |        |         |
| Wells                         | 324           | 3,698  | 0.5     | 178           | 2,966  | 0.9     |
| Onfarm surface sources        | 844           | 21,566 | 3.9     | 731           | 21,261 | 1.0     |
| Off-farm water suppliers      | 26            | 102    | NA      | 76            | 869    | 0.5     |
|                               | <i>Number</i> |        |         | <i>Number</i> |        |         |
|                               |               |        |         |               |        |         |
| Onfarm energy use for pumping | 942           | 24,312 | 48      | 789           | 22,988 | 54      |
| Electricity                   | 273           | 5,958  | 68      | 279           | 5,612  | 94      |
| Natural gas                   | 0             | 0      | 0       | 9             | 174    | 87      |
| LP gas, propane, butane       | 310           | 7,418  | 53      | 147           | 6,203  | 51      |
| Diesel fuel                   | 130           | 6,599  | 35      | 190           | 6,392  | 29      |
| Gasoline and gasohol          | 444           | 4,337  | 29      | 379           | 4,607  | 44      |
| Off-farm water supply         | 26            | 102    | 84      | 76            | 869    | 36      |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 67,612             | NR   | NR   | 78                | NR   | NR   |
| Irrigated cropland | 70,000             | NR   | NR   | 150               | NR   | NR   |
| Grazing land       | 56,761             | NR   | NR   | 32                | NR   | NR   |

# South Carolina

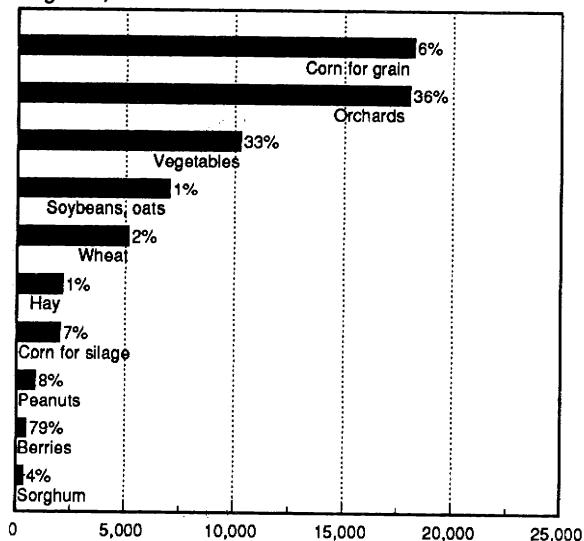
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total | Agriculture's share |
|---------------------|----------------------------------|----------------|---------------------|
|                     | <i>Percent</i>                   |                |                     |
| <b>Sources:</b>     |                                  |                |                     |
| Surface             | 7.4                              | 97             | 0                   |
| Ground              | 0.2                              | 3              | 12                  |
| Total               | 7.6                              | 100            | 1                   |
| <b>Agriculture:</b> |                                  |                |                     |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>  |                     |
| Surface             | 19.9                             | 40             | NA                  |
| Ground              | 29.4                             | 60             | NA                  |
| Total               | 49.3                             | 100            | NA                  |
| <b>Use—</b>         |                                  |                |                     |
| Irrigation          | 38.1                             | 77             | NA                  |
| Other farm uses     | 11.2                             | 23             | NA                  |
| <b>Disposition—</b> |                                  |                |                     |
| Consumptive use     | 49.2                             | 100            | NA                  |
| Return flow         | 0.1                              | 0              | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

South Carolina

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 18,578 | 23,166 | 25,427 | 28,074 | 37,634 | 53,963 |
| Harvested cropland | do.          | 15,556 | 20,144 | 22,875 | 24,757 | 32,189 | 50,005 |
| Irrigated land     | do.          | 1,216  | 946    | 770    | 446    | 675    | 1,337  |
| Harvested cropland | do.          | 1,153  | 926    | 719    | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 2,686  | 3,179  | 3,376  | 3,201  | 3,440  | 3,520  |
| Harvested cropland | do.          | 1,590  | 2,474  | 2,524  | 2,251  | 2,042  | 2,263  |
| Irrigated land     | No. of acres | 80,689 | 81,326 | 32,031 | 10,335 | 15,003 | 18,524 |
| Harvested cropland | do.          | 78,569 | 80,738 | 30,440 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Orangeburg | Edgefield | Sumter | Calhoun | Lexington |
|------------------------|--------------|--------|------------|-----------|--------|---------|-----------|
| Irrigated land         | No. of farms | 1,216  | 71         | 40        | 41     | 24      | 90        |
| Irrigated land         | No. of acres | 80,689 | 12,105     | 6,191     | 5,945  | 4,634   | 4,535     |
| Major irrigated crops: |              |        |            |           |        |         |           |
| Corn for grain         | do.          | 18,225 | 4,505      | 0         | 1,967  | 1,962   | 692       |
| Orchards               | do.          | 18,030 | 745        | 5,743     | 37     | NA      | 574       |
| Vegetables             | do.          | 10,254 | 346        | 33        | 225    | 68      | 1,829     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 201,169   | 208,524 | 424,484   | 559,784 | 187,505      | 195,155 |
| Machinery and equipment        | 31,252    | 30,576  | 76,666    | 89,315  | 28,467       | 28,339  |
| Farm products sold             | 42,827    | 38,853  | 157,880   | 143,399 | 35,579       | 34,729  |
| Crops, nursery, and greenhouse | 42,837    | 40,164  | 147,184   | 131,191 | 30,893       | 34,703  |
| Livestock and poultry          | 33,950    | 26,226  | 84,788    | 73,242  | 32,342       | 25,075  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,541     | 5,320   | 11,470    | 15,043  | 4,004        | 4,861   |
| Other agricultural chemicals   | 3,718     | 4,992   | 10,486    | 13,630  | 3,004        | 4,441   |
| Energy and petroleum products  | 2,825     | 3,454   | 10,218    | 11,854  | 2,361        | 3,132   |
| Hired labor                    | 11,947    | 8,500   | 45,822    | 32,139  | 8,509        | 7,093   |
| Contract labor                 | 7,042     | 8,045   | 25,438    | 26,050  | 4,154        | 6,027   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 03, South Atlantic Gulf

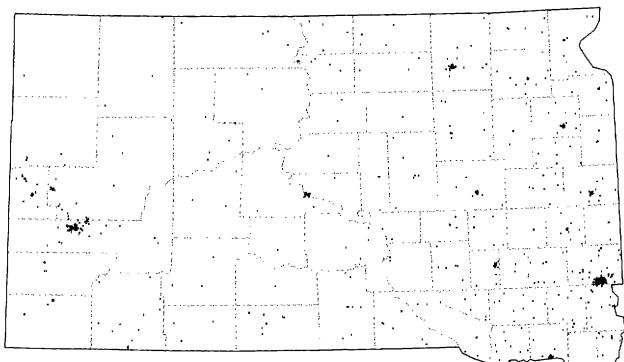
| Item                          | 1988   |           |                | 1984          |           |         |
|-------------------------------|--------|-----------|----------------|---------------|-----------|---------|
|                               | Farms  | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |        |           |                |               |           |         |
| Methods:                      |        |           |                |               |           |         |
| All sprinkler systems         | 13,837 | 1,265,350 | 0.8            | 8,887         | 904,024   | 0.7     |
| Center pivot                  | 6,322  | 661,593   | 0.9            | 1,938         | 380,757   | 0.7     |
| Mechanical move               | 2,432  | 296,183   | 0.5            | 2,723         | 241,098   | 0.5     |
| Hand move                     | 3,635  | 119,964   | 0.6            | 2,352         | 56,675    | 0.6     |
| Solid set and permanent       | 2,583  | 187,610   | 1.5            | 2,788         | 225,494   | 1.4     |
| All gravity systems           | 1,556  | 777,181   | 1.6            | 1,447         | 620,636   | 1.8     |
| Gated pipe                    | 211    | 21,326    | 0.9            | 137           | 25,028    | 1.3     |
| Ditch with siphon tube        | 520    | 149,441   | 1.2            | 553           | 161,804   | 1.9     |
| Flooding                      | 836    | 606,414   | 1.7            | 789           | 433,804   | 1.9     |
| Drip or trickle               | 2,751  | 327,958   | 1.6            | 1,989         | 243,723   | 1.3     |
| Subirrigation                 | 148    | 220,468   | 4.1            | 100           | 246,712   | 4.6     |
| Sources:                      |        |           |                |               |           |         |
| Wells                         | 8,864  | 1,281,282 | 1.2            | 7,391         | 1,093,214 | 1.2     |
| Onfarm surface sources        | 8,119  | 630,540   | 0.8            | 4,146         | 410,299   | 0.9     |
| Off-farm water suppliers      | 1,247  | 556,348   | 3.1            | 290           | 478,335   | 3.5     |
| <i>Number</i>                 |        |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 13,818 | 2,210,114 | 18             | 10,142        | 1,815,951 | 22      |
| Electricity                   | 6,309  | 733,196   | 22             | 5,134         | 658,340   | 25      |
| Natural gas                   | 4      | 287       | 56             | 64            | 7,335     | 47      |
| LP gas, propane, butane       | 1,628  | 91,982    | 24             | 607           | 51,882    | 32      |
| Diesel fuel                   | 5,945  | 1,358,762 | 16             | 4,862         | 1,072,794 | 19      |
| Gasoline and gasohol          | 1,850  | 25,887    | 35             | 907           | 25,600    | 18      |
| Off-farm water supply         | 1,247  | 556,348   | 27             | 290           | 478,335   | 22      |

### Land values and cash rent per acre

| Item               | Average land value |      |       | Average cash rent |      |      |
|--------------------|--------------------|------|-------|-------------------|------|------|
|                    | 1988               | 1986 | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |       |                   |      |      |
| Dry cropland       | 640                | NR   | 740   | 22                | NR   | 28   |
| Irrigated cropland | 618                | NR   | 1,272 | 55                | NR   | 47   |
| Grazing land       | 662                | NR   | 593   | 13                | NR   | 15   |

# South Dakota

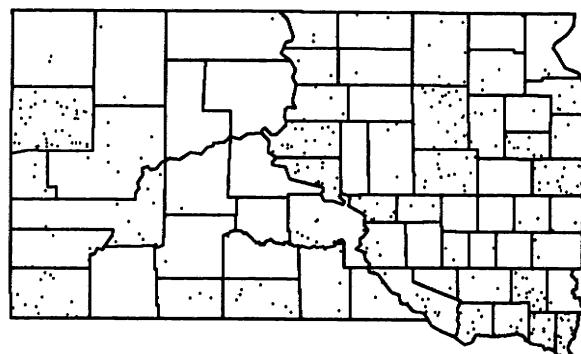
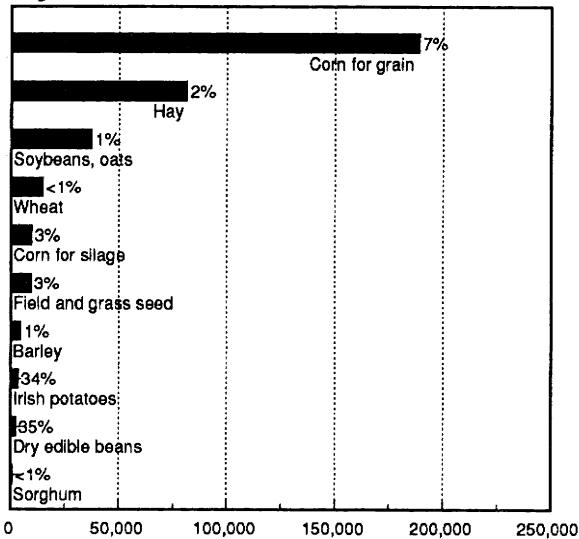
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share |
|---------------------|---------------------------|----------------|---------------------|
|                     | Percent                   |                |                     |
| <b>Sources:</b>     |                           |                |                     |
| Surface             | 0.5                       | 63             | 88                  |
| Ground              | 0.3                       | 37             | 53                  |
| Total               | 0.8                       | 100            | 75                  |
| <b>Agriculture:</b> |                           |                |                     |
| <b>Sources—</b>     |                           |                |                     |
| Surface             | 0.4                       | 74             | NA                  |
| Ground              | 0.2                       | 26             | NA                  |
| Total               | 0.6                       | 100            | NA                  |
| <b>Use—</b>         |                           |                |                     |
| Irrigation          | 0.5                       | 91             | NA                  |
| Other farm uses     | 0.1                       | 9              | NA                  |
| <b>Disposition—</b> |                           |                |                     |
| Consumptive use     | 0.4                       | 64             | NA                  |
| Return flow         | 0.2                       | 36             | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

South Dakota

### Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 32,451  | 33,844  | 36,091  | 40,015  | 42,781  | 47,133  |
| Harvested cropland | do.          | 31,110  | 32,823  | 35,172  | 38,635  | 41,108  | 46,230  |
| Irrigated land     | do.          | 1,869   | 1,815   | 1,776   | 1,072   | 1,063   | 1,005   |
| Harvested cropland | do.          | 1,837   | 1,772   | 1,710   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 19,642  | 18,839  | 18,733  | 19,192  | 19,838  | 18,707  |
| Harvested cropland | do.          | 12,983  | 14,433  | 13,856  | 14,855  | 12,634  | 14,445  |
| Irrigated land     | No. of acres | 361,796 | 376,447 | 334,755 | 152,203 | 148,341 | 130,050 |
| Harvested cropland | do.          | 350,822 | 364,657 | 313,802 | NA      | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Butte  | Union  | Spink  | Sully  | Brookings |
|------------------------|--------------|---------|--------|--------|--------|--------|-----------|
| Irrigated land         | No. of farms | 1,869   | 271    | 97     | 84     | 22     | 94        |
| Irrigated land         | No. of acres | 361,796 | 43,726 | 26,328 | 20,827 | 18,667 | 15,257    |
| Major irrigated crops: |              |         |        |        |        |        |           |
| Corn for grain         | do.          | 188,952 | 7,341  | 16,270 | 14,497 | 14,668 | 11,460    |
| Hay                    | do.          | 81,554  | 24,476 | NA     | 2,156  | 1,415  | 790       |
| Soybeans for beans     | do.          | 31,130  | 0      | 8,659  | 1,831  | 1,006  | 1,522     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 326,333   | 418,940 | 664,506   | 861,087 | 308,110      | 396,418 |
| Machinery and equipment        | 55,005    | 60,589  | 100,896   | 114,823 | 52,526       | 57,867  |
| Farm products sold             | 74,761    | 66,709  | 205,422   | 183,822 | 67,684       | 60,693  |
| Crops, nursery, and greenhouse | 31,785    | 31,016  | 68,116    | 71,810  | 29,462       | 28,693  |
| Livestock and poultry          | 65,517    | 53,161  | 195,929   | 151,129 | 58,781       | 48,096  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,515     | 4,134   | 8,539     | 8,140   | 4,216        | 3,827   |
| Other agricultural chemicals   | 3,154     | 2,668   | 5,820     | 5,661   | 2,987        | 2,490   |
| Energy and petroleum products  | 5,341     | 6,930   | 12,044    | 16,569  | 4,982        | 6,445   |
| Hired labor                    | 6,206     | 4,677   | 16,195    | 10,675  | 5,446        | 4,230   |
| Contract labor                 | 2,723     | 2,213   | 4,777     | 2,397   | 2,521        | 2,198   |

### Irrigation methods, water sources, and pumping energy use

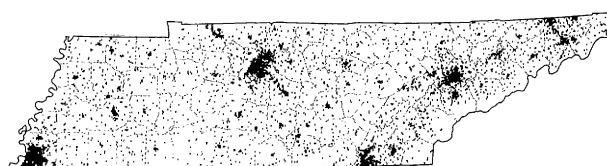
| Item                          | 1988          |         |         | 1984           |         |         |
|-------------------------------|---------------|---------|---------|----------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |                |         |         |
| Methods:                      |               |         |         |                |         |         |
| All sprinkler systems         | 1,121         | 254,711 | 1.0     | 892            | 225,664 | 0.8     |
| Center pivot                  | 1,069         | 246,539 | 1.0     | 752            | 206,495 | 0.8     |
| Mechanical move               | 112           | 6,598   | 0.3     | 179            | 16,864  | 0.6     |
| Hand move                     | 93            | 1,574   | NA      | 42             | 1,355   | 1.0     |
| Solid set and permanent       | 0             | 0       | NA      | 1              | D       | NA      |
| All gravity systems           | 550           | 112,254 | 1.3     | 623            | 113,445 | 1.1     |
| Gated pipe                    | 177           | 40,688  | 0.5     | 292            | 29,572  | 1.0     |
| Ditch with siphon tube        | 329           | 38,397  | 1.1     | 390            | 54,385  | 1.0     |
| Flooding                      | 181           | 33,169  | 1.4     | 228            | 29,488  | 1.0     |
| Drip or trickle               | 0             | 0       | 0.0     | 13             | 520     | NA      |
| Subirrigation                 | 0             | 0       | 0.0     | 0              | 0       | NA      |
| Sources:                      |               |         |         |                |         |         |
| Wells                         | 749           | 201,198 | 0.9     | 619            | 131,135 | 0.7     |
| Onfarm surface sources        | 277           | 50,939  | 1.1     | 370            | 88,053  | 1.0     |
| Off-farm water suppliers      | 585           | 114,151 | 1.4     | 469            | 120,200 | 1.1     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |         |         |
| Onfarm energy use for pumping | 1,046         | 265,155 | 23      | 958            | 205,140 | 20      |
| Electricity                   | 884           | 223,257 | 25      | 709            | 173,178 | 21      |
| Natural gas                   | 0             | 0       | 0       | 29             | 580     | 60      |
| LP gas, propane, butane       | 59            | 6,167   | 16      | 20             | 1,400   | 18      |
| Diesel fuel                   | 171           | 30,956  | 12      | 271            | 29,692  | 15      |
| Gasoline and gasohol          | 34            | 4,775   | 17      | 29             | 290     | 30      |
| Off-farm water supply         | 585           | 114,151 | 10      | 469            | 120,200 | 12      |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 273                | 276  | 401  | 20                | 27   | 31   |
| Irrigated cropland | 463                | 508  | 806  | 47                | 62   | 71   |
| Grazing land       | 75                 | 92   | 135  | 5                 | 8    | 9    |

# Tennessee

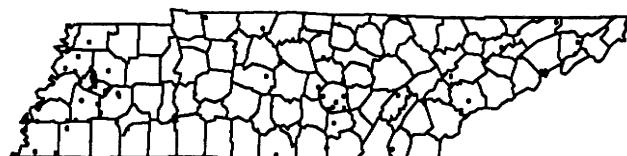
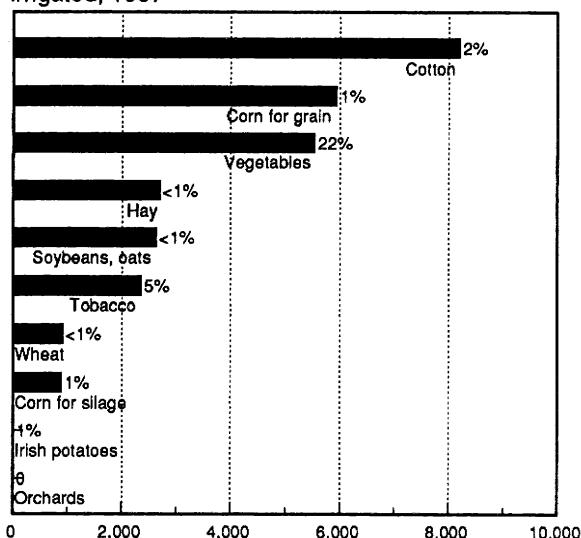
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | <i>Percent</i>         |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 9.0                                 | 95                | 1                      |
| Ground              | 0.5                                 | 5                 | 8                      |
| Total               | 9.5                                 | 100               | 1                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <i>Sources—</i>     |                                     |                   |                        |
| Surface             | 44.9                                | 54                | NA                     |
| Ground              | 38.0                                | 46                | NA                     |
| Total               | 82.9                                | 100               | NA                     |
| <i>Use—</i>         |                                     |                   |                        |
| Irrigation          | 10.0                                | 12                | NA                     |
| Other farm uses     | 72.9                                | 88                | NA                     |
| <i>Disposition—</i> |                                     |                   |                        |
| Consumptive use     | 37.6                                | 45                | NA                     |
| Return flow         | 45.3                                | 55                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Tennessee

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969    | 1964    |
|--------------------|--------------|--------|--------|--------|--------|---------|---------|
| Total cropland     | No. of farms | 73,703 | 84,774 | 82,450 | 89,518 | 115,086 | 127,992 |
| Harvested cropland | do.          | 63,754 | 74,518 | 73,823 | 77,885 | 96,958  | 115,755 |
| Irrigated land     | do.          | 1,899  | 1,141  | 1,254  | 836    | 1,299   | 1,086   |
| Harvested cropland | do.          | 1,799  | 1,103  | 1,167  | NA     | NA      | NA      |
| Total cropland     | 1,000 acres  | 7,186  | 7,602  | 7,786  | 7,757  | 8,404   | 7,855   |
| Harvested cropland | do.          | 3,854  | 4,549  | 4,409  | 3,746  | 3,472   | 3,618   |
| Irrigated land     | No. of acres | 37,776 | 17,745 | 13,163 | 9,860  | 12,158  | 10,737  |
| Harvested cropland | do.          | 34,886 | 16,382 | 11,045 | NA     | NA      | NA      |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Crockett | Lake  | Dyer  | Haywood | Shelby |
|------------------------|--------------|--------|----------|-------|-------|---------|--------|
| Irrigated land         | No. of farms | 1,899  | 10       | 7     | 8     | 11      | 69     |
| Irrigated land         | No. of acres | 37,776 | 6,493    | 2,281 | 1,863 | 1,755   | 1,664  |
| Major irrigated crops: |              |        |          |       |       |         |        |
| Cotton                 | do.          | 8,206  | 5,983    | NA    | NA    | 967     | NA     |
| Corn for grain         | do.          | 5,952  | 0        | 1,823 | NA    | NA      | NA     |
| Vegetables             | do.          | 4,871  | NA       | 0     | NA    | NA      | 18     |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 146,126   | 139,141 | 246,428   | 237,919 | 143,617      | 137,893 |
| Machinery and equipment        | 22,700    | 20,713  | 46,399    | 38,276  | 22,106       | 20,491  |
| Farm products sold             | 20,294    | 18,593  | 83,996    | 60,906  | 18,739       | 18,053  |
| Crops, nursery, and greenhouse | 16,292    | 14,909  | 75,732    | 53,600  | 13,832       | 14,180  |
| Livestock and poultry          | 16,020    | 13,354  | 28,680    | 22,369  | 15,785       | 13,269  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 2,061     | 1,958   | 3,439     | 2,599   | 2,018        | 1,948   |
| Other agricultural chemicals   | 1,414     | 1,567   | 2,343     | 3,016   | 1,376        | 1,540   |
| Energy and petroleum products  | 1,254     | 1,427   | 4,340     | 5,301   | 1,174        | 1,378   |
| Hired labor                    | 3,787     | 3,004   | 27,604    | 22,992  | 2,868        | 2,641   |
| Contract labor                 | 2,485     | 2,104   | 11,998    | 8,206   | 1,883        | 1,875   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 08, Lower Mississippi

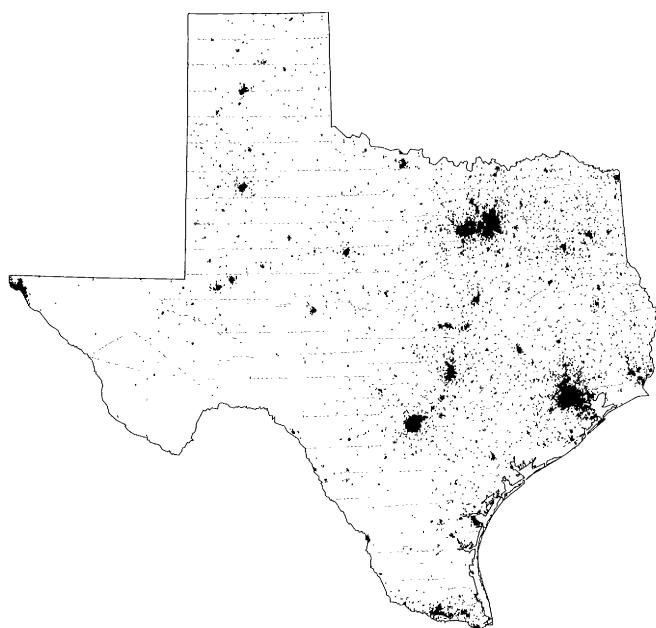
| Item                          | 1988          |           |         | 1984           |           |         |
|-------------------------------|---------------|-----------|---------|----------------|-----------|---------|
|                               | Farms         | Acres     | AF/acre | Farms          | Acres     | AF/acre |
| <i>Number</i>                 |               |           |         |                |           |         |
| Methods:                      |               |           |         |                |           |         |
| All sprinkler systems         | 1,977         | 771,968   | 0.7     | 1,439          | 426,219   | 0.8     |
| Center pivot                  | 1,573         | 628,087   | 0.7     | 985            | 319,232   | 0.8     |
| Mechanical move               | 269           | 56,412    | 0.3     | 163            | 33,426    | 0.7     |
| Hand move                     | 50            | 15,102    | NA      | 100            | 4,885     | 0.2     |
| Solid set and permanent       | 244           | 72,367    | 0.8     | 239            | 68,676    | 1.0     |
| All gravity systems           | 8,614         | 3,495,595 | 1.5     | 7,145          | 2,586,918 | 1.4     |
| Gated pipe                    | 3,215         | 1,046,177 | 1.2     | 2,027          | 528,037   | 0.9     |
| Ditch with siphon tube        | 1,433         | 326,262   | 2.0     | 1,258          | 310,265   | 1.6     |
| Flooding                      | 6,030         | 2,123,156 | 1.6     | 5,020          | 1,748,616 | 1.6     |
| Drip or trickle               | 466           | 12,395    | 1.4     | 196            | 3,502     | 0.5     |
| Subirrigation                 | 137           | 53,965    | 1.2     | 104            | 17,220    | 2.2     |
| Sources:                      |               |           |         |                |           |         |
| Wells                         | 8,508         | 3,763,587 | 1.3     | 7,172          | 2,596,689 | 1.3     |
| Onfarm surface sources        | 2,134         | 524,572   | 1.8     | 1,680          | 395,971   | 1.7     |
| Off-farm water suppliers      | 1,057         | 72,366    | 0.9     | 144            | 29,655    | 2.0     |
|                               | <i>Number</i> |           |         | <i>\$/acre</i> |           |         |
| Onfarm energy use for pumping | 9,312         | 4,259,523 | 16      | 8,058          | 2,900,523 | 20      |
| Electricity                   | 4,972         | 1,488,702 | 22      | 4,631          | 1,246,185 | 22      |
| Natural gas                   | 1,154         | 223,243   | 22      | 1,033          | 191,980   | 25      |
| LP gas, propane, butane       | 2,228         | 498,399   | 13      | 1,911          | 368,491   | 21      |
| Diesel fuel                   | 6,017         | 2,042,815 | 13      | 4,059          | 1,091,072 | 16      |
| Gasoline and gasohol          | 85            | 6,364     | 7       | 119            | 2,795     | 4       |
| Off-farm water supply         | 1,057         | 72,366    | 11      | 144            | 29,655    | 45      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 857                | 889   | 1,042 | 41                | 45   | 50   |
| Irrigated cropland | 1,182              | 1,281 | NR    | 60                | 50   | NR   |
| Grazing land       | 584                | 621   | 662   | 20                | 20   | 20   |

# Texas

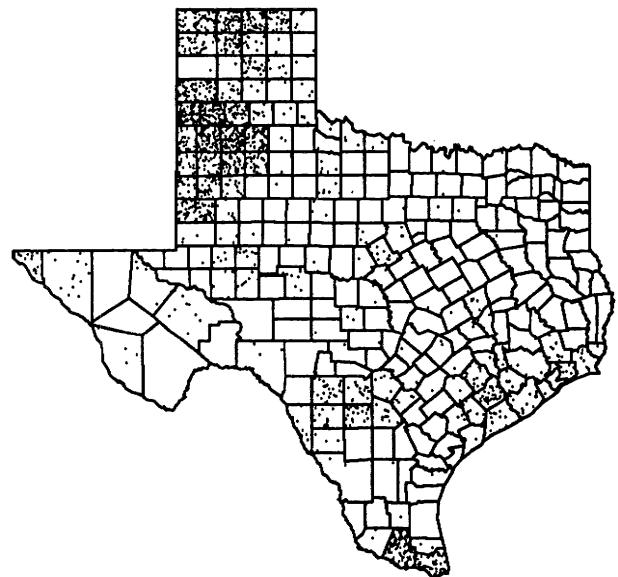
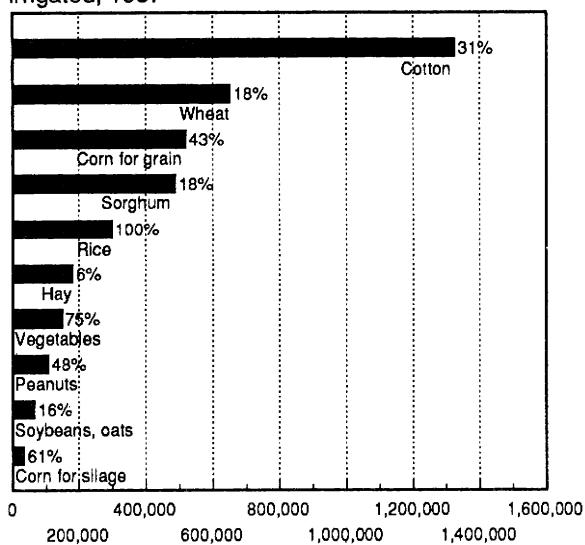
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share |
|---------------------|---------------------------|----------------|---------------------|
|                     |                           |                | Percent             |
| <b>Sources:</b>     |                           |                |                     |
| Surface             | 14.4                      | 64             | 22                  |
| Ground              | 8.0                       | 36             | 77                  |
| Total               | 22.5                      | 100            | 42                  |
| <b>Agriculture:</b> |                           |                |                     |
| <b>Sources—</b>     |                           |                |                     |
| Surface             | 3.2                       | 34             | NA                  |
| Ground              | 6.2                       | 66             | NA                  |
| Total               | 9.4                       | 100            | NA                  |
| <b>Use—</b>         |                           |                |                     |
| Irrigation          | 9.1                       | 97             | NA                  |
| Other farm uses     | 0.3                       | 3              | NA                  |
| <b>Disposition—</b> |                           |                |                     |
| Consumptive use     | 7.8                       | 83             | NA                  |
| Return flow         | 1.6                       | 17             | NA                  |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 2,000 acres

## Selected Characteristics of Irrigated Farms

Texas

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 147,174   | 145,880   | 145,748   | 146,373   | 176,790   | 164,645   |
| Harvested cropland | do.          | 110,358   | 110,341   | 112,291   | 109,208   | 128,274   | 138,503   |
| Irrigated land     | do.          | 19,806    | 19,775    | 24,418    | 22,634    | 28,552    | 27,114    |
| Harvested cropland | do.          | 18,523    | 18,437    | 22,670    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 35,611    | 36,598    | 39,404    | 36,499    | 39,762    | 34,269    |
| Harvested cropland | do.          | 16,521    | 20,761    | 20,599    | 19,014    | 19,825    | 19,408    |
| Irrigated land     | No. of acres | 4,271,043 | 5,575,553 | 6,947,079 | 6,593,832 | 6,888,075 | 6,384,963 |
| Harvested cropland | do.          | 4,020,802 | 5,319,716 | 6,366,287 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Hale    | Hidalgo | Castro  | Lamb    | Parmer  |
|------------------------|--------------|-----------|---------|---------|---------|---------|---------|
| Irrigated land         | No. of farms | 19,806    | 626     | 1,319   | 457     | 575     | 533     |
| Irrigated land         | No. of acres | 4,271,043 | 240,956 | 231,214 | 180,156 | 178,314 | 171,606 |
| Major irrigated crops: |              |           |         |         |         |         |         |
| Cotton                 | do.          | 1,327,122 | 124,300 | 47,236  | 37,125  | 91,565  | 35,903  |
| Wheat for grain        | do.          | 652,746   | 16,873  | 643     | 42,048  | 11,975  | 38,620  |
| Corn for grain         | do.          | 522,359   | 57,352  | 23,159  | 53,484  | 34,124  | 58,405  |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 374,742   | 386,138 | 587,091   | 758,381 | 349,900      | 341,846 |
| Machinery and equipment        | 30,351    | 30,436  | 78,569    | 87,302  | 24,701       | 23,664  |
| Farm products sold             | 55,877    | 48,299  | 167,744   | 147,268 | 42,765       | 36,456  |
| Crops, nursery, and greenhouse | 48,168    | 46,835  | 113,431   | 114,838 | 25,080       | 23,589  |
| Livestock and poultry          | 50,330    | 40,037  | 159,163   | 111,355 | 43,076       | 35,309  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 3,462     | 4,005   | 8,659     | 10,267  | 2,420        | 2,822   |
| Other agricultural chemicals   | 3,018     | 3,872   | 7,690     | 8,687   | 1,826        | 2,152   |
| Energy and petroleum products  | 3,146     | 3,993   | 11,911    | 17,591  | 2,071        | 2,367   |
| Hired labor                    | 10,424    | 7,617   | 25,902    | 19,146  | 6,838        | 5,070   |
| Contract labor                 | 3,278     | 3,911   | 7,666     | 9,989   | 2,361        | 2,353   |

### Irrigation methods, water sources, and pumping energy use

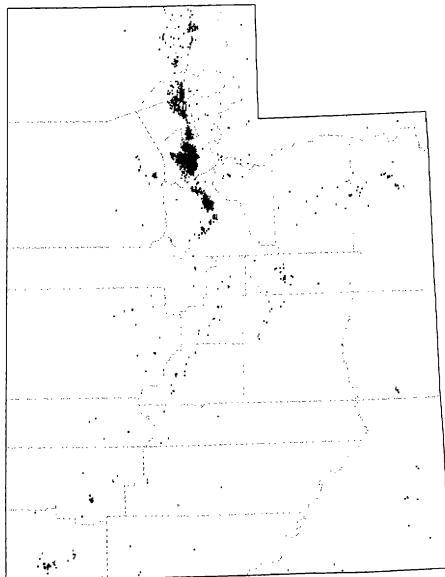
| Item                          | 1988          |           |         | 1984           |           |         |
|-------------------------------|---------------|-----------|---------|----------------|-----------|---------|
|                               | Farms         | Acres     | AF/acre | Farms          | Acres     | AF/acre |
| <i>Number</i>                 |               |           |         |                |           |         |
| Methods:                      |               |           |         |                |           |         |
| All sprinkler systems         | 5,243         | 1,333,785 | 1.0     | 4,738          | 1,366,968 | 1.1     |
| Center pivot                  | 3,412         | 1,060,286 | 1.1     | 2,695          | 1,011,314 | 1.3     |
| Mechanical move               | 1,573         | 171,794   | 1.1     | 1,710          | 256,919   | 0.8     |
| Hand move                     | 691           | 69,640    | 0.8     | 1,136          | 95,154    | 0.5     |
| Solid set and permanent       | 443           | 32,065    | 0.9     | 3              | D         | NA      |
| All gravity systems           | 11,087        | 3,169,416 | 1.6     | 10,302         | 3,669,263 | 1.4     |
| Gated pipe                    | 7,145         | 1,725,284 | 1.5     | 5,884          | 2,215,680 | 1.2     |
| Ditch with siphon tube        | 2,828         | 957,391   | 1.9     | 4,495          | 1,041,623 | 1.5     |
| Flooding                      | 2,925         | 486,741   | 2.2     | 2,306          | 411,960   | 2.5     |
| Drip or trickle               | 686           | 49,991    | 1.3     | 593            | 20,248    | 1.1     |
| Subirrigation                 | 0             | 0         | 0.0     | 0              | 0         | 0.0     |
| Sources:                      |               |           |         |                |           |         |
| Wells                         | 10,285        | 3,490,332 | 1.2     | 9,447          | 4,012,220 | 1.2     |
| Onfarm surface sources        | 2,077         | 248,866   | 1.5     | 1,251          | 223,186   | 2.7     |
| Off-farm water suppliers      | 3,945         | 765,415   | 2.2     | 3,555          | 698,785   | 1.9     |
|                               | <i>Number</i> |           |         | <i>\$/acre</i> |           |         |
| Onfarm energy use for pumping | 11,128        | 3,827,384 | 34      | 10,717         | 4,464,089 | 42      |
| Electricity                   | 7,103         | 1,439,992 | 37      | 6,918          | 1,749,506 | 41      |
| Natural gas                   | 4,985         | 2,066,756 | 33      | 5,257          | 2,353,833 | 44      |
| LP gas, propane, butane       | 861           | 139,991   | 27      | 708            | 139,803   | 21      |
| Diesel fuel                   | 949           | 178,662   | 28      | 1,042          | 220,834   | 47      |
| Gasoline and gasohol          | 28            | 1,983     | 7       | 113            | 113       | 65      |
| Off-farm water supply         | 3,945         | 765,415   | 30      | 3,555          | 698,785   | 27      |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 747                | 924  | 876  | 23                | 22   | 22   |
| Irrigated cropland | 728                | 780  | 911  | 43                | 45   | 49   |
| Grazing land       | 476                | 581  | 474  | 5                 | 5    | 5    |

# Utah

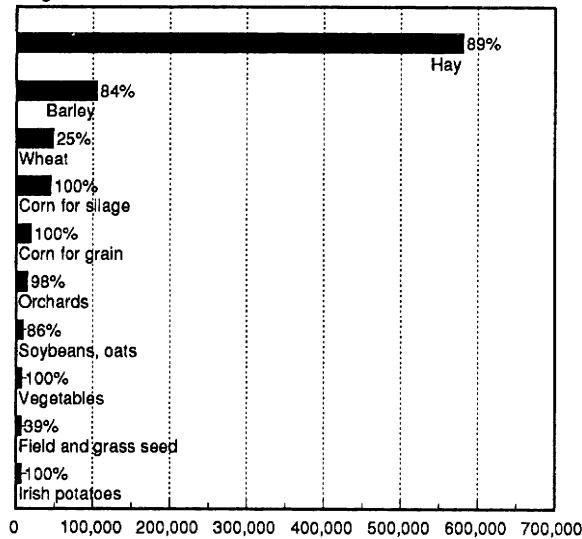
Distribution of population, 1985  
Each dot = 1,000 people



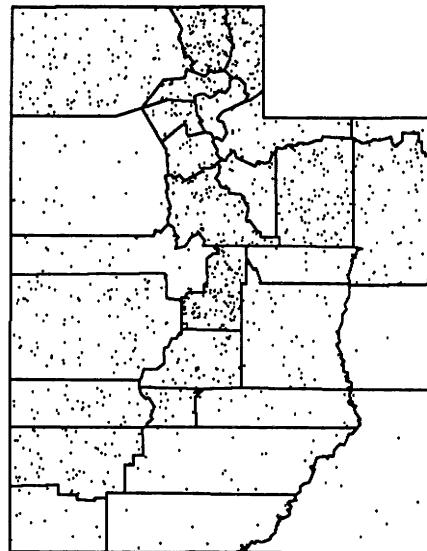
## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total | Agriculture's share<br>Percent |
|---------------------|---------------------------|----------------|--------------------------------|
| <b>Sources:</b>     |                           |                |                                |
| Surface             |                           |                |                                |
| Surface             | 3.8                       | 81             | 95                             |
| Ground              | 0.9                       | 19             | 53                             |
| Total               | 4.7                       | 100            | 87                             |
| <b>Agriculture:</b> |                           |                |                                |
| Sources—            |                           |                |                                |
| Surface             | 3.6                       | 88             | NA                             |
| Ground              | 0.5                       | 12             | NA                             |
| Total               | 4.1                       | 100            | NA                             |
| Use—                |                           |                |                                |
| Irrigation          | 4.0                       | 99             | NA                             |
| Other farm uses     | 0.1                       | 1              | NA                             |
| Disposition—        |                           |                |                                |
| Consumptive use     | 2.2                       | 54             | NA                             |
| Return flow         | 1.9                       | 46             | NA                             |

## Acres of principal irrigated crops and proportion irrigated, 1987



0 100,000 200,000 300,000 400,000 500,000 600,000 700,000



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Utah

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974    | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|---------|-----------|-----------|
| Total cropland     | No. of farms | 12,233    | 12,349    | 11,779    | 11,327  | 12,055    | 14,570    |
| Harvested cropland | do.          | 10,752    | 11,078    | 10,951    | 10,692  | 11,103    | 13,759    |
| Irrigated land     | do.          | 11,143    | 11,174    | 10,822    | 9,701   | 10,282    | 13,762    |
| Harvested cropland | do.          | 9,983     | 10,224    | 10,079    | NA      | NA        | NA        |
| Total cropland     | 1,000 acres  | 2,029     | 1,920     | 2,007     | 1,839   | 1,945     | 2,070     |
| Harvested cropland | do.          | 1,077     | 1,118     | 1,163     | 1,089   | 1,024     | 1,039     |
| Irrigated land     | No. of acres | 1,161,207 | 1,082,328 | 1,168,621 | 969,645 | 1,025,014 | 1,092,270 |
| Harvested cropland | do.          | 829,732   | 821,839   | 839,226   | NA      | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Sanpete | Box Elder | Duchesne | Millard | Cache  |
|------------------------|--------------|-----------|---------|-----------|----------|---------|--------|
| Irrigated land         | No. of farms | 11,143    | 600     | 838       | 658      | 529     | 937    |
| Irrigated land         | No. of acres | 1,161,207 | 110,744 | 106,686   | 97,174   | 93,419  | 83,771 |
| Major irrigated crops: |              |           |         |           |          |         |        |
| Hay                    | do.          | 581,082   | 38,549  | 39,253    | 42,508   | 50,941  | 41,636 |
| Barley for grain       | do.          | 105,534   | 7,798   | 16,644    | 2,767    | 17,918  | 18,699 |
| Wheat for grain        | do.          | 48,678    | 1,472   | 17,302    | 333      | 8,132   | 6,202  |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 302,838   | 389,678 | 309,214   | 403,451 | 278,798      | 336,249 |
| Machinery and equipment        | 35,685    | 33,985  | 38,574    | 36,780  | 24,861       | 23,237  |
| Farm products sold             | 43,927    | 39,719  | 43,821    | 39,387  | 44,332       | 41,038  |
| Crops, nursery, and greenhouse | 19,933    | 19,880  | 19,966    | 19,740  | 19,531       | 21,366  |
| Livestock and poultry          | 50,030    | 41,961  | 47,983    | 40,158  | 57,567       | 48,790  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 2,092     | 1,792   | 2,013     | 1,752   | 3,524        | 2,498   |
| Other agricultural chemicals   | 1,109     | 979     | 1,103     | 948     | 1,151        | 1,440   |
| Energy and petroleum products  | 3,332     | 3,509   | 3,568     | 3,808   | 2,327        | 2,354   |
| Hired labor                    | 9,018     | 6,936   | 8,633     | 6,700   | 11,496       | 8,080   |
| Contract labor                 | 3,817     | 3,392   | 3,920     | 3,593   | 3,201        | 2,566   |

### Irrigation methods, water sources, and pumping energy use

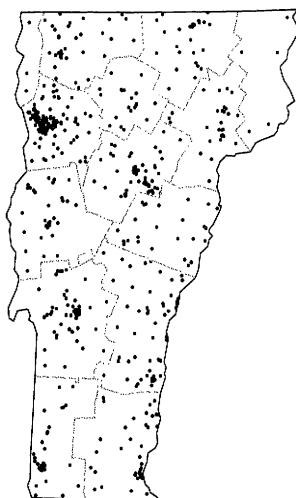
| Item                          | 1988          |         |         | 1984           |         |         |
|-------------------------------|---------------|---------|---------|----------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms          | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |                |         |         |
| Methods:                      |               |         |         |                |         |         |
| All sprinkler systems         | 3,343         | 382,000 | 2.0     | 3,163          | 295,749 | 2.3     |
| Center pivot                  | 1,007         | 110,034 | 2.4     | 141            | 44,087  | 2.7     |
| Mechanical move               | 1,510         | 171,207 | 1.7     | 1,361          | 150,776 | 2.9     |
| Hand move                     | 1,595         | 95,927  | 1.5     | 2,300          | 99,002  | 1.6     |
| Solid set and permanent       | 127           | 4,832   | 3.0     | 133            | 1,884   | 2.9     |
| All gravity systems           | 7,937         | 763,353 | 2.2     | 8,016          | 739,253 | 2.2     |
| Gated pipe                    | 1,475         | 60,704  | 2.5     | 582            | 36,481  | 3.0     |
| Ditch with siphon tube        | 3,625         | 355,639 | 2.2     | 5,303          | 416,348 | 2.3     |
| Flooding                      | 3,740         | 347,010 | 2.2     | 2,624          | 286,424 | 2.0     |
| Drip or trickle               | 77            | 9,882   | 1.6     | 171            | 13,927  | 1.9     |
| Subirrigation                 | 106           | 13,297  | 1.8     | 134            | 9,229   | 1.0     |
| Sources:                      |               |         |         |                |         |         |
| Wells                         | 1,751         | 216,390 | 2.5     | 893            | 123,404 | 2.3     |
| Onfarm surface sources        | 1,208         | 165,804 | 1.9     | 1,111          | 103,605 | 2.1     |
| Off-farm water suppliers      | 7,955         | 770,409 | 2.1     | 8,632          | 832,542 | 2.1     |
|                               | <i>Number</i> |         |         | <i>\$/acre</i> |         |         |
| Onfarm energy use for pumping | 2,327         | 294,992 | 37      | 1,816          | 236,481 | 26      |
| Electricity                   | 1,627         | 231,816 | 41      | 1,382          | 186,549 | 30      |
| Natural gas                   | 51            | 4,584   | 13      | 90             | 17,771  | 11      |
| LP gas, propane, butane       | 57            | 3,399   | 9       | 19             | 2,660   | 6       |
| Diesel fuel                   | 480           | 53,818  | 23      | 292            | 28,975  | 17      |
| Gasoline and gasohol          | 210           | 1,375   | 21      | 48             | 526     | 12      |
| Off-farm water supply         | 7,955         | 770,409 | 11      | 8,632          | 832,542 | 9       |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 340                | 293   | 492   | 17                | 13   | 12   |
| Irrigated cropland | 1,534              | 1,704 | 2,718 | 44                | 54   | 53   |
| Grazing land       | 434                | 404   | 565   | 12                | 10   | 16   |

# Vermont

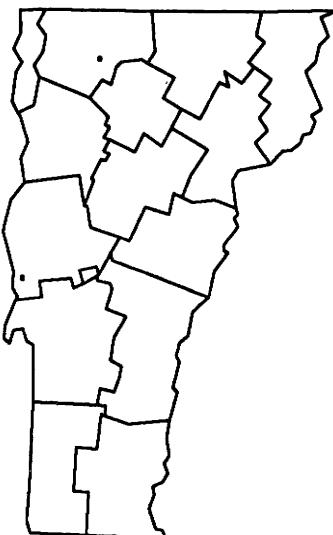
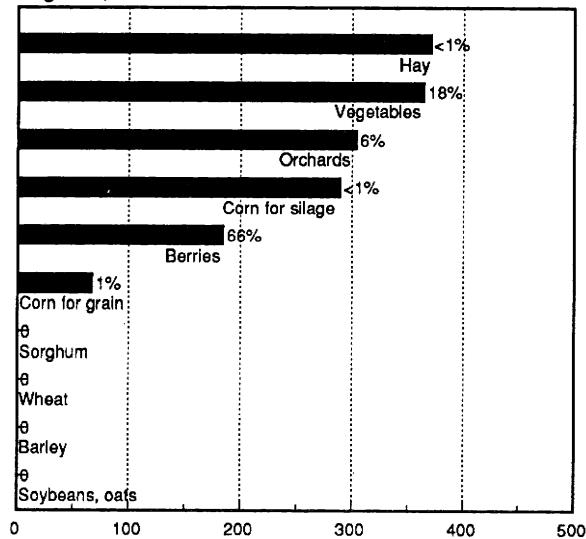
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br><i>M.a.f.</i> | Share of total<br><i>Percent</i> | Agriculture's share |
|---------------------|----------------------------------|----------------------------------|---------------------|
| <b>Sources:</b>     |                                  |                                  |                     |
| Surface             | 0.1                              | 71                               | 3                   |
| Ground              | 0.1                              | 29                               | 10                  |
| Total               | 0.2                              | 100                              | 5                   |
| <b>Agriculture:</b> |                                  |                                  |                     |
| <b>Sources—</b>     |                                  | <i>T.a.f.</i>                    |                     |
| Surface             | 2.5                              | 37                               | NA                  |
| Ground              | 4.3                              | 63                               | NA                  |
| Total               | 6.8                              | 100                              | NA                  |
| <b>Use—</b>         |                                  |                                  |                     |
| Irrigation          | 0.6                              | 8                                | NA                  |
| Other farm uses     | 6.2                              | 92                               | NA                  |
| <b>Disposition—</b> |                                  |                                  |                     |
| Consumptive use     | 1.8                              | 27                               | NA                  |
| Return flow         | 5.0                              | 73                               | NA                  |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Vermont

### Land in farms

| Item               | Unit         | 1987  | 1982  | 1978  | 1974  | 1969  | 1964  |
|--------------------|--------------|-------|-------|-------|-------|-------|-------|
| Total cropland     | No. of farms | 5,506 | 5,977 | 5,696 | 5,762 | 6,600 | 8,930 |
| Harvested cropland | do.          | 5,069 | 5,583 | 5,494 | 5,501 | 6,125 | 8,619 |
| Irrigated land     | do.          | 178   | 120   | 94    | 46    | 37    | 77    |
| Harvested cropland | do.          | 174   | 119   | 87    | NA    | NA    | NA    |
| Total cropland     | 1,000 acres  | 708   | 772   | 806   | 779   | 836   | 878   |
| Harvested cropland | do.          | 488   | 548   | 555   | 515   | 511   | 657   |
| Irrigated land     | No. of acres | 1,823 | 1,254 | 1,397 | 509   | 286   | 1,063 |
| Harvested cropland | do.          | 1,782 | 1,246 | 1,297 | NA    | NA    | NA    |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Franklin | Addison | Chittenden | Grand Isle | Windsor |
|------------------------|--------------|-------|----------|---------|------------|------------|---------|
| Irrigated land         | No. of farms | 178   | 18       | 28      | 18         | 9          | 18      |
| Irrigated land         | No. of acres | 1,823 | 487      | 385     | 244        | 142        | 102     |
| Major irrigated crops: |              |       |          |         |            |            |         |
| Hay                    | do.          | 371   | 230      | NA      | 0          | NA         | 0       |
| Vegetables             | do.          | 365   | NA       | 32      | 116        | 33         | 31      |
| Orchards               | do.          | 304   | 0        | 285     | 12         | NA         | 0       |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 258,713   | 206,616 | 209,135   | 200,817 | 260,197      | 206,713 |
| Machinery and equipment        | 46,090    | 43,571  | 47,276    | 47,315  | 46,054       | 43,508  |
| Farm products sold             | 63,899    | 58,496  | 64,676    | 49,252  | 63,875       | 58,675  |
| Crops, nursery, and greenhouse | 12,431    | 10,128  | 53,917    | 37,771  | 8,946        | 8,518   |
| Livestock and poultry          | 75,054    | 66,784  | 59,765    | 35,860  | 75,223       | 67,083  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 2,632     | 2,486   | 1,549     | 1,423   | 2,683        | 2,515   |
| Other agricultural chemicals   | 1,335     | 1,078   | 2,117     | 1,500   | 1,274        | 1,056   |
| Energy and petroleum products  | 3,983     | 4,023   | 4,970     | 4,981   | 3,952        | 4,007   |
| Hired labor                    | 10,470    | 8,430   | 21,366    | 12,909  | 9,966        | 8,312   |
| Contract labor                 | 2,715     | 1,805   | 7,444     | 1,067   | 2,389        | 1,854   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 01, New England

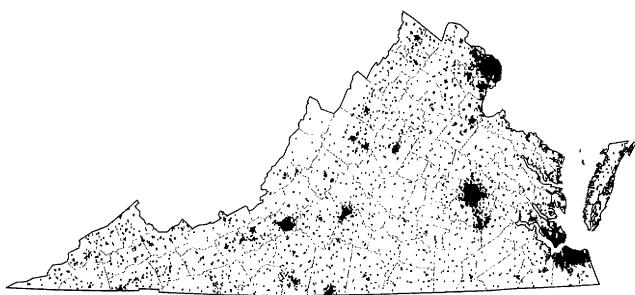
| Item                          | 1988          |        |         | 1984           |        |         |
|-------------------------------|---------------|--------|---------|----------------|--------|---------|
|                               | Farms         | Acres  | AF/acre | Farms          | Acres  | AF/acre |
| <i>Number</i>                 |               |        |         |                |        |         |
| Methods:                      |               |        |         |                |        |         |
| All sprinkler systems         | 967           | 24,233 | 0.8     | 886            | 24,127 | 1.1     |
| Center pivot                  | 611           | 11,411 | 1.3     | 196            | 5,039  | 1.1     |
| Mechanical move               | 13            | 1,046  | 0.3     | 36             | 2,548  | 0.4     |
| Hand move                     | 95            | 2,325  | 0.3     | 373            | 6,670  | 0.5     |
| Solid set and permanent       | 258           | 9,421  | 0.5     | 335            | 9,870  | 1.7     |
| All gravity systems           | 188           | 11,714 | NA      | 87             | 2,683  | 1.5     |
| Gated pipe                    | 23            | 391    | NA      | 6              | 174    | 0.0     |
| Ditch with siphon tube        | 26            | 2,928  | NA      | 41             | 1,455  | 1.5     |
| Flooding                      | 139           | 8,395  | NA      | 44             | 1,054  | 1.2     |
| Drip or trickle               | 0             | 0      | 0.0     | 75             | 679    | 0.6     |
| Subirrigation                 | 0             | 0      | 0.0     | 0              | 0      | 0.0     |
| Sources:                      |               |        |         |                |        |         |
| Wells                         | 324           | 3,698  | 0.5     | 178            | 2,966  | 0.9     |
| Onfarm surface sources        | 844           | 21,566 | 3.9     | 731            | 21,261 | 1.0     |
| Off-farm water suppliers      | 26            | 102    | NA      | 76             | 869    | 0.5     |
|                               | <i>Number</i> |        |         | <i>\$/acre</i> |        |         |
| Onfarm energy use for pumping | 942           | 24,312 | 48      | 789            | 22,988 | 54      |
| Electricity                   | 273           | 5,958  | 68      | 279            | 5,612  | 94      |
| Natural gas                   | 0             | 0      | 0       | 9              | 174    | 87      |
| LP gas, propane, butane       | 310           | 7,418  | 53      | 147            | 6,203  | 51      |
| Diesel fuel                   | 130           | 6,599  | 35      | 190            | 6,392  | 29      |
| Gasoline and gasohol          | 444           | 4,337  | 29      | 379            | 4,607  | 44      |
| Off-farm water supply         | 26            | 102    | 84      | 76             | 869    | 36      |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 975                | 723  | 897  | 27                | 25   | 26   |
| Irrigated cropland | NR                 | NR   | NR   | NR                | NR   | NR   |
| Grazing land       | 823                | 680  | 734  | 13                | 11   | 11   |

# Virginia

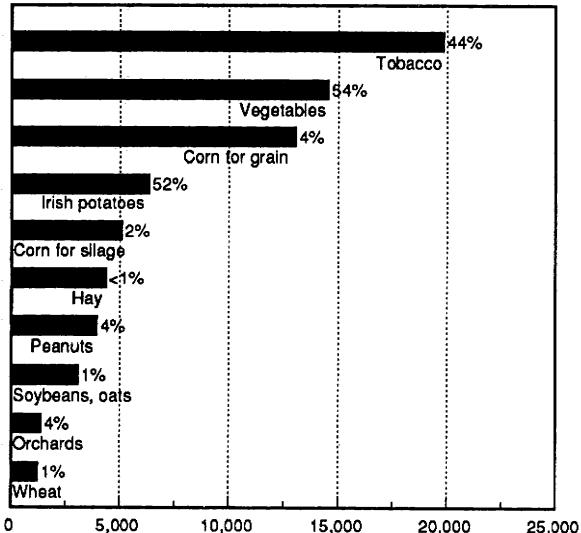
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount of water<br>M.a.f. | Share of total<br>—Percent— | Agriculture's share |
|---------------------|---------------------------|-----------------------------|---------------------|
| <b>Sources:</b>     |                           |                             |                     |
| Surface             |                           |                             |                     |
|                     | 5.1                       | 93                          | 2                   |
| Ground              |                           |                             |                     |
|                     | 0.4                       | 7                           | 10                  |
| Total               |                           |                             |                     |
|                     | 5.5                       | 100                         | 2                   |
| <b>Agriculture:</b> |                           |                             |                     |
| Sources—            |                           |                             |                     |
| Surface             | 78.6                      | 67                          | NA                  |
| Ground              | 39.0                      | 33                          | NA                  |
| Total               | 117.6                     | 100                         | NA                  |
| <b>Use—</b>         |                           |                             |                     |
| Irrigation          | 58.2                      | 50                          | NA                  |
| Other farm uses     | 59.4                      | 50                          | NA                  |
| <b>Disposition—</b> |                           |                             |                     |
| Consumptive use     | 43.9                      | 37                          | NA                  |
| Return flow         | 73.7                      | 63                          | NA                  |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

Virginia

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 41,491 | 48,550 | 47,652 | 50,419 | 60,877 | 75,021 |
| Harvested cropland | do.          | 37,332 | 44,259 | 44,643 | 46,485 | 54,192 | 71,748 |
| Irrigated land     | do.          | 3,054  | 1,839  | 2,416  | 1,965  | 2,708  | 4,452  |
| Harvested cropland | do.          | 2,991  | 1,815  | 2,355  | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 4,363  | 4,560  | 4,509  | 4,432  | 4,601  | 4,010  |
| Harvested cropland | do.          | 2,407  | 2,779  | 2,600  | 2,447  | 2,278  | 2,566  |
| Irrigated land     | No. of acres | 78,681 | 42,824 | 42,030 | 28,257 | 36,618 | 50,968 |
| Harvested cropland | do.          | 77,204 | 42,400 | 40,372 | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State  | Northampton | Accomack | Pittsylvania | Hanover | Rockingham |
|------------------------|--------------|--------|-------------|----------|--------------|---------|------------|
| Irrigated land         | No. of farms | 3,054  | 61          | 72       | 460          | 57      | 77         |
| Irrigated land         | No. of acres | 78,681 | 9,580       | 9,132    | 6,322        | 3,771   | 3,654      |
| Major irrigated crops: |              |        |             |          |              |         |            |
| Tobacco                | do.          | 19,856 | 0           | 0        | 5,686        | 0       | 0          |
| Vegetables             | do.          | 14,513 | 5,680       | 4,360    | 183          | 555     | 11         |
| Corn for grain         | do.          | 13,069 | NA          | 593      | 18           | 1,926   | 388        |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 232,374   | 205,034 | 348,315   | 306,538 | 223,787      | 201,338 |
| Machinery and equipment        | 30,249    | 26,976  | 59,906    | 59,613  | 28,045       | 25,787  |
| Farm products sold             | 35,464    | 30,986  | 89,381    | 89,758  | 31,520       | 28,825  |
| Crops, nursery, and greenhouse | 21,046    | 21,831  | 74,499    | 80,970  | 13,169       | 17,999  |
| Livestock and poultry          | 35,169    | 27,473  | 42,931    | 30,806  | 34,805       | 27,402  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 2,889     | 3,151   | 6,066     | 6,447   | 2,564        | 2,992   |
| Other agricultural chemicals   | 2,187     | 2,351   | 4,644     | 3,908   | 1,865        | 2,231   |
| Energy and petroleum products  | 2,043     | 2,361   | 6,204     | 7,938   | 1,722        | 2,157   |
| Hired labor                    | 7,480     | 5,581   | 20,903    | 17,457  | 5,687        | 4,837   |
| Contract labor                 | 3,918     | 4,319   | 12,795    | 18,954  | 2,946        | 3,179   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

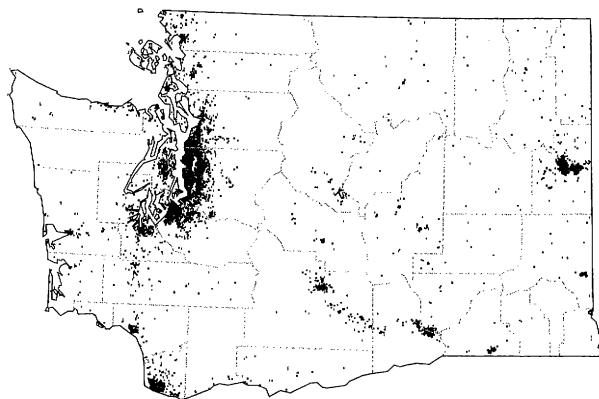
| Item                          | 1988          |         |         | 1984          |         |         |
|-------------------------------|---------------|---------|---------|---------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |               |         |         |
| Methods:                      |               |         |         |               |         |         |
| All sprinkler systems         | 2,482         | 255,416 | 0.6     | 2,209         | 183,188 | 0.5     |
| Center pivot                  | 817           | 105,830 | 0.6     | 403           | 70,560  | 0.6     |
| Mechanical move               | 672           | 94,424  | 0.4     | 525           | 56,114  | 0.3     |
| Hand move                     | 1,235         | 46,357  | 0.4     | 1,399         | 49,996  | 0.5     |
| Solid set and permanent       | 86            | 8,805   | 0.8     | 179           | 6,428   | 1.4     |
| All gravity systems           | 19            | 1,660   | 0.9     | 38            | 6,228   | 0.0     |
| Gated pipe                    | 0             | 0       | 0.0     | 29            | 3,510   | 0.0     |
| Ditch with siphon tube        | 10            | 1,390   | 0.9     | 0             | 0       | 0.0     |
| Flooding                      | 9             | 270     | NA      | 9             | 2,718   | 0.0     |
| Drip or trickle               | 209           | NA      | 1.1     | 156           | 2,646   | 0.5     |
| Subirrigation                 | 2             | NA      | NA      | 10            | 1,515   | 0.0     |
| Sources:                      |               |         |         |               |         |         |
| Wells                         | 792           | 126,525 | 0.8     | 1,065         | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920         | 137,469 | 0.5     | 1,288         | 76,946  | 0.6     |
| Off-farm water suppliers      | 67            | 4,076   | 0.3     | 149           | 2,075   | 0.6     |
|                               | <i>Number</i> |         |         | <i>Number</i> |         |         |
|                               |               |         |         |               |         |         |
| Onfarm energy use for pumping | 2,440         | 246,466 | 19      | 2,097         | 175,259 | 20      |
| Electricity                   | 537           | 49,109  | 21      | 496           | 41,735  | 25      |
| Natural gas                   | 0             | 0       | 0       | 0             | 0       | 0       |
| LP gas, propane, butane       | 51            | 6,729   | 13      | 103           | 11,538  | 19      |
| Diesel fuel                   | 1,460         | 167,116 | 18      | 831           | 90,185  | 16      |
| Gasoline and gasohol          | 868           | 23,512  | 28      | 990           | 31,801  | 25      |
| Off-farm water supply         | 67            | 4,076   | 21      | 149           | 2,075   | 56      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,385              | 1,242 | 1,165 | 36                | 35   | 37   |
| Irrigated cropland | 1,228              | 1,306 | NR    | 83                | 49   | NR   |
| Grazing land       | 854                | 809   | 783   | 15                | 14   | 15   |

# Washington

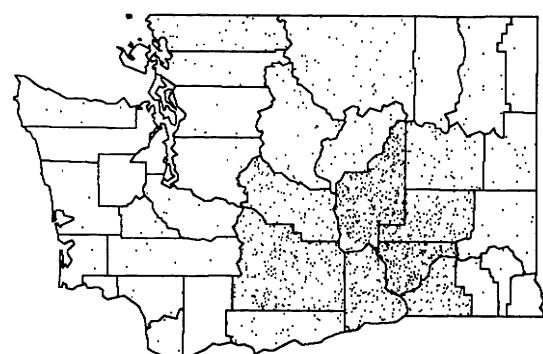
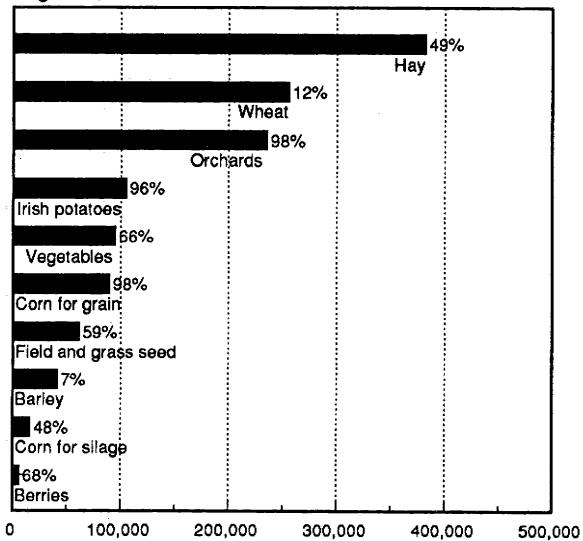
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | <i>Percent</i>         |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 6.4                                 | 83                | 75                     |
| Ground              | 1.4                                 | 17                | 53                     |
| Total               | 7.8                                 | 100               | 71                     |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     |                   |                        |
| Surface             | 4.8                                 | 87                | NA                     |
| Ground              | 0.7                                 | 13                | NA                     |
| Total               | 5.6                                 | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 5.5                                 | 99                | NA                     |
| Other farm uses     | 0.1                                 | 1                 | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 5.0                                 | 90                | NA                     |
| Return flow         | 0.6                                 | 10                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Washington

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 28,891    | 31,317    | 28,488    | 27,581    | 31,389    | 41,515    |
| Harvested cropland | do.          | 24,027    | 26,067    | 24,926    | 24,732    | 26,430    | 35,815    |
| Irrigated land     | do.          | 15,437    | 16,252    | 14,951    | 13,183    | 14,074    | 16,488    |
| Harvested cropland | do.          | 13,709    | 14,270    | 13,385    | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 8,168     | 8,191     | 8,236     | 7,945     | 8,230     | 8,061     |
| Harvested cropland | do.          | 4,597     | 5,279     | 5,014     | 4,946     | 4,367     | 4,423     |
| Irrigated land     | No. of acres | 1,518,684 | 1,638,470 | 1,639,189 | 1,309,018 | 1,224,238 | 1,149,842 |
| Harvested cropland | do.          | 1,378,065 | 1,499,888 | 1,435,530 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Grant   | Yakima  | Franklin | Adams   | Benton  |
|------------------------|--------------|-----------|---------|---------|----------|---------|---------|
| Irrigated land         | No. of farms | 15,437    | 1,569   | 3,850   | 736      | 409     | 921     |
| Irrigated land         | No. of acres | 1,518,684 | 369,179 | 247,313 | 193,960  | 131,433 | 112,366 |
| Major irrigated crops: |              |           |         |         |          |         |         |
| Hay                    | do.          | 382,363   | 107,969 | 34,414  | 57,588   | 22,056  | 12,922  |
| Wheat for grain        | do.          | 255,983   | 80,384  | 16,801  | 32,506   | 51,873  | 15,323  |
| Orchards               | do.          | 235,577   | 21,636  | 94,820  | 11,365   | 2,770   | 22,711  |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 355,976   | 423,352 | 363,988   | 452,290 | 349,055      | 400,729 |
| Machinery and equipment        | 45,905    | 45,947  | 55,955    | 56,563  | 37,211       | 37,651  |
| Farm products sold             | 87,000    | 78,469  | 123,867   | 107,981 | 55,595       | 54,279  |
| Crops, nursery, and greenhouse | 93,924    | 91,776  | 116,270   | 106,706 | 53,336       | 66,631  |
| Livestock and poultry          | 67,495    | 52,004  | 96,161    | 69,718  | 53,907       | 43,010  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 8,538     | 9,211   | 8,380     | 9,266   | 8,821        | 9,128   |
| Other agricultural chemicals   | 6,699     | 5,751   | 7,458     | 6,116   | 5,519        | 5,195   |
| Energy and petroleum products  | 4,812     | 4,790   | 6,594     | 7,029   | 3,165        | 3,040   |
| Hired labor                    | 26,631    | 17,905  | 36,920    | 25,610  | 12,258       | 8,415   |
| Contract labor                 | 10,797    | 10,676  | 14,835    | 13,293  | 3,074        | 3,865   |

### Irrigation methods, water sources, and pumping energy use

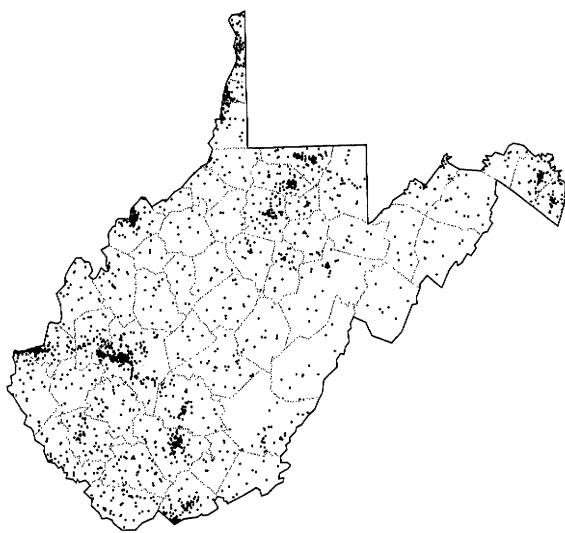
| Item                          | 1988          |           |         | 1984           |           |         |
|-------------------------------|---------------|-----------|---------|----------------|-----------|---------|
|                               | Farms         | Acres     | AF/acre | Farms          | Acres     | AF/acre |
| <i>Number</i>                 |               |           |         |                |           |         |
| Methods:                      |               |           |         |                |           |         |
| All sprinkler systems         | 11,896        | 1,215,416 | 2.1     | 10,687         | 1,139,686 | 2.0     |
| Center pivot                  | 4,014         | 573,835   | 2.0     | 1,279          | 524,392   | 2.2     |
| Mechanical move               | 1,917         | 233,913   | 1.7     | 2,139          | 255,149   | 1.8     |
| Hand move                     | 5,916         | 257,210   | 1.7     | 7,035          | 246,310   | 1.7     |
| Solid set and permanent       | 3,020         | 150,458   | 3.0     | 3,914          | 113,835   | 3.8     |
| All gravity systems           | 2,744         | 327,048   | 2.6     | 3,827          | 348,598   | 2.4     |
| Gated pipe                    | 901           | 43,785    | 3.3     | 908            | 43,361    | 3.0     |
| Ditch with siphon tube        | 1,445         | 193,345   | 2.2     | 2,211          | 230,562   | 2.2     |
| Flooding                      | 721           | 89,918    | 2.7     | 1,169          | 74,675    | 2.5     |
| Drip or trickle               | 258           | 11,047    | NA      | 390            | 14,500    | 2.1     |
| Subirrigation                 | 129           | 12,645    | 1.0     | 76             | 1,396     | NA      |
| Sources:                      |               |           |         |                |           |         |
| Wells                         | 5,195         | 441,673   | 1.7     | 2,934          | 397,880   | 1.6     |
| Onfarm surface sources        | 1,982         | 218,074   | 2.3     | 2,088          | 163,984   | 2.1     |
| Off-farm water suppliers      | 7,623         | 904,978   | 2.5     | 9,062          | 943,341   | 2.3     |
|                               | <i>Number</i> |           |         | <i>\$/acre</i> |           |         |
| Onfarm energy use for pumping | 9,312         | 1,015,199 | 32      | 7,788          | 931,879   | 27      |
| Electricity                   | 9,280         | 1,002,495 | 32      | 7,612          | 916,687   | 27      |
| Natural gas                   | 0             | 0         | 0       | 11             | 1,870     | 67      |
| LP gas, propane, butane       | 6             | 384       | 2       | 10             | 1,150     | 35      |
| Diesel fuel                   | 61            | 8,514     | 6       | 173            | 11,952    | 21      |
| Gasoline and gasohol          | 97            | 3,806     | 14      | 48             | 210       | 12      |
| Off-farm water supply         | 7,623         | 904,978   | 33      | 9,062          | 943,341   | 25      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 639                | 634   | 813   | 45                | 41   | 45   |
| Irrigated cropland | 1,408              | 1,600 | 1,983 | 83                | 97   | 105  |
| Grazing land       | 195                | 200   | 235   | 3                 | 7    | 8    |

# West Virginia

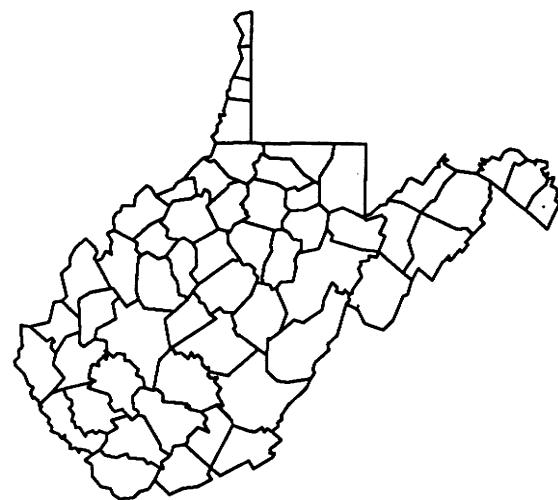
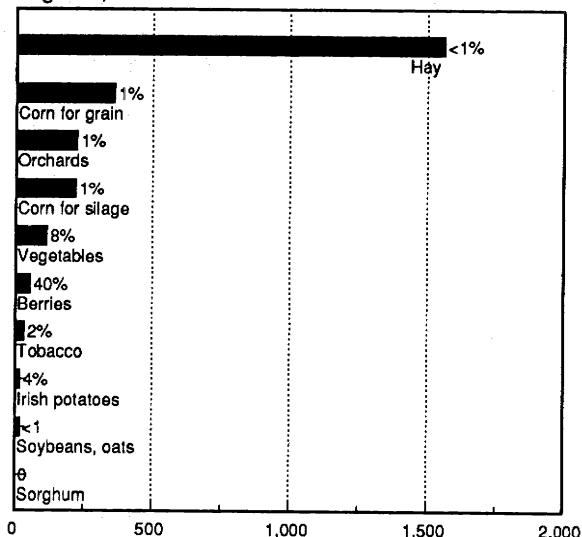
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agriculture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------|
|                     |                                     |                   | Percent                |
| <b>Sources:</b>     |                                     |                   |                        |
| Surface             | 5.8                                 | 96                | 0                      |
| Ground              | 0.3                                 | 4                 | 7                      |
| Total               | 6.1                                 | 100               | 1                      |
| <b>Agriculture:</b> |                                     |                   |                        |
| <b>Sources—</b>     |                                     | <i>T.a.f.</i>     |                        |
| Surface             | 14.8                                | 44                | NA                     |
| Ground              | 18.8                                | 56                | NA                     |
| Total               | 33.6                                | 100               | NA                     |
| <b>Use—</b>         |                                     |                   |                        |
| Irrigation          | 4.1                                 | 12                | NA                     |
| Other farm uses     | 29.5                                | 88                | NA                     |
| <b>Disposition—</b> |                                     |                   |                        |
| Consumptive use     | 29.2                                | 87                | NA                     |
| Return flow         | 4.4                                 | 13                | NA                     |

## Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 500 acres

## Selected Characteristics of Irrigated Farms

West Virginia

### Land in farms

| Item               | Unit         | 1987   | 1982   | 1978   | 1974   | 1969   | 1964   |
|--------------------|--------------|--------|--------|--------|--------|--------|--------|
| Total cropland     | No. of farms | 16,246 | 17,763 | 16,780 | 16,344 | 21,714 | 32,704 |
| Harvested cropland | do.          | 15,056 | 16,446 | 15,890 | 14,899 | 19,145 | 31,296 |
| Irrigated land     | do.          | 255    | 135    | 116    | 113    | 130    | 79     |
| Harvested cropland | do.          | 241    | 130    | 103    | NA     | NA     | NA     |
| Total cropland     | 1,000 acres  | 1,286  | 1,319  | 1,356  | 1,329  | 1,554  | 1,227  |
| Harvested cropland | do.          | 554    | 577    | 561    | 511    | 539    | 733    |
| Irrigated land     | No. of acres | 3,132  | 945    | 1,236  | 1,513  | 3,166  | 2,420  |
| Harvested cropland | do.          | 2,697  | 871    | 1,041  | NA     | NA     | NA     |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State | Jefferson | Pendleton | Randolph | Monroe | Jackson |
|------------------------|--------------|-------|-----------|-----------|----------|--------|---------|
| Irrigated land         | No. of farms | 255   | 9         | 6         | 8        | 4      | 18      |
| Irrigated land         | No. of acres | 3,132 | 473       | 389       | 206      | 198    | 175     |
| Major irrigated crops: |              |       |           |           |          |        |         |
| Hay                    | do.          | 1,563 | NA        | NA        | 115      | NA     | 58      |
| Corn for grain         | do.          | 362   | NA        | NA        | NA       | NA     | NA      |
| Orchards               | do.          | 226   | NA        | 0         | 0        | NA     | 0       |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 130,802   | 129,390 | 217,312   | 163,184 | 129,678      | 129,113 |
| Machinery and equipment        | 17,482    | 16,100  | 31,591    | 24,255  | 17,298       | 16,033  |
| Farm products sold             | 15,701    | 12,919  | 63,203    | 69,809  | 14,988       | 12,506  |
| Crops, nursery, and greenhouse | 8,801     | 10,303  | 66,497    | 64,435  | 6,740        | 9,229   |
| Livestock and poultry          | 16,792    | 12,610  | 28,060    | 44,818  | 16,691       | 12,489  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 1,119     | 1,134   | 2,391     | 2,711   | 1,093        | 1,113   |
| Other agricultural chemicals   | 933       | 1,005   | 3,542     | 1,500   | 861          | 997     |
| Energy and petroleum products  | 1,039     | 1,092   | 5,231     | 7,572   | 984          | 1,038   |
| Hired labor                    | 4,151     | 3,414   | 43,752    | 29,492  | 3,395        | 3,126   |
| Contract labor                 | 3,131     | 3,958   | 20,063    | 4,000   | 2,670        | 3,958   |

### Irrigation methods, water sources, and pumping energy use: Water Resources Region 02, Mid-Atlantic

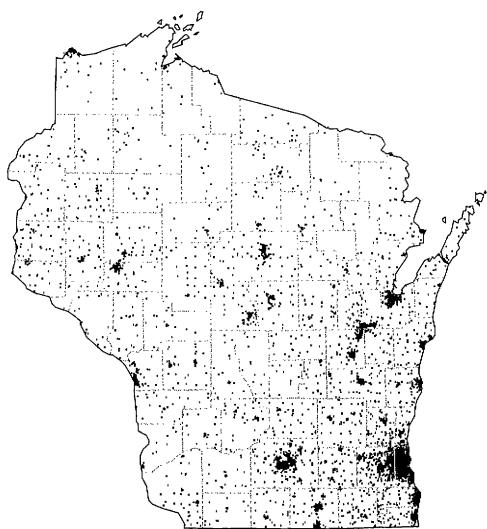
| Item                          | 1988          |         |         | 1984          |         |         |
|-------------------------------|---------------|---------|---------|---------------|---------|---------|
|                               | Farms         | Acres   | AF/acre | Farms         | Acres   | AF/acre |
| <i>Number</i>                 |               |         |         |               |         |         |
| Methods:                      |               |         |         |               |         |         |
| All sprinkler systems         | 2,482         | 255,416 | 0.6     | 2,209         | 183,188 | 0.5     |
| Center pivot                  | 817           | 105,830 | 0.6     | 403           | 70,560  | 0.6     |
| Mechanical move               | 672           | 94,424  | 0.4     | 525           | 56,114  | 0.3     |
| Hand move                     | 1,235         | 46,357  | 0.4     | 1,399         | 49,996  | 0.5     |
| Solid set and permanent       | 86            | 8,805   | 0.8     | 179           | 6,428   | 1.4     |
| All gravity systems           | 19            | 1,660   | 0.9     | 38            | 6,228   | 0.0     |
| Gated pipe                    | 0             | 0       | 0.0     | 29            | 3,510   | 0.0     |
| Ditch with siphon tube        | 10            | 1,390   | 0.9     | 0             | 0       | 0.0     |
| Flooding                      | 9             | 270     | NA      | 9             | 2,718   | 0.0     |
| Drip or trickle               | 209           | NA      | 1.1     | 156           | 2,646   | 0.5     |
| Subirrigation                 | 2             | NA      | NA      | 10            | 1,515   | 0.0     |
| Sources:                      |               |         |         |               |         |         |
| Wells                         | 792           | 126,525 | 0.8     | 1,065         | 106,936 | 0.6     |
| Onfarm surface sources        | 1,920         | 137,469 | 0.5     | 1,288         | 76,946  | 0.6     |
| Off-farm water suppliers      | 67            | 4,076   | 0.3     | 149           | 2,075   | 0.6     |
|                               | <i>Number</i> |         |         | <i>Number</i> |         |         |
|                               |               |         |         |               |         |         |
| Onfarm energy use for pumping | 2,440         | 246,466 | 19      | 2,097         | 175,259 | 20      |
| Electricity                   | 537           | 49,109  | 21      | 496           | 41,735  | 25      |
| Natural gas                   | 0             | 0       | 0       | 0             | 0       | 0       |
| LP gas, propane, butane       | 51            | 6,729   | 13      | 103           | 11,538  | 19      |
| Diesel fuel                   | 1,460         | 167,116 | 18      | 831           | 90,185  | 16      |
| Gasoline and gasohol          | 868           | 23,512  | 28      | 990           | 31,801  | 25      |
| Off-farm water supply         | 67            | 4,076   | 21      | 149           | 2,075   | 56      |

### Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 1,037              | 1,252 | 1,405 | 32                | 33   | 35   |
| Irrigated cropland | NR                 | NR    | NR    | NR                | NR   | NR   |
| Grazing land       | 501                | 568   | 647   | 11                | 11   | 10   |

# Wisconsin

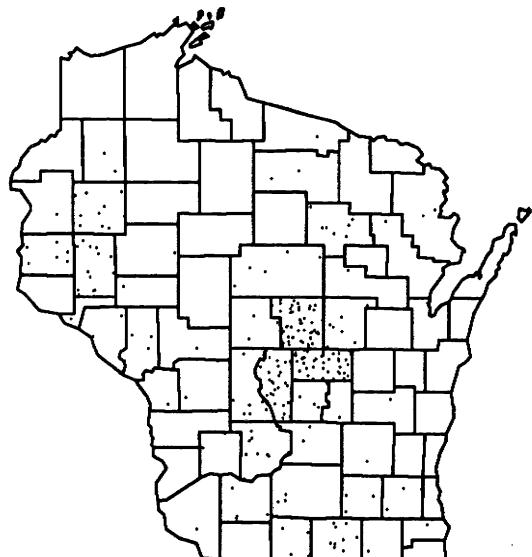
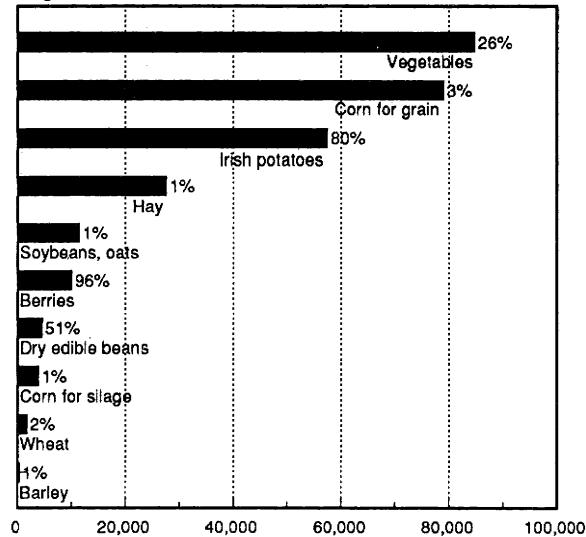
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br><i>M.a.f.</i> | Share<br>of total | Agricult-<br>ture's<br>share |
|---------------------|-------------------------------------|-------------------|------------------------------|
|                     |                                     |                   | Percent                      |
| <b>Sources:</b>     |                                     |                   |                              |
| Surface             | 6.9                                 | 92                | 0                            |
| Ground              | 0.6                                 | 9                 | 30                           |
| Total               | 7.5                                 | 100               | 3                            |
| <b>Agriculture:</b> |                                     |                   |                              |
| <b>Sources—</b>     |                                     |                   |                              |
| Surface             | 5.7                                 | 3                 | NA                           |
| Ground              | 189.3                               | 97                | NA                           |
| Total               | 195.0                               | 100               | NA                           |
| <b>Use—</b>         |                                     |                   |                              |
| Irrigation          | 94.2                                | 48                | NA                           |
| Other farm uses     | 100.8                               | 52                | NA                           |
| <b>Disposition—</b> |                                     |                   |                              |
| Consumptive use     | 175.8                               | 90                | NA                           |
| Return flow         | 19.2                                | 10                | NA                           |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

# Selected Characteristics of Irrigated Farms

Wisconsin

## Land in farms

| Item               | Unit         | 1987    | 1982    | 1978    | 1974    | 1969    | 1964    |
|--------------------|--------------|---------|---------|---------|---------|---------|---------|
| Total cropland     | No. of farms | 71,320  | 78,060  | 83,666  | 87,263  | 96,133  | 116,432 |
| Harvested cropland | do.          | 69,141  | 75,734  | 81,708  | 84,970  | 92,197  | 112,963 |
| Irrigated land     | do.          | 1,850   | 1,695   | 1,645   | 1,165   | 1,252   | 813     |
| Harvested cropland | do.          | 1,821   | 1,678   | 1,594   | NA      | NA      | NA      |
| Total cropland     | 1,000 acres  | 11,619  | 11,769  | 12,089  | 11,669  | 11,564  | 12,043  |
| Harvested cropland | do.          | 9,335   | 10,062  | 9,863   | 9,340   | 8,134   | 9,038   |
| Irrigated land     | No. of acres | 284,637 | 259,270 | 234,557 | 127,881 | 105,526 | 62,302  |
| Harvested cropland | do.          | 280,624 | 257,707 | 230,116 | NA      | NA      | NA      |

## Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State   | Portage | Waushara | Adams  | Dunn   | Barron |
|------------------------|--------------|---------|---------|----------|--------|--------|--------|
| Irrigated land         | No. of farms | 1,850   | 153     | 116      | 51     | 60     | 44     |
| Irrigated land         | No. of acres | 284,637 | 62,221  | 44,124   | 27,663 | 16,037 | 10,392 |
| Major irrigated crops: |              |         |         |          |        |        |        |
| Vegetables             | do.          | 84,821  | 24,610  | 19,396   | 9,084  | 99     | 4,749  |
| Corn for grain         | do.          | 79,061  | 11,536  | 9,031    | 8,103  | 7,003  | 2,030  |
| Irish potatoes         | do.          | 57,508  | 19,858  | 10,941   | 7,925  | 0      | 1,610  |

## Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 182,950   | 232,606 | 535,273   | 550,086 | 173,869      | 225,798 |
| Machinery and equipment        | 54,037    | 53,698  | 142,454   | 123,624 | 51,755       | 52,200  |
| Farm products sold             | 65,351    | 59,059  | 223,791   | 207,511 | 61,351       | 55,933  |
| Crops, nursery, and greenhouse | 22,716    | 22,958  | 183,621   | 177,947 | 15,801       | 17,082  |
| Livestock and poultry          | 67,728    | 57,957  | 137,336   | 110,920 | 66,835       | 57,351  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 4,061     | 4,306   | 14,998    | 16,496  | 3,722        | 3,990   |
| Other agricultural chemicals   | 1,895     | 1,699   | 10,558    | 8,409   | 1,617        | 1,504   |
| Energy and petroleum products  | 4,074     | 4,668   | 12,319    | 14,891  | 3,856        | 4,448   |
| Hired labor                    | 9,062     | 7,270   | 51,416    | 35,032  | 7,382        | 6,354   |
| Contract labor                 | 2,724     | 3,756   | 8,648     | 23,095  | 2,421        | 2,794   |

## Irrigation methods, water sources, and pumping energy use: Water Resources Region 07, Upper Mississippi

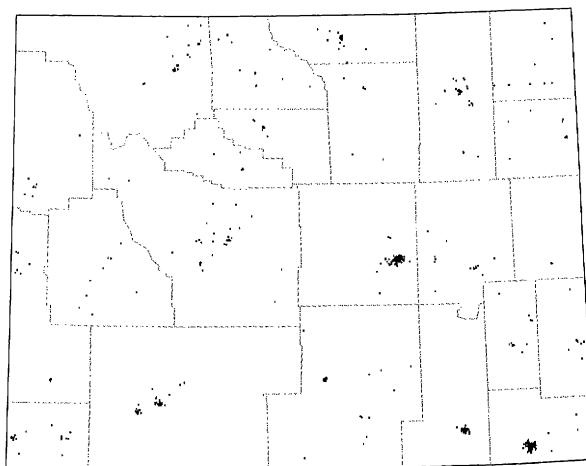
| Item                          | 1988          |         |                | 1984          |         |                |
|-------------------------------|---------------|---------|----------------|---------------|---------|----------------|
|                               | Farms         | Acres   | AF/acre        | Farms         | Acres   | AF/acre        |
| <i>Number</i>                 |               |         |                |               |         |                |
| Methods:                      |               |         |                |               |         |                |
| All sprinkler systems         | 3,557         | 755,893 | 0.9            | 2,980         | 593,946 | 0.8            |
| Center pivot                  | 2,316         | 593,502 | 0.9            | 1,897         | 474,203 | 0.8            |
| Mechanical move               | 952           | 114,128 | 0.7            | 909           | 83,062  | 0.5            |
| Hand move                     | 523           | 26,911  | 0.8            | 324           | 19,538  | 1.4            |
| Solid set and permanent       | 311           | 21,352  | 1.7            | 399           | 17,143  | 2.3            |
| All gravity systems           | 278           | 23,542  | 0.8            | 35            | 2,450   | NA             |
| Gated pipe                    | 208           | 12,348  | 0.6            | 35            | 2,450   | NA             |
| Ditch with siphon tube        | 59            | 9,596   | 1.2            | NA            | NA      | NA             |
| Flooding                      | 15            | 1,508   | D              | NA            | NA      | NA             |
| Drip or trickle               | 149           | 1,963   | 0.5            | 36            | 720     | 0.3            |
| Subirrigation                 | 36            | 8,092   | 1.1            | 1             | D       | NA             |
| Sources:                      |               |         |                |               |         |                |
| Wells                         | 2,732         | 638,774 | 0.9            | 2,206         | 482,201 | 0.7            |
| Onfarm surface sources        | 1,260         | 116,957 | 0.9            | 955           | 99,923  | 1.0            |
| Off-farm water suppliers      | 119           | 19,873  | 0.9            | 108           | 2,016   | 1.4            |
|                               | <i>Number</i> |         | <i>\$/acre</i> | <i>Number</i> |         | <i>\$/acre</i> |
| Onfarm energy use for pumping | 3,581         | 748,931 | 22             | 2,936         | 569,361 | 19             |
| Electricity                   | 2,015         | 434,187 | 23             | 1,932         | 392,425 | 17             |
| Natural gas                   | 45            | 7,887   | 17             | NA            | NA      | NA             |
| LP gas, propane, butane       | 198           | 27,022  | 17             | 283           | 39,800  | 22             |
| Diesel fuel                   | 1,697         | 275,315 | 20             | 1,055         | 122,097 | 23             |
| Gasoline and gasohol          | 185           | 4,520   | 33             | 208           | 15,039  | 40             |
| Off-farm water supply         | 119           | 19,873  | 5              | 108           | 2,016   | 59             |

## Land values and cash rent per acre

| Item               | Average land value |       |       | Average cash rent |      |      |
|--------------------|--------------------|-------|-------|-------------------|------|------|
|                    | 1988               | 1986  | 1984  | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |       |       |                   |      |      |
| Dry cropland       | 660                | 682   | 990   | 47                | 50   | 62   |
| Irrigated cropland | 1,012              | 1,212 | 1,278 | 113               | 127  | 121  |
| Grazing land       | 265                | 279   | 389   | 17                | 17   | 20   |

# Wyoming

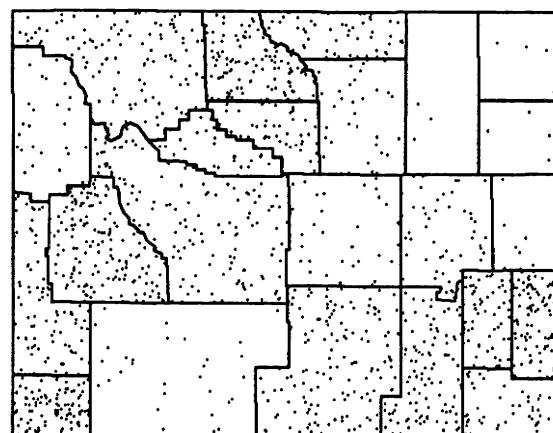
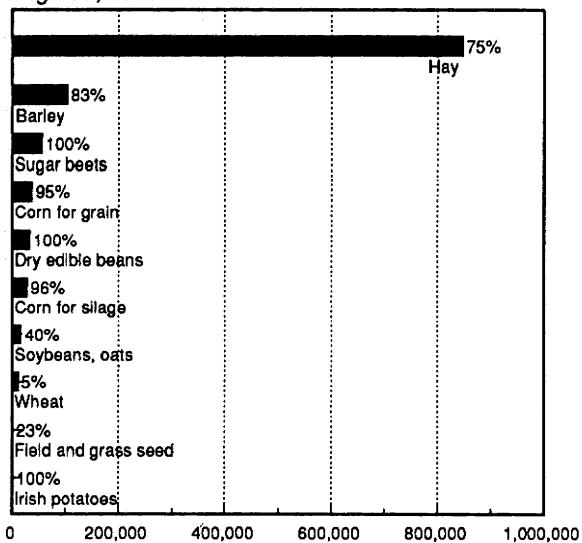
Distribution of population, 1985  
Each dot = 1,000 people



## Water sources, use, and disposition, 1985

| Item                | Amount<br>of water<br>M.a.f. | Share<br>of total | Agricult-<br>ture's<br>share |
|---------------------|------------------------------|-------------------|------------------------------|
|                     |                              |                   | Percent                      |
| <b>Sources:</b>     |                              |                   |                              |
| Surface             | 6.4                          | 92                | 94                           |
| Ground              | 0.6                          | 8                 | 60                           |
| Total               | 7.0                          | 100               | 92                           |
| <b>Agriculture:</b> |                              |                   |                              |
| <b>Sources—</b>     |                              |                   |                              |
| Surface             | 6.0                          | 95                | NA                           |
| Ground              | 0.4                          | 5                 | NA                           |
| Total               | 6.4                          | 100               | NA                           |
| <b>Use—</b>         |                              |                   |                              |
| Irrigation          | 6.4                          | 100               | NA                           |
| Other farm uses     | 0.0                          | 0                 | NA                           |
| <b>Disposition—</b> |                              |                   |                              |
| Consumptive use     | 2.9                          | 45                | NA                           |
| Return flow         | 3.5                          | 55                | NA                           |

Acres of principal irrigated crops and proportion irrigated, 1987



Distribution of irrigated acreage, 1987  
Each dot = 1,000 acres

## Selected Characteristics of Irrigated Farms

Wyoming

### Land in farms

| Item               | Unit         | 1987      | 1982      | 1978      | 1974      | 1969      | 1964      |
|--------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total cropland     | No. of farms | 7,237     | 7,214     | 6,907     | 6,857     | 7,296     | 8,033     |
| Harvested cropland | do.          | 6,389     | 6,473     | 6,444     | 6,347     | 6,747     | 7,624     |
| Irrigated land     | do.          | 5,221     | 5,284     | 4,995     | 4,738     | 5,034     | 5,923     |
| Harvested cropland | do.          | 4,679     | 4,819     | 4,660     | NA        | NA        | NA        |
| Total cropland     | 1,000 acres  | 2,839     | 2,741     | 2,711     | 2,644     | 2,788     | 2,766     |
| Harvested cropland | do.          | 1,717     | 1,814     | 1,780     | 1,681     | 1,686     | 1,702     |
| Irrigated land     | No. of acres | 1,517,891 | 1,564,576 | 1,661,558 | 1,459,900 | 1,523,422 | 1,571,192 |
| Harvested cropland | do.          | 1,132,266 | 1,146,996 | 1,124,863 | NA        | NA        | NA        |

### Counties with the largest irrigated acreage, 1987

| Item                   | Unit         | State     | Sublette | Carbon  | Fremont | Albany  | Park    |
|------------------------|--------------|-----------|----------|---------|---------|---------|---------|
| Irrigated land         | No. of farms | 5,221     | 201      | 188     | 755     | 163     | 532     |
| Irrigated land         | No. of acres | 1,517,891 | 159,025  | 145,991 | 135,774 | 117,841 | 112,122 |
| Major irrigated crops: |              |           |          |         |         |         |         |
| Hay                    | do.          | 848,392   | 115,479  | 104,421 | 71,018  | 71,030  | 41,543  |
| Barley for grain       | do.          | 105,172   | 0        | NA      | 15,930  | 0       | 29,308  |
| Sugar beets            | do.          | 56,932    | 0        | NA      | 1,453   | NA      | 11,714  |

### Average value per farm

| Item                           | All farms |         | Irrigated |         | Nonirrigated |         |
|--------------------------------|-----------|---------|-----------|---------|--------------|---------|
|                                | 1987      | 1982    | 1987      | 1982    | 1987         | 1982    |
| <i>Dollars</i>                 |           |         |           |         |              |         |
| Land and buildings             | 533,284   | 732,875 | 596,545   | 821,176 | 452,711      | 601,738 |
| Machinery and equipment        | 45,709    | 52,379  | 54,067    | 62,671  | 35,116       | 37,147  |
| Farm products sold             | 73,517    | 68,426  | 87,720    | 80,789  | 54,903       | 50,165  |
| Crops, nursery, and greenhouse | 33,967    | 35,204  | 40,143    | 39,411  | 16,866       | 23,293  |
| Livestock and poultry          | 76,649    | 65,789  | 86,801    | 74,944  | 63,758       | 52,665  |
| Selected production expenses:  |           |         |           |         |              |         |
| Commercial fertilizers         | 6,156     | 6,117   | 6,638     | 6,247   | 3,005        | 4,725   |
| Other agricultural chemicals   | 2,263     | 2,034   | 2,545     | 2,213   | 1,667        | 1,495   |
| Energy and petroleum products  | 5,071     | 6,066   | 5,947     | 7,441   | 3,900        | 4,028   |
| Hired labor                    | 14,907    | 11,063  | 17,072    | 12,909  | 10,903       | 7,052   |
| Contract labor                 | 4,723     | 3,913   | 5,378     | 4,036   | 3,465        | 3,609   |

### Irrigation methods, water sources, and pumping energy use

| Item                          | 1988  |           |                | 1984          |           |         |
|-------------------------------|-------|-----------|----------------|---------------|-----------|---------|
|                               | Farms | Acres     | AF/acre        | Farms         | Acres     | AF/acre |
| <i>Number</i>                 |       |           |                |               |           |         |
| Methods:                      |       |           |                |               |           |         |
| All sprinkler systems         | 1,442 | 201,027   | 1.1            | 1,160         | 187,621   | 1.1     |
| Center pivot                  | 596   | 120,870   | 1.2            | 326           | 73,848    | 1.0     |
| Mechanical move               | 444   | 39,316    | 0.5            | 470           | 54,434    | 1.3     |
| Hand move                     | 649   | 38,234    | 1.3            | 611           | 41,271    | 0.8     |
| Solid set and permanent       | 51    | 2,607     | 0.8            | 80            | 18,068    | 1.3     |
| All gravity systems           | 4,048 | 1,178,776 | 1.6            | 4,044         | 1,359,557 | 1.6     |
| Gated pipe                    | 1,092 | 119,095   | 1.2            | 1,259         | 144,256   | 1.6     |
| Ditch with siphon tube        | 2,666 | 541,237   | 1.5            | 2,703         | 729,834   | 1.4     |
| Flooding                      | 1,399 | 518,444   | 1.5            | 1,345         | 485,467   | 1.4     |
| Drip or trickle               | 50    | 5,292     | 1.5            | 0             | 0         | NA      |
| Subirrigation                 | 60    | 22,421    | 1.4            | 157           | 20,909    | 2.1     |
| Sources:                      |       |           |                |               |           |         |
| Wells                         | 436   | 85,578    | 1.1            | 389           | 85,367    | 1.4     |
| Onfarm surface sources        | 982   | 470,466   | 1.4            | 1,265         | 630,613   | 1.4     |
| Off-farm water suppliers      | 3,687 | 853,409   | 1.8            | 3,225         | 842,673   | 1.8     |
| <i>Number</i>                 |       |           | <i>\$/acre</i> | <i>Number</i> |           |         |
| Onfarm energy use for pumping | 1,443 | 228,039   | 23             | 1,057         | 194,791   | 22      |
| Electricity                   | 1,116 | 186,829   | 24             | 891           | 163,917   | 21      |
| Natural gas                   | 28    | 4,558     | 32             | 21            | 7,920     | 68      |
| LP gas, propane, butane       | 94    | 9,327     | 9              | 46            | 3,265     | 13      |
| Diesel fuel                   | 259   | 26,267    | 16             | 164           | 17,792    | 15      |
| Gasoline and gasohol          | 59    | 1,058     | 14             | 66            | 1,897     | 19      |
| Off-farm water supply         | 3,687 | 853,409   | 10             | 3,225         | 842,673   | 8       |

### Land values and cash rent per acre

| Item               | Average land value |      |      | Average cash rent |      |      |
|--------------------|--------------------|------|------|-------------------|------|------|
|                    | 1988               | 1986 | 1984 | 1988              | 1986 | 1984 |
| <i>Dollars</i>     |                    |      |      |                   |      |      |
| Dry cropland       | 174                | 195  | 333  | 25                | 15   | 18   |
| Irrigated cropland | 580                | 688  | 989  | 36                | 45   | 50   |
| Grazing land       | 69                 | 92   | 127  | 3                 | 3    | 3    |

## Appendix--Descriptions, Definitions, and Sources of Data

The following descriptions and definitions of the data in the U.S. and State tables and graphs provide a detailed explanation of the terms used. Where appropriate, a short discussion is provided of how the data can be interpreted and where to find greater detail.

### Land in Farms by Use

Source: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, Vol. 1, State Data, Chapter 1, Tables 1 and 2.

The number of farms reporting irrigated acreage and how that acreage is used is provided for census years 1954-87. Data for 1974, 1978, 1982, and 1987 are not fully comparable with data for earlier censuses because of changes in the definition of a farm. The current definition of a farm, first used for the 1974 Census, is any place from which \$1,000 or more of agricultural products were sold or normally would have been sold during the census year. The previous definition was any place of less than 10 acres with sales of \$250 or more in the census year or with sales of \$50 or more if over 10 acres in size. The change in definition somewhat reduces the number of farms that would have been reported if the 1974 definition had been used for reporting irrigated acreage.

Harvested cropland, whether irrigated or not, includes land from which crops were harvested or hay was cut, as well as land in orchards, citrus groves, vineyards, nurseries, and greenhouses. Land from which two or more crops were harvested in 1 year was counted only once, even though there was more than one use of the land. Differences between harvested and total cropland are accounted for by land used only for pasture or grazing, most of the land in government diversion programs, soil improvement crops, crop failure, cultivated summer fallow, idle cropland, and land planted in crops harvested after the census year.

### Selected Characteristics

Source: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, Vol. 1, State Data, Chapter 1, Table 3.

Data are presented on the average value per farm of selected capital items, products sold, and expenditures for 1982 and 1987. Dollar figures shown for expenses, product sales, and value of fixed capital items are

actual values and have not been adjusted for changes in price levels between census years.

Value of land and buildings estimates the market value of land and buildings used in the farm business during the census year. Included are land and buildings owned, rented, or leased from others, and rented or leased to others.

The machinery and equipment item accounts for the value of all capital other than land and buildings used in the farm business. This item includes cars, trucks, and tractors; tillage, planting, and harvesting equipment; irrigation equipment; livestock equipment; dryers, pumps, and all classes of miscellaneous tools.

Commercial fertilizer expenses include the amount spent during that year to purchase fertilizer even if the fertilizer was not spread during the year. The cost of custom application is included in 1987 but was excluded in prior years. Other agricultural chemicals include the cost of all insecticides, herbicides, fungicides, and other pesticides, including the cost of application in 1987, but not in prior years. The cost of lime is included in the 1978 data, but not in 1982 or 1987.

Hired labor expenses include gross wages and benefits, any bonuses, and paid leave before deductions. Social Security taxes, health, life, or employment insurance, and any other benefits paid by the operator are included. Contract labor relates primarily to expenditures for labor to perform harvest work, such as fruit and vegetable picking, sheep shearing, and so on, on a contract basis by a contractor or crew leader. Contract labor does not include items mainly considered machine work normally covered under custom work charges.

### Irrigated Acreage and Crops

Source: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture, Vol. 1, County Data, Chapter 2, Table 15.

The tables and graphs presenting the distribution of irrigated acreage and percentage of crops irrigated draws on county data in the 1987 Census of Agriculture for each State to compare irrigated acreage and irrigated harvested cropland in the five counties with the largest irrigated acreage. The acreage of the three major irrigated crops is compared across counties and the State. Each State differs with respect to major irrigated crops.

The Bureau of the Census is prohibited from publishing data that would disclose the operations of an individual farm. Because the number of farms in a given size category or other classification is not considered a disclosure, this information may be given even though other information is withheld. The acreage of an irrigated crop in many counties, particularly in the Western States, is identified with a (D), signifying a disclosure problem. This indicates that there are too few operators reporting that data item or some other situation that would result in disclosing data for individual farms.

### **Methods of Water Distribution**

Source: U.S. Department of Commerce, Bureau of Census, 1984 and 1987 Farm and Ranch Irrigation Surveys.

The method of water distribution comes from a survey consisting of a 5-percent sample of farmers reporting irrigation practices in the 1982 census and a 7.3-percent sample in the 1987 Census of Agriculture. Data on farms, acreage, and acre-feet of water applied are shown for four types of sprinkler systems, three types of gravity systems, drip or trickle, and subirrigation.

State data on water distribution methods are only reported for 20 principal irrigation States. These States account for about 94 percent of the irrigated acreage in the conterminous United States. For the remaining 28 States, comparable data are combined at the Water Resource Region (WRR) level. The information provided on the methods of water distribution for these States is for the WRR containing the largest share of a State's irrigated acreage. For example, the State of Missouri is divided into parts of three WRR's: Missouri, Upper Mississippi, and Lower Mississippi regions, but the water distribution methods occurring in the Lower Mississippi WRR were shown for Missouri because over 75 percent of the State's irrigated acreage lies within that WRR.

### **Sources of Water, Energy Expenses, and Onfarm Pumping**

Source: U.S. Department of Commerce, Bureau of Census, 1984 and 1987 Farm and Ranch Irrigation Surveys.

The same provision on reporting by State or WRR holds for water sources as for methods of distribution. While some farms use more than one source of water for irrigation, the data show that most rely on only one source. It is difficult to assign acreages to sources

where more than one is used. For that reason, the most accurate data on water sources relate to farms using wells, onfarm surface water, or off-farm surface water as the only source.

Wells are usually located on the farm. Pumps are usually needed to lift water to the surface, and in most situations, to move it to the field. However, there are free-flowing or artesian wells used for irrigation that have sufficient pressure to bring water to the surface without pumping. Some wells are located so that water flows by gravity to the fields, but these represent a very small proportion of all irrigation wells.

Onfarm surface sources are not controlled by a water supply organization. These sources include streams, drainage ditches, lakes, ponds, and reservoirs on or near the farm.

Off-farm supply is water from off-farm project water suppliers, such as the U.S. Bureau of Reclamation; irrigation districts; mutual, private cooperative, or neighborhood ditch companies; commercial companies; or community water systems.

Expenses for onfarm pumping of irrigation water are provided in terms of total and per acre energy expenditures in actual dollars for 1984 and 1987. Expenditures are disaggregated into the five principal energy sources commonly used for irrigation pumping: electricity, natural gas, LP gas, diesel, and gasoline. Pumped wells and pumping of onfarm surface sources make up the bulk of these expenses. All flowing or artesian wells were excluded from pumping expenditures. Since the Farm and Ranch Irrigation Survey is the data source for energy expenses, all previously discussed provisions of that source apply to these data.

### **Land Values and Cash Rent**

The sale and rental value of irrigated and dry cropland and grazing land is derived from an annual land value survey conducted by the Economic Research Service, USDA, with data from the 1984, 1986, and 1988 surveys. County offices of the Agricultural Stabilization and Conservation Service (ASCS), USDA, provide estimates based on knowledge of local sales and rental agreements during the past year. The county data are used to create weighted average values for each State.

Market values and rents include usual improvements like fences, tiles, terraces, and so on, and a normal amount of idle, farmstead, road, and other unused land. Excluded are the value of residences, farmstead

buildings, or any major developments such as mining or recreational facilities. Estimated values are full market value for each land category, not just for agricultural purposes. Thus, values of land near major metropolitan areas reflect urban influences on land values.

#### **Water Sources, Use, and Disposition, 1985**

Source: U.S. Geological Survey, *National Water Summary, 1987: Hydrologic Events and Water Supply and Use*, Water Supply Paper 2350, 1990.

State tables of water sources, use, and disposition provide information on both total and agricultural water use in each State. Information on agricultural water use includes the quantity and percentage of water withdrawn from the various sources, the major user, and the disposition.