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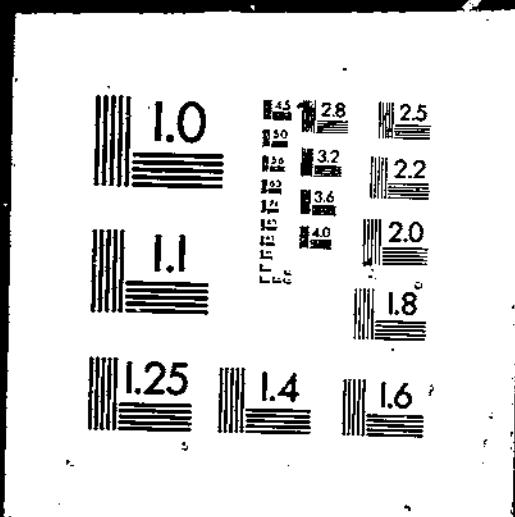
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(STATISTICAL BULLETIN.) / H. VROOMEN ECONOMIC RESEARCH SERVICE,
WASHINGTON, DC. RESOURCES AND TECHNOLOGY DIV. JUN 89 63P

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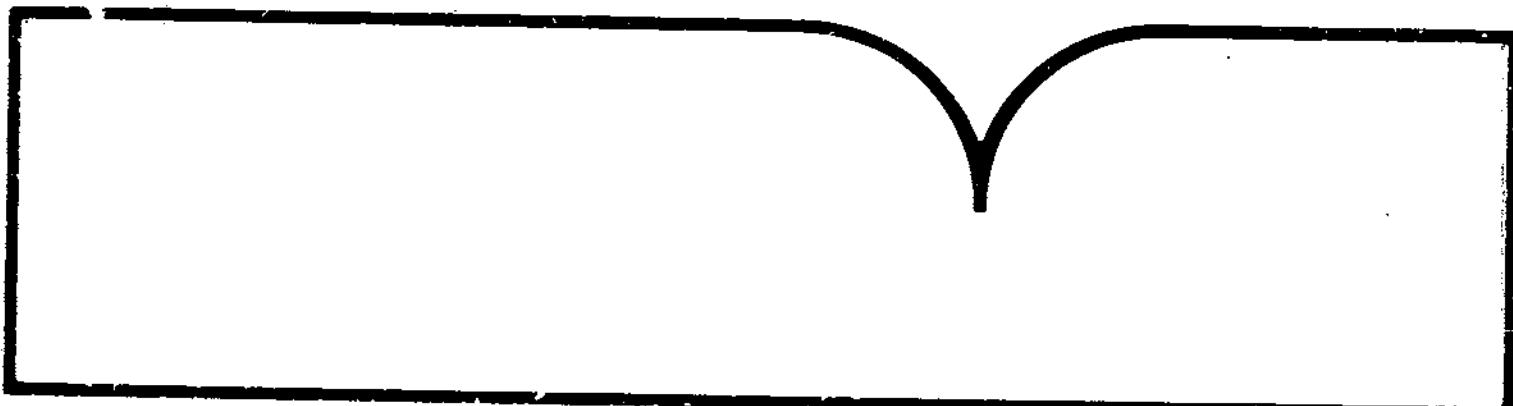


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Fertilizer Use and Price Statistics, 1960-88

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Statistical
Bulletin
Number 780

Fertilizer Use and Price Statistics, 1960-88

Harry Vroomen



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Fertilizer Use and Price Statistics, 1960-88. By Harry Vroomen. Resources and Technology Division, Economic Research Service, U.S. Department of Agriculture, Statistical Bulletin No. 780.

Abstract

The rapid growth in fertilizer consumption throughout the sixties and seventies peaked at 23.7 million nutrient tons in 1981. U.S. plant nutrient use has declined since, with 19.5 million tons used in 1988. Use has dropped by varying amounts because of fewer planted acres and stabilizing rates of application. Farm fertilizer prices, while stable or declining during the sixties, have varied widely since 1973. This bulletin includes quarterly or semiannual time series for farm fertilizer prices, annual farm and wholesale fertilizer price indexes, fertilizer consumption by plant nutrient and major selected products, consumption of mixed fertilizers and secondary and micronutrients, and statistics on fertilizer use per acre by nutrient in the major producing States for corn, cotton, soybeans, and wheat.

Keywords: Fertilizer, nitrogen, phosphate, potash, fertilizer application rates, direct application materials, mixed fertilizer, secondary and micronutrients.

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Contents

Introduction	1
Fertilizer Use	1
Estimated Fertilizer Use By Selected Crops	2
Corn	3
Cotton	4
Soybeans	4
Wheat	5
Other Crops	5
Fertilizer Products	6
Nitrogen Products	6
Phosphate Products	6
Potash Products	7
Fertilizer Prices	7
References	8
Appendix	28

Figures

1. Consumption of primary plant nutrients	9
2. Crop acreage planted	9
3. Estimated consumption of nitrogen, selected crops	10
4. Estimated consumption of phosphate, selected crops	10
5. Estimated consumption of potash, selected crops	11
6. Nitrogen application rates, selected crops	11
7. Phosphate application rates, selected crops	12
8. Potash application rates, selected crops	12
9. Percentage of crop acreage receiving nitrogen	13
10. Percentage of crop acreage receiving phosphate	13
11. Percentage of crop acreage receiving potash	14
12. Percentage of crop acreage receiving any fertilizer	14
13. Estimated nutrient application rates, other crops	15
14. Consumption of fertilizer	15
15. Consumption of selected nitrogen materials	16
16. Consumption of selected phosphate fertilizers	16
17. Consumption of potassium chloride	17
18. Average farm prices of selected nitrogen fertilizers	17
19. Average farm prices of selected phosphate and potash fertilizers	18
20. Index of fertilizer prices paid by farmers	18
21. Producer price indexes, fertilizer products	19

Tables

1. U.S. consumption of plant nutrients	20
2. Estimated U.S. plant nutrient use by selected crops	21
3. U.S. consumption of fertilizers	22
4. U.S. consumption of selected nitrogen materials	23
5. U.S. consumption of selected phosphate and potash fertilizers	24
6. Average U.S. farm prices of selected fertilizers	25
7. Fertilizer price indexes	27

Appendix tables

1. Percentage of corn acreage receiving any fertilizer, selected States	29
2. Percentage of corn acreage receiving nitrogen fertilizer, selected States	30
3. Nitrogen used on corn, rate per fertilized acre receiving nitrogen, selected States	31
4. Percentage of corn acreage receiving phosphate fertilizer, selected States	32
5. Phosphate used on corn, rate per fertilized acre receiving phosphate, selected States	33
6. Percentage of corn acreage receiving potash fertilizer, selected States	34
7. Potash used on corn, rate per fertilized acre receiving potash, selected States	35
8. Percentage of cotton acreage receiving any fertilizer, selected States	36
9. Percentage of cotton acreage receiving nitrogen fertilizer, selected States	37
10. Nitrogen used on cotton, rate per fertilized acre receiving nitrogen, selected States	38
11. Percentage of cotton acreage receiving phosphate fertilizer, selected States	39
12. Phosphate used on cotton, rate per fertilized acre receiving phosphate, selected States	40
13. Percentage of cotton acreage receiving potash fertilizer, selected States	41
14. Potash used on cotton, rate per fertilized acre receiving potash, selected States	42
15. Percentage of soybean acreage receiving any fertilizer, selected States	43

16. Percentage of soybean acreage receiving nitrogen fertilizer, selected States	44
17. Nitrogen used on soybeans, rate per fertilized acre receiving nitrogen, selected States	45
18. Percentage of soybean acreage receiving phosphate fertilizer, selected States	46
19. Phosphate used on soybeans, rate per fertilized acre receiving phosphate, selected States	47
20. Percentage of soybean acreage receiving potash fertilizer, selected States	48
21. Potash used on soybeans, rate per fertilized acre receiving potash, selected States	49
22. Percentage of wheat acreage harvested receiving any fertilizer, selected States	50
23. Percentage of wheat acreage receiving nitrogen fertilizer, selected States	51
24. Nitrogen used on wheat, rate per fertilized acre receiving nitrogen, selected States	52
25. Percentage of wheat acreage receiving phosphate fertilizer, selected States	53
26. Phosphate used on wheat, rate per fertilized acre receiving phosphate, selected States	54
27. Percentage of wheat acreage receiving potash fertilizer, selected States	55
28. Potash used on wheat, rate per fertilized acre receiving potash, selected States ..	56

Fertilizer Use and Price Statistics, 1960-88

Harry Vroomen

Introduction

The sharp upward trend in fertilizer consumption throughout the sixties and seventies peaked in 1981 and then reversed. By 1983, the year of the payment-in-kind (PIK) program, total nutrient use had fallen by almost 25 percent. U.S. fertilizer use rebounded in 1984 along with crop acreage, but fell again in 1986 and 1987 as planted acreage declined. Use increased somewhat in 1988, but stood only slightly higher than its 1974 level. Farm fertilizer prices, while stable or declining during the sixties, have varied widely since 1973. After increasing significantly during 1974-75 and again in 1980, farm prices of most fertilizer products declined during 1981-86. Prices started to turn around in 1987, however, and by 1988, the index of prices paid by farmers for fertilizer rose by 10 percent from a year earlier.

The demand for fertilizer and the prices of fertilizer products are important economic factors affecting the fertilizer industry and the farm production sector. Abrupt changes in the consumption and prices of fertilizer have heightened public and private interest in factors affecting the market for fertilizers. This report presents primary data on fertilizer use and prices obtained from various sources. Much of the data has been reported in various Government and private sources. A consistent time series of the data, however, has not been readily available in a single source. Combining data into one source allows long-term changes in fertilizer use and prices to be examined.

Fertilizer Use

U.S. consumption of nitrogen, phosphate, and potash for all purposes rose from a total of 7.5 million nutrient tons in 1960 to a record high of 23.7 million nutrient tons by 1981, an increase of over 217 percent (table 1 and fig. 1).^{1/} Total nutrient use has fallen somewhat from this level along with total crop acreage, particularly in 1983 as a result of the PIK program, and totaled 19.5 million nutrient tons in 1988.

^{1/} All fertilizer use data are reported on a fertilizer-year basis that begins on July 1 of the previous year and ends on June 30.

Nitrogen, phosphate, and potash have all shared in the dramatic increase in fertilizer use. The relative use of nitrogen, however, has increased much more rapidly. Nitrogen consumption stood at 2.7 million nutrient tons in 1960, or 36.7 percent of total nutrient consumption. By 1981, nitrogen use had increased by 335 percent to 11.9 million nutrient tons, its highest level on record. Nitrogen use stood at 10.5 million tons in 1988, and accounted for 53.6 percent of total nutrient consumption. This relative gain in nitrogen consumption has resulted primarily from favorable crop yield responses to nitrogenous fertilizers.

While nitrogen's share of total plant nutrient consumption increased over this period, phosphate's share declined from 34.5 percent in 1960 to 21.1 percent in 1988. Phosphate use, which increased by 119 percent from 2.6 million nutrient tons in 1960 to a peak of 5.6 million nutrient tons in 1977, has basically followed a downward trend since 1979.

Potash consumption, historically below that of both nitrogen and phosphate, surpassed phosphate consumption for the first time in 1977 and will likely hold this position. Total use of potash increased by 193 percent, from 2.2 million nutrient tons in 1960 to 6.3 million nutrient tons in 1981. Since then, the consumption of potash has fallen, paralleling phosphate consumption. While the shares of total primary nutrient consumption held by nitrogen and phosphate have increased and decreased, respectively, potash's share has remained stable.

Commercial fertilizer consumption data for 1984-88 were obtained from various issues of Commercial Fertilizers, a report compiled by the Tennessee Valley Authority (1).^{2/} Data from these reports are based on fertilizer consumption information submitted by State fertilizer regulatory officials. Data for the earlier years were obtained from various issues of Commercial Fertilizers, a report compiled by the Agricultural Statistics Board of USDA's National Agricultural Statistics Service (formerly the Statistical Reporting Service) (7, 8). These reports are based on fertilizer tonnage reports prepared by State fertilizer control officials and voluntary responses of more than 1,500 fertilizer manufacturers, blenders, and sales outlets. Both reports represent total commercial fertilizer tonnage sold or shipped for farm and nonfarm use.

Estimated Fertilizer Use By Selected Crops

U.S. consumption of nitrogen, phosphate, and potash is tied to total crop acreage.^{3/} As crop acreage increases, fertilizer consumption naturally increases as well (table 2 and figs. 2-5). Subsequently, Government programs that encourage farmers to divert acreage from production can significantly affect fertilizer consumption. However, fertilizer use also changes as application rates on specific crops and the proportion of the acreage of those crops fertilized change over time.

Detailed information on fertilizer use is available for four principal crops. Fertilizer use data on corn, cotton, soybeans, and wheat were obtained from

^{2/} Underscored numbers in parentheses in the text and numbers in parentheses in tables and figures cite sources listed in the Reference section.

^{3/} All acreage data included in the report refer to planted acreage, unless otherwise noted.

annual surveys conducted since 1964 by USDA's National Agricultural Statistics Service. The survey includes the principal producing States of the four crops during each survey year. Significant per-acre use differences between crops and between States are apparent in appendix tables 1-28.

Information for each crop includes plant nutrient application rates (figs. 6-8), the proportion of the crop fertilized with each plant nutrient (figs. 9-11), and the proportion of the crop receiving any fertilizer (fig. 12). Information for 1964-85 is based on harvested acreage for cotton, soybeans, and wheat, while information for corn is based only on that portion of the crop harvested for grain. Information for 1986-88 is based on planted acreage for corn, cotton, and soybeans, and harvested acreage for wheat.

The proportion of total fertilizer nutrients used on corn, cotton, soybeans, and wheat has increased since 1964. In 1964, the first year for which detailed data are available by crop, production of these crops accounted for an estimated 48.6 percent of total plant nutrient consumption.^{4/} These crops accounted for an estimated 71 percent of total plant nutrient consumption by 1982, and 67 percent in 1988.

Corn

U.S. farmers use more fertilizer on corn than on any other crop. In 1964, they applied an estimated 3.5 million tons of primary plant nutrients to their corn acres, or about 33.5 percent of total nutrient consumption. By 1985, plant nutrient use on corn more than tripled to 10.6 million tons and accounted for 48.8 percent of total plant nutrient consumption. This share declined to 44 percent in 1988.

The dramatic increase in fertilizer use on corn through 1985 is primarily due to greater application rates but was also enhanced by a rise in the proportion of corn acres fertilized with nitrogen and an increase in acreage. Application rates of nitrogen and potash were 140 percent greater in 1985 than in 1964, while the rate of phosphate applied rose by 46 percent. While corn acreage increased by almost 27 percent over the period, nitrogen, phosphate,

^{4/} Estimates of fertilizer nutrient use by crop are computed as the product of the average nutrient application rate per acre, the average proportion of acres receiving that particular plant nutrient, and U.S. planted crop acreage for 1964-88. This is in contrast to an earlier report which used harvested acreage of these selected crops to estimate nutrient use (11). In using planted acres for corn, cotton, and soybeans for 1964-85 and planted wheat acres for 1986-88, we assume that the nutrient application rate per planted acre is no different than the application rate per harvested acre. The nutrient application rate per harvested acre is probably an upper limit for the application rate per planted acre. Acreage originally planted to a particular crop may subsequently have been abandoned and therefore not have received as much fertilizer as if it were ultimately harvested. Consequently, use of planted acreage has the possibility of biasing estimated nutrient use by crop upwards. However, the use of harvested acreage has the potential for significantly underestimating nutrient use by crop. In 1986, for example, 72.1 million acres were planted to wheat while 60.7 million acres were harvested. Using only harvested acreage when estimating nutrient use by wheat would be equivalent to attributing no fertilizer use to the additional 11.4 million wheat acres planted in 1986.

and potash use rose by 249, 105, and 234 percent, respectively. Phosphate application rates trended upward between 1964 and 1980, but have declined since, while potash application rates have leveled off since 1980. Nitrogen application rates, on the other hand, increased through 1985, but declined somewhat thereafter.

Fertilizer application rates on corn also vary between States. Nitrogen application rates in 1988 were highest in Illinois at 163 pounds per acre (app. table 3), as rates in the Corn Belt are generally the highest. The lowest application rate for nitrogen of the States surveyed was 80 pounds per acre for South Dakota. Application rates of phosphate and potash follow a similar pattern, as farmers in the Corn Belt apply the greatest quantities per acre, while farmers in South Dakota and Nebraska apply the smallest (app. tables 5 and 7).

Cotton

Of the crops surveyed, cotton consumes the smallest share of total U.S. plant nutrient consumption and the smallest amount of acreage. Cotton farmers applied an estimated 610,000 tons of primary plant nutrients in 1988, or only about 3.1 percent of the U.S. total plant nutrient use (table 2). In 1964, however, combined application rates of 69 pounds for nitrogen, 49 pounds for phosphate, and 37 pounds for potash exceeded those of the other surveyed crops (app. tables 10, 12, and 14). During that year, cotton was second only to corn in total nutrient consumption and used an estimated 723,000 tons of primary plant nutrients, or 6.9 percent of the U.S. total.

Fertilizer use on cotton has generally followed changes in acreage, with phosphate and potash showing the greatest declines among the three plant nutrients. Since 1964, cotton acreage has declined by 16 percent and nitrogen use, by only 1 percent. This drop in acreage has also resulted in a 33-percent decline in the use of phosphate and a 34-percent decline in the use of potash.

Fertilizer application rates on cotton vary significantly between States, especially for nitrogen and potash. Nitrogen application rates in 1988 ranged from 45 pounds per acre in Texas to 144 pounds per acre in Arizona, while rates of potash applied per acre ranged from 13 pounds in Texas to 59 pounds in Mississippi (app. tables 10 and 14). Average application rates for each nutrient have also been affected by regional shifts in cotton production. Average application rates have generally declined as cotton acreage expanded in the South, where application rates for all plant nutrients are below the average of the States surveyed.

Soybeans

Soybeans received an estimated 143,000 tons of primary plant nutrients in 1964, or about 1.4 percent of total U.S. nutrient consumption. Fertilizer use on soybeans increased dramatically from this level, and by 1979, total plant nutrient use on soybeans reached 1.7 million tons, or 7.6 percent of total consumption. These changes were due to the combined effects of an increase in the proportion of soybean acreage fertilized, an increase in application rates, and a 125-percent increase in acreage.

Since 1979, however, fertilizer use in soybean production has trended downward and by 1988 stood at 1.2 million nutrient tons. This decrease in fertilizer use stems from a drop in the proportion of soybean acreage

fertilizer and reductions in soybean acreage. Application rates for nitrogen and phosphate have remained relatively stable since 1979 but have continued to increase for potash. Overall, potash consumption has increased most significantly on soybeans. Consumption of nitrogen, phosphate, and potash increased by 568, 543, and 924 percent, respectively, during 1964-88, while soybean acreage rose by 86 percent.

The rates of nitrogen applied to soybeans, a nitrogen-fixing crop, were relatively low and ranged from 14-39 pounds per acre in 1988 for the States surveyed, with an average of only 22 pounds (app. table 17). Average application rates of potash were significantly greater in 1988 at 79 pounds per acre, and ranged from 16 pounds in Nebraska to 102 pounds in Ohio (app. table 21). Application rates of potash are generally higher in the Corn Belt, where soybeans are commonly rotated with corn.

Wheat

Wheat, the second most important crop with respect to fertilizer use, received an estimated 2.7 million tons of primary plant nutrients in 1988, or 13.8 percent of the U.S. total. This is a considerable increase from the 708,000 tons consumed in 1964 when wheat ranked third in total tonnage behind corn and cotton. Nitrogen consumption on wheat has risen the most over this period as total use of nitrogen increased by over 393 percent, while wheat acreage was up 18 percent from 1964. This rapid increase in nitrogen use is a result of application rates that have more than doubled and an increase in the proportion of wheat acres fertilized. While only 47 percent of wheat acres were fertilized with nitrogen in 1964, the proportion had risen to 83 percent by 1988 (app. table 23).

The rate of phosphate and potash applied per acre of wheat has also increased over time, although not as dramatically as the rate of nitrogen. Subsequently, use of phosphate and potash has been more closely related to changes in wheat acreage. The use of phosphate and potash in wheat production increased by 137 and 263 percent, respectively, during 1964-88. As with corn, cotton, and soybeans, fertilizer application rates for wheat differed between States. In 1988, nitrogen application rates ranged from a low of 38 pounds per acre in Montana to a high of 103 pounds per acre in Minnesota (app. table 24). Phosphate and potash application rates also differed significantly in 1988, and ranged from 17-79 and from 13-95 pounds per acre, respectively (app. tables 26 and 28).

Other Crops

While detailed data on fertilizer use by crops other than corn, cotton, soybeans, and wheat are not collected in any consistent manner, an estimate of fertilizer use by other crops can be developed. This estimate is developed by adding the estimated total tonnage of each plant nutrient used on the four selected crops, and subtracting it from the total tonnage of each nutrient used.^{5/} By allocating this remaining nitrogen, phosphate, and potash to producing principal crops other than corn, cotton, soybeans, and wheat, we

^{5/} This estimate will be an upper limit on fertilizer use by crops other than corn, cotton, soybeans, and wheat because the total of each nutrient consumed includes tonnage sold or shipped for both farm and nonfarm use.

can also estimate an average nutrient application rate for other crops (as a group).^{6/}

In 1964, crops other than corn, cotton, soybeans, and wheat used an estimated 45.2 percent of the nitrogen, 52.9 percent of the phosphate, and 59.6 percent of the potash consumed. By 1988, these proportions dropped to an estimated 35.8, 26.9, and 32.3 percent, respectively, as these crops used 3.7 million nutrient tons of nitrogen, 1.1 million nutrients tons of phosphate, and 1.6 million nutrient tons of potash.

Planted acreage of other crops decreased during 1964-88, while corn, soybean, and wheat acreage generally increased. The share of each plant nutrient consumed by crops other than corn, cotton, soybeans, and wheat subsequently declined. Trends in application rates of nitrogen, phosphate, and potash on other crops resemble those of corn, soybean, and wheat but have generally changed more slowly (fig. 13). While total acreage of other crops fell by over 17 percent, estimated use of nitrogen increased by 91 percent, while phosphate and potash use fell 38 and 2 percent, respectively.

Fertilizer Products

While information on fertilizer is generally categorized by plant nutrient (nitrogen, phosphate, or potash), U.S. farmers purchase specific products to apply to their crops. These products can be classified as either direct application materials or mixed fertilizers. Direct application materials are fertilizer products that contain primarily one plant nutrient, while mixed fertilizers contain two or more.

Mixed fertilizers constituted almost 63 percent of total fertilizer consumption in 1960 (table 3 and fig. 14). This share steadily declined to below 40 percent by 1988 as the share for direct application materials increased from 37 to over 60 percent. Recent trends in the use of specific direct application materials suggest that farmers are using more high-analysis products.

Nitrogen Products

The consumption of major nitrogen direct application materials increased through the early eighties (table 4 and fig. 15). The trend since about 1973 has been toward anhydrous ammonia, nitrogen solutions, and urea and away from ammonium nitrate. These trends were induced by price changes that favored high-analysis products, reflecting economies in transportation, distribution, and storage and the ease and accuracy of applying nitrogen solutions.

Phosphate Products

The use of the major directly applied phosphate fertilizer products has trended downward since the early seventies (table 5 and fig. 16). The trend throughout the sixties and seventies was toward increased use of triple superphosphates relative to normal superphosphates because of price changes

^{6/} Crop acreages included are planted acreages for sorghum, oats, barley, rice, flaxseed, peanuts, sunflowers, potatoes, sweetpotatoes, sugar beets, rye and dry edible beans, and harvested acreages for all hay, tobacco, and sugarcane.

reflecting transportation, distribution, and storage economies. Since 1979, however, consumption of both normal and triple superphosphates has declined, by 68 and 52 percent, respectively.

The use of diammonium phosphate (DAP), a mixed fertilizer material containing primarily 18 percent nitrogen and 46 percent phosphate, has increased dramatically since 1960. DAP consumption of 20,388 material tons in 1960 increased to almost 3.7 million material tons by 1979. Since then, DAP consumption has been tied more closely to crop acreage as phosphate application rates have stabilized or declined, and stood at 3.4 million material tons in 1988.

Potash Products

The use of potassium chloride, the major directly applied potash product, has increased almost thirteenfold from its 1960 level (table 5 and fig 17). Potassium chloride use as a share of total potash material consumption increased from 82 percent in 1960 to almost 94 percent by 1988. While the sharp upward trend in use reversed along with total crop acreage after 1981, total use of potassium chloride remains high. Although total crop acreage in 1988 was down by over 15 percent from its record level in 1981, consumption of potassium chloride was off by only 5 percent.

Fertilizer Prices

Throughout the sixties, domestic prices of most fertilizer products declined as growth in industry capacity exceeded growth in demand (tables 6-7 and figs. 18-21). As a consequence of this excess capacity, the Cost of Living Council under Economic Stabilization Program regulations froze domestic fertilizer prices at the producer level on August 15, 1971, because of "insufficient cost justification to implement price increases" (4). After price controls took effect, fertilizer prices rose faster in the export market, increasing the spread between domestic and world fertilizer prices. Consequently, domestically produced fertilizer moved into the export market. Meanwhile, U.S. crop production expanded, and to increase the availability of fertilizers essential to peak crop production in the United States, prices were decontrolled on October 25, 1973.

With decontrol came sharp increases in fertilizer prices. At their peak in the spring of 1975, farm prices of most fertilizer products had doubled. However, by 1976, high fertilizer prices in 1975 had increased production and decreased consumption, causing fertilizer manufacturers' inventories to increase. Consequently, farm prices of nitrogen and phosphates fell by 19.34 percent, while the price of potassium chloride fell by 6 percent.

Fertilizer prices began to rise again in 1979 as a result of strong domestic and export demand and rapidly rising production, transportation, and retailing costs. Rising energy prices in particular were instrumental in increasing production costs, especially for nitrogen products. Prices of most fertilizer products increased in 1980 and 1981 and held steady or declined a year later as crop acreage declined in 1982. Farm fertilizer prices fell during 1983 as a record level of crop acreage was diverted under the PIK program.

Prices rebounded in 1984 as planted acreage increased by almost 36 million acres, but fell in 1985 and again in 1986 in response to declining domestic

consumption and plentiful supplies. Overall, fertilizer prices paid by farmers fell by 21 percent from May 1984 to October 1986 as the prices-paid index for fertilizer fell from 147 to 116 (where 1977=100). Prices then gradually began to increase, up 1 percent by April 1987 and an additional 3 percent by October 1987, primarily because of higher phosphate and potash prices. By the spring of 1988, tighter nitrogen and phosphate supplies combined with higher potash prices resulting from an antidumping case against Canadian potash producers, resulted in an additional 9-percent increase in overall fertilizer prices.

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Figure 1
Consumption of primary plant nutrients

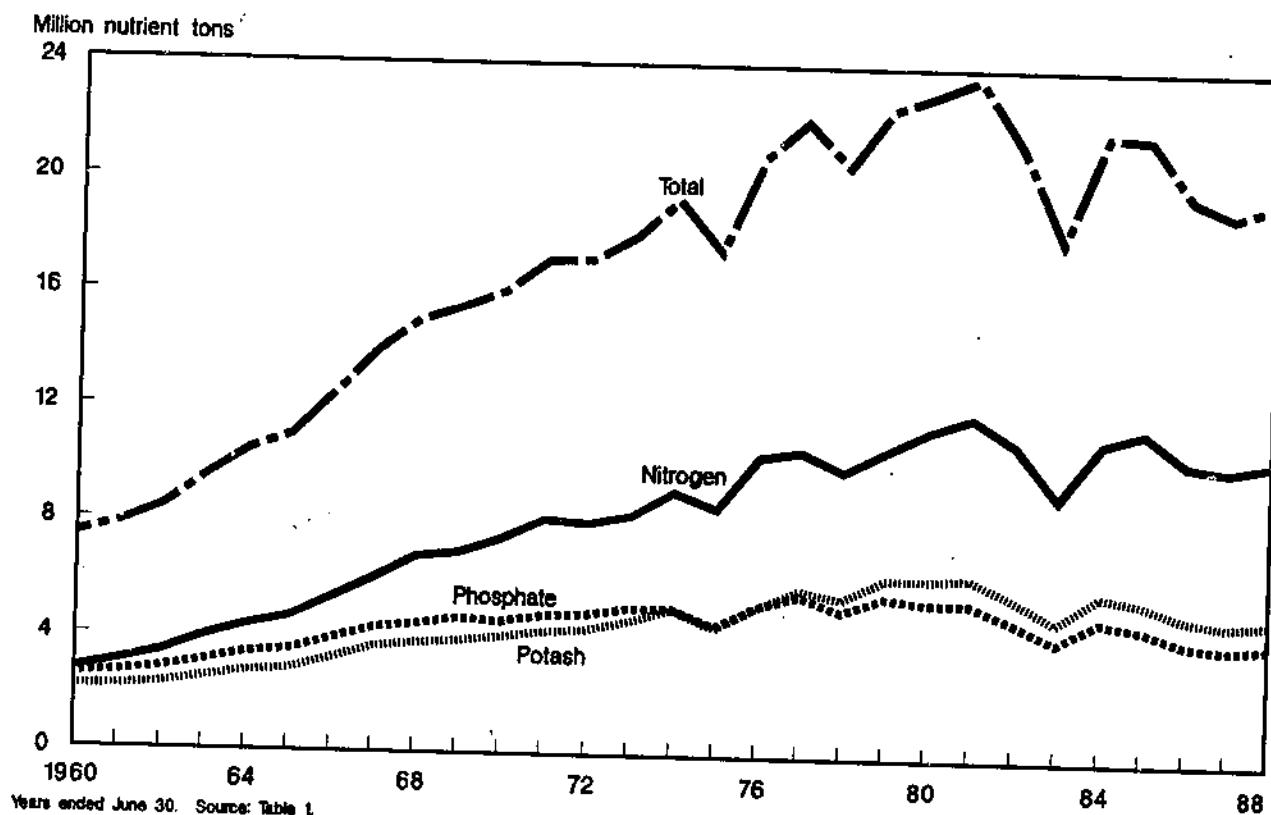


Figure 2
Crop acreage planted

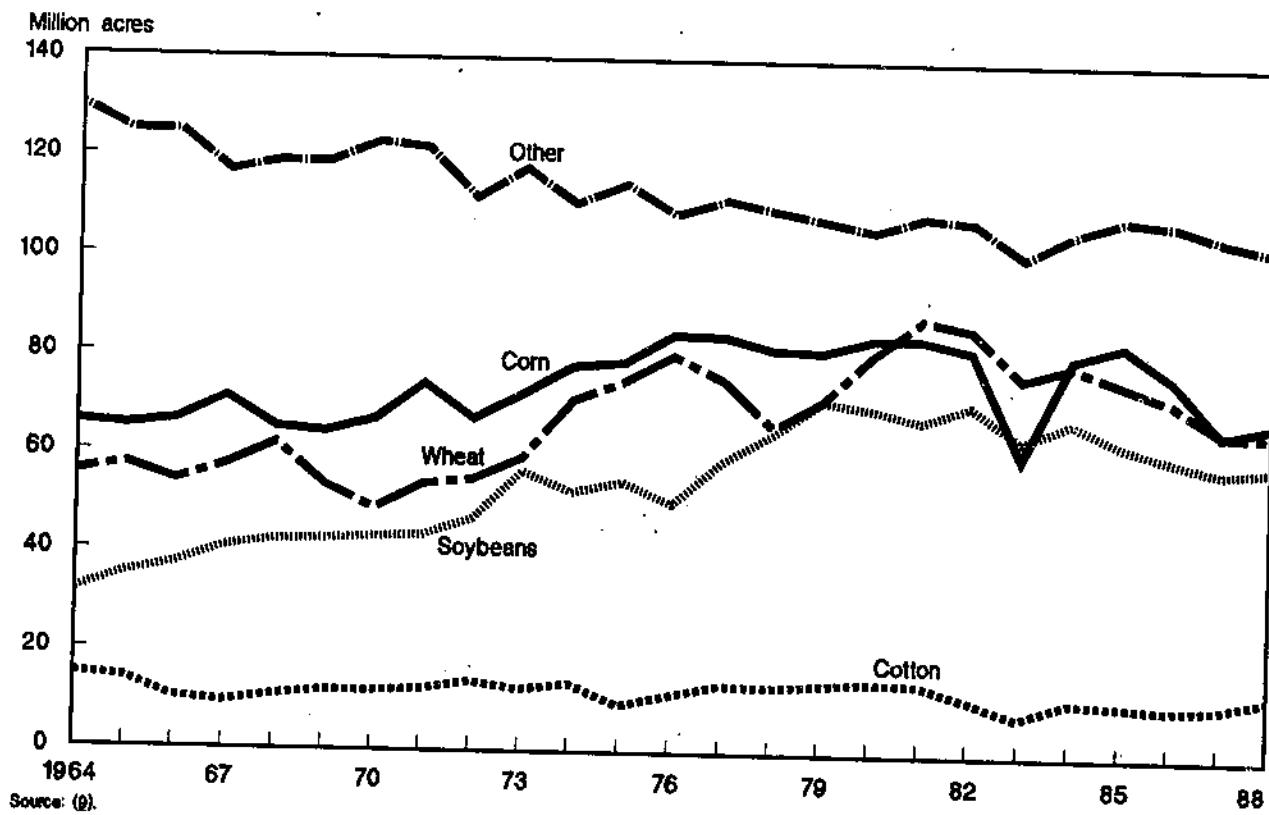


Figure 3
Estimated consumption of nitrogen, selected crops

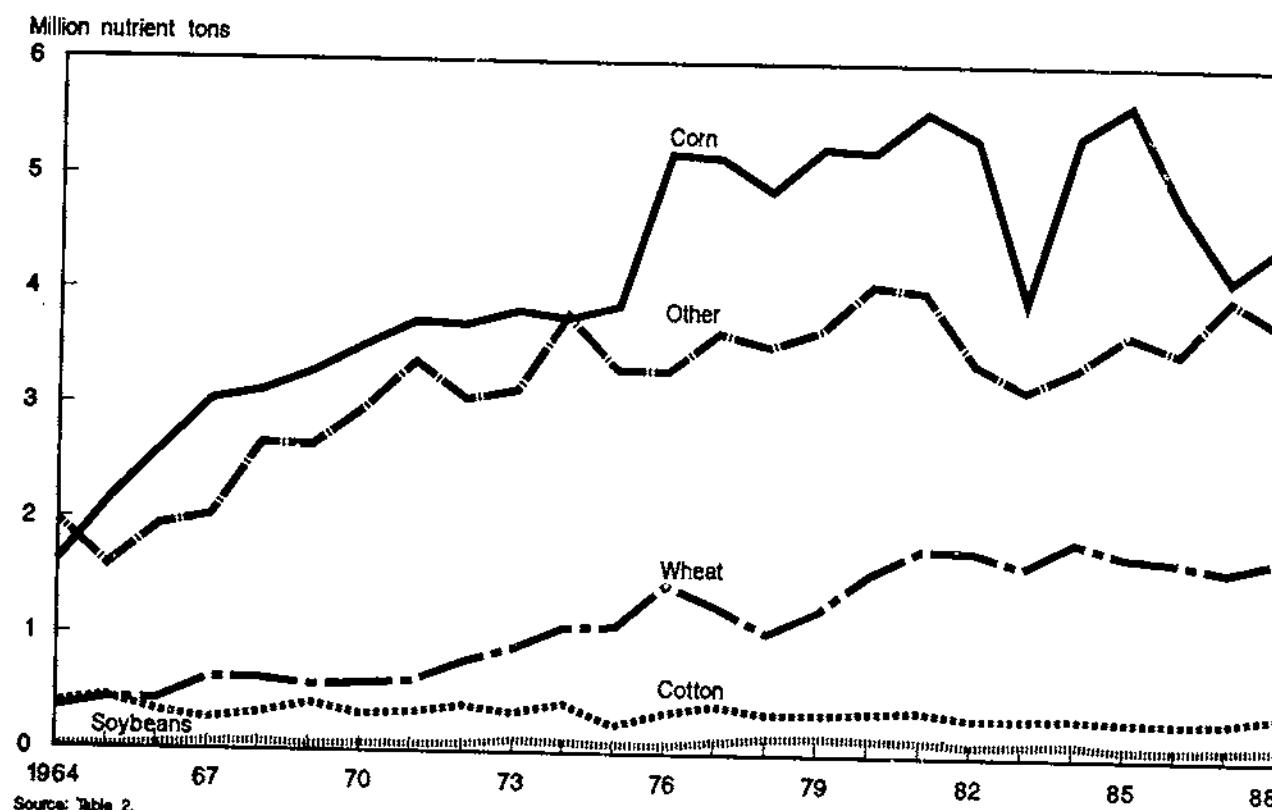


Figure 4
Estimated consumption of phosphate, selected crops

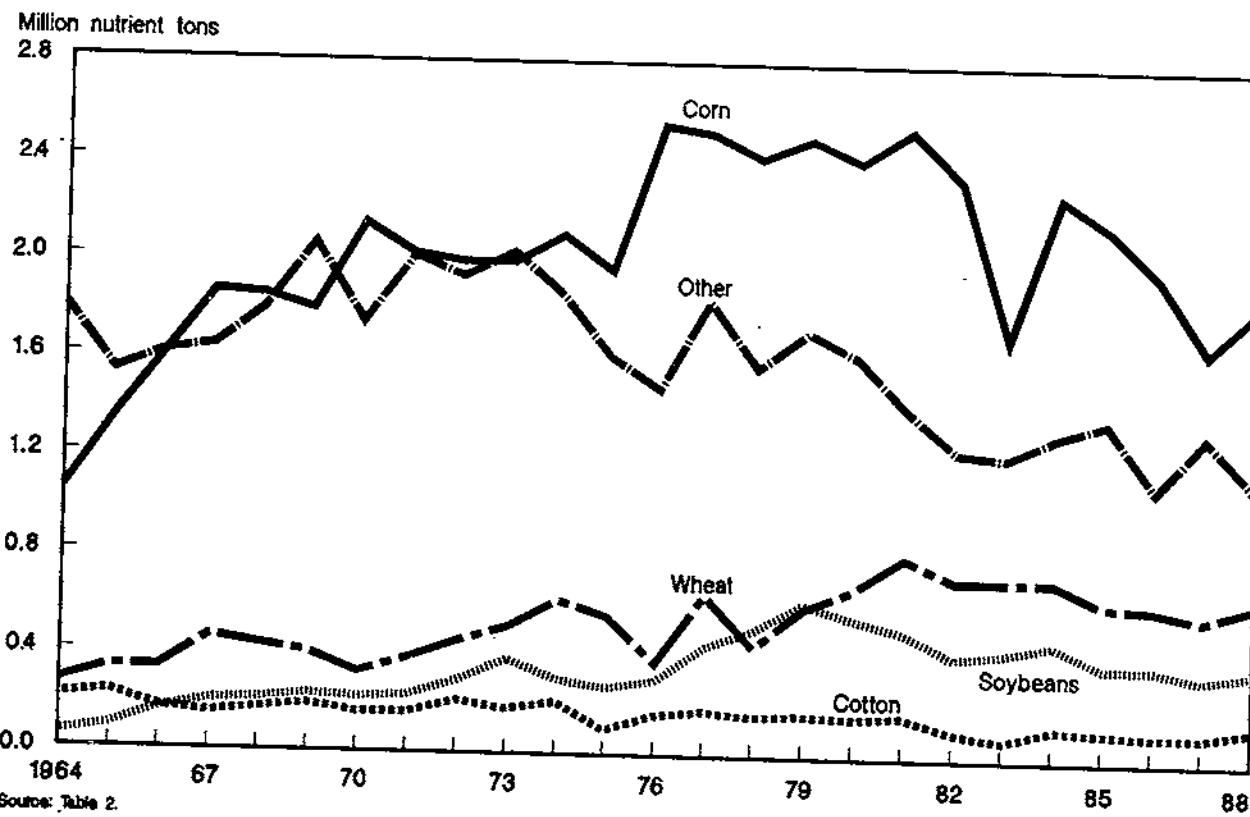


Figure 5
Estimated consumption of potash, selected crops

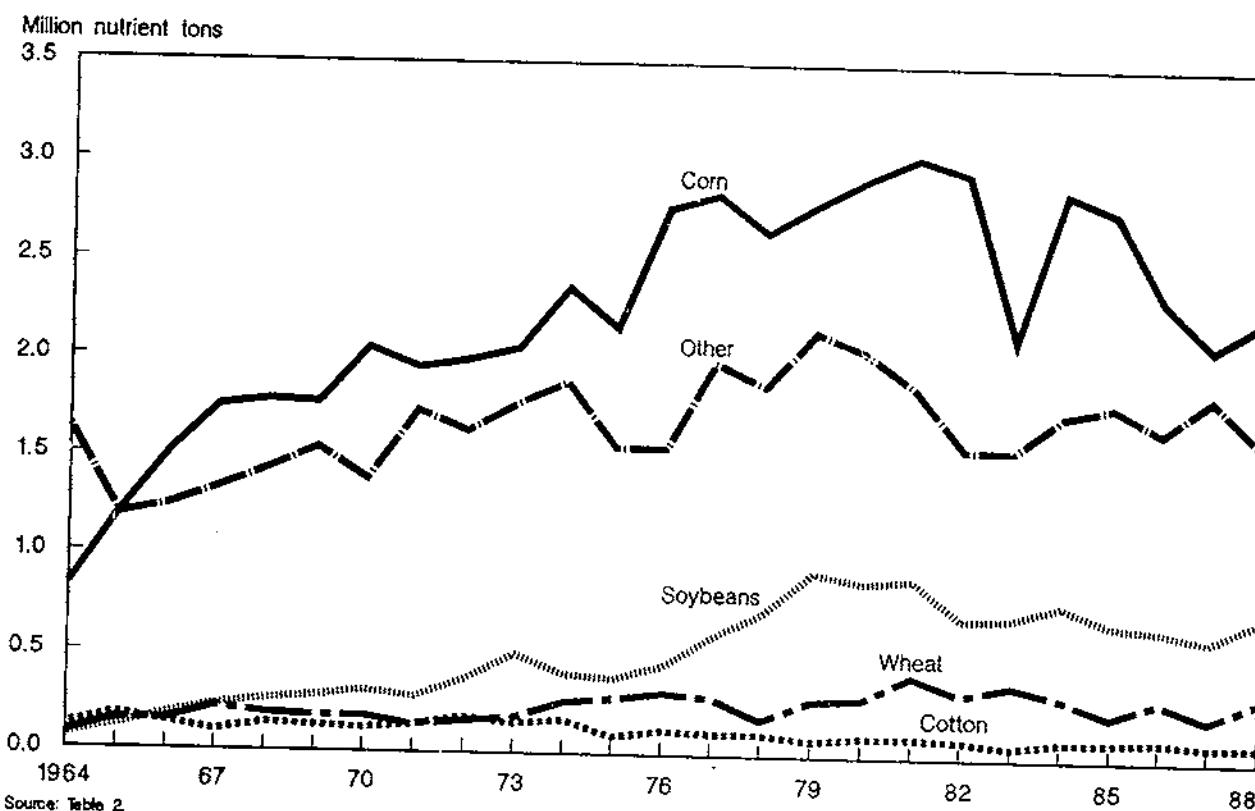


Figure 6
Nitrogen application rates, selected crops

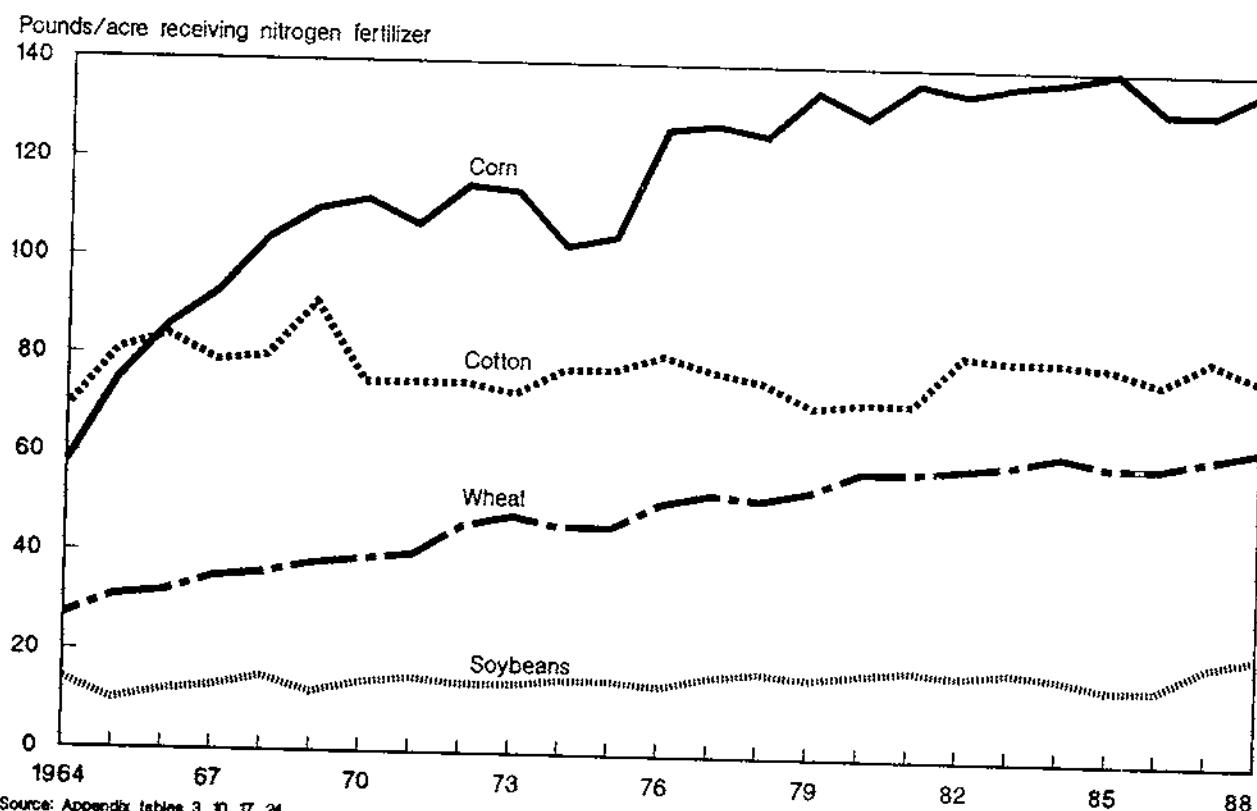
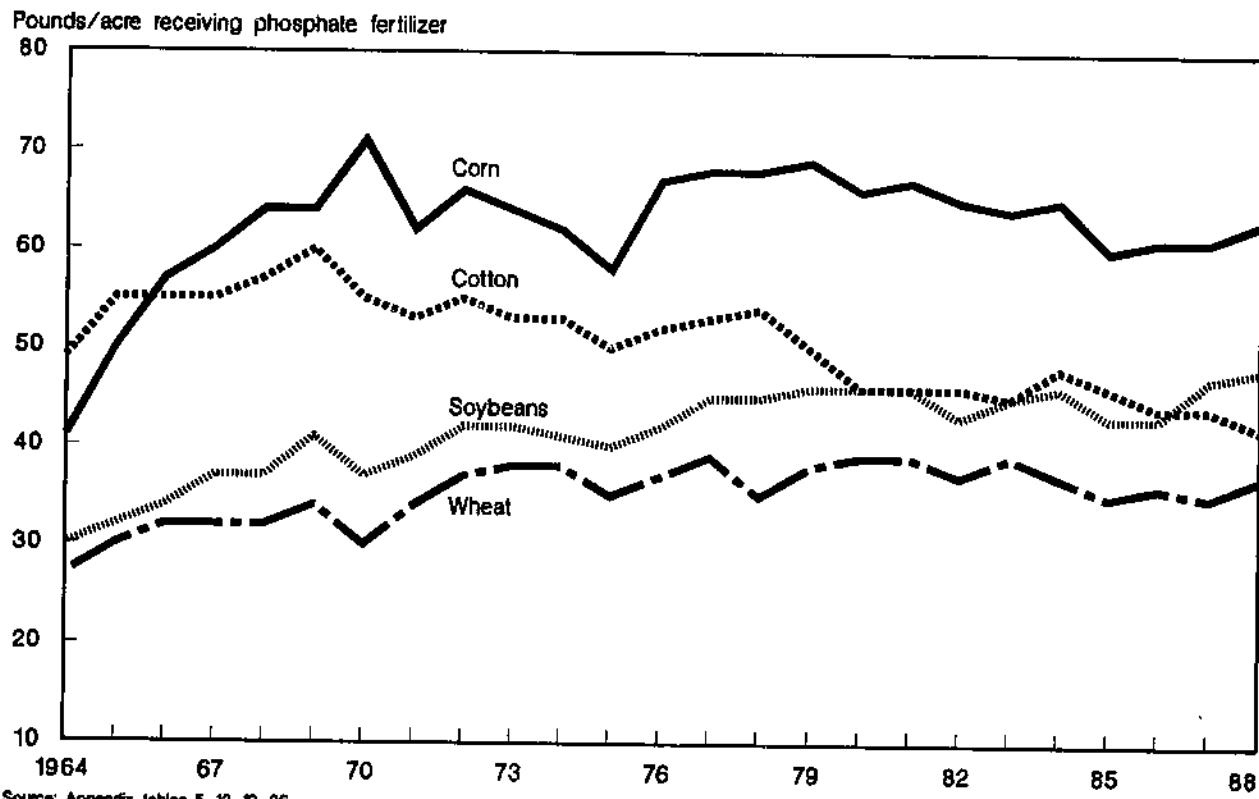
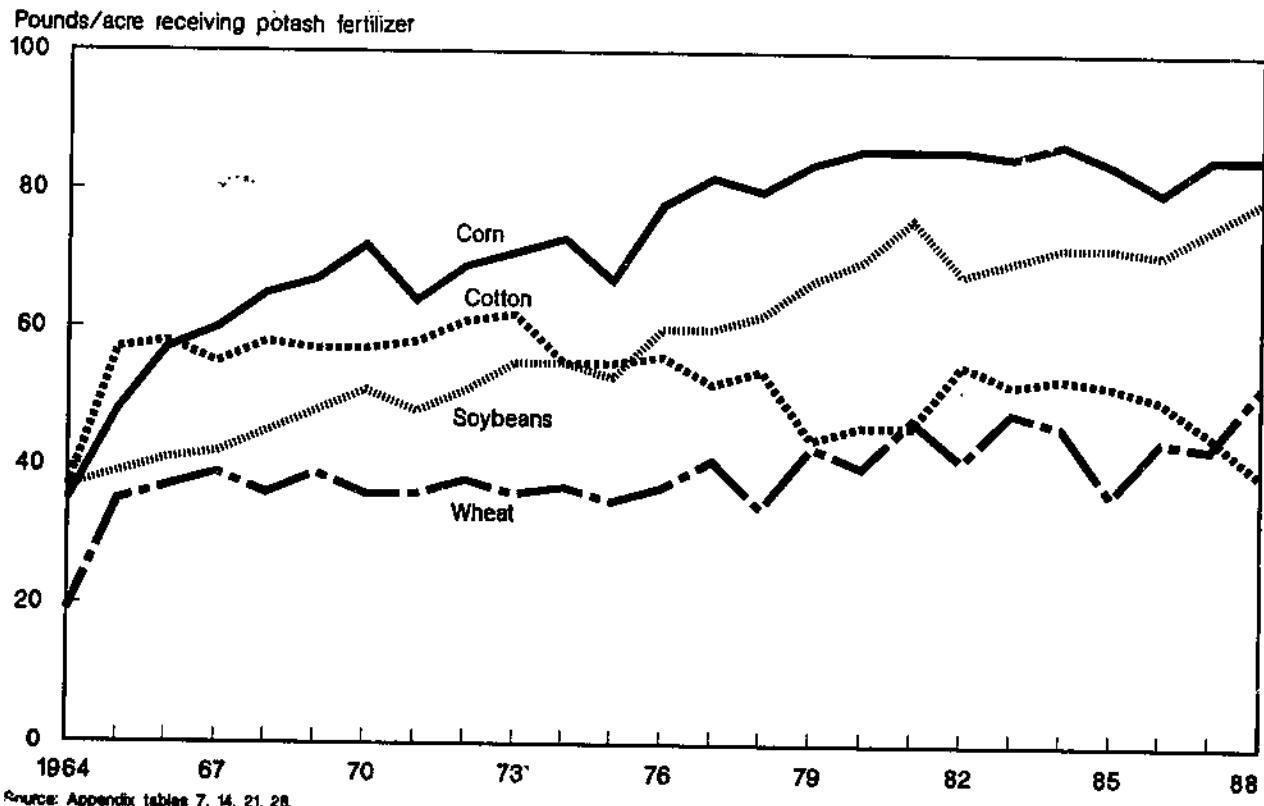


Figure 7
Phosphate application rates, selected crops



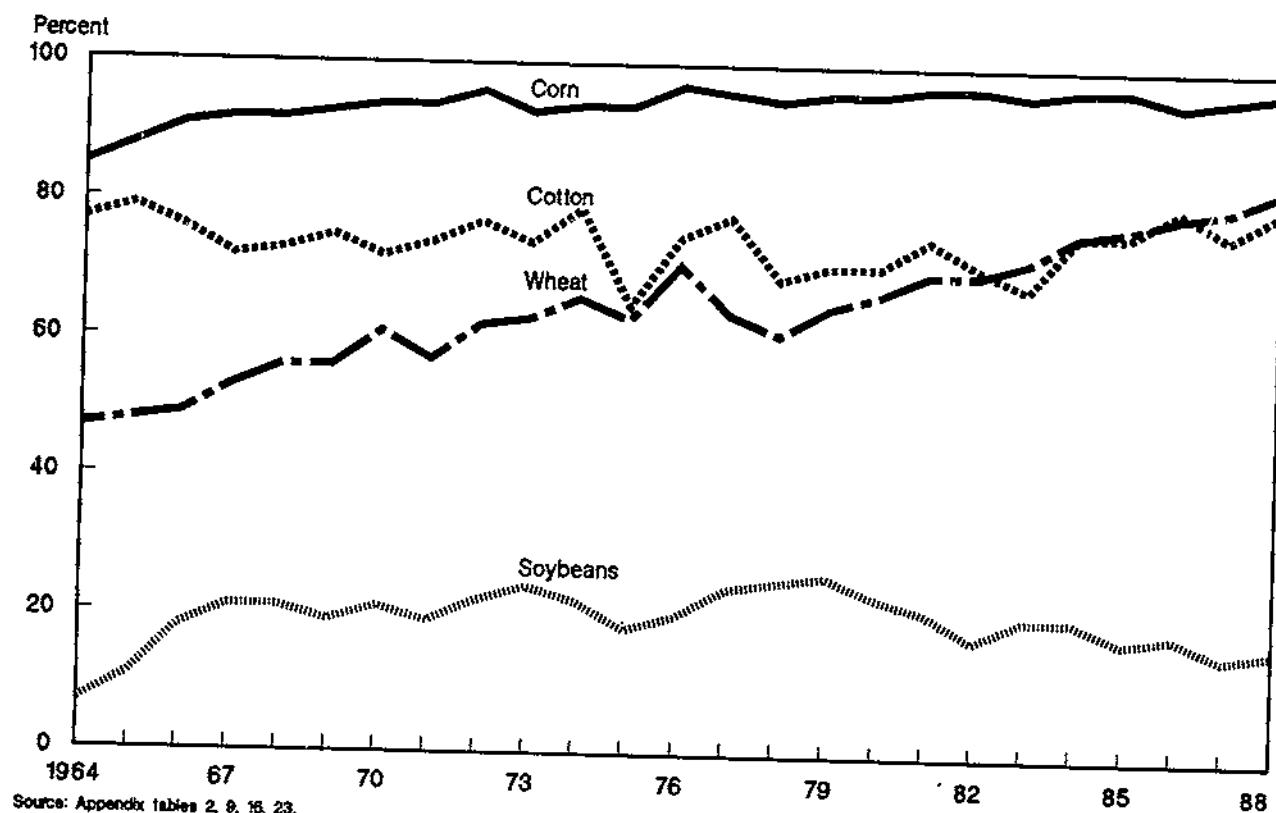
Source: Appendix tables 5, 12, 19, 26.

Figure 8
Potash application rates, selected crops



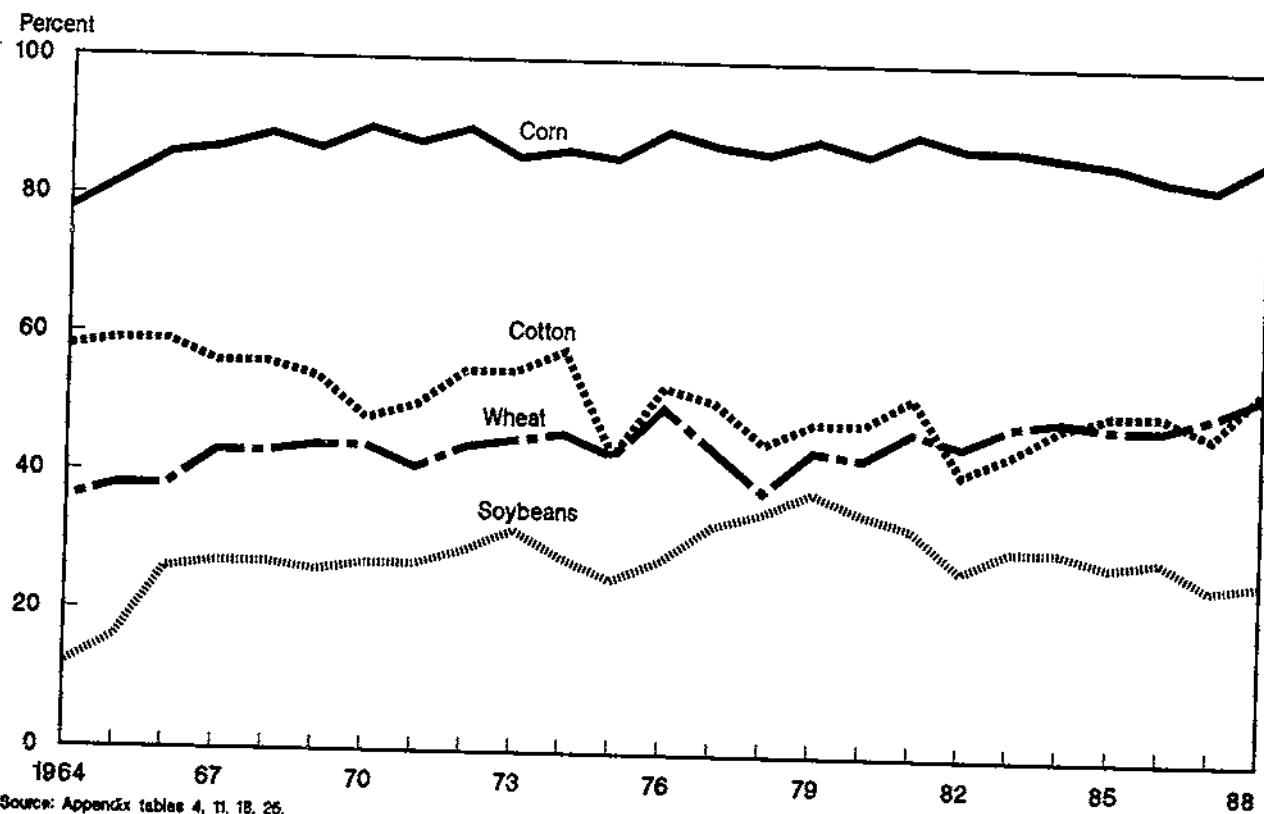
Source: Appendix tables 7, 14, 21, 28.

Figure 9
Percentage of crop acreage receiving nitrogen



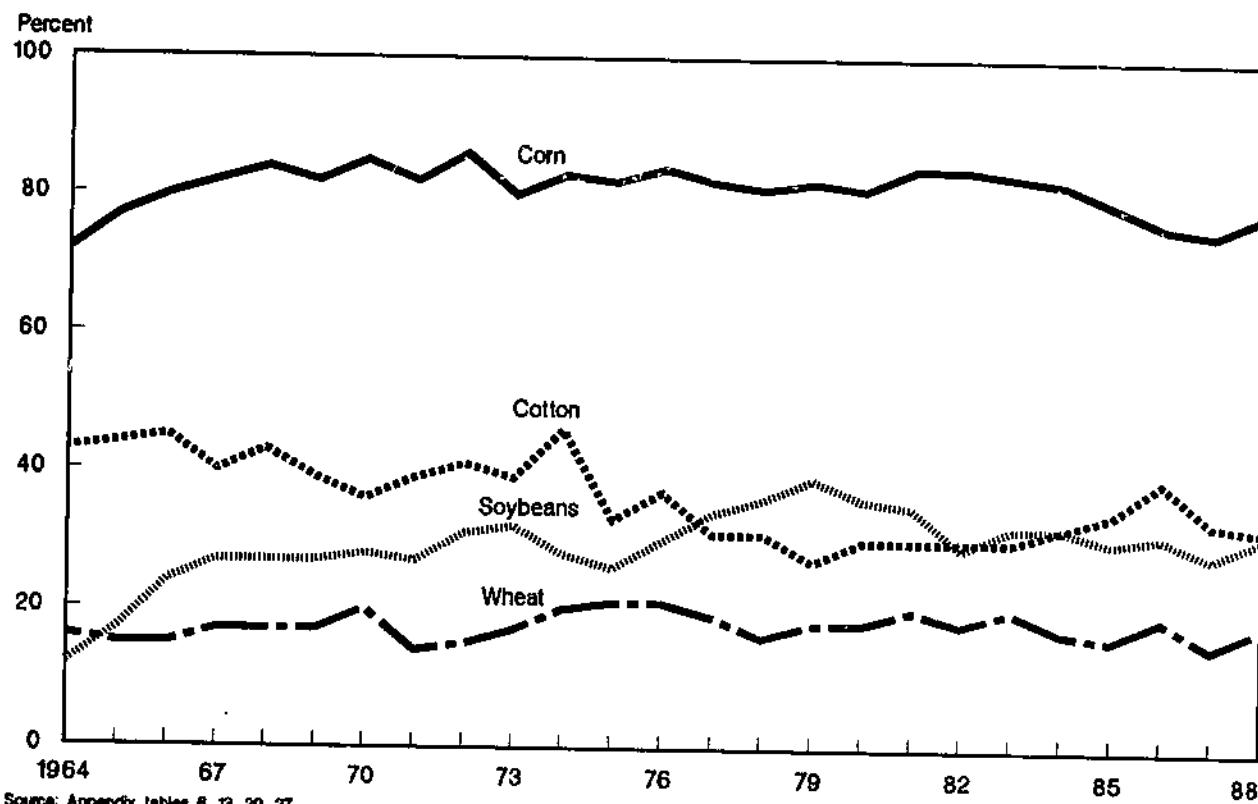
Source: Appendix tables 2, 9, 15, 23.

Figure 10
Percentage of crop acreage receiving phosphate



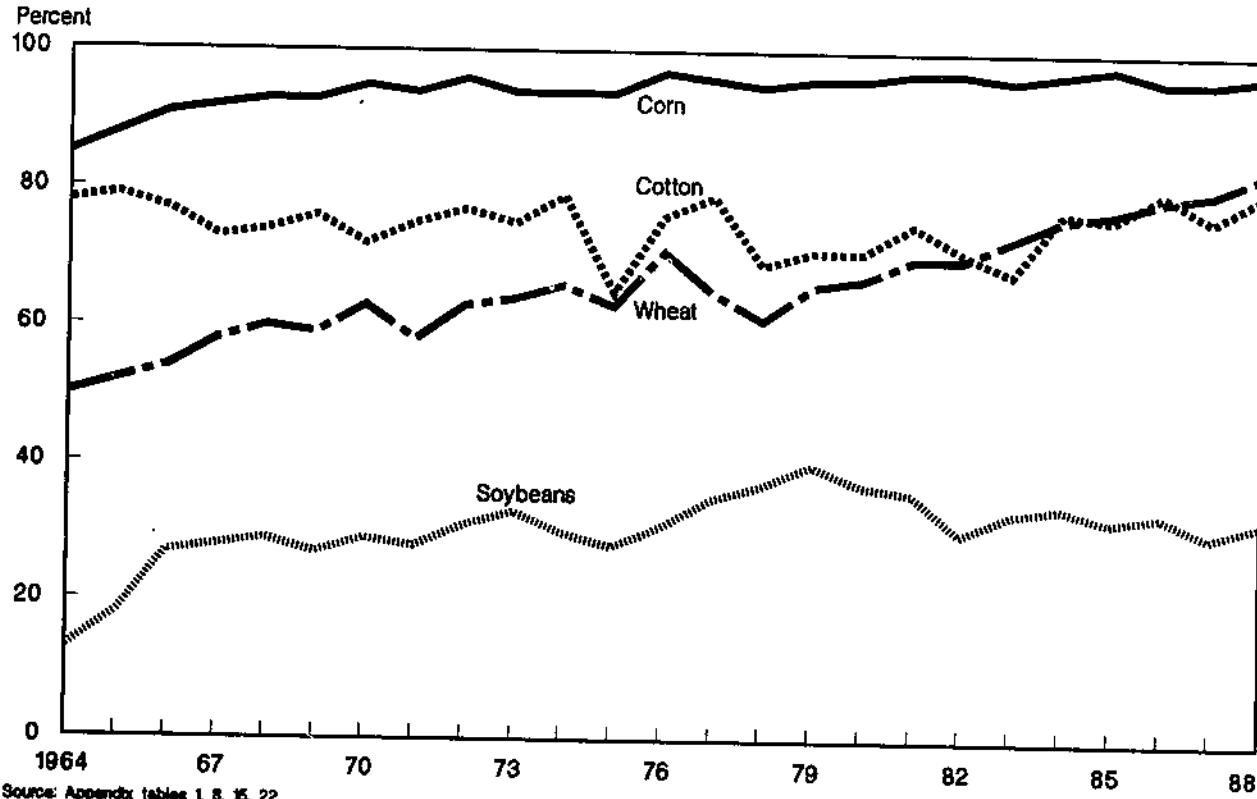
Source: Appendix tables 4, 11, 18, 26.

Figure 11
Percentage of crop acreage receiving potash



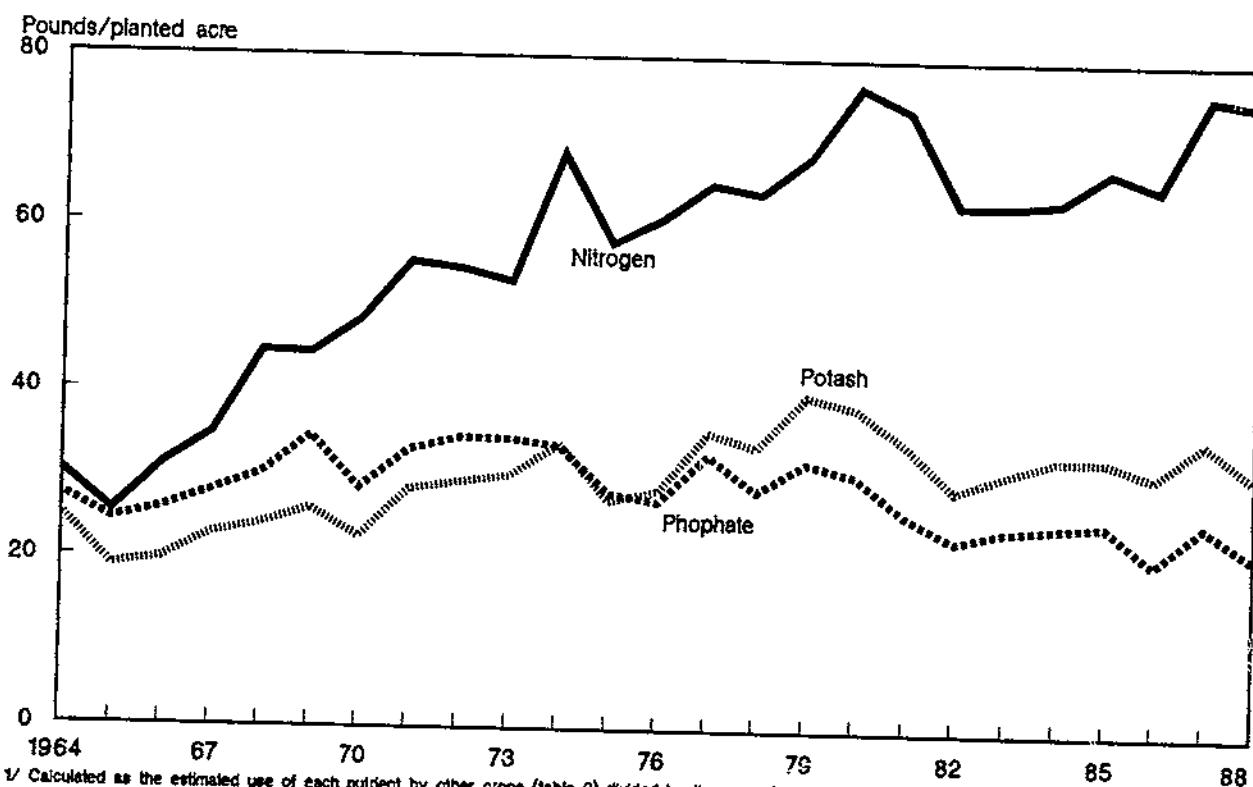
Source: Appendix tables 6, 13, 20, 27.

Figure 12
Percentage of crop acreage receiving any fertilizer



Source: Appendix tables 1, 8, 15, 22.

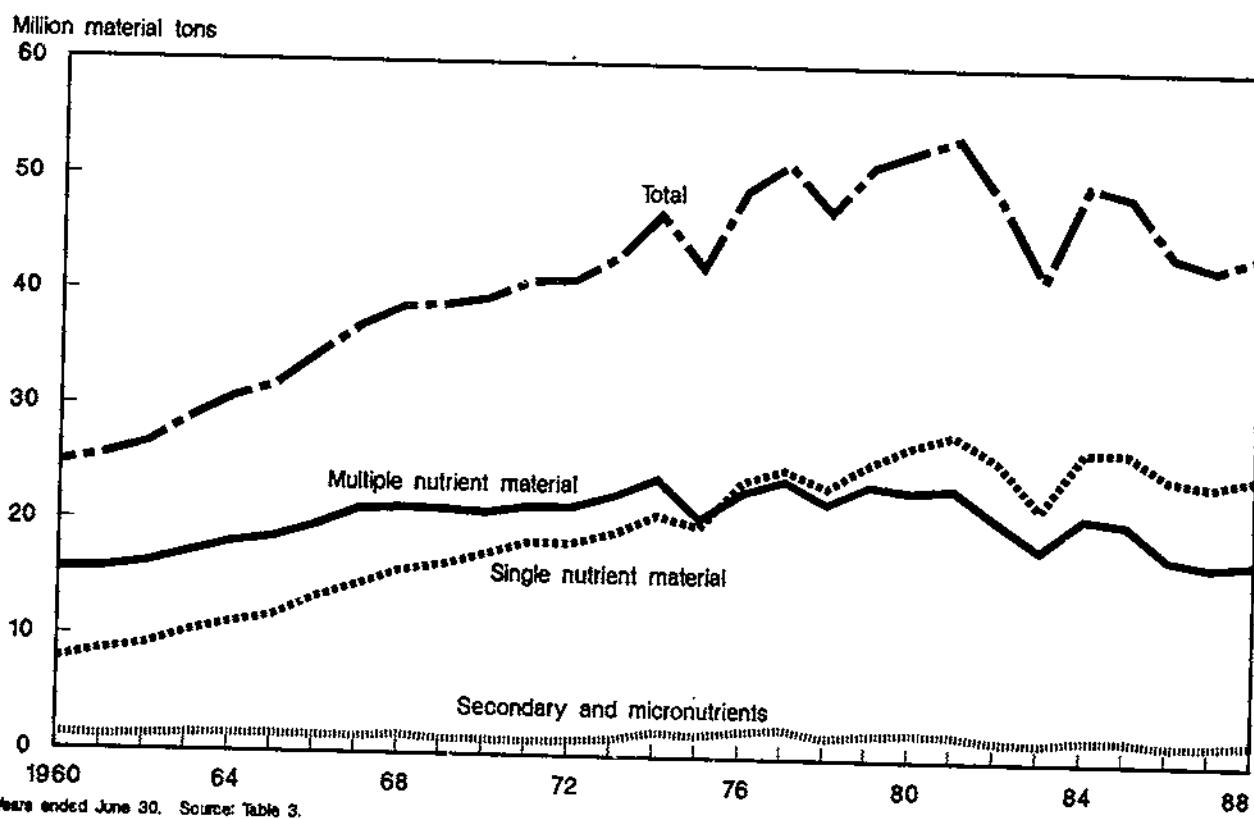
Figure 13
Estimated nutrient application rates, other crops



1/ Calculated as the estimated use of each nutrient by other crops (table 2) divided by the sum of planted acres for sorghum, oats, barley, rice, flaxseed, peanut, sunflower, potatoes, sweetpotatoes, sugar beets, dry edible beans, and rye, and harvested acres for all hay, tobacco, and sugarcane.

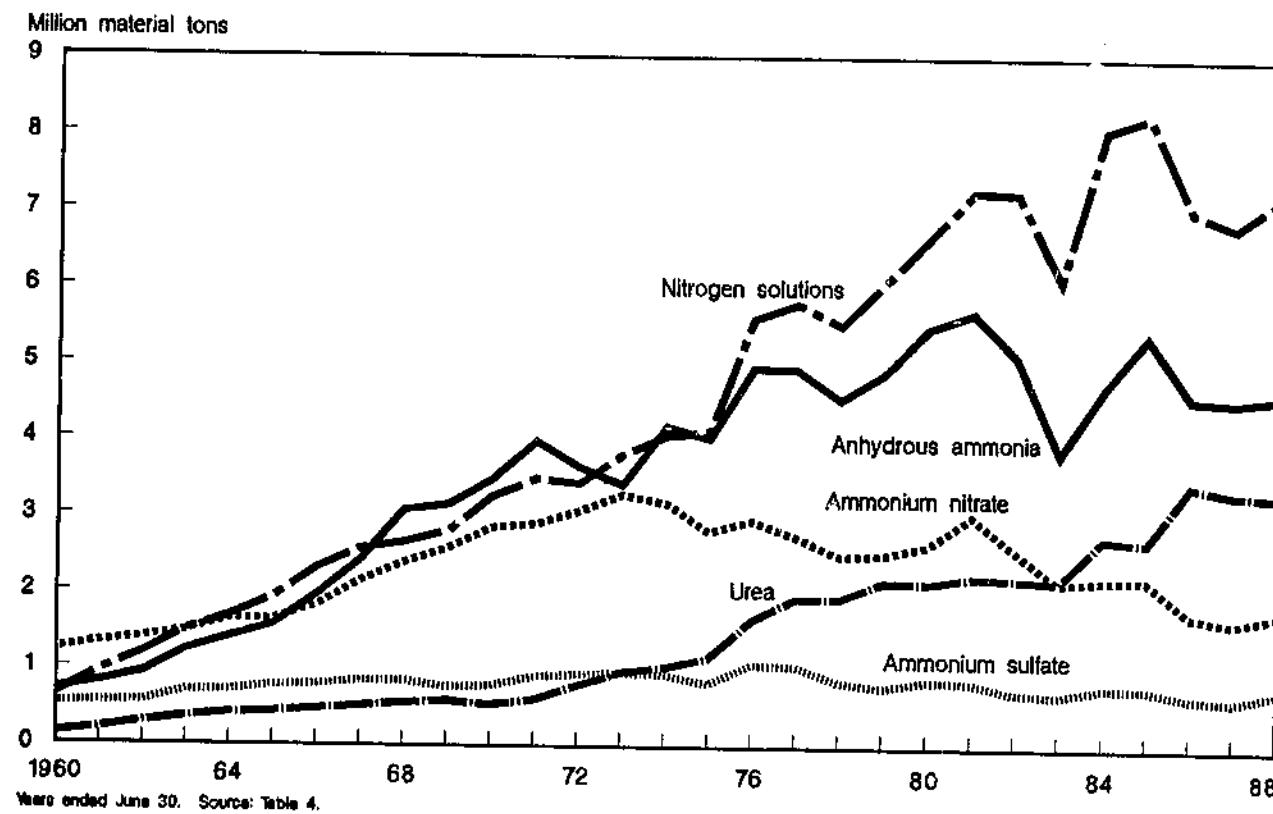
Figure 14

Consumption of fertilizer



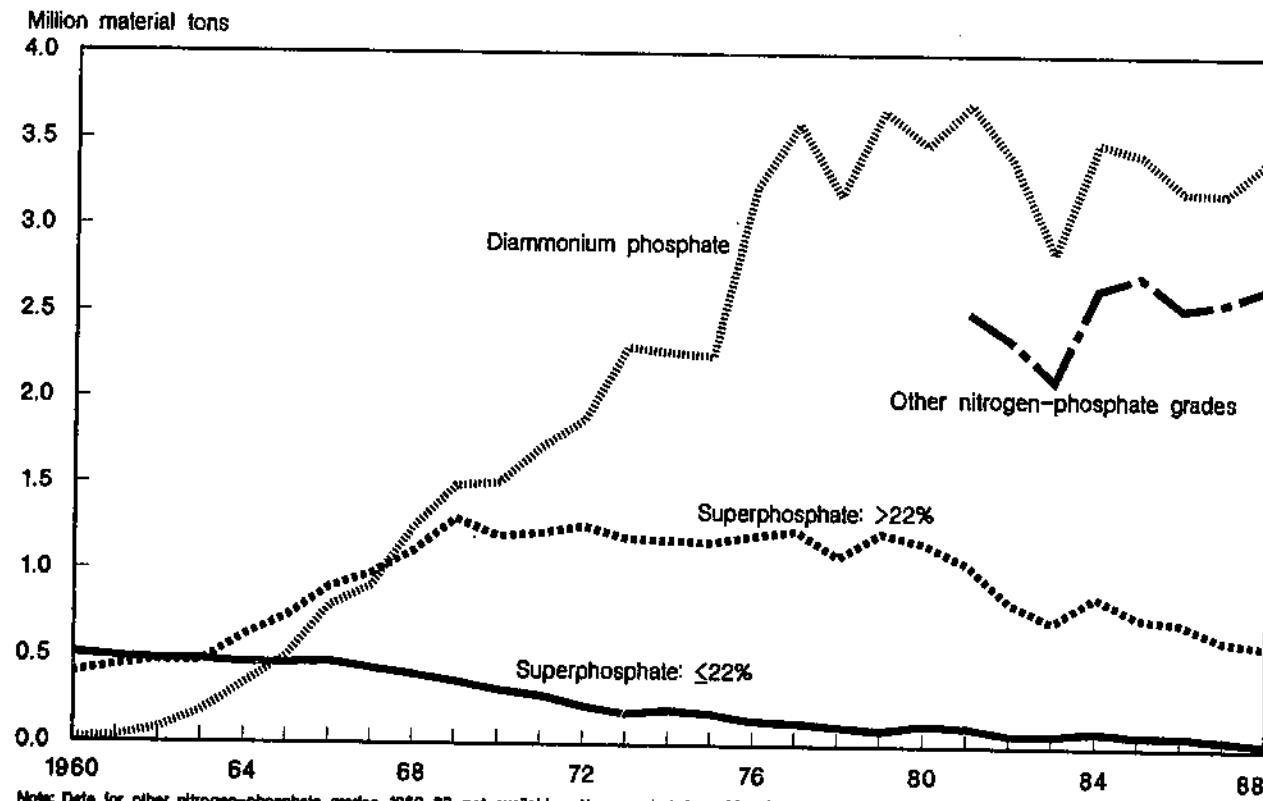
Years ended June 30. Source: Table 3.

Figure 15
Consumption of selected nitrogen materials



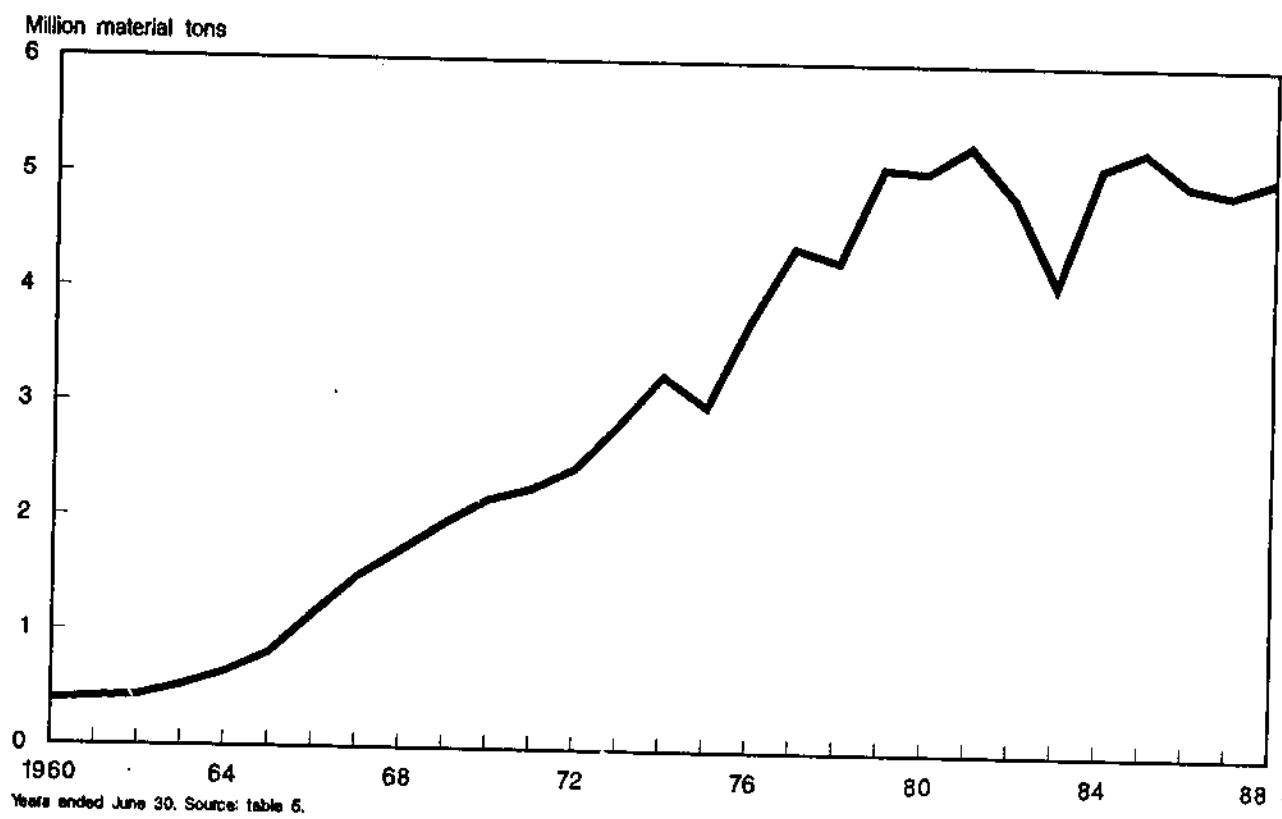
Years ended June 30. Source: Table 4.

Figure 16
Consumption of selected phosphate fertilizers



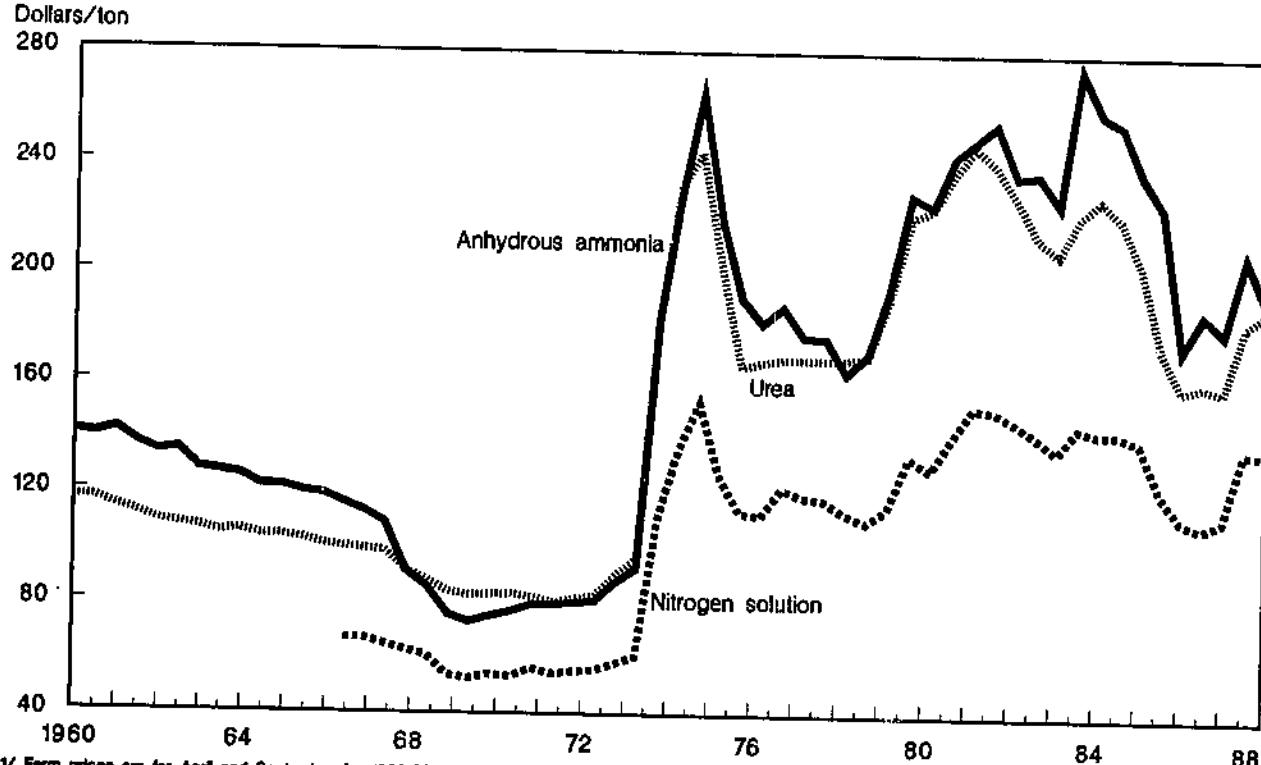
Note: Data for other nitrogen-phosphate grades, 1960-80, not available. Years ended June 30. Source: Table 5.

Figure 17
Consumption of potassium chloride



Years ended June 30. Source: table 6.

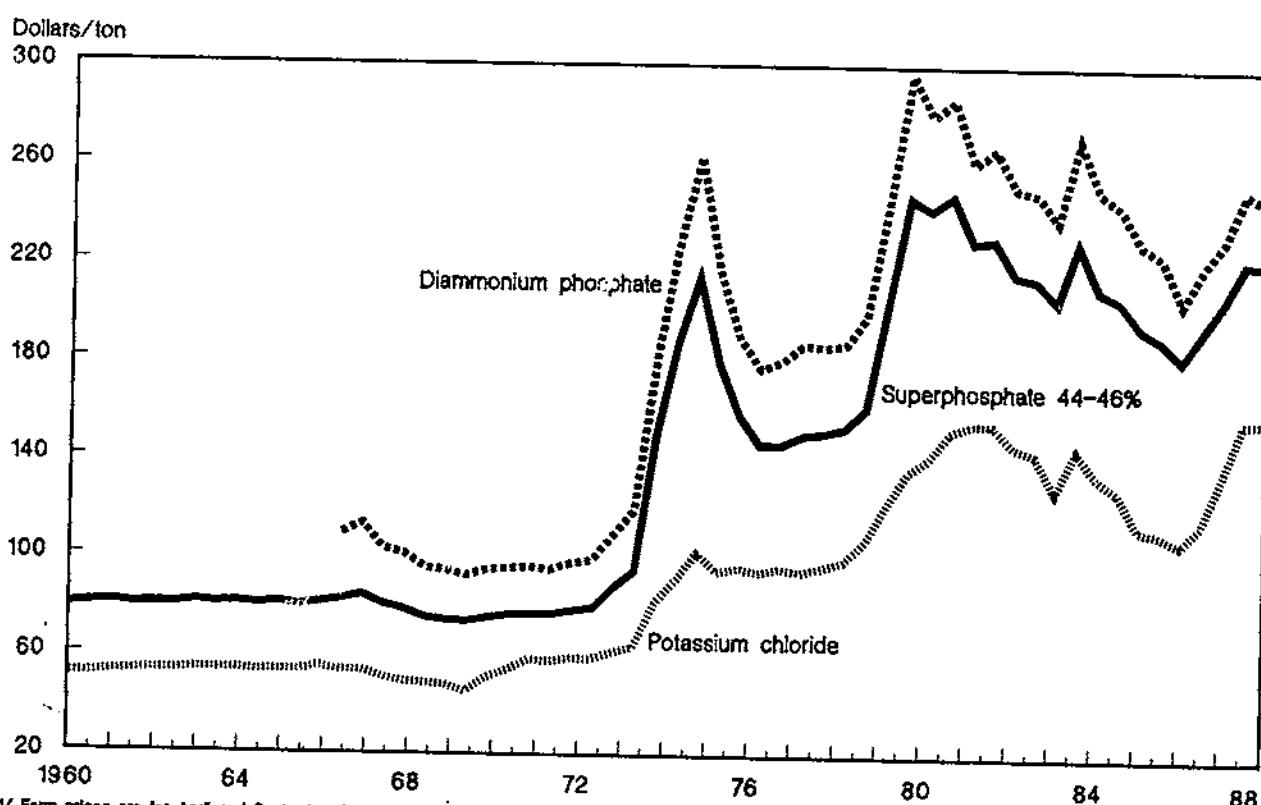
Figure 18
Average farm prices of selected nitrogen fertilizers¹



¹ Farm prices are for April and September for 1960-76, March and October for 1977-85, and April and October for 1986-88. Source: Table 6.
Note: Data for nitrogen solutions, 1960-66, not available.

Figure 19

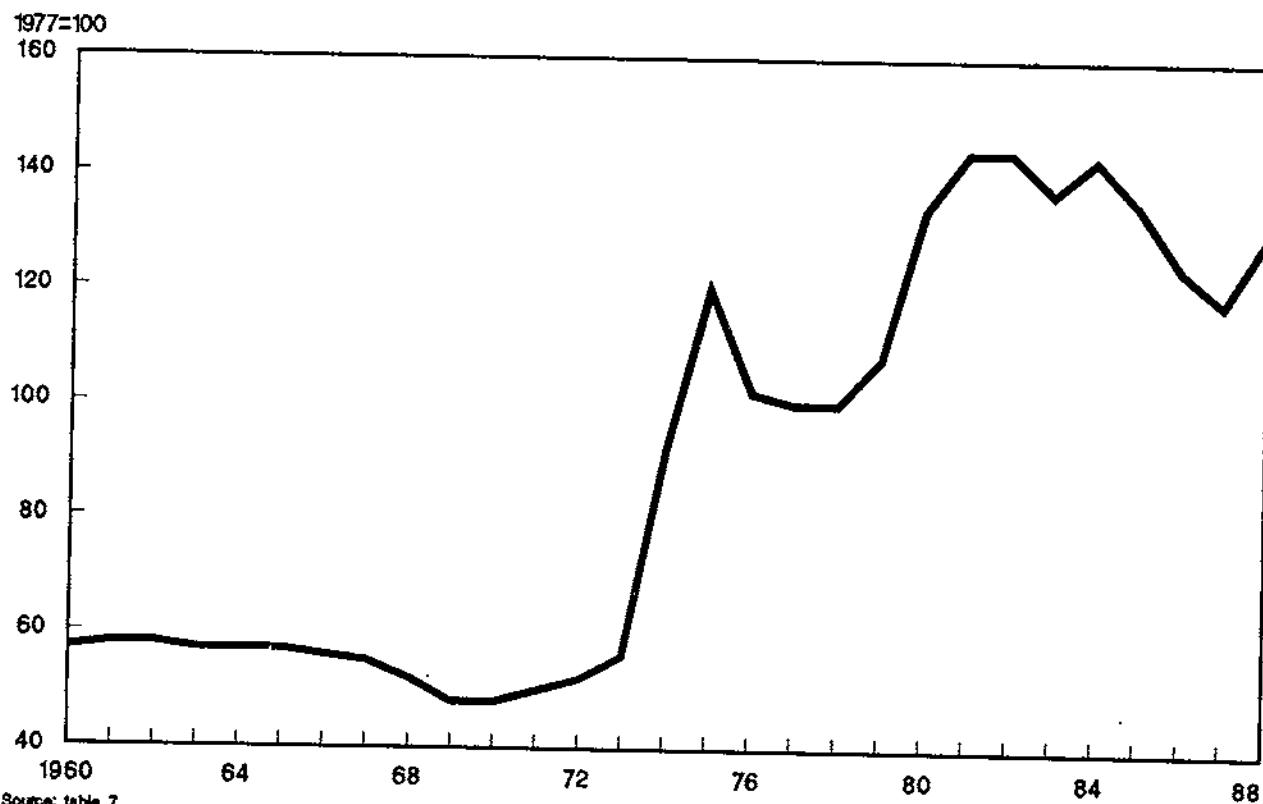
Average farm prices of selected phosphate and potash fertilizers¹



¹/ Farm prices are for April and September for 1960-76, March and October for 1977-85, and April and October for 1986-88. Source: Table 6.

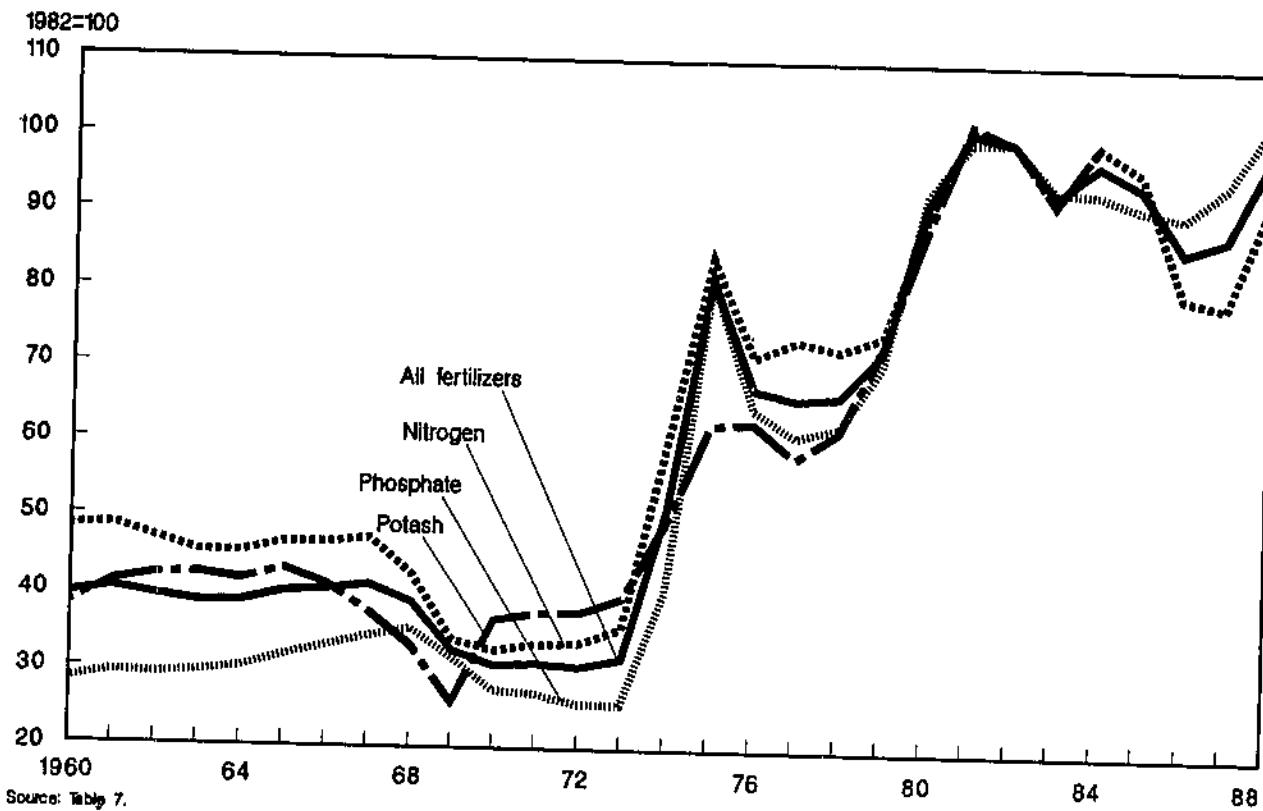
Figure 20

Index of fertilizer prices paid by farmers



Source: Table 7.

Figure 21
Producer price indexes, fertilizer products



Source: Table 7.

Table 1--U.S. consumption of plant nutrients 1/

Year ended June 30:	Primary nutrient content 2/				Share of total by nutrient		
	Nitrogen	Phosphate	Potash	Total	Nitrogen	Phosphate	Potash
: ----- 1,000 nutrient tons -----							
1960 :	2,738.0	2,572.4	2,153.3	7,463.7	36.68	34.47	28.85
1961 :	3,030.8	2,645.1	2,168.5	7,844.4	38.64	33.72	27.64
1962 :	3,370.0	2,807.0	2,270.5	8,447.5	39.89	33.23	26.88
1963 :	3,929.1	3,072.9	2,503.4	9,505.4	41.34	32.33	26.34
1964 :	4,352.8	3,377.8	2,729.7	10,460.3	41.61	32.29	26.10
1965 :	4,638.5	3,512.2	2,834.5	10,985.2	42.22	31.97	25.80
1966 :	5,326.3	3,897.1	3,221.2	12,444.6	42.80	31.32	25.88
1967 :	6,027.1	4,304.7	3,641.8	13,973.6	43.13	30.81	26.06
1968 :	6,787.6	4,453.3	3,792.6	15,033.5	45.15	29.62	25.23
1969 :	6,957.6	4,665.6	3,891.6	15,514.8	44.84	30.07	25.08
1970 :	7,459.0	4,573.8	4,035.5	16,068.3	46.42	28.46	25.11
1971 :	8,133.6	4,803.4	4,231.4	17,168.4	47.38	27.98	24.65
1972 :	8,022.3	4,863.7	4,326.8	17,212.8	46.61	28.26	25.14
1973 :	8,295.1	5,085.2	4,648.7	18,029.0	46.01	28.21	25.78
1974 :	9,157.2	5,098.6	5,082.6	19,338.4	47.35	26.37	26.28
1975 :	8,600.8	4,506.8	4,453.2	17,560.9	48.98	25.66	25.36
1976 :	10,411.6	5,227.6	5,209.7	20,848.8	49.94	25.07	24.99
1977 :	10,647.4	5,629.7	5,833.8	22,110.9	48.15	25.46	26.38
1978 :	9,964.6	5,096.1	5,526.1	20,586.9	48.40	24.75	26.84
1979 :	10,714.7	5,605.8	6,244.5	22,565.1	47.48	24.84	27.67
1980 :	11,406.7	5,431.5	6,245.1	23,083.3	49.42	23.53	27.05
1981 :	11,923.8	5,434.4	6,319.5	23,677.7	50.36	22.95	26.69
1982 :	10,983.1	4,813.9	5,630.9	21,427.9	51.26	22.47	26.28
1983 :	9,127.0	4,137.5	4,831.0	18,095.9	50.44	22.86	26.70
1984 :	11,092.2	4,901.1	5,796.8	21,790.1	50.90	22.49	26.60
1985 :	11,492.6	4,657.6	5,552.5	21,702.6	52.95	21.46	25.58
1986 :	10,424.4	4,177.9	5,052.6	19,654.9	53.04	21.26	25.71
1987 :	10,209.5	4,008.3	4,836.5	19,054.3	53.58	21.04	25.38
1988 :	10,475.3	4,111.7	4,943.2	19,530.3	53.64	21.05	25.31

1/ Source: (1, 7, 8).

2/ Includes Puerto Rico.

Table 2--Estimated U.S. plant nutrient use by selected crops 1/

Year ended June 30:	Nitrogen					Phosphate					Potash				
	Corn	Cotton	Soybeans	Wheat	Other	Corn	Cotton	Soybeans	Wheat	Other	Corn	Cotton	Soybeans	Wheat	Other
1,000 nutrient tons															
1964	1,622.5	394.1	15.5	353.2	1,967.4	1,052.5	210.8	57.1	270.6	1,786.8	829.4	118.0	70.4	84.6	1,627.3
1965	2,150.6	452.8	19.4	426.8	1,588.9	1,336.0	229.6	90.2	327.0	1,529.4	1,204.4	177.5	116.8	150.6	1,185.3
1966	2,596.2	330.4	40.3	424.2	1,935.3	1,626.2	167.9	164.8	329.0	1,609.2	1,512.7	135.1	183.5	150.1	1,239.8
1967	3,044.1	268.7	55.7	623.9	2,034.7	1,857.2	145.5	203.9	462.8	1,635.3	1,750.4	103.9	231.4	223.0	1,333.0
1968	3,115.6	318.7	66.6	623.5	2,663.2	1,854.8	174.2	211.1	425.6	1,787.6	1,777.9	136.1	256.8	189.3	1,432.5
1969	3,287.1	405.5	48.5	568.7	2,647.8	1,789.1	192.5	226.7	399.8	2,057.5	1,765.3	132.1	275.6	177.2	1,541.4
1970	3,519.7	322.5	63.3	579.8	2,973.7	2,136.3	157.7	215.2	321.7	1,743.0	2,046.0	122.6	307.6	175.5	1,383.9
1971	3,730.5	342.8	62.0	613.6	3,384.8	2,023.6	163.7	228.9	375.1	2,012.1	1,946.5	139.7	281.7	135.6	1,727.9
1972	3,705.4	404.3	72.2	783.1	3,057.4	1,993.6	211.8	285.4	447.0	1,925.9	1,991.6	175.1	370.5	156.5	1,633.1
1973	3,830.1	337.1	95.0	895.9	3,137.0	1,988.4	181.9	380.0	506.6	2,028.3	2,052.0	150.9	497.6	181.3	1,766.9
1974	3,772.8	421.5	86.6	1,078.4	3,797.9	2,101.9	210.3	301.2	620.9	1,864.3	2,361.0	173.0	404.1	262.9	1,881.6
1975	3,884.8	240.3	73.7	1,085.3	3,316.8	1,963.3	101.9	273.0	563.6	1,605.1	2,162.4	86.0	376.1	275.3	1,553.4
1976	5,210.2	353.4	70.4	1,455.6	3,322.0	2,550.3	160.3	295.6	743.7	1,477.7	2,771.1	120.5	452.4	312.3	1,553.3
1977	5,181.1	416.1	113.2	1,279.0	3,658.0	2,523.1	184.9	437.9	647.0	1,836.8	2,835.1	110.3	601.6	293.7	1,993.1
1978	4,888.2	350.7	137.5	1,046.6	3,541.6	2,415.9	162.5	509.6	438.8	1,569.2	2,646.3	111.9	722.1	179.5	1,866.2
1979	5,274.3	352.3	148.5	1,253.5	3,686.0	2,499.2	167.7	624.1	597.1	1,717.6	2,803.2	83.0	933.0	276.4	2,148.9
1980	5,244.3	371.5	136.7	1,569.7	4,084.5	2,412.9	160.5	562.9	677.4	1,617.8	2,927.2	100.3	881.1	290.8	2,045.6
1981	5,587.8	386.9	127.7	1,791.5	4,029.9	2,535.5	171.4	512.7	808.8	1,406.0	3,037.6	98.9	898.3	414.8	1,869.9
1982	5,359.6	330.3	102.4	1,780.7	3,410.1	2,341.1	107.0	411.5	717.9	1,236.4	2,956.7	93.6	698.9	318.2	1,563.5
1983	3,959.9	218.3	114.8	1,650.7	3,183.4	1,695.7	78.5	430.5	715.3	1,217.5	2,124.2	61.8	714.3	366.8	1,563.9
1984	5,390.7	343.1	115.2	1,866.3	3,377.0	2,277.4	128.4	467.5	718.1	1,309.8	2,873.0	94.5	780.5	309.7	1,739.1
1985	5,666.1	324.8	80.5	1,745.8	3,675.4	2,153.0	122.9	380.0	634.8	1,366.9	2,768.8	94.5	681.8	217.7	1,789.8
1986	4,807.5	309.4	81.5	1,708.0	3,518.0	1,964.4	110.5	376.5	622.7	1,103.9	2,330.9	97.9	664.5	301.2	1,658.0
1987	4,163.0	324.3	86.9	1,632.7	4,002.6	1,663.3	107.6	340.5	576.0	1,320.9	2,094.3	77.3	608.5	212.3	1,844.1
1988	4,492.9	389.9	103.6	1,740.5	3,748.4	1,853.1	141.7	367.3	642.5	1,107.0	2,241.6	78.0	720.9	306.7	1,596.1

1/ Estimates of plant nutrient use for corn, cotton, soybeans, and wheat are computed as the product of the nutrient application rate per acre, the proportion of acreage receiving that particular nutrient, and the planted crop acreage. Estimates of plant nutrient use by other crops are determined by subtracting the plant nutrient use of the four selected crops from the total use of each plant nutrient.

Table 3--U.S. consumption of fertilizers 1/

Year ended June 30:	Gross tonnages 2/			Share of total	
	Multiple 3/ nutrient material	Single nutrient material	Secondary and micro- nutrients	Total	Multiple nutrient material
1,000 material tons					
-- Percent --					
1960 :	15,650	7,850	1,378	24,877	62.91
1961 :	15,735	8,639	1,194	25,567	61.54
1962 :	16,205	9,100	1,310	26,615	60.89
1963 :	17,157	10,299	1,459	28,844	59.48
1964 :	18,093	11,113	1,475	30,681	58.97
1965 :	18,559	11,756	1,521	31,836	58.30
1966 :	19,659	13,412	1,461	34,532	56.93
1967 :	21,132	14,552	1,397	37,081	56.99
1968 :	21,294	15,832	1,617	38,743	54.96
1969 :	21,234	16,380	1,334	38,949	54.52
1970 :	20,961	17,331	1,297	39,589	52.95
1971 :	21,513	18,389	1,216	41,118	52.32
1972 :	21,511	18,385	1,310	41,206	52.20
1973 :	22,547	19,275	1,466	43,288	52.09
1974 :	24,067	20,897	2,130	47,094	51.10
1975 :	20,647	19,959	1,878	42,484	48.60
1976 :	22,958	23,935	2,296	49,189	46.67
1977 :	24,099	24,999	2,525	51,624	46.68
1978 :	22,110	23,511	1,877	47,497	46.55
1979 :	23,742	25,600	2,139	51,480	46.12
1980 :	23,270	27,221	2,296	52,787	44.08
1981 :	23,525	28,236	2,227	53,988	43.57
1982 :	20,857	26,054	1,758	48,669	42.85
1983 :	18,352	21,851	1,610	41,813	43.89
1984 :	21,174	26,928	1,954	50,056	42.30
1985 :	20,711	26,967	1,971	49,109	42.17
1986 :	17,790	24,662	1,620	44,071	40.37
1987 :	17,144	24,145	1,675	42,964	39.90
1988 :	17,466	24,876	1,876	44,217	39.50
					60.50

1/ Source: (1, 7, 8).

2/ Includes Puerto Rico.

3/ Includes analyses of nitrogen-phosphate-potash, nitrogen-phosphate, nitrogen-potash, and phosphate-potash.

4/ Direct application materials including primary, secondary, and micronutrients.

Table 4--U.S. consumption of selected nitrogen materials 1/

Year ended June 30	Ammonia		Ammonium		Nitrogen solutions	Sodium nitrate	Urea	Other
	Anhydrous	Aqua	Nitrate	Sulfate				
	Material tons							
1960	708,798	427,062	1,231,294	534,795	650,259	454,341	142,198	394,163
1961	811,490	432,494	1,324,569	552,264	948,785	407,766	203,934	358,760
1962	934,743	496,303	1,387,769	557,701	1,190,979	407,792	292,622	330,451
1963	1,226,266	579,165	1,480,186	703,963	1,493,507	381,343	364,439	307,885
1964	1,398,379	776,219	1,643,504	712,327	1,680,367	337,866	406,360	295,307
1965	1,563,376	819,665	1,634,294	774,503	1,922,126	301,111	427,555	252,410
1966	1,959,601	972,291	1,823,004	792,347	2,305,118	243,576	467,359	215,909
1967	2,406,824	862,931	2,141,514	839,941	2,562,625	199,118	505,769	202,007
1968	3,072,190	813,543	2,376,459	843,286	2,645,424	153,385	550,250	193,767
1969	3,138,333	701,050	2,574,077	762,955	2,791,582	104,470	581,879	223,899
1970	3,468,363	701,354	2,844,360	781,874	3,242,892	85,531	533,535	240,279
1971	3,968,488	738,149	2,892,809	901,518	3,482,263	99,061	601,335	228,313
1972	3,636,920	732,511	3,062,952	933,562	3,420,473	96,836	785,463	163,889
1973	3,411,745	664,559	3,280,623	952,825	3,799,572	58,766	960,480	270,473
1974	4,180,088	723,569	3,169,382	927,090	4,048,551	47,691	1,028,426	426,200
1975	4,018,020	702,192	2,796,275	815,979	4,109,665	84,703	1,151,213	476,865
1976	4,935,635	698,248	2,950,095	1,069,958	5,591,178	65,266	1,653,643	356,889
1977	4,927,474	655,133	2,738,710	1,050,582	5,794,636	73,626	1,931,830	371,717
1978	4,539,179	500,283	2,487,714	845,068	5,510,895	60,698	1,934,092	488,887
1979	4,883,959	566,300	2,507,546	778,237	6,073,617	71,210	2,148,125	537,565
1980	5,483,349	667,615	2,627,660	870,722	6,669,503	83,999	2,144,628	505,295
1981	5,684,606	728,626	3,020,738	846,445	7,270,118	76,909	2,219,461	472,337
1982	5,116,303	667,244	2,571,329	715,238	7,247,893	66,264	2,198,927	465,867
1983	3,836,095	520,307	2,151,778	685,773	6,105,555	60,100	2,171,929	341,306
1984	4,714,597	643,711	2,186,502	790,530	8,065,477	64,246	2,731,285	423,113
1985	5,387,839	629,457	2,195,397	778,320	8,255,895	52,274	2,680,237	434,028
1986	4,571,796	515,453	1,735,168	665,588	7,030,150	61,253	3,436,210	438,904
1987	4,527,725	437,805	1,643,500	632,999	6,824,515	34,539	3,325,721	634,529
1988	4,603,192	473,616	1,746,525	742,718	7,212,386	33,812	3,298,565	578,486

1/ Source: (1, 7, 8).

Table 5--U.S. consumption of selected phosphate and potash fertilizers 1/

Year ended June 30	Phosphates					Potash	
	Superphosphates		Diammonium phosphate (18-46-0) 2/	Other nitrogen- phosphate grades 3/	Other 4/	Potassium chloride	Other
	Grades 22% and under	Grades > 22%					
Material tons							
1960	510,539	399,319	20,388	NA	153,764	389,369	84,753
1961	492,657	438,398	32,680	NA	171,696	411,691	96,409
1962	481,266	465,067	81,253	NA	144,038	427,491	110,171
1963	483,596	474,198	175,312	NA	132,800	516,482	108,996
1964	456,357	622,434	337,753	NA	143,993	644,998	116,770
1965	455,437	729,374	504,481	NA	154,742	814,233	121,747
1966	470,244	902,098	786,782	NA	133,804	1,152,082	136,542
1967	433,383	976,351	906,372	NA	142,385	1,483,159	117,037
1968	401,347	1,109,332	1,246,953	NA	175,468	1,719,040	148,622
1969	364,032	1,295,214	1,490,409	NA	211,513	1,957,155	182,887
1970	312,032	1,204,566	1,514,911	NA	191,072	2,172,572	237,287
1971	276,057	1,220,257	1,716,365	NA	189,638	2,268,903	232,410
1972	217,733	1,262,538	1,875,690	NA	215,679	2,453,142	222,586
1973	179,451	1,188,109	2,299,198	NA	191,796	2,836,365	220,196
1974	195,184	1,183,092	2,267,174	NA	202,399	3,266,936	250,967
1975	183,916	1,168,726	2,252,187	NA	176,940	3,003,816	239,916
1976	140,343	1,211,060	3,232,501	NA	166,179	3,752,449	289,875
1977	134,014	1,242,786	3,604,577	NA	215,230	4,398,573	392,099
1978	106,983	1,086,741	3,187,866	NA	178,511	4,284,496	400,828
1979	87,782	1,234,351	3,683,758	NA	257,891	5,104,424	405,780
1980	121,908	1,166,540	3,481,921	NA	346,061	5,065,855	475,753
1981	112,524	1,051,653	3,721,845	2,510,250	228,430	5,301,384	457,480
1982	74,616	828,643	3,396,130	2,352,502	157,188	4,864,233	412,149
1983	71,651	721,126	2,856,257	2,120,469	123,852	4,104,305	363,459
1984	86,292	872,568	3,499,024	2,652,454	137,860	5,124,064	457,668
1985	68,574	751,412	3,433,653	2,730,920	197,095	5,265,971	383,736
1986	66,465	718,195	3,223,201	2,539,078	364,136	4,983,302	337,641
1987	49,374	624,378	3,214,068	2,581,073	367,625	4,905,640	316,962
1988	28,096	591,042	3,422,374	2,667,017	254,795	5,035,450	348,694

1/ Source: (1, 7, 8).

2/ 18-46-0 refers to the percentage of nitrogen, phosphate, and potash, respectively, contained in this fertilizer material. 1960-74 tonnages exclude Alaska, Hawaii, and Puerto Rico.

3/ All materials other than diammonium phosphate which contain both nitrogen and phosphate.

4/ Other single nutrient phosphate fertilizer materials.

Table 6--Average U.S. farm prices of selected fertilizers 1/

Year/month		Anhydrous ammonia	Nitrogen solutions (30%)	Urea 45-46% nitrogen	Ammonium nitrate	Sulfate of ammonium	Super-phosphate 20% phosphate	Super-phosphate 44-46% phosphate	Diammonium phosphate (18-46-0)	Potassium chloride 60% potassium
Dollars per ton										
1960	Apr.	141.0	NA	117.0	81.6	57.9	37.5	79.4	NA	51.3
	Sept.	140.0	NA	117.0	80.9	57.8	38.0	80.1	NA	51.6
1961	Apr.	142.0	NA	114.0	82.7	58.2	38.3	80.6	NA	52.4
	Sept.	137.0	NA	112.0	81.5	58.5	38.2	79.8	NA	52.8
1962	Apr.	134.0	NA	109.0	81.9	57.0	38.4	80.0	NA	53.3
	Sept.	135.0	NA	108.0	80.9	56.8	38.4	79.9	NA	53.2
1963	Apr.	128.0	NA	107.0	81.1	52.2	40.5	81.2	NA	53.9
	Sept.	127.0	NA	105.0	79.7	51.8	40.1	80.4	NA	53.7
1964	Apr.	126.0	NA	106.0	79.7	52.6	40.3	80.9	NA	53.9
	Sept.	122.0	NA	104.0	78.7	52.6	40.1	80.1	NA	53.3
1965	Apr.	122.0	NA	104.0	78.7	53.4	40.7	80.9	NA	53.6
	Sept.	120.0	NA	103.0	78.3	53.0	40.8	79.7	NA	53.5
1966	Apr.	119.0	NA	101.0	76.5	52.8	41.4	80.9	NA	54.9
	Sept.	116.0	66.8	100.0	75.0	52.7	41.2	82.1	109.0	53.4
1967	Apr.	113.0	66.8	99.3	74.2	54.2	42.1	84.1	113.0	53.6
	Sept.	109.0	64.8	98.6	73.2	55.4	42.1	80.4	103.0	50.8
1968	Apr.	91.4	62.7	91.8	67.9	53.9	43.2	78.4	101.0	49.1
	Sept.	85.6	60.8	88.0	65.3	53.4	43.1	75.1	95.2	48.5
1969	Apr.	75.6	53.6	83.9	61.7	52.5	43.8	74.0	94.1	47.8
	Sept.	72.8	52.4	82.6	60.1	52.6	44.5	73.4	92.0	45.2
1970	Apr.	75.0	53.9	82.9	60.0	52.4	45.4	75.1	94.4	50.9
	Sept.	76.8	53.3	83.2	60.9	52.1	46.9	76.2	95.1	54.0
1971	Apr.	79.3	56.2	81.9	63.3	51.7	47.8	76.6	95.7	58.2
	Sept.	79.3	54.4	80.3	63.8	51.2	49.0	76.6	94.7	57.7
1972	Apr.	80.0	55.3	81.4	64.7	52.1	49.9	78.0	97.4	58.8
	Sept.	80.8	55.9	82.7	65.4	53.0	51.2	79.0	98.7	58.7
1973	Apr.	87.6	58.3	90.3	71.4	55.2	53.7	87.5	109.0	61.5
	Sept.	92.5	60.8	96.2	77.3	59.5	56.0	94.1	119.0	63.6
1974	Apr.	183.0	111.0	183.0	139.0	110.0	91.4	150.0	181.0	81.3
	Sept.	229.0	136.0	232.0	170.0	137.0	104.0	188.0	228.0	91.0
1975	Apr.	265.0	153.0	244.0	186.0	148.0	118.0	214.0	263.0	102.0
	Sept.	219.0	126.0	203.0	156.0	125.0	103.0	179.0	216.0	94.3
1976	Apr.	191.0	113.0	166.0	135.0	98.2	95.2	158.0	189.0	95.9
	Sept.	182.0	112.0	168.0	137.0	94.8	95.1	146.0	177.0	94.2
1977	Mar.	188.0	122.0	169.0	141.0	101.0	99.2	146.0	180.0	95.8
	May	188.0	121.0	171.0	144.0	102.0	103.0	148.0	185.0	96.9
	Oct.	177.0	119.0	169.0	144.0	103.0	100.0	150.0	187.0	94.5
	Dec.	170.0	118.0	167.0	142.0	102.0	104.0	147.0	183.0	94.0
1978	Mar.	177.0	118.0	169.0	140.0	109.0	104.0	151.0	186.0	96.4
	May	171.0	117.0	170.0	139.0	109.0	100.0	153.0	186.0	98.4
	Oct.	164.0	113.0	169.0	138.0	113.0	108.0	153.0	187.0	98.9
	Dec.	160.0	109.0	168.0	135.0	111.0	111.0	153.0	186.0	99.3

See footnote at end of table.

Continued

Table 6--Average U.S. farm prices of selected fertilizers--continued

Year/month		Anhydrous ammonia	Nitrogen solutions (30%)	Urea 45-46% nitrogen	Ammonium nitrate	Sulfate of ammonium	Super-phosphate 20% phosphate	Super-phosphate 44-46% phosphate	Diammonium phosphate (18-46-0)	Potassium chloride 60% potassium
Dollars per ton										
1979	Mar.	171	110	170	138	118	109	161	199	107
	May	182	111	175	141	115	111	172	210	112
	Oct.	194	115	191	145	120	120	203	245	122
	Dec.	199	121	201	151	129	129	220	268	124
1980	Mar.	229	134	221	165	138	128	247	297	135
	May	234	132	228	169	138	132	251	298	135
	Oct.	225	129	224	168	141	131	242	280	141
	Dec.	220	129	222	169	143	132	242	278	142
1981	Mar.	243	141	237	185	150	134	248	287	152
	May	247	149	245	192	155	140	249	283	155
	Oct.	249	152	247	192	160	NA	229	261	155
	Dec.	249	149	246	192	160	NA	228	259	153
1982	Mar.	255	151	240	195	165	NA	230	267	155
	May	255	146	235	195	164	NA	228	262	155
	Oct.	236	147	228	191	161	NA	216	251	146
	Dec.	230	142	222	188	157	NA	212	248	143
1983	Mar.	237	142	214	185	149	NA	214	249	143
	May	237	141	213	184	147	NA	214	249	143
	Oct.	226	136	208	184	143	NA	205	238	128
	Dec.	232	137	208	186	145	NA	210	245	131
1984	Mar.	275	145	222	198	150	NA	229	271	145
	May	280	143	227	198	153	NA	231	271	147
	Oct.	259	143	228	196	152	NA	210	250	134
	Dec.	252	140	227	196	155	NA	208	246	132
1985	Mar.	255	143	221	192	156	NA	206	244	128
	May	252	141	217	189	152	NA	203	240	128
	Oct.	237	140	204	184	154	NA	195	229	113
	Dec.	233	136	195	183	151	NA	192	224	109
1986	Apr.	225	122	174	171	149	NA	190	224	111
	Oct.	174	112	159	164	151	NA	182	205	107
1987	Apr.	187	109	161	157	144	NA	194	220	115
	Oct.	180	112	159	154	141	NA	206	231	135
1988	Apr.	208	137	183	166	140	NA	222	251	157
	Oct.	191	136	188	170	146	NA	221	246	157

NA = Not available.

1/ Source: (6).

Table 7--Fertilizer price indexes

Year	Index of prices paid by farmers for fertilizer 1/	Producer price indexes 2/			
		All fertilizers	Nitrogen	Phosphate	Potash
		1977=100	1982=100		
1960	57	39.6	48.4	28.4	38.4
1961	58	40.4	48.7	29.4	41.2
1962	58	39.5	47.0	29.2	42.2
1963	57	38.7	45.3	29.6	42.4
1964	57	38.8	45.3	30.2	41.6
1965	57	40.1	46.6	31.8	43.0
1966	56	40.5	46.6	33.1	41.1
1967	55	41.1	47.2	34.4	37.5
1968	52	38.9	42.6	35.4	33.2
1969	48	32.6	34.0	31.7	25.9
1970	48	30.8	32.7	27.5	36.6
1971	50	31.0	33.5	27.1	37.6
1972	52	30.6	33.7	25.8	37.7
1973	56	31.7	35.7	25.8	39.6
1974	92	51.0	59.9	40.8	49.7
1975	120	81.7	84.4	81.3	62.5
1976	102	67.2	71.4	64.6	62.8
1977	100	65.9	73.7	61.1	58.3
1978	100	66.4	72.5	62.4	61.8
1979	108	72.3	74.4	70.6	73.1
1980	134	91.6	90.0	93.0	88.4
1981	144	101.2	101.8	100.6	102.3
1982	144	100.0	100.0	100.0	100.0
1983	137	93.1	92.2	93.8	92.1
1984	143	97.2	99.8	93.5	100.4
1985	135	94.3	96.3	91.6	NA
1986	124	86.1	80.3	90.5	NA
1987	118	87.9	79.0	94.9	NA
1988	130	98.8	92.8	103.1	NA

NA = Not available.

1/ Source: (6).

2/ Source: (10).

Appendix

The data in this appendix include most of the historical information on State fertilizer use for four selected crops: corn, cotton, soybeans, and wheat (2, 3, 4, 5). Information reported for each crop includes plant nutrient application rates, the proportion of the crop fertilized with each plant nutrient, and the proportion of the crop receiving any fertilizer. Information for 1964-85 is based on harvested acreage for cotton, soybeans, and wheat, while information for corn is based only on that portion of the crop harvested for grain. Information for 1986-88 is based on planted acreage for corn, cotton, and soybeans, and harvested acreage for wheat.

Appendix table 1--Percentage of corn acreage receiving any fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		
Percent																											
Delaware	NA	100	96	98	96	96	96	96	NA	NA																	
Maryland	NA	98	99	98	99	100	97	100	100	99	100	100	100	100	NA	NA											
New York	NA	100	99	100	98	100	100	NA	NA																		
Pennsylvania	NA	100	97	98	99	99	98	98	97	97	97	96	98	98	100	99	99	NA	NA								
Michigan	98	96	99	99	98	99	99	98	100	98	98	100	99	99	98	100	100	100	100	100	100	100	100	98	100	100	
Minnesota	79	79	86	92	97	90	94	94	90	94	94	93	99	95	95	95	94	97	97	97	96	95	95	96	95	96	
Wisconsin	92	97	98	94	98	99	98	97	98	98	99	98	97	98	100	99	99	100	98	97	100	99	97	99	99	99	
Illinois	90	91	96	94	96	97	96	96	97	95	97	96	99	99	97	100	98	98	99	99	98	97	98	97	100	98	
Indiana	100	100	100	99	100	99	99	99	100	99	99	100	99	98	100	100	99	98	100	99	99	99	99	99	99	97	
Iowa	81	87	92	89	88	92	95	95	94	94	91	94	98	98	93	98	95	98	99	95	97	100	99	98	99	99	
Missouri	92	93	95	98	97	95	98	99	98	95	94	93	98	95	97	96	98	98	99	96	98	96	98	96	98	99	
Ohio	99	100	99	100	99	100	100	99	97	97	99	99	100	98	99	100	99	99	100	99	98	99	99	100	98	99	
Kansas	79	84	92	90	93	93	97	98	97	96	95	99	98	99	93	96	99	NA	NA								
Nebraska	72	74	81	90	90	89	93	90	93	92	94	91	94	98	98	93	98	95	98	99	95	97	98	98	99	93	
South Dakota	25	26	29	48	41	47	61	51	45	63	59	63	60	53	51	59	54	64	61	66	66	77	75	73	75	75	
Kentucky	96	96	99	90	98	96	97	100	98	98	100	100	100	100	88	96	96	98	NA	NA							
North Carolina	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
Tennessee	97	97	98	98	98	98	98	100	NA	NA																	
Virginia	100	96	99	100	100	98	100	100	100	99	100	98	100	100	99	100	100	100	100	100	100	100	100	100	100	100	
Alabama	99	99	100	99	100	100	100	100	NA	NA																	
Florida	NA	100	99	99	100	100	98	NA	NA																		
Georgia	98	100	99	100	100	99	100	99	99	99	98	99	99	99	100	100	100	100	100	100	100	100	100	100	100	100	
South Carolina	100	100	100	99	100	100	100	NA	NA																		
Mississippi	98	97	98	79	98	98	99	NA	NA																		
Colorado	NA	NA																									
Texas	57	61	66	75	78	81	84	NA	95	96	NA	96	93	NA	NA	NA	NA	NA	NA	NA							
Average	85	88	91	92	93	93	95	94	96	94	94	94	97	96	95	96	96	97	97	96	97	98	96	96	97	97	

NA = Not available.

Appendix table 2--Percentage of corn acreage receiving nitrogen fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		
Percent																											
Delaware	NA	100	96	98	96	96	96	96	NA	NA																	
Maryland	NA	98	99	98	98	100	97	100	100	99	100	100	100	100	NA	NA											
New York	NA	100	99	100	93	100	99	NA	NA																		
Pennsylvania	NA	100	95	96	99	99	96	97	97	96	97	96	98	98	100	99	99	NA	NA								
Michigan	98	96	99	99	98	99	99	98	100	98	98	99	99	99	98	100	100	100	100	100	100	99	99	98	100	100	
Minnesota	79	77	86	92	97	89	93	94	90	93	94	93	97	95	94	94	94	94	94	94	94	94	95	95	95	96	
Wisconsin	92	97	98	93	98	99	98	97	98	98	98	98	98	98	98	99	99	99	99	99	99	97	97	99	97	98	
Illinois	89	90	96	93	96	96	95	95	96	94	96	96	99	98	97	99	98	98	99	99	99	99	99	98	97	98	
Indiana	99	100	99	99	100	99	99	99	100	98	99	98	100	99	99	99	99	99	99	99	99	99	99	99	98	100	
Iowa	80	86	91	88	87	91	94	94	94	93	90	93	98	98	93	98	95	97	99	95	97	99	98	98	98	97	
Missouri	92	93	95	98	94	95	98	99	98	95	93	93	98	94	96	96	97	97	97	98	99	99	98	98	98	99	
Ohio	99	100	99	100	99	100	100	99	97	96	99	99	100	88	99	100	99	99	99	99	99	99	99	96	97	95	
Kansas	79	84	92	90	93	93	97	98	97	96	93	99	98	99	93	96	99	NA	NA								
Nebraska	72	74	79	90	90	89	93	90	92	92	94	91	91	96	96	95	96	97	97	98	98	99	99	93	97	99	
South Dakota	25	25	29	48	41	46	60	51	45	63	59	63	57	53	51	59	54	64	61	66	66	77	75	73	75	75	
Kentucky	96	98	97	89	98	96	97	99	98	98	100	99	100	97	97	96	98	NA	NA								
North Carolina	99	100	100	100	100	100	100	100	100	100	100	99	100	97	97	96	98	NA	NA								
Tennessee	97	97	98	98	98	98	98	100	NA	NA																	
Virginia	100	96	99	100	100	98	100	100	99	100	98	100	100	99	100	100	NA	NA									
Alabama	99	99	100	99	100	100	100	NA	NA																		
Florida	NA	100	97	96	100	100	98	NA	NA																		
Georgia	99	100	99	100	100	99	100	99	99	99	98	99	99	100	100	99	100	100	NA	NA							
South Carolina	100	100	100	99	100	100	100	NA	NA																		
Mississippi	98	97	98	79	98	98	98	NA	NA																		
Colorado	NA	99	98	96	92	88	94	96	96	96	NA	78	93	NA	NA	NA	NA	NA	NA								
Texas	57	60	66	75	78	81	84	NA	95	96	NA	NA	NA														
Average	85	88	91	92	92	93	94	94	96	93	94	94	97	96	95	96	96	97	97	97	96	97	97	95	96	97	

NA = Not available.

Appendix table 3--Nitrogen used on corn, rate per fertilized acre receiving nitrogen, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Pounds																										
Delaware	NA	105	100	102	112	108	118	NA	NA																	
Maryland	NA	82	81	84	88	85	84	98	92	111	93	99	79	NA	NA											
New York	NA	69	78	78	72	70	84	NA	NA																	
Pennsylvania	NA	76	64	59	77	72	81	82	84	88	71	79	118	104	114	111	109	NA	NA							
Michigan	43	52	51	54	83	90	98	101	88	87	72	83	89	103	112	107	104	109	120	111	136	120	119	121	129	
Minnesota	28	46	54	69	84	95	98	96	93	98	83	91	104	107	90	107	105	105	110	100	115	112	107	121	118	
Wisconsin	28	33	43	52	63	79	69	61	79	76	62	73	88	82	92	93	108	110	95	97	102	96	86	89	87	
Illinois	72	86	102	109	112	120	118	113	128	123	113	117	141	130	140	146	147	152	153	155	148	158	156	161	183	
Indiana	68	91	108	112	112	115	126	113	126	115	102	106	129	140	130	149	148	146	152	149	155	162	157	136	146	
Iowa	45	65	81	90	104	108	107	101	110	109	102	102	126	128	130	138	134	142	131	141	143	145	131	132	139	
Missouri	75	75	94	81	106	108	117	125	116	127	117	107	116	134	123	116	119	129	125	131	119	130	133	134	132	
Ohio	55	72	70	88	85	93	110	90	102	100	90	95	116	130	133	145	155	159	161	157	150	153	154	143	158	
Kansas	60	68	75	106	128	133	148	139	143	154	140	142	162	165	122	174	169	NA	NA							
Nebraska	79	98	106	121	149	143	146	141	139	139	131	120	143	136	143	157	111	157	145	158	156	154	141	135	142	
South Dakota	31	44	43	55	59	56	59	58	53	62	47	60	61	52	62	62	69	69	78	80	61	66	73	68	80	
Kentucky	61	67	80	78	85	103	103	100	125	120	97	104	140	115	130	114	122	NA								
North Carolina	85	116	109	119	124	133	134	128	152	144	133	140	148	149	156	154	148	NA								
Tennessee	61	76	75	76	94	102	91	NA																		
Virginia	66	81	99	101	95	102	101	115	114	125	133	127	141	128	138	143	NA									
Alabama	69	79	84	90	75	96	96	NA																		
Florida	NA	71	80	76	93	103	97	NA																		
Georgia	72	77	95	114	114	119	118	117	115	117	124	111	124	149	139	151	160	NA								
South Carolina	71	82	115	108	124	124	129	NA																		
Mississippi	59	71	79	69	79	88	100	NA																		
Colorado	NA	152	166	167	158	128	163	151	165	150	NA															
Texas	45	39	63	100	99	117	105	NA	NA	NA	NA	NA	NA	172	187	NA	151	112	NA							
Average	58	75	86	93	104	110	112	107	115	114	103	105	127	128	126	135	130	137	135	138	140	132	132	137		

NA = Not available.

Appendix table 4--Percentage of corn acreage receiving phosphate fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
	Percent																								
Delaware	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maryland	NA	98	99	98	98	100	97	99	98	99	100	100	99	NA											
New York	NA	100	99	100	98	100	98	NA																	
Pennsylvania	NA	94	96	98	99	98	96	98	97	95	96	96	97	98	99	98	98	NA							
Michigan	98	96	98	99	98	99	98	97	100	98	97	100	97	96	97	100	99	99	96	100	100	97	97	94	95
Minnesota	77	79	86	90	95	87	92	92	88	90	88	92	95	93	89	93	91	95	91	89	91	91	90	87	90
Wisconsin	92	97	98	92	98	97	97	96	97	96	98	97	97	97	98	98	95	99	96	96	99	98	97	97	95
Illinois	82	87	90	90	93	92	94	89	91	89	94	88	96	96	95	94	93	95	94	94	99	90	86	88	89
Indiana	100	100	99	99	99	97	99	99	100	98	99	98	100	99	97	98	100	99	98	98	98	95	95	91	92
Iowa	72	78	86	84	84	88	90	89	90	84	81	85	90	90	85	89	87	90	90	84	85	85	83	84	91
Missouri	78	84	82	88	85	83	90	88	84	86	83	84	89	82	88	89	87	85	87	81	78	71	77	81	85
Ohio	97	100	99	100	99	99	100	99	97	93	97	96	98	98	96	98	98	97	97	96	97	96	93	93	96
Kansas	61	74	74	74	85	75	78	79	81	65	66	73	72	76	62	68	72	NA							
Nebraska	44	47	60	70	75	67	71	71	69	74	68	57	65	66	62	72	58	69	61	72	72	70	62	63	72
South Dakota	21	19	21	37	30	42	52	39	37	55	51	59	54	46	40	48	44	51	49	52	51	55	60	49	57
Kentucky	92	89	95	84	94	91	92	95	93	92	97	98	93	96	93	94	91	NA							
North Carolina	99	99	100	100	99	100	98	100	100	71	97	99	99	99	97	100	98	NA							
Tennessee	92	91	94	97	94	97	98	NA																	
Virginia	100	96	98	98	100	98	100	99	97	98	94	98	100	98	93	98	NA								
Alabama	98	98	100	98	99	98	100	NA																	
Florida	NA	100	99	87	92	97	96	NA																	
Georgia	99	100	99	100	100	99	100	98	99	97	97	96	100	100	99	100	99	NA							
South Carolina	100	99	99	95	100	100	100	NA																	
Mississippi	87	81	93	76	93	93	93	NA																	
Colorado	NA	NA	NA	NA	NA	NA	NA	86	75	76	63	60	66	66	78	79	NA								
Texas	53	58	59	65	49	60	58	NA	NA	NA	NA	NA	54	54	NA	84	80	NA							
Average	78	82	86	87	89	87	90	88	90	86	87	86	90	88	87	89	87	90	88	88	87	86	84	83	87

NA = Not available.

Appendix table 5--Phosphate used on corn, rate per fertilized acre receiving phosphate, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Pounds																										
Delaware	NA	77	66	74	71	66	64	NA	NA																	
Maryland	NA	NA	80	71	71	68	67	74	83	85	75	78	81	NA	NA											
New York	NA	51	62	65	66	61	67	NA	NA																	
Pennsylvania	NA	61	67	64	63	64	66	65	66	69	61	59	66	72	77	69	64	NA	NA							
Michigan	48	56	51	60	70	66	77	66	72	76	57	57	63	64	71	69	67	63	65	64	65	55	58	60	61	
Minnesota	36	45	45	55	63	60	61	60	66	64	61	58	61	56	51	60	50	53	51	48	50	45	48	49	52	
Wisconsin	46	48	56	51	75	64	69	65	61	61	55	55	60	60	71	57	58	60	57	56	57	49	53	56	56	
Illinois	44	56	69	67	77	75	92	67	74	70	75	67	78	83	85	88	83	90	85	81	87	80	79	82	87	
Indiana	50	68	74	78	80	77	92	76	75	77	74	63	84	84	75	85	77	78	69	75	72	70	75	65	71	
Iowa	39	43	52	57	64	67	67	58	60	59	62	59	62	64	66	70	68	63	66	62	63	56	57	58	57	
Missouri	34	39	52	48	49	56	57	53	60	56	59	51	52	61	59	58	63	57	61	56	58	58	57	58	58	
Ohio	56	56	68	71	75	77	83	70	81	79	68	64	80	90	86	82	79	80	71	78	79	68	73	76	80	
Kansas	28	34	39	36	41	46	47	43	45	55	52	41	59	40	38	46	40	NA								
Nebraska	31	33	36	36	37	37	42	43	40	42	38	36	42	40	42	41	33	42	37	42	41	40	36	41	38	
South Dakota	28	26	26	36	33	31	36	27	29	31	23	30	34	24	38	33	29	30	36	38	34	35	38	38	38	
Kentucky	49	50	58	63	63	70	68	71	86	78	58	68	90	81	91	75	79	NA								
North Carolina	44	45	48	51	50	56	55	58	60	56	58	56	67	61	65	64	60	NA								
Tennessee	44	50	50	53	58	56	59	NA																		
Virginia	60	64	77	71	67	71	70	77	73	80	79	72	84	81	80	66	NA									
Alabama	39	42	46	48	42	53	51	NA																		
Florida	NA	NA	42	44	52	48	49	NA																		
Georgia	43	43	49	49	53	50	51	50	52	52	49	47	51	61	56	54	60	NA								
South Carolina	43	50	56	57	67	63	64	NA																		
Mississippi	32	36	36	36	39	40	49	NA																		
Colorado	NA																									
Texas	37	36	42	50	43	55	40	NA																		
Average	41	50	57	60	64	64	71	62	66	64	62	58	67	66	68	69	66	67	65	64	65	60	61	61	63	

NA = Not available.

Appendix table 6--Percentage of corn acreage receiving potash fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Percent																										
Delaware	NA	100	95	98	92	94	95	NA	NA																	
Maryland	NA	98	97	98	96	100	96	99	100	98	96	93	100	NA	NA											
New York	NA	100	99	100	97	100	98	NA	NA																	
Pennsylvania	NA	93	95	97	98	98	97	96	96	94	97	93	93	97	98	96	97	NA	NA							
Michigan	98	95	96	98	98	99	96	97	98	97	95	99	99	98	93	99	97	100	99	98	97	89	95	93	95	95
Minnesota	69	73	81	88	95	85	91	92	86	89	86	92	94	90	90	93	91	94	90	89	91	86	85	85	87	87
Wisconsin	92	96	98	92	95	97	97	96	97	97	98	96	97	97	96	99	96	96	96	97	95	95	96	97	96	97
Illinois	82	86	89	89	94	90	94	87	91	88	92	89	94	97	91	91	90	94	94	94	90	88	82	85	89	89
Indiana	99	99	99	99	99	97	99	98	99	93	96	96	99	96	94	93	96	94	96	89	93	84	86	84	85	85
Iowa	62	71	78	78	80	83	87	84	86	80	79	82	85	89	82	88	85	88	89	85	86	83	81	82	87	87
Missouri	78	82	82	89	84	82	90	87	84	85	84	83	88	81	88	89	85	84	89	82	78	73	75	82	87	87
Ohio	96	100	99	99	99	99	100	99	97	94	98	95	97	95	94	100	97	97	96	96	89	94	92	94	93	93
Kansas	29	43	45	46	49	47	53	49	66	42	48	47	44	34	45	32	31	NA	NA							
Nebraska	18	15	26	40	49	44	46	43	50	50	49	43	42	37	37	40	35	35	38	45	49	46	37	35	36	36
South Dakota	1	4	7	8	9	19	28	17	20	27	24	25	31	32	26	31	35	39	32	31	30	28	31	18	30	30
Kentucky	92	90	95	84	94	91	93	97	91	91	96	99	94	98	92	94	89	NA	NA							
North Carolina	99	100	100	100	100	100	99	100	100	71	97	99	99	99	98	100	99	NA	NA							
Tennessee	92	92	94	97	94	98	98	NA	NA																	
Virginia	100	96	99	98	100	97	100	99	96	98	94	98	99	98	91	93	NA	NA								
Alabama	98	98	100	98	99	98	100	NA	NA																	
Florida	NA	100	99	94	98	100	96	NA	NA																	
Georgia	99	100	99	100	100	99	100	98	113	98	98	96	100	100	98	100	97	NA	NA							
South Carolina	99	99	99	95	100	100	100	NA	NA																	
Mississippi	89	81	93	76	93	93	93	NA	NA																	
Colorado	NA	37	14	19	26	20	34	37	29	37	NA	NA														
Texas	54	36	45	34	24	31	NA	NA	NA	NA	NA	43	29	NA	43	40	NA	NA								
Average	72	77	80	82	84	82	85	82	86	80	83	82	84	82	81	82	81	84	83	82	79	76	75	78		

NA = Not available.

Appendix table 7--Potash used on corn, rate per fertilized acre receiving potash, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Pounds																										
Delaware	NA	93	74	101	95	84	96	NA	NA																	
Maryland	NA	NA	82	79	86	78	74	87	96	94	87	84	99	NA	NA											
New York	NA	49	60	65	61	60	68	NA	NA																	
Pennsylvania	NA	52	49	47	50	56	51	54	56	58	52	48	51	56	59	58	57	NA	NA							
Michigan	42	48	51	71	70	87	73	81	69	76	73	70	74	79	90	85	90	83	92	94	108	104	90	104	103	103
Minnesota	30	36	41	46	61	60	70	61	60	73	69	61	68	77	63	73	76	76	69	66	68	65	62	65	65	65
Wisconsin	45	47	63	73	78	75	82	71	78	86	88	84	105	87	89	91	85	91	91	86	84	69	70	82	77	77
Illinois	40	50	68	70	76	78	92	64	80	83	85	78	92	99	99	109	111	109	112	111	117	114	105	110	109	109
Indiana	57	80	92	91	98	90	101	94	109	105	97	88	105	103	100	109	122	106	106	107	104	115	113	107	113	
Iowa	26	31	38	45	54	58	63	52	56	55	64	62	67	73	73	75	74	73	75	76	80	73	66	73	78	78
Missouri	31	37	45	44	46	55	55	49	64	61	64	61	59	69	71	71	71	74	67	79	66	73	66	73	69	69
Ohio	53	51	62	70	74	76	84	73	81	82	83	68	82	100	91	101	106	114	104	98	102	97	102	109	111	111
Kansas	15	19	20	22	17	24	28	23	24	29	31	21	44	27	31	29	17	NA	NA							
Nebraska	11	16	12	18	15	23	22	23	18	21	19	19	25	20	20	26	14	21	17	24	25	22	22	16	22	22
South Dakota	10	17	13	30	14	12	13	13	20	16	11	18	14	18	19	18	16	17	20	18	16	23	20	26	26	26
Kentucky	49	52	56	62	64	74	70	71	81	80	61	72	93	89	92	83	80	NA	NA							
North Carolina	49	52	57	62	61	70	68	75	75	71	75	77	88	86	90	97	92	NA	NA							
Tennessee	45	48	50	52	59	59	62	NA	NA																	
Virginia	71	74	88	89	87	94	90	109	94	104	110	96	124	105	91	83	80	NA	NA							
Alabama	39	42	46	49	42	54	52	NA	NA																	
Florida	NA	NA	58	54	71	69	65	NA	NA																	
Georgia	52	56	67	71	73	74	74	72	74	75	75	68	75	99	98	89	87	90	NA	NA						
South Carolina	43	51	68	71	81	78	84	NA	NA																	
Mississippi	34	35	35	35	39	40	49	NA	NA																	
Colorado	NA	33	51	43	32	23	29	37	36	29	NA	NA														
Texas	21	20	23	22	34	22	23	NA	NA	NA	NA	36	57	NA	23	44	NA	NA								
Average	35	48	57	60	65	67	72	64	69	71	73	67	78	82	80	84	86	86	85	87	84	80	85	85	85	85

NA = Not available.

Appendix table 8--Percentage of cotton acreage receiving any fertilizer, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988				
Missouri	100	100	99	99	95	94	90	99	100	100	97	96	93	100	97	100	100	92	100	100	98	100	NA	NA	NA				
North Carolina	100	100	98	100	100	99	100	100	100	98	100	100	100	100	NA	NA													
Tennessee	98	100	92	97	99	100	99	99	95	100	100	100	91	99	97	99	100	NA	97	100	100	100	100	100	NA	NA	NA		
Alabama	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	98	98	99	NA	NA	NA		
Georgia	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	92	NA	NA	NA		
South Carolina	100	100	100	100	100	99	100	99	100	100	100	100	100	100	NA	100	100	100	100	100	100	98	100	96	NA	NA	NA		
Arkansas	98	99	98	99	100	98	97	98	100	97	98	98	98	98	94	99	99	99	100	100	100	100	99	99	100	NA	NA	NA	
Louisiana	97	93	90	91	92	97	95	98	98	91	100	98	98	100	100	100	100	100	100	100	100	100	99	100	100	100	94	NA	
Mississippi	99	100	100	97	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	99	100	100	100	100	100	94	
Oklahoma	51	55	51	51	41	53	50	44	46	50	47	29	63	60	63	55	67	45	43	57	66	59	47	NA	NA	NA	NA	NA	
Texas	51	55	52	47	46	49	49	50	51	53	55	32	49	59	41	53	50	61	39	41	56	57	56	57	57	68	NA	NA	
Arizona	94	93	96	89	95	97	90	91	82	88	97	83	88	92	89	93	90	92	95	90	99	95	93	95	91	NA	NA	NA	
New Mexico	71	74	56	68	67	63	67	60	68	64	56	45	59	NA	NA	70	42	66	49	54	67	59	49	NA	NA	NA	NA	NA	NA
California	96	97	94	92	94	94	93	90	92	92	83	86	94	95	96	94	95	97	95	95	92	87	92	93	94	NA	NA	NA	NA
Average	78	79	77	73	74	76	72	75	77	75	79	65	76	79	69	71	71	75	71	68	77	76	80	76	80	NA	NA	NA	NA

NA = Not available.

Appendix table 9--Percentage of cotton acreage receiving nitrogen fertilizer, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
	Percent																									
Missouri	100	99	94	99	93	94	90	99	100	88	97	96	90	96	91	96	100	92	100	100	98	100	NA	NA	NA	
North Carolina	100	100	98	100	100	99	100	100	100	98	100	100	100	100	NA											
Tennessee	98	100	92	97	99	100	96	99	95	100	100	100	91	96	97	99	100	NA								
Alabama	99	100	100	100	100	100	100	99	100	99	100	100	98	99	100	100	100	NA	97	100	100	99	100	NA	NA	
Georgia	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	86	93	100	100	100	100	98	99	NA	NA	
South Carolina	100	100	100	100	100	99	100	99	99	100	100	99	100	100	NA	100	100	100	100	100	98	100	96	NA	NA	
Arkansas	97	99	97	98	99	96	95	98	99	97	98	98	96	97	95	93	98	98	97	97	97	97	100	99	99	99
Louisiana	97	93	90	91	92	97	95	98	98	91	98	98	98	98	99	100	96	98	98	100	99	100	100	100	94	94
Mississippi	99	100	98	97	100	100	99	100	100	100	100	100	100	100	99	99	100	99	99	100	99	100	100	100	100	94
Oklahoma	51	55	50	51	41	53	50	44	46	50	47	29	61	60	61	55	67	43	43	57	66	59	46	NA	NA	
Texas	50	55	51	47	45	48	48	50	51	53	55	32	49	59	41	53	50	60	39	41	55	57	56	57	68	68
Arizona	94	92	96	89	95	97	90	91	82	88	97	82	88	92	89	93	90	92	94	90	98	95	93	95	90	90
New Mexico	63	71	52	67	67	57	61	56	61	64	52	45	56	NA	NA	70	40	65	47	54	66	59	49	NA	NA	NA
California	95	96	94	91	94	93	92	90	92	88	84	86	94	95	96	94	95	97	95	95	91	87	92	93	93	93
Average	77	79	76	72	73	75	72	74	77	74	79	65	75	78	69	71	71	75	71	68	76	76	80	76	80	

NA = Not available.

Appendix table 10--Nitrogen used on cotton, rate per fertilized acre receiving nitrogen, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Pounds																									
Missouri	85	64	71	50	54	56	57	55	63	47	60	56	36	49	44	52	55	47	54	44	70	56	57	NA	NA
North Carolina	65	90	63	69	74	62	67	53	66	86	70	84	102	NA											
Tennessee	67	71	85	61	51	67	61	72	69	67	66	69	71	68	74	76	73	NA	67	91	82	78	75	NA	NA
Alabama	72	81	83	78	71	80	78	84	89	82	100	74	72	74	66	70	73	73	101	79	78	88	82	NA	NA
Georgia	80	86	104	102	97	105	92	94	82	95	119	130	92	109	78	69	80	63	79	72	69	78	80	NA	NA
South Carolina	68	78	101	91	101	88	80	88	95	99	101	109	92	125	NA	84	78	81	84	107	95	92	84	NA	NA
Arkansas	68	72	70	68	63	65	67	63	62	69	68	57	65	66	64	62	59	64	67	69	75	70	84	81	79
Louisiana	54	56	69	69	76	63	81	69	73	71	69	69	72	70	78	68	69	73	74	69	81	80	95	74	86
Mississippi	77	104	98	98	91	93	96	93	92	80	103	92	90	98	92	87	92	91	94	98	103	104	102	106	110
Oklahoma	28	30	28	19	28	27	25	31	32	34	21	28	34	27	34	32	32	50	34	45	53	34	29	NA	NA
Texas	59	62	62	55	51	61	57	57	53	46	48	39	52	45	50	45	43	44	41	52	47	49	45	51	45
Arizona	130	131	141	141	142	145	135	123	117	120	123	117	155	148	135	142	161	159	126	113	150	157	122	159	144
New Mexico	85	81	73	67	83	92	72	70	69	60	49	54	59	NA	NA	61	64	58	64	88	71	58	54	NA	NA
California	111	150	138	145	157	135	129	124	121	125	104	137	146	142	120	106	108	110	117	117	116	118	104	115	124
Average	69	81	84	79	80	91	75	75	75	73	78	78	81	78	76	71	72	72	82	81	81	80	77	82	78

NA = Not available.

Appendix table 11--Percentage of cotton acreage receiving phosphate fertilizer, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Percent																									
Missouri	95	96	96	94	92	91	84	84	91	94	85	84	91	83	88	96	78	75	83	100	100	66	82	NA	NA
North Carolina	100	100	95	100	100	90	100	98	100	95	100	91	91	NA											
Tennessee	97	92	89	91	89	97	96	93	94	100	96	98	91	92	95	99	94	NA	97	100	100	97	100	NA	NA
Alabama	100	100	100	100	99	98	100	100	98	95	99	92	93	91	95	84	93	97	93	86	91	88	87	NA	NA
Georgia	99	99	100	100	100	100	100	100	100	100	98	100	100	100	96	98	93	90	91	93	93	87	NA	NA	
South Carolina	100	100	100	100	100	97	100	97	97	99	94	91	100	94	NA	87	97	83	83	83	87	83	77	NA	NA
Arkansas	59	72	77	79	66	68	60	64	72	70	72	67	74	75	62	78	76	59	68	68	80	76	68	75	71
Louisiana	62	63	58	61	48	62	57	69	70	60	59	50	63	63	81	65	92	80	73	62	77	70	72	68	59
Mississippi	59	56	71	58	63	59	42	41	48	49	45	47	40	43	36	32	33	41	41	45	44	42	39	48	50
Oklahoma	49	48	45	45	38	50	43	38	42	45	43	29	55	58	61	51	58	34	19	52	42	32	39	NA	NA
Texas	38	40	40	39	37	34	30	30	36	41	47	23	40	45	28	45	43	53	28	31	39	47	44	46	56
Arizona	50	42	45	47	46	39	36	46	49	53	51	34	47	58	38	46	34	36	35	45	48	51	39	39	58
New Mexico	58	45	44	57	62	48	50	42	63	38	48	32	38	NA	NA	51	28	42	30	30	34	47	28	NA	NA
California	48	37	26	42	47	42	41	41	43	45	38	30	47	47	39	31	27	36	30	33	27	23	16	26	36
Average	58	59	59	56	56	54	48	50	55	55	58	43	53	51	45	48	48	52	41	44	48	50	50	44	54

NA = Not available.

Appendix table 12--Phosphate used on cotton, rate per fertilized acre receiving phosphate, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Pounds																									
Missouri	58	46	57	53	48	49	42	45	51	54	51	43	47	39	48	50	45	37	31	39	31	35	48	NA	NA
North Carolina	54	54	53	65	54	54	55	53	57	68	56	52	44	NA											
Tennessee	53	57	64	61	58	57	62	63	61	69	60	52	59	67	69	74	64	NA	62	65	62	61	65	NA	NA
Alabama	62	63	69	71	71	70	74	71	73	77	76	57	71	72	64	63	63	57	65	62	60	62	57	NA	NA
Georgia	64	65	66	64	62	65	59	61	60	65	65	53	61	67	60	47	50	48	53	53	51	62	55	NA	NA
South Carolina	76	81	85	85	89	84	71	78	77	72	69	66	63	65	NA	51	60	42	44	42	47	51	58	NA	NA
Arkansas	39	46	44	41	45	46	43	40	44	45	40	40	41	48	42	37	39	40	36	34	38	37	39	43	44
Louisiana	34	40	48	49	43	46	50	50	54	59	54	45	52	51	48	49	48	46	47	42	52	48	43	47	51
Mississippi	50	58	54	56	52	56	60	55	64	64	64	59	53	57	54	61	50	45	54	50	57	56	54	52	49
Oklahoma	28	27	33	23	28	37	27	36	38	33	30	29	31	38	39	43	30	46	29	36	42	34	29	NA	NA
Texas	46	44	45	43	44	46	45	42	44	45	43	39	43	47	42	45	39	40	30	40	39	39	35	37	38
Arizona	66	78	69	62	68	70	59	62	57	66	58	49	62	59	53	61	72	67	59	43	59	55	47	70	59
New Mexico	60	79	64	70	74	77	85	50	69	64	57	58	59	NA	NA	54	51	50	57	49	64	48	60	NA	NA
California	62	61	72	99	68	91	60	73	70	84	59	74	78	75	81	65	61	73	61	52	61	56	62	60	45
Average	49	55	55	55	57	60	55	53	55	53	53	50	52	53	54	50	46	46	46	45	48	46	44	44	42

NA = Not available.

Appendix table 13--Percentage of cotton acreage receiving potash fertilizer, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
	Percent																								
Missouri	95	96	96	94	92	91	84	87	91	97	89	87	91	88	94	100	100	85	83	100	100	98	88	NA	NA
North Carolina	100	100	98	100	100	90	100	100	100	98	100	98	100	NA											
Tennessee	98	93	90	92	90	97	96	93	95	100	98	99	91	92	95	99	94	NA	97	100	100	94	100	NA	NA
Alabama	99	100	100	100	99	98	100	99	98	97	99	98	97	95	84	93	91	93	89	88	80	77	NA	NA	NA
Georgia	100	99	100	100	100	98	100	100	98	100	100	98	100	100	99	98	85	100	100	98	100	90	NA	NA	NA
South Carolina	100	100	100	100	100	97	100	99	99	99	100	100	100	99	NA	100	92	97	86	100	98	98	85	NA	NA
Arkansas	65	73	76	79	61	68	63	65	70	69	75	72	77	78	74	83	85	62	72	70	82	77	81	79	75
Louisiana	69	64	58	62	51	64	56	69	70	60	59	50	63	61	81	65	92	80	72	70	77	76	73	71	65
Mississippi	59	54	72	58	62	59	42	43	47	50	46	48	40	44	38	33	34	48	41	50	46	44	49	60	56
Oklahoma	33	40	40	41	35	42	33	37	35	35	41	16	40	26	35	34	28	15	15	26	4	3	25	NA	NA
Texas	10	11	14	12	18	14	13	12	11	15	24	9	13	15	9	17	18	21	13	14	18	22	18	23	22
Arizona	2	2	1	1	1	2	4	3	4	2	2	2	1	1	1	3	2	2	3	11	4	9	7	NA	7
New Mexico	NA	5	9	9	13	NA	6	11	9	5	16	13	8	NA	NA	14	2	12	8	9	14	2	3	NA	NA
California	8	NA	4	6	6	1	9	6	12	9	10	1	7	10	8	5	3	5	4	6	2	3	2	NA	16
Average	43	44	45	40	43	39	36	39	41	39	46	33	37	31	31	27	30	30	30	32	34	39	33	32	

NA = Not available.

Appendix table 14--Potash used on cotton, rate per fertilized acre receiving potash, selected States

States	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
	Pounds																								
Missouri	59	49	61	56	52	57	44	50	56	77	73	56	57	62	51	52	75	67	80	68	66	62	63	NA	NA
North Carolina	69	69	68	80	75	70	75	70	84	92	90	82	81	NA											
Tennessee	56	62	66	63	59	60	64	63	64	69	61	58	64	69	74	79	74	NA	68	71	68	67	71	NA	NA
Alabama	63	66	70	73	73	71	77	73	77	83	75	66	80	85	69	68	70	68	72	72	70	73	62	NA	NA
Georgia	89	69	104	95	94	92	85	90	91	102	103	84	88	110	93	79	77	83	89	73	88	86	88	NA	NA
South Carolina	88	89	90	89	101	98	90	96	102	102	108	99	113	110	NA	102	97	97	84	102	103	90	96	NA	NA
Arkansas	48	51	51	47	55	54	53	50	54	50	46	46	55	60	50	51	53	58	48	46	53	51	65	63	58
Louisiana	35	41	48	50	46	47	50	53	56	60	51	45	52	49	49	53	52	51	53	58	59	64	48	55	58
Mississippi	50	55	55	57	53	57	61	63	65	65	64	66	54	57	59	53	55	59	65	63	68	59	63	71	59
Oklahoma	14	14	19	13	14	17	13	15	26	17	15	16	14	15	15	23	15	24	23	18	12	10	15	NA	NA
Texas	16	18	18	20	18	21	21	17	19	14	17	12	16	14	16	16	14	20	20	22	15	21	13	14	13
Arizona	88	8	15	40	36	12	16	41	39	34	27	22	16	37	26	55	9	7	34	14	29	6	12	NA	14
New Mexico	NA	28	23	40	41	NA	17	12	31	18	26	18	22	NA	NA	15	10	19	37	1	6	14	6	NA	NA
California	26	NA	16	74	46	31	24	37	49	50	22	43	70	50	67	44	75	84	39	38	87	112	24	NA	39
Average	37	57	58	55	58	57	57	58	61	62	55	55	56	52	54	44	46	46	55	52	53	52	50	45	39

NA = Not available.

Appendix table 15--Percentage of soybean acreage receiving any fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
	Percent																									
Minnesota	4	13	12	14	25	22	22	10	14	26	23	13	13	11	15	22	15	15	13	23	26	19	11	13	23	
Illinois	8	16	18	17	17	11	17	20	22	29	19	20	28	26	19	24	24	22	18	32	24	22	23	27	35	
Indiana	36	42	48	56	51	52	61	52	48	63	58	55	56	56	57	67	53	52	45	43	54	52	38	50	51	
Iowa	6	10	18	15	22	13	13	11	14	16	11	11	9	15	13	12	8	9	10	12	18	12	10	18	13	
Missouri	7	11	20	20	20	18	17	17	27	25	14	13	12	16	30	31	29	22	25	19	14	23	23	28	28	
Ohio	23	27	34	42	34	46	46	42	54	49	55	48	50	52	40	59	51	47	40	42	48	60	56	51	48	
Kansas	12	4	6	21	16	16	20	11	14	19	14	6	10	23	16	21	22	NA								
Nebraska	12	10	39	25	25	15	24	9	22	23	7	9	8	11	11	20	28	19	28	21	18	30	19	12	14	
Kentucky	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	71	69	68	74	NA	NA	NA	47	59	49	53	
North Carolina	NA	NA	71	64	68	71	58	70	67	70	63	63	58	56	76	73	66	64	53	65	58	58	58	72		
Tennessee	NA	NA	46	42	45	48	52	49	54	60	58	53	71	67	84	68	74	70	63	67	64	66	48	49	57	
Alabama	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97	93	85	87	69	65	77	74	65	68	67	NA
Georgia	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	89	86	72	80	55	79	63	81	75	79	
South Carolina	NA	NA	74	67	80	81	84	80	85	82	80	78	75	79	NA	88	81	86	59	71	74	NA	NA	NA	NA	
Arkansas	15	22	24	24	26	28	36	36	39	29	32	30	33	39	37	37	33	35	22	27	28	24	18	23	24	
Louisiana	NA	NA	NA	22	21	23	24	27	28	28	21	23	21	26	34	33	37	49	32	28	32	33	23	17	30	
Mississippi	4	6	18	24	28	26	25	30	34	91	35	30	42	41	43	42	36	42	35	29	41	33	24	24	23	
Average	13	18	27	28	29	27	29	28	31	33	30	28	31	35	37	40	37	36	30	33	34	32	33	30	32	

NA = Not available.

Appendix table 16--Percentage of soybean acreage receiving nitrogen fertilizer, selected States

State	: 1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
	Percent																									
Minnesota	: 2	11	10	10	19	18	17	8	13	23	18	11	7	6	12	13	7	10	10	19	20	12	10	9	16	
Illinois	: 5	6	10	9	8	6	9	12	11	16	12	9	12	16	10	11	8	9	5	13	9	8	9	9	9	
Indiana	: 23	33	36	46	43	40	52	46	42	54	49	46	48	46	41	51	39	40	25	31	35	23	16	30	31	
Iowa	: 3	8	15	11	17	6	8	7	9	10	7	8	7	11	10	7	6	5	5	8	14	9	6	10	9	
Missouri	: 6	9	17	20	17	15	15	14	23	19	12	8	9	8	23	14	17	11	15	11	7	0	8	12	12	
Ohio	: 18	19	27	37	28	38	42	37	47	42	47	42	36	41	33	46	38	28	24	23	22	35	23	21	20	
Kansas	: 12	4	6	21	16	16	19	9	14	19	12	6	8	21	12	16	20	NA								
Nebraska	: 6	5	35	22	22	15	18	9	16	23	7	9	7	11	11	14	20	17	21	18	17	28	15	12	14	
Kentucky	: NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	64	54	57	60	NA	NA	NA	NA	25	42	28	34
North Carolina	: NA	NA	58	50	59	57	49	62	65	62	57	57	49	49	63	61	60	60	44	57	46	46	46	46	54	
Tennessee	: NA	NA	32	35	42	34	38	35	42	45	38	32	47	48	56	44	51	43	33	38	40	33	22	20	30	
Alabama	: NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	71	77	66	68	57	49	51	34	34	44	44	NA
Georgia	: NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	76	74	71	58	69	46	59	51	54	56	51	49
South Carolina	: NA	NA	52	44	62	66	65	61	65	63	60	53	52	61	NA	45	43	44	40	32	41	NA	NA	NA	NA	
Arkansas	: 2	3	5	8	12	15	14	6	14	14	20	10	13	18	16	16	11	13	12	13	14	6	7	8	10	
Louisiana	: NA	NA	NA	20	16	14	12	14	14	19	17	9	14	12	19	19	7	12	9	11	8	7	3	7	9	
Mississippi	: 2	1	8	16	14	14	13	17	15	12	17	11	26	17	21	14	13	15	13	12	17	5	8	10	9	
Average	: 7	11	18	21	21	19	21	19	22	24	22	18	20	24	25	26	23	21	17	20	20	17	18	15	16	

NA = Not available.

Appendix table 17--Nitrogen used on soybeans, rate per fertilized acre receiving nitrogen, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Pounds																										
Minnesota	15	8	9	6	10	8	17	10	20	12	15	42	21	10	16	16	13	30	13	16	18	26	13	17	21	
Illinois	8	8	18	17	14	9	25	30	12	19	11	11	11	12	16	14	15	20	18	20	17	31	16	14	39	20
Indiana	6	8	9	7	11	9	8	11	11	9	10	9	10	11	11	11	11	12	11	9	10	14	11	14	18	
Iowa	4	17	6	12	10	8	11	10	11	10	9	9	12	14	11	11	18	20	32	14	23	10	14	13	24	
Missouri	7	14	8	16	11	12	10	14	17	10	17	26	12	13	17	19	22	14	21	23	22	12	14	31	24	
Ohio	11	10	7	9	10	10	11	12	12	12	13	11	11	12	15	12	12	14	10	10	14	13	14	13	17	
Kansas	9	5	19	22	11	21	18	23	44	21	55	43	32	30	26	15	10	NA								
Nebraska	2	9	21	9	32	27	32	11	14	19	27	22	23	25	23	21	30	19	23	21	13	18	14	15	32	
Kentucky	NA	20	21	18	18	NA	NA	NA	NA	21	27	23	39													
North Carolina	NA	NA	13	12	13	15	13	15	13	14	17	12	12	14	18	17	15	18	16	20	16	16	13	23	14	
Tennessee	NA	NA	14	16	14	13	13	14	15	24	15	17	19	18	17	14	16	14	14	20	16	19	16	20	34	
Alabama	NA	27	24	21	22	19	22	21	14	21	18	NA														
Georgia	NA	21	21	22	21	20	20	35	16	14	17	20	15													
South Carolina	NA	NA	15	16	17	17	17	13	18	15	21	14	17	15	NA	19	13	18	20	11	13	NA	NA	NA	NA	
Arkansas	40	19	28	24	11	13	15	12	14	11	16	18	19	28	16	17	16	17	17	15	21	24	14	18	28	
Louisiana	NA	NA	NA	14	10	12	13	17	15	20	19	14	14	12	15	18	19	26	17	13	13	21	17	15	18	
Mississippi	44	10	24	17	2	19	17	17	27	19	23	17	17	22	17	17	13	24	15	12	16	16	16	10	37	
Average	14	10	12	13	15	12	14	15	14	14	15	15	14	16	17	16	17	18	17	18	17	15	15	20	22	

NA = Not available.

Appendix table 18—Percentage of soybean acreage receiving phosphate fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
	Percent																									
Minnesota	4	13	12	14	25	20	22	10	11	25	21	10	10	9	14	21	11	11	21	24	14	9	11	20		
Illinois	6	10	17	13	10	11	12	17	18	27	15	15	23	23	18	20	19	17	14	23	17	17	17	20	25	
Indiana	37	41	48	55	51	52	57	50	47	62	54	51	54	54	56	61	49	47	34	38	48	38	31	41	41	
Iowa	6	9	18	15	22	12	13	11	13	16	11	11	9	15	13	12	8	9	8	12	16	12	8	15	10	
Missouri	6	11	18	20	17	16	16	17	27	23	13	11	9	15	28	25	26	19	23	16	10	21	19	20	21	
Ohio	23	26	33	42	33	46	45	42	53	48	53	46	49	52	38	56	48	39	35	34	39	48	41	40	35	
Kansas	8	4	6	21	13	14	18	4	11	19	10	2	10	17	10	20	20	NA								
Nebraska	12	10	30	25	16	13	20	9	22	19	6	7	7	11	9	17	20	15	23	19	15	25	18	10	11	
Kentucky	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	71	67	68	74	NA	NA	NA	NA	46	59	46	50
North Carolina	NA	NA	69	63	65	70	56	70	67	67	60	62	58	55	73	72	66	60	59	63	54	55	52	51	63	
Tennessee	NA	NA	46	42	45	48	51	49	54	59	58	52	67	62	84	66	73	66	63	65	61	59	47	43	52	
Alabama	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	95	92	81	86	66	60	77	74	65	68	66	NA
Georgia	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	87	86	72	75	56	76	63	61	77	72	76
South Carolina	NA	NA	72	66	79	81	84	80	84	82	78	77	74	78	NA	85	78	84	54	65	66	NA	NA	NA	NA	
Arkansas	14	19	23	23	26	28	35	33	35	27	31	26	29	35	35	35	31	32	21	26	26	21	15	22	21	
Louisiana	NA	NA	NA	22	21	23	24	27	28	28	20	23	21	26	34	33	37	49	32	28	32	32	23	17	30	
Mississippi	3	6	17	24	28	26	25	30	33	19	34	29	40	39	41	38	34	42	35	29	40	32	19	23	18	
Average	12	16	26	27	27	26	27	27	29	32	28	25	28	33	35	38	35	33	27	30	30	28	29	25	26	

NA = Not available.

Appendix table 19--Phosphate used on soybeans, rate per fertilized acre receiving phosphate, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Pounds																										
Minnesota	37	21	20	24	30	27	35	25	44	31	26	44	31	34	27	36	29	31	30	38	38	34	20	26	57	
Illinois	24	32	56	51	57	54	36	41	48	55	44	43	49	47	50	57	73	63	66	63	62	61	45	57	67	
Indiana	22	28	25	25	28	42	31	29	41	37	38	32	34	37	39	38	44	36	39	35	41	40	49	46	40	
Iowa	37	30	21	30	39	53	44	34	36	42	33	27	33	39	33	36	42	54	54	46	52	34	51	45	33	
Missouri	22	39	30	31	34	43	29	30	37	34	43	38	43	41	43	49	47	57	45	49	58	44	46	43	49	
Ohio	28	36	33	33	36	37	36	38	38	44	42	37	39	42	42	46	38	54	43	37	53	37	42	52	46	
Kansas	16	20	58	29	29	33	36	42	46	32	29	46	43	39	30	30	22	NA								
Nebraska	29	23	36	27	24	44	43	33	34	29	29	15	37	44	50	36	47	32	29	33	29	27	27	27	24	
Kentucky	NA	50	52	60	51	NA	NA	NA	NA	57	63	61	69													
North Carolina	NA	NA	35	35	36	36	35	39	34	37	38	34	38	36	41	45	37	42	39	35	42	40	36	45	34	
Tennessee	NA	NA	32	36	38	34	36	42	44	44	42	41	43	50	48	46	45	42	43	48	43	45	44	53	44	
Alabama	NA	56	59	52	50	45	49	54	48	53	48	46	NA													
Georgia	NA	50	42	48	43	41	38	47	35	37	37	38	36													
South Carolina	NA	NA	44	46	42	42	42	42	46	42	40	40	45	43	NA	41	39	43	37	37	36	NA	NA	NA	NA	
Arkansas	32	35	35	41	39	38	39	39	42	37	44	46	36	40	41	38	43	38	38	40	36	39	44	45		
Louisiana	NA	NA	NA	51	41	48	56	63	54	58	54	60	52	57	51	52	53	55	47	47	50	54	45	51	41	
Mississippi	37	44	57	53	14	44	46	57	54	53	56	52	57	55	51	50	47	50	41	42	49	44	44	40	41	
Average	30	32	34	37	37	41	37	39	42	42	41	40	42	45	45	46	46	46	43	45	46	43	43	47	48	

NA = Not available.

Appendix table 20--Percentage of soybean acreage receiving potash fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		
Percent																											
Minnesota	5	12	11	14	23	21	22	10	12	24	21	10	12	11	14	21	15	14	11	20	25	19	10	12	20		
Illinois	7	14	17	17	15	11	16	20	22	28	17	18	28	26	19	23	21	21	17	32	22	21	22	26	34		
Indiana	36	41	47	56	51	52	57	52	48	63	58	55	55	55	54	64	51	51	44	42	49	50	37	45	49		
Iowa	5	8	16	14	21	12	13	11	14	16	11	11	9	15	13	12	8	9	9	11	18	11	10	17	12		
Missouri	7	11	19	20	18	18	17	17	27	25	14	13	12	16	28	30	29	21	24	18	14	23	23	26	27		
Ohio	20	26	32	41	34	46	46	42	54	48	54	47	50	52	40	57	51	47	38	40	45	58	55	48	46		
Kansas	8	4	3	17	10	14	11	2	9	19	4	NA	8	11	8	7	4	NA									
Nebraska	6	NA	13	19	6	6	13	7	16	15	6	6	7	8	8	11	13	5	15	13	9	10	7	6	8		
Kentucky	NA	71	67	66	74	NA	NA	NA	46	56	45	47															
North Carolina	NA	NA	71	63	67	71	58	70	67	69	62	63	56	56	76	73	66	61	53	65	56	56	57	57	72		
Tennessee	NA	NA	46	42	45	48	51	49	54	59	57	53	70	66	84	67	73	70	63	67	63	66	48	48	55		
Alabama	NA	96	93	84	83	69	65	77	73	64	59	66	NA														
Georgia	NA	92	89	86	72	80	55	78	63	62	77	75	79														
South Carolina	NA	NA	72	66	79	81	84	80	85	82	80	78	73	79	NA	86	81	84	59	71	74	NA	NA	NA	NA		
Arkansas	12	21	21	22	24	28	36	35	38	29	32	28	32	36	37	36	33	34	21	26	21	24	17	23	22		
Louisiana	NA	NA	NA	22	20	23	24	27	28	27	20	23	21	25	34	33	37	49	32	28	30	31	22	15	30		
Mississippi	3	5	13	24	28	26	25	30	31	19	32	29	41	40	43	42	35	42	34	26	41	32	23	24	21		
Average	12	17	24	27	27	27	28	27	31	32	28	26	30	34	36	39	36	35	29	32	32	30	31	28	31		

NA = Not available.

Appendix table 21--Potash used on soybeans, rate per fertilized acre receiving potash, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Minnesota	73	26	23	27	40	35	82	38	62	39	39	53	64	56	36	56	48	72	52	56	63	62	42	51	51	
Illinois	42	58	72	66	73	71	74	48	63	69	73	56	79	67	85	92	97	113	96	96	99	93	88	105	101	
Indiana	29	30	33	34	31	48	43	42	51	60	60	55	52	52	59	69	75	76	87	67	67	99	84	66	78	
Iowa	28	29	19	24	34	53	49	45	35	48	44	34	59	49	39	52	61	65	64	49	69	59	62	55	65	
Missouri	29	40	35	33	39	45	37	39	43	46	55	61	59	60	65	72	82	77	66	68	76	60	69	67	74	
Ohio	27	40	31	31	39	33	37	39	47	51	50	38	47	47	52	53	64	89	71	73	102	74	81	96	102	
Kansas	5	20	20	17	24	32	54	24	31	21	16	NA	26	46	28	26	28	NA								
Nebraska	4	3	24	7	18	23	11	12	22	16	14	16	24	20	18	18	32	20	14	22	12	13	10	15	16	
Kentucky	NA	56	63	64	59	NA	NA	NA	75	70	71	80														
North Carolina	NA	NA	50	53	54	51	55	59	55	65	60	65	66	58	71	76	75	83	71	70	68	70	70	80	72	
Tennessee	NA	NA	34	37	42	35	41	41	46	45	44	45	46	55	60	63	58	60	55	60	60	63	57	66	61	
Alabama	NA	63	72	61	67	66	60	61	56	57	57	54	NA													
Georgia	NA	78	69	77	76	78	67	79	68	63	64	68	76													
South Carolina	NA	NA	68	70	69	66	70	71	77	75	68	71	80	84	NA	89	84	82	79	81	76	NA	NA	NA	NA	
Arkansas	39	42	38	42	42	42	49	47	48	50	52	50	56	54	57	52	56	51	49	52	48	55	58	62	62	
Louisiana	NA	NA	NA	51	40	48	53	61	53	58	53	57	53	60	54	58	66	68	60	68	67	73	62	78	62	
Mississippi	37	45	43	52	15	44	44	57	53	54	55	53	59	68	61	69	65	69	60	61	71	69	65	60	68	
Average	37	39	41	42	45	48	51	48	51	55	55	53	60	60	62	67	70	76	68	70	72	71	75	79		

NA = Not available.

Appendix table 22--Percentage of wheat acreage receiving any fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Percent																										
Michigan	96	100	100	100	97	98	99	96	92	100	97	98	98	98	96	94	100	100	100	NA	NA	NA	NA	NA	NA	
Minnesota	76	80	67	86	88	90	86	87	96	91	92	90	95	91	98	96	95	95	96	NA	95	95	94	99	88	100
Illinois	94	89	86	91	96	90	92	99	95	90	96	91	90	95	93	97	98	96	88	85	92	92	87	99	99	99
Indiana	98	99	99	95	97	83	95	99	97	100	100	100	100	96	86	97	99	100	94	97	85	92	92	92	100	96
Missouri	95	95	92	93	92	93	92	94	91	86	99	95	96	93	96	88	95	95	94	94	87	92	80	98	99	99
Ohio	97	100	99	99	98	98	99	100	98	99	97	100	97	99	96	97	99	100	84	99	95	92	90	95	100	100
Arkansas	NA	72	94	93	100																					
Kansas	40	40	50	51	59	51	51	49	60	67	69	69	73	72	64	70	76	76	75	82	84	81	79	87	89	89
Nebraska	25	25	26	42	43	49	43	45	46	53	73	55	58	58	46	57	57	64	56	59	58	81	71	70	73	73
North Dakota	51	56	60	67	68	72	73	66	72	74	65	57	65	51	60	68	49	57	NA	71	72	72	81	80	75	75
South Dakota	6	8	16	25	28	33	34	43	31	39	42	29	53	24	21	19	25	44	NA	44	47	62	68	63	73	73
Oklahoma	58	61	61	53	60	57	70	70	63	65	65	66	82	73	62	80	89	85	81	70	81	83	81	89	86	86
Texas	39	45	46	50	42	34	52	48	46	42	65	37	59	44	50	32	48	58	56	54	71	62	44	69	70	70
Colorado	9	7	1	8	13	13	6	6	10	9	8	16	18	9	11	10	14	25	35	23	39	56	64	66	63	63
Idaho	46	43	40	48	42	52	57	59	72	71	72	66	79	77	82	85	80	87	85	94	88	89	88	92	90	90
Montana	19	30	29	41	40	39	39	41	47	40	37	43	48	48	45	59	45	47	63	59	64	67	59	58	70	70
California	NA	95	91	81	86																					
Oregon	94	86	92	59	78	54	81	83	89	89	82	87	81	85	72	88	90	90	95	95	96	95	96	96	99	99
Washington	81	70	78	88	94	82	92	90	92	98	87	97	93	99	96	99	99	97	100	98	96	96	98	100	98	98
Average	50	52	54	58	60	59	63	58	63	64	66	63	71	65	61	66	67	70	70	73	76	77	79	80	83	83

NA = Not available.

Appendix table 23--Percentage of wheat acreage receiving nitrogen fertilizer, selected States

State	: 1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988		
Percent																											
Michigan	:	95	99	99	100	97	98	99	96	91	100	97	98	98	96	96	94	98	100	98	100	NA	NA	NA	NA	NA	
Minnesota	:	76	78	64	86	88	90	86	87	96	91	92	90	95	91	98	96	93	96	NA	95	95	94	99	88	100	
Illinois	:	92	85	85	88	88	85	92	99	93	65	96	87	89	95	92	93	95	94	87	82	89	92	87	97	98	
Indiana	:	96	99	99	95	97	83	91	99	97	99	99	100	99	96	86	97	99	100	94	95	84	91	77	100	96	
Missouri	:	95	95	92	93	92	93	90	94	91	81	99	95	96	93	96	84	95	95	94	93	87	91	80	96	99	
Ohio	:	97	100	99	99	95	98	99	100	98	99	97	100	97	99	94	97	99	100	84	99	94	92	99	93	100	
Arkansas	:	NA	72	90	93	100																					
Kansas	:	39	40	50	51	59	50	51	48	60	66	68	68	73	71	63	70	76	76	75	82	84	81	79	86	89	
Nebraska	:	25	25	26	39	43	48	43	44	45	51	72	55	58	56	46	57	57	62	56	59	58	81	70	70	73	
North Dakota	:	42	43	41	48	52	65	69	63	68	73	63	57	65	51	58	65	49	57	NA	71	72	72	81	80	75	
South Dakota	:	6	7	16	25	23	33	32	41	31	39	42	29	53	24	21	19	25	44	NA	43	47	62	68	61	73	
Oklahoma	:	58	60	60	52	58	57	70	70	63	65	65	65	82	73	62	79	89	84	81	70	81	83	81	89	86	
Texas	:	39	44	46	50	41	34	51	47	46	42	65	37	59	44	49	32	48	57	55	54	71	62	43	69	70	
Colorado	:	9	7	1	8	13	13	6	6	10	9	8	16	18	9	11	10	14	25	35	23	39	56	64	66	62	
Idaho	:	46	41	40	48	42	50	56	59	71	71	72	65	79	77	81	84	80	87	85	93	88	89	88	92	90	
Montana	:	6	17	14	28	32	32	30	37	43	38	37	43	47	47	45	56	45	47	63	59	64	65	59	58	69	
California	:	NA	94	91	82	86																					
Oregon	:	94	86	92	59	78	54	81	83	89	89	82	67	81	84	72	88	90	90	95	95	96	95	96	96	99	
Washington	:	81	70	77	88	94	82	92	90	92	98	87	97	93	99	96	96	99	99	97	100	98	96	96	98	100	
Average	:	47	48	49	53	56	56	61	57	62	63	66	63	71	64	61	65	67	70	70	72	76	77	79	80	83	

NA = Not available.

Appendix table 24—Nitrogen used on wheat, rate per fertilized acre receiving nitrogen, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Michigan	35	28	33	26	35	31	37	41	36	40	38	37	49	51	52	48	51	64	54	64	NA	NA	NA	NA	NA
Minnesota	16	15	18	24	34	32	36	24	58	54	52	54	62	63	68	73	69	57	NA	72	60	67	76	83	103
Illinois	32	32	43	44	41	42	46	59	56	60	57	50	57	54	57	55	69	65	82	76	74	84	72	88	98
Indiana	39	40	45	46	50	48	48	52	53	58	53	59	61	63	58	63	64	84	80	68	87	74	77	73	72
Missouri	36	40	44	51	44	53	61	49	78	79	53	50	63	61	53	58	68	70	69	76	72	72	73	87	90
Ohio	26	34	34	42	39	37	37	42	43	41	40	49	56	61	48	56	69	74	65	58	65	77	72	71	70
Arkansas	NA	146	112	103	94																				
Kansas	26	27	35	36	42	50	46	47	51	54	49	47	52	49	50	50	56	54	56	52	57	57	59	54	53
Nebraska	42	42	34	27	34	36	40	43	40	51	45	43	48	48	43	49	45	50	47	49	49	45	46	56	43
North Dakota	9	9	10	10	11	14	15	18	18	23	21	25	32	33	33	41	43	39	NA	46	43	38	44	51	47
South Dakota	13	22	15	14	19	23	20	19	27	24	23	21	30	28	24	19	27	44	NA	32	21	32	46	39	42
Oklahoma	29	31	38	33	39	41	47	49	49	61	54	45	54	57	58	60	65	64	63	56	65	67	64	64	70
Texas	76	56	62	84	69	85	80	101	82	103	82	74	72	77	112	93	74	70	83	91	95	77	68	90	80
Colorado	13	48	22	54	31	18	43	32	61	54	35	39	56	58	40	43	52	48	36	44	41	49	42	37	43
Idaho	41	56	65	77	67	60	66	76	60	71	69	96	74	84	72	76	81	89	93	89	108	89	89	92	100
Montana	5	10	11	6	9	8	10	12	14	14	13	11	17	20	24	28	23	23	36	32	40	28	30	38	36
California	NA	102	121	106	98																				
Oregon	41	60	39	52	56	47	41	55	46	47	69	66	78	72	67	74	73	90	65	87	66	66	79	72	73
Washington	38	53	56	69	86	79	64	60	63	67	69	70	69	71	76	65	73	67	82	76	83	74	73	69	69
Average	27	31	32	35	36	38	39	40	46	48	46	46	51	53	52	54	58	58	59	60	62	60	60	62	64

NA = Not available.

Appendix table 25--Percentage of wheat acreage receiving phosphate fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Percent																										
Michigan	96	100	100	100	97	96	96	84	92	100	95	89	96	96	91	91	100	96	98	NA	NA	NA	NA	NA	NA	
Minnesota	74	80	67	75	79	90	86	87	96	88	87	82	93	86	93	92	79	87	NA	80	91	89	90	78	93	
Illinois	89	84	80	85	89	86	86	95	86	85	93	83	75	87	76	88	95	80	78	82	84	84	77	79	92	
Indiana	95	98	96	92	97	79	95	97	96	99	99	85	99	95	84	90	97	94	91	91	85	83	90	85	85	
Missouri	76	70	69	64	66	74	67	63	65	60	71	70	85	75	76	77	82	83	81	73	67	78	70	53	77	
Ohio	96	100	98	99	98	98	99	100	98	97	97	99	95	97	94	93	99	96	82	91	91	86	85	89	96	
Arkansas	NA	25	41	33	38																					
Kansas	32	31	38	41	45	39	37	31	40	42	39	42	47	41	30	38	40	44	40	49	48	43	42	49	50	
Nebraska	7	7	7	18	23	17	17	19	15	23	26	25	24	13	15	22	29	21	25	23	34	21	16	33		
North Dakota	51	56	60	66	67	72	73	64	71	74	63	54	58	48	55	55	40	47	NA	60	63	64	70	70	67	
South Dakota	4	6	11	23	24	30	29	39	28	37	41	26	40	17	19	18	21	29	NA	41	45	51	44	49	57	
Oklahoma	46	44	36	46	34	34	41	40	40	46	39	41	54	48	32	46	56	53	49	36	48	53	43	47	44	
Texas	12	20	23	25	24	19	22	14	24	17	32	17	24	27	15	15	30	35	36	33	24	30	26	57	45	
Colorado	NA	4	NA	2	1	NA	NA	NA	NA	5	NA	NA	4	NA	NA	2	2	4	1	9	8	11	10	13		
Idaho	8	16	7	7	8	13	19	5	13	18	19	22	21	13	16	22	21	29	34	48	28	47	51	48	54	
Montana	19	29	28	41	40	39	39	40	45	37	37	41	45	43	41	55	42	44	62	58	63	65	53	48	67	
California	NA	46	54	17	27																					
Oregon	18	3	8	4	10	8	7	6	9	6	20	16	24	20	10	15	18	25	15	24	21	14	20	14	22	
Washington	5	4	5	6	6	15	3	10	6	10	14	15	13	19	9	10	12	8	15	18	24	27	30	37	26	
Average	36	38	38	43	43	44	44	41	44	45	46	43	50	44	38	44	43	47	45	48	49	48	48	50	53	

NA = Not available.

Appendix table 26--Phosphate used on wheat, rate per fertilized acre receiving phosphate, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
:																									
Michigan	53	53	53	56	55	58	56	61	60	56	57	52	57	57	53	62	55	58	57	54	NA	NA	NA	NA	NA
Minnesota	26	31	27	29	35	36	39	31	38	33	39	38	36	36	39	35	32	30	NA	39	33	32	40	33	41
Illinois	42	41	52	57	56	56	52	64	72	55	66	54	66	65	69	68	81	70	82	76	75	64	80	76	79
Indiana	49	49	51	53	52	50	56	56	57	63	56	54	57	61	58	62	54	69	60	61	63	64	49	60	58
Missouri	27	32	32	38	37	42	41	39	38	50	53	41	39	49	46	47	52	49	45	53	50	43	44	46	52
Ohio	52	53	57	56	57	55	58	57	59	63	59	54	62	63	56	64	57	62	60	59	62	66	63	71	60
Arkansas	NA																								
Kansas	30	30	29	37	35	38	36	38	36	41	34	32	35	34	30	35	34	34	35	33	35	33	33	33	34
Nebraska	29	33	33	39	31	34	32	33	44	34	34	35	36	36	39	36	40	40	32	34	30	31	33	40	29
North Dakota	23	22	23	23	25	25	27	26	26	28	25	24	25	28	26	28	26	25	NA	27	25	29	27	28	29
South Dakota	11	23	20	21	21	23	22	21	20	20	22	21	22	21	22	23	22	31	NA	27	23	27	26	29	25
Oklahoma	26	28	30	30	31	32	32	37	36	47	38	31	34	37	30	35	38	40	35	36	35	33	37	35	30
Texas	25	26	52	49	47	54	33	37	37	52	37	25	35	41	47	39	38	46	39	46	51	46	35	52	39
Colorado	NA	30	NA	17	24	NA	NA	NA	NA	19	NA	NA	35	NA	NA	53	25	23	28	18	20	26	26	25	17
Idaho	17	44	36	35	41	34	35	29	46	34	40	43	55	34	34	49	44	48	33	36	33	39	35	36	
Montana	14	18	20	18	18	18	20	23	22	23	25	24	31	27	30	30	28	27	33	31	32	30	28	28	27
California	NA																								
Oregon	38	26	77	32	30	35	24	65	35	25	40	62	47	45	48	45	38	40	33	42	37	40	31	37	34
Washington	64	30	44	46	41	51	26	30	32	43	59	43	44	38	30	35	31	43	32	30	31	30	24	21	24
Average	27	30	32	32	32	34	30	34	37	38	38	35	37	39	35	38	39	39	37	39	37	35	36	35	37

NA = Not available.

Appendix table 27--Percentage of wheat acreage receiving potash fertilizer, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Michigan	95	100	100	100	97	96	99	84	91	100	95	89	96	96	91	91	98	100	98	100	NA	NA	NA	NA	NA	
Minnesota	31	34	31	50	56	59	56	65	59	70	69	59	65	71	70	65	63	70	NA	63	72	68	62	64	67	
Illinois	82	74	74	77	78	77	85	86	77	83	69	79	62	76	51	69	82	70	72	77	78	66	65	76	80	
Indiana	93	98	94	92	97	79	95	97	97	99	99	99	95	95	84	90	97	96	89	88	85	82	89	82	85	
Missouri	76	70	70	64	66	74	67	63	64	55	73	69	85	75	76	78	84	85	82	73	69	78	75	51	83	
Ohio	96	100	98	99	98	98	99	100	98	97	97	99	95	97	93	93	99	95	82	91	92	80	87	87	96	
Arkansas	NA	25	42	30	35																					
Kansas	4	3	4	5	5	5	5	8	6	8	10	11	11	8	6	9	10	12	8	11	9	10	6	2	4	
Nebraska	NA	1	2	2	3	3	3	2	1	7	4	8	7	4	2	2	2	4	5	5	5	6	4	NA	2	
North Dakota	3	4	3	5	4	8	6	5	8	10	11	11	9	7	10	10	5	7	NA	11	5	9	7	11	9	
South Dakota	NA	NA	NA	NA	2	NA	NA	4	5	6	7	9	4	1	6	4	3	3	NA	6	4	8	6	NA	3	
Oklahoma	15	10	12	19	13	10	16	10	9	16	15	19	19	18	13	13	14	16	17	12	13	15	9	8	13	
Texas	3	2	1	2	3	2	5	5	4	12	13	9	10	6	2	6	5	7	11	11	5	8	7	59	9	
Colorado	NA	1	NA	NA	2	NA	NA	NA	NA	1	NA	1	3	NA	1	NA	2									
Idaho	NA	2	NA	NA	NA	NA	NA	2	NA	1	2	1	5	2	2	3	4	1	1	8	7	6	19	8	6	6
Montana	NA	1	NA	NA	1	NA	2	2	2	4	2	2	5	3	5	4	5	3	7	6	7	11	5	7	6	
California	NA	6	1	NA	13																					
Oregon	12	NA	4	2	2	NA	1	1	NA	NA	6	7	5	5	3	3	4	10	8	19	6	4	12	9	14	
Washington	2	NA	NA	NA	2	5	NA	3	NA	NA	NA	NA	1	1	1	2	1	1	2	6	1	5	4	3	6	
Average	16	15	15	17	17	20	14	15	17	20	21	21	19	16	18	18	20	18	20	17	16	19	15	18		

NA = Not available.

Appendix table 28--Potash used on wheat, rate per fertilized acre receiving potash, selected States

State	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Pounds																									
Michigan																									
Michigan	44	49	49	50	52	51	52	52	50	54	49	49	56	55	53	63	60	58	59	53	NA	NA	NA	NA	NA
Minnesota	19	18	9	19	19	20	22	17	21	17	28	24	22	23	29	26	21	25	NA	35	28	29	32	27	38
Illinois	30	37	40	54	45	51	41	53	56	60	57	52	66	62	69	75	64	76	86	85	86	76	92	94	95
Indiana	48	46	50	49	49	47	55	53	52	63	62	63	59	65	53	64	57	84	66	69	73	63	60	75	76
Missouri	26	27	32	36	34	41	40	40	41	53	46	44	43	49	54	56	62	57	55	59	55	51	65	57	69
Ohio	45	46	51	53	55	52	55	55	54	63	57	55	60	64	63	63	67	65	65	70	72	74	73	76	
Arkansas	NA																								
Kansas	11	11	13	14	16	24	14	18	15	22	19	19	24	21	18	25	31	30	27	41	28	24	31	14	31
Nebraska	NA	5	15	27	16	23	13	10	6	9	12	12	18	8	7	18	28	12	16	3	14	20	17	NA	NA
North Dakota	9	10	7	10	8	11	8	9	12	11	10	9	13	15	13	18	15	17	NA	10	19	18	14	17	16
South Dakota	NA	NA	NA	NA	3	NA	1	7	11	8	10	8	13	5	6	10	10	13	NA	16	17	22	14	NA	NA
Oklahoma	21	9	13	13	12	11	12	11	11	35	15	12	12	17	12	15	14	29	17	18	16	19	27	19	13
Texas	4	26	24	16	8	20	13	40	16	20	15	11	23	38	10	22	13	14	22	41	27	16	18	49	24
Colorado	NA	12	NA	10	NA	NA	3	NA	NA	NA	NA	23	NA	9	6	NA	10	NA							
Idaho	NA	9	NA	7	NA	NA	11	NA	12	12	33	10	31	35	10	32	38	2	22	27	24	23	27	24	21
Montana	3	1	NA	NA	1	1	4	4	6	9	8	5	22	27	9	21	21	18	19	19	11	11	9	22	
California	NA	11	10	NA	NA																				
Oregon	17	NA	24	30	30	NA	14	29	NA	NA	20	25	22	38	37	31	42	37	31	38	32	42	42	49	35
Washington	80	NA	NA	2	13	51	NA	28	NA	NA	NA	NA	2	20	10	37	18	78	42	31	42	33	15	26	32
Average	19	35	37	39	36	39	36	36	38	36	37	35	37	41	34	43	40	47	41	48	46	36	44	43	52

NA = Not available.

END
DATE
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9-15-89
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