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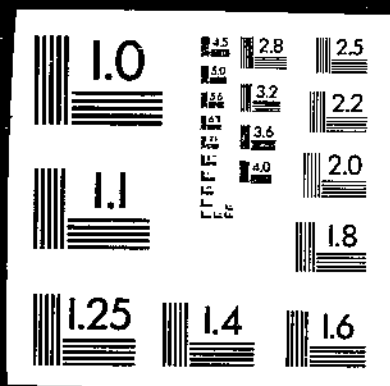
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Agricultural Use of Federally Supplied Irrigation Water, 1979-86

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Agricultural Use of Federally Supplied Irrigation Water, 1979-86

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Agricultural Use of Federally Supplied Irrigation Water, 1979-86.
By Tom McGuckin, Gary Bruner, Donald Negri, and Michael Moore.
Resources and Technology Division, Economic Research Service,
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Abstract

The Bureau of Reclamation (BuRec) has been instrumental in developing the western river basins for irrigation water supplies and other purposes. In the last decade, the BuRec has not initiated any new water development projects, opting instead to complete and manage existing projects. Although little water development occurred during this period, two significant trends emerged: cropping patterns on land irrigated using BuRec water are shifting to higher valued specialty crops and away from USDA-supported program crops, and BuRec water deliveries to municipal and industrial uses have gradually increased while deliveries to farms have declined.

Keywords: Bureau of Reclamation, Federal irrigation water, irrigated crop production

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Summary

The Bureau of Reclamation (BuRec), an agency of the U.S. Department of the Interior, has been instrumental in developing the western river basins for irrigation water supply, municipal and industrial water supply, hydroelectric power generation, recreation, and flood control. In the last decade, BuRec planning and construction of new water development projects have diminished considerably. BuRec resources, instead, have been devoted to completing projects under way and managing and administering existing projects. As water supplies from BuRec projects have leveled off, demand by nonagricultural users has increased.

The net supply of BuRec water increased to 42 million acre-feet in 1986, or about 400,000 acre-feet per year during the 1979-86 period. Urban and suburban water use from BuRec projects increased at slow but steady rates in all regions except the Lower Colorado, where high urban demand resulted in a faster rate of increase. Although the amount of agricultural acreage irrigated by BuRec water remained relatively constant, regional changes of acreage in agricultural use occurred during the 8-year period.

Lands served by the BuRec specialize in several crops. BuRec lands account for 5.4 percent of agricultural acreage in the United States, but these lands produce a greater percentage of U.S. production in barley, alfalfa, cotton, fruit, sugar beets, rice, and nuts. BuRec lands produced 60 percent of total U.S. vegetable output. Specialty crop production, particularly in the Mid-Pacific and Lower Colorado regions, increased while program crop acreage declined. Program crop acreage increased only in the Missouri Basin.

The most pronounced trend in irrigation technology on BuRec lands is the increase of sprinkler irrigation in the Pacific Northwest. This region accounts for 81 percent of sprinkler irrigation on BuRec lands and is increasing sprinkler irrigated acreage at an average of 107,000 acres per year. The most intensive use of drip irrigation occurs in the Lower Colorado, but drip-irrigated acreage is still less than 1.4 percent of irrigated acreage. Despite the increase in sprinkler and drip irrigation, it is not apparent that water use per acre has improved. Average BuRec water use per acre, determined by water deliveries divided by irrigated acreage, has not significantly changed.

Agricultural Use of Federally Supplied Irrigation Water, 1979-86

Tom McGuckin, Gary Bruner,
Donald Negri, and Michael Moore

Introduction

Since its inception in 1902, the Bureau of Reclamation (BuRec) has planned, constructed, or rehabilitated an infrastructure of 337 water storage reservoirs, 154 diversion dams, and thousands of miles of water canals, pipelines, tunnels, and laterals. The BuRec currently supplies irrigation water to 25 percent of the irrigated acres in the 17 Western States. In the last decade, BuRec planning and construction of water development projects has diminished considerably. BuRec resources, instead, have been devoted to completing projects under way and managing and administering existing projects.

As water supplies from BuRec projects have leveled off, non-agricultural users' demand for water has increased. Evidence of this increased demand includes water reallocation to urban uses; more than 50 outstanding Native American claims to western surface water rights; potential water reallocations from irrigation uses to instream flows for wildlife habitat preservation or for esthetic and recreational river uses; interstate conflicts about river apportionment; and recent Federal water quality legislation that will alter irrigation water use.

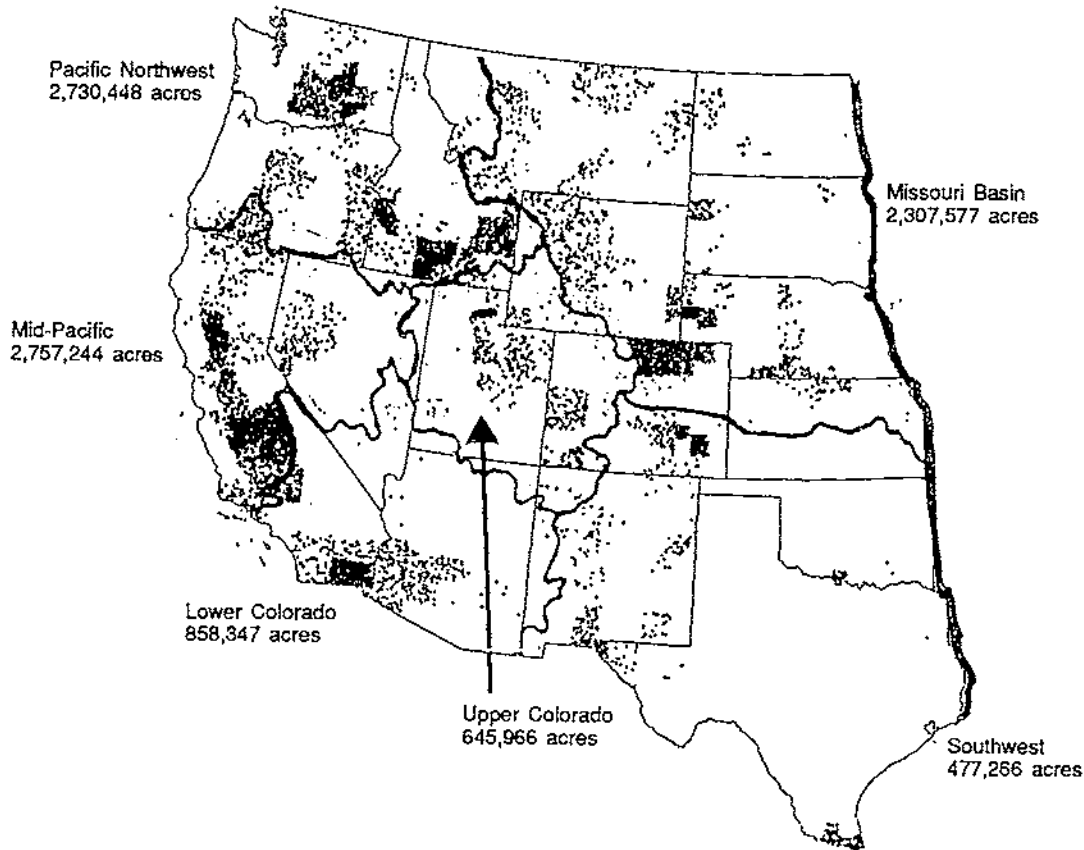
This increasing competition for the fixed water resources of the BuRec has the following implications for Federal policy and Federal agencies:

1. Increased competition by nonagricultural users will challenge BuRec managers to reallocate water use from agriculture to municipal, industrial, and other uses, thereby balancing trends in supply and demand.
2. Reduced water allocation and deliveries to farms under BuRec jurisdiction may change the quantity and mix of crop production, with implications for Federal agricultural programs.
3. Recipients of BuRec irrigation water, like western irrigators in general, face a future of water conservation. Another concern will be promotion of water-saving irrigation technologies.

This report describes trends in cropping patterns and BuRec water use for the selected 1979-86 period. The report is divided into three sections: (1) water supply and use for the six BuRec regions and for total BuRec lands, (2) crop acreage and production within the six BuRec regions, and (3) irrigation technology and water use per acre by region. BuRec lands are defined as receiving full or supplemental water supplies from BuRec water projects. Lands that occasionally receive temporary BuRec water allocations are not included in the analysis.

The BuRec operates in 5 regional divisions that follow watershed boundaries of the major river systems in the 17 Western States (fig. 1). In 1988, the BuRec consolidated several regions, thus reducing the total number to five. The consolidation does not affect this analysis. The largest BuRec regions, each with more than 2 million acres, are the Pacific Northwest, Mid-Pacific, and Missouri Basin.

Figure 1
Bureau of Reclamation regional boundaries and irrigated acreage:
Full and supplemental service, 1986



1 dot = 1,000 irrigated acres.
Dots do not represent exact locations of irrigated acreage.

Missouri Basin. Smaller regions, each with less than 1 million acres, are the Upper Colorado, Lower Colorado, and Southwest. BuRec lands accounted for 5.4 percent of total U.S. agricultural acreage.

To establish trends within BuRec lands in the period 1979-86, crop acreage and water use were analyzed using linear regression with two explanatory variables. A time trend variable captured the average annual rate of change in the dependent variable. Because agricultural use of BuRec land decreased sharply under the Federal Payment-in-Kind (PIK) Program in 1983, the regression included a second binary variable that equaled one in 1983 and zero for all other years to distinguish the effect of the PIK program. The average annual rate of change is presented in the tables along with one or two asterisks indicating a t-statistic of 90- or 95-percent confidence level. The coefficients associated with the PIK binary variable are also presented using the same format. Because there is no formal testable hypothesis presented in this analysis and because time is not a causal factor, the analysis is strictly descriptive. Known factors influencing trends are suggested in the text. The analysis does not imply that trends occurring within 1979-86 will continue.

Water Supply And Use

The net supply of water by BuRec projects reached 42 million acre-feet in 1986, increasing at an average estimated rate of 400,000 acre-feet per year for the 1979-86 period. Urban and suburban water use from BuRec projects increased at slow but steady rates in all regions except the Lower Colorado, where high urban demand for water has created a competitive environment.

Water Supply

Most of the increase in BuRec water supply occurred in the Upper Colorado, Southwest, and Missouri Basin regions (table 1, fig. 2). The supply in the Pacific Northwest, Mid-Pacific, and Lower Colorado regions remained relatively constant over the 8-year period. The Pacific Northwest region received the largest supply of BuRec water, with 15.5 million acre-feet, or 37 percent of the 1986 total. The Mid-Pacific region was second in 1986 with 19 percent of the total, followed by the Lower Colorado, Missouri Basin, Southwest, and Upper Colorado region.

The decreasing supply of BuRec water has been felt most in the Pacific Northwest region, where in 1986, the amount of BuRec water received dropped compared with 1979, primarily because of drought. In other regions, the amount of BuRec water received has increased, although at a slower rate.

Net deliveries to farms decreased in 1983, the year of the PIK program, in part because of reductions in irrigated acreage. However, 1983 was also a wet year, and farms may have reduced irrigated acreage because improved rain and snow conditions alleviated the need to withdraw water from storage.

Water Use

Agriculture, with 63 percent of the total BuRec water supply, remained the major user of BuRec water (table 2, fig. 3). Transportation losses and operational spills accounted for 27 percent of BuRec water use, municipal and industrial supply for 7 percent, and miscellaneous uses for 3 percent.

The amount of agricultural acreage irrigated by BuRec water remained relatively constant during 1979-86 (table 3, fig. 4). Most of the 400,000 acre-feet of average annual increased supply has been distributed among municipal and industrial users, transportation losses, and operational spills. The amount of farm water deliveries has not significantly changed from 1979 to 1986, except during the PIK, when use declined by 2.5 million acre-feet. Farm water deliveries in the Pacific Northwest and Lower Colorado declined, while deliveries in the Missouri Basin increased. The Mid-Pacific had declining agricultural acreage but was constant in water deliveries to farms, indicating that water use per irrigated acre increased in this region. Other regions did not exhibit any trend in agricultural water use, except the Upper Colorado, where water use per acre declined.

Municipal and industrial water use has been a small fraction of BuRec water supply, but has continuously increased over time (table 4, fig. 5). The bulk of the increases occurred in the Colorado River Basin. By 1986, municipal demand constituted 26.3 percent of BuRec water use in the Lower Colorado region, a significant factor in this region's BuRec water demand. In the Upper Colorado, municipal and industrial uses accounted for 17.2 percent of its BuRec water supply. The Southwest and Pacific Northwest increased modestly in municipal use, and the share of BuRec water supply in these regions remained small.

Supply and Demand Conditions

Increased competition for nonagricultural uses of BuRec water is evident in the Colorado River Basin. In the Lower Colorado region, BuRec water supplies have remained constant, while the percentage of water in agricultural use has declined and municipal and industrial use has increased. Some cities and towns have been developing their remaining rights for Colorado River water. These trends indicate both an increasing value for BuRec water and continued efforts to reallocate among sectors. BuRec water supplies in the Upper Colorado region have increased along with use by the municipal and industrial sector, thus it is not clear that the BuRec water value has increased. While the BuRec water supply also increased in the Southwest Basin, the percentage of municipal and industrial use in this region declined. In the Pacific Northwest, Mid-Pacific, and Missouri Basin regions, the percentage of municipal and industrial use of BuRec water supplies has been small.

Crop Acreage and Production

The amount of agricultural acreage irrigated by BuRec water projects has remained relatively constant since 1979. In 1979, the BuRec served 9.66 million acres with full and supplemental water (table 3, fig. 4). This increased to 10.01 million in 1982. With the Federal PIK program, agricultural land use decreased within BuRec lands by an estimated 567,000 acres. After 1983, irrigated acreage returned to pre-PIK levels, approximately 9.8 million acres.

Lands Served by BuRec

Despite the constant amount of total irrigated acreage, significant regional changes in BuRec acreage use occurred during 1979-86. Agricultural acreage in the Pacific Northwest, Mid-Pacific, Lower Colorado, and Southwest regions declined at a rate of about 50,000 acres per year, while agricultural acreage in the Missouri Basin region increased at a nearly equal annual rate. The compensating changes in these regions canceled any aggregate trend. The Mid-Pacific region experienced the largest reduction in agricultural acreage, declining at approximately 36,000 acres per year over the 8-year period.

In 1983, the Federal PIK program reduced agricultural acreage in BuRec lands by an estimated 567,500 acres, or 5.7 percent of the acreage in use in 1982. The PIK program affected mostly the Mid-Pacific region, reducing irrigated lands there by 356,000 acres or 12.9 percent of irrigated acreage. All regions except the Upper Colorado and Missouri Basin declined in acreage during the PIK program. The Upper Colorado region increased acreage during 1983, and the Missouri Basin did not appear to be significantly affected.

BuRec Federal Program Crop Acreage

The Secretary of Agriculture administers a comprehensive program of target prices, price support loans, and acreage restrictions for specified crops. Wheat, oats, upland cotton, rice, corn, barley, and sorghum were included in USDA price and income support programs in 1986. Participation in commodity programs is voluntary, and compliance with certain land set-aside provisions is often the only requirement.^{1/}

BuRec acreage devoted to Federal program crops accounted for 31 percent of total acreage in BuRec lands in 1986. The Mid-Pacific, Missouri Basin, and Pacific Northwest regions have large amounts of acreage in program crops (fig. 6). All regions except

^{1/} The Food and Agriculture Act of 1977 governed agricultural policy through 1981; the Agriculture and Food Act of 1981 governed policy through 1985. Within the legislation's general structure, the Secretary of Agriculture annually defines specific features of commodity programs to adjust them to current circumstances.

the Missouri Basin declined in program crop acreage in the 8-year period (table 5). The estimated rate of decrease for all BuRec lands was 71,000 acres per year. The rate of decline in program crop acreage was highest in the Mid-Pacific region, which used 56,000 fewer acres per year or 317,000 fewer acres during 1979-86. The Lower Colorado had the largest percentage rate of decline. A substantial increase in program crop acreage occurred in the Missouri Basin, where program crop acreage increased 220,000 acres in the 1979-86 period.

There are several plausible explanations for the changes in BuRec program crop acreage, specifically in the Mid-Pacific, Lower Colorado, Southwest, and Missouri Basin regions. The Mid-Pacific, Lower Colorado, and Southwest regions have large acreages of cotton, which is not grown in other regions. BuRec cotton acreage has followed a national trend to fewer acres, hence the general decline in program crop acreage in these regions. Adverse prices or restrictive Government programs could be factors. The increased program crop acreage in the Missouri Basin results from more corn acreage, amounting to more than 50 percent of its program crop acreage, while corn production remained constant nationally, possibly indicating further development of water resources in the Missouri Basin. Also, competing alternative uses for land and water resources in the far western regions induced a shift to higher valued crops, such as vegetables and orchards.

The distribution of reduced program crop acreage during the PIK program is similar to the trends outlined above. During 1983, an estimated 519,000 acres of program crops on BuRec lands were removed from production. The majority of this acreage was in the Mid-Pacific region. The Pacific Northwest, Upper Colorado, and Missouri Basin regions either had small increases in program acreage during the PIK program, or the change was not significant. The following points outline trends for each program crop.

Barley. The three largest barley production regions are the Pacific Northwest, Missouri Basin, and Mid-Pacific (table 6, fig. 7). Only the Mid-Pacific region had a significant decline in barley acreage. The share of national barley production from BuRec lands declined from 13.66 percent in 1979 to 7.54 percent in 1986 (table 7).

Corn. Seventy-two percent of corn acreage within BuRec lands was in the Missouri Basin region (table 8, fig. 8). The Missouri Basin also experienced an annual rate of increase of 31,000 acres. The PIK program did not significantly reduce acreage, except in the Mid-Pacific and Southwest regions. BuRec's percentage of U.S. production increased between 1979 and 1986, and by 1986, the BuRec share of U.S. production was 1.45 percent (table 9).

Cotton. Cotton acreage declined in all BuRec cotton-producing regions (table 10, fig. 9). The Mid-Pacific region had the largest acreage decline over the 8-year period, totaling 207,798

acres. BuRec cotton acreage generally followed national trends, but at a slightly accelerated rate (table 11).

Oats. Oats is not a major BuRec crop (table 12), nor does BuRec oats acreage account for a significant portion of national acreage (table 13).

Rice. The Mid-Pacific region produced more than 99 percent of the rice produced on BuRec acreage, accounting for 11 percent of national production in 1986 (table 14). BuRec rice acreage declined 54,000 acres since 1979, paralleling a decline in national production. The PIK program reduced acreage by an estimated 79,000 acres.

Sorghum. Sorghum acreage is highly variable and does not exhibit a consistent BuRec-wide trend. However, trends in acreage in the Pacific Northwest, Mid-Pacific, and Lower Colorado regions were statistically significant (table 15). BuRec lands produced less than 1 percent of national sorghum production (table 16).

Soybeans. A small amount of soybeans was produced in the Southwest and Missouri Basin regions. This soybean production amounted to a negligible share of national soybean production (tables 17 and 18).

Sugar beets. The two largest production regions are the Pacific Northwest and the Missouri Basin (table 19, fig. 10). During 1979-86, the Pacific Northwest region increased in sugar beet acreage, and the Missouri Basin declined. The 31-percent share of national sugar beet production from BuRec lands remained relatively constant over the 8-year period (table 20).

Wheat. The Pacific Northwest, Mid-Pacific, and Lower Colorado have been the three largest BuRec wheat production regions (table 21, fig. 11). The Pacific Northwest was the only BuRec region where wheat acreage declined during the study period. Wheat acreage increased in the Missouri Basin and Upper Colorado regions. The 3-percent share of national wheat production from BuRec lands remained relatively constant during 1979-86 (table 22).

Specialty Crops

Vegetables, nuts, fruit, nursery products, and seeds are defined as specialty crops. The Pacific Northwest, Mid-Pacific, and Lower Colorado are the leading BuRec specialty crop-producing regions (table 23, fig. 12). BuRec specialty crop acreage increased 245,000 acres over the 8-year period, mostly in the major producing regions. Although the PIK program did not directly affect specialty crop production, specialty crop acreage increased significantly in the Southwest region in 1983. The BuRec increases in specialty crop acreage is consistent with increasing competition for water. As the value of water within the BuRec increases, specialty crop acreage is expected to also increase. Because most of the specialty crop increase occurs in

the Far West, that region will have the most competition for water. The following points outline trends in each specialty crop category.

Vegetables. BuRec vegetable acreage increased in the Pacific Northwest, Mid-Pacific, and Southwest at an estimated annual rate of 24,000 acres (table 24, fig. 13). BuRec lands have increased vegetable production at the national level. Since 1979, the share of national vegetable production from BuRec lands has continuously increased to 63 percent in 1986 (table 25).

Nuts. The Mid-Pacific region produced 90 percent of BuRec nut acreage (table 26, fig. 14). The Southwest and Lower Colorado had small acreages, but were increasing. There was no overall trend in BuRec nut production compared with U.S. production (table 27).

Fruit. The three largest BuRec fruit production regions are the Mid-Pacific, Pacific Northwest, and Lower Colorado (table 28, fig. 15). All regions except the Missouri Basin consistently increased fruit acreage, although freeze damage in 1984 caused a large decline in the Southwest region. The share of national fruit production from BuRec lands increased from 19 percent in 1979 to 25 percent in 1986 (table 29).

Nursery Products. The three largest BuRec nursery production regions are the Mid-Pacific, Pacific Northwest, and Lower Colorado (table 30). All regions except the Missouri Basin and Pacific Northwest consistently increased acreage, and nursery crops increased at an estimated annual rate of 457 acres.

Seeds. The three largest BuRec seed production regions are the Pacific Northwest, Mid-Pacific, and Lower Colorado (table 31, fig. 16). Seed crop acreage increased in the Lower Colorado and Missouri Basin regions, but decreased in the Upper Colorado region.

Forage Acreage

Forage acreage accounted for 36 percent of BuRec lands (table 32, fig. 17). Except for a very small rate of increase in the Southwest, no acreage changes occurred in other BuRec regions or in total BuRec lands used for forage. The PIK program did not change forage acreage in any region, except for a small change in the Upper Colorado. Hay acreage increased in all BuRec regions, especially in the Missouri Basin and Lower Colorado (table 33, fig. 18). BuRec lands accounted for 7 percent of total U.S. hay production (table 34). Alfalfa acreage in BuRec regions also increased (table 35, fig. 19). BuRec lands accounted for 11 percent of total U.S. alfalfa production in 1986 (table 36), and the share of BuRec alfalfa has been increasing.

Irrigation Technology and Water Use per Acre

Except in the Northwest, BuRec regions had no significant acreage change in irrigation technology during 1979-86 for drip,

sprinkler, and gravity irrigation (table 37). The most pronounced trend in irrigation technology in the 8-year period is the 739,000-acre increase of sprinkler irrigation in the Pacific Northwest since 1979 (table 38, fig. 20). This region accounted for 81 percent of sprinkler irrigation on BuRec lands. The annual rate of increase in sprinkler-irrigated acreage in the Pacific Northwest was estimated at 107,000 acres per year, displacing gravity irrigation by approximately the same annual acreage rate (table 39, fig. 21). By 1986, sprinkler irrigation comprised 38 percent of the Pacific Northwest irrigated acreage. In the Upper and Lower Colorado River regions, sprinkler use increased slightly, but decreased in the Mid-Pacific region. The decline of gravity irrigation in all regions except the Missouri Basin and Pacific Northwest was due to the decline in irrigated acreage rather than the substitution of sprinkler irrigation. Gravity irrigation increased in the Missouri Basin region.

Drip irrigation increased slightly in all regions except the Southwest and Missouri Basin (table 40). The most intensive use of drip irrigation occurred in the Lower Colorado region, but drip acreage was less than 1.4 percent of total irrigated acreage.

Despite the increased sprinkler use in the Pacific Northwest, it is not apparent that water use per acre improved. Average water use per acre, determined by water deliveries divided by irrigated acreage, did not change for this region or for the BuRec in general (table 41). The Upper Colorado was the only region where water use per acre declined. These trends in water use per acre do not necessarily correspond to trends in irrigation efficiency, as changing cropping patterns would also affect water use.

Table 1--Net water supply, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
	<u>Acre-feet</u>						
1986	15,676,762	8,105,335	7,032,623	2,854,417	2,931,906	5,716,772	42,317,815
1985	16,565,540	6,805,198	6,930,359	2,960,159	2,751,994	5,645,568	41,658,818
1984	15,554,648	8,405,654	6,863,994	2,393,788	2,289,461	5,144,142	40,651,687
1983	14,940,352	6,961,725	6,256,953	2,031,863	2,057,683	4,880,410	37,128,986
1982	15,585,083	7,240,447	6,263,657	1,979,269	2,124,038	4,544,740	37,737,234
1981	16,845,703	7,211,349	7,020,802	1,957,593	1,847,876	4,768,443	39,651,766
1980	16,446,076	7,571,508	7,006,024	1,896,755	2,310,042	5,228,270	40,458,675
1979	16,164,817	7,112,148	7,021,385	1,954,519	1,941,087	5,002,394	39,196,350
Average annual change	NS	NS	NS	158,589**	127,774*	105,714*	399,772**
Change during PIK	-1,137,277*	NS	-618,951*	-343,973*	NS	NS	-3,338,361**
	<u>Percent 1/, 2/</u>						
1986	37.05	19.15	16.62	6.75	6.93	13.51	100.00
1985	39.76	16.34	16.64	7.11	6.61	13.55	100.00
1984	38.26	20.68	16.88	5.89	5.63	12.65	100.00
1983	40.24	18.75	16.85	5.47	5.54	13.14	100.00
1982	41.30	19.19	16.60	5.24	5.63	12.04	100.00
1981	42.48	18.19	17.71	4.94	4.66	12.03	100.00
1980	40.65	18.71	17.32	4.69	5.71	12.92	100.00
1979	41.24	18.14	17.91	4.99	4.95	12.76	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;
 ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional net water supply as a percentage of net BuRec water supply.
 2/ Percentages may not total due to rounding.
 Source: Bureau of Reclamation

Figure 2

Net supply of water, full and supplemental service, by region

Million acre-feet

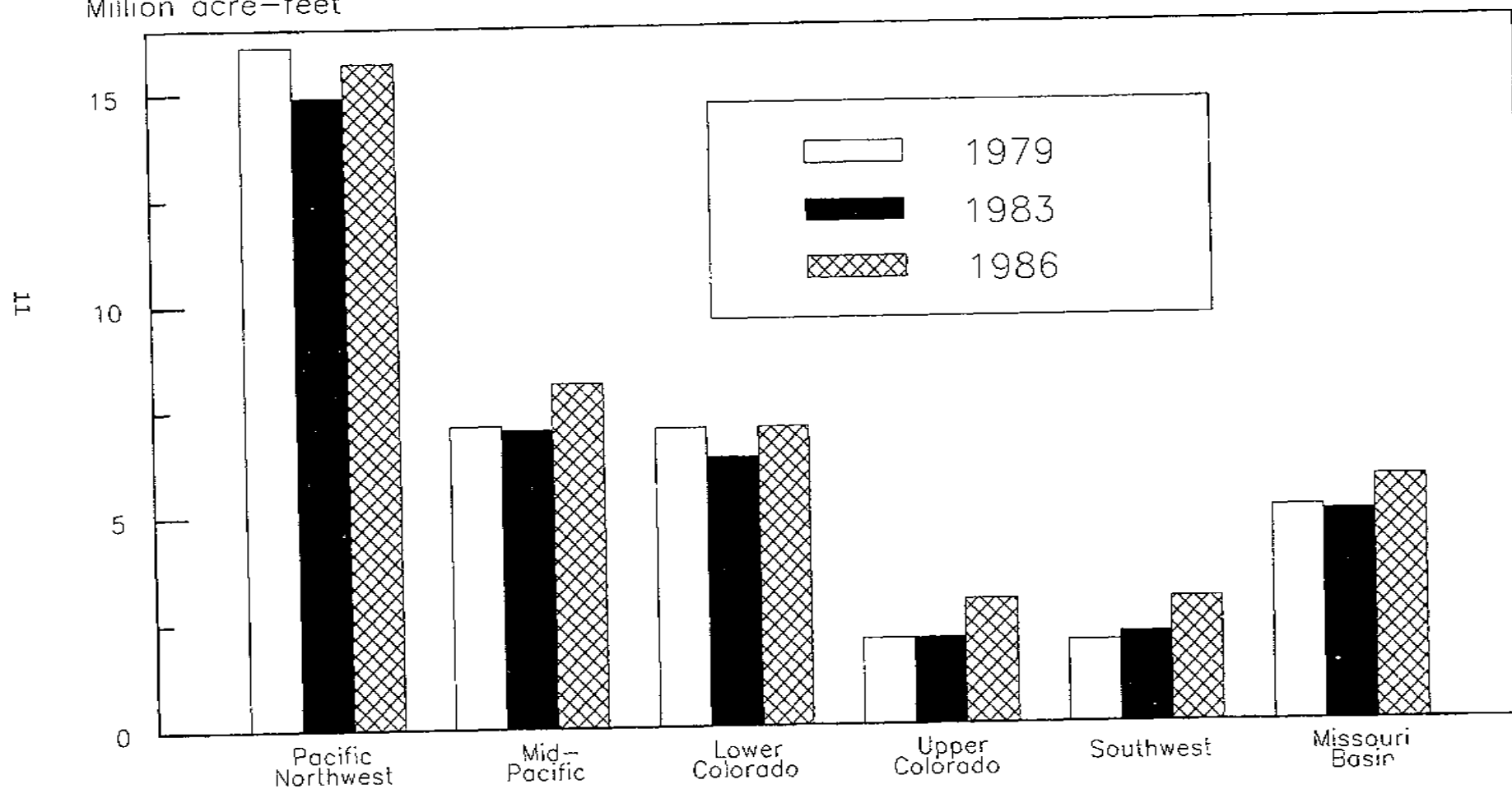


Table 2--Water deliveries to farms, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acre-feet</u>							
1986	10,259,733	6,583,625	4,432,781	1,077,691	963,910	3,371,026	26,688,766
1985	10,832,779	5,635,791	4,383,032	1,278,237	894,513	3,382,114	26,406,466
1984	10,025,930	6,313,096	4,318,048	1,009,928	970,346	2,978,862	25,616,210
1983	9,691,022	5,446,745	4,081,642	948,804	990,713	2,730,467	23,889,393
1982	10,226,772	6,454,689	4,264,162	1,198,869	1,070,276	2,495,985	25,710,753
1981	10,961,653	6,064,147	4,781,663	1,282,309	802,404	2,705,937	26,598,113
1980	10,604,246	6,454,568	5,042,305	1,233,803	1,044,017	2,973,527	27,352,466
1979	11,509,275	5,997,326	4,731,897	1,358,166	831,702	2,678,091	27,106,457
Average annual change	-119,942*	NS	-77,675**	-30,584*	NS	97,773**	NS
Change during PIK	-871,924*	-771,546*	-438,813*	-239,291**	NS	NS	-2,548,425**
<u>Percent 1/</u>							
1986	65.45	81.23	63.03	37.76	32.88	58.97	63.07
1985	65.39	82.82	63.24	43.18	32.50	59.91	63.39
1984	64.46	75.11	62.91	42.19	42.38	57.91	63.01
1983	64.86	78.24	65.23	46.70	48.15	55.95	64.34
1982	65.62	89.15	68.08	60.57	50.39	54.92	68.13
1981	65.07	84.09	68.11	65.50	43.42	56.75	67.08
1980	64.48	85.25	71.97	65.05	45.19	56.87	67.61
1979	71.20	84.33	67.39	69.49	42.85	53.54	69.16

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional water deliveries to farms as a percentage of net BuRec water supply.
 Source: Bureau of Reclamation

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Figure 3
Farm deliveries of water, full and supplemental
service, by region

Million acre-feet

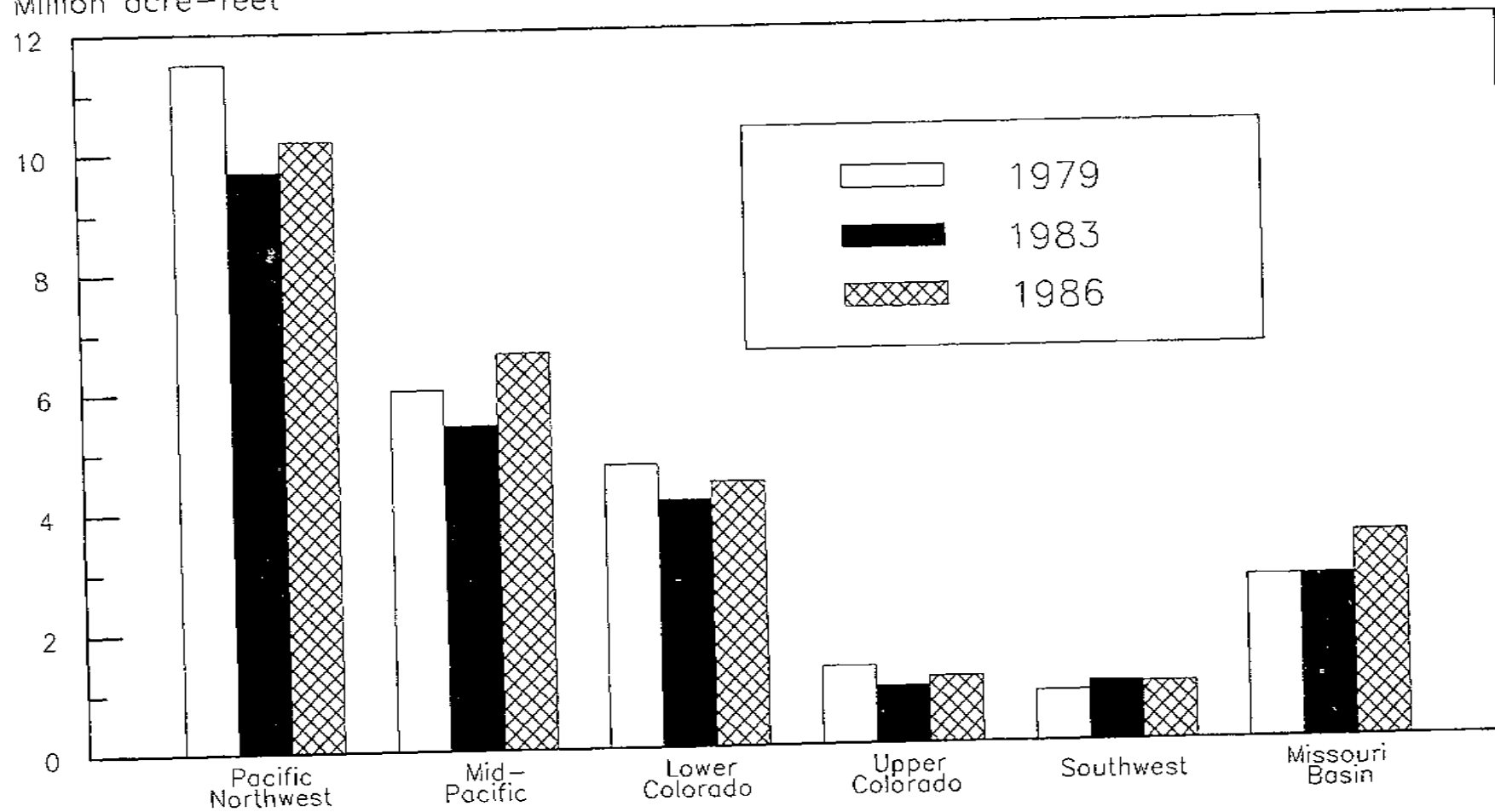


Table 3--Acreage irrigated, full and supplemental service, by region

Year and item	Pacific Northwest	Mid- Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	2,730,448	2,757,244	858,347	645,966	477,266	2,307,577	9,776,848
1985	2,780,137	2,767,839	839,039	643,773	483,858	2,201,562	9,716,208
1984	2,768,121	2,811,788	844,641	629,592	489,122	2,134,112	9,677,376
1983	2,671,987	2,516,495	801,313	664,234	452,999	2,099,322	9,206,350
1982	2,798,934	2,972,820	871,972	651,275	494,429	2,219,978	10,009,408
1981	2,781,778	3,036,196	883,772	644,040	512,374	1,958,218	9,816,378
1980	2,784,953	2,982,428	878,343	644,630	506,626	1,964,476	9,761,456
1979	2,773,168	2,921,268	874,201	635,841	502,935	1,955,306	9,662,719
Average annual change	-4,663**	-35,652**	-5,184**	NS	-4,345**	48,724**	NS
Change during PIK	-99,282**	-355,930**	-60,055**	21,978**	-39,748**	NS	-567,447**
<u>Percent 1/, 2/</u>							
1986	27.93	28.20	8.78	6.61	4.88	23.60	100.00
1985	28.61	28.49	8.64	6.63	4.98	22.66	100.00
1984	28.60	29.06	8.73	6.51	5.05	22.05	100.00
1983	29.02	27.33	8.70	7.21	4.92	22.80	100.00
1982	27.96	29.70	8.71	6.51	4.94	22.18	100.00
1981	28.34	30.93	9.00	6.56	5.22	19.95	100.00
1980	28.53	30.55	9.00	6.60	5.19	20.12	100.00
1979	28.70	30.23	9.05	6.53	5.20	20.24	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional acreage irrigated as a percentage of total BuRec acres irrigated.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 4
Acreage irrigated, full and supplemental service,
by region

Million acres

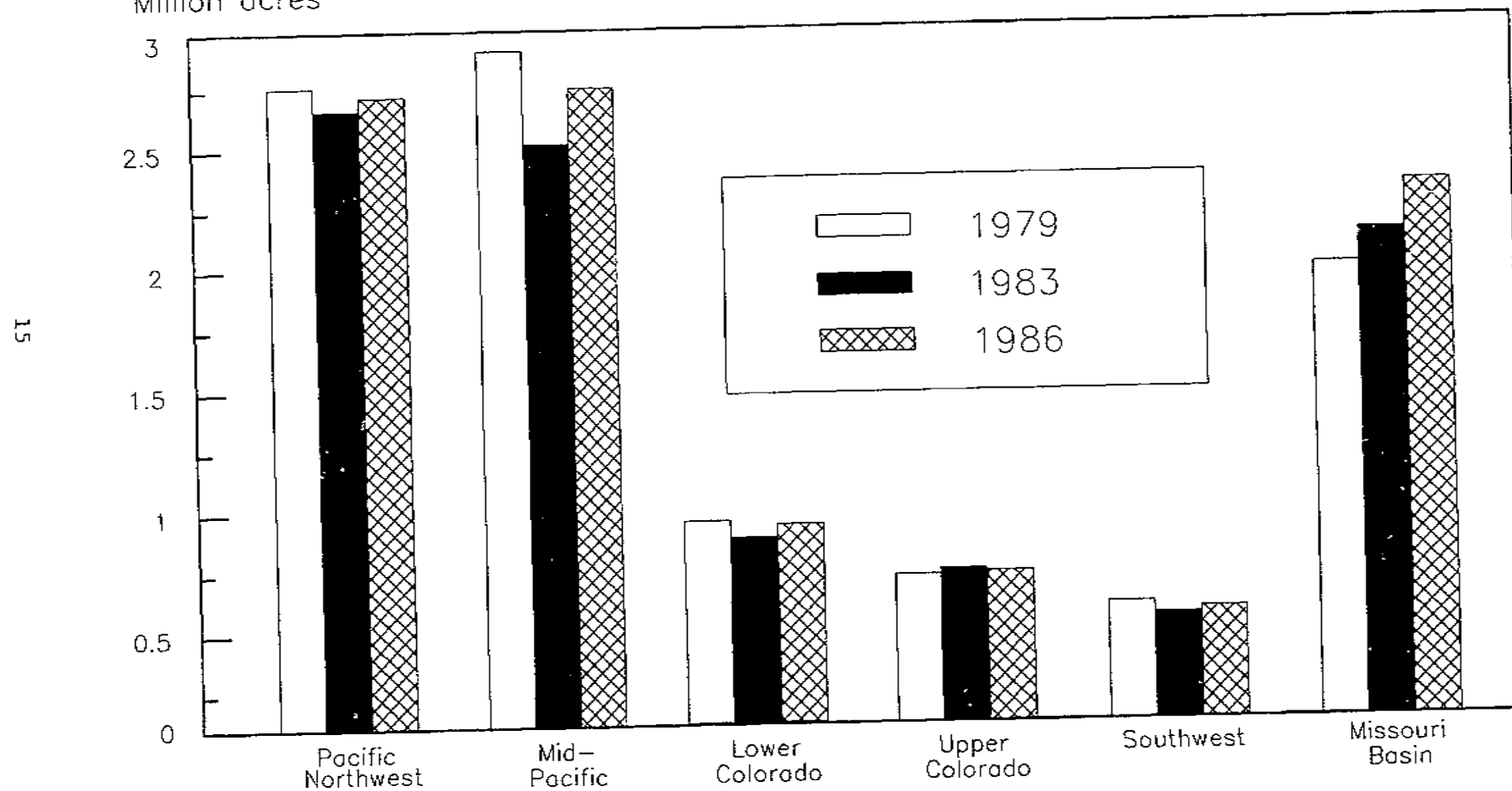


Table 4--Municipal and industrial use of BuRec water, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acre-feet</u>							
1986	52,325	305,782	1,848,484	491,484	249,687	81,435	3,029,197
1985	51,010	302,069	1,788,497	450,141	236,916	81,952	2,910,585
1984	47,647	292,597	1,751,575	159,785	313,422	56,209	2,621,235
1983	45,115	238,764	1,374,816	159,947	192,613	49,829	2,061,084
1982	43,891	218,462	1,166,636	157,157	226,357	69,539	1,882,042
1981	43,352	312,004	1,297,745	174,973	204,377	78,135	2,110,536
1980	19,336	273,288	1,251,428	175,053	238,705	73,424	2,031,234
1979	13,691	313,743	1,211,035	125,430	199,041	56,085	1,919,025
Average annual change	5,232**	NS	105,671**	47,741**	8,207*	NS	169,914**
<u>Percent ^{1/}</u>							
1986	0.33	3.77	26.28	17.22	8.52	1.42	7.16
1985	.31	4.44	25.81	15.21	8.61	1.45	6.99
1984	.31	3.48	25.52	6.67	13.69	1.09	6.45
1983	.30	3.43	21.97	7.87	9.36	1.02	5.55
1982	.28	3.02	18.63	7.94	10.66	1.53	4.99
1981	.26	4.33	18.48	8.94	11.06	1.64	5.32
1980	.12	3.61	17.86	9.23	10.33	1.40	5.02
1979	.08	4.41	17.25	6.42	10.25	1.12	4.90

* = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

^{1/} Regional municipal and industrial water deliveries as a percentage of net BuRec water supply.

Source: Bureau of Reclamation

Figure 5

Municipal and industrial deliveries of water, full and supplemental service, by region

1,000 acre-feet

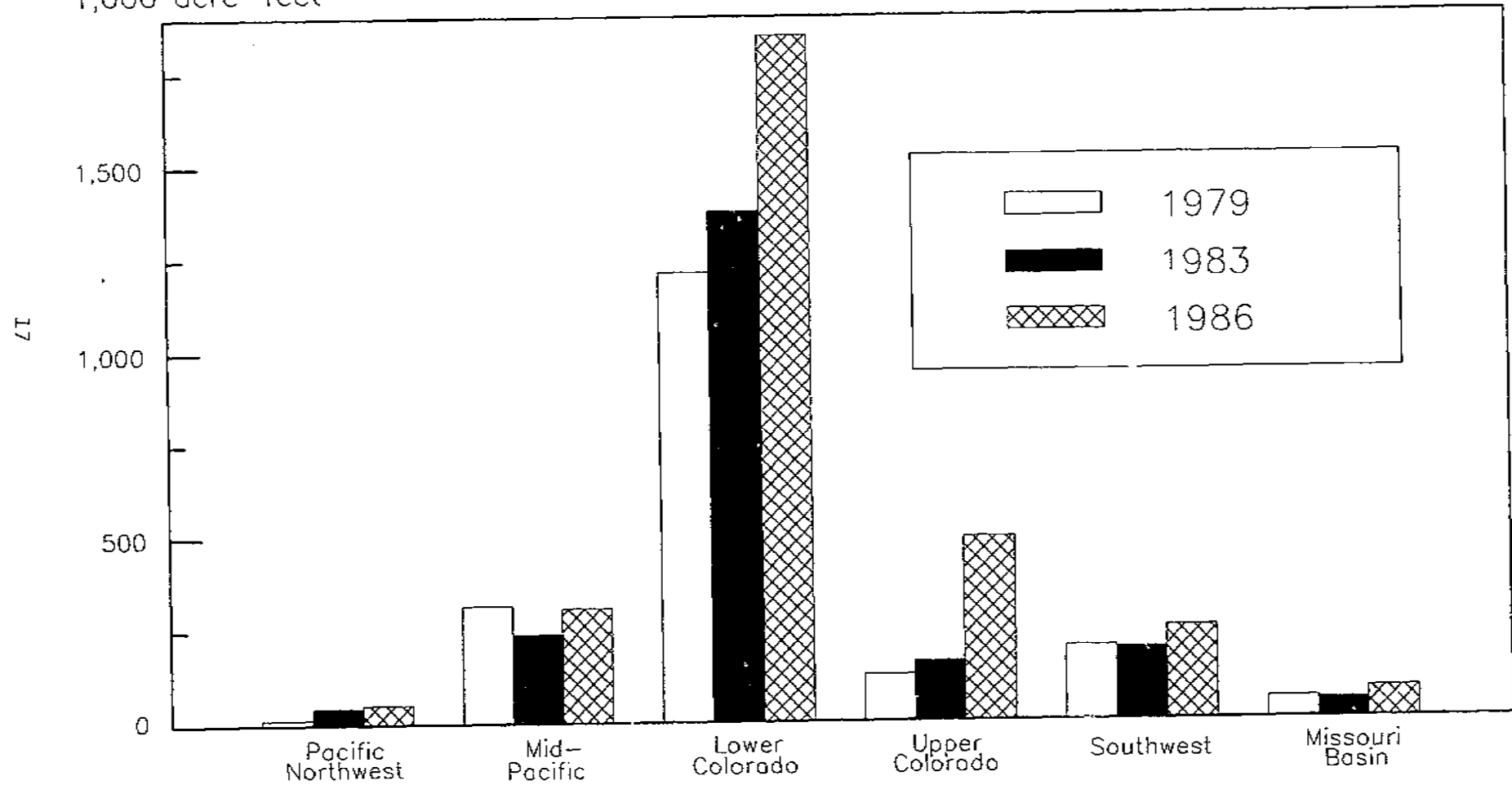


Figure 6
Program crop acreage, full and supplemental service,
by region

1,000 acres

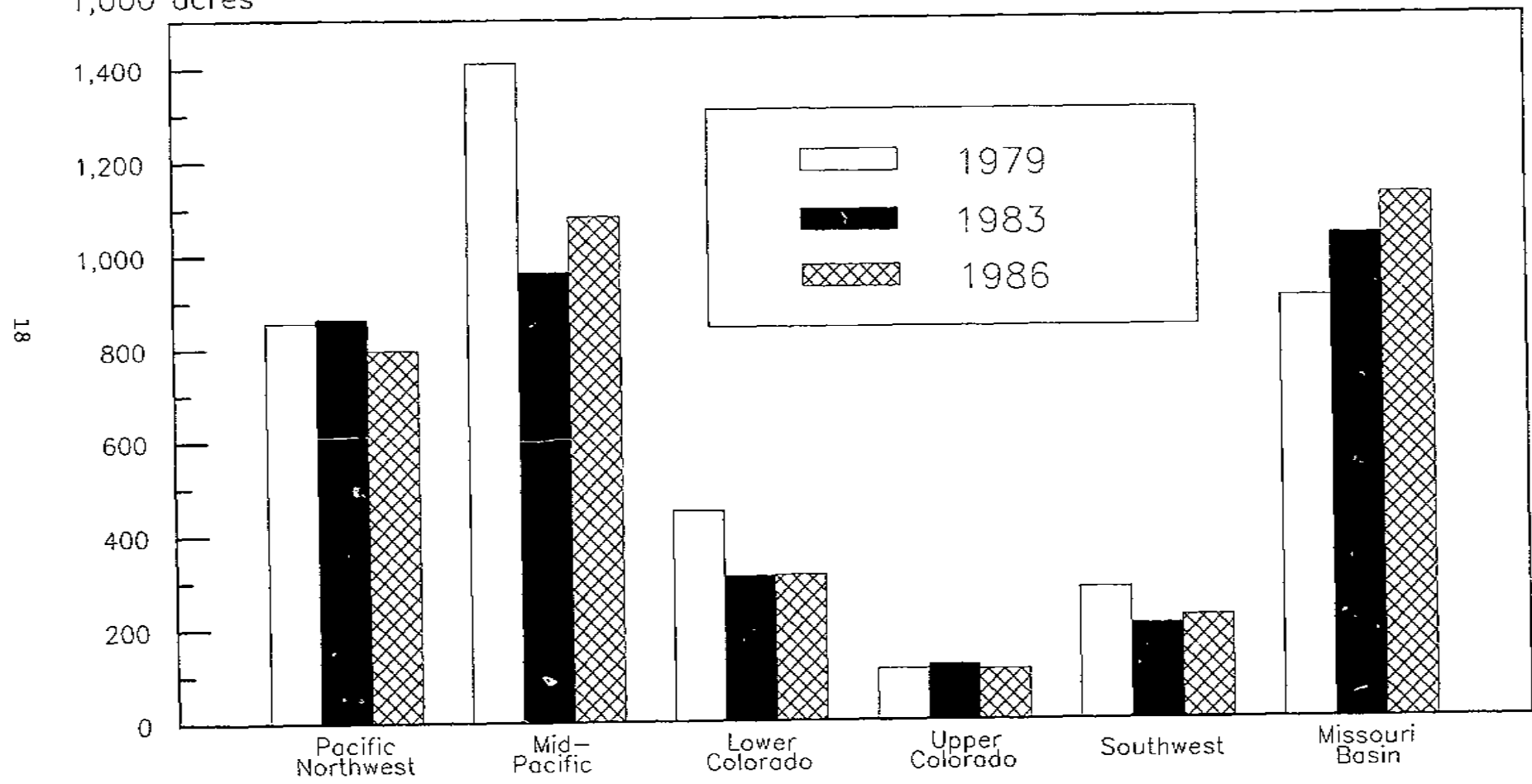


Table 5--Program crop acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	796,690	1,082,616	311,729	108,237	220,226	1,121,066	3,640,564
1985	875,296	1,204,533	301,331	113,043	226,523	1,148,663	3,869,389
1984	896,001	1,255,585	351,264	117,510	240,798	1,082,596	3,943,754
1983	864,852	961,736	309,585	119,402	203,316	1,034,554	3,493,445
1982	971,155	1,406,580	477,758	109,612	266,772	1,084,251	4,316,128
1981	905,382	1,518,730	533,026	107,346	297,986	984,688	4,347,158
1980	896,545	1,508,409	499,262	107,246	296,393	941,624	4,249,479
1979	857,342	1,409,798	448,107	109,651	280,549	901,000	4,006,447
Average annual change	NS	-55,913**	-30,563**	NS	-11,371**	33,835**	-71,135**
Change during PIK	NS	-347,206**	-90,447*	8,679**	-51,508**	NS	-519,180**
<u>Percent 1/</u>							
1986	29.73	38.46	31.36	16.85	48.49	49.11	36.90
1985	31.98	42.76	30.83	17.75	48.64	52.18	39.34
1984	32.83	44.08	33.95	18.84	51.07	50.97	40.11
1983	32.69	37.62	32.91	18.18	46.14	49.62	37.46
1982	35.05	46.29	43.63	17.02	54.53	48.96	42.10
1981	32.93	48.58	48.98	16.86	58.27	50.15	43.15
1980	32.56	48.89	44.98	16.92	58.57	47.76	42.24
1979	31.24	47.14	42.15	17.63	57.12	45.88	40.57

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional program crop acreage as a percentage of total BuRec crop acreage.
 Source: Bureau of Reclamation

Table 6--Barley acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	210,409	119,894	13,098	46,852	2,988	174,914	568,155
1985	225,810	130,451	10,404	50,811	2,846	171,638	591,960
1984	235,280	127,092	11,106	55,728	3,576	185,547	618,329
1983	224,353	125,490	6,764	54,186	10,505	214,433	635,731
1982	259,902	176,097	9,938	52,317	3,712	189,527	691,493
1981	244,480	182,937	6,660	51,246	11,331	187,269	683,923
1980	221,983	206,413	6,684	50,819	4,693	170,305	660,897
1979	226,833	202,135	8,760	52,745	4,554	173,741	668,768
Average annual change	NS	-13,611**	741**	NS	NS	NS	-15,543**
Change during PIK	NS	-30,306**	-3,181**	NS	5,980*	35,447**	NS
<u>Percent 1/, 2/</u>							
1986	37.03	21.10	2.31	8.25	0.53	30.79	100.00
1985	38.15	22.04	1.76	8.58	.48	28.99	100.00
1984	38.05	20.55	1.80	9.01	.58	30.01	100.00
1983	35.29	19.74	1.06	8.52	1.65	33.73	100.00
1982	37.59	25.47	1.44	7.57	.54	27.41	100.00
1981	35.75	26.75	.97	7.49	1.66	27.38	100.00
1980	33.59	31.23	1.01	7.69	.71	25.77	100.00
1979	33.92	30.22	1.31	7.89	.68	25.98	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;

** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional barley acreage as a percentage of total BuRec barley acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 7

Barley acreage, full and supplemental service, by region

1,000 acres

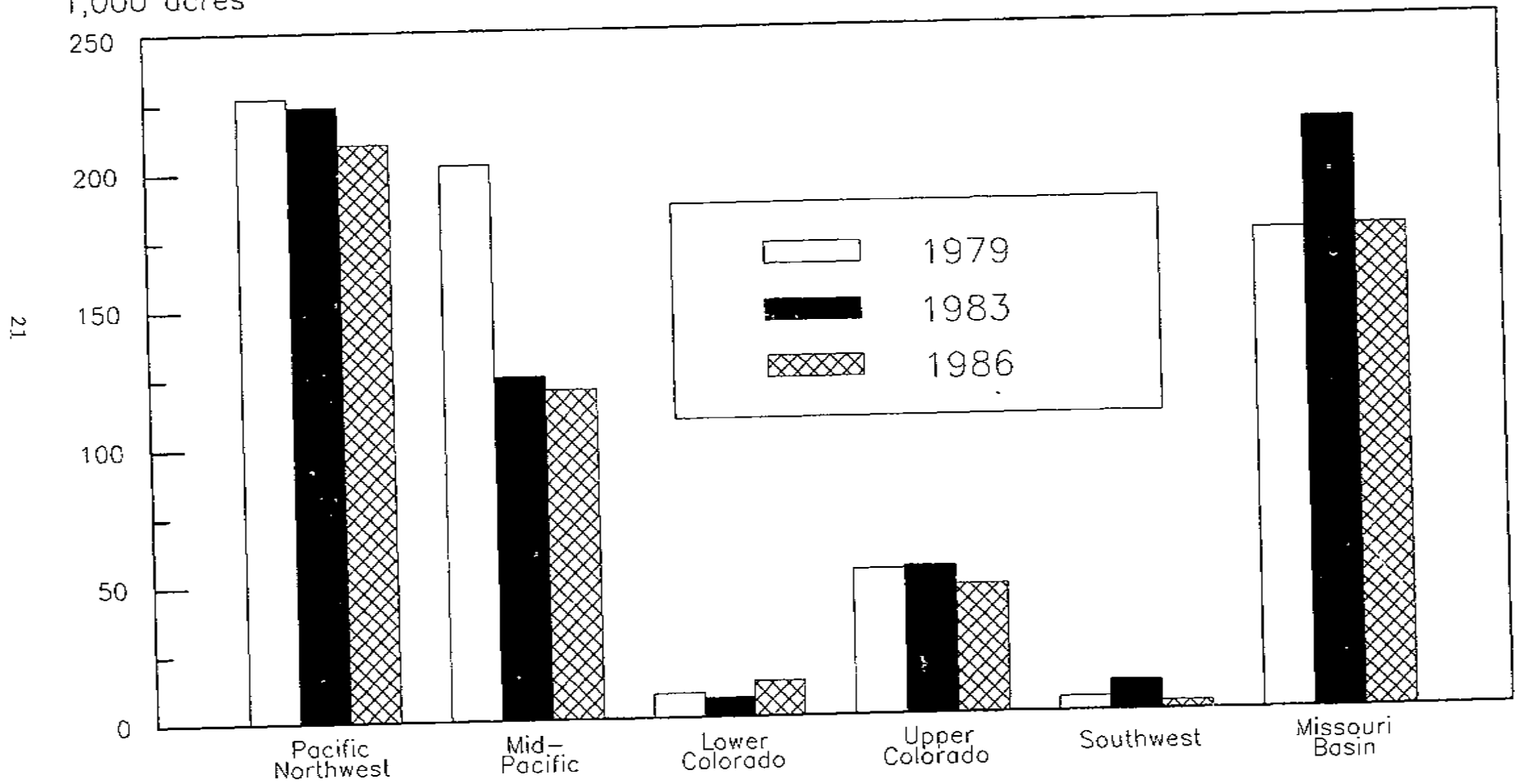


Table 7--Barley acreage and production, full and supplemental service

Year and item	BuRec crop area	Share of BuRec acreage 1/	BuRec barley production	National barley production	BuRec share of national barley production 2/
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 bushels----</u>		<u>Percent</u>
1986	568,155	5.76	46,056	610,552	7.54
1985	591,960	6.02	49,270	591,383	8.33
1984	618,329	6.29	52,396	599,204	8.74
1983	635,731	6.82	54,382	508,925	10.69
1982	691,493	6.74	57,903	515,935	11.22
1981	683,923	6.79	56,341	473,512	11.90
1980	660,897	6.57	54,559	261,135	20.89
1979	668,768	6.77	52,335	383,201	13.66
Average annual change	NA	-.14**	NA	NA	-1.37**
Change during PIK	NA	.48**	NA	NA	NS

NA = Not applicable; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.
 1/ BuRec barley acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 8--Corn acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	99,264	81,603	680	26,893	37,294	658,189	903,923
1985	124,357	98,205	294	29,770	41,314	722,594	1,016,534
1984	134,938	101,615	0	27,438	32,793	645,083	941,867
1983	101,794	64,811	0	29,275	22,585	575,156	793,621
1982	115,638	100,483	0	23,774	33,417	612,019	885,331
1981	109,904	90,629	45	21,589	38,081	541,406	801,654
1980	98,563	78,860	0	21,587	20,965	512,753	732,728
1979	120,045	77,917	250	22,973	18,095	486,366	725,646
Average annual change	NS	NS	NS	1,042**	2,619**	30,540**	36,684**
Change during PIK	NS	-26,083**	NS	3,818*	-10,620*	NS	NS
<u>Percent 1/, 2/</u>							
1986	10.98	9.03	0.08	2.98	4.13	72.81	100.00
1985	12.23	9.66	.03	2.93	4.06	71.08	100.00
1984	14.33	10.79	0	2.91	3.48	68.49	100.00
1983	12.83	8.17	0	3.69	2.85	72.47	100.00
1982	13.06	11.35	0	2.69	3.77	69.13	100.00
1981	13.71	11.31	.01	2.69	4.75	67.54	100.00
1980	13.45	10.76	0	2.95	2.86	69.98	100.00
1979	16.54	10.74	.03	3.17	2.49	67.03	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional corn acreage as a percentage of total BuRec corn acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 8

Corn acreage, full and supplemental service, by region

1,000 acres

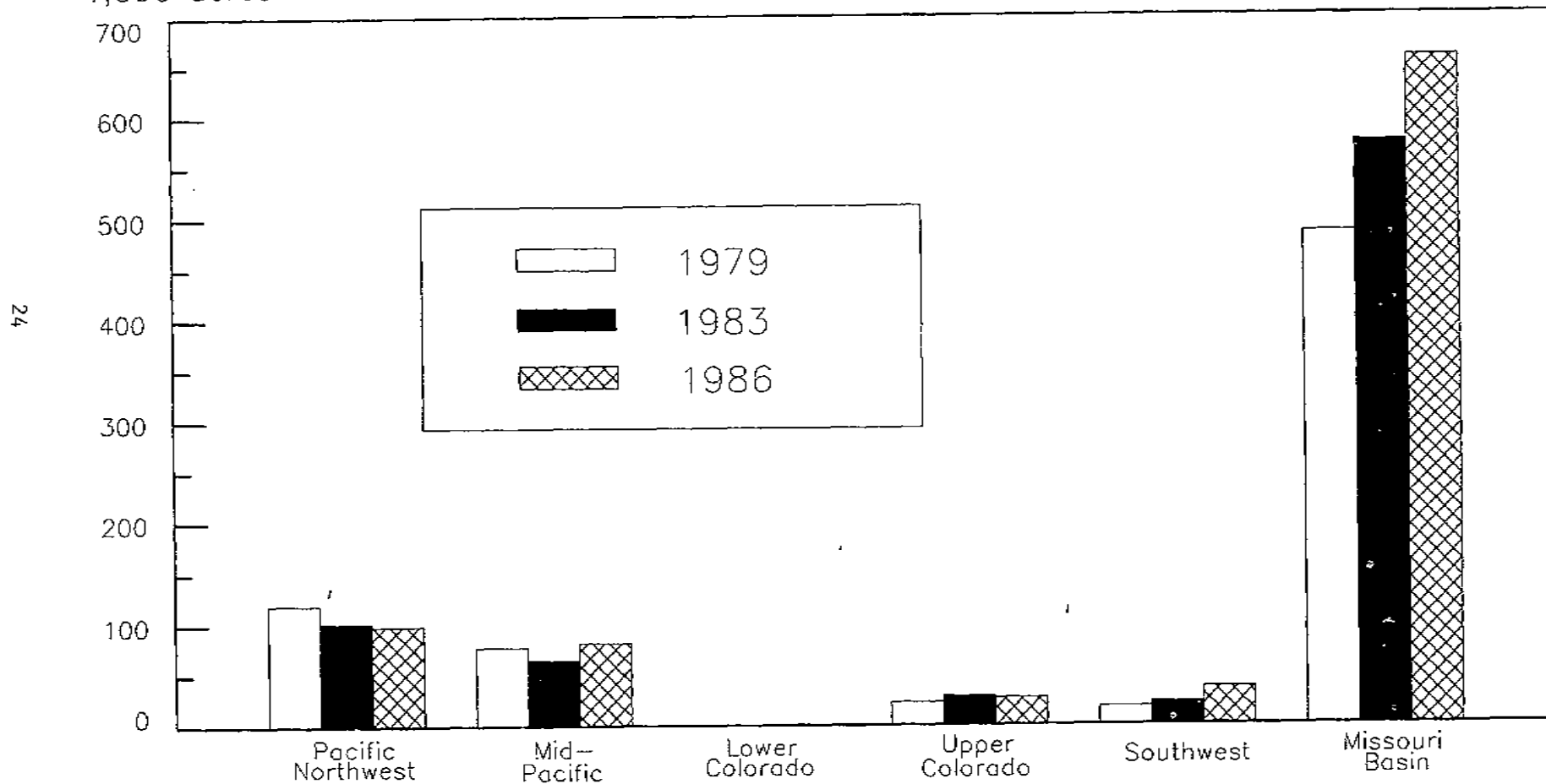


Table 9--Corn acreage and production, full and supplemental service

Year and item	BuRec crop area	Share of BuRec acreage	BuRec corn production	National corn production	BuRec share of national corn production
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 bushels----</u>		<u>Percent</u>
1986	903,923	9.16	119,262	8,249,864	1.45
1985	1,016,534	10.34	129,028	8,876,706	1.45
1984	941,867	9.58	120,060	7,674,020	1.56
1983	793,621	8.51	94,165	4,174,678	2.26
1982	885,331	8.64	103,659	8,235,101	1.26
1981	801,654	7.96	96,875	8,118,650	1.19
1980	732,728	7.28	79,274	8,639,396	.92
1979	725,646	7.35	86,292	7,928,139	1.09
Average annual change	NA	.39**	NA	NA	.80**
Change during PIK	NA	NS	NA	NA	.94**

NA = Not applicable; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.
1/ BuRec corn acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 10--Upland and pima cotton acreage, full and supplemental service, by region 1/

Year and item	Mid-Pacific	Lower Colorado	Southwest	Total
<u>Acres</u>				
1986	439,554	106,083	125,478	671,115
1985	498,786	107,050	124,918	730,754
1984	546,491	129,548	136,857	812,896
1983	401,528	108,602	106,918	617,048
1982	534,423	183,196	132,768	850,387
1981	588,280	243,365	156,645	988,290
1980	594,001	236,496	195,657	1,026,154
1979	647,343	240,942	191,122	1,079,407
Average annual change	-24,459**	-23,227**	-10,229**	-57,915**
Change during PIK	-134,335**	-56,223**	-39,157**	-229,715**
<u>Percent 2/, 3/</u>				
1986	65.50	15.81	18.70	100.00
1985	68.26	14.65	17.09	100.00
1984	67.23	15.94	16.84	100.00
1983	65.07	17.60	17.33	100.00
1982	62.84	21.54	15.61	100.00
1981	59.53	24.62	15.85	100.00
1980	57.89	23.05	19.07	100.00
1979	59.97	22.32	17.71	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level.

1/ No upland and pima cotton acreage existed in the Pacific Northwest, Upper Colorado, and Missouri Basin regions.

2/ Regional cotton acreage as a percentage of total BuRec cotton acreage.

3/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 9

Cotton acreage, full and supplemental service, by region

1,000 acres

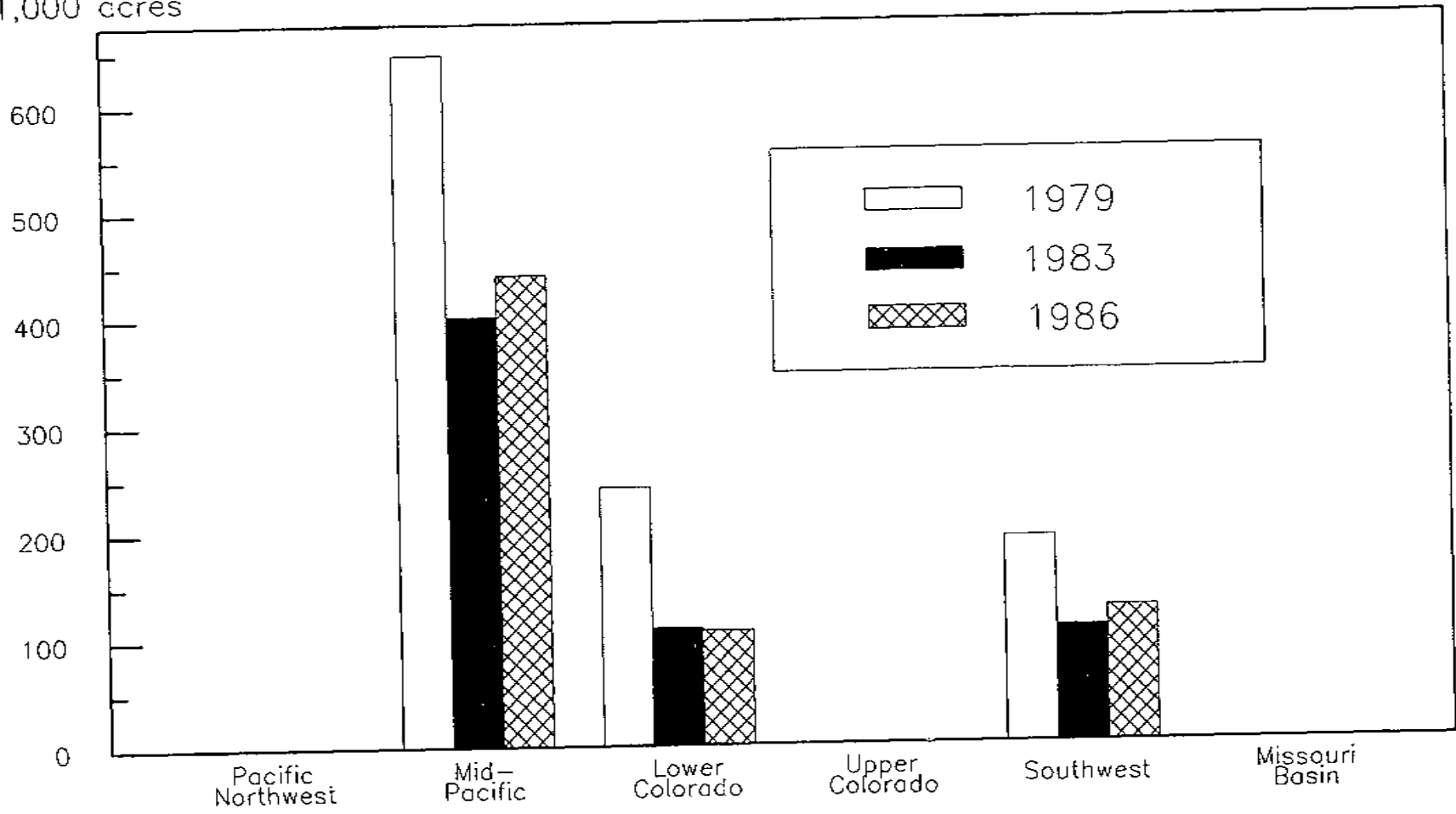


Table 11--Cotton acreage and production, full and supplemental service

Year and item	BuRec crop area	Share of BuRec acreage 1/	BuRec cotton production	National cotton production	BuRec share of national cotton production
	Acres	Percent	----1,000 bales----		Percent
1986	671,115	6.80	1,455	9,731	14.95
1985	730,754	7.43	1,656	13,432	12.33
1984	812,896	8.27	1,809	12,982	13.93
1983	617,048	6.62	1,250	7,771	16.09
1982	850,387	8.29	1,999	11,963	16.71
1981	988,290	9.81	2,412	15,646	15.42
1980	1,026,154	10.20	2,039	11,122	18.33
1979	1,079,407	10.93	2,209	14,629	15.10
Average annual change	NA	-.56**	NA	NA	-.44*
Change during PIK	NA	-1.88**	NA	NA	NS

NA = Not applicable; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec cotton acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 12--Oat acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	17,294	19,643	853	10,183	1,139	22,640	71,752
1985	16,679	17,254	611	9,736	1,303	23,097	68,680
1984	22,575	12,274	1,075	10,744	1,896	20,866	69,430
1983	16,708	11,976	380	10,437	1,002	27,685	68,188
1982	19,801	12,694	1,007	12,292	2,025	27,614	75,433
1981	16,176	20,556	683	10,967	1,156	24,545	74,083
1980	19,373	20,283	749	11,385	1,045	24,019	76,854
1979	18,501	23,979	525	12,024	1,059	26,497	82,585
Average annual change	NS	NS	NS	-276*	NS	-553*	-1,581**
Change during PIK	NS	NS	-423*	NS	NS	3,818*	-5,024*
<u>Percent 1/, 2/</u>							
1986	24.10	27.38	1.19	14.19	1.59	31.55	100.00
1985	24.29	25.12	.89	14.18	1.90	33.63	100.00
1984	32.51	17.68	1.55	15.47	2.73	30.05	100.00
1983	24.50	17.56	.56	15.31	1.47	40.60	100.00
1982	26.25	16.83	1.33	16.30	2.68	36.61	100.00
1981	21.83	27.75	.92	14.80	1.56	33.13	100.00
1980	25.21	26.39	.97	14.81	1.36	31.25	100.00
1979	22.40	29.04	.64	14.56	1.28	32.08	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;
 ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional oat acreage as a percentage of total BuRec oat acreage.
 2/ Percentages may not total due to rounding.
 Source: Bureau of Reclamation

Table 13--Oat acreage and production, full and supplemental service

Year and Item	BuRec crop area	Share of BuRec acreage 1/	BuRec oat production	National oat production	BuRec share of national oat production
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 bushels----</u>		<u>Percent</u>
1986	71,752	0.73	5,404	386,356	1.40
1985	68,680	.70	5,242	520,800	1.01
1984	69,430	.71	5,482	473,661	1.16
1983	68,188	.73	5,066	476,961	1.06
1982	75,433	.74	5,525	592,630	.93
1981	74,083	.74	5,358	509,529	1.05
1980	76,854	.76	5,985	458,792	1.30
1979	82,585	.84	5,949	526,748	1.13
Average annual change	NA	-.014**	NA	NA	NS
Change during PIK	NA	NS	NA	NA	NS

NA = Not applicable; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.
 1/ BuRec oat acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 14--Rice acreage and production, full and supplemental service

Year and item	BuRec rice area	Share of BuRec acreage 1/	BuRec rice production	National rice production	BuRec share of national rice production
	Acres	Percent	-----1,000 cwt-----		Percent
1986	208,723	2.12	15,032	133,356	11.27
1985	217,756 2/	2.21	14,400	134,913	10.67
1984	232,757	2.37	18,880	138,810	13.60
1983	171,606	1.84	11,286	99,720	11.32
1982	297,325	2.90	19,298	153,637	12.56
1981	298,434	2.96	19,584	182,742	10.72
1980	284,169	2.82	17,355	146,150	11.87
1979	263,132 3/	2.66	16,460	131,947	12.47
Average annual change	NA	-.11**	NA	NA	NS
Change during PIK	NA	-.68**	NA	NA	NS

NA = Not applicable; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec rice acreage as a percentage of total BuRec crop acreage.

2/ Includes 40 acres of rice production in the Pacific Northwest region.

3/ Includes 354 acres of rice production in the Missouri Basin region.

Source: Bureau of Reclamation

Table 15--Sorghum acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	1,045	16,198	10,155	274	32,782	28,539	88,993
1985	916	10,132	10,040	234	33,134	22,968	77,424
1984	848	15,591	11,220	103	40,010	21,225	88,997
1983	861	14,791	9,197	185	40,254	22,212	87,500
1982	107	24,768	10,268	120	61,344	56,280	152,887
1981	153	18,362	12,274	20	54,807	11,127	96,743
1980	69	28,490	13,519	575	36,577	10,586	89,816
1979	170	24,958	12,026	111	46,721	11,568	95,554
Average annual change	154**	-1,995**	-390**	NS	NS	NS	NS
Change during PIK	301*	NS	-1,937**	NS	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	1.17	18.20	11.41	0.31	36.84	32.07	100.00
1985	1.18	13.09	12.97	.30	42.80	29.67	100.00
1984	.95	17.52	12.61	.12	44.96	23.85	100.00
1983	.98	16.90	10.51	.21	46.00	25.39	100.00
1982	.07	16.20	6.72	.08	40.12	36.81	100.00
1981	.16	18.98	12.69	.02	56.65	11.50	100.00
1980	.08	31.72	15.05	.64	40.72	11.79	100.00
1979	.18	26.12	12.59	.12	48.89	12.11	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional sorghum acreage as a percentage of total BuRec sorghum acreage.
 2/ Percentages may not total due to rounding.
 Source: Bureau of Reclamation

Table 16--Sorghum acreage and production, full and supplemental service

Year and item	BuRec sorghum area	Share of BuRec acreage 1/	BuRec sorghum production	National sorghum production	BuRec share of national sorghum production
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 bushels----</u>		<u>Percent</u>
1986	88,993	0.90	8,199	938,124	0.87
1985	77,424	.79	6,380	1,120,271	.57
1984	88,997	.91	7,263	866,241	.84
1983	87,500	.94	6,606	487,521	1.36
1982	152,887	1.49	12,271	835,083	1.47
1981	96,743	.96	7,376	875,835	.84
1980	89,816	.89	6,793	579,343	1.17
1979	95,554	.97	7,171	807,422	.89
Average annual change	NA	NS	NA	NA	NS
Change during PIK	NA	NS	NA	NA	NS

NA = Not applicable; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec sorghum acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 17--Soybean acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	73	10	78	687	727	16,277	17,852
1985	4	5	0	35	998	19,015	20,057
1984	9	444	5	42	1,376	18,417	20,293
1983	324	3	0	0	1,339	13,409	15,075
1982	157	0	327	0	1,534	12,148	14,166
1981	359	0	145	0	1,401	10,615	12,520
1980	70	162	38	0	1,031	8,328	9,629
1979	162	2,826	3,734	0	3,018	7,022	16,762
Average annual change	NS	-224*	-310*	63*	-196**	1,709**	1,016**
Change during PIK	NS	NS	NS	NS	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	0.41	0.06	0.44	3.85	4.07	91.18	100.00
1985	.02	.02	0	.17	4.98	94.80	100.00
1984	.04	2.19	.02	.21	6.78	90.76	100.00
1983	2.15	.02	0	0	8.88	88.95	100.00
1982	1.11	0	2.31	0	10.83	85.75	100.00
1981	2.87	0	1.16	0	11.19	84.78	100.00
1980	.73	1.68	.39	0	10.71	86.49	100.00
1979	.97	16.86	22.28	0	18.01	41.89	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional soybean acreage as a percentage of total BuRec soybean acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Table 18--Soybean acreage and production, full and supplemental service

Year and item	BuRec soybean area	Share of BuRec acreage 1/	BuRec soybean production	National soybean production	BuRec share of national soybean production
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 bushels----</u>		<u>Percent</u>
1986	17,852	0.18	768	1,940,101	0.04
1985	20,057	.20	786	2,098,531	.04
1984	20,293	.21	779	1,860,863	.04
1983	15,075	.16	611	1,635,772	.04
1982	14,166	.14	533	2,190,297	.02
1981	12,520	.12	546	1,989,110	.03
1980	9,629	.10	386	1,797,543	.02
1979	16,762	.17	613	2,260,665	.03
Average annual change	NA	.10*	NA	NA	.26**
Change during PIK	NA	NS	NA	NA	NS

NA = Not applicable; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec soybean acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 19--Sugar beet acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	113,704	48,477	34,048	0	200	133,275	329,704
1985	117,203	49,930	37,340	0	0	86,213	290,686
1984	104,987	52,913	38,150	0	0	106,948	302,998
1983	100,726	39,367	39,525	0	0	107,950	287,568
1982	94,829	40,809	41,713	0	0	115,304	292,655
1981	99,201	61,845	48,516	800	0	148,988	359,350
1980	95,601	62,071	39,667	2,020	0	163,601	362,960
1979	70,679	52,113	51,614	2,647	0	152,087	329,140
Average annual change	5,168**	NS	-1,937**	-362**	NS	-7,558**	NS
Change during PIK	NS	-12,534*	NS	NS	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	34.49	14.70	10.33	0	0.06	40.42	100.00
1985	40.32	17.18	12.85	0	0	29.66	100.00
1984	34.65	17.46	12.59	0	0	35.30	100.00
1983	35.03	13.69	13.74	0	0	37.54	100.00
1982	32.40	13.94	14.25	0	0	39.40	100.00
1981	27.61	17.21	13.50	.22	0	41.46	100.00
1980	26.34	17.10	10.93	.56	0	45.07	100.00
1979	21.47	15.83	15.68	.80	0	46.21	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional sugar beet acreage as a percentage of total BuRec sugar beet acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 10

Sugar beet acreage, full and supplemental service, by region

1,000 acres

37

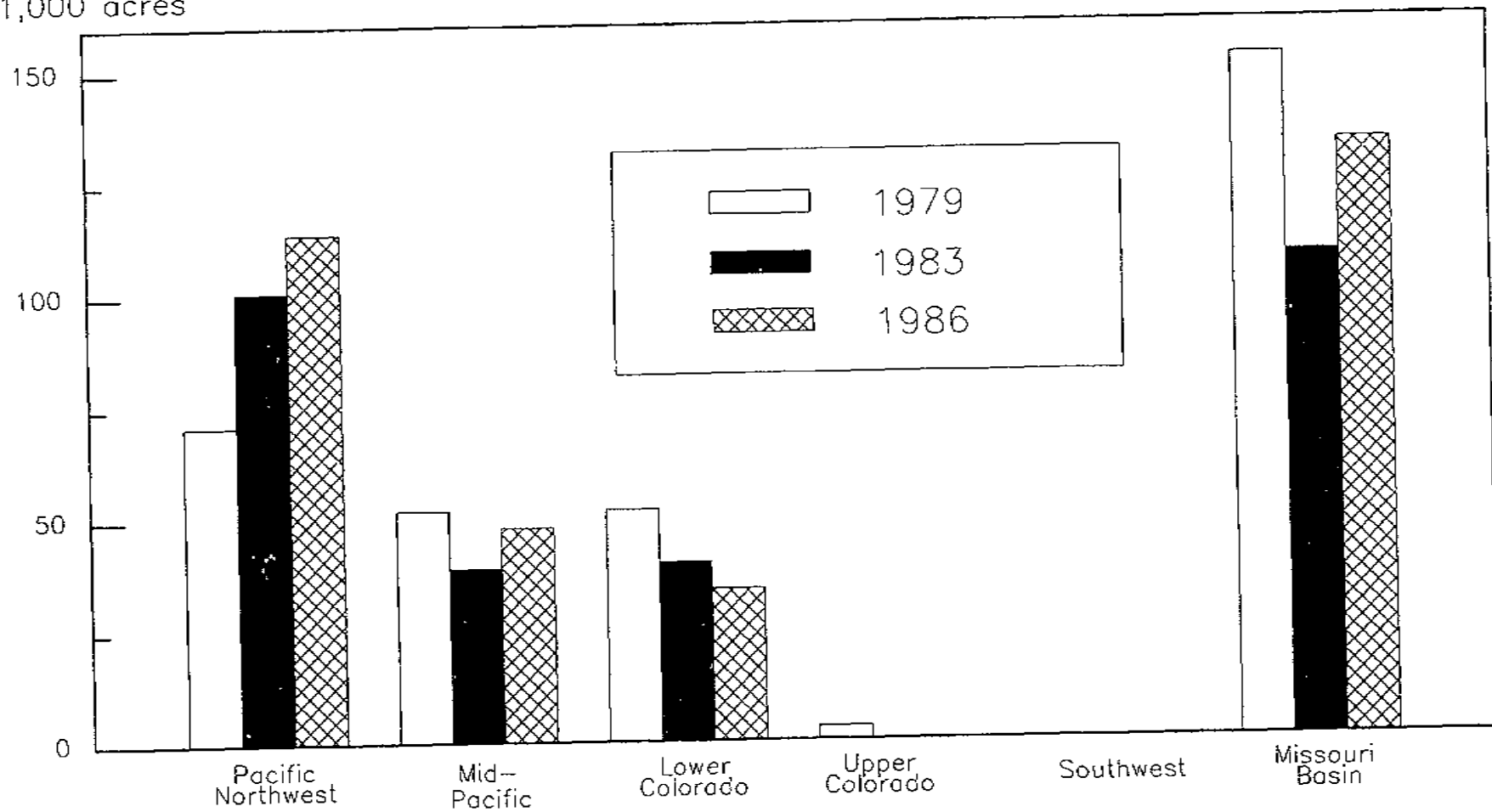


Table 20--Sugar beet acreage and production, full and supplemental service

Year and item	BuRec sugar beet area	Share of BuRec acreage 1/	BuRec sugar beet production	National sugar beet production	BuRec share of national sugar beet production
	<u>Acres</u>	<u>Percent</u>	<u>-----1,000 tons-----</u>		<u>Percent</u>
1986	329,704	3.34	7,811	25,162	31.04
1985	290,686	2.96	6,643	22,529	29.49
1984	302,998	3.08	6,729	22,134	30.40
1983	287,568	3.08	6,213	20,992	29.60
1982	292,655	2.85	6,420	20,894	30.73
1981	359,350	3.57	8,337	27,538	30.27
1980	362,960	3.61	7,965	23,502	33.89
1979	329,140	3.33	6,893	21,996	31.34
Average annual change	NA	NS	NA	NA	NS
Change during PIK	NA	NS	NA	NA	NS

NA = Not applicable; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec sugar beet acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 21--Wheat acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	354,901	148,514	146,734	23,348	19,618	87,232	780,347
1985	390,287	182,054	135,592	22,457	22,010	103,138	855,538
1984	397,364	166,408	160,160	23,455	24,290	84,510	856,187
1983	420,086	132,164	145,117	25,319	20,713	73,709	817,108
1982	480,721	219,389	231,309	21,101	31,693	70,538	1,054,751
1981	435,076	257,028	221,338	22,724	34,523	60,738	1,031,427
1980	460,881	233,302	202,109	20,812	30,015	50,990	998,109
1979	420,943	114,697	130,256	19,130	15,901	42,636	743,563
Average annual change	-11,856**	NS	NS	487**	NS	7,732**	NS
Change during PIK	NS	NS	NS	3,179**	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	45.48	19.03	18.80	2.99	2.51	11.18	100.00
1985	45.62	21.28	15.85	2.62	2.57	12.06	100.00
1984	46.41	19.44	18.71	2.74	2.84	9.87	100.00
1983	51.41	16.17	17.76	3.10	2.53	9.02	100.00
1982	45.58	20.80	21.93	2.00	3.00	6.69	100.00
1981	42.18	24.92	21.46	2.20	3.35	5.89	100.00
1980	46.18	23.37	20.25	2.09	3.01	5.11	100.00
1979	56.61	15.43	17.52	2.57	2.14	5.73	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional wheat acreage as a percentage of total BuRec wheat acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 11

Wheat acreage, full and supplemental service, by region

1,000 acres

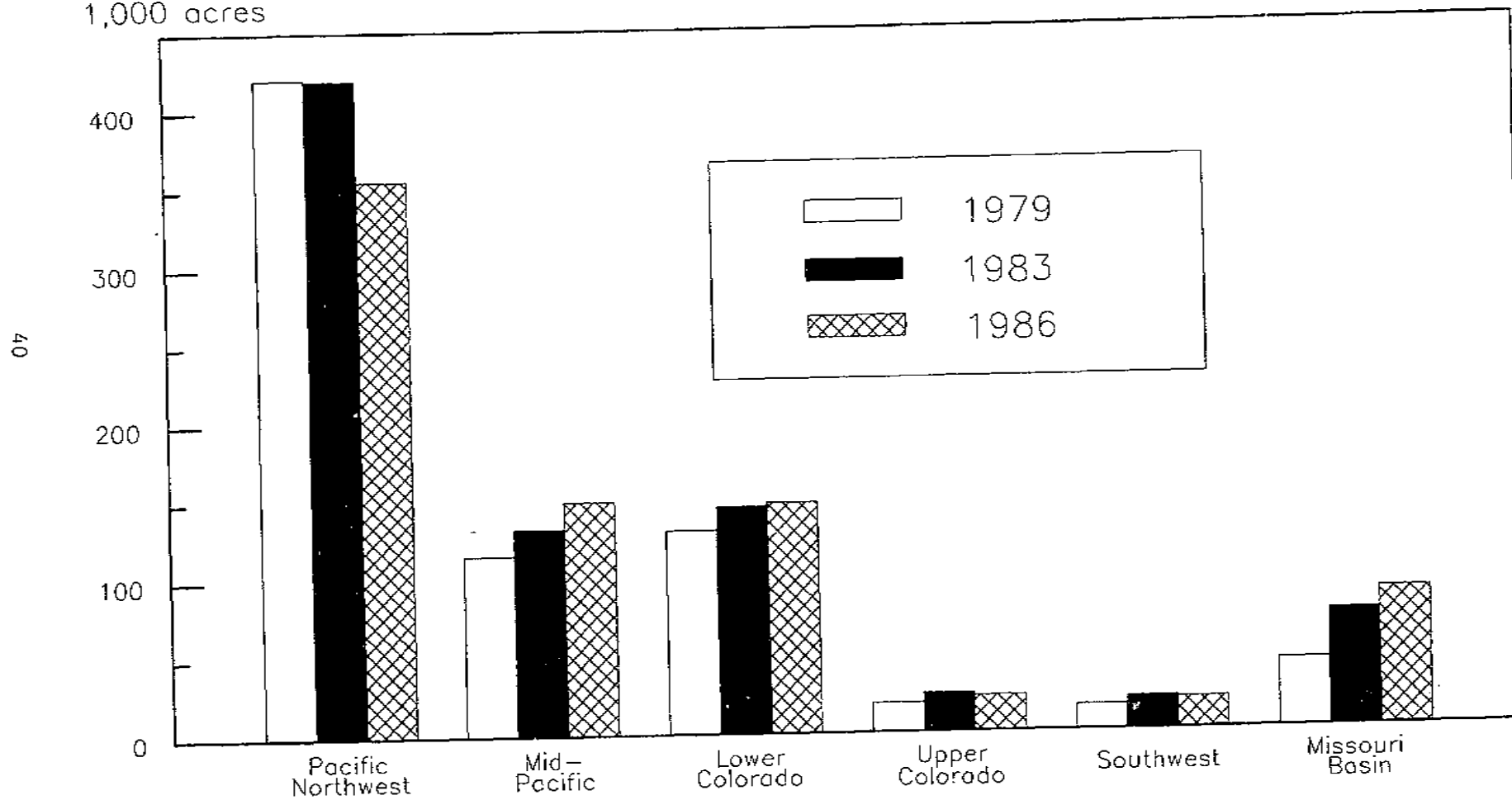


Table 22--Wheat acreage and production, full and supplemental service

Year and item	BuRec wheat area	Share of BuRec acreage 1/	BuRec wheat production	National wheat production	BuRec share of national wheat production
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 bushels----</u>		<u>Percent</u>
1986	780,347	7.91	64,502	2,091,635	3.08
1985	855,538	8.70	72,320	2,425,105	2.98
1984	856,187	8.71	76,086	2,594,777	2.93
1983	817,108	8.76	72,324	2,419,824	2.99
1982	1,054,751	10.29	85,029	2,764,967	3.08
1981	1,031,427	10.24	82,088	2,785,357	2.95
1980	998,109	9.92	82,681	2,380,934	3.47
1979	743,563	7.53	57,626	2,134,060	2.70
Average annual change	NA	NS	NA	NA	NS
Change during PIK	NA	NS	NA	NA	NS

NA = Not applicable; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec wheat acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 23--Specialty crop acreage, full and supplemental service, by region 1/

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	618,836	1,107,202	311,287	25,244	76,832	43,878	2,183,279
1985	622,719	1,033,351	305,268	28,476	75,055	43,896	2,108,765
1984	584,349	996,192	282,650	26,734	67,881	37,238	1,995,044
1983	563,181	996,934	260,630	26,682	88,460	45,861	1,981,748
1982	533,959	1,015,839	248,397	26,232	78,782	43,766	1,946,975
1981	512,956	986,211	233,022	29,250	73,093	30,525	1,865,057
1980	511,346	957,948	242,239	27,357	69,630	29,023	1,837,543
1979	577,460	975,160	255,519	25,307	69,336	35,343	1,938,125
Average annual change	13,097**	15,890**	10,480**	NS	NS	1,776**	41,920**
Change during PIK	NS	NS	NS	NS	15,118**	NS	NS
<u>Percent 2/, 3/</u>							
1986	28.34	50.71	14.26	1.16	3.52	2.01	100.00
1985	29.53	49.00	14.48	1.35	3.56	2.08	100.00
1984	29.29	49.93	14.17	1.34	3.40	1.87	100.00
1983	28.42	50.31	13.15	1.35	4.46	2.31	100.00
1982	27.43	52.18	12.76	1.35	4.05	2.25	100.00
1981	27.50	52.88	12.49	1.57	3.92	1.64	100.00
1980	27.83	52.13	13.18	1.49	3.79	1.58	100.00
1979	29.79	50.31	13.18	1.31	3.58	1.82	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level;
 NS = Not significant.

1/ Includes vegetable, fruit, nut, nursery, and seed crops.

2/ Regional specialty crop acreage as a percentage of total BuRec specialty crop acreage.

3/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 12

Specialty crop acreage, full and supplemental service, by region

1,000 acres

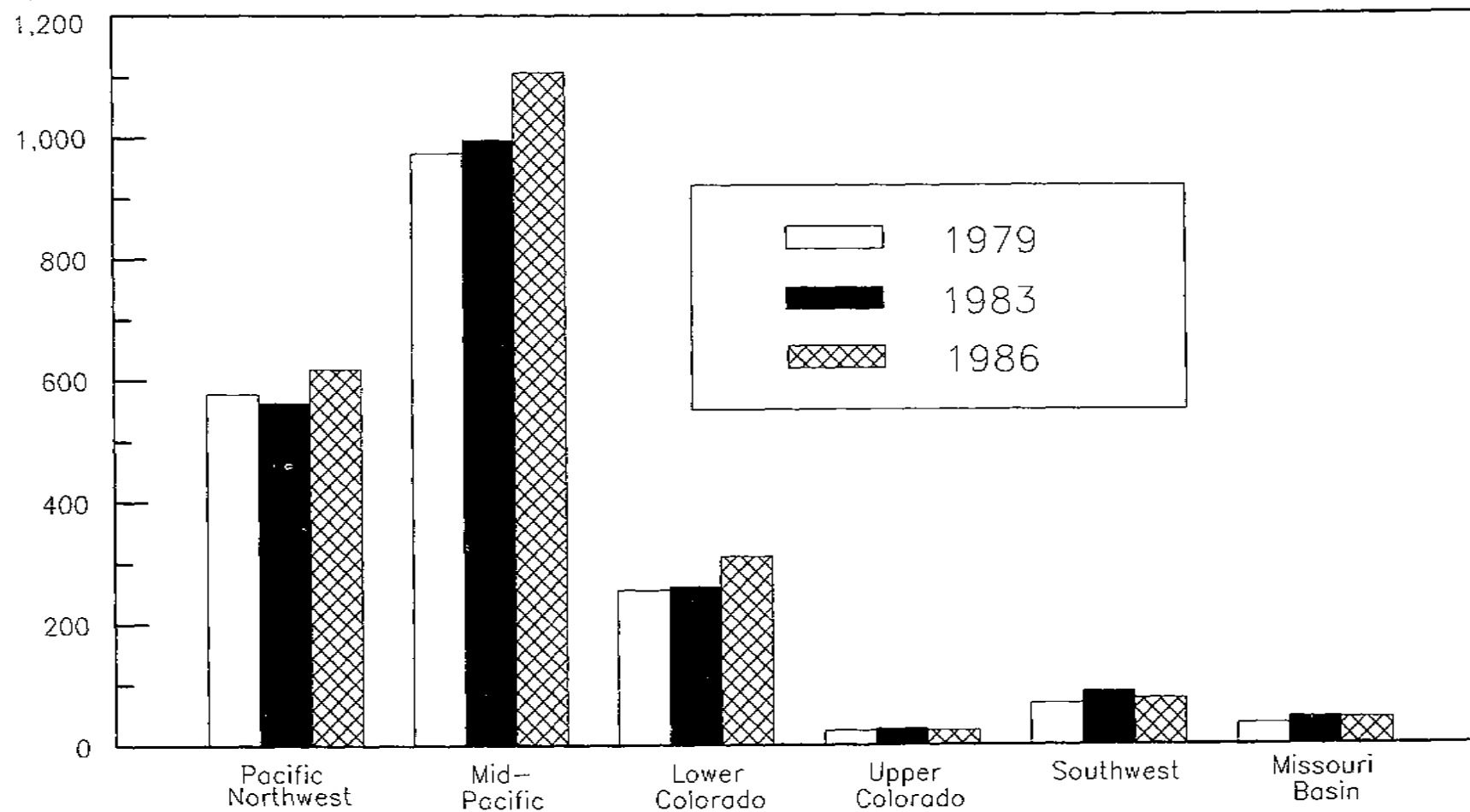


Table 24--Vegetable acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	319,142	372,942	169,438	10,297	43,373	32,743	947,935
1985	337,927	352,994	173,728	10,856	42,844	36,919	955,268
1984	302,844	340,810	158,204	9,214	38,895	28,795	878,762
1983	291,848	353,777	139,989	9,206	44,193	37,319	876,332
1982	272,196	346,717	142,575	9,323	41,291	35,222	847,324
1981	266,881	307,380	136,359	10,674	34,300	24,617	780,211
1980	256,508	277,627	141,443	11,036	37,055	25,039	748,708
1979	286,561	327,250	154,868	10,262	38,537	30,735	848,213
Average annual change	9,141**	9,379**	4,047**	NS	896**	NS	24,419**
Change during PIK	NS	NS	NS	NS	4,210*	NS	NS
<u>Percent 1/, 2/</u>							
1986	33.67	39.34	17.87	1.09	4.58	3.45	100.00
1985	35.38	36.95	18.19	1.14	4.49	3.86	100.00
1984	34.46	38.78	18.00	1.05	4.43	3.28	100.00
1983	33.30	40.37	15.97	1.05	5.04	4.26	100.00
1982	32.12	40.92	16.83	1.10	4.87	4.16	100.00
1981	34.21	39.40	17.48	1.37	4.40	3.16	100.00
1980	34.26	37.08	18.89	1.47	4.95	3.34	100.00
1979	33.78	38.58	18.26	1.21	4.54	3.62	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;

** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional vegetable acreage as a percentage of total BuRec vegetable acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 13

Vegetable acreage, full and supplemental service, by region

1,000 acres

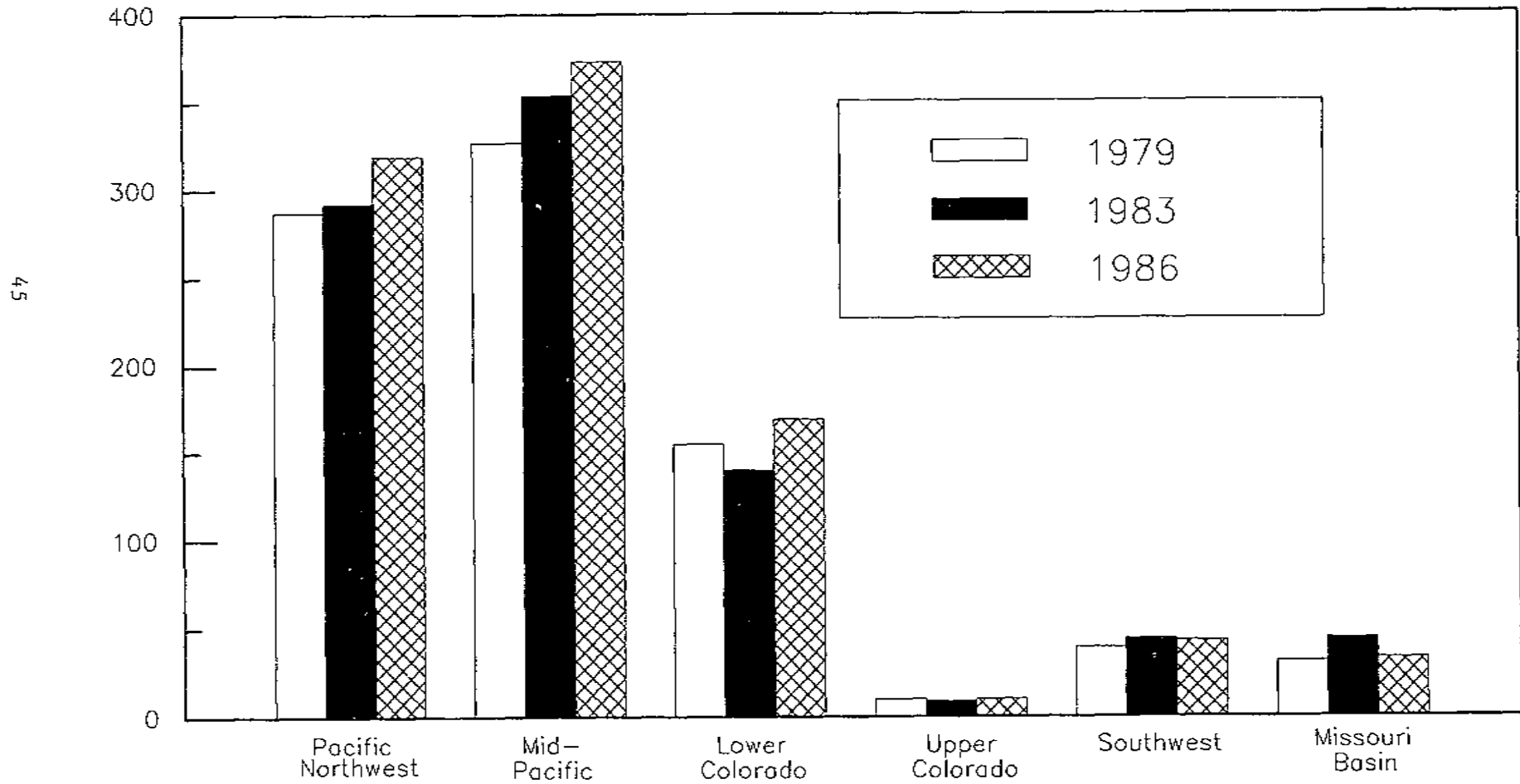


Table 25--Vegetable acreage and production, full and supplemental service

Year and item	BuRec vegetable area	Share of BuRec acreage 1/	BuRec vegetable production	National vegetable production	BuRec share of national vegetable production
	Acres	Percent	-----1,000 tons-----		Percent
1986	947,935	9.61	13,958	22,272	62.67
1985	955,268	9.71	13,992	22,688	61.67
1984	878,762	8.94	13,154	22,870	57.52
1983	876,332	9.40	13,252	20,166	65.71
1982	847,324	8.26	12,149	21,540	56.40
1981	780,211	7.74	10,511	24,275	43.30
1980	748,708	7.44	9,916	24,146	41.07
1979	848,213	8.59	11,318	26,057	43.44
Average annual change	NA	.27**	NA	NA	3.31**
Change during PIK	NA	NS	NA	NA	11.53**

NA = Not applicable; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.
 1/ BuRec vegetable acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 26--Nut acreage, full and supplemental service, by region 1/

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Southwest	Total
	<u>Acres</u>				
1986	162	203,516	3,897	19,076	226,651
1985	159	163,144	2,655	18,465	184,423
1984	23	159,919	1,444	18,446	179,832
1983	21	161,072	813	17,270	179,176
1982	31	177,950	820	16,366	195,167
1981	39	184,013	783	15,212	200,047
1980	36	179,559	882	14,703	195,180
1979	26	167,143	868	13,573	181,610
Average annual change	18**	NS	394**	805**	NS
Change during PIK	NS	NS	NS	NS	NS
	<u>Percent 2/, 3/</u>				
1986	0.07	89.79	1.72	8.42	100.00
1985	.09	88.46	1.44	10.01	100.00
1984	.01	88.93	.80	10.26	100.00
1983	.01	89.90	.45	9.64	100.00
1982	.02	91.18	.42	8.39	100.00
1981	.02	91.98	.39	7.60	100.00
1980	.02	92.00	.45	7.53	100.00
1979	.01	92.03	.48	7.47	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ No nut acreage existed in the Upper Colorado and Missouri Basin regions.

2/ Regional nut acreage as a percentage of total BuRec nut acreage.

3/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 14

Nut acreage, full and supplemental service, by region

1,000 acres

48

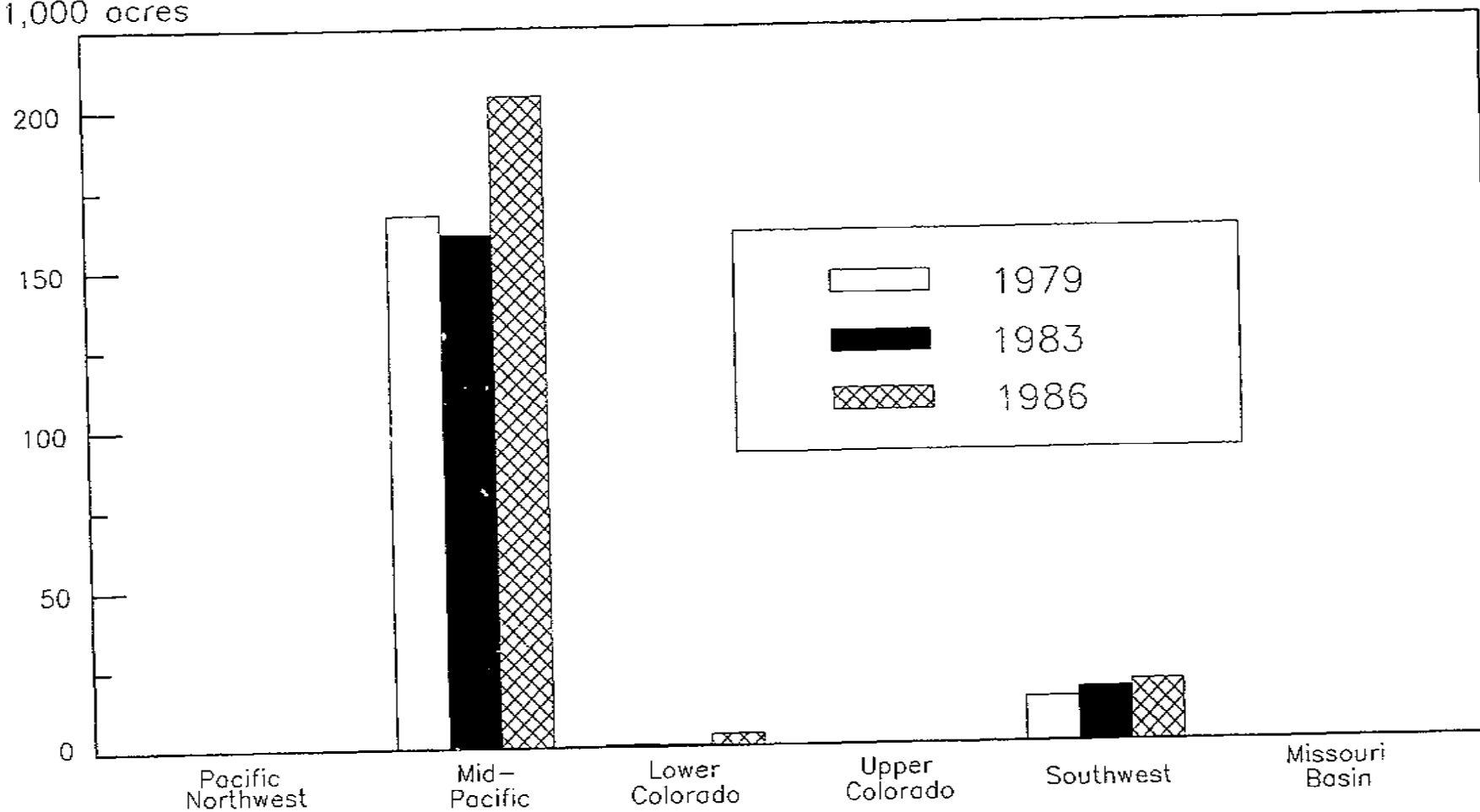


Table 27--Nut acreage and production, full and supplemental service

Year and item	BuRec nut area	Share of BuRec acreage 1/	BuRec nut production	National nut production	BuRec share of national nut production
	<u>Acres</u>	<u>Percent</u>	<u>----1,000 tons----</u>		<u>Percent</u>
1986	226,651	2.30	124	592	20.88
1985	184,423	1.88	147	774	19.03
1984	179,832	1.83	138	860	16.06
1983	179,176	1.92	121	574	21.08
1982	195,167	1.90	157	686	22.96
1981	200,047	1.99	150	768	19.58
1980	195,180	1.94	154	599	25.67
1979	181,610	1.84	143	652	21.88
Average annual change	NA	NS	NA	NA	NS
Change during PIK	NA	NS	NA	NA	NS

NA = Not applicable; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec nut acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 28--Fruit acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	175,245	459,169	93,895	14,182	9,532	0	752,023
1985	163,352	450,732	88,161	16,724	8,078	22	727,069
1984	167,433	431,930	86,977	16,184	1,804	11	704,339
1983	158,755	426,704	80,178	15,642	18,956	26	700,261
1982	144,332	428,370	77,431	14,396	15,382	0	679,911
1981	142,069	426,196	73,450	15,117	14,483	0	671,315
1980	143,549	430,243	78,576	14,052	14,258	15	680,693
1979	139,066	420,581	78,409	13,241	14,031	15	665,343
Average annual change	5,245**	4,755**	2,420**	282*	1,255**	NS	11,447**
Change during PIK	NS	NS	NS	NS	8,592**	NS	NS
<u>Percent 1/, 2/</u>							
1986	23.30	61.06	12.49	1.89	1.27	0	100.00
1985	22.47	61.99	12.13	2.30	1.11	--	100.00
1984	23.77	61.32	12.35	2.30	.26	--	100.00
1983	22.67	60.93	11.45	2.23	2.71	--	100.00
1982	21.23	63.00	11.39	2.12	2.26	0	100.00
1981	21.16	63.49	10.94	2.25	2.16	--	100.00
1980	21.09	63.21	11.54	2.06	2.09	--	100.00
1979	20.90	63.21	11.78	1.99	2.11	--	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant; -- = Negligible.
 1/ Regional fruit acreage as a percentage of total BuRec fruit acreage.
 2/ Percentages may not total due to rounding.
 Source: Bureau of Reclamation

Figure 15

Fruit acreage, full and supplemental service, by region

1,000 acres

51

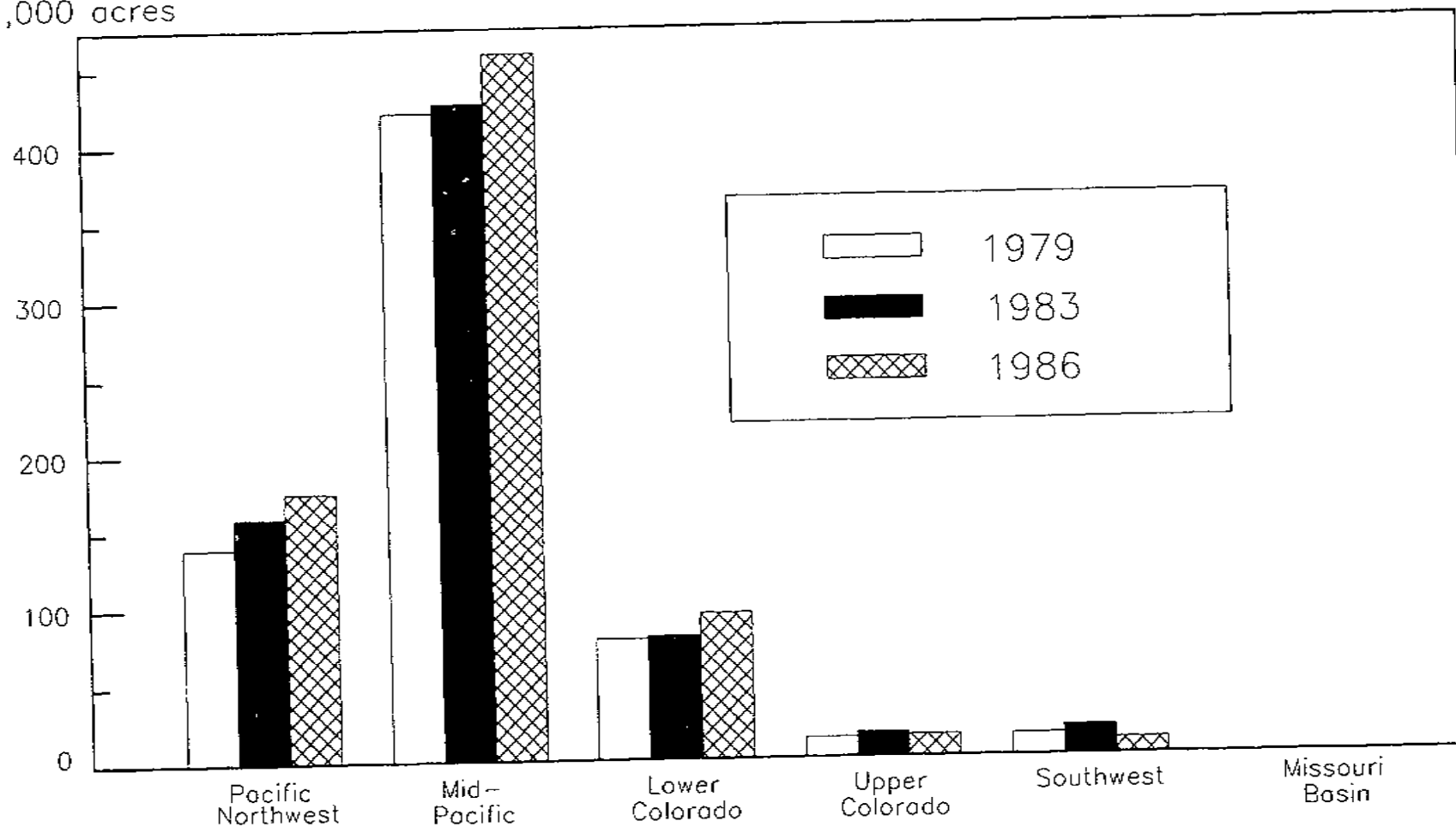


Table 29--Fruit acreage and production, full and supplemental service

Year and item	BuRec fruit area	Share of BuRec acreage 1/	BuRec fruit production	National fruit production	BuRec share of national fruit production
	<u>Acres</u>	<u>Percent</u>	<u>-----1,000 tons-----</u>		<u>Percent</u>
1986	752,023	7.62	6,303	25,054	25.16
1985	727,069	7.39	5,160	26,546	19.44
1984	704,339	7.16	5,996	25,283	23.72
1983	700,261	7.51	6,579	27,995	23.50
1982	679,911	6.63	6,097	27,583	22.10
1981	671,315	6.66	5,894	28,470	20.70
1980	680,693	6.77	5,186	31,994	16.21
1979	665,343	6.74	5,327	27,345	19.48
Average annual change	NA	.13**	NA	NA	.76**
Change during PIK	NA	.44**	NA	NA	NS

NA = Not applicable; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.

1/ BuRec fruit acreage as a percentage of total BuRec crop acreage.

Source: Bureau of Reclamation

Table 30--Nursery crop acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	3,849	10,079	2,308	498	1,314	205	18,253
1985	3,088	9,839	2,255	281	743	192	16,398
1984	3,974	8,682	1,973	328	640	164	15,761
1983	2,956	8,201	2,064	308	501	181	14,211
1982	4,107	8,196	1,793	246	553	130	15,025
1981	3,821	9,097	1,524	277	244	130	15,093
1980	4,383	9,397	1,441	52	239	231	15,743
1979	3,557	8,461	979	173	430	48	13,648
Average annual change	NS	158*	176**	43**	119**	NS	457**
Change during PIK	-840*	-996*	210*	NS	NS	NS	-1,754*
<u>Percent 1/, 2/</u>							
1986	21.09	55.22	12.64	2.73	7.20	1.12	100.00
1985	18.83	60.00	13.75	1.71	4.53	1.17	100.00
1984	25.21	55.09	12.52	2.08	4.06	1.04	100.00
1983	20.80	57.71	14.52	2.17	3.53	1.27	100.00
1982	27.33	54.55	11.93	1.64	3.68	.87	100.00
1981	25.32	60.27	10.10	1.84	1.62	.86	100.00
1980	27.84	59.69	9.15	.33	1.52	1.47	100.00
1979	26.06	61.99	7.17	1.27	3.15	.35	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional nursery crop acreage as a percentage of total BuRec nursery crop acreage.
 2/ Percentages may not total due to rounding.
 Source: Bureau of Reclamation

Table 31--Seed crop acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	120,438	61,496	41,749	267	3,537	10,930	238,417
1985	118,193	56,642	38,469	615	4,925	6,763	225,607
1984	110,075	54,851	34,052	1,008	8,096	8,268	216,350
1983	109,601	47,180	37,586	1,526	7,540	8,335	211,768
1982	113,293	54,606	25,778	2,267	5,190	8,414	209,548
1981	100,146	59,525	20,906	3,182	8,854	5,778	198,391
1980	106,870	61,122	19,897	2,217	3,375	3,738	197,219
1979	148,250	51,725	20,395	1,631	2,765	4,545	229,311
Average annual change	NS	NS	3,413**	-297**	NS	789**	NS
Change during PIK	NS	-10,194**	6,886**	NS	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	50.52	25.79	17.51	0.11	1.48	4.58	100.00
1985	52.39	25.11	17.05	.27	2.18	3.00	100.00
1984	50.88	25.35	15.74	.47	3.74	3.82	100.00
1983	51.76	22.28	17.75	.72	3.56	3.94	100.00
1982	54.07	26.06	12.30	1.08	2.48	4.02	100.00
1981	50.48	30.00	10.54	1.60	4.46	2.91	100.00
1980	54.19	30.99	10.09	1.12	1.71	1.90	100.00
1979	64.65	22.56	8.89	.71	1.21	1.98	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level;
 NS = Not significant.

1/ Regional seed crop acreage as a percentage of total BuRec seed crop acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 16

Seed crop acreage, full and supplemental service, by region

1,000 acres

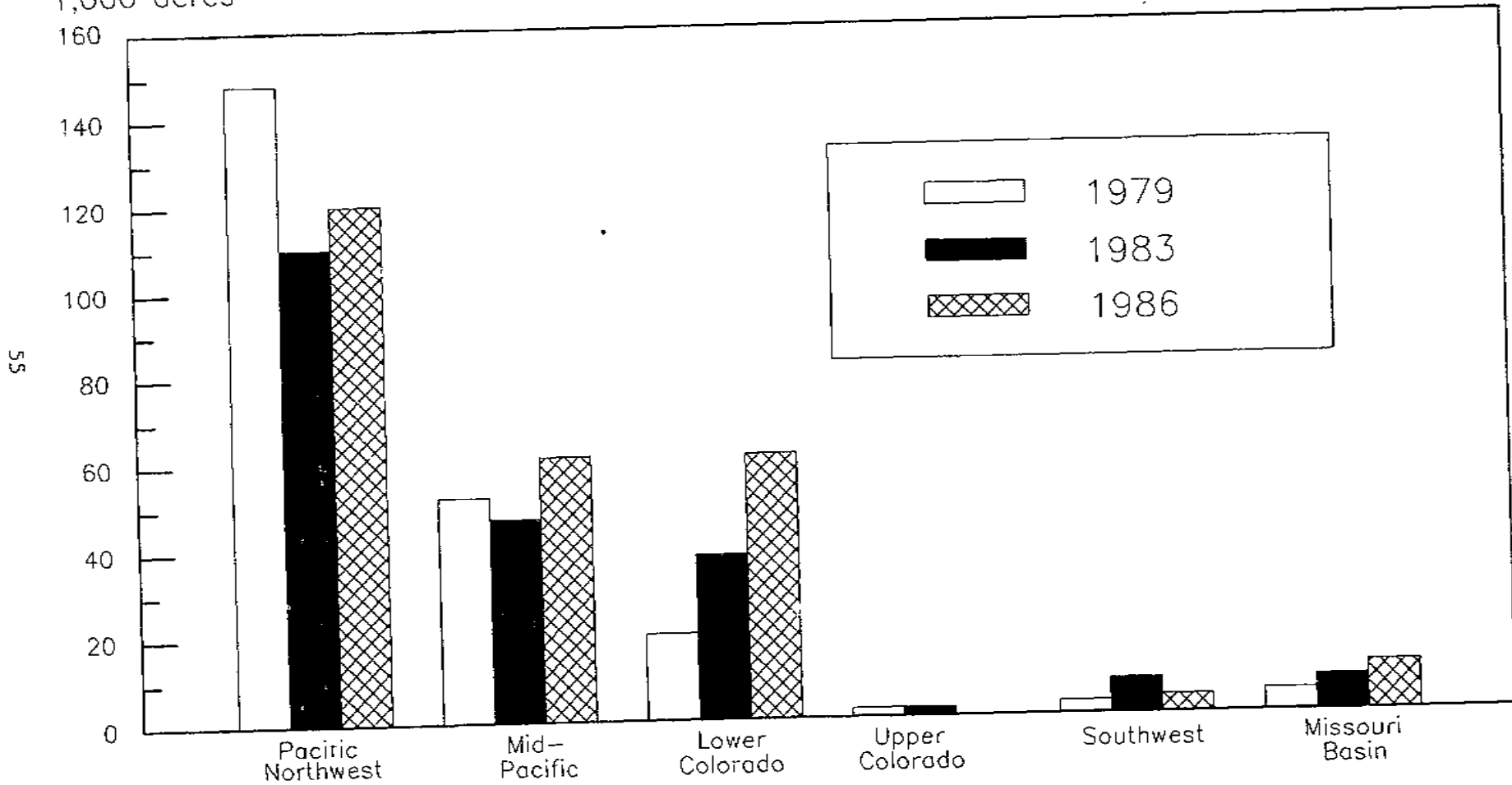


Table 32--Forage acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
	<u>Acres</u>						
1986	1,014,983	524,690	362,519	489,556	141,425	956,146	3,489,319
1985	1,028,590	494,720	361,587	481,821	148,939	882,960	3,398,617
1984	986,920	505,981	385,249	464,236	149,439	873,807	3,365,632
1983	971,898	515,308	359,789	497,544	137,658	889,979	3,372,176
1982	977,778	521,636	357,101	489,380	132,773	897,729	3,376,397
1981	970,575	529,589	316,504	480,547	129,323	761,730	3,188,268
1980	1,029,114	529,410	363,338	478,167	130,117	828,203	3,358,349
1979	1,040,017	507,870	353,231	471,097	131,626	864,274	3,368,115
Average annual change	NS	NS	NS	NS	2,732**	14,645*	18,806*
Change during PIK	NS	NS	NS	17,681*	NS	NS	NS
	<u>Percent 1/, 2/</u>						
1986	29.09	15.04	10.39	14.03	4.05	27.40	100.00
1985	30.26	14.56	10.64	14.18	4.38	25.98	100.00
1984	29.32	15.03	11.45	13.79	4.44	25.96	100.00
1983	28.82	15.28	10.67	14.75	4.08	26.39	100.00
1982	28.96	15.45	10.58	14.49	3.93	26.59	100.00
1981	30.44	16.61	9.93	15.07	4.06	23.89	100.00
1980	30.64	15.76	10.82	14.24	3.87	24.66	100.00
1979	30.88	15.08	10.49	13.99	3.91	25.66	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;
 ** = Significant at the 95-percent confidence level; NS = Not significant.
 1/ Regional forage crop acreage as a percentage of total BuRec forage acreage.
 2/ Percentages may not total due to rounding.
 Source: Bureau of Reclamation

Figure 17

Forage acreage, full and supplemental service, by region

1,000 acres

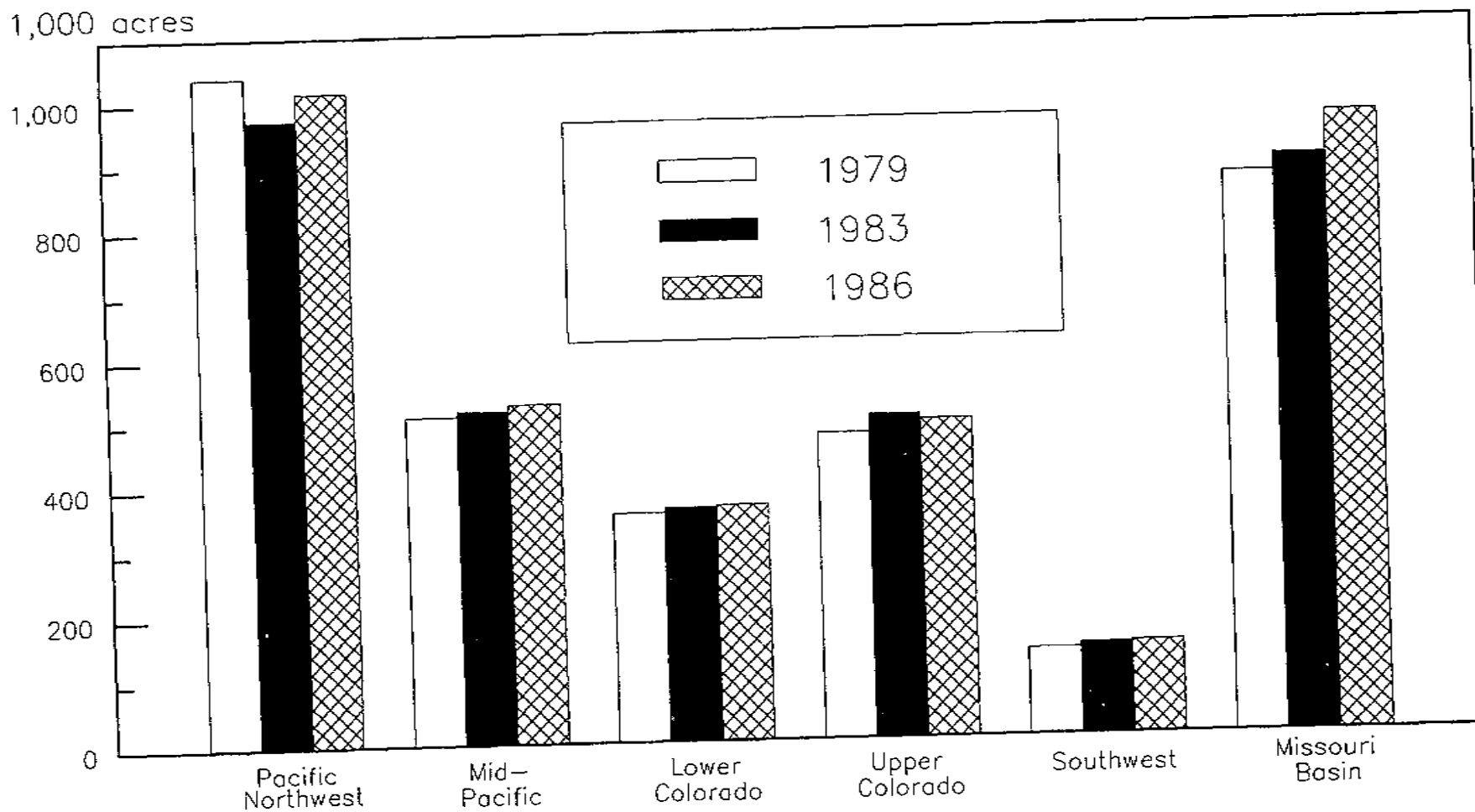


Table 33--Hay acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	640,019	337,732	300,778	267,306	92,625	668,004	2,306,464
1985	638,175	310,168	285,242	267,014	101,883	558,454	2,160,936
1984	595,781	311,239	293,058	265,051	100,442	564,883	2,130,454
1983	589,016	305,969	279,823	270,886	95,611	566,621	2,107,926
1982	565,432	315,843	272,823	264,930	92,032	592,825	2,103,885
1981	568,424	313,656	237,860	260,206	88,037	482,924	1,951,107
1980	617,021	317,499	260,897	259,724	85,695	467,587	2,008,423
1979	593,783	298,423	258,629	255,597	86,729	514,189	2,007,350
Average annual change	6,577*	2,761*	6,980**	1,568**	1,916**	20,783**	40,586**
Change during PIK	NS	NS	NS	7,157**	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	27.75	14.64	13.04	11.59	4.02	28.96	100.00
1985	29.53	14.35	13.20	12.36	4.71	25.84	100.00
1984	27.96	14.61	13.76	12.44	4.71	26.51	100.00
1983	27.94	14.52	13.27	12.85	4.54	26.88	100.00
1982	26.88	15.01	12.97	12.59	4.37	28.18	100.00
1981	29.13	16.08	12.19	13.34	4.51	24.75	100.00
1980	30.72	15.81	12.99	12.93	4.27	23.28	100.00
1979	29.58	14.87	12.88	12.73	4.32	25.62	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;

** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional hay acreage as a percentage of total BuRec hay acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 18

Hay acreage, full and supplemental service, by region

1,000 Acres

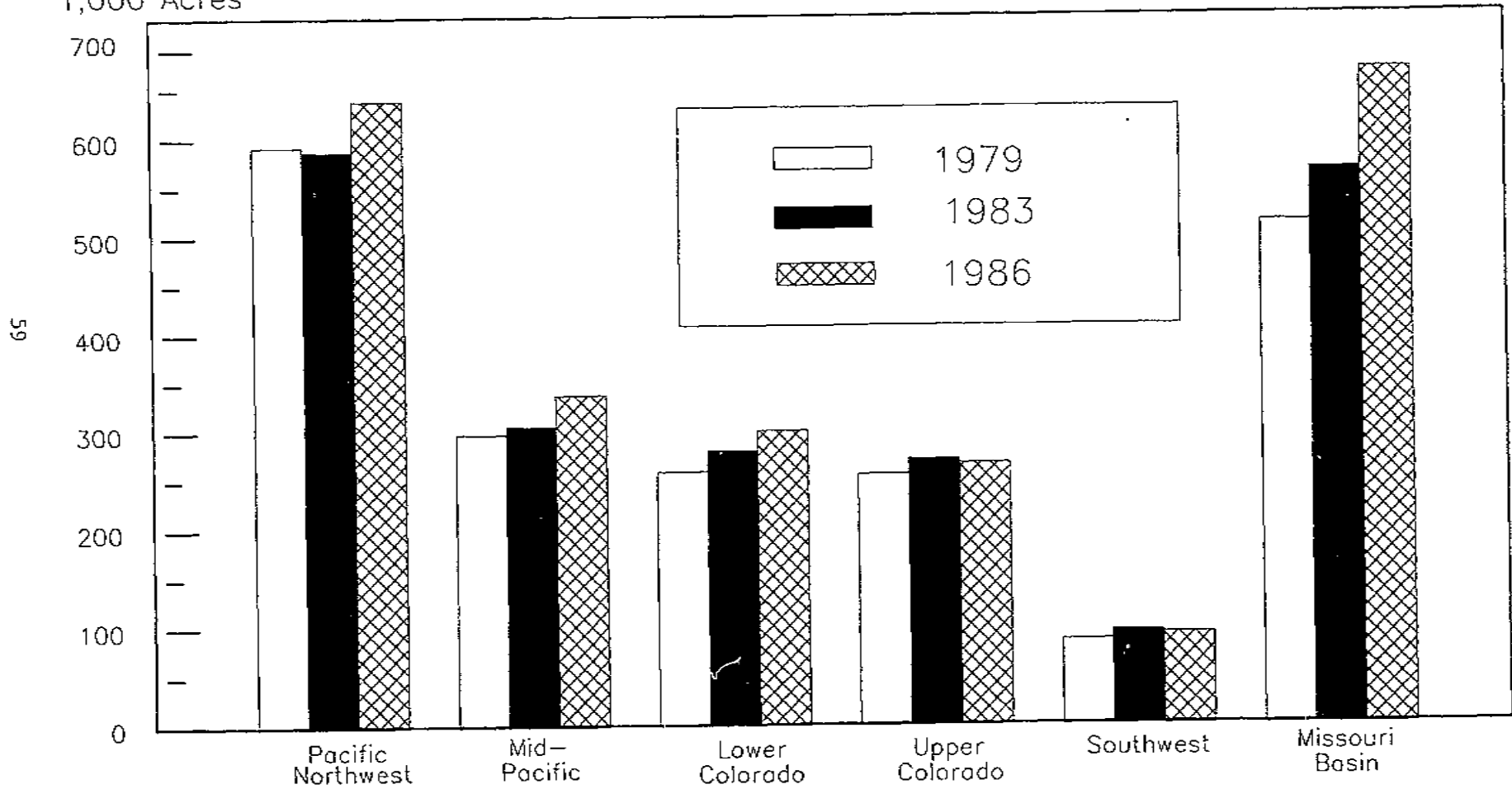


Table 34--Hay acreage and production, full and supplemental service

Year and item	BuRec hay area	Share of BuRec acreage ^{1/}	BuRec hay production	National hay production	BuRec share of national hay production
	<u>Acres</u>	<u>Percent</u>	<u>-----1,000 tons-----</u>		<u>Percent</u>
1986	2,306,464	23.37	11,039	155,529	7.10
1985	2,160,936	21.97	10,526	148,601	7.08
1984	2,130,454	21.67	10,567	150,648	7.01
1983	2,107,926	22.60	9,887	140,764	7.02
1982	2,103,885	20.52	9,857	149,241	6.60
1981	1,951,107	19.37	9,140	142,520	6.41
1980	2,008,423	19.96	9,316	130,740	7.13
1979	2,007,350	20.33	9,405	147,307	6.38
Average annual change	NA	.46**	NA	NA	.08*
Change during PIK	NA	1.31*	NA	NA	NS

NA = Not applicable; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.

^{1/} BuRec hay acreage as a percentage of total BuRec crop acreage.
Source: Bureau of Reclamation

Table 35--Alfalfa hay acreage, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	558,388	287,169	296,017	172,022	83,598	573,374	1,970,568
1985	557,998	264,492	283,184	178,554	91,628	471,881	1,847,737
1984	519,534	270,162	288,963	187,855	89,417	486,778	1,842,709
1983	515,393	258,839	275,738	189,804	87,528	498,281	1,825,583
1982	495,125	267,903	269,277	192,140	83,295	510,293	1,818,033
1981	502,908	282,619	234,714	189,437	78,315	412,587	1,700,580
1980	548,105	277,544	256,386	184,062	77,458	408,099	1,751,654
1979	532,820	258,425	254,618	179,391	77,583	452,054	1,754,891
Average annual change	NS	NS	7,027**	NS	1,750**	16,229**	28,897**
Change during PIK	NS	NS	NS	NS	NS	NS	NS
<u>Percent 1/, 2/</u>							
1986	28.34	14.57	15.02	8.73	4.24	29.10	100.00
1985	30.20	14.31	15.33	9.66	4.96	25.54	100.00
1984	28.19	14.66	15.68	10.19	4.85	26.42	100.00
1983	28.23	14.18	15.10	10.40	4.79	27.29	100.00
1982	27.23	14.74	14.81	10.57	4.58	28.07	100.00
1981	29.57	16.62	13.80	11.14	4.61	24.26	100.00
1980	31.29	15.84	14.64	10.51	4.42	23.30	100.00
1979	30.36	14.73	14.51	10.22	4.42	25.76	100.00

PIK = Payment-in-kind program; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional alfalfa acreage as a percentage of total BuRec alfalfa acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 19

Alfalfa acreage, full and supplemental service, by region

1,000 acres

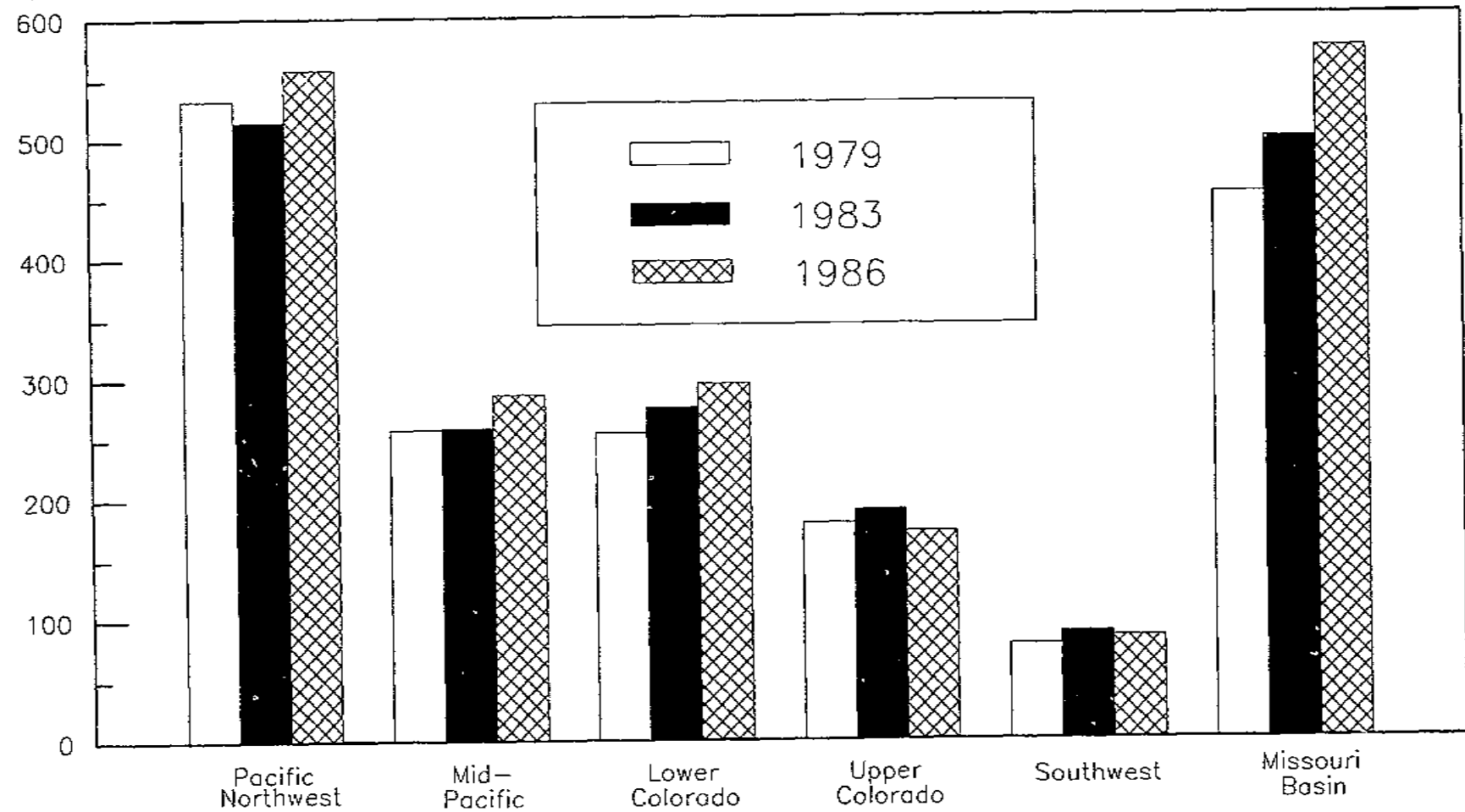


Table 36--Alfalfa acreage and production, full and supplemental service

Year and item	BuRec alfalfa area	Share of BuRec acreage ^{1/}	BuRec alfalfa production	National alfalfa production	BuRec share of national alfalfa production
	<u>Acres</u>	<u>Percent</u>	<u>-----1,000 tons-----</u>		<u>Percent</u>
1986	1,970,568	19.97	10,087	91,552	11.02
1985	1,847,737	18.79	9,651	85,048	11.35
1984	1,842,709	18.74	9,729	90,105	10.80
1983	1,825,583	19.58	9,078	82,212	11.04
1982	1,818,033	17.73	9,054	90,678	9.98
1981	1,700,580	16.88	8,504	83,792	10.15
1980	1,753,654	17.41	8,667	79,897	10.85
1979	1,734,891	17.77	8,787	88,314	9.95
Average annual change	NA	.34**	NA	NA	.15*
Change during PIK	NA	1.20*	NA	NA	NS

NA = Not applicable; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; PIK = Payment-in-kind program; NS = Not significant.
^{1/} BuRec alfalfa acreage as a percentage of total BuRec crop acreage.
 Source: Bureau of Reclamation

Table 37--Acres irrigated by drip, sprinkler, and gravity, full and supplemental service ^{1/}

Year and item	Area drip irrigated	Share of total acres irrigated	Area sprinkler irrigated	Share of total acres irrigated	Area gravity irrigated	Share of total acres irrigated	Total area irrigated
	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>
1986	26,432	0.27	1,287,700	13.17	8,462,716	86.56	9,776,848
1985	30,952	.32	1,071,651	11.03	8,613,605	88.65	9,716,208
1984	24,686	.26	1,094,126	11.31	8,558,564	88.44	9,677,376
1983	25,086	.27	818,986	8.90	8,362,278	90.83	9,206,350
1982	18,740	.19	868,598	8.68	9,122,070	91.13	10,009,408
1981	15,508	.16	832,359	8.48	8,968,511	91.36	9,816,378
1980	39,123	.40	451,591	4.63	9,270,742	94.97	9,761,456
1979	13,550	.14	525,369	5.44	9,123,800	94.42	9,662,719
Average annual change	2,463**	NA	110,624**	NA	-114,039**	NA	NS
Change during PIK	NS	NA	NS	NA	-450,469**	NA	-567,447**

** = Significant at the 95-percent confidence level; NS = Not significant; NA = Not applicable.

^{1/} Percentages may not total due to rounding.

Source: Bureau of Reclamation

Table 38--Acreage drip irrigated, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Total
<u>Acres</u>						
1986	3,247	6,162	11,989	4,840	194	26,432
1985	3,472	5,497	16,962	4,826	195	30,952
1984	3,377	3,562	12,714	4,775	258	24,686
1983	5,615	1,999	12,680	4,497	295	25,086
1982	3,695	1,437	12,784	728	96	18,740
1981	1,408	679	12,684	439	141	15,508
1980	896	917	11,528	314	92	13,747
1979	0	2,794	10,215	275	266	13,550
Average annual change	481**	884**	474*	828*	NS	2,628**
Change during PIK	3,041**	NS	NS	1,710*	NS	NS
<u>Percent 2/, 3/</u>						
1986	12.28	23.31	45.36	16.31	0.73	100.00
1985	11.22	17.76	54.80	15.59	.63	100.00
1984	13.68	14.43	51.50	19.34	1.05	100.00
1983	22.38	7.97	50.55	17.93	1.18	100.00
1982	19.72	7.67	68.22	3.88	.15	100.00
1981	9.08	4.38	81.79	2.83	.91	100.00
1980	6.52	6.67	83.86	2.28	.67	100.00
1979	0	20.62	75.39	2.03	1.69	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ 1981 total includes 157 acres, or 1.01 percent, of total BuRec drip-irrigated acreage, located in the Missouri Basin region.

2/ Regional drip-irrigated acreage as a percentage of total BuRec drip-irrigated acreage.

3/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 20

Acresage sprinkler irrigated, full and supplemental service, by region

1,000 acres

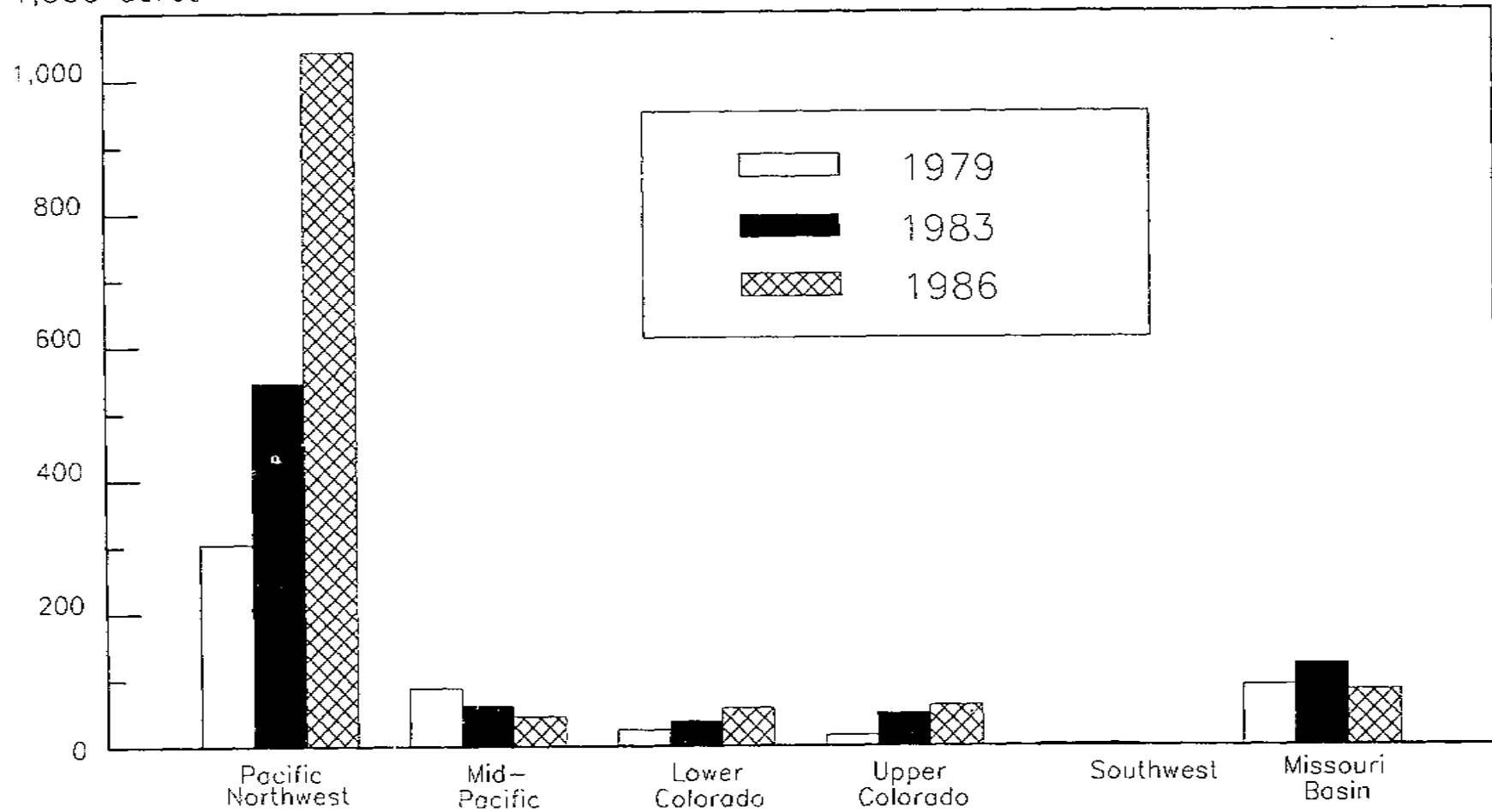


Table 39--Acreage sprinkler irrigated, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
	<u>Acres</u>						
1986	1,041,701	45,320	56,954	60,998	225	82,502	1,287,700
1985	874,990	51,111	37,994	56,315	3,984	47,257	1,071,651
1984	826,091	55,274	35,616	51,091	2,424	123,630	1,094,126
1983	546,224	60,790	37,817	48,798	3,172	122,185	818,986
1982	588,865	61,692	34,227	39,086	1,574	143,154	868,598
1981	621,943	49,394	34,839	25,351	1,799	99,033	832,359
1980	244,310	77,189	34,415	35,074	3,318	57,285	451,591
1979	302,876	87,560	25,283	15,844	3,328	90,478	525,369
Average annual change	107,777**	-4,903**	2,934**	6,005**	NS	NS	110,624**
67 Change during PIK	-158,331*	NS	NS	NS	NS	NS	NS
	<u>Percent 1/, 2/</u>						
1986	80.90	3.52	4.42	4.74	0.02	6.41	100.00
1985	81.65	4.77	3.55	5.25	.37	4.41	100.00
1984	75.50	5.05	3.26	4.67	.22	11.30	100.00
1983	66.70	7.42	4.62	5.96	1.39	14.92	100.00
1982	67.79	7.10	3.94	4.50	.18	16.48	100.00
1981	74.72	5.93	4.19	3.05	.22	11.90	100.00
1980	54.10	17.09	7.62	7.77	.73	12.69	100.00
1979	57.65	16.67	4.81	3.02	.63	17.22	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Regional sprinkler-irrigated acreage as a percentage of total BuRec sprinkler-irrigated acreage.

2/ Percentages may not total due to rounding.

Source: Bureau of Reclamation

Figure 21

Acreage flood irrigated, full and supplemental service, by region

1,000 acres

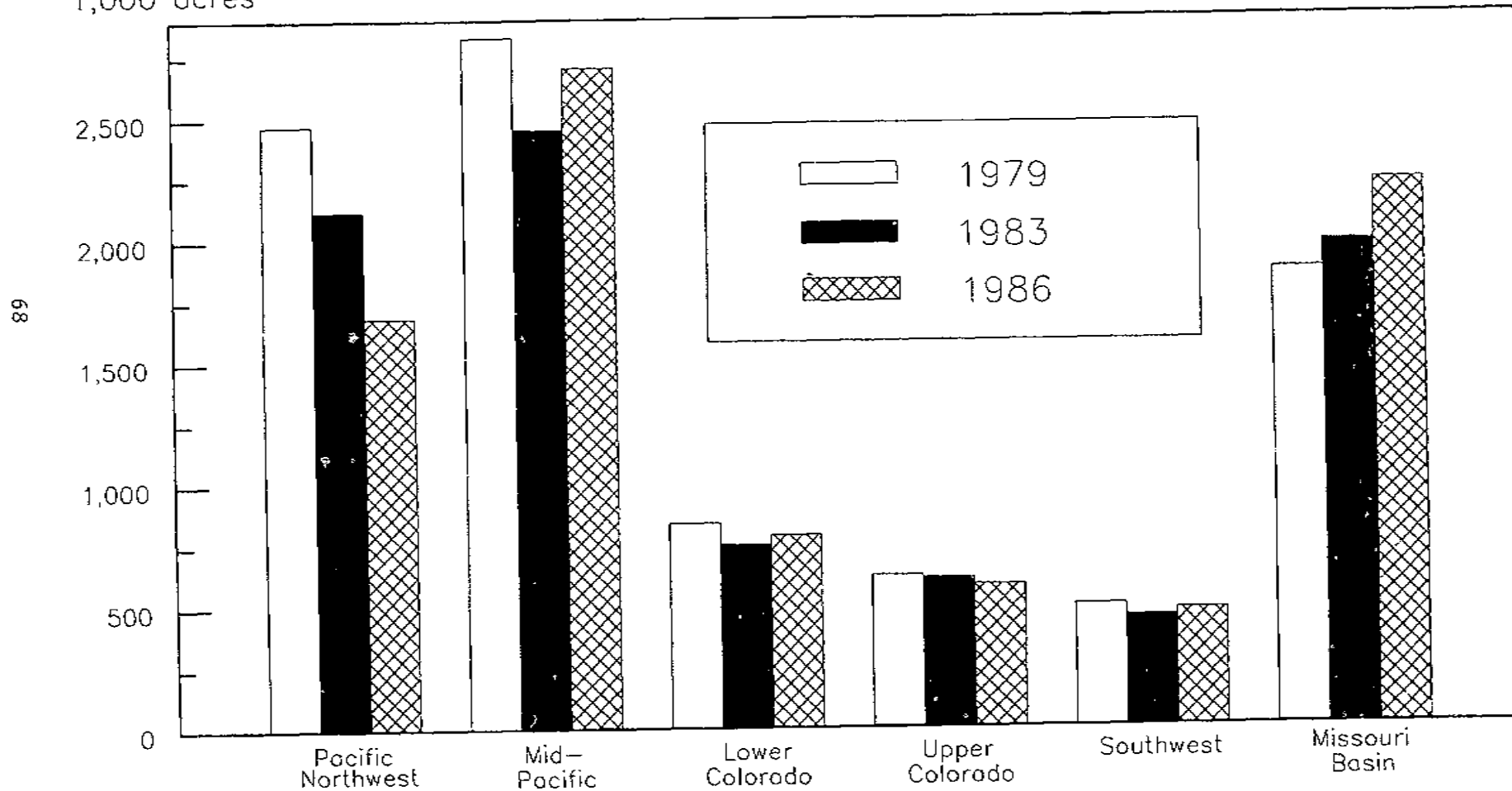


Table 40--Acreage gravity irrigated, full and supplemental service, by region

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acres</u>							
1986	1,685,500	2,705,762	789,404	580,128	476,847	2,225,075	8,462,716
1985	1,901,675	2,711,231	784,083	582,632	479,679	2,154,305	8,613,605
1984	1,938,653	2,752,952	796,311	573,726	486,440	2,010,482	8,558,564
1983	2,120,148	2,453,706	750,816	610,939	449,532	1,977,137	8,362,278
1982	2,206,374	2,909,691	824,961	611,461	492,759	2,076,824	9,122,070
1981	2,158,427	2,986,123	836,249	618,250	510,434	1,859,028	8,968,511
1980	2,539,747	2,904,322	832,400	609,242	503,216	1,907,191	9,296,118
1979	2,470,292	2,830,914	838,703	619,722	499,341	1,864,828	9,123,800
Average annual change	-112,922**	-31,428**	-8,593**	-6,664**	-4,162**	50,266**	-113,503**
⁶⁹ Change during PIK	NS	-357,048**	-58,861**	15,438*	-40,764**	NS	-449,457**
<u>Percent ^{1/}</u>							
1986	19.92	31.97	9.33	6.86	5.63	26.29	100.00
1985	22.08	31.48	9.10	6.76	5.57	25.01	100.00
1984	22.65	32.17	9.30	6.70	5.68	23.49	100.00
1983	25.35	29.34	8.98	7.31	5.38	23.64	100.00
1982	24.19	31.90	9.04	6.70	5.40	22.77	100.00
1981	24.07	33.30	9.32	6.89	5.69	20.73	100.00
1980	27.32	31.24	8.95	6.55	5.41	20.52	100.00
1979	27.08	31.03	9.19	6.79	5.47	20.44	100.00

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level;

** = Significant at the 95-percent confidence level; NS = Not significant.

^{1/} Regional gravity-irrigated acreage as a percentage of total BuRec gravity-irrigated acreage.

Source: Bureau of Reclamation

Table 41--Average water deliveries per acre to farms, full and supplemental service, by region 1/

Year and item	Pacific Northwest	Mid-Pacific	Lower Colorado	Upper Colorado	Southwest	Missouri Basin	Total
<u>Acre-feet per acre</u>							
1986	3.83	2.34	4.46	1.68	2.12	1.48	2.70
1985	3.96	2.00	4.48	2.01	1.92	1.54	2.68
1984	3.67	2.22	4.17	1.62	2.06	1.40	2.61
1983	3.66	2.13	4.34	1.44	2.25	1.31	2.56
1982	3.69	2.12	3.89	1.86	2.19	1.13	2.51
1981	3.99	1.94	4.39	2.01	1.57	1.38	2.64
1980	3.85	2.09	4.54	1.95	2.06	1.51	2.72
1979	4.19	2.01	4.45	2.18	1.69	1.36	2.74
Average annual change	NS	.03*	NS	-.05**	NS	NS	NS
Change during PIK	NS	NS	NS	-.43**	NS	NS	NS

PIK = Payment-in-kind program; * = Significant at the 90-percent confidence level; ** = Significant at the 95-percent confidence level; NS = Not significant.

1/ Farm deliveries of water divided by total crop acreage.

Source: Bureau of Reclamation

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