

Arizona Cropland: A Background Paper

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Overview

Arizona's urban land base has been expanding rapidly since 1945. Despite this expansion, Arizona's cropland remained stable from 1954 until 1980. Harvested acres declined by over 350,000 acres statewide from 1980 to 1985, but have remained relatively stable since 1985. Harvested acreage increased slightly in the mid-1990s in response to more favorable agricultural prices, but has declined slightly in recent years.

The most recent, 1997 Census of Agriculture reports that Central Arizona and counties along the Colorado River accounted for 88 percent of irrigated acreage in the state. Southeastern Arizona accounted for 10 percent, while counties in Northern Arizona accounted for 2 percent. Data from the 2002 Census of Agriculture, scheduled for release in June 2004, will provide more recent, county-level estimates of irrigated acreage in the state.

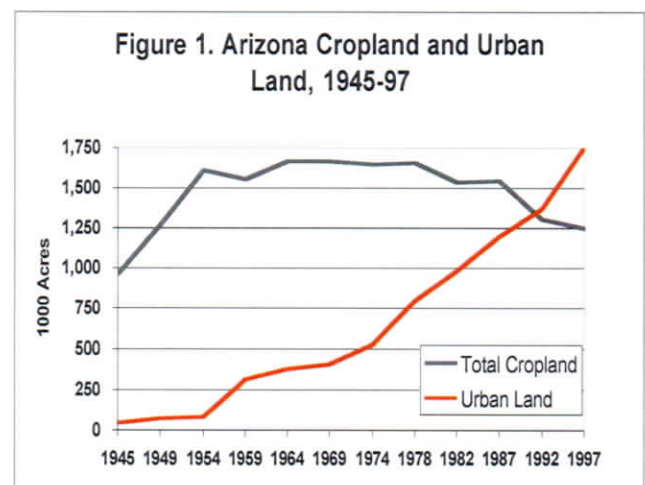
While total acreage has undergone only modest changes since 1985, there has been significant regional variation. Maricopa County has had larger and steadier declines in acreage than elsewhere in the state. In Pinal County, acreage has remained relatively stable since 1985. In Yuma and La Paz Counties, there have been significant increases in harvested acres.

The acreage of individual crops has also changed more than overall acreage. In Yuma and La Paz Counties, acres of alfalfa, other hay, vegetables and melon acreage have grown, while cotton and wheat acres have declined. Cotton and wheat acres have also declined in Central Arizona while alfalfa and other hay acres have increased. The doubling of the number of milk cows in the state since 1980 has fueled demand for forage crops.

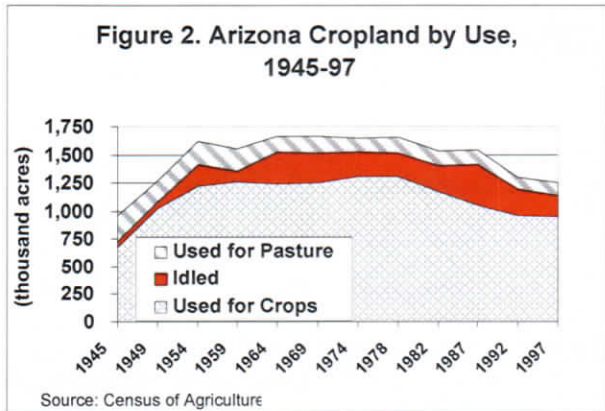
In Arizona, productivity growth has allowed aggregate output of crops and livestock to remain stable since the mid-1970s. This, despite the fact that agricultural input use has also declined since then. Productivity changes result from changes in efficiency, the scale of production, and adoption of new technologies made available through public and private research.

Statewide trends and patterns

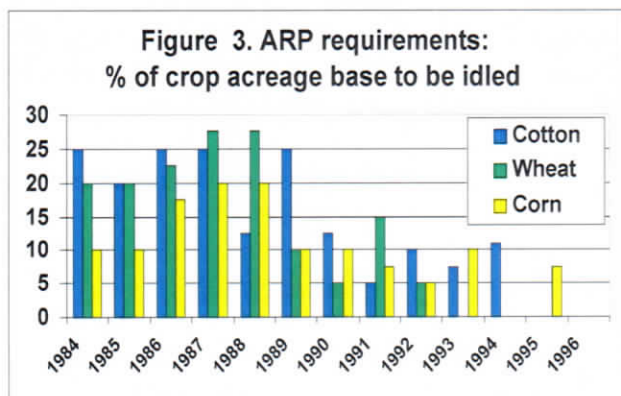
Between the 1945 and 1954 Censuses of Agriculture, total cropland rose from less than one million acres to over 1.6 million acres (figure 1). Between 1964 and 1978 Censuses, total cropland remained at its height, between 1.6 and 1.7 million acres. Urban land area began to rise dramatically after 1954, but total cropland changed little until after 1978. After 1978, the decline in total cropland was less than the increase in urban land. Between the 1978 and 1997 Censuses, urban land grew by nearly one million acres, while total cropland declined by 405,000 acres.



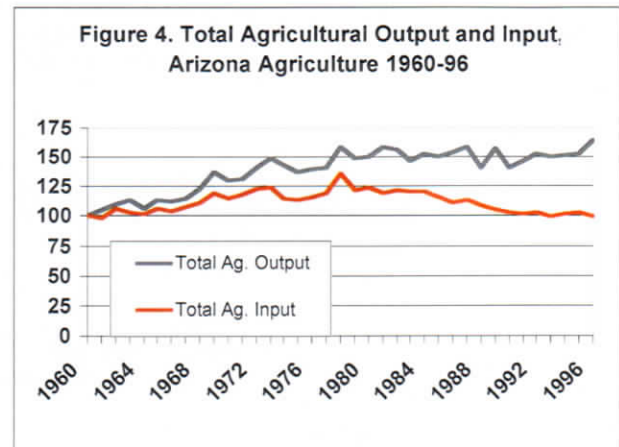
The Census divides total cropland into three use categories: cropland used for pasture, idled cropland, and cropland used for crops (figure 2). This latter includes harvested cropland plus acres with crop failure and summer fallow.



Idled cropland reached a peak of over 350,000 acres in 1987, but declined to 187,000 by 1997. Growers idle cropland based on expected market prices and requirements of federal commodity programs. Until the 1996 farm bill eliminated many planting restrictions, the Secretary of Agriculture had the authority to require growers to idle, or “set aside” a certain percentage of their program base acreage as a condition of receiving commodity program payments. This Acreage Reduction Program (ARP) was a supply control program, intended to raise market prices and reduce program spending. Under the ARP, cotton and wheat growers were required to set aside 20 percent or more of base acreage (figure 3).



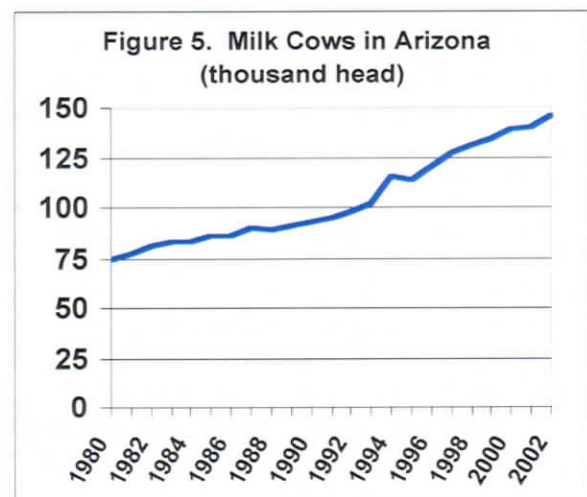
Despite reduced acreage, Arizona’s agricultural output has remained relatively stable (figure 4). Figure 4 shows USDA’s index of aggregate output and input for Arizona agriculture. Output includes all crop and livestock production, while the input index measures use of land, labor, capital, and all intermediate inputs, such as pesticides, fertilizers, seeds, and energy.



The ratio of output to input measures productivity. The growing gap between output and input is the result of productivity growth. Productivity growth comes from new technologies made available through public and private research, improved management practices, and changes in scale of production. Because of productivity growth, Arizona’s agricultural output has remained stable since 1978, even as use of land, labor, chemicals and other inputs has declined.

USDA reports state-level output indexes only up to 1996. Yet, the inflation-adjusted value of agricultural sales has remained relatively stable from the mid-1990s to the present. This suggests that the state’s overall agricultural output has remained stable for the last 25 years.

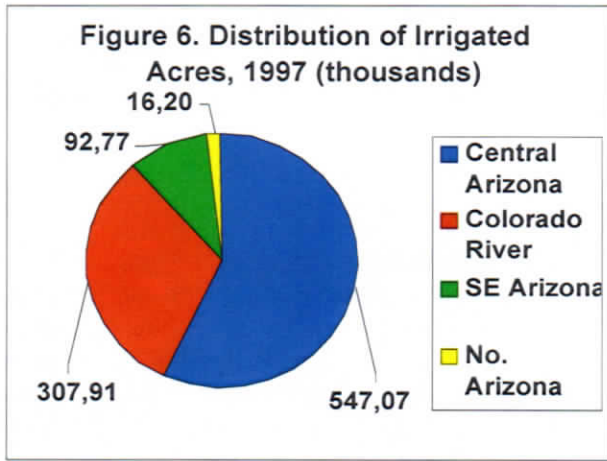
While sales revenues have remained relatively stable, the mix of production has changed dramatically over time. One important development has been the rise of the state’s dairy industry. The number of milk cows in Arizona has nearly doubled since 1980 (figure 5).



The increased dairy production has increased demand for forage crops.

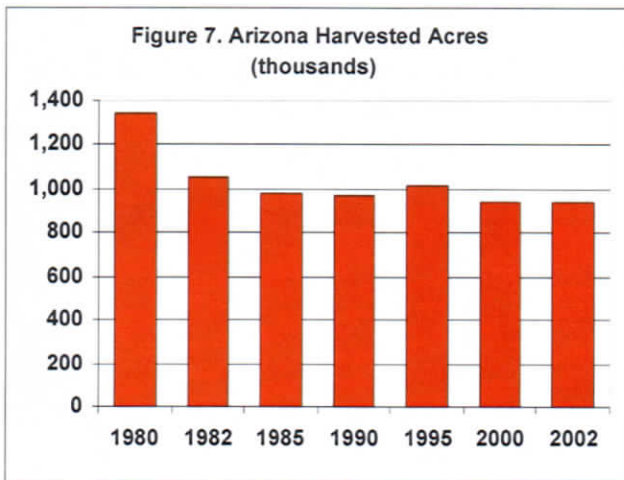
State distribution of irrigated acreage

The most recent county-level data on irrigated acreage come from the 1997 Census of Agriculture (USDA has scheduled release of 2002 Census numbers for June 2004). Central Arizona counties (Maricopa, Pima, and Pinal) accounted for 56 percent of irrigated acreage in 1997, while counties along the Colorado River (La Paz, Mohave, and Yuma) accounted for 32 percent (Figure 6). Southeastern Arizona (Cochise, Graham, Greenlee, and Santa Cruz) accounted for 10 percent, while Northern Arizona (Apache, Coconino, Gila, Navajo, and Yavapai) accounted for 2 percent.



Regional trends in harvested acreage

Data from the Arizona Agricultural Statistical Service report more recent harvested acre numbers. Like the Agricultural Census numbers, they show a significant drop in acreage in the early 1980s. Since 1985 however, changes in acreage have been quite small (figure 7). Harvested acreage increased

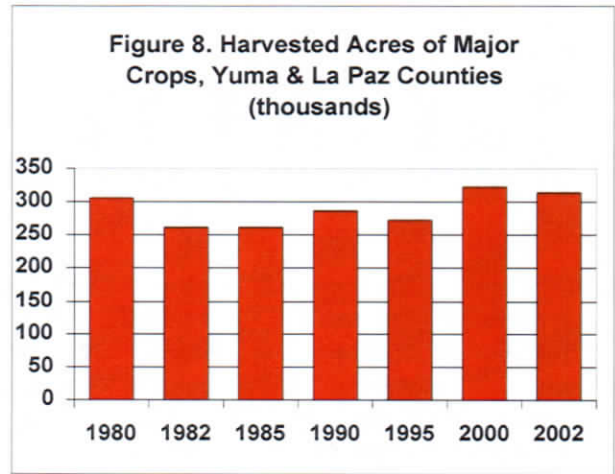


slightly in the mid-1990s, in part, because of more favorable commodity prices.

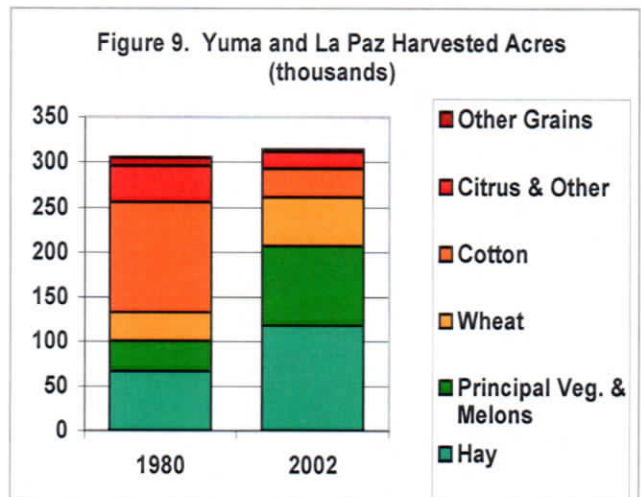
While harvested acres have remained relatively stable overall, there have been some important regional differences.

Yuma and La Paz Counties: Acreage increases, crop mix shifts to vegetables, melons and hay

Harvested acres in Yuma and La Paz counties declined between 1980 and 1985, but acres have increased since then (figure 8). From 1985-2002, harvested acres grew by 43,000 acres. The mix of crops grown has changed considerably.



In 1980, cotton and wheat accounted for half of acreage (figure 9). Alfalfa and other hay crops plus principal vegetable and melons accounted for one third of acreage. By 2002, cotton and wheat accounted for a little more than a quarter of acreage, while hay and principal vegetables and melons accounted for two thirds of acreage.



Central Arizona: Maricopa County accounts for bulk of acreage reduction

Central Arizona as a whole shows a downward trend in harvested acres since 1980, with a small upturn in the mid-1990s (figure 10). This reduction is greatest in Maricopa County.

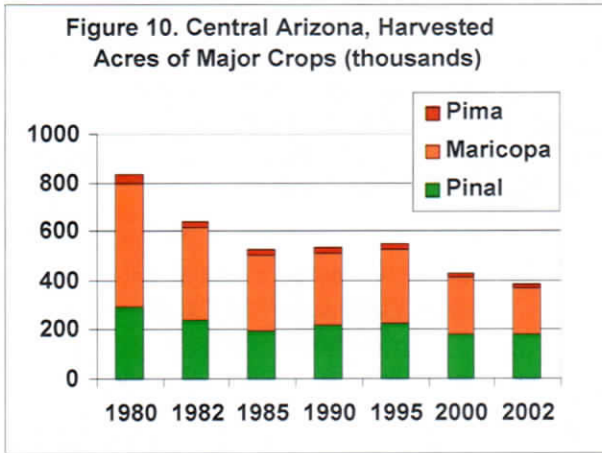
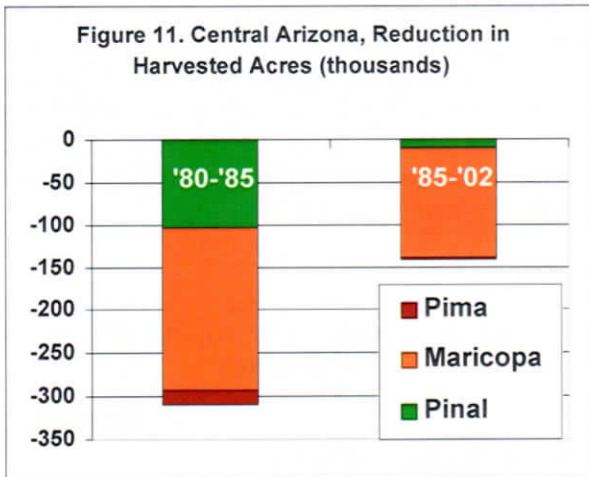
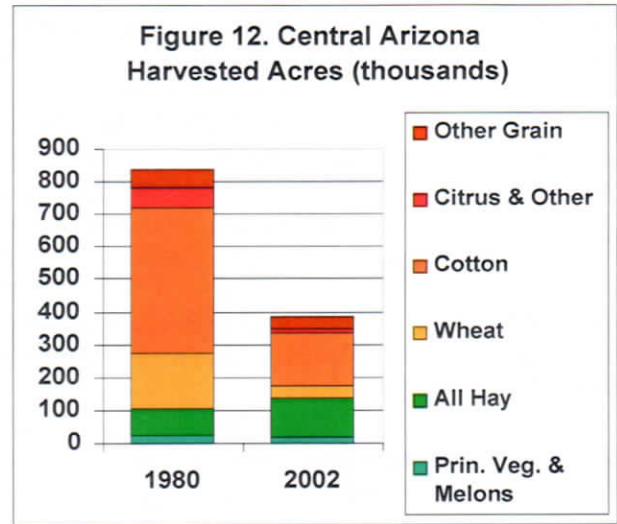


Figure 11 shows the reduction in acres between the two periods 1980-85 and 1985-2000. While acreage in Pinal County fell by about 100,000 acres from 1980 to 1985, acreage in Pinal County has changed little since 1985. From 1985-2002, Maricopa County accounted for 91 percent of the Central Arizona's reduction in acreage.



As with Yuma and La Paz Counties, acres in cotton and wheat have declined, while acres in alfalfa and all other hay have increased (figure 12).



Discussion

Harvested acres have declined significantly in Maricopa County. Yet, since 1985, harvested acres and overall agricultural production have remained stable in Arizona. This has occurred through increases in harvested acreage in other areas of the state and through productivity growth. Along with changes in *where* crops are grown, there have also been important changes in the mix of crops grown, with a greater emphasis on vegetables, melons, and hay.

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