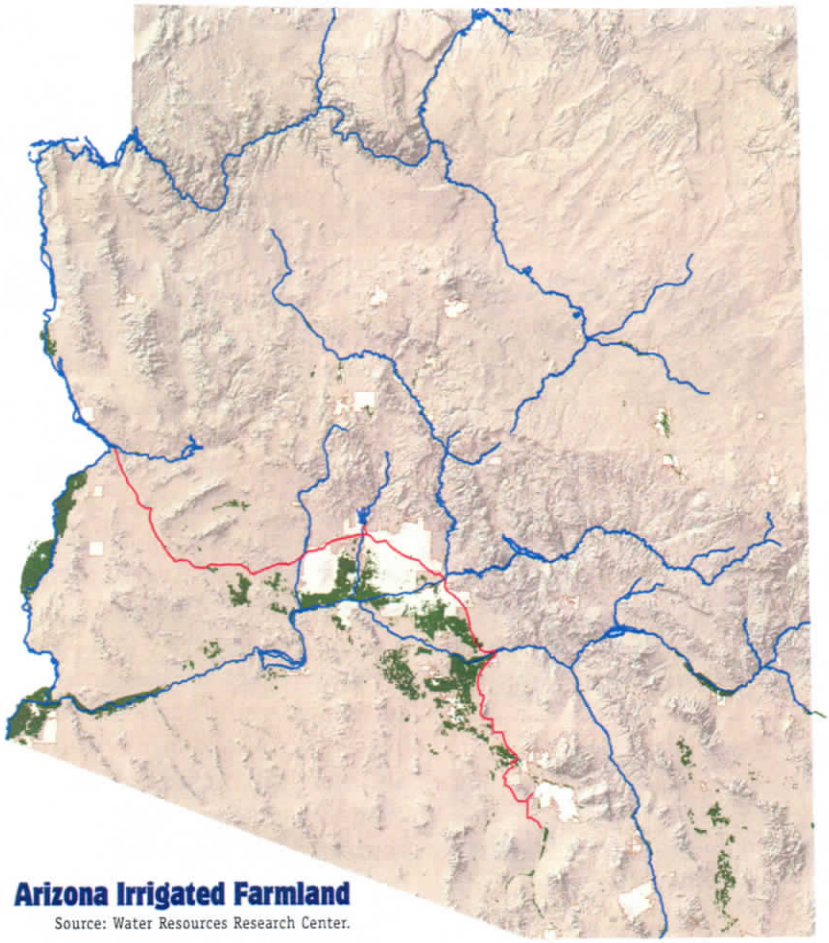

Arizona Irrigated Farmland
Source: Water Resources Research Center.

Swooping down to a lower altitude, we can spot the pens of a few very large dairy lots, over 80 percent of them located near Phoenix. Nearly 93 percent of the state's milk cows are on farms with 500 or more head. In 1997 there were only 79 such operations, 67 of them in Maricopa and 9 in Pinal counties. These highly productive operations supply most of the milk for the State's rapidly growing population. Even fewer large beef cattle feedlots—only about a dozen statewide, but again producing huge numbers—punctuate the landscape in Pinal County to the south of Phoenix and Yuma County in the southwestern corner of the state. Of all fat cattle sold in 1997, 99 percent came from 13 feedlots selling 500 or more head per year—3 in Maricopa, 1 in Apache, 8 in Pinal, and 1 in Yuma counties.

Our aerial view shows that Arizona's population (5.1 million in 2000) lives mostly in two urban centers, Phoenix and Tucson, and just a few other small cities. In 1997, less than 4,000 farmers actually lived on the farms they operated. The urban areas account for the lion's share of the state's economic activity, and by many measures, agriculture only a very small portion. In 1999, for example, Arizona's agriculture accounted for 1.5 percent of gross state product, down from 1.8 percent ten years earlier and down from near 10 percent prior to World War II.

Arizona Agriculture: A Thumbnail Sketch

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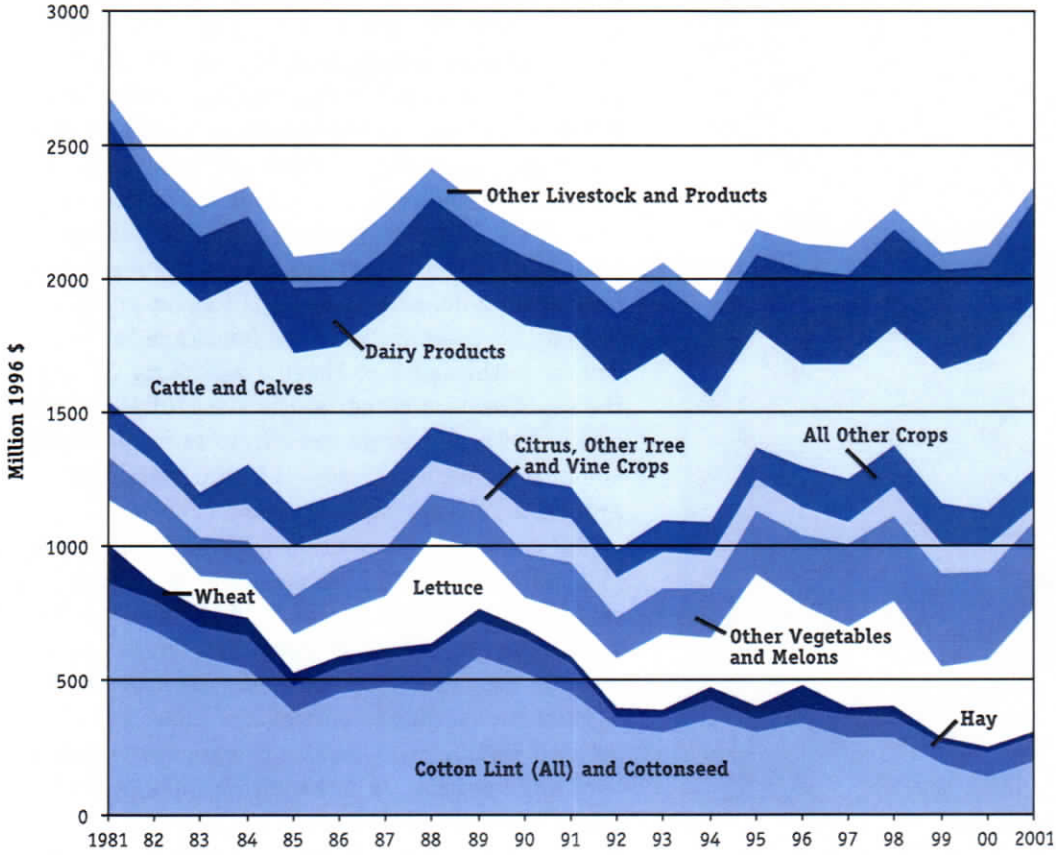
Viewed from high above, Arizona's deserts and highlands paint the landscape in ochers and umbers and gray-green earth tones. Cattle ranching spreads thinly over nearly the whole of the state's 73 million acres (sixth largest in the United States), most of it (some 83 percent) federal or state or reservation land. But here and there sprinkled in the lowland desert of the southern third of the state, irrigation tints the earth's canvas with more vibrant greens. These areas of mostly cotton, alfalfa, wheat, lettuce and other vegetables, melons, and citrus occupy less than a million acres, but in contrast to the low-yielding grasslands, irrigation water and high technology make these fields some of America's most productive.

Agriculture accounts for approximately the same share of gross domestic product in the U.S. and in several well-recognized "big agriculture" states such as California and Texas. Beyond this direct contribution to the state's economy, production agriculture links indirectly backward and forward to state input suppliers and processors, and farm and ag-related families make consumption expenditure—all economic activities that add to the economy. The sum of these direct, indirect, and consumption (induced) effects from agriculture accounts for approximately 5 percent of the state's GSP.

Sector Sales

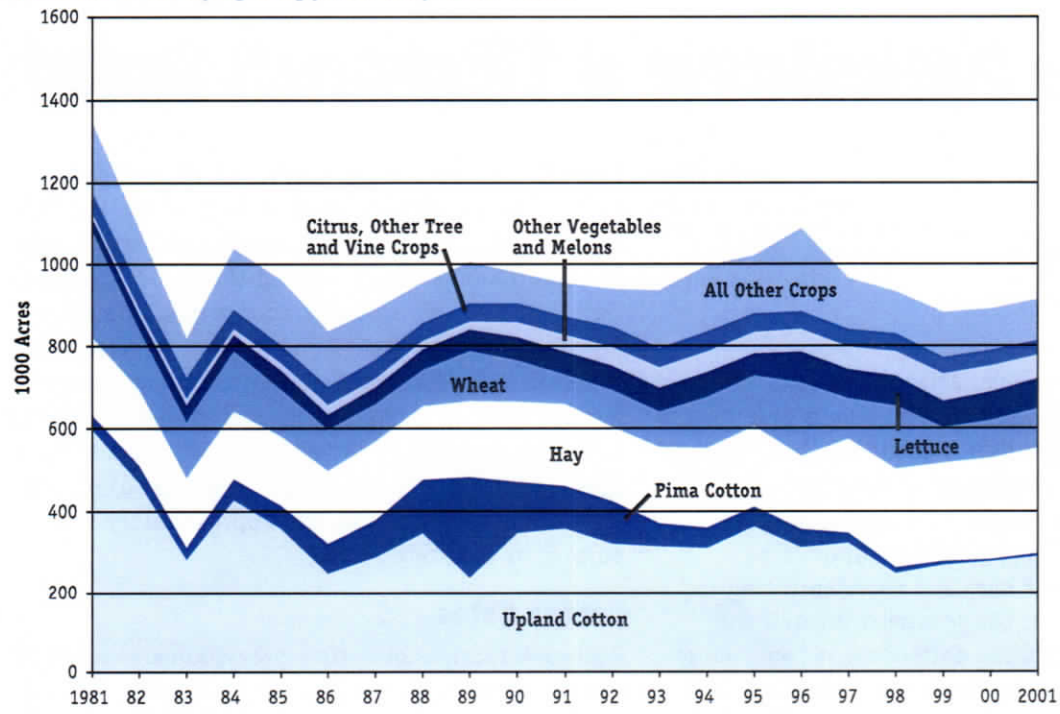
Real cash receipts over time provide one measure of the economic health of Arizona agriculture. During the first half of the 21-year period 1981–2001, real income trended notably down, but since the early 1990s it has moved higher, albeit with ups and downs and still not reaching the level of the early 1980s. Within the total, some sectors changed

Real Cash Receipts, Key Agricultural Commodities, Arizona, 1981–2001



Source: ERS,USDA.

Acres Harvested, By Crop, Arizona, 1981–2001



Source: Arizona Agricultural Statistics Service.

markedly, even during the last 10 years. Real cotton receipts moved persistently downward from near $700 million in the early '80s to now less than $200 million in 1999–2001—shifting cotton's rank from one of the two top sectors to a distant fifth place below lettuce, other vegetables and melons, cattle and calves, and dairy products. Cattle and calves (combined fat cattle and feeder calves) have also trended generally downward, with cash receipts in the early 1980s in the $700–$800 million range, falling to around $400 million in the mid-1990s, and then recovering somewhat to the $500–$600 million level in 1999–2001. These numbers reflect declines and then some increases in the numbers of both cow/calf and feedlot cattle. Lettuce, other vegetables and melons, and dairy products, countered the downtrends. Real cash receipts for lettuce increased from approximately $150 million in the early 1980s to $300–$400 million from 1995 onward. Other vegetables and melons (as a group) showed similar beginning and ending values. Real dairy receipts increased from around $250 million in the early 1980s to approximately $350 million from 1996–2001.

Cropped Acreage

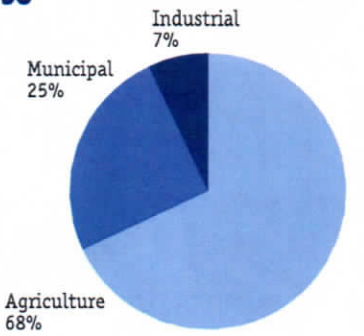
For the most part, crop acreage follows the trends of cash receipts, upland cotton being the key exception. Its acreage declined sharply in the early 1980s, but since the mid-1980s shows no clear trend up or down—this in contrast to the long-term downtrend in upland prices and cash receipts. After an approximately five-year spurt in acreage in the late 1980s and early 1990s, Pima acreage has tailed off to very low levels. Hay acreage expanded with the increase in dairy receipts,

and lettuce and other vegetables and melon acres increased with receipts in these sectors. Yuma County experienced the bulk of the expansion in vegetable and melon acreage.

Water

Historically, water issues captured the attention of not only farmers and ranchers, but also Arizona society more generally. All crops rely almost exclusively on irrigation water, and agriculture accounts for nearly 68 percent of all water used, even though less than one-half of one percent of Arizona's population farms. Legal and political activities to secure water rights and regulate water use reflect the competition for this scarce resource. Indian claims to a large share of the state's surface water, protracted negotiations about agriculture's use of water in the recently agreed Third Management Plan of the Groundwater Management Act, and the diversion of massive amounts of Central Arizona Project water from agriculture to urban uses all reflect the long and continuing battle for rights to Arizona's limited water. The cost of energy also affects water use because nearly 40 percent of irrigation water comes from groundwater sources (often deep) pumped to the surface using costly fuel. Even the massive Central Arizona Project that brings surface water some three hundred miles from the Colorado River to help irrigate crops in central and southern Arizona must be pumped nearly 2,000 feet uphill at considerable expense. Finally, water issues are at the sharp edge of ranching concerns. Both ranchers and those interested in recreation and the environment try to secure the right to use riparian areas on public lands historically leased for ranching.

Water Use by Sector, Arizona, 1998



Source: University of Arizona Water Resources Research Center using data from ADWR & USGS.

Government Subsidies

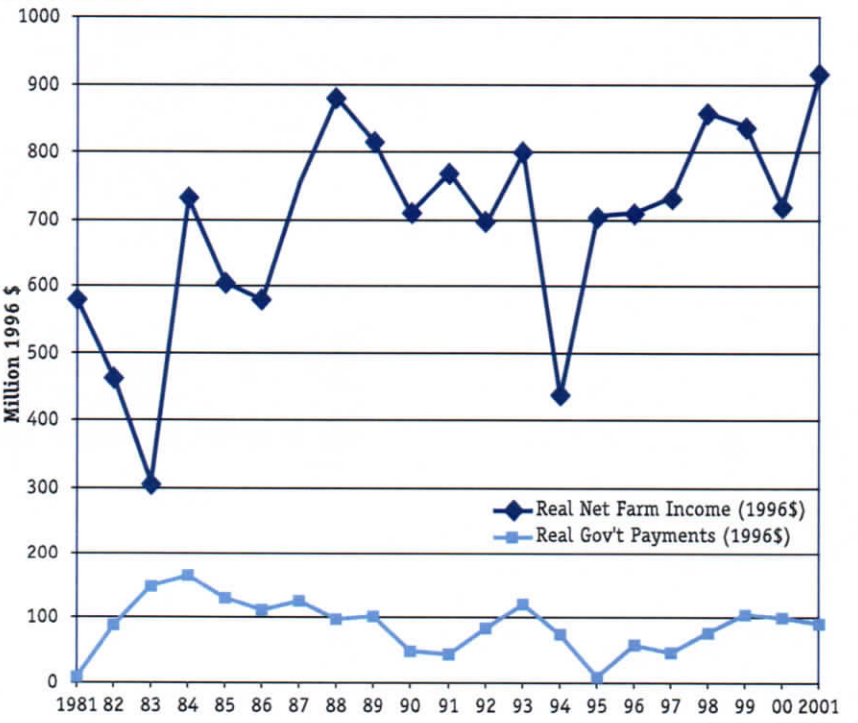
Government subsidies also form an important part of Arizona's agricultural story. Federal farm program payments reached a high of 48 percent of total net farm income in 1983—a year of unusually low net farm income. Since that time, total subsidies have fallen, but in the last five years have still accounted for 7 to 17 percent of the state's net farm income. The distribution of these subsidies among farming sectors and even among farms within sectors, however, has been highly skewed. The large beef, hay, fruit, and vegetable sectors received almost no program subsidies. Rather, cotton and wheat producers received most federal payments, and large cotton farms received the bulk of the subsidies. In 1998, 1999, 2000, and 2001, when world supplies outstripped demand and cotton prices fell, these subsidies reached record or near-record proportions.

Foreign Trade

Arizona agriculture relies, to a considerable extent, on foreign trade. The state exports over 80 percent of its cotton and a sizeable share of its wheat. Mexico supplies about 15 percent of the feeder cattle to Arizona feedlots. The fruit, vegetable, live animal, dairy, and seeds sectors also export portions of production. Current and upcoming rules and regulations of both the North American Free Trade Agreement (NAFTA) and the World Trade Organization (WTO) will affect the economic health of Arizona agriculture. AR

Since 1970 Harry Ayer has focused his applied research and outreach on agricultural policy issues, and particularly the periodic federal Farm Bills, water policy in Arizona, and trade policy. For many years he edited a magazine that brought sound economic assessment of food, farm, and resource issues to a wide U.S. audience, and especially farm and resource interest groups and policy makers. More recently he helped launch a similar publication in Europe, an effort that recognizes that many food, farm, and resource issues have international implications and interest.

Real Net Farm Income and Government Payments, Arizona, 1981–2001



Source: ERS, USDA.

Department of Agricultural and Resource Economics

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