



County Agricultural Economy Profiles for Southern Arizona

Making Action Possible in Southern Arizona (MAP Dashboard)

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Executive Summary

Arizona County Agricultural Economy Profiles University of Arizona Cooperative Extension

Overview

Data on agricultural production, water use across sectors, and regional economies are important to understanding the role of agriculture within regions and states. These data are available from different agencies and databases, but are often presented independently, with limited context. To further these objectives, this collection of county profiles presents agricultural production, water use, and regional economic data for seven Southern Arizona counties. The profiles provide information in a standardized, integrated format to provide context on the role of agriculture within the state and its counties. The profiles also highlight the role of agricultural producers as managers of land and natural resources. The report integrates data from the USDA Census of Agriculture (including the most recent 2017 USDA Census of Agriculture), the Bureau of Economic Analysis, the Bureau of Labor Statistics, Arizona Department of Water Resources, and the U.S. Geological Survey.



Map of Arizona Counties Profiled

Statewide Highlights

- Roughly 90% of Arizona’s population lives in urban areas (2010). Major industries include mining, high-tech manufacturing, business services, and tourism.
- On-farm agricultural production accounts for roughly 1.1% of private employment in Arizona and less than 1% of state GDP (2018).
- Approximately 36% of Arizona’s land area is used for agricultural purposes, either crop or livestock production (2017).
- In Arizona, 77% of water use is for irrigation, livestock, and aquaculture (2015). In western states, it is common for agriculture to represent a relatively small share of state GDP while constituting a large share of total water use.
- Agriculture in Arizona is diverse, characterized by highly productive irrigated crop production in the central, western, and southern parts of the state, and by livestock grazing over expansive rangelands in the northern and eastern parts of the state.
- The value of Arizona’s agricultural production is neither crop- or livestock-dominant, but rather value of production of crops and livestock track together in recent years. Within individual counties, the mix between crops and livestock varies considerably.
- Arizona’s top agricultural products by sales include **vegetables, melons, potatoes, & sweet potatoes** (\$1 billion), **milk from cows** (\$856 million), **cattle & calves** (\$641 million) and **other crops & hay** (largely alfalfa and other hay) (\$402 million) (2017).
- Nationally, Arizona ranks highly in the production of broccoli (2nd), cabbage (6th), cantaloupes (2nd), cauliflower (2nd), chile peppers (4th), hay (8th), long-staple cotton (3rd), lemons (2nd), lettuce (2nd), pecans (4th), pistachios (2nd), spinach (2nd), and watermelon (5th) (USDA ERS) (2018). For total value of vegetables and melons sold, Arizona ranked second, after California (2018).

The following table presents high-level agricultural and economic indicators from the state and seven county profiles.

Agricultural & Economic Indicators – Statewide & Southern Arizona Counties

Indicator	Arizona	Cochise	Graham	Greenlee	Pima	Pinal	Santa Cruz	Yuma
Land Area (square miles)	113,990	6,219	4,641	1,848	9,189	5,374	1,238	5,519
Land in Farms (Crops, Grazing) (square miles)	40,822	1,521	2,016	103	4,090	1,751	309	386
Population (2018)	7,171,646	126,770	38,072	9,483	1,039,073	447,138	46,511	212,128
Annual Avg. Population Growth (2010-18)	1.4%	-0.5%	0.3%	1.6%	0.7%	2.1%	-0.2%	0.9%
Percent of Population Over 65 (2018)	17.5%	22.3%	13.9%	13.2%	19.8%	20.4%	18.1%	18.8%
Percent Population Rural (2010)	10.2%	36.3%	46.4%	46.6%	7.5%	21.9%	26.9%	10.4%
Total Employment (2018)	2,826,095	33,994	9,148	4,890	368,438	62,137	13,305	67,639
Share Federal, State, & Local Government Employment (2018)	13.8%	31.8%	30.6%	11.5%	18.8%	31.9%	27.2%	21.0%
GDP (2018) (billions)	\$348.3	\$4.9	\$1.2	\$1.7	\$44.9	\$7.6	\$1.9	\$8.3
Ag, Forestry, & Hunting GDP (2018) (on-farm only)	\$2.3 billion	\$40.3 million	\$35.0 million	\$2.5 million	\$64.5 million	\$28.1 million	\$18.7 million	\$1.2 billion

Executive Summary

County-Level Highlights

Cochise County

- Of the top 10 most concentrated private industries in Cochise County (2018), agricultural industries occupy the top five spots, including tree nut farming, water supply and irrigation systems, hay farming, farm labor contracting, and corn farming. Wineries ranks tenth.
- Cochise County is a center for fruit and tree nut production, particularly pecans, pistachios, and wine grapes. The county is home to two American Viticultural Areas (AVAs) (wine grape-growing regions), the Willcox and Sonoita AVAs. As of 2017, Cochise County had 757 acres of grape production, accounting for roughly half of the state's total acreage.

Graham County

- Cotton farming is the most concentrated industry in Graham County, with its share of employment 54 times the national average (2018).
- Though the most common type of farm in Graham County are beef cattle ranches, 88% of county cash receipts originate from sales of crops, and 12% from livestock (2017).
- Major agricultural commodities by sales include cotton & cottonseed (\$28.5 million), grains, oilseeds, dry beans, & dry peas (\$14.2 million), cattle & calves (\$6.8 million), and fruits, tree nuts, & berries (sales data not disclosed) (2017).

Greenlee County

- Top industries in Greenlee County include copper mining and mining-related industries. Agriculture has a small footprint, accounting for less than 1% of all private employment and less than 0.2% of county GDP (2018).
- Greenlee County has a small share of land in farms (6%) and accounts for less than 1% of state agricultural cash receipts (2018).
- The most common type of operation in Greenlee County is beef cattle ranching and farming, with 68 farms (2017).

Pima County

- Agriculture directly contributes \$64.5 million to the county's \$44.9 billion economy (2018). While agriculture represents a small share of county GDP, nearly 45% of Pima County's land area is in farms, either for crop production or grazing (2017).
- Pima County accounts for about 2% of Arizona's state agricultural cash receipts (2017).

Pinal County

- Pinal County accounts for about one-fourth of Arizona's state agricultural cash receipts. Major agricultural products by sales includes cattle & calves (\$283.2 million), milk from cows (\$268.2 million), cotton & cottonseed (\$92.0 million), other crops & hay (\$79.1 million), grains, oilseeds, dry beans, dry peas (\$50.2 million), and vegetables, melons, potatoes, & sweet potatoes (\$49.3 million) (2017).
- Pinal County ranks in the top 2% of U.S. counties for the sale of cattle, cotton, other crops & hay, and vegetables & melons (2017).

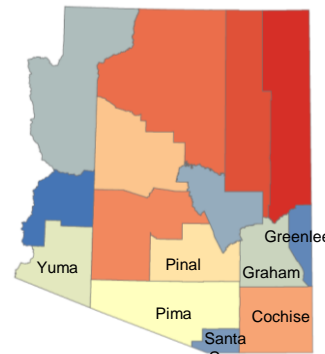
Santa Cruz County

- The county's largest private industry is fruit and vegetable merchant wholesalers, accounting for about 10% of total employment and 13% of total wages in the county (2018). The Nogales port of entry, located in Santa Cruz County, is a top port nationally for shipments of fresh fruits and vegetables from Mexico, the U.S.'s top source of imported fresh produce.
- Santa Cruz County has a growing wine industry and is home to the Sonoita American Viticultural Area (AVA).

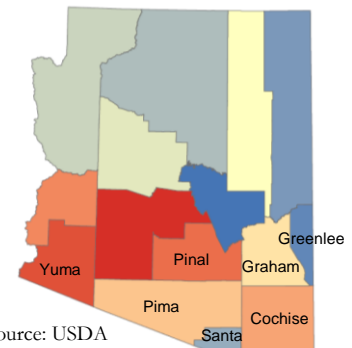
Yuma County

- Agriculture accounts for more than 14% of the county's GDP and employs nearly one-fourth of all private industry jobs (2018). Yuma County accounts for about 30% of Arizona's state agricultural cash receipts (2017).
- Yuma County is the third-largest vegetable and melon producing county in the U.S. with \$782.3 million in sales in 2017.
- Yuma County is one of the country's largest producers of winter vegetables, particularly leafy greens such as Romaine, iceberg, and red leaf and green leaf lettuce.

Farms by County, 2017



Value of Ag Products Sold by County, 2017



Source: USDA

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Statewide Summary

Arizona County Agricultural Economy Profiles University of Arizona Cooperative Extension

Overview

Arizona is a largely urban state, with roughly 90% of the state’s population in urban areas. It includes the country’s 10th largest metro area, the Phoenix-Mesa-Chandler metropolitan statistical area (MSA), with 4.9 million residents.

Major industries include mining, high-tech manufacturing, business services, and tourism. Agriculture accounts for approximately 1.1% of private employment in the state and less than 1% of state GDP. Nonetheless, approximately 36% of Arizona’s land area is used for agricultural purposes, either crop or livestock production. Agriculture in Arizona is diverse, characterized by highly productive irrigated crop production in the central, western, and southern parts of the state, and by livestock grazing over expansive rangelands in the northern and eastern parts of the state. Arizona is known as a leading state in the production of winter vegetables, particularly in the Yuma area. Much of the state’s livestock and animal product production by value occurs in large dairies in central Arizona that serve the state’s main population centers.

The types of crops and livestock produced, the amount of water used for agricultural purposes, and the role of agriculture in county economies varies significantly across the state. ***This collection of county profiles presents agricultural production, water use, and regional economic data in a standardized, integrated, and easy-to-read format to provide context on the role of agriculture within state and county economies, as well as its role as a manager of land and natural resources.***



Map of Arizona & Counties

Top 20 Private Industries in AZ by Employment LQ, 2018

Industry	Location Quotient
Copper, nickel, lead, & zinc mining	30.98
Satellite telecommunications	11.58
Professional employer organizations	6.67
Research & development in nanotech.	5.48
Other credit intermediation activities	5.45
Semiconductors & related device mfg.	5.09
Solar electric power generation	4.87
Financial trans. processing & clearing	4.84
Citrus, except orange, groves	4.71
Translation & interpretation services	4.52
Bus & other motor veh. transit systems	4.47
Hay farming	3.75
Small arms & ordnance manufacturing	3.57
Scenic & sightseeing transportation, oth.	3.56
Cotton farming	3.53
Support act. for nonmetallic minerals	3.52
Crop harvesting, prim. by machine	3.42
Telemarketing & other contact centers	3.37
Lessors of other real estate property	3.30
Flight training	3.29

Indicator	Arizona
Land Area (square miles)	113,990
Land in Farms (Crops, Grazing) (square miles)	40,822
Population (2018)	7,171,646
Annual Average Population Growth Rate (2010-18)	1.4%
Percent of Population Over 65 (2018)	17.5%
Percent Population Rural (2010)	10.2%
Total Employment (2018)	2,826,095
Share Federal, State, & Local Government Employment (2018)	13.8%
GDP (2018)	\$348.3 billion
Ag, Forestry, & Hunting GDP (2018) (on-farm only)	\$2.3 billion

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs), which measure the ratio of a particular industry’s share of employment within a region to the same industry’s share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that a region is specialized in. Higher LQs indicate greater specialization. Four agricultural industries rank in Arizona’s top 20 industries by employment LQ. These include citrus (except orange) groves (4.71 times more concentrated than the national average), hay farming (3.75), cotton farming (3.53), and crop harvesting (3.42). These reflect some of the state’s largest agricultural industries.

Statewide Summary

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

There were 19,086 farms in Arizona as of 2017, covering 1,286,648 acres of cropland (96% irrigated) and 22,656,597 acres of pastureland (<1% irrigated). The average farm size was 1,369 acres, though the top 7% of farms account for 91% of state acreage. Farms are distributed across the state unevenly with a large number of farms in the northeastern portion of the state. Areas of central and southwestern Arizona have a smaller number of farms, but account for a larger share of agricultural production in terms of the value of their sales. More than half of total farms in Arizona (11,132 farms) had sales of less than \$1,000 and a large majority of county farms (84%) are family- or individually-held farms.

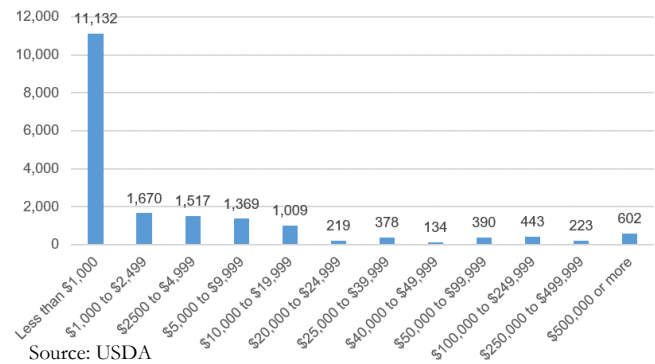
Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Arizona is beef cattle ranching and farming (5,572 farms), followed by sheep and goat farming (5,139 farms), and aquaculture and other animal production (4,550 farms).

While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts.

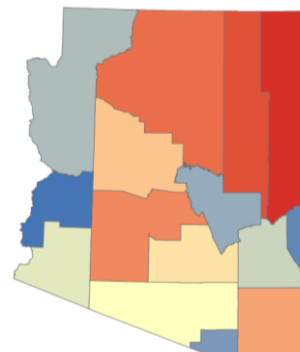
Arizona Farms by Industry

Category	Farms
Total farms	19,086
Oilseed and grain farming	188
Vegetable and melon farming	903
Fruit and tree nut farming	760
Greenhouse, nursery, and floriculture production	227
Other crop farming	1,318
Cotton farming	173
Sugarcane, hay, & all other crop farming	1,145
Beef cattle ranching and farming	5,572
Cattle feedlots	40
Dairy cattle and milk production	116
Hog and pig farming	130
Poultry and egg production	143
Sheep and goat farming	5,139
Aquaculture and other animal production	4,550

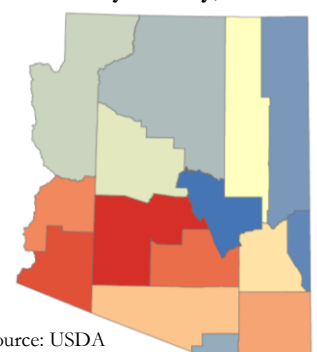
Arizona Farms by Annual Sales, 2017



Farms by County, 2017

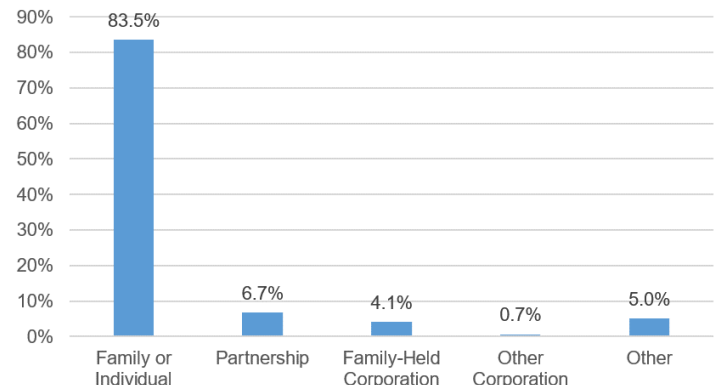


Value of Ag Products Sold by County, 2017



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Arizona Farms by Legal Organization, 2017



Statewide Summary

Production & Marketing

Arizona's agricultural production is neither crop- or livestock-dominant, but rather value of production of crops and livestock track together, with year-to-year fluctuations in value of sales.

According to the 2017 Census of Agriculture, major agricultural products by sales includes **vegetables, melons, potatoes, and sweet potatoes** (\$1 billion), **milk from cows** (\$856 million), **cattle and calves** (\$641 million) and **other crops and hay** (\$402 million).

Similar to the national average, local marketing represents less than 1% of state cash receipts. Additionally, there were 74 farms with a total of \$97 million in sales of organic production.

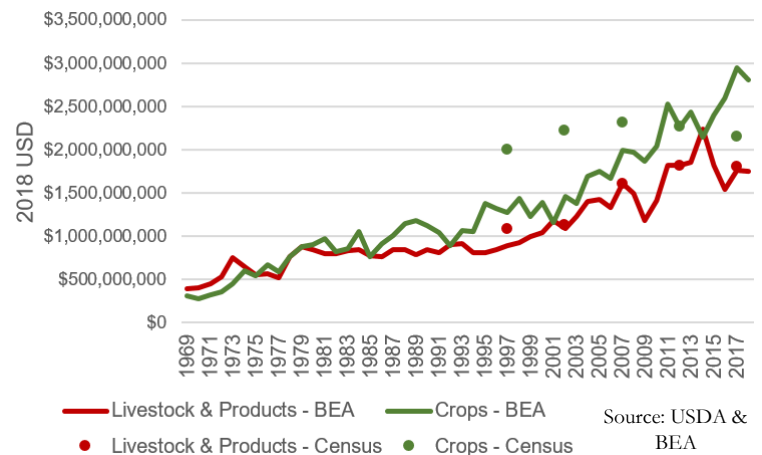
Agriculture in State Economies

Nationally, on-farm agriculture accounts for less than 1% of national GDP. This is also the case in Arizona (0.6%). In California, the country's largest agricultural producer, agriculture represents 1.3% of state GDP (gross state product or GSP). Meanwhile, in some Midwestern states agriculture accounts for upwards of 6% of state GDP.

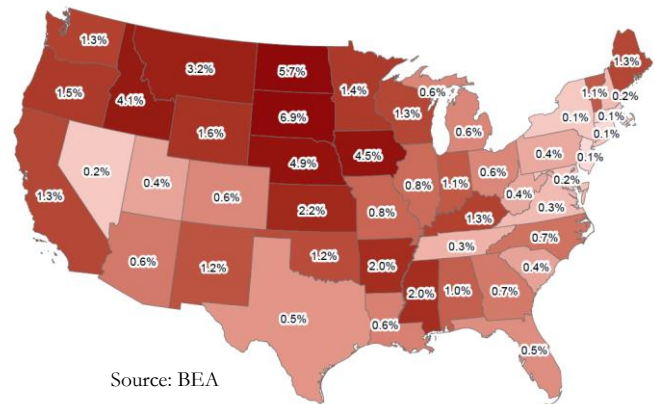
In terms of water use nationally, irrigation accounts for 37% of total water use, though in western states the share is much higher as most agriculture is irrigated. For example, in Arizona 77% of water use is for irrigation, livestock, and aquaculture. A common trend among states, particularly in the West, is agriculture representing a relatively small share of state GDP while constituting a large share of water use. Food, feed, and fiber production are, by nature, water-intensive.

Nationally, Arizona ranks highly in the production of a number of agricultural commodities. For 2018, this includes value of production of broccoli (2nd), cabbage (6th), cantaloupes (2nd), cauliflower (2nd), chile peppers (4th), hay (8th), long-staple cotton (3rd), lemons (2nd), lettuce (2nd), pecans (4th), pistachios (2nd), spinach (2nd), and watermelon (5th) (USDA ERS). For total value of vegetables and melons sold, Arizona ranked second, after California. So while agriculture overall may not comprise a large share of the state's economy as measured by state GDP, Arizona plays an important role nationally and internationally in the production of specific commodities.

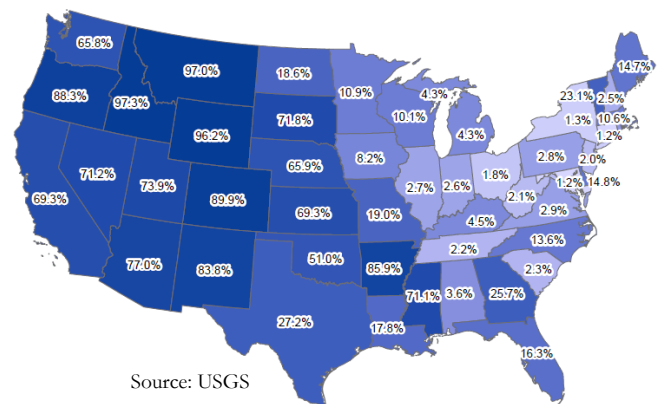
Arizona Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018



Agriculture's Share of Gross State Product (GSP), 2018



Agriculture's Share of State Water Withdrawals, 2015



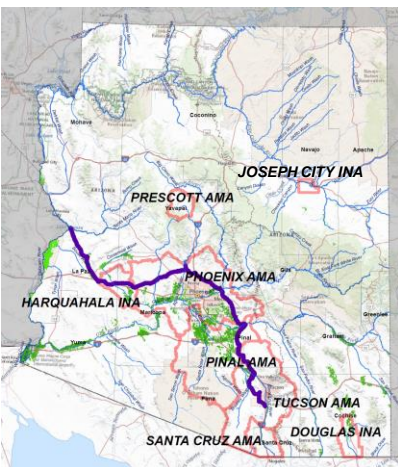
Statewide Summary

Irrigation Water Use

Water and agricultural production are inextricably linked. Major sources of surface water include the Colorado River, the Central Arizona Project which delivers Colorado River water to central and southern Arizona, and the Salt and Gila Rivers. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited. These include the Phoenix AMA, Prescott AMA, Pinal AMA, Santa Cruz AMA, and Tucson AMA. Within AMAs, water use for agriculture has decreased from roughly 66% of total demand in 1985 to 47% of demand in 2017. Overall, AMA water demand for agriculture has fallen from over 2.2 million acre-feet in 1985 to 1.7 million acre-feet in 2017.

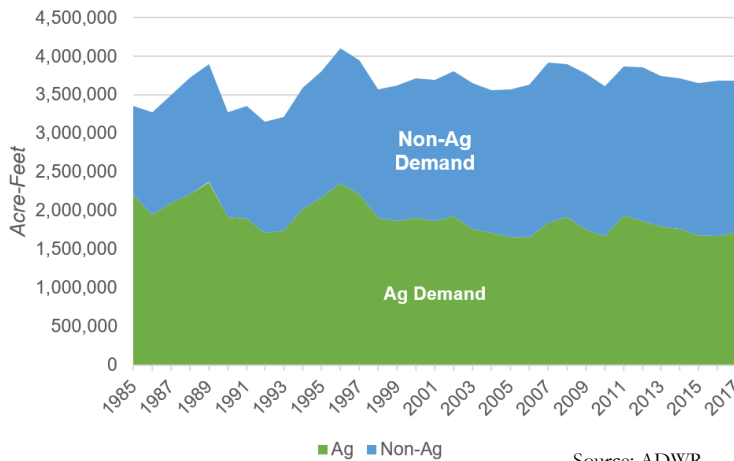
Statewide, total agricultural water use is estimated to have decreased slightly between 2010 and 2015, the most recently available data. Use of surface water for crop irrigation decreased over the period, while groundwater use for crop irrigation increased, as did groundwater use for livestock. Surface irrigation represents a large majority of statewide acreage, however, between 2010 and 2015 drip irrigation acreage increased substantially

Arizona Water Map

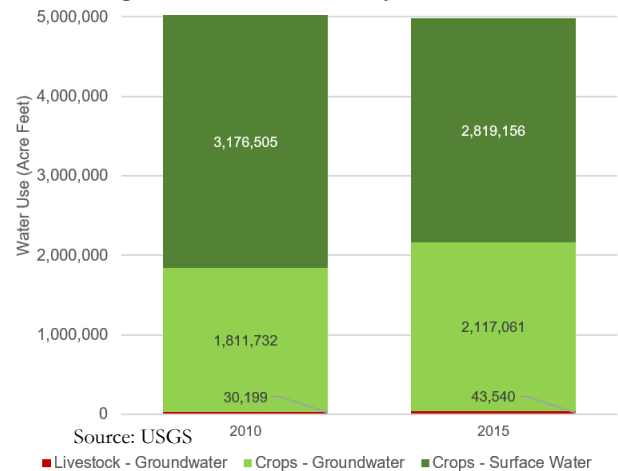


The Central Arizona Project (CAP) is depicted in purple on the map to the left. It delivers Colorado River water to the state's largest population centers in central and southern Arizona. Those same population centers account for most of the state's AMAs (outlined in red), and a large share of the state's irrigated agriculture (areas in green). Irrigated agriculture along the Colorado River mainstem represents another large share of the state's agricultural production.

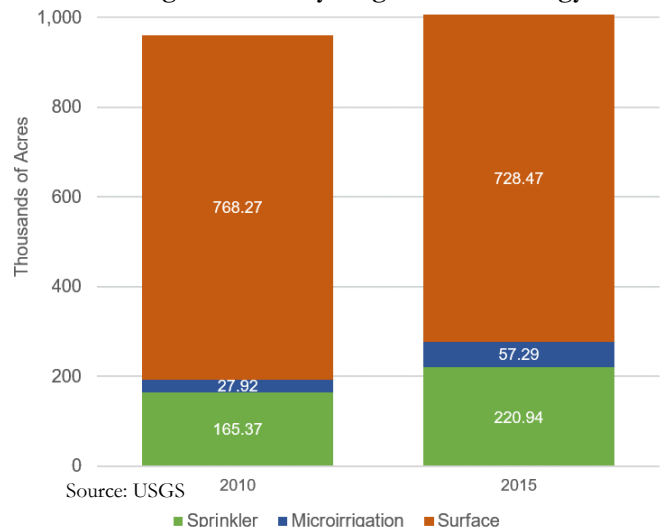
AMA Water Use



Arizona Agricultural Water Use by Use and Source



Arizona Irrigated Acres by Irrigation Technology



Cochise County, AZ

Overview

Cochise County is located in the southeastern corner of Arizona bordered to the east by New Mexico and to the south by Mexico. As of 2018 the population was nearly 127,000 with more than one-third of the county's population residing in rural areas. Major population centers include Sierra Vista, Douglas, Bisbee, Benson, and Willcox.

Historically a mining region, top industries in Cochise County include government, tourism, and agriculture. The county is home to Fort Huachuca, an Army installation, and a rapidly growing tree nut and winery industry, supporting agritourism in the region.

Although agriculture accounts for less than 1% of the county's GDP, it employs approximately 4% of all private industry jobs, higher than the national and state averages. Agriculture also plays an important role in land management, with more than 1,500 square miles or one-quarter of Cochise County's land area in farms. Relative to state agricultural production, Cochise County accounts for about 4% of Arizona's state agricultural cash receipts.



Map of Cochise County, Arizona

Indicator	Cochise County	Arizona
Land Area (square miles)	6,219	113,990
Land in Farms (Crops, Grazing) (square miles)	1,521	40,822
County Population (2018)	126,770	7,171,646
Annual Average Population Growth Rate (2010-18)	-0.5%	1.4%
Percent of Population Over 65 (2018)	22.3%	17.5%
Percent Population Rural (2010)	36.3%	10.2%
Total County Employment (2018)	33,994	2,826,095
Share Federal, State, & Local Government Employment (2018)	31.8%	13.8%
GDP (2018)	\$4.9 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$40.3 million	\$2.3 billion

Top 10 Private Industries in Cochise County by Employment LQ, 2018

Industry	Location Quotient
Tree nut farming	32.77
Water supply and irrigation systems	13.47
Hay farming	11.75
Farm labor contractors and crew leaders	10.93
Corn farming	9.46
Motor vehicle towing	4.49
Hardware stores	3.55
Residential framing contractors	3.23
Outpatient mental health centers	3.21
Wineries	3.11

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs), which measure the ratio of a particular industry's share of employment within a region to the same industry's share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that a region is specialized in. Higher LQs indicate greater specialization. Of the top 10 most concentrated private industries in Cochise County, agricultural industries occupy the top five spots, including tree nut farming, water supply and irrigation systems, hay farming, farm labor contracting, and corn farming. For example, the share of employment in tree nut farming is nearly 33 times the national average. Wineries rank as the tenth highest employment location quotient at more than 3 times the national average.

Cochise County, AZ

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

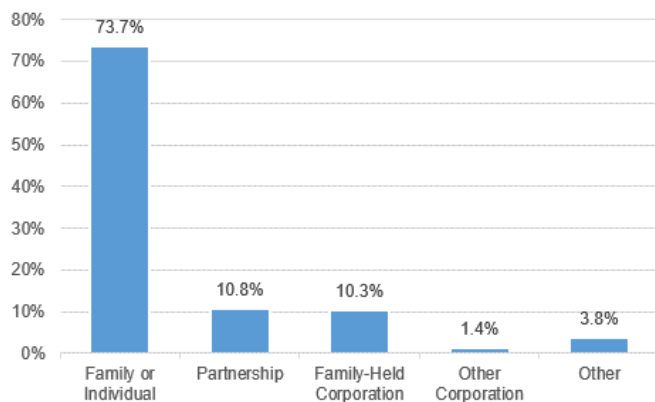
There were 1,083 farms in Cochise County in 2017, covering 87,417 acres of cropland (96% irrigated) and 829,598 acres of pastureland (<1% irrigated). The average farm size was 899 acres, significantly larger than the national average of 441 acres, though the top 11% of farms account for 75% of county acreage.

Of 1,083 total farms, 372 had less than \$1,000 in sales and 59 farms had over \$500,000 in sales. The majority of farms in Cochise County were individual or family-held (74%). Another 11% were partnerships and 10% were family-held corporations.

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Cochise County is beef cattle ranching and farming (373 farms), followed by aquaculture and other animal production (254 farms), and fruit and tree nut farming (176 farms).

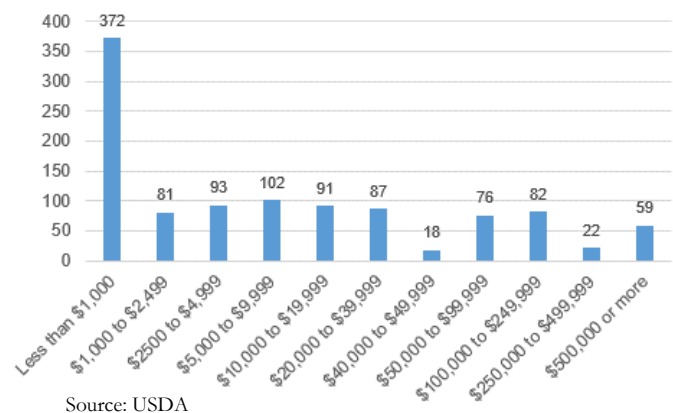
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Cochise County Farms by Legal Organization , 2017



Source: USDA

Cochise County Farms by Annual Sales , 2017



Source: USDA

Cochise County Farms by Industry

Category	Farms
<i>Total farms</i>	<i>1,083</i>
Oilseed and grain farming	12
Vegetable and melon farming	17
Fruit and tree nut farming	176
Greenhouse, nursery, and floriculture production	15
Other crop farming	116
Cotton farming	1
Sugarcane, hay, & all other crop farming	115
Beef cattle ranching and farming	373
Cattle feedlots	3
Dairy cattle and milk production	14
Hog and pig farming	15
Poultry and egg production	35
Sheep and goat farming	53
Aquaculture and other animal production	254

Cochise County, AZ

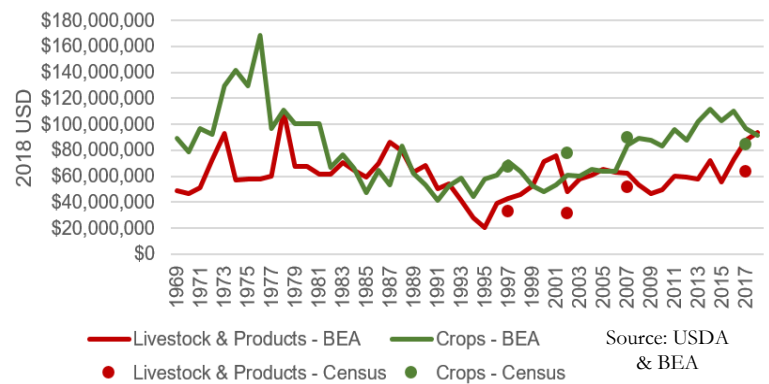
Production & Marketing

Cochise County is neither crop nor livestock dominant in terms of its agricultural production. As of 2017, 57% of county cash receipts originated from the sale of crops, and 43% from livestock.

According to the 2017 Census of Agriculture, major agricultural products by value of sales include **fruits, tree nuts, and berries** (\$31.5 million), **cattle and calves** (\$29.1 million), **grains, oilseeds, dry beans and dry peas** (\$24.4 million), and **other crops and hay** (\$19.6 million). In 2017, Cochise County ranked in the top 5% of counties nationally for its sales of **fruit and tree nuts** and **other field crops and hay**.

Local marketing represents just under 7% of county cash receipts, significantly higher than the national average of less than 1%. Additionally, there were 3 farms with sales of organic production in 2017.

Cochise County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018



Growing Agricultural Industries in Cochise County

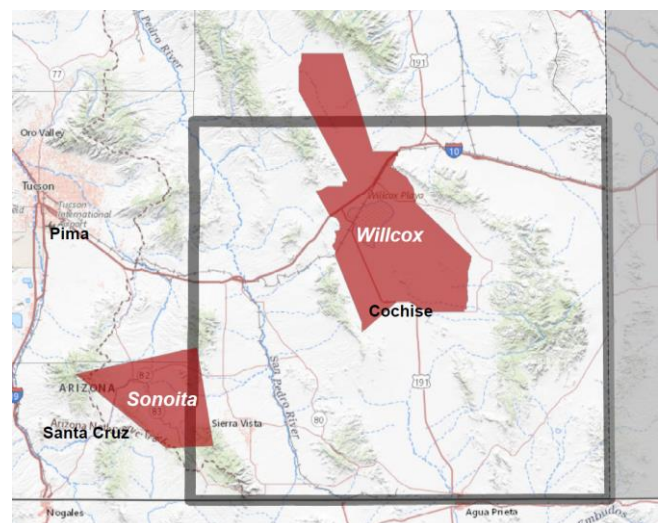
Cochise County is a center for fruit and tree nut production. This is particularly the case for pecans, pistachios, and wine grapes.

The county is home to two American Viticultural Areas (AVAs), areas that have been designated and recognized as wine grape-growing regions. Both the Willcox and Sonoita AVAs are located partially in Cochise County. As of 2017, Cochise County had 757 acres of grape production, accounting for roughly half of the state's total acreage, with 49 farms growing grapes.

Additionally, as of 2017, there were 140 farms producing tree nuts in Cochise County with 21,919 acres. These farms produce pecans and pistachios. In fact, almost all of Arizona's production of pistachios comes from Cochise County. Of the total acreage in tree nuts, 11,146 of which were bearing acres and 10,772 of were non-bearing, highlighting heavy investment in new planting and continued growth of the industry.

In fact, land in orchards in Cochise County grew from 9,944 acres to 22,762 acres between 2012 and 2017.

American Viticultural Areas (AVAs) in Cochise County



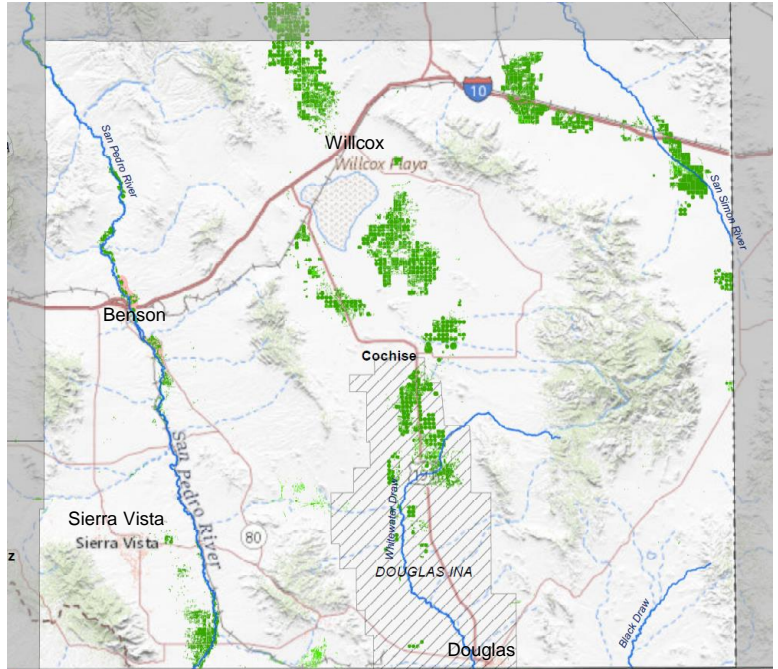
Cochise County, AZ

Irrigation Water Use

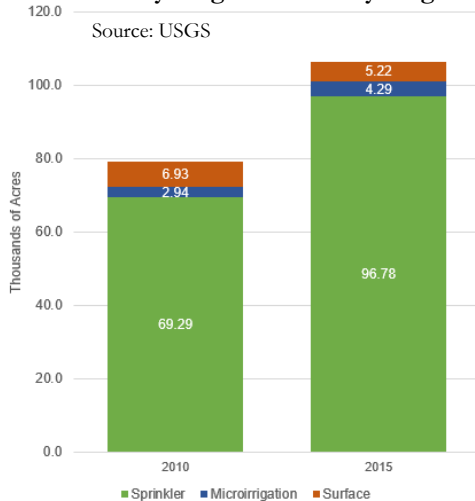
Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited. Cochise County does not contain any land within an AMA, however, it does contain the Douglas INA, which accounts for 8.9% of county acreage.

Irrigated crop production is located throughout Cochise County, though most is located in the greater Willcox area and Sulfur Springs Valley, as well as near both Bowie and San Simon. Based on USGS 2015 estimates of water use, agriculture accounted for 90.0% of Cochise County water withdrawals. Agricultural irrigation water use in Cochise County is dominated by production of crops, with irrigation water exclusively sourced from groundwater. In 2015, an estimated 242,870 acre-feet (AF) was sourced from groundwater for agricultural production. An acre-foot is the amount of water required to cover one acre one foot deep in water. Groundwater use increased slightly between 2010 and 2015. Meanwhile, total irrigated acreage increased by over 20,000 acres over the same time, reflecting large increases in acreage of tree nut crops. Irrigation in Cochise County is heavily dominated by sprinkler irrigation.

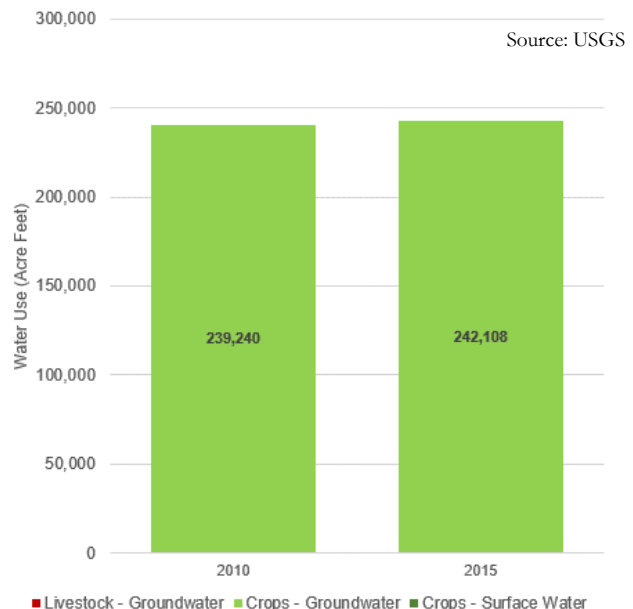
Cochise County Water Map



Cochise County Irrigated Acres by Irrigation Technology



Cochise County Agricultural Water Use by Use and Source



Graham County, AZ

Arizona County Agricultural Economy Profiles
University of Arizona Cooperative Extension

Overview

Graham County is located in eastern Arizona bordered to the north by the Black and San Carlos Rivers, to the south by Cochise County, to the east by Greenlee County, and to the west by Gila and Pinal counties. As of 2018 the population was just over 38,000 with more than 46% of the county's population residing in rural areas. Major population centers are concentrated in the eastern part of the county and include Safford, Pima, and Thatcher.

Top industries in Graham County include government, agriculture, and retail and service-industries. With much of eastern Arizona's population residing in rural areas, the cities and towns of Graham County serve as a primary source for household goods and services.

Agriculture plays an important role in Graham County. More than 40% of the county's land area is in farms, either crops or grazing. On-farm agriculture directly accounts for 2.9% of county GDP and more than 5% of all private industry jobs, higher than the national and state averages. Relative to state agricultural production, Graham County accounts for about 2% of Arizona's state agricultural cash receipts.



Map of Graham County, Arizona

Indicator	Graham County	Arizona
Land Area (square miles)	4,641	113,990
Land in Farms (Crops, Grazing) (square miles)	2,016	40,822
Population (2018)	38,072	7,171,646
Annual Average Population Growth Rate (2010-18)	0.3%	1.4%
Percent of Population Over 65 (2018)	13.9%	17.5%
Percent Population Rural (2010)	46.4%	10.2%
Total Employment (2018)	9,148	2,826,095
Share Federal, State, & Local Government Employment (2018)	30.6%	13.8%
GDP (2018)	\$1.2 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$35.0 million*	\$2.3 billion

* Estimated using IMPLAN 2017 model

Industry	Location Quotient
Cotton farming	54.53
Residential flooring contractors	4.45
Cut stone and stone product manufacturing	3.82
New single-family general contractors	3.64
Food service contractors	2.79
Beef cattle ranching and farming	2.50
Offices of dentists	1.58
Supermarkets and other grocery stores	1.40
Offices of optometrists	1.29
All other general merchandise stores	1.24

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs). LQs are the ratio of a particular industry's share of employment within a region to the same industry's share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that the region is specialized in. Higher LQs indicate greater specialization.

Of the top 10 most concentrated industries in Graham County, cotton farming ranks first, with the share of employment in cotton farming 54 times the national average. Beef cattle ranching and farming ranks sixth at 2.5 times more concentrated than the national average.

Top 10 Private Industries in Graham County by Employment LQ, 2018

Graham County, AZ

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

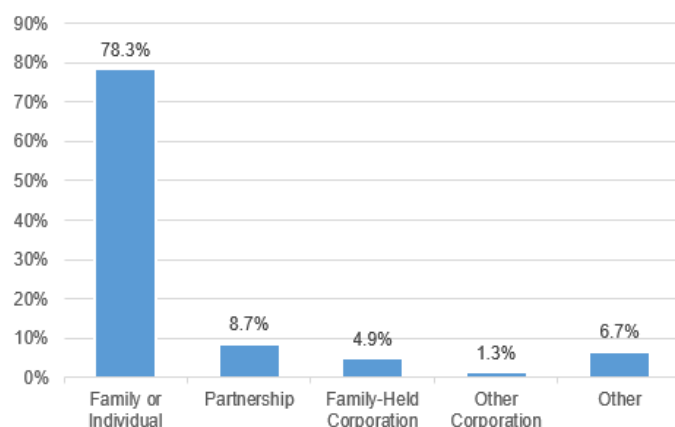
There were 448 farms in Graham County in 2017, covering 43,056 acres of harvested cropland (98% irrigated) and 1,183,759 acres of pastureland (<1% irrigated). The average farm size was 2,880 acres, significantly larger than the national average of 441 acres, though the top 6% of farms account for 95% of county acreage.

Of 448 total farms, 198 had less than \$1,000 in sales and 26 had more than \$500,000 in sales. Over three-quarters of Graham County farms are family or individually held farms, 8.7% are partnerships, 4.8% are family held corporations, and 1.3% are non-family held corporations.

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Graham County is beef cattle ranching and farming, with 221 farms.

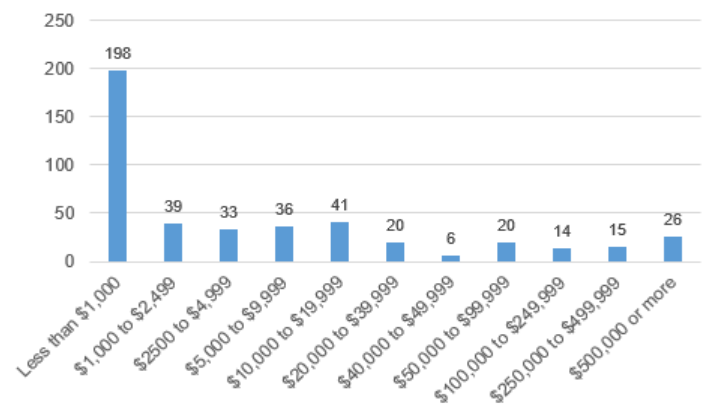
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Graham County Farms by Legal Organization, 2017



Source: USDA

Graham County Farms by Annual Sales, 2017



Source: USDA

Graham County Farms by Industry

Category	Farms
<i>Total farms</i>	448
Oilseed and grain farming	4
Vegetable and melon farming	5
Fruit and tree nut farming	44
Greenhouse, nursery, and floriculture production	2
Other crop farming	101
Cotton farming	35
Sugarcane, hay, & all other crop farming	66
Beef cattle ranching and farming	221
Cattle feedlots	1
Dairy cattle and milk production	8
Hog and pig farming	4
Poultry and egg production	5
Sheep and goat farming	11
Aquaculture and other animal production	42

Graham County, AZ

Production & Marketing

Though the most common type of farm in Graham County are beef cattle ranches, the county is crop-dominant, with 88% of county cash receipts originating from sales of crops, and 12% from livestock.

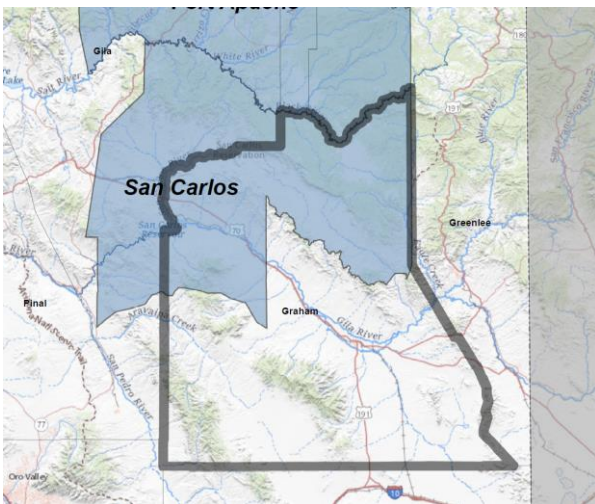
According to the 2017 Census of Agriculture, major agricultural commodities by sales include *cotton and cottonseed* (\$28.5 million), *grains, oilseeds, dry beans, and dry peas* (\$14.2 million), particularly corn, *cattle and calves* (\$6.8 million), and *fruits, tree nuts, and berries* (sales data not disclosed to prevent identifying individual operations).

Similar to the national average, local marketing represents less than 1% of county cash receipts. There were 7 farms with sales of organic production.

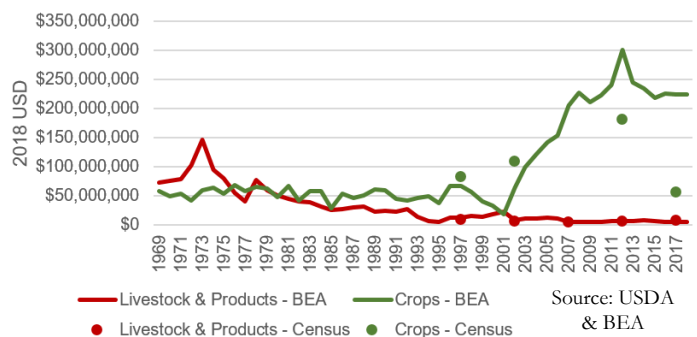
Tribal Agriculture

Graham County encompasses a portion of the San Carlos Apache reservation. A total of 198 farms operated on the San Carlos Apache reservation in 2017. Of these 198 farms, 187 were between 1 and 9 acres in size and 169 farms sold less than \$1,000 in agricultural products. Nearly all operations (193 farms) had inventory of cattle and calves, while only 66 farms sold cattle. Most cattle production within the San Carlos Apache reservation is of beef cattle. Statistics reported represent production within entire tribal areas, therefore production occurring within Graham County is only a portion of the totals reported.

Tribal Areas in Graham County



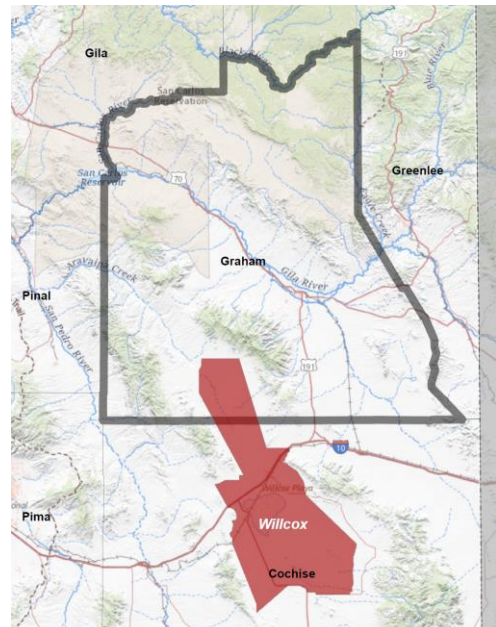
Graham County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018



Specialty Ag Production

Like its neighbor Cochise County, Graham County has a growing wine industry. The southern part of Graham County is considered part of the Willcox American Viticultural Area (AVA), an area that has been designated and recognized as a wine grape-growing region. Between 2012 and 2017, there were 10 new farms producing grapes and, as of 2017, Graham County had 107 acres of grape production.

Willcox AVA Map



Graham County, AZ

Irrigation Water Use

Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited.

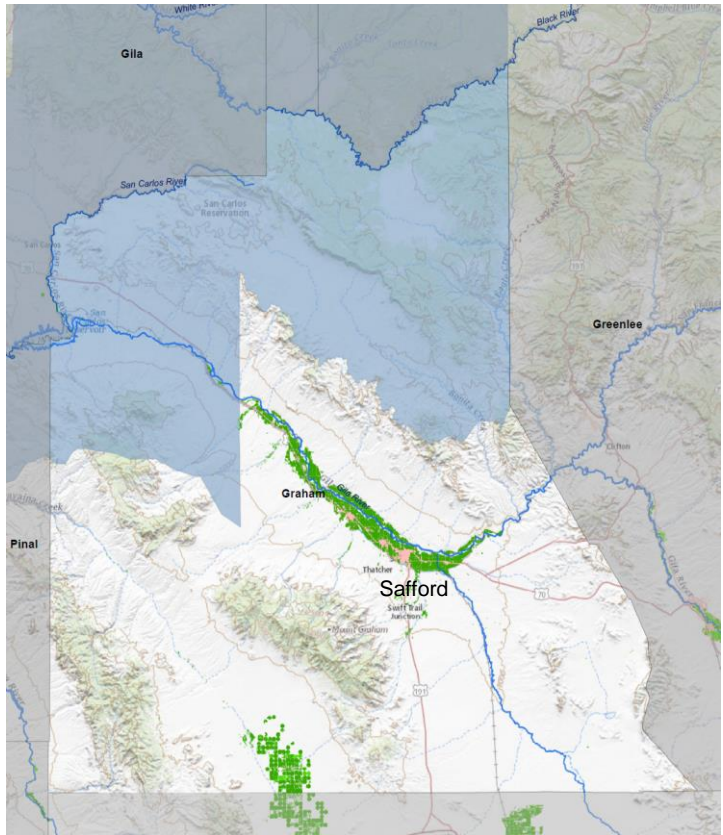
Graham County does not fall within any of the state's AMAs or INAs. Based on USGS 2015 estimates of water use, agriculture accounted for 96.2% of Graham County water withdrawals. Irrigated crop production is concentrated in the Safford area which is located on the Gila River.

Agricultural irrigation water use in Graham County is dominated by production of crops, with the source of water split between groundwater (119,150 acre-feet (AF)) and surface water (86,016 AF). An acre-foot is the amount of water required to cover one acre one foot deep in water. Estimated groundwater use increased between 2010 and 2015 and surface water use declined slightly. Meanwhile, total irrigated acreage declined between 2010 and 2015, and acreage by irrigation technology shifted from surface irrigation dominant to a more even split between sprinkler and surface irrigation, with micro-irrigation representing only a small share of total acreage.

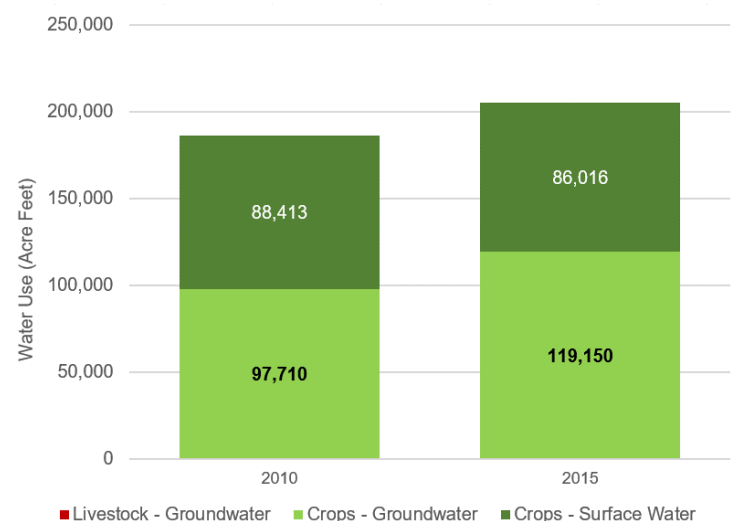
Graham County Irrigated Acres by Irrigation Technology



Graham County Water Map



Graham County Agricultural Water Use by Use and Source



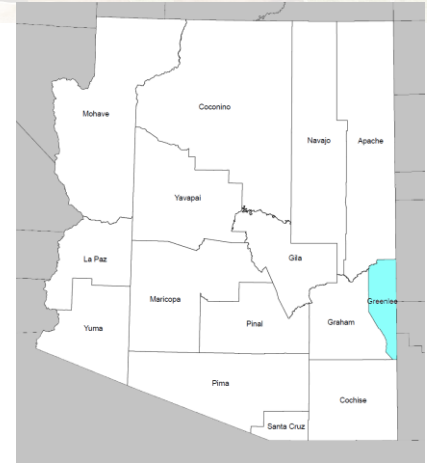
Greenlee County, AZ

Overview

Greenlee County is located in eastern Arizona along the New Mexico border. It is bordered by Apache County to the north and Graham county to the west. As of 2018 the population was just under 9,500 with more than 46% of the county’s population residing in rural areas. Major population centers include Clifton and Duncan.

Top industries in Greenlee County include copper mining and mining-related industries. Agriculture has a small footprint, accounting for less than 1% of all private employment and less than 0.2% of county GDP.

Characterized by its rugged, mountainous terrain, Greenlee County also has a relatively small proportion of land in farms (6%). Much of the land in Greenlee County is public land, or government-owned. Ranchers in Greenlee County lease land from public agencies for grazing. Relative to state agricultural production, Greenlee County accounts for less than 1% of Arizona’s state agricultural cash receipts.



Map of Greenlee County, Arizona

Indicator	Greenlee County	Arizona
Land Area (square miles)	1,848	113,990
Land in Farms (Crops, Grazing) (square miles)	103	40,822
County Population (2018)	9,483	7,171,646
Annual Average Population Growth Rate (2010-18)	1.6%	1.4%
Percent of Population Over 65 (2018)	13.2%	17.5%
Percent Population Rural (2010)	46.6%	10.2%
Total Employment (2018)	4,890	2,826,095
Share Federal, State, & Local Government Employment (2018)	11.5%	13.8%
GDP (2018)	\$1.7 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$2.5 million	\$2.3 billion

Industry	Location Quotient
Copper, nickel, lead, and zinc mining	1,164.07
Support activities for metal mining	629.63
Postal service	107.76
Support activities for rail transportation	60.42
Water supply and irrigation systems	39.21
Natural gas distribution	33.91
Corn farming	29.72
Bowling centers	27.44
Septic tank and related services	26.77
Soil preparation, planting, and cultivating	26.33

Top 10 Private Industries in Greenlee County by Establishment LQ, 2018

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs). LQs are the ratio of a particular industry’s share of employment within a region to the same industry’s share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that the region is specialized in. Higher LQs indicate greater specialization. Due to the size of Greenlee County’s economy and concentration of employment in a small number of large firms, non-disclosed data prevents presenting employment location quotients for the county. Therefore LQs are calculated based on the number of businesses. Greenlee County’s economy is heavily mining dependent, with copper, nickel, lead, and zinc mining ranking first by establishment LQ. Water supply and irrigation systems, corn farming, and soil preparation, planting, and cultivating are agriculture or agriculture-related industries that rank in the top 10.

Greenlee County, AZ

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

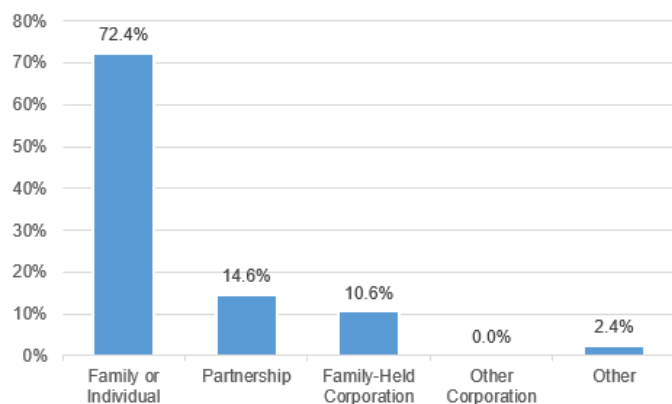
There were 123 farms in Greenlee County in 2017, covering 3,279 acres of cropland (100% irrigated) and 59,714 acres of pastureland (3% irrigated). The average farm size was 536 acres, larger than the national average of 441 acres, with the top 5% of farms accounting for 67% of county acreage.

Of 123 total farms, 35 had less than \$1,000 in sales and 4 had more than \$500,000 in sales. A large majority (72%) of county operations were family- or individual-held farms. Other common types were partnerships (14.6%) and family-held corporations (10.6%).

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Greenlee County is beef cattle ranching and farming, with 68 farms.

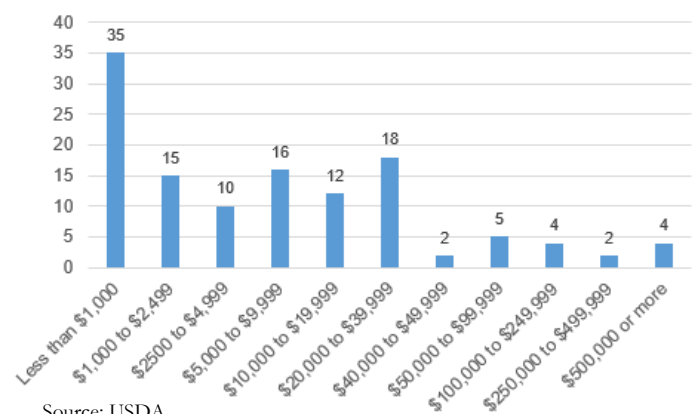
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Greenlee County Farms by Legal Organization, 2017



Source: USDA

Greenlee County Farms by Annual Sales, 2017



Source: USDA

Greenlee County Farms by Industry

Category	Farms
Total farms	123
Oilseed and grain farming	0
Vegetable and melon farming	2
Fruit and tree nut farming	4
Greenhouse, nursery, and floriculture production	0
Other crop farming	16
Cotton farming	2
Sugarcane, hay, & all other crop farming	14
Beef cattle ranching and farming	68
Cattle feedlots	0
Dairy cattle and milk production	1
Hog and pig farming	0
Poultry and egg production	0
Sheep and goat farming	12
Aquaculture and other animal production	20

Greenlee County, AZ

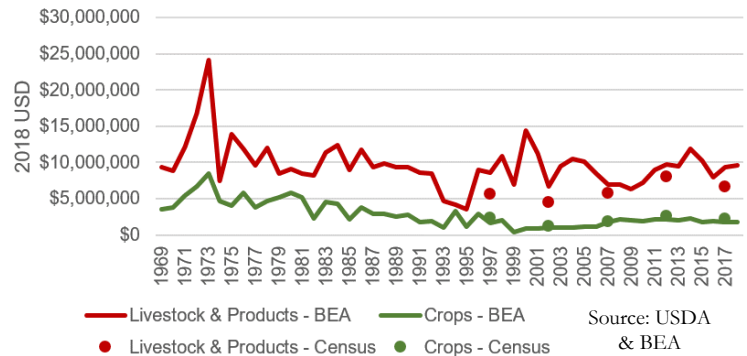
Production & Marketing

Greenlee County is a livestock-dominant county, with 75% of county cash receipts originating from sales of livestock, and 25% from crops.

According to the 2017 Census of Agriculture, the major agricultural commodities by sales are **cattle and calves** (sales data not disclosed to prevent identifying individual operations) and **other crops and hay** (\$1.9 million).

Beef cattle ranching is the most prominent agricultural activity in Greenlee County, with Greenlee County accounting for approximately 3% of the state's inventory of beef cows.

Greenlee County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018

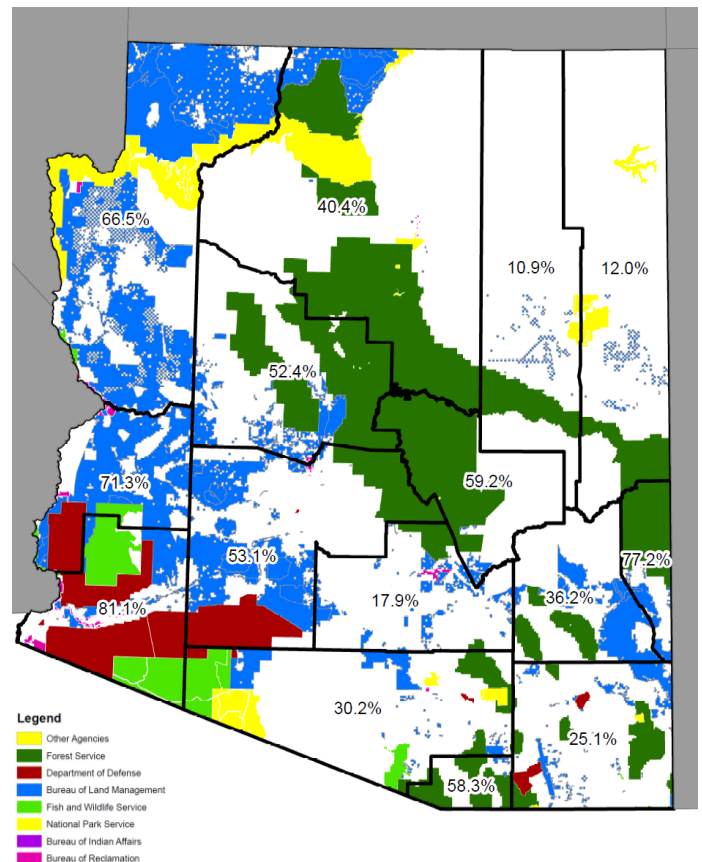


Agriculture & Public Lands

Greenlee County has the second highest share of federal lands of all counties in Arizona at 77.2%, while Yuma County has 81.1%. As a livestock-dominant county, many Greenlee County livestock producers rely on leasing federal lands for grazing their livestock. The Forest Service (FS) and the Bureau of Land Management (BLM) are the two federal agencies that issue grazing permits. Approximately 64% of Greenlee County's land area is managed by the FS and 13% is managed by the BLM.

Ranching on public lands presents a series of unique considerations for producers. Wildland fire is one issue that affects livestock producers, particularly those operating in forested areas. Greenlee County has been significantly impacted by wildland fire in recent years. In the summer of 2011, the Wallow Fire burned a large portion of the Apache-Sitgreaves National Forest in Greenlee and Apache counties. As one of the largest fires in the state's history, grazing activity was disrupted for livestock producers who were forced to flee and move livestock to safety. Additionally, grazing on public lands requires coordinating with one or many land managers, complying with federal or state regulation, obtaining permits, and paying fees. These considerations have implications for operations and the cost of doing business (Cost and Return Estimates for Cow/Calf Ranches in Five Regions of Arizona, Teegerstrom & Tronstad, 2000).

Share of County Area in Federal Lands and Type



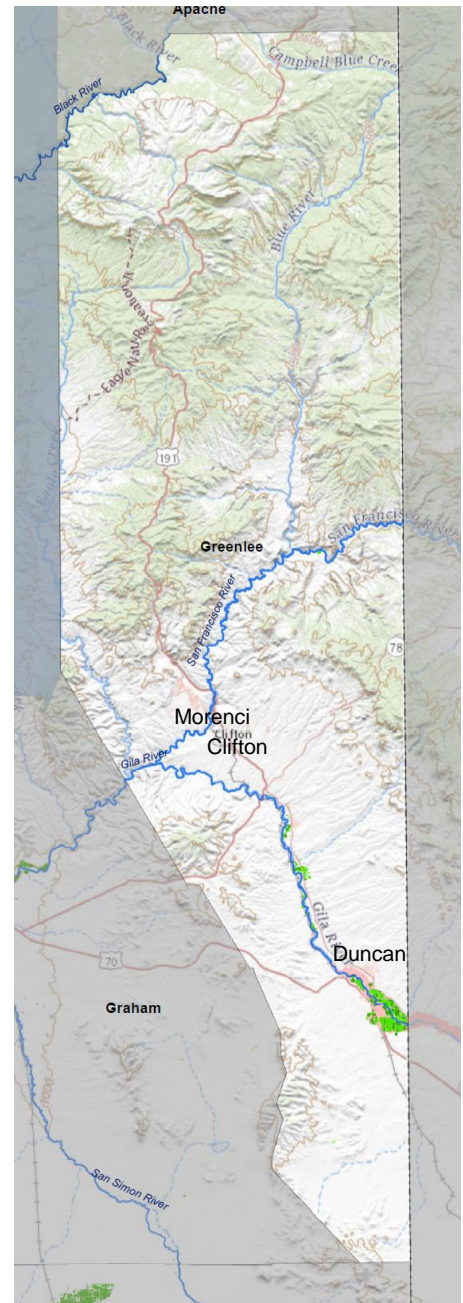
Greenlee County, AZ

Irrigation Water Use

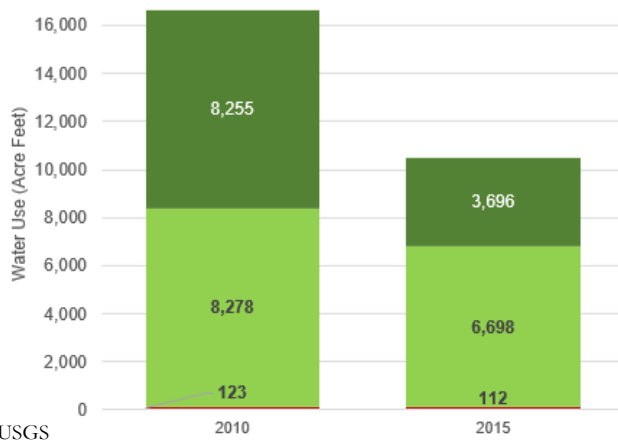
Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited.

Greenlee County does not include any area within an AMA or INA. Based on USGS 2015 estimates of water use, agriculture accounted for 60.0% of Greenlee County water withdrawals. Irrigated crop production is concentrated in the Gila River Valley near Duncan, Arizona. Agricultural irrigation water use in Greenlee County is dominated by production of crops, with the majority of irrigation water coming from groundwater. Water source is split between groundwater (6,810 acre-feet (AF)) and surface water (3,696 AF). An acre-foot is the amount of water required to cover one acre one foot deep in water. Groundwater and surface water decreased between 2010 and 2015. Total irrigated acreage declined between 2010 and 2015, mostly through declines in acres irrigated by surface irrigation.

Greenlee County Water Map



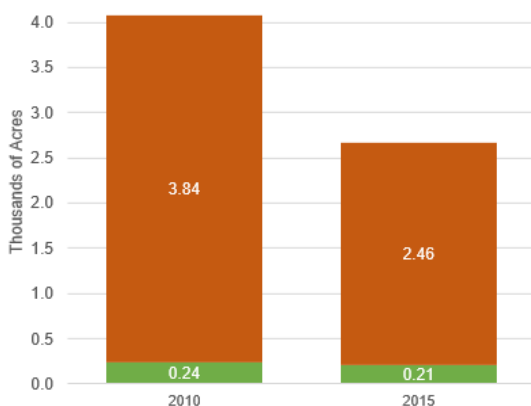
Greenlee County Agricultural Water Use by Use and Source



Source: USGS

■ Livestock - Groundwater ■ Crops - Groundwater ■ Crops - Surface Water

Greenlee County Irrigated Acres by Irrigation Technology



Source: USGS

■ Sprinkler ■ Microirrigation ■ Surface

Pima County, AZ

Overview

Pima County is located in southern Arizona bordered to the north by Pinal and Maricopa counties, to the east by Cochise County, and to the south by Mexico and Santa Cruz County. Pima is an urban county, ranking as the second most populous county in Arizona, with more than 1 million residents and only 7.5% of the population living in rural areas. A majority of the county's population resides in Tucson, Arizona's second largest city.

Major industries in Pima County include higher education, healthcare, and aerospace and defense. Agriculture accounts for approximately 0.2% of private employment in Pima County and directly contributes \$64.5 million to the county's \$44.9 billion economy. While agriculture does not account for a large share of county GDP or county employment, nearly 45% of Pima County's land area is in farms, either for crop production or grazing. Relative to state agricultural production, Pima County accounts for about 2% of Arizona's state agricultural cash receipts.



Map of Pima County, Arizona

Indicator	Pima County	Arizona
Land Area (square miles)	9,189	113,990
Land in Farms (Crops, Grazing) (square miles)	4,090	40,822
County Population (2018)	1,039,073	7,171,646
Annual Average Population Growth Rate (2010-18)	0.7%	1.4%
Percent of Population Over 65 (2018)	19.8%	17.5%
Percent Population Rural (2010)	7.5%	10.2%
Total Employment (2018)	368,438	2,826,095
Share Federal, State, & Local Government Employment (2018)	18.8%	13.8%
GDP (2018)	\$44.9 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$64.5 million	\$2.3 billion

Industry	Location Quotient
Research and development in nanotechnology	36.44
Support activities for metal mining	10.11
Telemarketing and other contact centers	7.72
Professional employer organizations	6.84
Other support activities for air transport.	4.61
Freestanding emergency medical centers	4.61
Other technical and trade schools	4.47
Book stores	3.91
Other automotive mechanical and elec. repair	3.53
Automotive glass replacement shops	3.34

Top 10 Private Industries in Pima County by Employment LQ, 2018

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs). LQs are the ratio of a particular industry's share of employment within a region to the same industry's share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that the region is specialized in. Higher LQs indicate greater specialization.

Due to the size of Pima County's economy, which is dominated by economic activity in the metro Tucson area, agricultural industries do not rank within the top 10 industries by employment LQ.

Pima County, AZ

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any place that produced and sold, or would have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

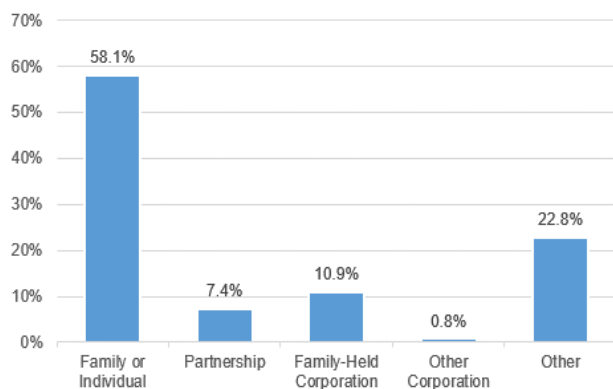
There were 661 farms in Pima County in 2017, covering 29,192 acres of cropland (99% irrigated) and 2,553,726 acres of pastureland (<1% irrigated). The average farm size was 3,960 acres, larger than the national average of 441 acres, though the top 5% of farms account for 98% of county acreage.

Of 661 total farms, 324 had less than \$1,000 in sales and 20 farms had sales of \$500,000 or more. The majority of farms in Pima County are individual or family-held (58%). The second most common type, accounting for 23% of operations in Pima County, have other forms of legal organization.

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Pima County is aquaculture and other animal production, reflecting domestic animal breeders in the Tucson metropolitan area.

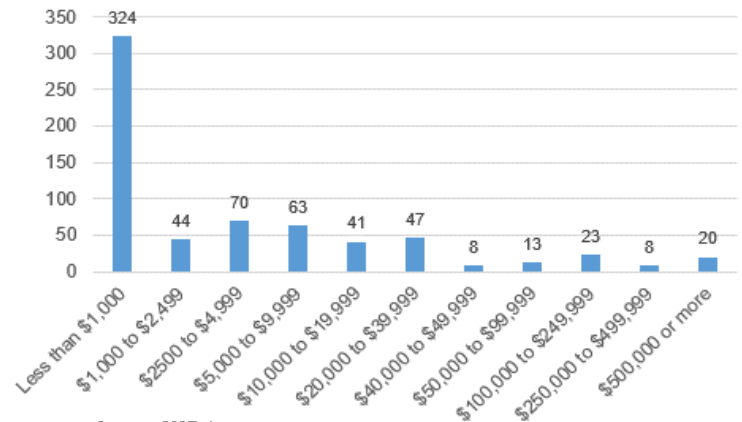
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Pima County Farms by Legal Organization, 2017



Source: USDA

Pima County Farms by Annual Sales, 2017



Source: USDA

Pima County Farms by Industry

Category	Farms
Total farms	661
Oilseed and grain farming	2
Vegetable and melon farming	32
Fruit and tree nut farming	23
Greenhouse, nursery, and floriculture production	29
Other crop farming	27
Cotton farming	11
Sugarcane, hay, & all other crop farming	16
Beef cattle ranching and farming	217
Cattle feedlots	0
Dairy cattle and milk production	0
Hog and pig farming	16
Poultry and egg production	14
Sheep and goat farming	32
Aquaculture and other animal production	269

Pima County, AZ

Production & Marketing

Pima County is a crop-dominant county, with 84% of county cash receipts originating from sales of crops, and 16% from livestock.

According to the 2017 Census of Agriculture, major agricultural commodities in Pima County by sales include **nursery, greenhouse, floriculture, and sod** (\$14.6 million), **cotton and cottonseed** (\$10.6 million), and **cattle and calves** (\$8.3 million). **Fruits, tree nuts, and berries** are also a major commodity in Pima County, ranking it third in sales for the state, but the value of sales is not disclosed to protect the identity of individual operations.

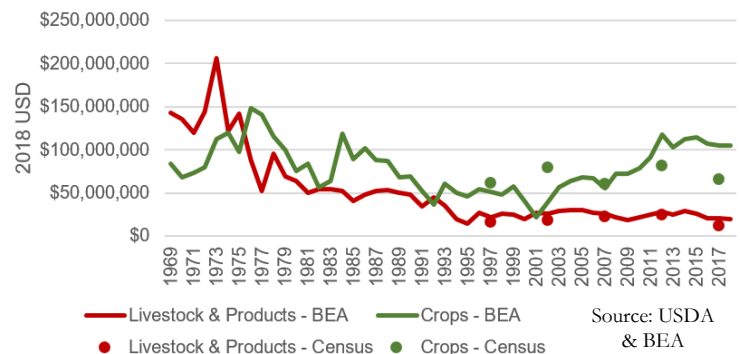
Local marketing represents <1% of county cash receipts. Additionally, there were 3 farms with sales of organic production.

Tribal Agriculture

Pima County contains portions of the Tohono O'odham Nation and the Pascua Yaqui Pueblo. According to the 2017 Census of Agriculture, 164 farms operated on the Tohono O'odham Nation in 2017 with 2.6 million acres in farms, 8,603 acres of which were in crops. These farms generated \$8.1 million in total sales in 2017. The most common type of operation was farms producing cattle and calves, followed by those producing horses.

Production by the Pascua Yaqui Pueblo was not reported in the 2017 Census of Agriculture. Statistics reported represent production within entire tribal areas, therefore production occurring within Pima County is only a portion of the totals reported for those tribal areas only partially within the county.

Pima County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018

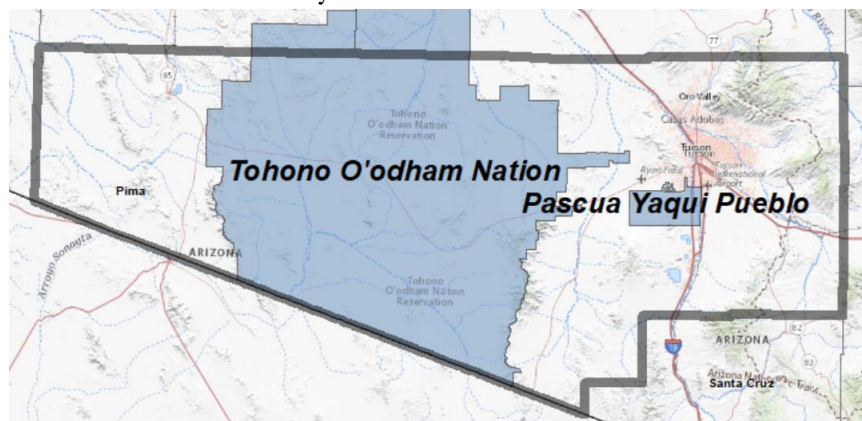


Specialty Ag Production

Sales of **nursery, greenhouse, floriculture, and sod** in Pima County rank the county third in the state and in the top 7% of U.S. counties producing these agricultural products.

In 2017, Pima County had 7 operations with 95,000 square feet of greenhouse vegetables and fresh cut herbs under glass or other protection. This includes greenhouse tomatoes as well as other types of fresh vegetables and herbs.

Tribal Areas in Pima County



Pima County, AZ

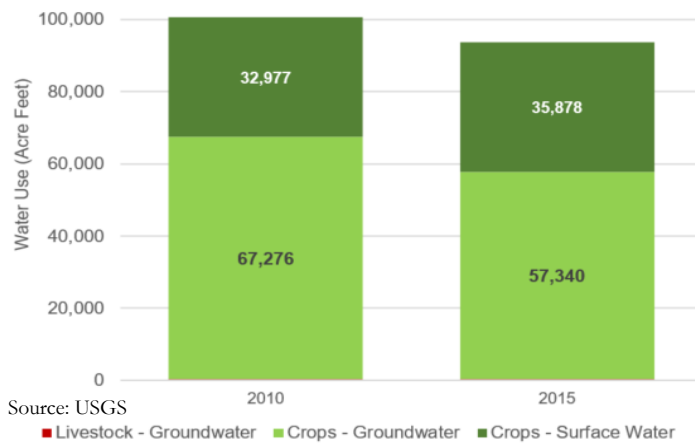
Irrigation Water Use

Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited.

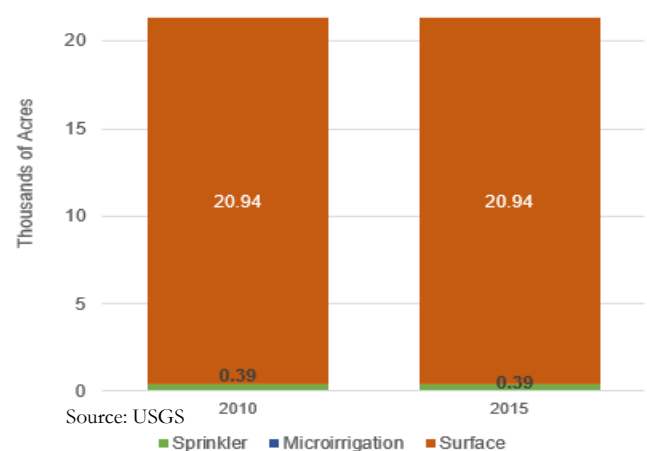
Pima County has land in three AMAs: 33.1% of land area in the Tucson AMA, 15.9% in the Pinal AMA, and 1.6% in Santa Cruz AMA. AMA-level water demand data from the Arizona Department of Water Resources shows that water demand in the Tucson AMA has increased slightly between 1985 and 2017, and agriculture's share of total demand has decreased modestly, from just under 42% in 1985 to 33% in 2017.

Based on USGS 2015 estimates of water use, agriculture accounted for 27.9% of Pima County water withdrawals. Agricultural irrigation water use in Pima County is dominated by production of crops, with the majority of irrigation water coming from groundwater. Water source is split between groundwater (57,799 acre-feet (AF)) and surface water (35,878 AF). An acre-foot is the amount of water required to cover one acre one foot deep in water. Irrigated crop production is concentrated along the Santa Cruz River. Groundwater use decreased slightly between 2010 and 2015 and surface water use increased slightly, while irrigated acreage remained unchanged, heavily dominated by surface irrigation.

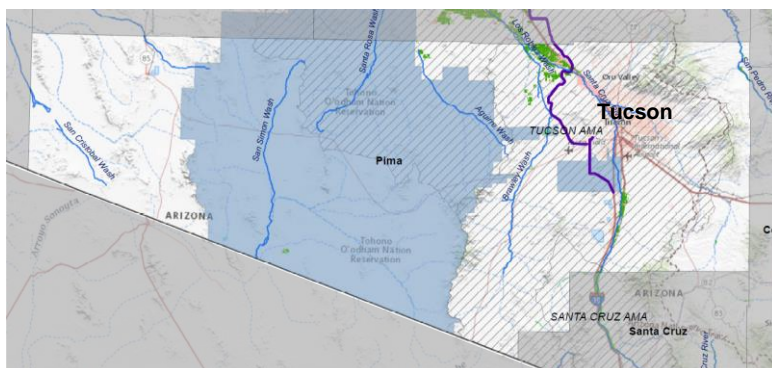
Pima County Agricultural Water Use by Use and Source



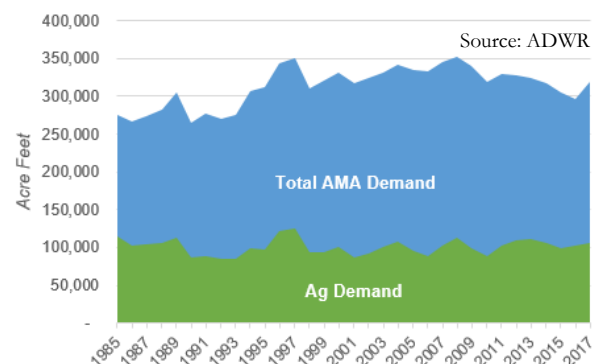
Pima County Irrigated Acres by Irrigation Technology



Pima County Water Map



Tucson AMA Water Demand

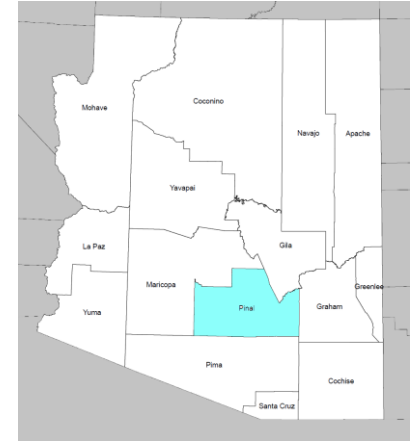


Pinal County, AZ

Overview

Pinal County is located in central Arizona bordered to the north and west by Maricopa County, the south by Pima County, the east by Graham County, and the northeast by Gila County. The third most populous county in the state, major population centers include Casa Grande, Maricopa, and Apache Junction. With metropolitan Phoenix and Tucson on either side of Pinal County, the county has experienced an annual population growth rate of 2.1% and has only 21.9% of the population living in rural areas.

Top industries in Pinal County include mining, agriculture, and government. Mining occurs primarily in the eastern part of the county, while agriculture occurs in the valley along the Gila and Santa Cruz rivers and the Central Arizona Project canal. Agriculture plays an important role in Pinal County's economy. While agriculture accounts for a small share of Pinal County's GDP (less than 1%), jobs in agriculture account for approximately 5% of all private employment, higher than the state and national averages. Additionally, approximately one-third of county land is in farms. Relative to state agricultural production, Pinal County accounts for about one-fourth of Arizona's state agricultural cash receipts.



Map of Pinal County, Arizona

Indicator	Pinal County	Arizona
Land Area (square miles)	5,374	113,990
Land in Farms (Crops, Grazing) (square miles)	1,751	40,822
County Population (2018)	447,138	7,171,646
Annual Average Population Growth Rate (2010-18)	2.1%	1.4%
Percent of Population Over 65 (2018)	20.4%	17.5%
Percent Population Rural (2010)	21.9%	10.2%
Total Employment (2018)	62,137	2,826,095
Share Federal, State, & Local Government Employment (2018)	31.9%	13.8%
GDP (2018)	\$7.6 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$28.1 million	\$2.3 billion

Industry	Location Quotient
Cotton farming	46.64
Dairy cattle and milk production	25.82
Cotton ginning	23.80
Hay farming	13.35
Lessors of other real estate property	8.57
All other miscellaneous crop farming	7.25
Wheat farming	6.43
Soil preparation, planting, and cultivating	6.11
Crop harvesting, primarily by machine	5.43
Other gasoline stations	4.88

Top 10 Industries in Pinal County by Employment LQ

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs). LQs are the ratio of a particular industry's share of employment within a region to the same industry's share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that the region is specialized in. Higher LQs indicate greater specialization.

Of the top 10 most concentrated private industries in Pinal County, agriculture occupies eight spots, reflecting not only employment on-farm, but also industries that prepare land and are involved in harvest and postharvest activities. Cotton farming ranks first with employment more than 46 times more than the national average, and dairy cattle and milk production ranks second, with nearly 26 the national average.

Pinal County, AZ

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

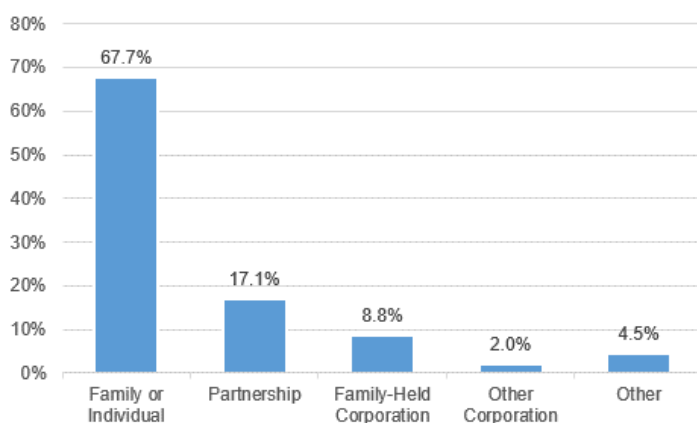
There were 762 farms in Pinal County in 2017, covering 235,185 acres of cropland (98% irrigated) and 772,331 acres of pastureland (<1% irrigated). The average farm size was 1,471 acres, significantly larger than the national average of 441 acres, though the top 10% of farms account for 88% of county acreage.

Of 762 total farms, 244 had less than \$1,000 in sales, meanwhile 146 had more than \$500,000 in sales. The majority of county farms (68%) are family or individual farms, 17% are partnerships, and 9% are family-held corporations.

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Pinal County is aquaculture and other animal production (222 farms), followed closely by beef cattle ranching and farming (180), and sugarcane, hay, and all other crop farming (122 farms).

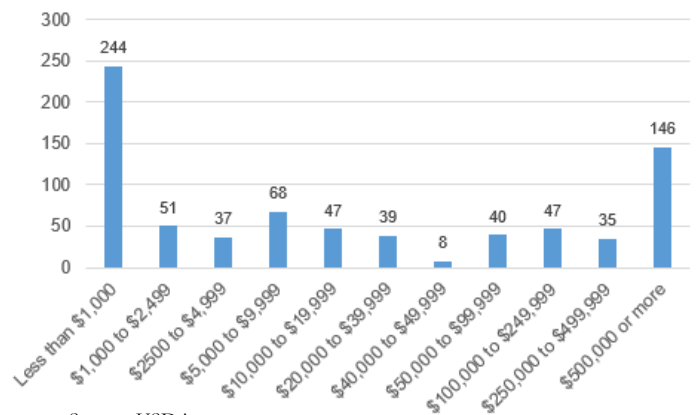
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Pinal County Farms by Legal Organization, 2017



Source: USDA

Pinal County Farms by Annual Sales, 2017



Source: USDA

Pinal County Farms by Industry

Category	Farms
<i>Total farms</i>	762
Oilseed and grain farming	26
Vegetable and melon farming	17
Fruit and tree nut farming	20
Greenhouse, nursery, and floriculture production	12
Other crop farming	208
Cotton farming	86
Sugarcane, hay, & all other crop farming	122
Beef cattle ranching and farming	180
Cattle feedlots	7
Dairy cattle and milk production	31
Hog and pig farming	6
Poultry and egg production	10
Sheep and goat farming	23
Aquaculture and other animal production	222

Pinal County, AZ

Production & Marketing

Pinal County is a livestock-dominant county, with 64% of county cash receipts originating from sales of livestock, and 36% from crops. That said, Pinal County is a major agricultural producer, ranking in the top 2% in the U.S. for the sale of cattle, cotton, other crops and hay, and vegetables and melons.

According to the 2017 Census of Agriculture, major agricultural products by sales includes **cattle and calves** (\$283.2 million), **milk from cows** (\$268.2 million), **cotton and cottonseed** (\$92.0 million), **other crops and hay** (\$79.1 million), **grains, oilseeds, dry beans, dry peas**, particularly barley and wheat (\$50.2 million), and **vegetables, melons, potatoes, and sweet potatoes** (\$49.3 million).

Similar to the national average, local marketing represents less than 1% of county cash receipts. Additionally, there were 4 farms with sales of organic production.

Tribal Agriculture

Pinal County contains portions of the Gila River Indian Community, the Tohono O'odham Nation, the San Carlos Apache reservation, and the Maricopa Ak-Chin reservation. Statistics reported below represent production within entire tribal areas, therefore production occurring within Pinal County is only a portion of the totals reported.

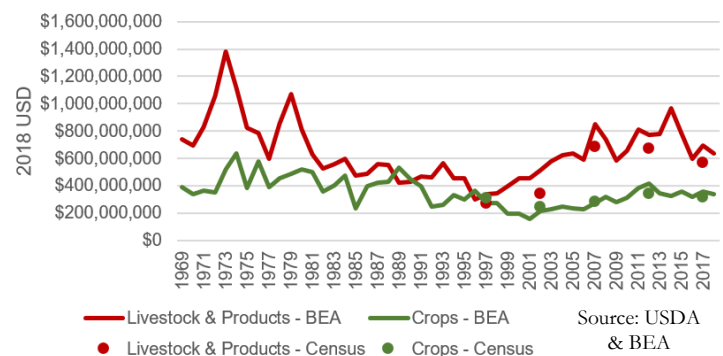
The Gila River Indian Community had 55 farms operating in 2017, 40,930 acres of crops, and \$32.8 million in sales, primarily cotton and hay.

The Tohono O'odham Nation operated 164 farms, with 2.6 million acres in farms, 8,603 acres of which were in crops. These farms generated \$8.1 million in total sales in 2017. The most common type of operation was farms producing cattle and calves, followed by those producing horses.

A total of 198 farms operated on the San Carlos Apache reservation in 2017, of which a large majority were very small scale (187 were between 1 and 9 acres in size and 169 farms sold less than \$1,000 in agricultural products). Most farms (193) had inventory of cattle and calves, but only 66 farms sold cattle in 2017. Most cattle production within the San Carlos Apache reservation is of beef cattle.

Finally, the Maricopa Ak-Chin reservation had 3 farms in operation in 2017.

Pinal County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018



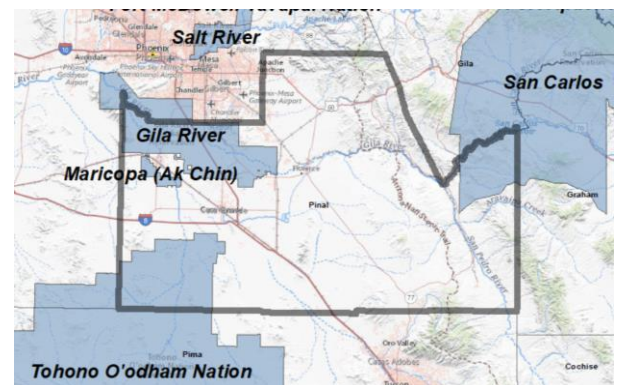
Central Arizona Dairy Industry

Between 1979 and 2018, Arizona's milk cow inventory increased from about 70,000 cows to more than 210,000 cows, with Pinal County playing a major role in raising milk cows since around 2005.

In 2017, Pinal County had 25 dairies with \$268.2 million in sales, accounting for about 31% of the state's milks sales. Maricopa and Pinal counties in Central Arizona generated 88% of Arizona's milk sales.

As the dairy industry has grown in Pinal County, crop production has largely shifted towards agricultural products that are used as feed crops. There has been a shift in acreage towards forage land, growing hay (including alfalfa hay), grass silage, haylage, and greenchop and corn for silage. This has also been accompanied by a reduction in acreage for both wheat and cotton.

Pinal County Tribal Areas



Pinal County, AZ

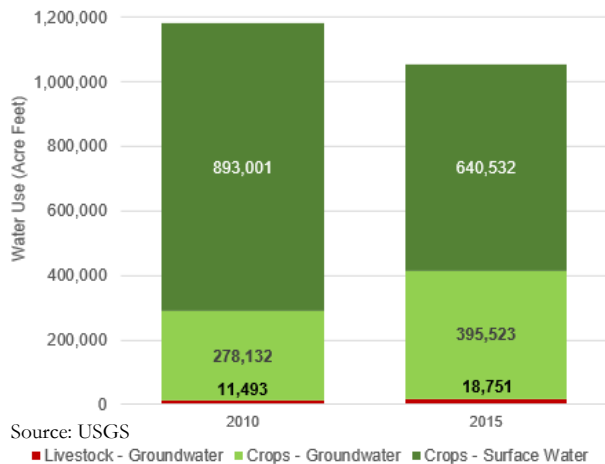
Irrigation Water Use

Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited.

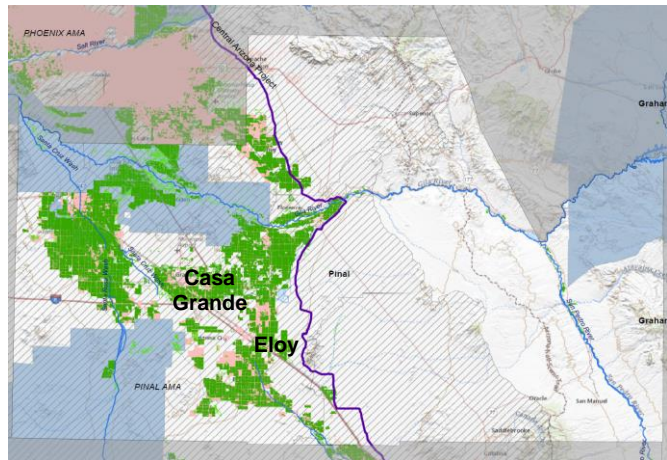
Pinal County is located in three AMAs: 42.1% of Pinal County land area is located in the Pinal AMA, 15.4% in the Phoenix AMA, and 13.3% in the Tucson AMA. Data available for AMAs from the Arizona Department of Water Resources show that demand for water in the Pinal AMA has increased since 1985, and agricultural demand has increased as well, though the share of agricultural demand as a percent of total has fallen from nearly 92% in 1985 to nearly 81% in 2017.

Agricultural irrigation water use in Pinal County is dominated by production of crops, with a slight majority coming from surface water. Water source is split between groundwater (414,274 acre-feet (AF)) and surface water (640,532 AF). An acre-foot is the amount of water required to cover one acre one foot deep in water. Based on USGS 2015 estimates of water use, agriculture accounted for 92.3% of Pinal County water withdrawals. Irrigated crop production occurs in the western half of the county. Groundwater use increased between 2010 and 2015 and surface water use declined. Meanwhile, total irrigated acreage is estimated to have declined between 2010 and 2015, and acreage by irrigation technology shifted from surface irrigation to include a small share of sprinkler and microirrigation acreage.

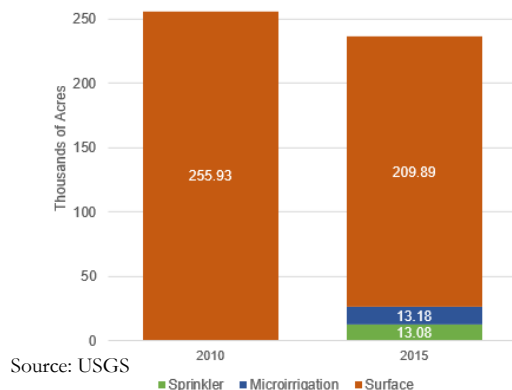
Pinal County Agricultural Water Use by Use and Source



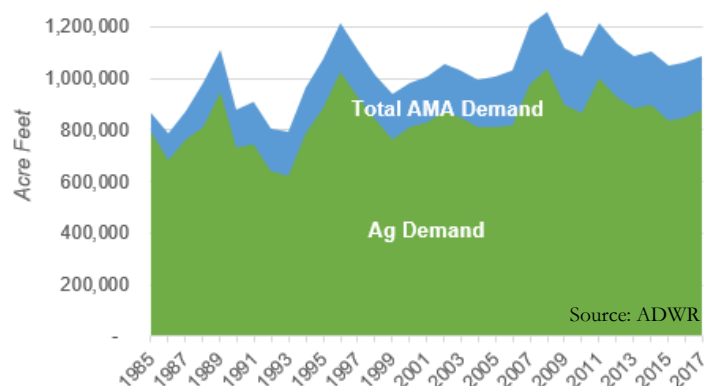
Pinal County Water Map



Pinal County Irrigated Acres by Irrigation Technology



Pinal AMA Water Demand, 1985-2017



Santa Cruz County, AZ

Arizona County Agricultural Economy Profiles
University of Arizona Cooperative Extension

Overview

Santa Cruz County is located in southern Arizona bordered to the north by Pima County, to the east by Cochise County, and to the south by Mexico. It is the smallest county in Arizona by land area at 1,238 square miles. Major population centers include Nogales and Rio Rico.

Top industries in Santa Cruz County include transportation, wholesale, government, and agriculture. The county is home to a cluster of industries involved in the importation, storage, and transportation of fresh produce from Mexico. Ranching is prominent within the county, but there is also significant greenhouse production and a robust grape-growing and wine-making region in the eastern part of the county near Sonoita.

Agriculture accounts for a relatively small share (1%) of Santa Cruz County's GDP, but accounts for nearly 3% of private employment, higher than the national and state averages. It also occupies approximately one-quarter of county land area. Relative to state agricultural production, Santa Cruz County accounts for 1% of Arizona's state agricultural cash receipts.



Map of Santa Cruz County, Arizona

Indicator	Santa Cruz County	Arizona
Land Area (square miles)	1,238	113,990
Land in Farms (Crops, Grazing) (square miles)	309	40,822
County Population (2018)	46,511	7,171,646
Annual Average Population Growth Rate (2010-18)	-0.2%	1.4%
Percent of Population Over 65 (2018)	18.1%	17.5%
Percent Population Rural (2010)	26.9%	10.2%
Total Employment (2018)	13,305	2,826,095
Share Federal, State, & Local Government Employment (2018)	27.2%	13.8%
GDP (2018)	\$1.9 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$18.7 million	\$2.3 billion

NAICS Code / Industry	Location Quotient
Fruit and vegetable merchant wholesalers	143.05
Fruit and vegetable markets	25.75
Other postharvest crop activities	20.43
Freight transportation arrangement	18.80
Art dealers	17.63
Beef cattle ranching and farming	12.33
Other support activities for road transport.	10.10
Clothing accessories stores	8.50
Packaging and labeling services	5.54
Wineries	5.51

Top 10 Industries in Santa Cruz County by Employment LQ

An economy can be characterized by the industries that make up the "base" of the economy. A common way to do this is with location quotients (LQs). LQs are the ratio of a particular industry's share of employment within a region to the same industry's share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that the region is specialized in. Higher LQs indicate greater specialization.

Agricultural industries ranking in the top 10 most concentrated industries in the county include other postharvest crop activities (20.43 times more concentrated than the national average), beef cattle ranching (12.33), and wineries (5.51). Industries linked with the fresh produce trade also rank highly in the county, for example, fruit and vegetable merchant wholesalers (143.05) and freight transportation arrangement (18.80).

Santa Cruz County, AZ

Arizona County Agricultural Economy Profiles
University of Arizona Cooperative Extension

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

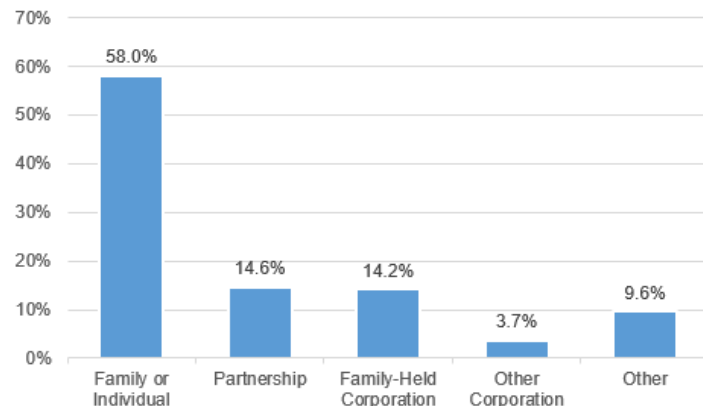
There were 219 farms in Santa Cruz County in 2017, covering 1,398 acres of cropland (89% irrigated) and 191,118 acres of pastureland (<1% irrigated). The average farm size was 903 acres, significantly larger than the national average of 441 acres, though the top 12% of farms account for 83% of county acreage.

Of 219 total farms, 72 had less than \$1,000 in sales and 4 farms had more than \$500,000 in sales. A slight majority of county farms (58%) are family- or individually-held, while 15% are partnerships, 14% are family-held corporations, 4% are other corporations, and 10% have other forms of legal organization.

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common type of operation in Santa Cruz County is beef cattle ranching and farming (111 farms), followed by aquaculture and other animal production (51 farms).

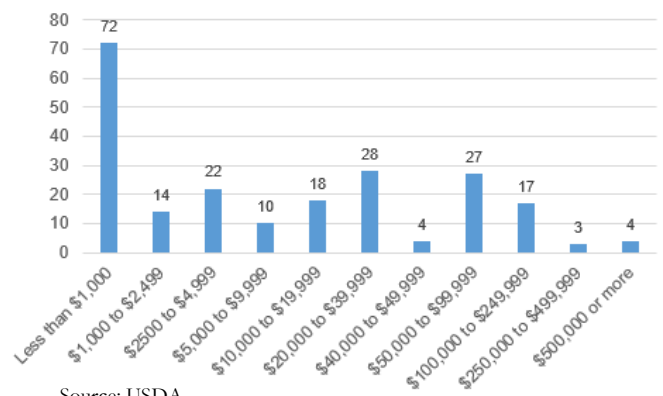
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Santa Cruz County Farms by Legal Organization, 2017



Source: USDA

Santa Cruz County Farms by Annual Sales, 2017



Source: USDA

Santa Cruz County Farms by NAICS Industry Code

Category	Farms
<i>Total farms</i>	219
Oilseed and grain farming	0
Vegetable and melon farming	15
Fruit and tree nut farming	24
Greenhouse, nursery, and floriculture production	7
Other crop farming	4
Cotton farming	0
Sugarcane, hay, & all other crop farming	4
Beef cattle ranching and farming	111
Cattle feedlots	1
Dairy cattle and milk production	0
Hog and pig farming	0
Poultry and egg production	0
Sheep and goat farming	6
Aquaculture and other animal production	51

Santa Cruz County, AZ

Production & Marketing

In past years, Santa Cruz County has been a livestock-dominant county, though the 2017 Census of Agriculture reports an increase in crop production between 2012 and 2017. According to the 2017 Census of Agriculture, major agricultural commodities by sales include **cattle and calves** (\$9.6 million) and **nursery, greenhouse, floriculture, and sod** (sales data not disclosed to prevent identifying individual operations). One farm in the county reported sales of organic products.

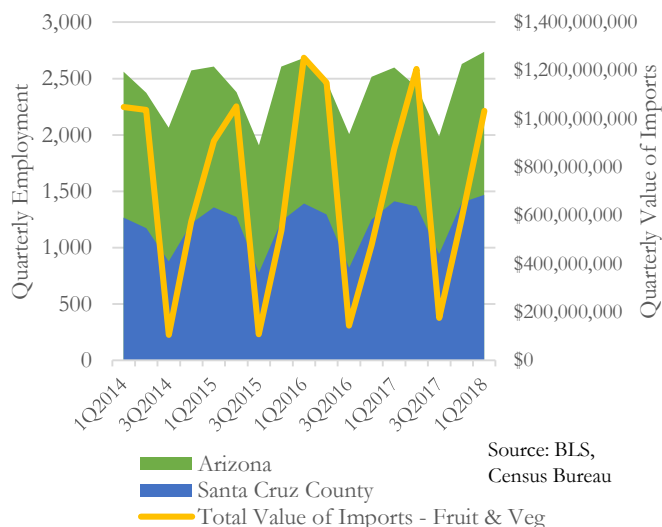
Fresh Produce Wholesale Industry

The Nogales port of entry, located in Santa Cruz County, is a top port nationally for shipments of fresh fruits and vegetables from Mexico, the U.S.'s top source of imported fresh produce.

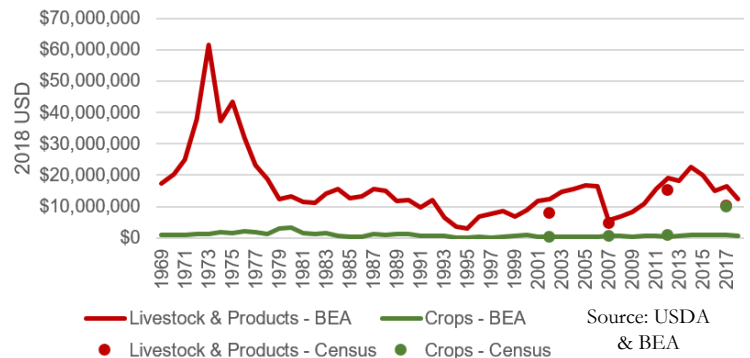
The largest private industry, by a relatively significant margin, is **fruit and vegetable merchant wholesalers**. In 2018, there were 125 establishments, employing more than 1,300 people, and accounting for about 10% of total employment and 13% of total wages in the county.

Fruit and vegetable merchant wholesaling employment is highly seasonal in Santa Cruz County, Arizona, and corresponds closely with the value of fresh produce imports arriving through the Nogales port of entry.

Value of Fruit & Vegetable Imports through Nogales Port of Entry & Employment in Fruit & Vegetable Merchant Wholesalers in Santa Cruz County by Quarter



Santa Cruz County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018



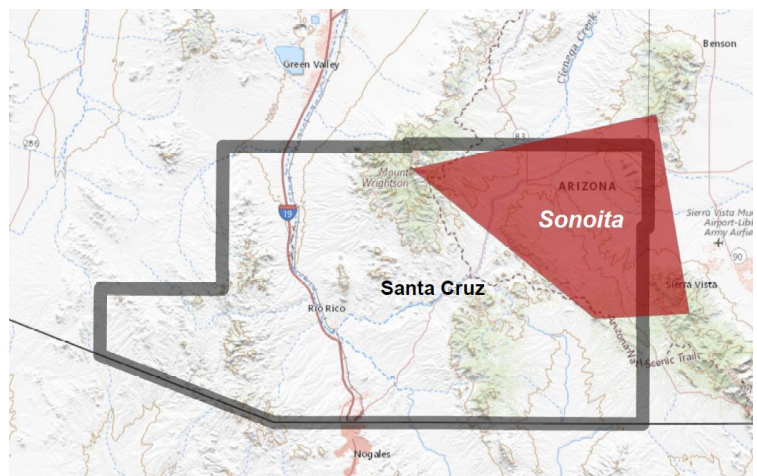
Wineries in Santa Cruz County

Like its neighbor Cochise County, Santa Cruz County has a growing wine industry.

The northeastern part of the county is home to the Sonoita American Viticultural Area (AVA). An AVA is an area that has been designated and recognized as a wine grape-growing region.

In 2017, the county had 229 acres of grape production by 25 growers. This increased from 2012 when there were 19 growers with 191 acres of grape production.

Sonoita AVA Map



Santa Cruz County, AZ

Arizona County Agricultural Economy Profiles
University of Arizona Cooperative Extension

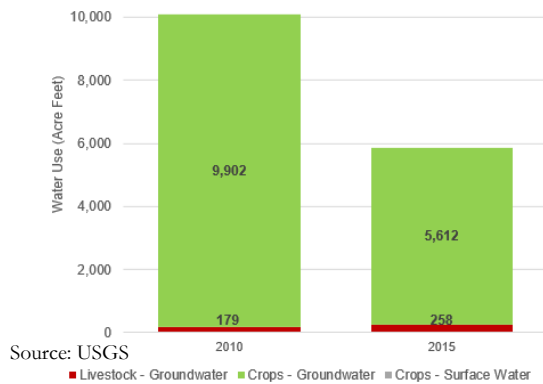
Irrigation Water Use

Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited.

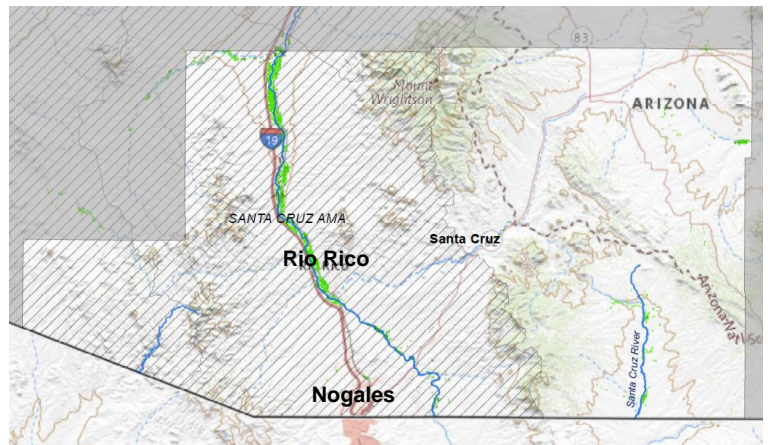
Santa Cruz County is located within two AMAs: 46.2% of Santa Cruz County land area is located in the Santa Cruz AMA and 9.4% of land is located in the Tucson AMA. Data available for AMAs from the Arizona Department of Water Resources show that demand for water in the Santa Cruz AMA has remained relatively steady between 1985 and 2017, and the share of water demand from agriculture has fallen from 62% in 1985 to 57% in 2017.

Based on USGS 2015 estimates of water use, agriculture accounted for 39.6% of Santa Cruz County water withdrawals. Agricultural irrigation water use in Santa Cruz County is dominated by production of crops, with irrigation water almost exclusively sourced from groundwater. In 2015, an estimated 5,870 acre-feet (AF) was sourced from groundwater for agricultural production. An acre-foot is the amount of water required to cover one acre one foot deep in water. Irrigated crop production is concentrated along the Santa Cruz River running south to north across the county. Groundwater use decreased between 2010 and 2015. Meanwhile, total irrigated acreage remained constant and relied primarily on surface irrigation.

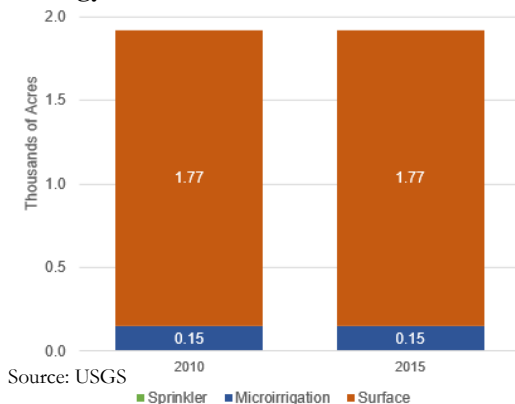
Santa Cruz County Agricultural Water Use by Use and Source



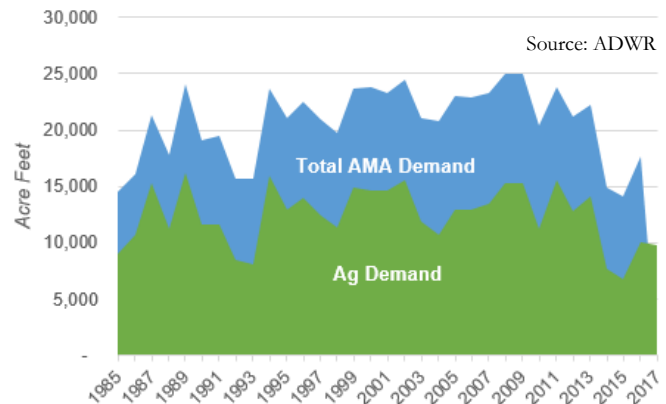
Santa Cruz County Water Map



Santa Cruz County Irrigated Acres by Irrigation Technology



Santa Cruz AMA Water Demand, 1985-2017



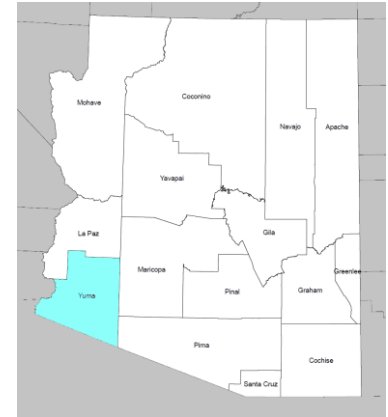
Yuma County, AZ

Overview

Yuma County is located at the southwest corner of Arizona and is bordered to the west by California and the Colorado River, to the north by La Paz County, and to the east by Maricopa and Pima counties. The county is the fifth most populous county in the state, with more than 90% of the population living in urban areas, such as the city of Yuma.

Top industries in Yuma County include agriculture, tourism, and government. Yuma is a popular destination for seasonal visitors because of its mild winter temperatures and the county is home to two military bases.

Despite having a small share (7%) of county land in farms, agriculture plays an important role in the Yuma County economy. In fact, agriculture accounts for more than 14% of the county's GDP and employs nearly one-fourth of all private industry jobs. Relative to state agricultural production, Yuma County accounts for about 30% of Arizona's state agricultural cash receipts.



Map of Yuma County, Arizona

Indicator	Yuma County	Arizona
Land Area (square miles)	5,519	113,990
Land in Farms (Crops, Grazing) (square miles)	386	40,822
County Population (2018)	212,128	7,171,646
Annual Average Population Growth Rate (2010-18)	0.9%	1.4%
Percent of Population Over 65 (2018)	18.8%	17.5%
Percent Population Rural (2010)	10.4%	10.2%
Total Employment (2018)	67,639	2,826,095
Share Federal, State, & Local Government Employment (2018)	21.0%	13.8%
GDP (2018)	\$8.3 billion	\$348.3 billion
Ag, Forestry, & Hunting GDP (on-farm only) (2018)	\$1.2 billion*	\$2.3 billion

* Estimate from 2017 IMPLAN Data

NAICS Code / Industry	Location Quotient
Crop harvesting, primarily by machine	121.07
Other vegetable and melon farming	80.09
Farm labor contractors and crew leaders	69.09
Other postharvest crop activities	46.89
Recreational vehicle dealers	29.31
All other miscellaneous crop farming	26.24
Hay farming	24.54
Soil preparation, planting, and cultivating	21.08
Cotton farming	18.96
Rv parks and campgrounds	16.23

Top 10 Private Industries in Yuma County by Employment LQ, 2018

An economy can be characterized by the industries that make up the “base” of the economy. A common way to do this is with location quotients (LQs). LQs are the ratio of a particular industry's share of employment within a region to the same industry's share of national employment. An industry with a LQ greater than 1.25 is considered part of the economic base, exporting goods and services and bringing money into the region. LQs also help identify industries that the region is specialized in. Higher LQs indicate greater specialization. Of the top 10 most concentrated private industries in Yuma County, agricultural industries occupy eight spots, reflecting not only employment on-farm, but also industries that prepare the land and are involved in harvest and postharvest activities. For example, the share of employment in crop harvesting in Yuma County is 121.07 times the national average.

Yuma County, AZ

Every 5 years, U.S. Department of Agriculture releases the Census of Agriculture, which provides the most comprehensive source of information on agricultural production by county. The Census provides information on the number of farms, types of crops and livestock produced, and farm characteristics, among other information. A farm is defined as any establishment that produced and sold, or could have sold, more than \$1,000 or more of agricultural products in the Census year. The following information comes from the most recent 2017 Census of Agriculture.

Farms

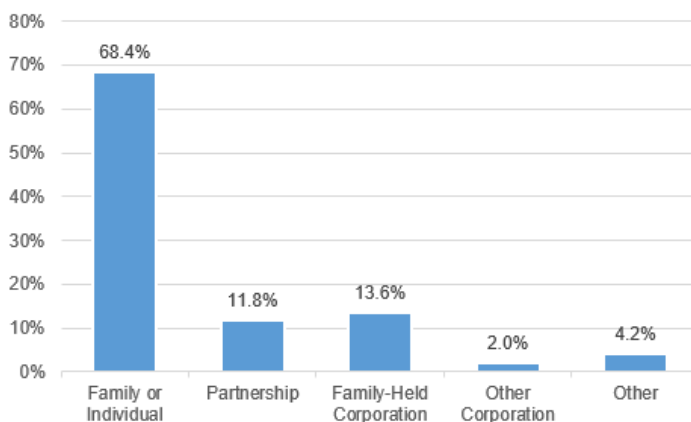
There were 456 farms in Yuma County in 2017, covering 193,823 acres of cropland (94% irrigated). The average farm size was 542 acres, larger than the national average of 441 acres, though the top 9% of farms account for 71% of county acreage.

Of 456 total farms, 113 had less than \$1,000 in sales and 98 farms had sales of \$500,000 or more, evidence of the concentration of large, high-value crop-producing farms in the county. The majority of farms in Yuma County are family or individually held (68.4%).

Farms are classified by the type of agricultural products they produce. When a farm or ranch produces more than one agricultural product, they are classified by the product that constitutes more than 50% of their sales. The most common operation in Yuma County are farms producing fruit and tree nuts, with 123 farms.

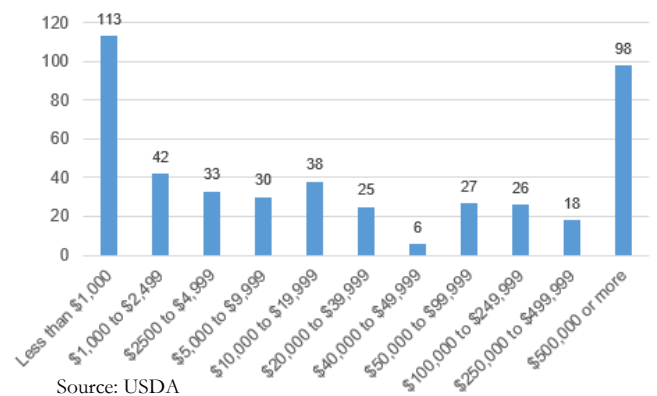
While the number of farms is helpful in understanding how many farms “specialize” in different types of agricultural production, it does not reflect the magnitude or scale of production by commodity, which is better reflected by sales or cash receipts, presented on the next page.

Yuma County Farms by Legal Organization , 2017



Source: USDA

Yuma County Farms by Annual Sales , 2017



Source: USDA

Yuma County Farms by Industry

Category	Farms
<i>Total farms</i>	456
Oilseed and grain farming	16
Vegetable and melon farming	64
Fruit and tree nut farming	123
Greenhouse, nursery, and floriculture production	7
Other crop farming	135
Cotton farming	18
Sugarcane, hay, & all other crop farming	117
Beef cattle ranching and farming	23
Cattle feedlots	4
Dairy cattle and milk production	2
Hog and pig farming	6
Poultry and egg production	4
Sheep and goat farming	11
Aquaculture and other animal production	61

Yuma County, AZ

Production & Marketing

Yuma County is a crop-dominant county, with an estimated 81% of county cash receipts originating from sales of crops. According to the 2017 Census of Agriculture, sales of **vegetables, melons, potatoes, and sweet potatoes** (\$782.3 million) dominate, ranking Yuma County as the third-largest vegetable and melon producing county in the U.S. **Grains, oilseeds, dry beans, dry peas**, particularly wheat, are commonly grown as rotational crops, generating \$32.6 million. Other major agricultural products include **fruit, tree nuts, and berries** (\$62.5 million) and **other crops and hay** (\$50.2 million). Sales for **cattle and calves** are not disclosed for Yuma County, but the county is the second largest producer in the state by sales. Local marketing represents roughly 7% of county cash receipts, significantly higher than the national average of less than 1%. Additionally, there were 31 farms with sales of organic production.

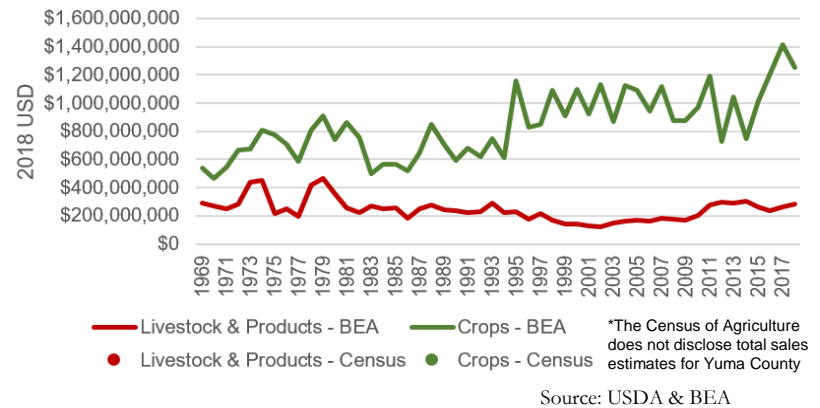
Tribal Agriculture

Highly productive farms operate on tribal land in Yuma County, many of which grow a vegetable-wheat rotation. The Fort-Yuma-Quechan reservation, located primarily in California but spanning into Yuma County, had 10 farms that generated over \$208 million in sales. Most irrigated agriculture falls on the California side of the reservation. The Cocopah reservation falls entirely within Yuma County. Agricultural sales figures are not disclosed, but total production expenses were nearly \$108 million for the six farms operating on the land. Therefore, we might expect total sales equal or greater to total expenses, exceeding \$108 million. Most agricultural land within the Cocopah reservation is leased to non-Indian farmers.

Leafy Greens

With its arable land, warm winter temperatures, and access to Colorado River water for irrigation, Yuma County is one of the country's largest producers of winter vegetables, particularly leafy greens such as Romaine, iceberg, and red leaf and green leaf lettuce. Production of leafy greens rotates seasonally between the Yuma area in the winter and central California in the summer, jointly fulfilling a large majority of national supply. During peak weeks in December, leafy greens from Yuma can represent between 80% to 95% of U.S. weekly shipments.

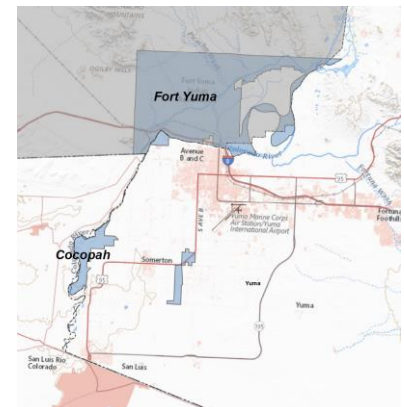
Yuma County Agricultural Cash Receipts for Crops & Livestock, 1969 to 2018



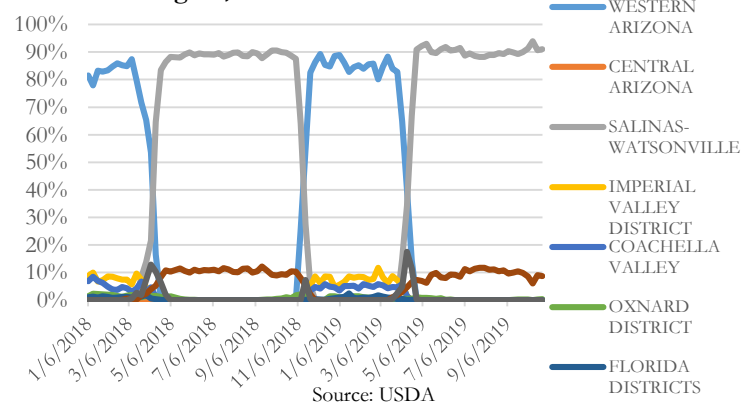
Yuma County Tribal Agriculture Summary and Map

	Cocopah	Fort Yuma-Quechan
Farms	6	10
Total cropland acres	29,136	45,643
Durum wheat for grain (acres)	9,958	10,180
Land in vegetables (acres)	(D)	19,973
Value of ag. products sold (\$1,000)	(D)	208,144

(D) = Not disclosed



Share of National Weekly Romaine Lettuce Shipments by Production Region, 2018-2019



Yuma County, AZ

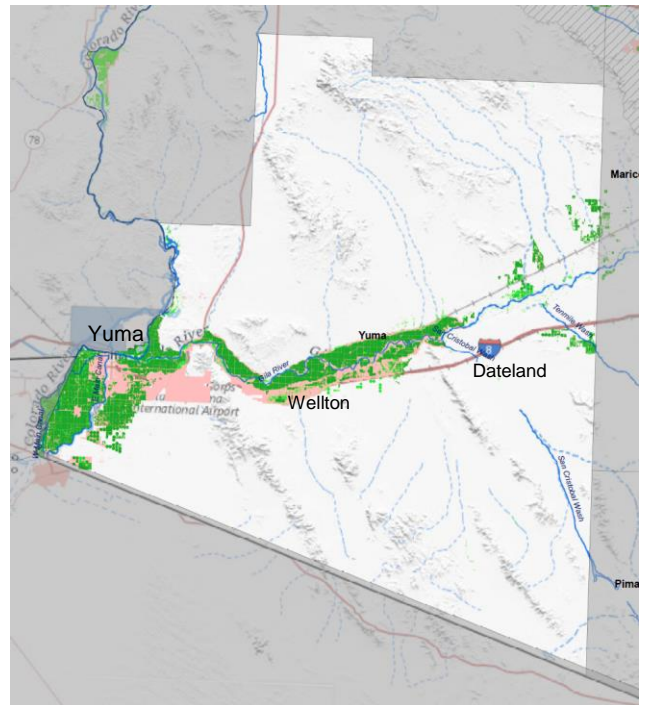
Irrigation Water Use

Water and agricultural production are inextricably linked. In Arizona, agriculture accounts for approximately 74.9% of the state's water use. More than half of withdrawals for agricultural uses in the state are from surface water. In some areas of the state with high water demand, groundwater withdrawals for irrigated agriculture are limited by the 1980 Groundwater Management Act. This legislation established five Active Management Areas (AMA) as well as other Irrigation Non-Expansion Areas (INA) where groundwater pumping and expansion of irrigated agriculture is limited.

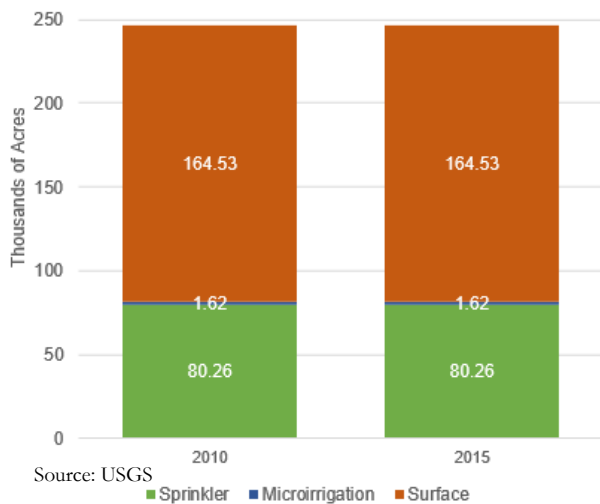
There is no land in Yuma County within an AMA or INA. Based on USGS 2015 estimates of water use, agriculture accounted for 96.2% of Yuma County water withdrawals.

Withdrawals for agriculture in Yuma County are dominated by crop production, with the large majority of irrigation water sourced from surface water. In 2015, an estimated 1,084,143 acre-feet (AF) was sourced from surface water and 123,966 AF was sourced from groundwater. An acre-foot is the amount of water required to cover one acre one foot deep in water. Irrigated crop production is concentrated along the Gila River, extending to its confluence with the Colorado River, and southward toward the Colorado River Delta. Irrigation water use remained relatively steady between 2010 and 2015, as did the share of acreage irrigated with surface, sprinkler, and micro irrigation.

Yuma County Water Map



Yuma County Irrigated Acres by Irrigation Technology



Yuma County Agricultural Water Use by Use and Source

