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 <br> <br> Irrigation and Water Management} Highlights

Results from the 2018 Irrigation and Water Management Survey


In 2018, U.S. farms irrigated 55.9 million acres with 83.4 million acre-feet of water. The number of farms irrigating and the amount of land irrigated increased slightly between 2013 and 2018, while the total amount of water used for irrigation declined. Irrigation needs vary depending on weather and the commodities grown. Five states accounted for about half of the irrigated acres and water applied. Wells provided half of the water used for irrigation, and sprinkler systems were the most widely used distribution method.

## Number and Location

In 2018, there were 231,474 farms in the United States that irrigated at some point during the year, an increase of 2,237 farms since 2013. They irrigated 55.9 million acres (about one-fourth of their farmland), applying 83.4 million acre-feet of water, a decrease of 5.8 percent from 2013. The average amount of water applied per acre was 1.5 acrefeet, down from 1.6 in 2013.

Five states - California, Nebraska, Arkansas, Texas, and Idaho - together accounted for 50 percent of U.S. irrigated acres in 2018 and 56 percent of total irrigation water applied.

Irrigation provides water to fields in the open and to commodities grown under protection. Acres in the open accounted for nearly all irrigated acres.

The 2018 Irrigation and Water Management Survey collected detailed data on irrigation methods and water use on U.S. farms, ranches, and horticultural operations.

## U.S. Farms that Irrigated, 2013 and 2018

|  | 2013 | 2018 | \% change | The total amount of water applied declined 5.8 percent between 2013 and 2018. |
| :---: | :---: | :---: | :---: | :---: |
| Number of farms | 229,237 | 231,474 | 1.0 |  |
| Land in farms (acres) | 214.0 mil | 222.0 mil | 3.8 |  |
| Irrigated acres | 55.3 mil | 55.9 mil | 1.1 |  |
| Acre-feet applied |  |  |  |  |
| U.S. total | 88.5 mil | 83.4 mil | -5.8 |  |
| Average per acre | 1.6 | 1.5 |  |  |

## Top States

lrigated Acreage and Water Use, 2018

| Irrigated Acres |  | Water Applied (acre-feet) |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | million |  | million | avg per acre |
| California | 8.4 | California | 24.5 | 2.9 |
| Nebraska | 7.7 | Idaho | 6.6 | 1.9 |
| Arkansas | 4.2 | Texas | 5.3 | 1.3 |
| Texas | 4.1 | Arkansas | 5.1 | 1.2 |
| Idaho | 3.4 | Nebraska | 4.9 | 0.6 |
| Colorado | 2.5 | Arizona | 4.4 | 4.7 |
| Kansas | 2.4 | Washington | 4.1 | 2.2 |
| Montana | 2.1 | Colorado | 3.8 | 1.6 |
| Washington | 1.9 | Oregon | 2.7 | 1.7 |
| Mississippi | 1.7 | Montana | 2.5 | 1.2 |
| U.S. Total | 55.9 | U.S. Total | 83.4 | 1.5 |

## Acre-foot

The amount of water required to cover one acre to a depth of one foot.
This is equivalent to 43,560 cubic feet or 325,851 gallons.

## Water Sources and Distribution Systems

Producers relied on three sources of water for irrigation: ground water from on-farm wells, surface water on the farm, and off-farm water from a variety of sources and suppliers. They relied on sprinkler systems, gravity systems, and a variety of drip, trickle, or other low-flow micro systems to distribute the water.

Water Sources, 2018

|  | Irrigated Acres <br> million | Acre-feet Applied <br> million | G of total | Ground water <br> from on-farm <br> wells accounted |
| :--- | ---: | ---: | ---: | :--- |
|  | 36.2 | 41.5 | 50 | for 50 percent of <br> Ground water from wells |
|  | 6.3 | 8.3 | 10 | irrigation water |

${ }^{a}$ Total is less than the sum of individual sources because some irrigated acres have more than one water source.

Distribution Systems, Acres in the Open, 2018

|  | Farms <br> number | Irrigated Acres <br> million | Sprinklers were <br> the most widely |
| :--- | :---: | :---: | :--- |
|  | 109,184 | 31.7 | used distribution <br> system, covering |
| Sprinkler | 85,888 | 20.2 | 31.7 million |
| Gravity | 62,158 | 5.9 | irrigated acres in |
| Drip, trickle, and low-flow micro | $220,566^{\text {a }}$ | $55.9^{\text {a }}$ | the open. |

${ }^{a}$ Total is less than the sum because some farms and acres have more than one distribution system applied.

## 462,788 Wells

119,235 U.S. farms used 462,788 wells in 2018 for irrigation. The wells provided 50 percent of all water for open fields and 63 percent of water for protected areas. Farms utilizing ground water on average had 3.9 wells.

Of the wells:

- 36 percent had flow meters to measure the amount of water supplied
- 74 percent had backflow prevention devices to prevent cross contamination

Most wells required dedicated pumps to move ground water to the surface, but 2,844 free-flowing wells on 1,520 farms did not require a pump.

## 235 feet

The average well depth in 2018. The average depth to water at the beginning of irrigation season was 94 feet.

## Irrigation Expenses

Energy costs for pumping well and surface water amounted to $\$ 2.4$ billion; the average cost per farm was $\$ 15,289$.

Infrastructure costs for equipment, facilities, land improvement, and computer technology were $\$ 2.0$ billion. Water purchased from off-farm sources and labor costs each amounted to $\$ 1.1$ billion.

## About the Survey

The 2018 Irrigation and Water Management Survey (IWMS) was conducted with producers who indicated in the 2017 Census of Agriculture that they had irrigated sometime during the past five years. It is the successor to the Farm and Ranch Irrigation Survey,

For more information on the IWMS and the Census of Agriculture, go to:
www.nass.usda.gov/AgCensus

Irrigation Expenses, U.S. Total and Average per Farm, 2018


## Horticulture Operations

Horticulture operations irrigate both fields in the open and areas under protection. In 2018, these operations irrigated 581,936 acres in the open, a 57,709-acre increase from 2013. They also irrigated 1.5 billion square feet under protection, an increase of 120 million from 2013. Some types of horticulture crops, such as sod, are grown almost exclusively in the open.

## Top Crops Irrigated by Horticulture Operations, 2018

| In the Open (acres) |  | Under Protection (mil sq feet) |  |
| :--- | ---: | :--- | ---: |
| Sod | 260,974 | Floriculture and bedding | 737.4 |
| Nursery crops | 198,995 | Nursery crops | 503.2 |
| Propagative materials | 78,401 | Food under protection | 158.2 |
| Floriculture and bedding | 30,448 | Propagative materials | 121.1 |

