



# 2007 CENSUS OF AGRICULTURE

## 2008 Farm and Ranch Irrigation Survey

### Survey Overview

The Farm and Ranch Irrigation Survey (FRIS) expands upon the basic irrigation data collected in the Census of Agriculture. FRIS is the most comprehensive source of information on irrigation water use throughout the agricultural industry and results are reported not only on the national and state levels, but by water resources regions.

The 2008 FRIS sample included all agricultural operations nationwide that reported irrigation use on the 2007 Census of Agriculture, with the exception of institutional, research and experimental farms. The sample was divided into two groups: a general group and a horticulture group.

The general group excluded operations that reported horticultural sales on the 2007 Census of Agriculture. Data for this group are reported in Chapter 1 – General Data Tables. Data for the second group, operations with horticultural sales, are published in Chapter 2 – Horticultural Operations Data Tables.

2008 marked the first time that FRIS included operations with horticultural sales of \$10,000 or more. The previous FRIS, in 2003, only included operations that reported horticultural sales of less than \$10,000. Therefore, the state-level General Data Tables for 2003 and 2008 are not comparable. To provide a measure of comparability between the two survey years, the National Agricultural Statistics Service removed operations with less than \$10,000 of horticultural sales from the published 2003 national-level data.

### Chapter 1 - General FRIS Data

The 2008 FRIS shows that U.S. farmers and ranchers irrigated 54.9 million acres of farmland in 2008. This is an increase of 2.4 million acres, or 4.6 percent, from 2003.

More acres were irrigated with sprinkler systems in 2008 than in 2003. During this five-year period, the area irrigated by sprinkler systems increased 15 percent, to 30.9 million acres. The area with gravity irrigation continued to decline, down 5 percent to 22.0 million acres.

U.S. Department  
of Agriculture

National Agricultural  
Statistics Service



# 2007 CENSUS OF AGRICULTURE



*The states with the largest area of irrigated land are:*

1. Nebraska
2. California
3. Texas
4. Arkansas
5. Idaho

## Water Applied

Between 2003 and 2008, the total quantity of water applied for irrigation increased 5 percent to 91.2 million acre-feet. With the corresponding increase in acres irrigated, the average acre-feet applied by all methods remained the same as 2003 at 1.7 acre-feet.

|                           | 2008          | 2003          | % Change |
|---------------------------|---------------|---------------|----------|
| Farms with Irrigation     | 206,834       | 210,106       | -1.6     |
| Acres Irrigated           | 54.9 million  | 52.5 million  | +4.6     |
| Acre-feet Applied         | 91.2 million  | 86.8 million  | +5.2     |
| Sprinkler System Only     | 1.2 acre-feet | 1.3 acre-feet | NA       |
| Gravity Flow Systems Only | 2.2 acre-feet | 2.0 acre-feet | NA       |

## Water Source

|                       | 2008         | 2003         | % Change |
|-----------------------|--------------|--------------|----------|
| <b>Ground Water</b>   |              |              |          |
| Acres Irrigated       | 36.2 million | 32.3 million | +12      |
| Acre-feet Applied     | 48.5 million | 43.5 million | +12      |
| <b>On-farm Water</b>  |              |              |          |
| Acres Irrigated       | 8.8 million  | 7.2 million  | +22      |
| Acre-feet Applied     | 13.8 million | 11.7 million | +17      |
| <b>Off-farm Water</b> |              |              |          |
| Acres Irrigated       | 13.1 million | 13.8 million | -6       |
| Acre-feet Applied     | 29.0 million | 31.6 million | -8       |

## Irrigation Wells

Between 2003 and 2008, the number of wells with flow meters increased 76 percent to 107,384 wells. The number of wells with backflow prevention devices also increased. In 2008, backflow prevention devices were on 252,242 wells, an increase of 18 percent.

In 2008, the average well depth increased 5 feet to 243 feet. The average depth to the bowls increased from 158 feet in 2003, to 166 feet in 2008. Furthermore, the average depth to water increased by 3 feet to 100 feet.

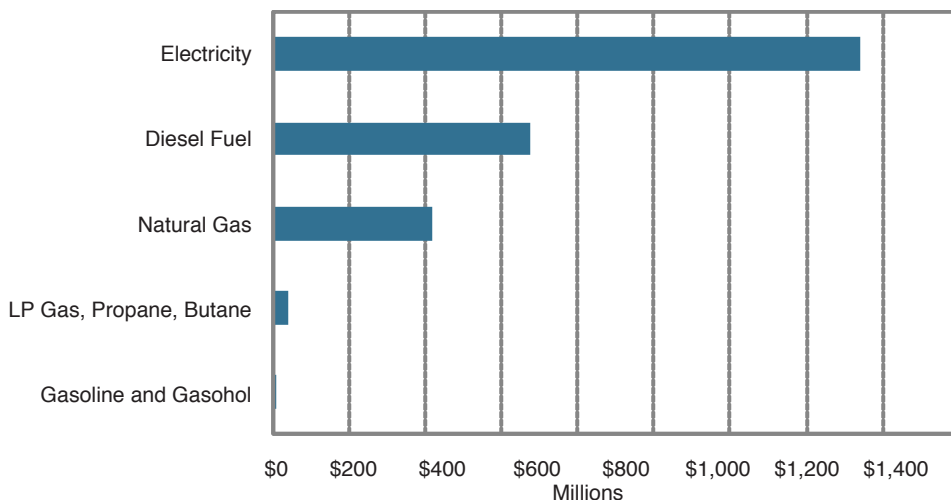
# 2008 Farm and Ranch Irrigation Survey

## Irrigation Expenses

Producers spent \$2.1 billion on expenses related to irrigation equipment, facilities, land improvements and computer technology in 2008. Of those expenses, 50 percent was for replacement of existing equipment, 35 percent for new expansion and 15 percent for water conservation.

The total expenses for energy to power pumps increased 73 percent from 2003. With 12 percent more pumps used in 2008, the energy expenses for pumps totaled \$2.68 billion.

**Energy Expenses for Irrigation Pumps, 2008**  
(total \$2.68 billion)



## Energy and Water Conservation

Between 2003 and 2008, a total of 74,846 farms made changes to their equipment or management practices that reduced energy use and/or conserved water. Nearly 46 percent of these farms reported reduced energy cost and 59 percent reported a reduction in the amount of water applied.

Additionally, in 2008 there were 152 farms that purchased a total of 94,472 acre-feet of reclaimed water at \$28.48 per acre-foot.

|                 | Farms | Acres Irrigated |
|-----------------|-------|-----------------|
| Recycled Water  | 9,843 | 1,806,984       |
| Reclaimed Water | 3,205 | 705,197         |



For more information:

[www.nass.usda.gov](http://www.nass.usda.gov)

[www.agcensus.usda.gov](http://www.agcensus.usda.gov)

**Agricultural Statistics  
Hotline**

**(800) 727-9540**

# 2007 CENSUS OF AGRICULTURE

## Chapter 2 - Horticultural Operations Data

In 2008 there were 28,881 operations with irrigated horticultural area. Of those operations, 71 percent (20,610 operations) reported irrigated area under protection and 65 percent (18,797 operations) reported irrigated area in the open.

|                            | Area Under Protection | Area in the Open |
|----------------------------|-----------------------|------------------|
| <b>Area Irrigated</b>      | 1.37 billion sq. ft.  | 579,633 acres    |
| <b>Total Water Applied</b> |                       |                  |
| Acre-feet                  | 79,081                | 642,603          |
| Gallons                    | 25.77 billion         | 209.39 billion   |

### Application Method

The vast majority of water applied to horticultural crops in 2008, both under protection and in the open, was applied by sprinkler irrigation. The second most common method was drip, trickle or low-flow irrigation.

| Area Irrigated by Method<br>(More than one method may be used on the same area) |                                    |                             |
|---|------------------------------------|-----------------------------|
|   | Area Under Protection<br>(Sq. ft.) | Area in the Open<br>(Acres) |
| <b>Sprinkler</b>  | 752,511,338                        | 412,421                     |
| <b>Drip, Trickle or Low-flow</b>  | 371,620,978                        | 183,569                     |
| <b>Hand Watered</b>   | 338,548,915                        | 7,295                       |
| <b>Subirrigation</b>  | 18,950,180                         | 15,420                      |
| <b>Gravity</b>  | 14,584,204                         | 27,186                      |

In 2008, the majority of water for irrigation of horticultural crops under protection and in the open was from ground water rather than on-farm or off-farm surface water.

|                       | Area Under Protection | Area in the Open |
|-----------------------|-----------------------|------------------|
| <b>Ground Water</b>   | 62%                   | 50%              |
| <b>On-farm Water</b>  | 26%                   | 24%              |
| <b>Off-farm Water</b> | 12%                   | 26%              |

### Water Conservation

In 2008, a total of 1,453 operations reported using recycled water and 202 operations reported using reclaimed water on their horticultural crops.

|                        | Area Under Protection | Area in the Open |
|------------------------|-----------------------|------------------|
| <b>Recycled Water</b>  |                       |                  |
| Operations             | 827                   | 1,055            |
| Area Irrigated         | 222,018,512 sq. ft.   | 43,567 acres     |
| <b>Reclaimed Water</b> |                       |                  |
| Operations             | 48                    | 182              |
| Area Irrigated         | 2,432,209 sq. ft.     | 6,736 acres      |

## 2008 Farm and Ranch Irrigation Survey