

# Results of the 2008 Farm & Ranch Irrigation Survey (FRIS)



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# Census Irrigation History

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- Irrigation included in census since 1890
- Special Irrigation Census in 1900
- Special surveys in 1954 and 1959
- FRIS since 1979
- Responsibility shifted to NASS in 1997



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# FRIS Data

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- **The FRIS publication is divided into two Chapters**
- **Chapter 1 = General FRIS Data**  
Released November 30, 2009
- **Chapter 2 = Horticultural Operations FRIS Data**  
Released February 11, 2010 and appended to the November publication



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# FRIS Data

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- **Data based on samples**
- **U.S. data more precise than state or water resources areas**
- **Data levels vary due to weather and economics**



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# FRIS Sampling Approach

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- Selected from farms irrigating in the previous year's census
- Research and institutional farms excluded
- Farms with horticultural sales excluded from general FRIS sample. Those farms were sampled separately and received a horticultural version of the FRIS report form. Data tables are in Chapter 2.



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# New FRIS Questions in 2008

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- Area irrigated with recycled water
- Area irrigated with reclaimed water
- Reclaimed water purchased



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# Number of Farms Irrigating

(thousands)

<b>2002 Census</b>	<b>300</b>
<b>2003 FRIS (adj)</b>	<b>210</b>
<b>2007 Census</b>	<b>301</b>
<b>2008 FRIS</b>	<b>236</b>
<b>2008 General FRIS</b>	<b>207</b>
<b>2008 FRIS Horticulture</b>	<b>29</b>



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# Number of Acres Irrigated

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	(Million)
<b>2002 Census</b>	<b>55.3</b>
<b>2003 FRIS (adj)</b>	<b>52.5</b>
<b>2007 Census</b>	<b>56.6</b>
<b>2008 FRIS</b>	<b>55.5</b>



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# Horticultural Area Irrigated

## Horticultural FRIS - Chapter 2

**Area irrigated under protection:**

**1.37 billion square feet**

**approximately 31,430 acres**

**Area irrigated in the open:**

**579,633 acres**



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# Total Acre-feet Used for Irrigation

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	(Million)
1998 FRIS	97.3
2003 FRIS	86.8
2008 FRIS	92.0



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# Horticultural Water Use

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## Horticultural FRIS - Chapter 2

**Area irrigated under protection:**

**25.8 billion gallons**

approximately 79,081 acre-feet

**Area irrigated in the open:**

**209.4 billion gallons**

approximately 642,603 acre-feet



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# Average Acre-feet of Water Applied

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<b>1988 FRIS</b>	<b>1.82</b>
<b>1994 FRIS</b>	<b>1.72</b>
<b>1998 FRIS</b>	<b>1.79</b>
<b>2003 FRIS</b>	<b>1.65</b>
<b>2008 FRIS</b>	<b>1.66</b>



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# Average Acre-feet of Water Applied

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	<u>Acre-feet</u>
<b>2008 General FRIS</b>	<b>1.66</b>
<b>2008 Horticulture: Under Protection</b>	<b>2.52</b>
<b>2008 Horticulture: In the Open</b>	<b>1.11</b>



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# 2008 General FRIS Irrigation, by Water Source (%)

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	<u>Acres</u>	<u>Water</u>
<b>Wells</b>	<b>62%</b>	<b>53%</b>
<b>On-farm water</b>	<b>15%</b>	<b>15%</b>
<b>Off-farm water</b>	<b>23%</b>	<b>32%</b>



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# 2008 Horticultural Irrigation, by Water Source (%)

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## Percent of Water Applied

<b>Wells</b>	<b>51%</b>
<b>On-farm water</b>	<b>24%</b>
<b>Off-farm water</b>	<b>25%</b>



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# 2008 General FRIS Irrigation Wells

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<b>Total Farms with wells</b>	<b>97,942</b>
<b>Total wells available</b>	<b>426,756</b>
<b>Wells pumped</b>	<b>406,566</b>
<b>Artesian wells</b>	<b>1,347</b>
<b>Total wells used</b>	<b>407,913</b>
<b>Average wells per farm</b>	<b>4.2</b>



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# 2008 General FRIS

## Irrigation Wells Per Farm

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No. on farm

% of farms

1 – 2

62

3 – 5

19

6 – 19

16

20+

3



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# 2008 General FRIS Recycled and Reclaimed Water Used

## Recycled water use

Farms 9,843

Acres 1.8 million

## Reclaimed water use

Farms 3,205

Acres 705,197

Acre-feet applied 629,202



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# 2008 Horticultural FRIS Recycled Water Use

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## Under Protection

Operations 827

Square Feet irrigated 222.0 million

## In the Open

Operations 1,055

Acres irrigated 43,567



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# 2008 Horticultural FRIS Reclaimed Water Use

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## Under Protection

Operations 48

Square Feet irrigated 2.4 million

## In the Open

Operations 182

Acres irrigated 6,736



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# 2008 General FRIS

## Top Five States by Irrigated Acres

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<u>State</u>	<u>Acres Irrigated</u>
Nebraska	8.4 million
California	7.3 million
Texas	5.4 million
Arkansas	4.5 million
Idaho	3.3 million



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# 2008 Horticultural FRIS Top Five States by Irrigated Area Under Protection

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<u>State</u>	<u>Square Feet</u>
Florida	338.3 million
California	221.4 million
Texas	94.5 million
Pennsylvania	64.5 million
Michigan	63.0 million



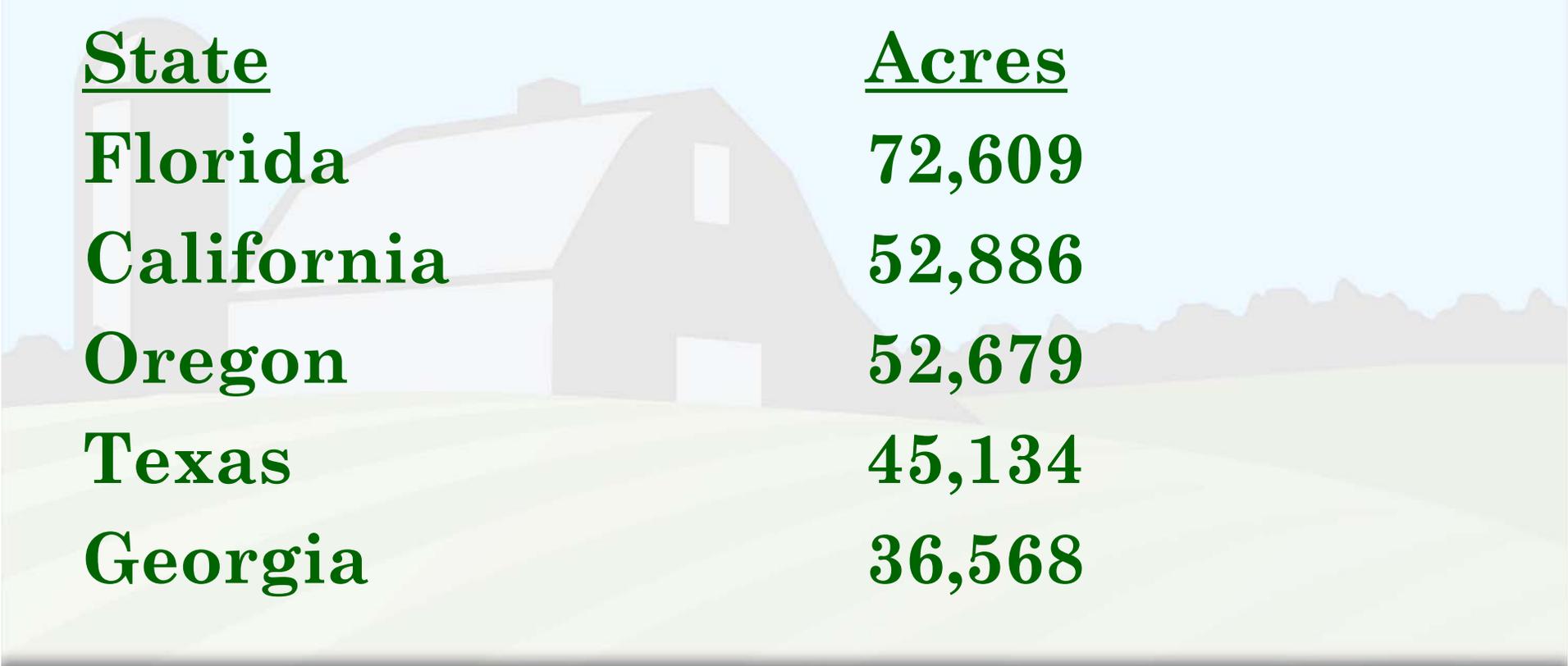
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# 2008 Horticultural FRIS Top Five States by Irrigated Area In the Open



<u>State</u>	<u>Acres</u>
Florida	72,609
California	52,886
Oregon	52,679
Texas	45,134
Georgia	36,568



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# 2008 General FRIS Top Five States by Total Acre-feet of Water Applied

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<u>State</u>	<u>Acre-feet</u>
California	22.6 million
Arkansas	8.6 million
Texas	6.8 million
Nebraska	6.7 million
Idaho	6.2 million



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# 2008 Horticultural FRIS Top Five States by Water Applied to Crops Under Protection

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<u>State</u>	<u>Billion Gallons</u>
Florida	9.1
California	4.0
Texas	2.4
Oregon	1.1
Arizona	1.0



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# 2008 Horticultural FRIS Top Five States by Water Applied to Crops In the Open

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<u>State</u>	<u>Billion Gallons</u>
Oregon	37.4
California	35.0
Florida	22.6
Texas	16.9
Washington	12.1



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# 2008 General FRIS Energy and Water Conservation

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- **74,846 farms implemented changes in equipment or management**
  - **46% reduced energy costs**
  - **59% reduced water applied**



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