



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Agricultural Outlook Forum
U.S. Department of Agriculture

Presented: February 18-19, 2010

Results of the 2008 Farm and Ranch
Irrigation Survey

Robert Bass

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Census Irrigation History

- 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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

FRIS Data

- **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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

FRIS Data

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

FRIS Sampling Approach

- 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.



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

New FRIS Questions in 2008

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Number of Farms Irrigating

(thousands)

2002 Census

300

2003 FRIS (adj)

210

2007 Census

301

2008 FRIS

236

2008 General FRIS

207

2008 FRIS Horticulture

29



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Number of Acres Irrigated

	(Million)
2002 Census	55.3
2003 FRIS (adj)	52.5
2007 Census	56.6
2008 FRIS	55.5



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Total Acre-feet Used for Irrigation



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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Horticultural Water Use

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Average Acre-feet of Water Applied

1988 FRIS 1.82

1994 FRIS 1.72

1998 FRIS 1.79

2003 FRIS 1.65

2008 FRIS 1.66



United States Department of Agriculture
National Agricultural Statistics Service

2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

Average Acre-feet of Water Applied

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



United States Department of Agriculture
National Agricultural Statistics Service

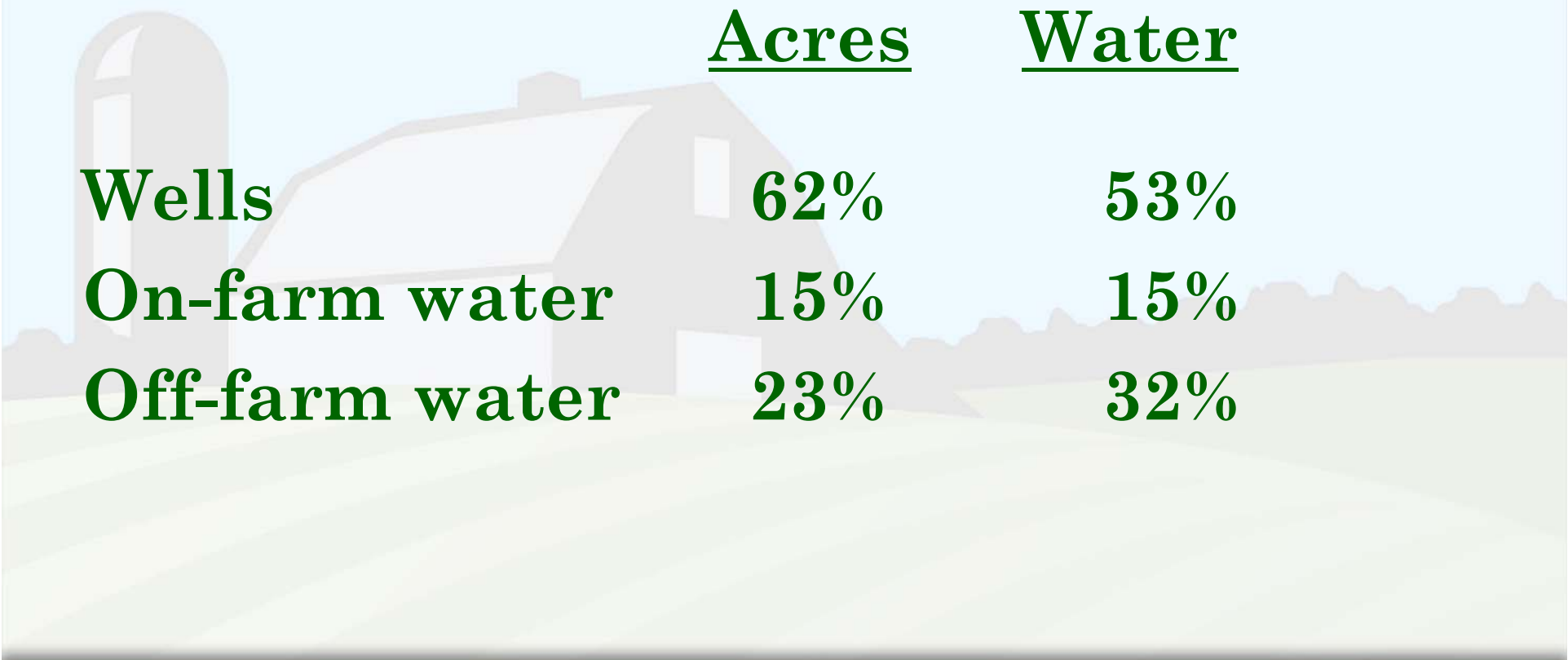


2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 General FRIS Irrigation, by Water Source (%)



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



United States Department of Agriculture
National Agricultural Statistics Service

2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 Horticultural Irrigation, by Water Source (%)

Percent of Water Applied

Wells	51%
On-farm water	24%
Off-farm water	25%



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 General FRIS

Irrigation Wells

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 General FRIS

Irrigation Wells Per Farm

No. on farm

% of farms

1 – 2

62

3 – 5

19

6 – 19

16

20+

3



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 Horticultural FRIS Recycled Water Use

Under Protection

Operations 827

Square Feet irrigated 222.0 million

In the Open

Operations 1,055

Acres irrigated 43,567



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 Horticultural FRIS Reclaimed Water Use

Under Protection

Operations	48
------------	----

Square Feet irrigated	2.4 million
-----------------------	-------------

In the Open

Operations	182
------------	-----

Acres irrigated	6,736
-----------------	-------



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 General FRIS

Top Five States by Irrigated Acres

<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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 Horticultural FRIS Top Five States by Irrigated Area Under Protection

<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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

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

<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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

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

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

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

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.

2008 General FRIS Energy and Water Conservation

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



United States Department of Agriculture
National Agricultural Statistics Service



2008 Farm and Ranch
Irrigation Survey

2007 | CENSUS OF
AGRICULTURE

YOUR VOICE. YOUR FUTURE. YOUR RESPONSIBILITY.