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# Introduction

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## PURPOSE AND SCOPE

Selected irrigation data for on-farm irrigation operations have been collected in the census of agriculture since 1890. Surveys of irrigation in humid areas were taken in connection with the 1954 and 1959 censuses.

The 2013 Farm and Ranch Irrigation Survey (FRIS) is the eighth survey devoted entirely to collecting on-farm irrigation data for the U.S. The 1979, 1984, 1988, and 1994 surveys were conducted by the U.S. Department of Commerce, Bureau of the Census. Responsibility for the survey was transferred from the Bureau of the Census to the U.S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS) in 1997. The 1998 survey utilized the resources of the 45 NASS field offices which expanded opportunities for telephone follow-up or personal enumeration of nonresponse cases. The 1998 Farm and Ranch Irrigation Survey was the first survey to collect and publish data for each of the 50 States. Previous farm and ranch irrigation surveys published data only for leading irrigation States, with a U.S. total, excluding Alaska and Hawaii. In 2008, horticultural specialty operations with sales of \$10,000 or greater were included in the survey for the first time.

## USES OF SURVEY DATA

The 2013 Farm and Ranch Irrigation Survey provides data that supplement the basic irrigation data collected from all farm and ranch operators in the 2012 Census of Agriculture. Irrigation data from this survey combined with 2012 census data provide one of the most complete and detailed profiles of irrigation in the U.S.

Survey data are used by producers, farm organizations, businesses, State departments of agriculture, elected representatives and legislative

bodies at all levels of government, public and private sector analysts, the news media, and colleges and universities. The data are used to:

- Compare water use by application method;
- Develop improved technologies;
- Develop Federal programs;
- Appraise water use trends;
- Assess impact of congressional legislation; and
- Evaluate the impact of irrigated crops by State.

## AUTHORITY

The census of agriculture is required by law under the "Census of Agriculture Act of 1997," Public Law 105-113 (Title 7, United States Code, Section 2204g). The law authorizes the Secretary of Agriculture to conduct surveys deemed necessary to furnish annual or other data on the subjects covered by the census. The 2013 Farm and Ranch Irrigation Survey was conducted under the provisions of this section.

## FARM DEFINITION

A farm is any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census or survey year.

## DATA COMPARABILITY

In Tables 2 through 39, the State level FRIS data are not comparable between 2013 and 2008. In the 2008 survey, operations that reported any horticultural sales in the 2007 Census of Agriculture were not included in the General FRIS data tables. In the 2013 survey, operations with horticultural sales in the 2012 Census of Agriculture were included in all FRIS tables.

To provide a measure of comparability, the published 2008 U.S. level data were adjusted to include the horticulture operations' data. See Appendix A, Statistical Methodology for a detailed discussion of data comparability.

## **WATER RESOURCES REGIONS MAP**

The map on page 1 shows Water Resources Regions delineated to approximate actual basin boundaries based on topographic drainage characteristics. Data are tabulated separately for each of the 20 Water Resources Regions shown on the map.

## **PERCENT OF NORMAL PRECIPITATION MAPS**

The maps on pages 2 through 5 show the areas of the U.S. with deviations from normal precipitation during 2013. The maps are included for reference purposes only.

## **TABLES AND APPENDICES**

The FRIS tables are divided into three sections: Entire Farm, Crops Grown in the Open and Pasture, and Horticultural Operations.

**Entire Farm Data Tables.** Table 1 shows farms and acres irrigated for the 1997 through 2012 Censuses of Agriculture for each State. Tables 2 through 27 present detailed irrigation data collected in the farm and ranch irrigation survey from operations that reported irrigated land in the 2012 census and also in the 2013 survey. Excluded from these data are institutional, research, and experimental operations. Table 27 presents data for farm operations that irrigated in 2012 but discontinued irrigation either temporarily or permanently in 2013 while continuing to operate a farm or ranch. Comparable adjusted 2008 U.S. level survey data are also presented in some tables. Data are reported at the national level, for each State, and for the 20 Water Resources Regions.

**Crops Grown in the Open and Pasture Data Tables.** Tables 28 through 39 present detailed 2013 irrigation data collected on crops grown in the open and pasture. Excluded from these data are

institutional, research, and experimental operations, and water use and area of crops grown under protection. Data are reported at the national level and for each State.

**Horticultural Operations Data Tables.** Tables 40 through 45 present detailed 2013 irrigation data collected on horticultural crops grown under protection. Data are from horticultural operations that reported irrigating in the 2012 census and also in the 2013 survey. Data are reported at the national level and for each State.

**Appendix A.** Provides information about data collection and data processing activities and discusses the statistical methodology used in conducting and evaluating the survey. Table A provides the general 2013 FRIS sample counts and the sample's corresponding 2012 census irrigated acreage. It also provides the general 2013 FRIS unexpanded and expanded acres irrigated and 2012 census acres irrigated. Table B provides a comparison of the irrigated acres published in the 2012 Census of Agriculture and expanded 2013 FRIS acres irrigated by size group. Table C provides the standard error for selected data for irrigated crops grown in the open in 2013. Table D provides the standard error for selected horticultural data in 2013.

**Appendix B.** Provides information about the development of the report form. It also contains the definitions of specific terms and phrases used in this publication, including items in the publication tables that carry the note "see text." The facsimiles of the report form and the instruction sheet used to collect the FRIS data are included. Table A provides irrigated acreage and rank for the previous three censuses.

## **RESPONDENT CONFIDENTIALITY**

In keeping with the provisions of Title 7 of the United States Code, no data are published that would disclose information about the operations of an individual farm or ranch. All tabulated data are subjected to an extensive disclosure review prior to publication. Any tabulated item that identifies data reported by a respondent or allows a respondent's data to be accurately estimated or derived, was suppressed and coded with a 'D'. However, the number of farms reporting an item is not considered

confidential information and is provided even though other information is withheld.

## **SPECIAL STUDIES AND CUSTOM TABULATIONS**

The 2013 Farm and Ranch Irrigation Survey data, as well as the 2012 Census of Agriculture Volume 1 Geographic Area Series and related reports, are available on the NASS website at [www.nass.usda.gov](http://www.nass.usda.gov).

Custom-designed tabulations may be developed when data are not published elsewhere. These tabulations are developed to individual user specifications on a cost-reimbursable basis and shared with the public. Quick Stats, NASS's online database that allows data users to build customized queries, should be investigated before requesting a custom tabulation.

All NASS publications and custom tabulations are subject to a thorough disclosure review prior to release to prevent the disclosure of any individual respondent data. Requests for custom tabulations can be submitted via the internet from the NASS home page, by mail, or by e-mail to:

DataLab  
National Agricultural Statistics Service  
Room 6436A, Stop 2054  
1400 Independence Ave, S.W.  
Washington, D.C. 20250-2054  
or  
[Datalab@nass.usda.gov](mailto:Datalab@nass.usda.gov)

## **ABBREVIATIONS AND SYMBOLS**

The following abbreviations and symbols are used throughout the tables:

- Represents zero.
- (D) Withheld to avoid disclosing data for individual farms.
- (H) Coefficient of variation is greater than or equal to 99.95 percent or the standard error is greater than or equal to 99.95 percent of mean.
- (L) Coefficient of variation is less than 0.05 percent or the standard error is less than 0.05 percent of the mean.
- WRR Water Resources Regions.
- (NA) Not available.
- (X) Not applicable.
- (Z) Less than half of the unit shown.
- (cwt) Hundredweight.
- gpm Gallons per minute.
- psi Pounds per square inch.
- sq. ft. Square feet