



Western Data Users Meeting

Salt Lake City, UT

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HANDOUTS

Economic Research Service

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World Agricultural Outlook Board

World Board Update

ERS/RRED Use of Irrigation Data from the Farm & Ranch Irrigation Survey (FRIS)

From Email Information Requests:

Requested by:	Date:	Type of Information:
1. Trade Economist DTS Incorporated	4/25/07	Data on average costs of irrigation for farms in the U.S. (for US-AID funded project on trade and agriculture).
<p>Response: Referred the DTS Trade Economist to the NASS FRIS website and the summarized tables for onfarm groundwater pumping costs, purchased water costs for off-farm water supplies, and for irrigation maintenance and repair costs.</p> <p>-----</p>		
2. Dept. of Atmospheric & Oceanic Sciences Univ. of Maryland	4/9/07	Data on surface water application rates by crop and by State. Also requested interpretation of water-use rates (i.e., "average annual seasonal rates," as opposed to "daily means").
<p>Response: Provided NASS website for FRIS, tables on water-use, and the ERS website summarizing irrigation statistics by State by farm-size class (also an expressed area of interest).</p> <p>-----</p>		
3. The Associated Press Kansas City, KS	2/28/07	Data on irrigation statistics, including acreage, irrigation water management practices, water costs, and the value of irrigated crop production (its value share).
<p>Response: Defined differentiated farm production value from irrigated crop production value (explained the need to use FRIS, Ag. Census, and NASS crop price data to compute value shares). Provided both NASS and ERS website information locating access to summarized FRIS data, as well as published ERS reports identifying the latest research available on value shares. These included the latest ERS AREI chapters addressing these issues (that extensively used FRIS data).</p> <p>-----</p>		
4. SUNY-ESF (consultants)	11/20/06	Data on water-use rates by irrigation system type and by farm structure class for irrigated corn. [Working on a spatial variation of energy costs of ethanol study.]
<p>Response: Explained why geographic differences exist in applied water-use rates. Provided the ERS and NASS website addresses for summarized FRIS data [by State (from</p>		

NASS) and by State and farm-size class (from ERS)]. Also, explained the differences between applied and consumptive water-use rates.

5. Comparative Ag. Develop. Service 3/5/07 Data on water quality, irrigation crop
Food & Ag. Organization (FAO) production practices, and water
United Nations, Rome management practices affecting water
infiltration rates. Information was
requested for the FAO report "State of
Food and Agriculture". The 2007 report
was emphasizing how agriculture provides
"environmental services," of which water
was an important concern.

Response: Provided website references to both NASS's FRIS tables and to ERS summarized irrigation statistics by farm-size class (particularly for irrigation technology and water management data).

6. [Private Citizen] 1/10/07 Data on U.S. irrigated agriculture by
California county, including water-use data, irrigation
technology and water-management
practices. Interested in the water-use
aspects of "agricultural bio-mass and
energy issues as well as in general
agricultural resource use.

Response: Identified both ERS and NASS website addresses for summarized FRIS data on irrigated agriculture, water-use, irrigation technology, and water-management practices. Also provided access to published ERS reports on irrigation statistics by farm-size class.

7. Master's Graduate Student 3/19/07 Interested in trends in irrigation technology
Yale School of Forestry & Envir. Studies and water-management practices,
particularly in center-pivot technology
types. Also, the information request
wanted data on technology use by water
source, by State.

Response: Referenced the ERS and NASS websites for FRIS summarized irrigation data, and several ERS reports on irrigated agriculture (the 2006 AREI chapters on irrigated agriculture). A reference was also identified (along with a note of caution) for irrigation data provided by the "Irrigation Journal" (annual expert opinion data).

FRIS Used for ERS Policy Information Requests (Staff Analyses):

Requested by:	Date:	Type of Information:
1. Comparative Ag. Develop. Service Food & Ag. Organization (FAO) United Nations, Rome	5/7/07	Provided FAO with a review of their 2007 "State of Food & Ag." Report on payments to farmers for environmental services. FRIS information on irrigated agriculture and water use for the U.S. helped the review of this report.

2. Organization for Econ. Co-operation and Development (OECD)	1/16/07	Provided OECD with a review of the Ag.-Environmental Indicators Summary document. Used FRIS data for U.S. comparisons.

3. Food & Agricultural Organization (FAO) United Nations, Rome	7/19/06	Provided FAO with a review of irrigation data sets reported in the FAOSTAT. FRIS data was used for comparisons.

4. Congressional Res. Service (CRS)	7/21/05	Provided the CRS with data on the value of irrigation in the Pacific Northwest. The CRS was guided to ERS's Irrigation and Water Use Briefing Room (on the ERS website), whose reports integrated FRIS and Ag. Census data to report on the importance of irrigated crop sales by State.

5. General Accounting Office (GAO)	1/27/05	Provided review comments on the draft GAO report "Freshwater Programs: Federal Agencies' Funding in the U.S. and Abroad." Summarized FRIS data on irrigated agriculture was used for comparisons.

6. Western Water Policy Review Advisory Commission (WWPRAC)	1996-97	Provided a variety of summarized FRIS data for the Report of the Western Water

[A congressionally-mandated special regional commission]

Policy Review Advisory Commission, entitled "Water in the West: The Challenge for the Next Century" (June 1998). The WWPRAC was charged with "a comprehensive review of Federal

activities in the western states which affect the use and allocation of water, and the review of numerous aspects of water resources, management, institutional and legal matters, and the performance of federal agencies." ERS conducted several analyses for the WWPRAC using FRIS data, including the value of irrigated production by crop and irrigated water-use by crop.

7. OECD Joint Working Party on Ag. & the Environment 3/12/04 Provided the OECD with information on U.S. agricultural water use by water source, as well as information on irrigated farms, irrigated acres and irrigation costs (from 1984-98). The information helped the OECD to develop its "Environmental Indicators for Agriculture" report.

8. CENR-SWAQ: A Federal Inter-Agency Water Availability Task Group 3/17/04 Provided CENR-SWAQ with answers to a series of economic questions on U.S. agricultural water-use, water shortages and flooding. Both FRIS and reports from the ERS Briefing Room "Irrigation and Water Use" (which is based on FRIS data) were used to answer the CENR-SWAQ questions.

9. USDA Under-Secretary Penn 6/4/04 Provided USDA Under-Secretary J.B. Penn with an analysis of the significance of energy price increases to the farm sector. This report included a thorough analysis of the "effect of rising energy prices on U.S. irrigated agriculture." Agricultural Census and FRIS data were used extensively, evaluating water-use by source, energy costs by type of energy, irrigation technology by type of system and their effect on irrigation energy costs, and the effect of crop water application rates on irrigation energy costs.

FRIS Used in ERS Policy Research Projects/Reports:

1. Western Regional Research Committee, W-1190 (Western Water)
(Members: Water Resource Economists from 12 western States)

ERS W-1190 Representatives have worked closely with the W-1190 over the years (since the mid-1980's) to provide suggested improvements so that FRIS will serve the broadest base of users interested in using the data for policy-based resource economic analysis. Water Resource Economists from University's across the western States make effective use of FRIS data in economic modeling of agriculture, as well as for a variety of water policy issues. FRIS data contributes directly to W-1190 research objectives (1) and (2), specifically: (1) develops and evaluates alternative technologies to monitor environmental effects of water allocation and management; and (2) quantify comparative economic values of water in alternative uses.

2. Two chapters important to ERS's Agricultural Resources and Environmental Indicators (AREI) report (both chapters in the 2nd and 3rd AERI editions).

Chapter 2.1 – *Irrigation Resources and Water Costs*

This AREI chapter presents an aggregate picture of U.S. irrigated agriculture, its resource use and contribution to the overall agricultural sector, and the nature and policy implications of water cost and pricing issues.

Chapter 4.6 – *Irrigation Water Management*

This chapter addresses farm-level water resource efficiency/economic issues, how irrigation systems and water-management practices affect farm profitability, conservation, environmental values, and likely impacts for water resource supplies and allocation issues. FRIS data on irrigation systems and water-management practices by crop are essential indicators of irrigated agriculture's sustainability, as well as its impact on water quality, the environment, and its potential to supply resources for increasing non-agricultural demands.

3. ERS Data Product: *Western Irrigated Agriculture* (www.ers.usda.gov/data/WesternIrrigation/)
The influence of farm structure on rural America, agricultural resources, as well as for USDA conservation and environmental policy goals has become an important component of farm policy analysis. This data product used FRIS data to evaluate important indicators of irrigated agriculture's production practices, resource use, production value, and costs by farm-size class. Key irrigation characteristics, across 16 broad categories, were evaluated across four farm-size classes and are summarized in 147 electronic data tables on the ERS website. Study results show that the "efficiency" of irrigated agriculture (based on irrigation systems and water-management practices used) varies significantly across farm-size classes. Most irrigated farms are small farms (under \$250,000 in annual sales), as are most farms that receive cost-share payments to improve irrigation efficiency. However, larger farms (\$250,000 or more in annual sales) use the most irrigation water, i.e., the largest 10 percent of irrigated farms (\$500,000 or more in annual sales) account for half of total farm water applied (across the western States). Study results suggest that cost-share programs that target larger farms more heavily may conserve more water to better meet environmental and conservation policy objectives.

4. 1999 ERS Drought Study - *Economic Assessment of the 1999 Drought: Agricultural Impacts are Severe Locally, But Limited Nationally* (AIB 755).

FRIS data was key to being able to address the impacts of this drought. The research indicated that aggregate farm losses totaled about \$1.35 billion, but locally, impacts

were often severe. The results also indicated that the regions affected, the crops grown in these regions, increased use of irrigation, and crop insurance coverage limited the droughts impacts on agriculture nationally.

5. ERS water conservation policy studies:
 - a. *Economic Analysis of Selected Water Policy Options for the Pacific Northwest*, AER # 720, June 1995.
 - b. *Water Conservation Policy Analysis: An Interregional, Multi-Output, Primal-Dual Optimization Approach*, AJAE, February 1997.
 - c. *Economic and Conservation Tradeoffs of Regulatory vs. Incentive-based Water Policy in the Pacific Northwest*, IJWRD, Vol. 16, No. 2, June 2000.

These studies were conducted based on the use of an interregional, economic model of Pacific Northwest agriculture (which was heavily based on the use of FRIS data). The studies examined both onfarm water conservation and agricultural economic tradeoffs across water price, regulatory (water diversion cutbacks), and conservation-incentive water policy perspectives. *For study (5a)*, the economic model was used to evaluate the agricultural impacts for i) reduced diversions of surface water for agriculture; ii) increased farm-level costs of publicly supplied water; iii) increased efficiency in transferring surface water from the source to the farm (conveyance efficiency); iv) increased irrigation efficiency on the farm; and v) increased onfarm irrigation efficiency coupled with improved crop yields. [Impacts are too numerous to summarize here.] *For study (5b)*, water demand elasticities are estimated for restricted and unrestricted groundwater substitution environments, and decomposed by water source. Elasticities are inelastic, but water-price policy reform can be an effective water-conservation policy tool when groundwater use is unrestricted. When groundwater use is restricted, effective conservation policy requires more dramatic water-price policy reform. *For study (5c)*, the economic model evaluated alternative water policy scenarios similar to those for study (a). Results demonstrated that producer willingness-to-accept water policy change is lowest for regulatory policy (\$4 - \$18 per acre-foot), but highest for conservation-incentive policy that increases both irrigation efficiency and crop productivity (\$67 - \$208 per acre-foot). Results also implied that conservation-incentive policy enhances decision-maker flexibility in meeting multiple regional policy goals (i.e., water for endangered aquatic species, water quality, Native American treaty obligations, and/or sustainable rural agricultural economies).

6. ERS's USDA, congressionally-mandated Pacific Northwest Salmon Study: *Salmon Recovery in the Pacific Northwest: Agricultural and Other Economic Effects*, AER 727 (February 1996).

This USDA study analyzed the effect on the region's agricultural sector of two proposed endangered-species mitigation strategies: (1) use of reservoir drawdown along the lower Snake River (resulting in less water for irrigated agriculture); and (2) reductions in irrigation water supply in the upper Snake River Basin. FRIS data was a critical input to this study. FRIS was used to help describe the agricultural and water resource environment of the region, and to model the economics of the region's crop-production sector under alternative water scenarios.

7. Additional Earlier ERS Water Studies:

- a. *Multi-Crop Production Decisions in Western Irrigated Agriculture: The Role of Water Price*, AJAE, Vol. 76 (November 1994).
- b. *Alternative Models of Input Allocation in Multi-Crop Systems: Irrigation Water in the Central Plains, United States*, Agricultural Economics, Vol. 11 (1994).
- c. *Western Irrigation Response to Pumping Costs: A Water Demand Analysis Using Climatic Regions*, Water Resources Research, Vol. 25, No. 5 (May 1989).

For study (7a), FRIS farm-level data was used within an econometric-based study that estimated farm crop choice, supply, land allocation, and water demand functions for field crops across four western State regions. Key findings indicate that: (1) observed activity at the farm-level masks crop-level adjustments, that is, while farm-level water demand typically declines in water price, crop-level water demand may decline in price for some crops, yet increase for other crops; (2) producers tend to respond to water price at the extensive-margin of water use (crop-choice and land allocation decisions) rather than the intensive-margin (short-run water use decisions); and (3) there are significant structural differences in estimated equations across regions, indicating that one needs to be very cautious in transferring econometric results across regions. *For study (7b)*, FRIS farm-level data for groundwater users for the Central Plains States (Colorado, Kansas, Nebraska, and Wyoming) was used to estimate and compare results for three alternative models of input allocation in farm-level multi-crop systems. Study results demonstrate that the "allocatable fixed-input model" statistically dominates over other model types, that is, it explains multi-crop water use better than the other models. Because "allocatable fixed-input models" require the use of crop-level input use data, these study results imply the need for and importance of collecting crop-specific input use data. *For study (7c)*, FRIS data for farms using only groundwater was used to evaluate differences in groundwater demand elasticity estimates for field crops across the western States, based on three alternative functional forms for irrigation groundwater demand. All three demand function specifications result in inelastic groundwater demand elasticities (for field crop production). Findings support earlier inelastic demand estimates from studies using experimental data, but demand for groundwater does vary somewhat among climatic regions.



USDA/NASS
Summary of Crops Branch Program Changes
Related to Western and Northwestern Regions

Data Users Meeting
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Chickpeas, Dry Edible Peas, Austrian Winter Peas, Lentils

Change: Add planted acreage intentions

Published in: March 2007 *Prospective Plantings Report*

States Involved: Chickpeas - CA, ID, MT, NE, ND, OR, SD, WA
Dry Edible Peas - ID, MT, ND, OR, WA
Austrian Winter Peas - ID, MT, OR
Lentils - ID, MT, ND

Comments: Acreage estimates will be used to assist with crop supply projections and to estimate Farm Program costs. Additionally, ERS will use these data to provide more market information and analysis in their market outlook reports.

Yellow Type Potatoes

Change: Add planted acreage (percent of all potato acres)
Add yellow type potatoes in storage (percent of all potato stocks)

Published in: Acreage - July 2007 *Crop Production Report*
Stocks - December 2007 *Potato Stocks Report*

States Involved: Acreage - CO, ID, ME, MI, MN, NY, ND, OR, PA, WA, WI
Stocks - CO, ID, ME, MI, MN, NY, ND, OR, WA, WI

Comments: Historically, yellow potatoes have been included with white potatoes. However, white potatoes yield differently and are utilized differently than yellow potatoes. Yellow type potatoes are an increasing portion of the potato crop.

Klamath Basin Potato Stocks

Change: Publish Klamath Basin potato stocks

Published in: All 2007 *Potato Stocks Reports*

States Involved: CA, OR

Comments: The Klamath Basin consists of Siskiyou and Modoc Counties in California and Klamath County in Oregon. Many potatoes grown in California are stored in Oregon. Publishing the Klamath Basin separately will provide needed information of actual stocks available for the area and will assist the industry in marketing the potato crop in a more efficient manner.

Potatoes - Florida

Change: Winter potatoes will be combined with spring potatoes
Published in: July 2007 *Crop Production Report*
States Involved: FL
Comments: Florida's winter potato crop is decreasing. Winter potato shipments are under 3 percent of Florida's total sales. Potato county estimates are no longer needed.

Prunes

Change: An additional production forecast will be made in October
Published in: October 2007 *Crop Production Report*
States Involved: CA
Comments: Requested and funded by the California prune industry.

Sugarbeets

Change: Ohio will be dropped from the estimating program
Published in:
States Involved: OH
Comments: Ohio no longer has any sugarbeet acreage.

Canola

Change: Addition of two States – acreage, yield, production
Published in: January 2007 - *Crop Production Summary*
February 2008 – *Crop Values Report*
States Involved: CO, KS
Comments: Due to increased acreage as a result of new bio-tech varieties and potential demand associated with bio-fuels.

Spearmint

Change: Acreage, yield, production, price, value for Scotch and Native varieties
Published in: January 2007 - *Crop Production Summary*
February 2008 – *Crop Values Report*
States Involved: WA
Comments: Washington has been estimating Scotch and Native spearmint varieties in their State program for several years.



**World Agricultural Outlook Board (WAOB)
Office of the Chief Economist (OCE), USDA**

Comments about World Agricultural Outlook Board programs may be directed to Gerald A. Bange, Chairperson, WAOB, Mail Stop 3812, South Building, USDA, Washington, D.C. 20250-3182; (202) 720-6030; gbange@oce.usda.gov.

World Board Update

Report Usage Grows. During the past year, WAOB issued 12 monthly *World Agricultural Supply and Demand Estimates (WASDE)* reports, as scheduled; and delivered 52 weekly Weather and Economics Briefing reports to the Secretary and top staff. Interagency Commodity Estimates Committees (ICECs), chaired by WAOB senior economists, cleared all USDA economic outlook reports to assure consistency with official USDA estimates.

The *WASDE* report is among USDA's most widely viewed reports. From October 2006 through March 2007, the *WASDE* was hit 14,407 times on average per month. Also, the *WASDE* report has 6,701 subscribers (as of May 2007) on the USDA-Cornell site, which is operated by Cornell through a partnership relationship with USDA.

WAOB staff also prepared numerous special economic reports and weather assessments for the Secretary and Chief Economist. For example, WAOB analyzed the impact of the rapid growth of corn use for ethanol production on grain, livestock, and dairy markets; estimated probable crop losses associated with a severe freeze on California's citrus industry; and, analyzed the probable impact of genetically modified rice on U.S. exports and prices. WAOB's monthly estimates of corn use for ethanol production continue to lead the industry. Also, WAOB continued to monitor and project the market impact of trade restrictions on U.S. beef products to Japan and South Korea.

International Exchanges. USDA Chief Meteorologist, Ray Motha (WAOB staff member), and Keith Menzie, Oilseeds Analyst, traveled to India late October-early November in 2006. Motha was finishing his second term as president of the World Meteorological Organization's Commission for Agricultural Meteorology. Menzie spoke to the Commission on how weather data is used to help determine global supply and demand estimates and the tools used to produce the analysis. Menzie also traveled throughout India touring meeting with producers, oilseed processors, and Government officials. Shayle Shagam, Livestock Dairy & Poultry Analyst, traveled to Argentina and Uruguay in March 2007, to learn about production and markets and also exchange information about U.S. livestock systems. Shagam met with U.S. embassy officials, Argentine trade officers, producers, butchers, and also visited slaughter houses, markets, and feedlots. David Stallings, WAOB Senior Economist, will travel to Argentina in late May to speak about the USDA agricultural projections report at "Agrotendencias 2007," a conference sponsored by private sector grain handlers and processors. World Board Chairman Gerald Bange travels to China to attend the National Grains & Oilseeds Conference on July 2. This will be his eighth trip to China where he's traveled to encourage greater exchange of data and statistical methodology in the effort to refine the sharing of global information sources.

Weather Monitoring. The Joint Agricultural Weather Facility (JA WF), managed by W AOB and staffed by W AOB and National Weather Service personnel, issued daily national agricultural weather summaries and, in cooperation with the National Agricultural Statistics Service, published 52 issues of the *Weekly Weather and Crop Bulletin*. On a rotational basis, WAOB prepared issues of the weekly *U.S. Drought Monitor*, produced jointly with the National Weather Service and the National Drought Mitigation Center in Nebraska. WAOB's JAWF also prepared numerous early warnings and assessments of significant weather events that affected agriculture. The meteorologists routinely describe projected storm tracks, wind speeds, and rainfall, and use GIS to delineate crop areas and project probable crop losses.

From October 2006 through March 2007, the *Weekly Weather and Crop Bulletin* was hit 15,160 times per month and the Morning Weather Summary was hit 3,738 times per month. WAOB's *Climatic Profiles* publication was accessed 30,308 times per month.

USDA'5 Annual Agricultural Outlook Forum. The 2007 Agricultural Outlook Forum, organized by W AOB, attracted a record 1,865 attendees and wide press coverage. The 2007 Forum featured Secretary Mike Johanns and leading CEOs focusing on the impact of bioenergy on agriculture. The program featured in-depth and timely sessions on the major issues, including the U.S. Farm Bill, affecting the agricultural sector. Publication of the 10-year baseline projections just prior to the Forum provided critical strategic planning information for firms in agriculture, food, and fiber industries. In association with the 2007 Agricultural Outlook Forum, W AOB initiated the Student Diversity Program for the purpose of increasing the diversity of agricultural professionals. Sponsors funded Forum attendance for 11 students from Land-Grant Colleges and Universities. The 2008 Forum will be held February 21-22 in Arlington, Virginia. More information is available at: www.usda.gov/oce/forum or please contact: Brenda Chapin (202-720-5447) or: bchapin@oce.usda.gov

Preparing for Emergency Operations. WAOB information technology specialists conducted onsite tests of hardware, software, and communications capabilities at OCE's Continuity of Operations Plan (COOP) facility which is co-located with National Agricultural Statistics Service (NASS) in Fairfax, Virginia. Software was installed to mirror *WASDE* backup files to the Fairfax site. W AOB implemented a monthly procedure to refresh all the COOP laptops with Microsoft, McAfee, and other applications updates. To ensure access to meteorological information at the Fairfax site, W AOB installed FX-NET for accessing critical weather information in an emergency. These technologies enable production of the *WASDE* report and WWCB at the Fairfax site in the event USDA's South Building is shutdown. W AOB also collaborated with NASS to provide for a Level 4 COOP site by collocating with NASS in Charlotte, North Carolina.

Web Sites: Office of the Chief Economist: www.usda.gov/oce/
World Agricultural Outlook Board: h11Y://www.usda.gov/oce/commodity/wasde/index.htm USDA
Agricultural Outlook Forum: www.usda.gov/oce/forum
USDA-Cornell University Mann Library site: www.usda.mannlib.comell.edu/MannUsda/