

Economic Research Service

The USDA Commodity Costs and Returns (CAR) Estimation Project

William D. McBride
USDA, ERS

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Outline of Presentation

- **Motivation for CAR estimates**
- **Commodity surveys as part of the ARMS**
- **Cost and return accounting**
- **Approaches to estimation**
- **Dissemination of the estimates**
- **Research uses of CAR data**

Motivation for the CAR Project

- **CAR Project dates to the Agricultural and Consumer Protection Act of 1973**

“The Secretary of Agriculture...shall conduct a cost of production study of the wheat, feed grain, cotton, and dairy commodities under the various production practices and establish a current national weighted average cost of production. This study shall be updated annually and shall include all typical variable costs, including interest costs, a return on fixed costs, and a return for management.”

Commodities in the CAR Project

- National and regional accounts for 12 commodities published annually from 1975

Crop commodities

- Corn
- Wheat
- Cotton
- Soybeans
- Rice
- Oats
- Peanuts
- Grain sorghum
- Barley

Livestock commodities

- Dairy
- Hogs
- Cow-calf

Mandated
Estimates

CAR Estimates are Survey Based

- Data collected in commodity surveys as part of the Agricultural Resource Management Survey (ARMS) are the basis for the CAR estimates
- Commodity surveys are conducted every 4-8 years on a rotating basis for each commodity
- Estimates between surveys are updates based on price, acreage, and production changes
- Methods are those recommended by the American Agricultural Economics Association Task Force

Agricultural Resource Management Survey

- **ARMS is a national survey of U.S. agriculture done each year through a collaboration between ERS and the National Agricultural Statistics Service (NASS)**
- **ARMS evolved from a merger in 1996 of the Farm Costs and Returns Survey and Cropping Practices Survey**
- **ARMS is a voluntary survey with about 36,000 samples and an average overall response rate of about 65%**
- **ARMS costs about \$19 million each year**

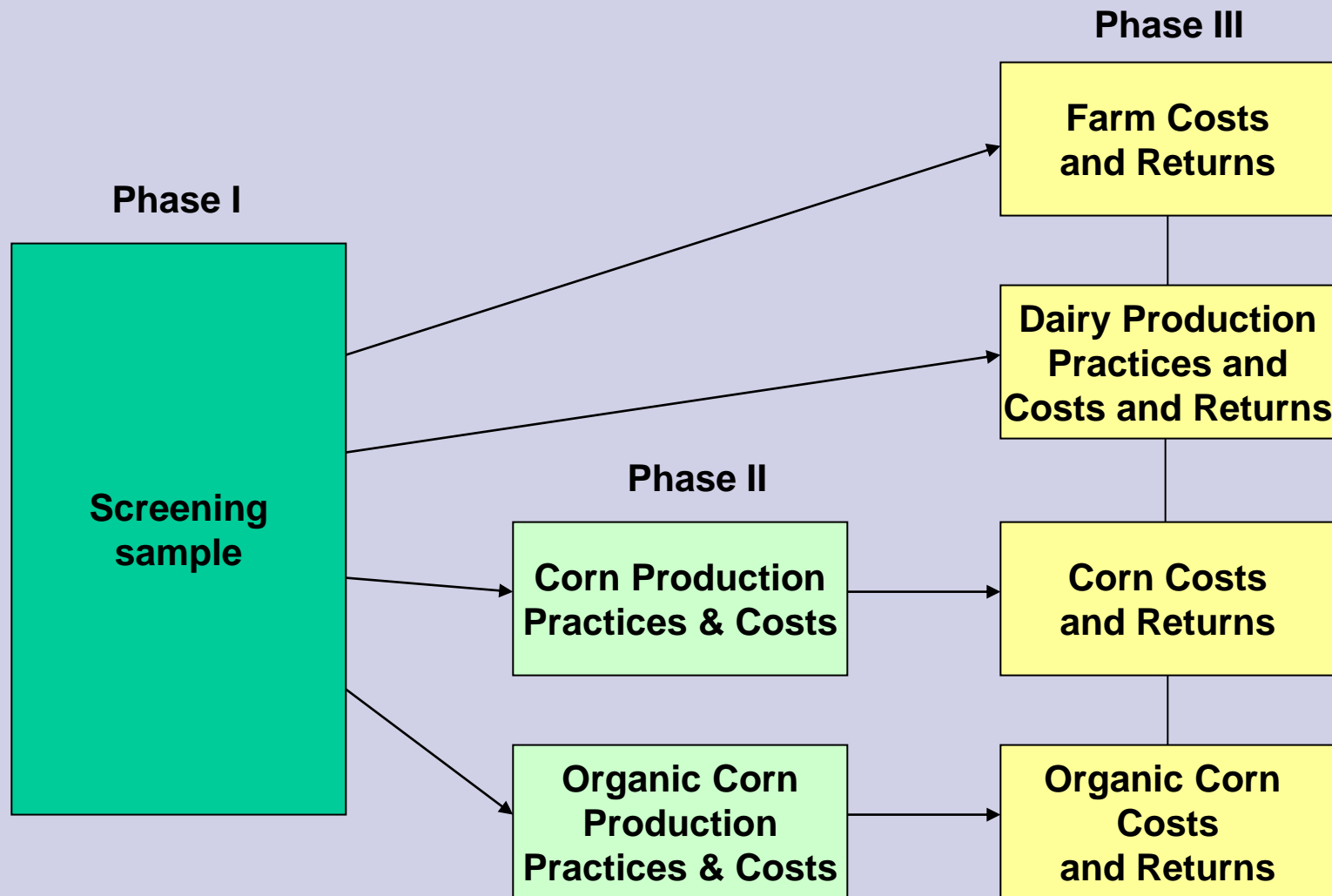
Importance of the ARMS

- **ARMS supports official USDA estimates of agricultural sector net farm income, assets and debt, commodity costs and returns, crop production practices, and crop pesticide use**
- **ARMS supports programs of research in such areas as industry structure and concentration, adoption of technologies, farm business performance, and farm household well-being**

Design of the ARMS

- **Includes multiple versions that represent different target populations (all farms, commodity producers)**
- **Uses a multi-frame, stratified, probability-weighted sampling design—each farm represents a number of farms in the target population**
- **Data are collected by trained enumerators conducting personal interviews, supplemented with mail contacts**
- **Collects data on farm production practices, input use, costs of production, farm income, assets and debt, off-farm income, and farm and household characteristics**

Example: 2010 ARMS



Most Recent CAR Data from the ARMS

Crop commodities

- **Corn** 2010
- **Wheat** 2009
- **Cotton** 2007
- **Soybeans** 2006
- **Rice** 2006
- **Oats** 2005
- **Peanuts** 2004
- **Grain sorghum** 2003
- **Barley** 2003

Livestock commodities

- **Dairy** 2010
- **Hogs** 2009
- **Cow-calf** 2008

The CAR Account

- **Measures historic costs incurred by commodity producers, as opposed to farm planning budgets**
- **Measures the costs incurred by all participants in production—farm operators, landlords, contract growers, contractors**
- **Measures only production costs, excluding marketing costs—production valued at time of harvest**
- **Measures costs of purchased inputs and opportunity costs of farm supplied or homegrown inputs**

U.S. corn production costs and returns, dollars per planted acre

Item	2009	2010
Gross value of production:		
Corn Grain and Silage	561.22	637.68
Operating costs:		
Seed	78.92	83.23
Fertilizer	132.72	100.30
Chemicals	27.68	27.39
Custom operations	11.98	12.15
Fuel, lube, and electricity	29.00	35.73
Repairs	15.69	16.03
Purchased irrigation water	0.14	0.15
Interest on operating capital	0.43	0.27
Total, operating costs	296.56	275.25
Allocated overhead:		
Hired labor	2.41	2.44
Opportunity cost of unpaid labor	25.67	25.92
Capital recovery of machinery and equipment	81.11	83.46
Opportunity cost of land (rental rate)	123.90	127.33
Taxes and insurance	8.13	8.23
General farm overhead	14.49	14.71
Total, allocated overhead	255.71	262.09
Total, costs listed	552.27	537.34
Value of production less total costs listed	8.95	100.34
Value of production less operating costs	264.66	362.43
Yield (bushels per planted acre)	156	145
Price (dollars per bushel at harvest)	3.59	4.39

Approaches to CAR Estimation

- **Direct costing:** Purchased input costs are taken directly from the survey
- **Valuing input quantities:** Farm supplied or homegrown input quantities from the survey are valued using relevant prices
- **Indirect costing:** Formulas are used with survey data to estimate machinery operating and ownership costs
- **Allocating whole-farm expenses:** Rules are specified to allocate general farm business expenses

Direct Costing

Crop commodities

- Purchased seed
- Fertilizer
- Chemicals
- Custom operations
- Hired labor
- Purchased water

Livestock commodities

- Purchased feed
- Feeder animals
- Veterinary & medicine
- Bedding & litter
- Marketing
- Custom services
- Fuel, lube, & electric
- Repairs
- Artificial insemination
- Milk Hauling
- DHIA fees

Valuing Input Quantities

Crop commodities

- Homegrown seed
- Manure
- Unpaid labor
- Land
- Operating interest
- Cotton ginning

Livestock commodities

- Homegrown feed
- Pasture
- Unpaid labor
- Land
- Operating interest

Indirect Costing

Crop commodities

- Fuel, lube, & electric
- Repairs
- Capital recovery

Livestock commodities

- Capital recovery

Allocating Whole-Farm Expenses

Crop commodities

- General farm overhead
- Taxes and insurance

Livestock commodities

- General farm overhead
- Taxes and insurance

ERS website



The screenshot shows the ERS website homepage with the following elements:

- Header:** USDA United States Department of Agriculture, Economic Research Service, The Economics of Food, Farming, Natural Resources, and Rural America.
- Navigation:** Home, About ERS, Briefing Rooms, Publications, Data Sets, Newsroom, Help, Contact Us.
- Search:** Search ERS: Google™ Search Go
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- New Releases & Events:** November 2011 calendar.

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

- More than 400 briefings and analyses for policymakers
- 90 market analysis updates and 50 major reports annually
- More than 10,000 Website visitors daily

ARMS briefing room

The screenshot shows the USDA Economic Research Service website. At the top, there is a header with the USDA logo and the text "United States Department of Agriculture Economic Research Service The Economics of Food, Farming, Natural Resources, and Rural America". Below this is a navigation menu with links for Home, About ERS, Briefing Rooms, Publications, Data Sets, Newsroom, Help, and Contact Us. The main content area features a breadcrumb trail: "You are here: Home / Briefing Rooms / Agricultural Resource Management Survey (ARMS)". A search bar is located on the left, and a "Briefing Rooms" header is in the center. Below the header, there are links for Print, E-mail, Bookmark/share, Translate, and Text only. The main title is "Agricultural Resource Management Survey (ARMS)". Underneath, there is an "Overview" section with a paragraph describing the survey. To the right, there is a "Contents" section with a list of links: Overview, What is ARMS?, What Type of Information is Collected in the Survey?, How Are ARMS Data Used?, How are Results Reported?, Accessing the Data, Recommended Readings, Recommended Data, Related Links, and Maps and Images Gallery. On the left side, there is a "Browse by Subject" section with a list of categories.

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Agricultural Resource Management Survey (ARMS)

Contents:

- Overview**
- [What is ARMS?](#)
- [What Type of Information is Collected in the Survey?](#)
- [How Are ARMS Data Used?](#)
- [How are Results Reported?](#)
- [Accessing the Data](#)
- [Recommended Readings](#)
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Overview

USDA's Agricultural Resource Management Survey (ARMS) is an integrated data collection system that enables the development of farm business and household accounts for the same unit of observation. ARMS data provide a direct linkage between commodity production practices (including conservation) and the financial status of the farm and its operator's household. The data also provide insights on several facets of the agricultural sector, including its contribution to the national economy, the organization and performance of farms, the income and well-being of farm households, and the economics of production practices used across commodity enterprises. Information collected in the survey can be used to examine the effects of economic or policy events on farms and farm households.

Get the Full Briefing

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- Rural Economy
- Trade & International Markets

CAR data page

USDA United States Department of Agriculture
Economic Research Service
The Economics of Food, Farming, Natural Resources, and Rural America

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- Research & Productivity
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Data Sets

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Commodity Costs and Returns: Data

- U.S and Regional Cost and Return Estimates for the Most Recent 2 Years, 2009-10
- Recent Costs and Returns, United States and ERS Farm Resource Regions, New Format and Regions
- Historical Costs and Returns, United States and ERS Production Regions, Old Format and Regions
- Cost-of-Production Forecasts
- Monthly Milk Costs of Production

Contents:

- [Commodity Costs and Returns](#)
- [Features](#)
- [Data](#)**
- [About the Estimates](#)
- [Methods](#)
- [Glossary](#)

U.S and Regional Cost and Return Estimates for the Most Recent 2 Years, 2009-10

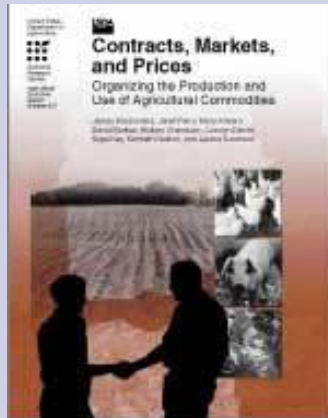
These estimates are presented for the United States and ERS Farm Resource Regions for most commodities and are updated biannually with preliminary estimates released during the first week of May and final estimates released during the first week of October.

Commodity

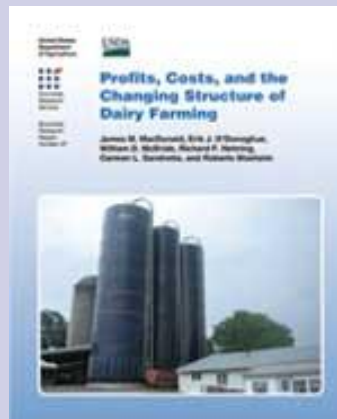
Corn
Soybeans
Wheat
Cotton

Research using CAR Data

Contracting in U.S. Agriculture



Profits, Costs, and Dairy Farm Structure



Adoption of Biotech Crops



Changing Economics of Hog Production



Characteristics and Costs of Corn Farms



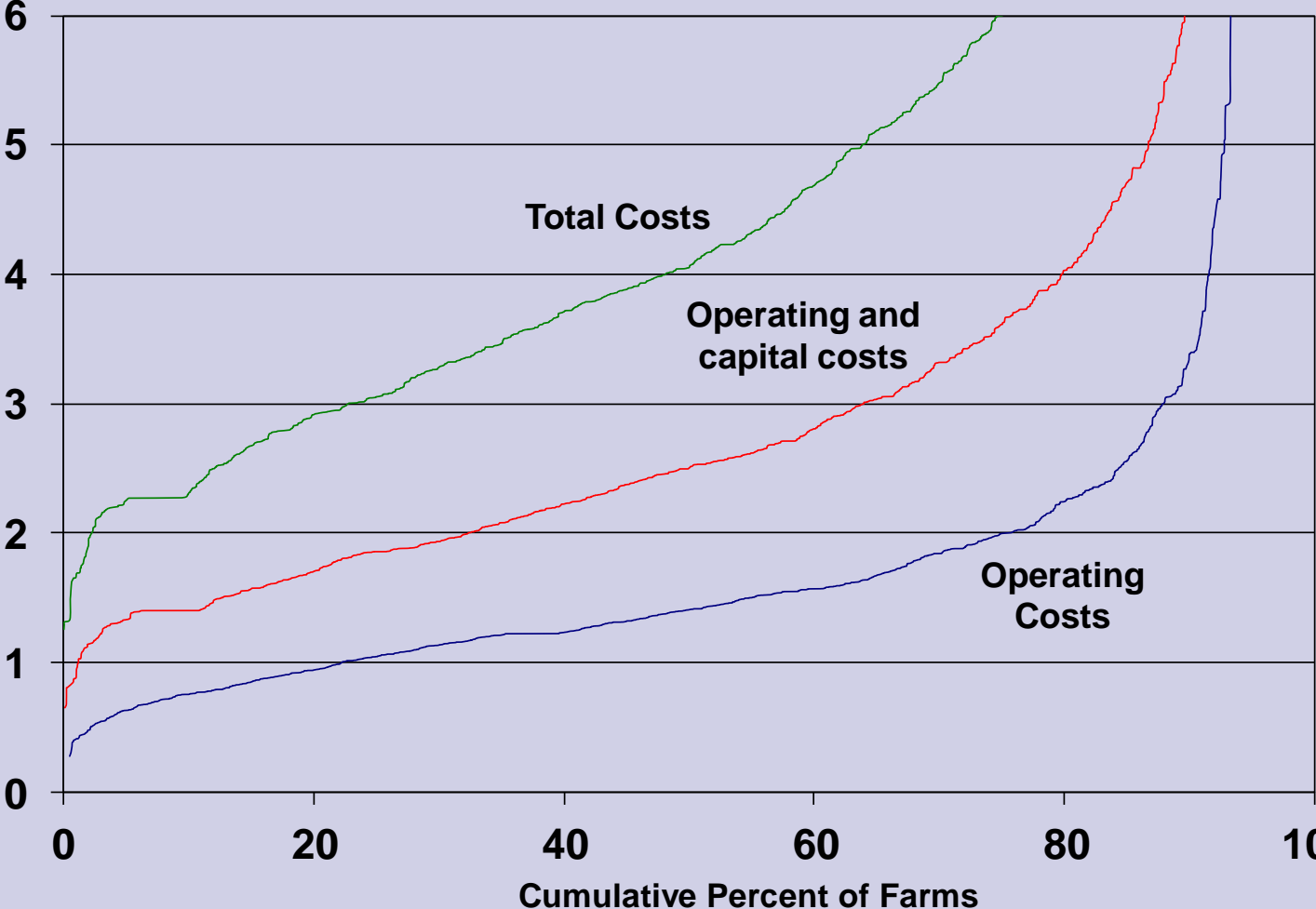
Issues for Organic Dairy Farming



Distribution of production costs

Wheat

Dollars per bushel



Information about USDA CAR Estimation

- ERS website:

www.ers.usda.gov

- ARMS briefing room

www.ers.usda.gov/briefing/ARMS

- CAR data page:

www.ers.usda.gov/Data/CostsAndReturns/

- E-mail:

wmcbride@ers.usda.gov