

# AGRICULTURAL RESOURCE MANAGEMENT SURVEY (ARMS)

## *Integrating Varied Data Needs Into a Single Data Collection*

Dave Aune  
USDA/NASS  
June 1, 2011

- ❖ **ARMS is an annual snapshot of the economic health of all farms and ranches in the 48 contiguous states.**
- ❖ **ARMS is cosponsored by NASS and the USDA's Economic Research Service.**

# Products Supported by ARMS

## ***NASS***

- ❖ **Farm Production Expenditures**
- ❖ **Agricultural Chemical Use**

## ***ERS***

- ❖ **National Sector Accounts**
- ❖ **Cost of Production**
- ❖ **Economic Impact Analysis**
- ❖ **Reports to Congress**

# ARMS Integrates

- ❖ **Costs and Returns**
- ❖ **Chemical Use**
- ❖ **Cost of Production**
  - ❖ **2 to 4 Commodities per year**

# SURVEY DESIGN

- ❖ **Two versions of the costs and returns questionnaire**
  - ❖ **Full version — detailed — personal interview**
  - ❖ **Core version — general — mail/web**
- ❖ **One version for each cost of production target commodity**
  - ❖ **For 2010: dairy, corn, organic corn**
- ❖ **All versions obtain enterprise expense and production data**
- ❖ **Items that do not require as large a sample size are asked on a selected version(s)**

3. For each type of loan, what was the balance owed, average interest rate, and percent for farm use?

What was the  
balance owed on  
December 31, 2010?  
DOLLARS

What was the  
average interest rate  
of this debt?  
PERCENT

How much of this  
debt was for farm  
use?  
PERCENT

		1048	1049	1050
a. One year or less production or other loans . . . . .	NONE <input type="checkbox"/>	<input type="text"/>	<input type="text"/> % Hundredths	<input type="text"/> %
b. More than one year non-real estate debt . . . . .	<input type="checkbox"/>	<input type="text"/>	<input type="text"/> % Hundredths	<input type="text"/> %
c. More than one year real estate debt . . . . .	<input type="checkbox"/>	<input type="text"/>	<input type="text"/> % Hundredths	<input type="text"/> %

6. To estimate the financial position of farms correctly and their ability to service debt and to categorize debt by types, we need to list loans this operation had on December 31, 2010, including any line of credit. (Include farm/ranch loans, debt on the operator's house if owned by the operation, and multi-purpose loans used for both farm and non-farm purposes. Exclude CCC commodity loans and any loans used exclusively for non-farm purposes.)

1 Who is the lender?  [Show lender codes in the Respondent Booklet.]  CODE	2 What was the balance owed on Dec. 31, 2010 including outstanding principal plus unpaid interest?  DOLLARS	3 What was the interest rate on 12/31/2010?  [Report in hundredths of a percent. Example: 9% = 09.00]  PERCENT	4 What is the type of loan?  [See the Respondent Booklet.]  CODE	5 What year was it obtained?  YEAR	6 What is the original term of the loan?  NUMBER of YEARS	7 What percent is for operating expenses, capital expenditures, or other expenses of the farm operation?  PERCENT	8 What is the primary farm purpose of this loan?  [Show codes in the Respondent Booklet.]  CODE	9 Is this a— 1 fixed rate loan? If this is a variable or adjustable rate loan, how often is it repriced? 2 monthly 3 quarterly 4 annually 5 more than annually  CODE
1001	1002	1003 _____	1004	1005 _____	1008	1006	1007	1009
1010	1011	1012 _____	1013	1014 _____	1017	1015	1016	1018
1019	1020	1021 _____	1022	1023 _____	1026	1024	1025	1027
1028	1029	1030 _____	1031	1032 _____	1035	1033	1034	1036
1037	1038	1039 _____	1040	1041 _____	1044	1042	1043	1045

7. If you had farm loans **in addition to the five that I've just recorded**, what is the total amount of debt from these loans owed on December 31, 2010? (Include farm/ranch loans and debt on the operator's house if it is owned by the operation. Exclude any loans for non-farm purposes that are secured by assets of the farm/ranch.)

DOLLARS

1047

**OTHER OPERATIONS GROWING, RAISING, OR FEEDING LIVESTOCK FOR THIS OPERATION**

3. Did any other operation(s) grow, raise, or feed livestock or poultry owned by this operation under a contract arrangement in 2010 (you are the contractor)?

0271 1  Yes 3  No → SKIP to Section D

NONE 0050 DOLLARS

a. What were your gross receipts from items sold or removed under these contracts? . . . . .

0050

b. On December 31, 2010, what was the market value of unsold livestock or poultry remaining under these contracts? . . . . .

0051

c. How much was paid to contractees for labor, management, and reimbursement for expenses? . . . . .

0052

**OTHER OPERATIONS GROWING, FEEDING, OR RAISING LIVESTOCK FOR THIS OPERATION**

3. Did any OTHER operation(s) grow, feed, or raise livestock or poultry owned by this operation under a contract arrangement in 2010 (you are the contractor)?

CODE

YES - [Enter code 1 and continue]  NO - [Enter code 3, then go to SECTION D] . . . . .

0271

1	2	3	4	5	6	7
What livestock or poultry were being raised or fed for you? [List type below.]	See livestock codes in respondent booklet CODE	What was the market value of [type] on hand on contractee operations on Jan. 1, 2010? DOLLARS	What was the estimated market value (at placement) of [type] placed under contract DURING 2010? DOLLARS	How much was paid to contractees for labor, management, and reimbursement for expenses? DOLLARS	How much were your GROSS receipts from [type] sold or removed under this contract? DOLLARS	On Dec. 31, 2010 what was the market value of unsold [type] remaining under contract? DOLLARS
	0277	0278	0279	0280	0281	0282
	0283	0284	0285	0286	0287	0288
	0289	0290	0291	0292	0293	0294



# SAMPLE DESIGN

- ❖ **A large sample is screened to eliminate out-of-scope records and establish presence of cost of production items (Phase 1)**
- ❖ **The screened sample is selected to minimize overlap to previous year ARMS and current year Acreage surveys.**

# SAMPLE DESIGN

- ❖ **Mutually exclusive samples are selected for each version from the Phase 1 respondents.**
- ❖ **Expenditure samples are a stratified random sample by sales class**
- ❖ **Cost of production samples are probability proportional to size**
- ❖ **A chemical use survey is conducted for all crops targeted for cost of production (Phase 2)**

# SAMPLING

- ❖ Sample sizes are determined from prescribed precision standards (target CVs), variance history, and response history.
- ❖ Sample sizes for the 2010 ARMS Phase 3:

Organic corn	627
Corn	3,266
Dairy	3,613
Full Costs and Returns	12,393
Core Costs and Returns	16,495
- ❖ The pooled sample ( $n = 36,394$ ) is used to estimate costs and returns.

# SUMMARIZATION

- ❖ **Each sample in the ARMS comes with two weights: one for the version sample and one for the pooled samples.**
- ❖ **Weights have been scaled to frame totals and adjusted for nonresponse in previous phases.**

# SUMMARIZATION

- ❖ List incompleteness is directly measured using the NASS area frame.
- ❖ Item nonresponse is addressed using a custom algorithm to impute data values.
- ❖ Weights are calibrated to 31 production targets based on official NASS estimates.
- ❖ Unit nonresponse is confounded with calibration.

$$\text{Total} = \sum w_i x_i$$

# BURDEN MANAGEMENT

- ❖ **Minimize overlap of samples with two other burdensome surveys in Phase 1.**
- ❖ **No overlap across all surveys (versions) performed as part of costs and returns.**
- ❖ **Reduced (core) version of the costs and returns report for mail/web collection.**
- ❖ **Special analysis questions asked on selected versions.**