The Zwick Center for Food and Resource Policy

Milk Cost of Production Estimates for April, May, and June 2011

Prepared for the Connecticut Commissioner of Agriculture

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I. Introduction

In July 2009, Connecticut Public Act 09-229 established an agricultural sustainability account to provide financial assistance to Connecticut milk producers during times when the federal milk pay price falls below a minimum sustainable monthly cost of production. This legislation mandates that the Commissioner of Agriculture make payments to Connecticut dairy farmers on a quarterly basis. To determine whether payments are necessary to comply with the legislation, Public Act 09-229 defines the minimum sustainable monthly cost of production as eighty-two percent of the monthly average cost of production for a New England state, as calculated by the United States Department of Agriculture (USDA) Economic Research Services (ERS).

Since January 2003, the ERS has estimated the monthly state level milk cost of production for Vermont and other selected states in the country. Since the inception of Public Act 09-229 the Connecticut Commissioner of Agriculture has used the Vermont cost of production to determine if assistance should be provided to Connecticut milk producers. However, questions have arisen about the validity of monthly state level estimates using the current USDA methodology and thus effective January 2011, monthly state level milk cost of production is no longer estimated.[1] The lack of cost estimates for use by the Commissioner of

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Agriculture created a problem with maintaining compliance with existing legislation. It became impossible to determine payments to Connecticut dairy farmers under Public Act 09-229. To rectify this situation, the Connecticut Legislature, through Public Act 11-48, revised existing dairy legislation to allow the Commissioner of Agriculture to determine an alternative source and/or methodology that is based on data and variables published by the USDA.[2] With the newly granted authority, the Commissioner of Agriculture has requested that The Zwick Center for Food and Resource Policy in the Department of Agricultural and Resource Economics at the University of Connecticut provide estimates of the monthly cost of production for a New England State based on data and variables published by the USDA.

The ideal estimates that one would provide to the Commissioner of Agriculture would be based on the monthly cost of production for Connecticut dairy farmers. Unfortunately there exists no USDA data or variables that can estimate this cost for Connecticut. Given these constraints, it has been agreed upon that the estimates to be provided are based on the Vermont monthly cost of production using the existing USDA methodology.

This report presents the current USDA methodology and continues the Vermont milk cost of production estimates previously calculated by the ERS. This report does not address concerns about the validity of this methodology and the authors do not endorse the long-term continued use of these estimates. Beyond 2011, it is recommended that an alternative methodology for calculating the monthly milk cost of production be considered specifically based on Connecticut dairy farms.

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[1] More specific comments and actions by the USDA with respect to monthly state level milk cost of production estimates can be obtained at http://www.ers.usda.gov/Data/CostsAndReturns/testpick.htm

[2] The section of Public Act 09-229 that authorized these payments was set to terminate on July 1, 2011. However, Public Act 11-48 eliminated the sunset on these provisions.

II. Methodology and Data

The methodology used to calculate the monthly milk cost of production for selected individual states was established by the USDA and implemented by the ERS since January 2006. While the USDA no longer estimates state level cost of production, it is possible to use their established methodology and available data to continue to calculate the cost of production for 2011. The data and variables used to estimate the monthly milk cost of production are detailed in Table 1.

Table 1. Data Sources, Variables, and Cost Components

Data Sources

1) Annual milk production costs and returns for Vermont based on the 2005 Agricultural Resource Management Survey (ARMS).
2) Annual and monthly U.S. prices-paid indexes from the NASS monthly Agricultural Prices report.
3) Annual and monthly Vermont milk production per cow from the NASS monthly Milk Production report.

Variables

ARMS	Annual weighted-average Vermont milk costs of production developed from the 2005 ARMS.
NASSINDX	Ratio of annual and monthly U.S. prices paid indexes from the NASS Agricultural Prices report.
NASSMILK	Ratio of annual and monthly daily average milk production per cow in Vermont from the NASS Milk Production report.

Cost Components

Operating Costs
- Feed
  - Purchased Feed
  - Homegrown Harvested Feed
  - Grazed Feed
- Other Operating Costs
  - Veterinary and Medicine
  - Bedding and Litter
  - Marketing
  - Custom Services
  - Fuel, Lube, and Electricity
  - Repairs
  - Other Operating Costs
  - Interest on Operating Capital

Allocated Overhead
- Hired Labor
- Opportunity Cost of Unpaid Labor
- Capital Recovery of Machinery and Equipment
- Opportunity Cost of Land (Rental Rate)
- Taxes and Insurance
- General Farm Overhead

Total Cost = Operating Costs + Allocated Overhead

Source: USDA Methods of Estimating Monthly Milk Costs of Production
http://www.ers.usda.gov/data/costsandreturns/monthlymilkcosts.htm

All data are obtained from or based on USDA publications, including the 2005 Agricultural Resource Management Survey (ARMS), and monthly National Agricultural Statistics Service (NASS) publications of the *Agricultural Prices* report and *Milk Production* report. The publication for the most current month is issued toward the end of the month and provides the previous month's initial data estimates for the necessary variables. This creates approximately a three to four week delay in the calculation of costs for the previous month. These data are also available from the NASS statistics database available at http://www.nass.usda.gov.

It is important to note that data published by NASS is often revised in subsequent months as new information used to create these estimates becomes available. Data revisions are most reliably obtained from the NASS statistics database. Collecting these data at the latest possible time provides for the most up-to-date estimate of the cost of production. Due to the timing that the Commissioner of Agriculture needs to use the monthly cost of production estimates, it is best to collect the data for the previous quarter one month following the end of the quarter, i.e. the end of July or beginning of August for Quarter 2. All data used in this report was collected from the NASS statistics database on August 2, 2011.

The methodology for calculating the cost of production uses three main variable categories from the ARMS and NASS reports. The ARMS is used to compute an annual milk production cost for selected states, including Vermont, for each year from 2005 to 2010. This production cost is broken down by the components of the cost of production, which include operating costs, allocated overhead, and their respective subcategory costs. Operating costs include feed, veterinary and medicine, bedding and litter, marketing, custom service, fuel, repairs, and other operating related costs as detailed in Table 1. Allocated overhead, also

detailed in Table 1, includes costs associated with hired labor, opportunity costs of unpaid labor and land, capital recovery, taxes and insurance, and general overhead. Each of these cost components also have associated NASS prices paid indexes from the *Agricultural Prices* report. A complete list of equations used to calculate the monthly cost of production is included in Appendix A.

III. Monthly Cost of Production and Related Uniform Pricing for Quarter 2, 2011

The estimates for the April, May, and June 2011 milk cost of production for Vermont are shown in Table 2.

Table 2. Vermont monthly milk costs of production: April - June 2011

Item 1/		Apr	May	Jun
		Dollars per Hundredweight		
Operating costs	Total feed costs	9.20	9.64	9.94
	--Purchased feed	7.08	7.18	7.50
	--Homegrown harvested feed	1.95	2.27	2.25
	--Grazed feed	0.16	0.19	0.19
	Veterinary and medicine	0.91	0.91	0.93
	Bedding and litter	0.43	0.44	0.44
	Marketing	0.30	0.30	0.30
	Custom services	0.48	0.48	0.48
	Fuel, lube, and electricity	1.07	1.08	1.06
	Repairs	0.61	0.60	0.61
	Other operating costs	0.00	0.00	0.00
	Interest on operating capital	0.01	0.01	0.01
	Total operating costs ($/cwt)	**13.00**	**13.46**	**13.78**
Allocated overhead	Hired labor	1.82	1.82	1.84
	Opportunity cost of unpaid labor	2.88	2.88	2.91
	Capital recovery of machinery and equipment	3.83	3.84	3.88
	Opportunity cost of land (rental rate)	0.05	0.05	0.05
	Taxes and insurance	0.40	0.40	0.41
	General farm overhead	1.26	1.26	1.28
	Total allocated overhead ($/cwt)	**10.25**	**10.26**	**10.36**
Total	**All costs listed ($/cwt)**	**23.25**	**23.71**	**24.14**

1/ Estimates may be adjusted based on revisions in monthly agricultural price indices and milk production estimates as provided by the USDA.

Source: Based on USDA's 2005 Agricultural Resource Management Survey of milk producers and updated using current USDA milk production per cow and production input indexes. See http://www.ers.usda.gov/Data/CostsAndReturns/monthlymilkcosts.htm for methodology.

The total cost is broken down into two main categories: operating costs and allocated overhead. The operating costs for April, May, and June 2011 are $13.00, $13.46, and $13.78/cwt., respectively. The major component of operating costs is the total feed costs of $9.20, $9.64, and $9.94/cwt., respectively. With the exception of the feed cost categories, there is very little variation within cost categories from month to month. Allocated overhead during these three months are $10.25, $10.26, and $10.36/cwt. for April, May, and June, respectively. Very little monthly changes in costs occur within allocated overhead cost categories. The total milk cost of production is $23.25 for April, $23.71 for May, and $24.14/cwt. for June. The average of these three months, i.e. the quarter two average cost of production, is thus $23.70/cwt. Public Act 09-229 specifies the minimum sustainable monthly cost of production as eighty-two percent of the monthly average cost of production. Eighty-two percent of the milk cost of production is $19.07 for April, $19.45 for May, and $19.80/cwt for June. The average of these three months is $19.44/cwt.

For comparison purposes, the statistical uniform prices (i.e. blend price) for Hartford, CT for the second quarter of 2011 are $20.28 for April, $20.69 for May, and $21.99/cwt for June, all higher than the minimum sustainable monthly cost of production. The difference between the uniform prices and the eighty-two percent minimum sustainable monthly cost of production is $1.21 for April, $1.24 for May, and $2.19/cwt for June. This represents an average statistical uniform price of $1.55/cwt higher than the minimum sustainable monthly cost of production.

The uniform prices that farmers are receiving during the second quarter of 2011 are historically high (above $20/cwt) and were seen before only during the second half of 2007 and the months of January and July 2008. With uniform prices above the cost of production no

payment to farmers takes place, a situation that is currently common for other federal crop subsidy programs.[3]

IV. Concluding Remarks

At the request of the Connecticut Commissioner of Agriculture we have estimated the monthly milk cost of production for Vermont using the established USDA methodology and available USDA data. While we provide such estimates in this report for the second quarter of 2011, and will continue to do so for the remainder of 2011, it is recommended that the Commissioner of Agriculture consider pursuing monthly estimates for the milk cost of production based on Connecticut surveys and a methodology to be developed for monthly adjustments.

[3] See Kilman, Scott. 2011. Crop Prices Erode Farm Subsidy Program, *Wall Street Journal*, July 25.

Appendix A

Equations used to Estimate the Vermont Milk Cost of Production

ARMS = Weighted average national milk cost of production for 2010 as developed from the 2005 ARMS of milk producers.

NASSINDX = Ratio of annual and monthly U.S. prices paid indexes for selected inputs. e.g. NASSINDX(Concentrates) is the NASS Index for prices paid for concentrates; and NASSINDX(Hay and forages) is the NASS Index for prices paid for hay and forages. The formula for each NASSINDX input is:

$$\frac{\text{2011 Current Month}}{\text{2010 Annual Average}}$$

NASSMILK = Ratio of annual and monthly Vermont milk production per cow on a daily average basis. The formula for each NASSMILK input is:

$$\frac{\text{2011 Current Month Daily Average}}{\text{2010 Annual Daily Average}}$$

Operating costs:

Total feed costs -

Purchased feed = ARMS(Purchased feed) * NASSINDX(Concentrates) * (1/NASSMILK(Production))

Homegrown harvested feed = ARMS(Homegrown harvested feed) * NASSINDX(Hay and forages) * (1/NASSMILK(Production))

Grazed feed = ARMS(Grazed feed) * NASSINDX(Hay and forages) * (1/NASSMILK(Production))

Other operating costs -

Veterinary and medicine = ARMS(Veterinary and medicine) * NASSINDX(Other farm services) * (1/NASSMILK(PRODUCTION))

Bedding and litter = ARMS(Bedding and litter) * NASSINDX(Farm supplies) * (1/NASSMILK(PRODUCTION))

Marketing = ARMS(Marketing) * NASSINDX(Other farm services)

Custom services = ARMS(Custom services) * NASSINDX(Custom rates) * (1/NASSMILK(Production))

Fuel, lube, and electricity = ARMS(Fuel, lube, and electricity) * NASSINDX(Fuels) * (1/NASSMILK(Production))

Repairs = ARMS(Repairs) * NASSINDX(Farm repairs) * (1/NASSMILK(Production))

Other operating costs = ARMS(Other operating costs) * NASSINDX(Other farm services) * (1/NASSMILK(Production))

Interest on operating capital = ARMS(Interest on operating capital) * NASSINDX(Interest) * (1/NASSMILK(Production))

Allocated overhead:

Hired labor = ARMS(Hired labor) * NASSINDX(Wage rates) * (1/NASSMILK(Production))

Opportunity cost of unpaid labor = ARMS(Opportunity cost of unpaid labor) * NASSINDX(Wage rates) * (1/NASSMILK(Production))

Capital recovery of machinery and equipment = ARMS(Capital recovery of machinery and equipment) * NASSINDX(Farm machinery) * (1/NASSMILK(Production))

Opportunity cost of land (rental rate) = ARMS(Opportunity cost of land (rental rate)) * NASSINDX(Rent)* (1/NASSMILK(Production))

Taxes and insurance = ARMS(Taxes and insurance) * NASSINDX(Taxes) * (1/NASSMILK(Production))

General farm overhead = ARMS(General farm overhead) * NASSINDX(Production items) * (1/NASSMILK(Production))

Source: http://www.ers.usda.gov/Data/CostsAndReturns/monthlymilkcosts.htm