COOPERATIVE EXTENSION SERVICE

UNIVERSITY OF KENTUCKY College of Agriculture

Risk Management Tool for Dairy - USDA Livestock Gross Margin (LGM) for Dairy

By: Jack McAllister, Ph.D.

In April 2009, Kentucky dairy farmers became eligible to participate in a program offered by the Risk Management Agency of USDA. The Livestock Gross Margin (LGM) program for Dairy is an insurance program reinsured by the Federal Crop Insurance program. This tool helps manage risk through the purchase of insurance based on the expected monthly difference between the value of milk produced and the cost of purchased feed fed (corn and soybean meal equivalents). This difference is referred to as the gross margin (Gross Margin = Expected Value of Milk Produced – Expected Cost of Purchased Feed). This expected gross margin is calculated on the date of the insurance purchase and is called the Gross Margin Guarantee. The estimated value of milk produced is based on monthly estimated milk marketings and the Class III milk futures price for each month. Purchased feed is estimated from the sum of tons of corn equivalents and the tons of soybean meal equivalents fed to produce the milk and the price used is futures prices for corn and soybean meal. The insurance is a protection against a loss in the Gross Margin Guarantee when compared to the Actual Gross Margin for each month of the insurance period. The Actual Gross Margin is calculated from Class III milk, corn and soybean meal prices on the closing date each month.

Insurance can be purchased for a coverage period of a maximum of 11 months in the future. Insurance can only be purchased on the last Friday of a month (which is business day) and ends at 8:00 PM Central Time on the following day. The premiums are based on 5000 simulations using futures prices for Class III milk, corn, and soybean meal in each of the months covered by the insurance period and applied to the expected milk marketings (cwt) and the use of corn and soybean meal equivalents (tons). The futures prices used are those for the three previous trading days of the futures prior to the date of sale of the insurance. The same set of simulation results are used for each policy holder for that month. Like other insurance, there can be a deductible ranging from $0.00 to $1.50/cwt. based on the amount of the expected gross margin that the producers decides not to insure.

Example Premium Calculation

The premium for a Livestock Gross Margin was calculated using a calculator on the University of Wisconsin website (http://future.aae.wisc.edu/lgm_dairy.html) for an example herd of 80 cows producing 18,000 pounds of milk per cow. The insurance period covered 10 months for each month from December 2009 through September 2010. To estimate monthly milk marketings, monthly milk production per cow for 2008 for Kentucky was used and extrapolated to an 18,000 pound level. Feed amounts for corn and soybean meal were determined using default values of 0.014 tons of corn equivalent/cwt of milk and 0.002 tons of soybean meal equivalent/cwt of milk. The estimated milk marketings, feed amounts and their respective feed prices were used to calculate the Gross Margin Guarantee (GMG). The deductible level was $0.00/cwt. During months in which the Actual Gross Margin was less than the Gross Margin Guarantee for that month, there would be an indemnity or loss. The total premium under the scenario above was $9,034 for estimated milk marketings of

1,208,300 pounds or 12,083 hundredweights. To recover the Livestock Gross Margin premium, there would have to be an indemnity or loss over the total insurance period of at least $9,034 or $0.75/cwt. This would amount to a minimum of a $1/cwt loss in 8 of the 10 months of the insurance period. If a $1.50 deductible had been chosen, the premium would have been $2,354 and to recover the premium, there would have had to have been a loss of at least $1.00/cwt in at least 2 months of the 10 months of insurance coverage or an average of $0.19/cwt loss over the whole 10 months. If margins of at least $0.75/cwt less than the Gross Margin Guarantee are expected then the insurance deserves consideration.

Table 1 lists the insured months for this example and the milk and feed amounts estimated and the futures prices for milk, corn and soybean meal determined from the average futures prices of September 25, 28 and 29, 2009. The total Gross Margin Guarantee is $147,554 or $12.21/cwt.

Table 1. Calculations of Gross Margin Guarantee with a $0.00 deductible level using default feed values and estimated milk production from a herd of 80 cows producing 18,000 pounds of milk per year.

Insured Months	Covered Production	Covered Corn Equiv	Covered Soybean Equiv	Avg. Milk Futures	Avg. Corn Futures	Avg. Soybean Meal Futures	Gross Margin Guarantee @ Base Deductible	
	(cwt)	(Tons)	(Tons)	($/cwt)	($/bu)	($/ton)	Total ($)	Per cwt ($)
Dec-09	1,255	17.60	2.50	14.08	3.38	284.40	14,835	11.82
Jan-10	1,255	17.60	2.50	14.11	3.42	281.77	14,852	11.83
Feb-10	1,181	16.50	2.40	14.30	3.47	280.17	14,173	12.00
Mar-10	1,340	18.80	2.7	14.33	3.51	278.57	16,093	12.01
Apr-10	1,308	18.30	2.60	14.24	3.56	277.09	15,582	11.91
May-10	1,287	18.00	2.60	14.43	3.60	275.60	15,541	12.08
Jun-10	1,181	16.50	2.40	14.70	3.64	275.74	14,554	12.32
Jul-10	1,127	15.80	2.30	14.93	3.68	275.87	14,115	12.52
Aug-10	1,064	14.90	2.10	15.24	3.72	275.90	13,656	12.83
Sep-10	1,085	15.20	2.20	15.48	3.76	273.70	14,153	13.04
Total-10	12,083	169.00	24.00				147,454	12.21

More detailed information on the LGM for Dairy program may be obtained from the USDA Risk Management website http://www.rma.usda.gov/livestock . The University of Wisconsin also has an extensive website on Understanding Dairy Markets which contains software, background papers and links to other sites under the LGM-Dairy tab (http://future.aae.wisc.edu/lgm_dairy.html).