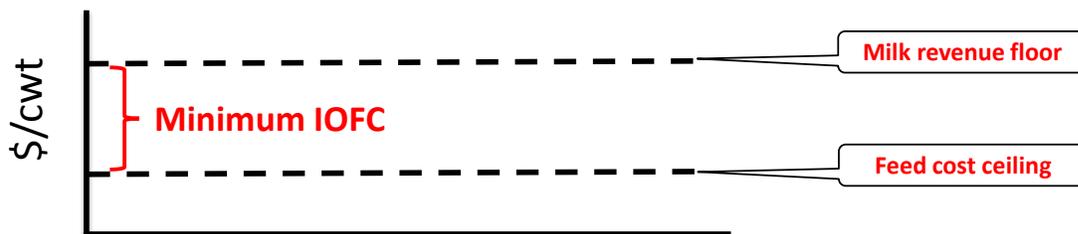


**Livestock Gross Margin Insurance for Dairy**  
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*Livestock Gross Margin Insurance for Dairy* (LGM-Dairy) is a subsidized insurance policy providing dairy producers protection against the loss of *gross margin* (market value of milk minus feed costs) for specified portions of milk produced by their dairy cows. LGM-Dairy establishes a floor (minimum) on income over feed costs (IOFC) and is a risk management tool very similar to using a bundled options strategy (see Figure 1). In a bundled options risk management strategy the producer uses Class III milk put options to create a milk revenue floor (minimum) and feed (corn, soybean meal) call options to establish a feed cost ceiling (maximum). The “bundling” of the put and call options allows the producer to establish an IOFC floor (minimum). The effect of LGM-Dairy and the bundled options strategy are identical (Figure 1).

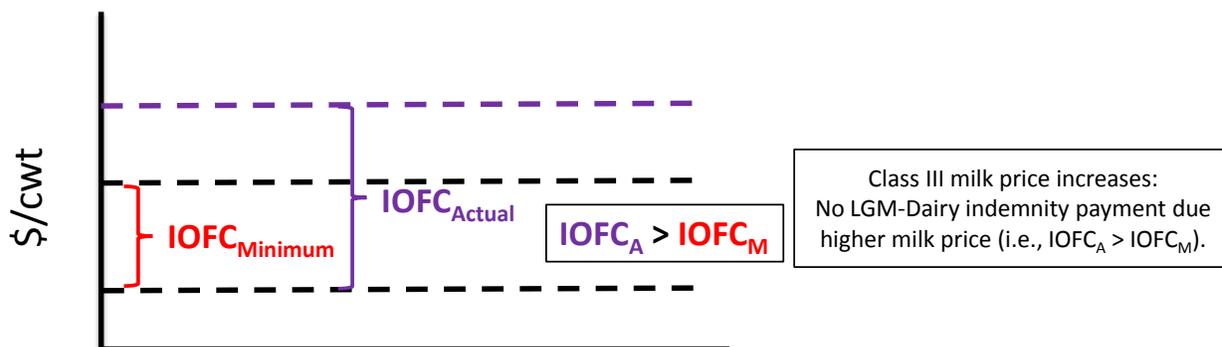


**Figure 1.** Effect of LGM-Dairy insurance or bundled options strategy using Class III put options and corn and soybean meal call options.

LGM-Dairy has several advantages over traditional hedging using Class III futures contracts, using a bundled options strategy, or co-op sponsored forward (fixed) price contracts: 1) hedging and forward contracts “lock in a milk price” and, unlike LGM-Dairy, provide no upside milk price potential, 2) hedging has daily margin requirements while LGM-Dairy does not, 3) the contract size in hedging and bundled options strategies are limited to increments of 200,000 lbs. of milk, 5,000 bushels of corn, and 100 tons of soybean meal while LGM-Dairy has a completely flexible contract size, 4) the cost of an LGM-Dairy policy is the policy premium, and is known before entering into the contract, 5) the cost of insurance in a LGM-Dairy policy is much cheaper than in a similar bundled options strategy because the premium is subsidized, and 6) LGM-Dairy does not require an established contract with a commodities broker or a milk marketing entity that offers forward price contracts. Very importantly, LGM-Dairy’s only cost is the cost of the insurance policy and the contract guarantees a minimum IOFC for covered milk production, but does not limit the producer from participation in higher milk prices (Figure 2) and/or lower feed (corn, soybean) prices (Figure 3).

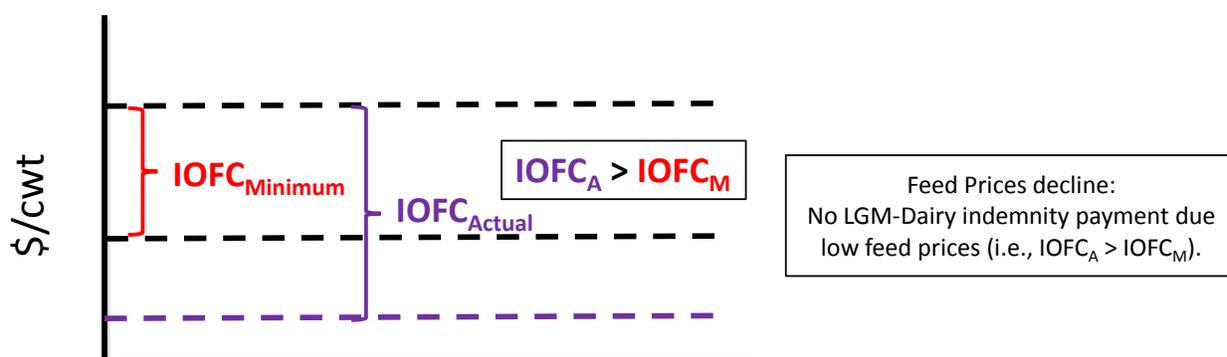
LGM-Dairy is a program administered by the USDA’s *Risk Management Agency*, but LGM-Dairy policies are purchased from firms selling federal crop insurance. Crop insurance agents must be certified to sell LGM-Dairy and have an identification number on file with the *Federal Crop Insurance Corporation*. A list of approved agents can be obtained by going to the University of Wisconsin’s *Understanding Dairy Markets* website ([future.aae.wisc.edu](http://future.aae.wisc.edu)) and clicking on the “LGM-Dairy” tab, then on “List of LGM-Dairy Providers.”

## Does Not Limit Upside Milk Price Potential



**Figure 2.** LGM-Dairy insurance permits producer to participate in milk prices higher than specified in the LGM-Dairy policy.

## Does Not Limit Downside Feed Price Potential



**Figure 3.** LGM-Dairy insurance permits producer to participate in feed prices lower than specified in the LGM-Dairy policy.

LGM-Dairy is available for purchase each month (12 contracts offered per year) and each contract covers from one to ten months (Figure 4). Unfortunately, LGM-Dairy has a very short period each month when the product can be purchased. The LGM-Dairy purchase period starts at the end of the last business Friday of each month and ends at 9:00 PM EDT the next day (Saturday), therefore, there is only about a 27 hour sign-up window every month. This makes it critical that producers work with their insurance agent in advance of the sign-up period.

### Overview of LGM-Dairy

Figure 1 shows the purpose of LGM-Dairy is to provide insurance protecting a minimum IOFC. This is achieved by first establishing an *expected gross margin* (GM). The GM equals the *expected market value of milk sold* minus the *expected feed cost*:

$$\text{Expected Gross Margin (GM)} = \text{expected market value of milk} \text{ minus } \text{expected feed costs}$$

Feed usage in LGM-Dairy is expressed as corn and soybean meal (SBM) equivalents and can be selected by the producer. The LGM-Dairy program allows a wide usage range for these two feed equivalents. The producer may choose any feed usage numbers desired, even if they do not accurately represent their farm’s actual feed usage, as long as they stay with the LGM-Dairy’s feed usage limits. If desired, producers may also convert the portion of their dairy rations that are not corn or SBM, for example, homegrown feeds like corn silage or haylage, to corn and SBM equivalents. The University of Wisconsin *Understanding Dairy Markets* website has software available to convert a wide variety of dairy feeds to corn and SBM equivalents.

Once expected milk production and feed usage are determined, the GM can be calculated. *Expected* milk, corn, and SBM prices are derived from futures prices on the Chicago Mercantile Exchange (CME) for the three commodities: Class III milk, corn, and SBM. *Expected* prices are the average of the last three days of futures settlement prices for each month and commodity including the sign-up Friday. So in our example (Figure 4), the *expected* prices would be the three-day futures settlement price averages for Class III milk, corn, and SBM on September 28, 29, and 30, 2011. Fortunately, producers do not have to collect all of this information and make the calculations on their own. The University of Wisconsin website *Understanding Dairy Markets* has web-based software (LGM-Dairy Analyzer v. 2.0) available that provides these data and makes all the necessary calculations.

Sep '11	Oct '11	Nov '11	Dec '11	Jan '12	Feb '12	Mar '11	Apr '12	May '12	Jun '12	Jul '12	Aug '12
		1	2	3	4	5	6	7	8	9	10
Purchase at End of Month	No Coverage	Insurance Contract Period									
Production Coverage	No Coverage	50%	75%	80%	40%	No	No	No	No	No	No

**Figure 4.** LGM-Dairy insurance contract period for insurance purchased in the September, 2011 sales period.

Like most insurance, LGM-Dairy allows the producer to select a deductible. The higher the deductible selected the more risk the producer assumes, but the lower the premium becomes on the LGM-Dairy contract. Deductibles are available from \$0.00/cwt of insured milk to \$2.00/cwt of insured milk in \$0.10/cwt increments (Table 1). As LGM-Dairy deductibles increase the amount of insurance premium subsidy also increases (Table 1). The premium subsidy is expressed as the percentage the premium is reduced. For example, if a \$0.50/cwt deductible is chosen, the premium for that covered month would be reduced by 28%. A producer must have targeted marketings in two or more months to qualify for the premium subsidy.

Once the deductible is selected it is possible to calculate the gross margin guarantee (GMG). The GMG equals the GM minus the deductible (i.e., the portion of the GM you choose to leave unprotected):

$$\text{Gross Margin Guarantee (GMG)} = \text{GM} \text{ minus deductible}$$

The final calculation needed in the LGM-Dairy program is the *actual gross margin*, which equals the *actual* market value of milk minus the *actual* feed cost:

$$\text{Actual Gross Margin (AGM)} = \text{Actual market value of milk} \text{ minus } \text{actual feed cost}$$

**Table I.** LGM-Dairy insurance deductibles and premium subsidies.

Deductible (\$/cwt)	Subsidy (%)	Deductible (\$/cwt)	Subsidy (%)
\$0.00	18%	\$0.60	31%
\$0.10	19%	\$0.70	34%
\$0.20	21%	\$0.80	38%
\$0.30	23%	\$0.90	43%
\$0.40	25%	\$1.00	48%
\$0.50	28%	\$1.10-\$2.00	50%

The futures markets are also used to determine the *actual* milk, corn, and SBM prices. Very importantly the LGM-Dairy program uses no actual farm level prices, involves no futures market transactions, and no local basis is used to adjust commodity prices. *Actual* prices for Class III, corn, and SBM are the average CME futures settlement prices for the first, second, and third days prior to the futures contract last trading day. Let’s look at October, 2011: The last trading day for corn and SBM futures is the 14<sup>th</sup>, so the *actual* October corn and SBM prices would be the average futures settlement prices for the 11<sup>th</sup>, 12<sup>th</sup>, and 13<sup>th</sup>. The last trading day for Class III milk is October 30<sup>th</sup>, so the *actual* October Class III price would be the average futures settlement prices on the 27<sup>th</sup>, 28<sup>th</sup>, and 29<sup>th</sup>.

In LGM-Dairy an indemnity payment occurs when the *total actual gross margin* ( $AGM_{Total}$ ) for an LGM-Dairy contract period is less than the *total gross margin guarantee* ( $GMG_{Total}$ ). That is, an indemnity (payout) occurs if:

$$AGM_{Total} < GMG_{Total}$$

It is important to remember that there is only one  $AGM_{Total}$  and one  $GMG_{Total}$  per LGM-Dairy contract, thus, the contract is evaluated over the entire contract period. In other words, indemnity payments in months where the AGM is lower than the GMG may potentially be offset by other covered months where the AGM is greater than the GMG.

### LGM-Dairy Example

To better understand the rules of LGM-Dairy and how the program works we will consider an example. Let’s assume a producer is going to purchase a contract during the purchase period at the end of September, 2011 (Figure 4). Poverty Acres Dairy consists of 500 cows averaging 25,200 pounds milk sold per cow per year. Using the software available at the University of Wisconsin’s *Understanding Dairy Markets* website feed usage was determined to be 170.4 tons of corn equivalent and 42.6 tons of SBM equivalent per month. Total monthly milk production was assumed to be evenly spread across all 12 months with 15% of the herd dry in any one month. This results in a total of 8,925 cwts of milk sold per month.

Sep '11	Oct '11	Nov '11	Dec '11	Jan '12	Feb '12	Mar '11	Apr '12	May '12	Jun '12	Jul '12	Aug '12
		1	2	3	4	5	6	7	8	9	10
Purchase at End of Month	No Coverage	Insurance Contract Period									
Production Coverage	No Coverage	50%	75%	80%	40%	No	No	No	No	No	No

**Figure 5.** LGM-Dairy insurance contract period for insurance purchased in the September, 2011 sales period.

Let's evaluate the GMG for the month of November, 2011. Only 50% of targeted marketings were selected for coverage with a \$1.00/cwt deductible. Expected milk price is \$17.27/cwt, expected corn price is \$7.08/bu, and expected SBM price is \$358.90/ton. Recall:

$$\text{Expected Gross Margin (GM)} = \text{expected market value of milk} \text{ minus } \text{expected feed costs}$$

Then,

$$\text{GM} = (8,925 \text{ cwts milk} \times \$17.27/\text{cwt} \times 50\% \text{ covered}) \text{ minus } 50\% \text{ covered} \times (170.4 \text{ tons corn} \times \$7.08/\text{bu} \times 35.71 \text{ bu/ton} + 42.6 \text{ tons SBM} \times \$358.90/\text{ton})$$

$$\text{GM} = \$77,076 - \$21,543 - \$7,645$$

$$\text{GM} = \$47,888$$

Now, the GMG must be calculated, recall:

$$\text{Gross Margin Guarantee (GMG)} = \text{GM} \text{ minus } \text{deductible}$$

In our example we chose a deductible of \$1.00/cwt; therefore,

$$\text{GMG} = \$47,888 - (8,925 \text{ cwts milk} \times \$1.00/\text{cwt} \times 50\% \text{ covered})$$

$$\text{GMG} = \$47,888 - \$4,463$$

$$\text{GMG} = \$43,416$$

This same process is used to calculate the GMG's for each month with targeted marketings. Recall that a potential indemnity payment exists when  $\text{AGM} < \text{GMG}$ ; therefore, for November, 2011 a potential indemnity payment would exist if the  $\text{AGM}_{\text{November, 2011}}$  is less than \$43,416. However, remember there is only one GMG and one AGM per contract because contracts are evaluated over the entire contract period. Thus, the producer would have to wait until after the actual prices are available

for the last month with targeted marketings (March, 2011 in Figure 5) to know if the  $AGM_{Total}$  is less than  $GMG_{Total}$ .

Producers have options when it comes to premium billings and indemnity payments. In the month following the last month with targeted marketings (March, 2011 in Figure 5) the producer may choose to receive an indemnity payment if it is due. If the total indemnity payment is less than the total premium, the net premium payment can be made at this time and no indemnity payment is received. Even if the producer owes a net premium payment they may still choose to receive the indemnity payment in the month following the last month with targeted marketings (March, 2011 in Figure 5) and then wait to pay the entire premium the month following the last month in the contract period (September, 2012 in Figure 5).

Producers must file a marketing report to receive an indemnity payment. This report must be filed within 15 days of a notice of a probable loss from their insurance agent. The marketing report must also be supported by milk sales receipts showing evidence of actual marketings in each month with targeted marketings. In the event total actual marketings are less than 75% of the total of targeted marketings for the insurance period, indemnities will be reduced by the percentage by which the total actual marketings for the insurance period fall below the total of target marketings for the period. There are no limits to milk production covered per year, but annual indemnities are limited to a maximum of 240,000 cwt.

The example contract period (Figure 5) would be available for purchase beginning from about 6:00 PM EDT on the last business Friday of September (9/30) until 9:00 PM EDT the following day (Saturday, 10/1). Figure 5 shows the LGM-Dairy insurance period extends for 10 months from November, 2011 to August, 2012. Program rules do not allow coverage in the month after purchase (i.e., October, 2011). The producer does not have to insure each of the 10 months, but can vary the coverage to the months desired and also vary the percentage of milk production covered within the months with targeted marketings. In this example, only four months have covered, or *targeted* marketings (November and December, 2011; January and February, 2012). Also, in the example the covered months are covered at less than 100% coverage. The producer in this example chose not to cover March through August of 2012. Since LGM-Dairy contracts can be purchased every month; the producer in this example could choose to purchase coverage for the months without targeted marketings in the September contract using subsequent LGM-Dairy contracts in the following month(s).

When the rules of the LGM-Dairy program were changed during the first half of 2011, allowing premium payments to be made at the end of the insurance contract period, the program became very popular. Its popularity increased even more when market conditions in the spring of 2011 made LGM-Dairy a very attractive risk management tool. LGM-Dairy was allocated \$16.2 million in underwriting capacity for fiscal year 2011 (10/1/2010 to 9/30/2011) and that amount was exhausted during the March, 2011 sales period. LGM-Dairy will not resume sales until the fiscal year 2012 begins in October, 2011. With our nation's budget woes it remains to be seen how much and how long this program will be funded.

## **Conclusion**

LGM-Dairy is a flexible insurance program all dairy producers should investigate. It guarantees a minimum IOFC by establishing a milk price floor (minimum) and feed (corn, SBM equivalents) cost ceiling (maximum). It does not require all milk production and feed usage to be insured, allows overlapping of contracts, contracts can be purchased every month for up to 10 months into the future,

and it provides substantial premium subsidies and a variable deductible. It is very similar to the bundled options strategy which employs milk put options and feed call options, but is much cheaper and more flexible in regards to amounts of milk and feed covered. Its major drawbacks are the short sign-up window, producers must wait for an indemnity payment for a given contract until the month following the last month with targeted marketings in that contract, and a subsidy in any given year disappears when program funds are exhausted prior to the end of a fiscal year.

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