

Livestock Gross Margin (LGM) Insurance in Missouri

In livestock production, gross margin is the difference between revenue from livestock or milk sales and feed costs. It is an indicator of profitability.

Livestock gross margin (LGM) insurance offers livestock producers a way to manage gross margin risk by guaranteeing a minimum gross margin. If the gross margin guarantee at the beginning of the contract period is higher than the actual gross margin at the end of the contract period, the policyholder earns an indemnity. LGM insurance protects expected gross margin rather than a selling price, which is what livestock risk protection (LRP) insurance is for. It does not protect against risks such as disease or death.

LGM insurance is administered by the U.S. Department of Agriculture (USDA) Risk Management Agency (RMA) and sold by approved livestock insurance agents. LGM insurance uses futures prices to determine the expected and actual gross margins. The RMA reports expected and actual gross margins for LGM policies at https://www3.rma.usda.gov/apps/livestock_reports. Policies are available in Missouri for cattle, dairy and swine operations, but dairy operations participating in the Dairy Margin Protection Program are not eligible to participate in LGM-Dairy.

How LGM insurance works

Livestock producers can sign up for LGM insurance 12 times a year through livestock insurance agents. The RMA reserves the right to suspend sales at any time due to market complications or if the Federal Crop Insurance Act limit of \$20 million per year for program costs is met.

LGM insurance may only be purchased between when markets close on the last Friday of each month (excluding holidays) and 8:00 p.m. Central time the next day. Cattle and dairy producers can insure livestock or milk to be sold two to 11 months in the future. Swine producers can insure livestock to be sold two to six months in the future. Producers identify the months in which they intend to sell their commodities, then buy coverage based on those intentions. Additionally, producers can have multiple policies by purchasing coverage at different sales closing dates. Coverage begins one month after purchase of a policy

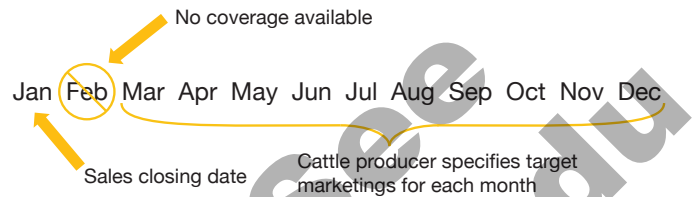


Figure 1. Example of months that are covered under a cattle policy purchased in January.

because the first month is not insurable. For example, a cattle policy purchased at the end of January would begin insuring cattle in March and provide coverage through December (Figure 1).

To obtain a policy, a producer must fill out an application that includes identifying the type of livestock insured, the estimated number of target marketings — number of slaughter-ready head or pounds of milk for sale — during the insurance period, and the deductible amount. Along with the application, a producer must complete a substantial beneficial interest (SBI) form. This form requires that the applicant provide documentation of at least 10 percent ownership of the livestock to be insured and identify all other owners. Premiums are due at the time of sale for cattle policies and at the end of the insurance period for swine and dairy policies.

After insurance is purchased, the policyholder must submit target marketing reports by the sales closing date each month to document actual marketings over the course of the insurance period. The producer's target marketings for any month may not be more than the producer's approved target marketings.

With coverage in place, indemnities are determined based on expected gross margin, actual gross margin and deductibles. Any indemnity payments are made after the last month of the producer's LGM policy.

To effectively review what LGM insurance can offer, one must look at the rules and options that pertain to each of the three policy options: cattle, swine and dairy.

Cattle policy

LGM insurance for cattle is available for calf finishing and yearling finishing operations (Table 1). A yearling-finishing operation will assume an initial weight of 750 pounds and 1,250 pounds when marketed. A calf-finishing operation will assume an initial weight of 550 pounds

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Table 1. LGM-Cattle snapshot.

Covered operations	Yearling- or calf-finishing operations
Deductibles	\$0–\$150 per head in \$10 increments
Premiums due	Time of sale
Insurance period	Up to 11 months
Gross margin factors	Feeder cattle, corn and live cattle futures
Maximum per insurance policy	5,000 head
Maximum per year (July–June)	10,000 head

and 1,150 pounds when marketed. There is no minimum amount of cattle that can be insured.

Gross margin is calculated by subtracting costs of feeder cattle and feed from the market value of cattle. For the purposes of calculating gross margin, feed quantity is established in the insurance contract and is not dependent on the producer’s actual feed use. CME futures contract prices for feeder cattle, corn and live cattle are used to determine the gross margin guarantee and actual gross margin. In months when there are no futures prices for feed or livestock, the USDA estimates the price of feed and livestock using the futures prices of surrounding months. The calculations and appropriate futures contract months used to determine gross margin can be found in Table 2.

For example, a yearling finishing producer elected an LGM policy on the last Friday of March with a \$20 per head deductible for cattle to be sold in October. The RMA reported the expected gross margin at the time of sale was \$300 per head for the month of October, and after applying the \$20 deductible, gross margin guarantee would be \$280 per head. Live cattle futures were \$130 per hundredweight (cwt) in October, corn futures were \$5 per bushel (bu) in August, and feeder cattle futures were \$135 per hundredweight in May. Actual gross margin would be calculated as follows:

$$(12.5 \text{ cwt} \times \$130 \text{ live cattle futures price}) - (50 \text{ bu} \times \$5 \text{ corn futures price}) - (7.5 \text{ cwt} \times \$135 \text{ feeder cattle futures price}) = \$362.50 \text{ per head}$$

Because the expected gross margin (\$280) is less than the actual gross margin (\$362.50), the producer receives no indemnity. Producers should account for the premium cost to determine their net gain or loss from the program.

Table 2. Cattle gross margin calculations.

Operation type	Live cattle price		Feeder cattle price		Feed (corn) price	
	Market value equation	Contract month	Feeder calf equation	Contract month	Cost of feed equation	Contract month
Yearling finishing	12.5 cwt × live cattle futures price	When marketed	7.5 cwt × feeder cattle futures price	5 months before marketing	50 bu × corn futures price	2 months before marketing
Calf finishing	11.5 cwt × live cattle futures price	When marketed	5.5 cwt × feeder cattle futures price	8 months before marketing	52 bu × corn futures price	4 months before marketing

Swine policy

LGM insurance for swine allows producers to insure slaughter-ready swine, such as barrows and gilts (Table 3). Swine are not insurable in the first month and are expected to be marketed at 260 pounds live weight. To convert from live weight, use the lean conversion factor of 0.74 to adjust to dressed weights. There is no minimum coverage level for swine policies, and an insurance year runs from the beginning of July to the end of June.

Table 3. LGM-Swine snapshot.

Covered operations	Farrow-to-finish, feeder-to-finish and segregated early weaned (SEW) operations
Deductibles	\$0–\$20 per head in \$2 increments
Premiums due	At the end of the insurance period
Insurance period	Up to six months
Gross margin factors	Lean hog, corn and soybean meal futures prices
Maximum per insurance policy	15,000 head
Maximum per year (July–June)	30,000 head

Calculate gross margin by subtracting feed costs from the market value of swine. For the purposes of calculating gross margin, feed quantity is established in the insurance contract and is not dependent on the producer’s actual feed use. CME futures contract prices for lean hogs, corn and soybean meal are used to determine the gross margin guarantee and actual gross margin. The calculations and appropriate futures contract months used to determine gross margin can be found in Table 4.

For example, a producer with a farrow-to-finish operation took out an LGM policy with a \$2 per head deductible for pigs to be sold in April. The RMA reported the expected gross margin at the time of sale was \$65 per head for April, so gross margin guarantee would be locked at \$63 per head after applying the deductible. Lean hog futures were \$75 per hundredweight (cwt) in April, and corn and soybean meal futures in January were \$5 per bushel (bu) and \$400 per ton, respectively. Actual gross margin would be calculated as follows:

$$(\$75 \text{ lean hog futures price} \times 0.74 \text{ conversion factor} \times 2.6 \text{ cwt}) - (12 \text{ bu} \times \$5 \text{ corn futures price}) - (138.55 \div 2,000 \text{ tons} \times \$400 \text{ soybean meal futures price}) = \$56.59 \text{ per head}$$

Table 4. Swine gross margin calculations.

Operation type	Lean hog price		Feed (corn and soybean meal) prices	
	Market value equation	Contract month	Cost of feed equation	Contract month
Farrow-to-finish	Swine lean hog futures price \times 0.74 \times 2.6 cwt	When marketed	(12 bu \times corn futures price) + (138.55 lbs \div 2,000 \times soybean meal futures price)	3 months before marketing
Feeder-to-finish	Swine lean hog futures price \times 0.74 \times 2.6 cwt	When marketed	(9 bu \times corn futures price) + (82 lbs \div 2,000 \times soybean meal futures price)	2 months before marketing
Segregated early weaned (SEW)	Swine lean hog futures price \times 0.74 \times 2.6 cwt	When marketed	(9.05 bu \times corn futures price) + (91 lbs \div 2,000 \times soybean meal futures price)	2 months before marketing

The difference between the gross margin guarantee and actual gross margin would result in an indemnity payment of \$6.41 per head (\$63 – \$56.59). Producers should also account for a policy’s premium costs to determine their net gain or loss from using the LGM program.

Dairy policy

Table 5. LGM-Dairy snapshot.

Covered operations	Milk sold for commercial or private sale for human consumption
Deductibles	\$0–\$2 per cwt in \$0.10 increments
Premiums due	At the end of the insurance period
Insurance period	Two to 11 months
Gross margin factors	Milk (Class III), corn and soybean meal futures contracts
Maximum per year (July–June)	240,000 cwt

Dairy operations can be covered under LGM-Dairy (Table 5). These policies contain subsidies to reduce premium payments, but you must insure at least two months during the 11-month insurance period to qualify for a subsidy. The amount of the subsidy is determined by the deductible the producer chooses for the insurance plan. Deductibles range from \$0 to \$2 per hundredweight in increments of \$0.10, and subsidy rates range from 18 to 50 percent of the premium cost. For example, a deductible of \$0.00 will receive a subsidy of 18 percent, and a deductible of \$1.10 or higher will receive a subsidy of 50 percent. Dairy premiums are due at the end of the insurance period. There is no minimum for the hundredweight of milk insured per month.

Gross margin is calculated by subtracting feed costs from the market value of milk. CME futures contract prices for

corn, soybean meal and Class III milk are used to determine the gross margin guarantee and actual gross margin (Table 6). Under LGM-Dairy, cost of feed may depend on the producer’s predicted use. Cost of feed is determined by the corn (or its equivalent) and soybean meal (or its equivalent) use.

Conversion factors are used to convert various feed ingredients to corn and soybean meal equivalents; you can find them on the University of Wisconsin’s LGM-Dairy website at http://future.aae.wisc.edu/lgm_dairy.html. Corn or corn equivalent is restricted to between 0.00364 and 0.0381 tons per hundredweight of milk. Soybean meal or its equivalent is restricted to between 0.000805 and 0.013 tons per hundredweight of milk. Producers can use default values of 0.014 tons of corn and 0.002 tons of soybean meal per hundredweight of milk if they do not wish to choose feed amounts.

For example, a dairy farmer elects an LGM policy with a \$1 per hundredweight deductible for 1,000 hundredweight of milk to be sold in April. The farmer uses the default values of 0.014 tons of corn per hundredweight and 0.002 tons of soybean meal per hundredweight for their cost of feed. Multiplying the default values by the volume of milk to be sold (1,000 cwt) would set the target feed levels at 14 tons of corn and 2 tons of soybean meal. Expected futures prices at the sales closing date for Class III milk were \$18 per hundredweight, corn at \$5 per bushel and soybean meal at \$400 per ton. Based on these expected values, the expected gross margin would be calculated as follows:

Step 1. Determine expected cost of feed.

$$(14 \text{ tons} \times 2,000 \div 56 \text{ conversion factor} \times \$5\text{-per-bushel corn price}) + (2 \text{ tons} \times \$400 \text{ per ton soybean meal price}) = \$3,300 \text{ expected cost of feed (or } \$3.30 \text{ per cwt)}$$

Step 2. Determine expected milk price.

$$\$18 \text{ per cwt milk price} \times 1,000 \text{ cwt} = \$18,000 \text{ expected milk price}$$

Table 6. Dairy gross margin calculations.

Operation type	Milk prices		Feed (corn and soybean meal) prices	
	Market value equation	Contract month	Cost of feed equation	Contract month
Dairy	Class III milk futures price \times cwt	When marketed	(Corn or equivalent tons fed \times corn futures price \times 2,000 \div 56 conversion factor) + (Soybean meal or equivalent tons fed \times soybean meal futures price)	When marketed

Step 3. Determine expected gross margin.

$$\begin{aligned} & \$18,000 - \$3,300 \\ & = \$14,700 \text{ expected gross margin (or } \$14.70 \text{ per cwt)} \end{aligned}$$

After factoring in the \$1 per hundredweight deductible, the gross margin guarantee would be \$13.70 per hundredweight. Actual futures prices in April for Class III milk were \$16 per hundredweight, \$6 per bushel for corn and \$425 per ton for soybean meal. Actual gross margin would be calculated as follows:

Step 1. Determine actual cost of feed.

$$\begin{aligned} & (14 \text{ tons} \times 2,000 \div 56 \text{ conversion factor} \times \$6\text{-per-bushel} \\ & \text{corn price}) + (2 \text{ tons} \times \$425\text{-per-ton soybean meal price}) \\ & = \$3,850 \text{ actual cost of feed (or } \$3.85 \text{ per cwt)} \end{aligned}$$

Step 2. Determine actual milk price.

$$\begin{aligned} & \$16 \text{ per cwt milk price} \times 1,000 \text{ cwt} \\ & = \$16,000 \text{ actual milk price} \end{aligned}$$

Step 3. Determine actual gross margin.

$$\begin{aligned} & \$16,000 - \$3,850 \\ & = \$12,150 \text{ actual gross margin (or } \$12.15 \text{ per cwt)} \end{aligned}$$

The difference between the expected gross margin after accounting for the deductible and actual gross margin would result in an indemnity payment of \$1.55 per hundredweight (\$13.70 – \$12.15) for a total payment of \$1,550 (\$13,700 – \$12,150). Producers should account for the producer paid premiums to determine their net gain or loss from using the program.

Additional resources

For more information on LGM plans, contact a livestock insurance agent to help you find a policy that will best fit your operation. These resources provide RMA data on LGM coverage, premiums and resources, as well as help finding a nearby insurance agent:

- LGM Coverage prices, rates and actual ending values: https://www3.rma.usda.gov/apps/livestock_reports
- Cost estimator (premium calculator): <https://ewebapp.rma.usda.gov/apps/costestimator>
- LGM resources: <http://www.rma.usda.gov/livestock>
- Livestock agent locator: <http://www.rma.usda.gov/tools/agent.html>

ALSO FROM MU EXTENSION PUBLICATIONS

- MP749 *Crop Insurance in Missouri*
- G457 *Pasture, Rangeland, Forage (PRF) Rainfall Index Insurance in Missouri*
- G459 *Livestock Risk Protection (LRP) Insurance in Missouri*

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