Agricultural Marketing Policy Center

B R I E F I N G

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Livestock Risk Protection for Swine in Wyoming

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Objective Analysis for Informed Decision Making

Background

Federally-subsidized yield and/or revenue crop insurance products are offered in many counties in Wyoming. Federally-subsidized offerings of livestock and livestock-related risk management products have been limited to crops produced for livestock feed and, for a short time, a dairy options pilot program.

In 2001 the Risk Management Agency (RMA) approved Livestock Risk Protection as a price risk management product for swine in all counties in Iowa. This insurance product is now available in every county of 20 states including Wyoming. The product is also offered in Colorado, Iowa, Kansas, Nebraska, Nevada, Oklahoma, South Dakota, Texas, Utah, Illinois, Indiana, Minnesota, Michigan, Missouri, Montana, North Dakota, Ohio, West Virginia, and Wisconsin. The product for swine is referred to as LRP-Swine. Livestock Risk Protection insurance is also available for feeder cattle and fed cattle in these states.

Elements of LRP-Swine

LRP-Swine is designed to insure against declining market prices for hogs. Specifically, a producer can insure against a decline in national hog prices below an established coverage price. The insurance is applicable to hogs that the producer marketed for slaughter at the end of an insurance period.

LRP- Swine *target weights* refer to the anticipated per head *lean weight* of market hogs, expressed on a hundredweight basis at the end of an insurance period. A lean weight conversion factor of 0.74 is used to convert live weight market hogs to *lean weight*. For example, a market hog that weighs 250 pounds on a live weight basis is equal to 185 pounds on a lean weight basis. Target weights vary from 1.50 to 2.25 hundred weight. This equates to live weight market hogs weighing from 203 to 304 pounds.

LRP-Swine insurance is offered for 13, 17, 21, or 26 week periods (*endorsement length*). Producers are expected to select an *endorsement length* closest to the sale date of their market hogs.

Procedure for Obtaining LRP-Swine Coverage

Producers must apply for LRP-Swine insurance coverage through a crop insurance agent. Not all crop insurance agents are authorized to sell LRP. A *Substantial Beneficial Interest Reporting Form* must be submitted with an application. This form records pertinent information on any entity that has at least a 10 percent share in the market hogs to be insured. The beneficial interest form facilitates the establishment of eligibility and tracks insurance limits.

Once an application for coverage is approved by a company and a policy number is assigned, a producer may activate coverage at any time by applying for a *Specific Coverage Endorsement.* This endorsement is used to initiate coverage for a specific group of market hogs to be marketed at or near the end date of the endorsement. Each *Specific Coverage Endorsement* is limited to a maximum of 10,000 market hogs. More than one *Specific Coverage Endorsement* may be purchased each crop year. *Endorsement lengths* and *coverage prices* may differ among endorsements. However, no more than 32,000 market hogs per entity may be covered by LRP-Swine in any crop year. The crop year for LRP-Swine insurance is July 1 through June 30.

Coverage Prices and Levels

Coverage prices are the prices that can be insured by a producer. *Coverage prices* are calculated based on the *expected ending value* of the market hogs to be insured. *Expected ending values* are posted most business days on a RMA website (http://www3.rma.usda.gov/ apps/livestock_reports/). *Expected ending values* reflect lean weight prices for market hogs that are expected to occur at the end of the coverage period. *Coverage levels* range from 70 to 95 percent of *expected ending values*. *Coverage prices* are known to the producer at the time LRP-Swine coverage is attached to a group of market hogs under a Specific Coverage Endorsement.
Table 1 presents an example from RMA's website (only a portion of the first page) as of October 6, 2005. Table 1 presents *expected ending values* by *endorsement length* and *coverage levels* for market hogs in Wyoming. Note that *expected ending values* for Wyoming market hogs with a 13-week endorsement were $66.670 per hundredweight for all coverage levels. For a contract with a 13-week endorsement period and a *coverage level* of 92.28 percent, the *coverage price* was $61.520 per hundredweight.

Insured Value and LRP-Swine Premium Calculations

Insured value is calculated as:
Insured Value = Number of Head x Target Weight at End Date (in hundredweight per head) x Coverage Price x Insured Share

For LRP-Swine, *Target Weight* is expressed in lean weight, per hundredweight.

Total premiums are calculated as:
Total Premium = Insured Value x Rate

The total premium calculations are rounded to the nearest whole dollar and then referred to as *Rounded Total Premium*.

Thirteen percent of the total premium is subsidized by the Federal government. The *total subsidy* is calculated as:

Total Subsidy = 0.13 (13 percent subsidy) x Rounded Total Premium

An Example Premium

Consider a situation in which a producer had a 100 percent interest in 5,000 market hogs on October 6, 2005. The producer plans to market these hogs on or near January 2, 2006. The hogs are expected to average 2.5 hundredweight per head, live weight, at that time. The per head lean weight

Table 1: Partial Replica of LRP-Swine Expected and Actual Ending Values, Coverage Prices and Rates for Wyoming Market Hogs, 10/06/05

Endorsement Length	Crop Year	Expected End Value	Coverage Price	Cover-age Level	Rate	Cost Per Cwt	End Date	Actual End Value
13	2006	66.670	$61.520	0.922800	0.029291	1.802	01/05/2006	
13	2006	66.670	$59.520	0.892800	0.022413	1.334	01/05/2006	
13	2006	66.670	$57.520	0.862800	0.015977	0.919	01/05/2006	
13	2006	66.670	$55.520	0.832800	0.011942	0.663	01/05/2006	
13	2006	66.670	$53.520	0.802800	0.008931	0.478	01/05/2006	
13	2006	66.670	$51.520	0.772800	0.005726	0.295	01/05/2006	
13	2006	66.670	$49.520	0.742800	0.003817	0.189	01/05/2006	
13	2006	66.670	$47.520	0.712800	0.003093	0.147	01/05/2006	
17	2006	67.147	$62.000	0.923300	0.032097	1.990	02/02/2006	
17	2006	67.147	$60.000	0.893600	0.25950	1.557	02/02/2006	
17	2006	67.147	$58.000	0.863800	0.019603	1.137	02/02/2006	
17	2006	67.147	$56.000	0.83400	0015500	0.863	02/02/2006	

equivalent would be 1.85 hundredweight, (2.5 hundredweight x 0.74). The producer's LRP-Swine *endorsement length* would be 13 weeks. On October 6, 2005, the *expected ending value* for contracts with a 13-week endorsement period was $66.670 per hundredweight, lean weight (Table 1). If the producer had selected a *coverage level* of 92.28 percent, the producer's *coverage price* would have been $61.520 per hundredweight, lean weight, at a premium rate of 0.002291 (Table 1). The producer premium for this example is calculated as:
Insured Value = 5,000 head x 1.85 hundredweight/hog lean weight x $61.520 per hundredweight x 1.0 = $569,060.

Rounded Total Premium = $984,650 x 0.029291 = $16,668.

Rounded Subsidy = $16,668 x 0.13 = $2,167.

Producer Premium = $16,668 - $2,167 = $14,501.

The premium must be paid on the day the insurance is purchased for coverage to be provided.

Indemnity Calculation:

An indemnity is due if the *actual ending value* is less than the *coverage price* selected by a producer. As noted above, the *coverage price* is selected on the day the insurance policy is attached. *Coverage prices* range from 70 to 95 percent of *expected ending values*. The *actual ending value* for swine is the weighted average price of lean hogs. The days used in the weighted average price calculations are the end date and the day preceding the end date. The Agricultural Marketing Service (AMS) price series used to calculate an actual ending value is the same series that is used to settle the lean hog futures contract on the Chicago Mercantile Exchange. The weighted average price is calculated using two *Producers Sold* data series in this report, the Negotiated and the Swine or Pork Market Formula Categories. Producers may reference *Specific Coverage Endorsement-Swine*, O5-LRP-Swine, FCIC, March 2004, for steps to calculate the weighted average price. The AMS report is available at http://www.ams.usda.gov/mnreports/lmhg201.txt.

An indemnity payment will be made on those market hogs specified in a *Specific Coverage Endorsement* based on the expected ending weight of the market hogs that was selected when the insurance was attached. In the case of death loss, a producer is expected to notify the insurance company within 72 hours. If notice of death loss is not provided in a timely fashion, then coverage will be reduced by the number of dead animals. A producer's **actual fed market hog sales weights** and **prices** at end of the endorsement period **do not** enter into indemnity calculations. The actual ending value per hundredweight, lean weight, for market hogs is available at the end of the insurance period. The indemnity is calculated as:

Indemnity = [*Number of Head Insured x Target Weight x (Coverage Price - Actual Ending Value)*] x *Insured Share*

An Indemnity Example:

Returning to the above example, the AMS for the week that included January 5, 2006 reported an *actual ending value* for market hogs of $58.480 per hundredweight, lean weight, as reported in Table 2. This producer will receive an indemnity because the *actual ending value* on January 5, 2006 was less than the *coverage price* of $61.520. The indemnity is calculated as:

Indemnity = [5,000 head x 1.85 hundredweight/hog, lean weight, x ($61.520 - 58.480)] x 1.0. = $28,120.

Note that the producer paid $14,501 for this insurance. Consequently, the net indemnity is $13,619.

Off-Setting Transactions

Producers are not allowed to enter into any transactions that would convert the premium subsidy provided by the Federal Crop Insurance Corporation into funds available for personal use. Such transactions include obtaining positions in the commodity futures or options markets that offset the risk being managed by LRP-Swine coverage. Although there are several possibilities, producers are not allowed to enter into transactions such as the following for market hogs covered by a *Specific Coverage Endorsement*:

1. The selling of a CME Lean Hog *put option* contract on the insured swine, or
2. The buying of CME Lean Hog *futures contracts* on the insured swine.

LRP-Swine Insurance Differences with CME Lean Hog Options

LRP insurance and CME lean hog options have some similarities. However, differences also exist. The CME lean hog options are only available in specified total pound increments. For all practical purposes, CME options have no maximum limits on quantity insured. Conversely, LRP-Swine insurance can only be used to insure a maximum of 10,000 market hogs per endorsement and 32,000 market hogs in any crop year. A producer who sells a put option or buys a futures contact incurs the full costs of those transactions. Conversely, a producer who buys LRP-Swine insures coverage receives a 13 percent subsidy on total premium costs.

Evaluating the Use of LRP-Swine by Wyoming Producers

To a large extent, the value of LRP-Swine depends upon the relative tradeoffs of price risk versus basis risk. Lean hog basis refers to the difference between local Wyoming cash lean hog prices and values reported in the AMS report.

Table 2: Partial Replica of LRP-Swine Expected and Actual Ending Values, Coverage Prices and Rates for Wyoming Market Hogs, 10/06/05

Endorsement Length	Crop Year	Expected End Value	Coverage Price	Coverage Level	Rate	Cost Per Cwt	End Date	Actual End Value
13	2006	66.670	$61.520	0.922800	0.029291	1.802	01/05/2006	58.480
13	2006	66.670	$59.520	0.892800	0.022413	1.334	01/05/2006	58.480
13	2006	66.670	$57.520	0.862800	0.015977	0.919	01/05/2006	58.480
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13	2006	66.670	$51.520	0.772800	0.005726	0.295	01/05/2006	58.480
13	2006	66.670	$49.520	0.742800	0.003817	0.189	01/05/2006	58.480
13	2006	66.670	$47.520	0.712800	0.003093	0.147	01/05/2006	58.480
17	2006	67.147	$62.000	0.923300	0.032097	1.990	02/02/2006	*
17	2006	67.147	$60.000	0.893600	0.25950	1.557	02/02/2006	*
17	2006	67.147	$58.000	0.863800	0.019603	1.137	02/02/2006	*
17	2006	67.147	$56.000	0.83400	0015500	0.863	02/02/2006	*

* Contracts of this and greater endorsement lengths had not matured when this table was printed.

Producers are encouraged to use their sales records to evaluate this basis over time and seasonally within the year. Producers need to evaluate if historical relationships are good predictors of future relationships. Producers, especially those not contracting with a processor for price, may want to consider LRP-Swine insurance if basis risk is less than price risk.

Over the past decade there have been substantial changes in hog production in Wyoming. The total number of operations reporting hogs declined during the decade. During this ten-year period hog marketings increased threefold according to information available from the Wyoming Agricultural Statistics Service.

The 2002 Census of Agriculture reported 247 producers of hogs in Wyoming, all classed as independent producers, with nearly 357,000 hogs and pigs sold. Nearly 341,000 hogs and pigs were sold by three producers who each averaged nearly 114,000 hogs and pigs sold annually. The other 244 independent producers sold a total of about 16,000 hogs during 2002.

The LRP-Swine price insurance would not likely be used by the three largest Wyoming producers because of the limits of 10,000 market hogs per *Specific Coverage Endorsement* and no more than 32,000 market hogs per entity per crop year can be covered by LRP-Swine insurance. These three larger independent producers likely use other mechanisms to manage their market hog price risks.

Each of the other 244 independent producers marketed fewer than 1,000 head of hogs and pigs during the 2002 census period. Their operations would all fit with the *Specific Coverage Endorsement* and crop year limits applicable to LRP Swine price insurance.