Gross margin insurance for hog producers

by William Edwards, extension economist, 515-294-6161, wedwards@iastate.edu

After many months of review, a revenue insurance plan for hog producers has been approved by the U.S. Department of Agriculture. The new product is called Livestock Gross Margin, or LGM for short. It will probably be available to producers beginning the second half of 2002.

How does LGM work?
The revenue that will be insured is actually the return over feed costs. The guarantee is based on projections for three risky variables: the price of market hogs, the price of corn, and the price of soybean meal. These are the most important determinants of gross margin that are beyond the producer's control. LGM does not provide any guarantee against production risks, such as disease or infertility.

There are several steps involved in determining the guarantee and possible indemnity payments.

• First, the operation must be classified as either a farrow-to-finish or a finishing only operation. This affects only the assumptions about feed consumption per pig marketed.

• Second, the producer must project the number of market hogs that will be sold each month for the next six months. This is used to calculate the total dollar guarantee and premium. If the producer estimates too high or too low, it simply means that the actual production was over or under insured. The upper limit is 15,000 head of hogs marketed in each half of the year. Insurance can be purchased for the expected sales in either of two periods, February through July or August through January.

• Third, the projected prices for lean hogs, corn and soybean meal are taken from the Chicago futures quotes. Contract prices on the last three trading days before January 15.

continued on page 2

Handbook Updates
For those of you subscribing to the Ag Decision Maker Handbook, the following updates are included.

2001 Suggested Closing Inventory Prices—File C1-40 (2 pages)

Farmland Value Survey (ISU Survey)—File C2-70 (4 pages)

Income Tax Aspects of Property Transfers—File C4-20 (2 pages)

Federal Gift Tax—File C4-23 (4 pages)

Federal Estate Tax—File C4-24 (7 pages)

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Inside . . .

Brazil and Iowa soybean production—a cost comparison ......................Page 3

What is a New Generation Cooperative (NGC)? ......Page 5
Gross margin insurance for hog producers, continued from page 1

are used for the February–July period, and prices from the last three trading days before July 15 are used for the August–January period. Different prices are used for each month. Most months use the price of the lean hog futures contract that expires in that month. For non-contract months, the average prices of the contracts for the month before and month after are used. For corn and soybean meal, prices from contracts expiring two or three months earlier are used, to reflect the middle of the feeding period.

• The fourth step is to project the gross margin per pig for each month, by subtracting the projected cost of corn and soybean meal from the projected sales revenue. The assumed marketing weight is 260 pounds, and a factor of .74 is used to convert the lean hog price to a liveweight price. The price of corn is multiplied by a standard quantity of 12.95 bushels per pig, and the price of soybean meal is multiplied by a standard quantity of .092445 tons per pig. For a finishing enterprise, the standard feed quantities are 10.41 bushels of corn and .07473 tons of soybean meal.

By multiplying the projected gross revenue per pig in each month by the number of pigs to be marketed in that month, a total gross revenue value for the six-month period is estimated. The producer can then choose to insure from 80 percent up to 100 percent of that amount. Naturally, a higher level of coverage will result in a higher premium. The premium will also depend on how soon the hogs will be marketed. If more production will be sold early in the six-month period, the premium will be lower. This is because the risk of both hog and feed prices changing is less for the closer months.

Actual revenue

When the marketing period is over, the actual revenue will be calculated in the same manner as the guarantee. The only difference is that actual prices will be used, that is, the prices for the same contracts used to set the guarantee averaged over the last three days they are traded. If the actual revenue turns out to be less than the guaranteed value, the producer will receive a payment for the difference.

Who will benefit most from LGM? Producers who depend on the daily cash market price or a formula based on it to sell their hogs are the obvious targets. Secondly, smaller producers who do not have enough volume to practically use futures contracts can accomplish similar risk protection with LGM. Larger scale producers can buy put options on lean hog contracts and call options on corn and soybean meal contracts, but there are minimum contract sizes to deal with. LGM can be tailored to any scale of production. Plus, LGM offers a more straightforward transaction than managing multiple futures contracts.

Producers who purchase all or most of their feed will achieve the most risk reduction. Farmers who produce their own corn and soybeans have less feed cost risk (prices for soybean meal and soybeans are closely correlated), but can still benefit from reducing risk from declining hog prices.

Livestock price insurance available

The USDA has approved a second insurance product for hog producers called Livestock Risk Protection (LRP). It protects against declining hog prices, only. Policies can be purchased at any time, beginning in April 2002. Coverage levels of approximately 70 to 95% of daily hog prices can be fixed for 90, 120, 150, or 180 days into the future.

Example of Livestock Gross Margin Insurance

1. Operation is farrow-to-finish.
2. Projected sales are 100 head per month for August through January.
3. Futures prices on July 15 are:

<table>
<thead>
<tr>
<th>Month</th>
<th>Lean Hogs, cwt.</th>
<th>Corn, bu.</th>
<th>Meal, ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug.</td>
<td>$62</td>
<td>$2.32</td>
<td>$149</td>
</tr>
<tr>
<td>Sept.</td>
<td>58</td>
<td>2.35</td>
<td>149</td>
</tr>
<tr>
<td>Oct.</td>
<td>54</td>
<td>2.38</td>
<td>148</td>
</tr>
<tr>
<td>Nov.</td>
<td>52</td>
<td>2.42</td>
<td>149</td>
</tr>
<tr>
<td>Dec.</td>
<td>50</td>
<td>2.43</td>
<td>150</td>
</tr>
<tr>
<td>Jan.</td>
<td>52</td>
<td>2.45</td>
<td>147</td>
</tr>
</tbody>
</table>

4. Projected gross margin per pig is:

<table>
<thead>
<tr>
<th>Month</th>
<th>Gross Margin per Pig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug.</td>
<td>$75.47</td>
</tr>
<tr>
<td>Sept.</td>
<td>$67.39</td>
</tr>
<tr>
<td>Oct.</td>
<td>$59.39</td>
</tr>
<tr>
<td>Nov.</td>
<td>$54.93</td>
</tr>
<tr>
<td>Dec.</td>
<td>$50.86</td>
</tr>
<tr>
<td>Jan.</td>
<td>$54.73</td>
</tr>
</tbody>
</table>

5. Total projected gross margin for the 6-month period is $36,277.

6. If the producer chooses 95% coverage (5% deductible), the guarantee is .95 x $36,277, or $34,464.

7. In February the actual revenue is calculated, using the actual futures contract prices, to determine if there was a loss and a payment. The projected number of hogs sold is used, regardless of the actual number marketed.
Brazil and Iowa soybean production—a cost comparison

by Kelvin Leibold, extension farm management specialist, 641-648-4850, kleibold@iastate.edu; Phil Baumel and Bob Wisner, professors of economics; and Marty McVey, AGRI-Industries

In this article, we will compare the cost of producing soybean in Iowa with two areas in Brazil. The two Brazilian areas are Paraná and Matto Grosso. First we will compute and compare the non-land cost of production. Then we will include a land charge and see how the analysis changes. The cost of production comparisons is shown in Table 1.

The state of Paraná is located in southern Brazil. This area has been in crop production the longest. Most of the tillable land is in production, either as pasture or row crops. Twenty-five percent of the land is left in natural vegetation.

This area was originally a very heavy wheat and coffee producing area. However, several hard freezes have forced the coffee industry farther north. Low wheat yields and low prices have shifted some of the wheat acres into soybean production.

Matto Grosso is in central Brazil. Much of it is part of the cerrados area that is experiencing substantial growth. It includes tall grass areas referred to as light cerrados and areas of small trees and light brush referred to as heavy cerrados.

A key to the success of Brazilian soybean production is the development of new hybrids suited to the soils and latitude. The government has spent large sums of money helping to develop these hybrids. In addition, a group of farmers, through the Matto Grosso Foundation, also has invested heavily in seed research. We estimate seed cost in Brazil to be $8 per acre.

Much of the soybean seed is treated with nitrogen fixing bacteria to help the soybean seed fix its own nitrogen.

Iowa producers are faced with strict patent laws and tech fees. The use of bin run seeds has dropped dramatically as producers have switched to genetically modified soybean seed. The seed industry has invested millions of dollars in research that it is trying to recover.

Apparently no one in Brazil is collecting royalties or tech fees. Many of the larger farms have their own seed cleaning and processing facilities. They can buy new genetics and save seed back from the crop. The seed can be processed in the off-season with labor not otherwise used.

Fertilizer and lime

The Iowa cost estimates include the cost of 40 pounds of phosphorus and 75 pounds of potassium per acre. Phosphorus and potassium rates are based on the amount removed with the crop. We have also included $6 as a typical cost for lime. Depending on the area, this may be a little high.

In Paraná an application of 300 pounds of 2-20-20 at a cost of $250 a metric ton costs about $34 per acre. A lime application, with the cost spread over three years, costs another $4 per acre. The Matto Grosso area has higher fertilizer rates and much higher lime rates.

It appears that transportation costs for fertilizer and lime are very affordable. Almost 80 percent of the trucks hauling soybeans to the ports return empty. So, for a small charge, truckers are willing to haul fertilizer and lime.

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Table 1. Brazil and Iowa soybean production cost comparison.

<table>
<thead>
<tr>
<th></th>
<th>Iowa</th>
<th></th>
<th></th>
<th>Paraná</th>
<th></th>
<th></th>
<th>Matto Grosso</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>$0.36</td>
<td>$0.18</td>
<td>$0.16</td>
<td>$0.78</td>
<td>$0.94</td>
<td>$0.64</td>
<td>$0.48</td>
</tr>
<tr>
<td>Non-land</td>
<td>$0.64</td>
<td>$0.48</td>
<td>$0.68</td>
<td>$0.56</td>
<td>$0.32</td>
<td>$0.64</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>$1155</td>
<td>$130</td>
<td>$139</td>
<td>$172</td>
<td>$171</td>
<td>$171</td>
<td>$139</td>
</tr>
<tr>
<td>Land cost</td>
<td>$140</td>
<td>$42</td>
<td>$32</td>
<td>$93</td>
<td>$32</td>
<td>$32</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$295</td>
<td>$172</td>
<td>$171</td>
<td>$210</td>
<td>$211</td>
<td>$211</td>
<td>$213</td>
</tr>
</tbody>
</table>

continued on page 4
The Brazilian government invested in the development of Matto Grosso. They picked locations near large lime deposits.

Labor
Labor in Brazil is very affordable. People working in packing plants make about $100 for a forty-four hour week. These appeared to be some of the better jobs. A skilled worker makes about $500 per month. Day labor in the sugar fields sometimes is as little as three dollars a day. These people receive meals and transportation to and from work. Labor is more expensive in the remote areas.

Although they spend more time due to smaller equipment and more trips across the field, only $10 per acre seems very reasonable. Often full time help lives in tenant houses on the farm and the whole family is involved. The cost of providing housing is minimal. However, the employer is required to contribute to a national health care plan and a social security system.

The soybean labor cost in Iowa is about $20 per acre (2 1/2 hours at $8.00 per hour).

Pesticides
Brazil uses many of the same herbicide, insecticide, and fungicide products that we do. The cost of these products is much lower in Brazil than in Iowa. Products similar to Round Up sell for $12 per gallon. However, they use more pesticides. They sometimes spray twice with a fungicide because of the wet, warm conditions. They spray twice for insects in the south. They also have more weed pressure in the Paraná and spray more frequently.

Most of the spraying is done by the farmers. There is very little custom spraying. Farmers don’t need a license. The farms have low cost labor that can be used because the workers live on the farms.

Crop Insurance
In Iowa, due to our weather variability, the cost of crop insurance has been included. Although there has been a dramatic increase in the number of insured acres in Iowa, we realize that not all producers carry crop insurance.

There are some insurance companies considering selling crop insurance in Brazil. However, producers indicate that rainfall is too predictable to justify crop insurance.

Interest
Many of the production inputs in Brazil are provided by vertically coordinated input suppliers. This may be through local co-ops or internationally known companies. The producer pays for the inputs with a pre-determined number of bags of beans at harvest. So cash needs are further reduced.

For Iowa we used a 10 percent interest rate for cash inputs.

Machinery
We have estimated that machinery costs in Iowa are $43 per acre. This reflects the more efficient producers. Many of Iowa’s producers have machinery costs (including fuel) of more than $55 per acre.

Machinery costs in Brazil are significantly lower. The purchase price of machinery and equipment are typically less. Also, machinery is used for many more years. It is also used many more hours per year due to double cropping and the wide variation of crops that are grown.

The machinery in Matto Grosso tends to be newer and larger. The farms are bigger also. Diesel fuel is also more expensive but is not that big a factor due to use of no-till crop production.

Land
For Iowa we are using a cash rental rate for high quality. In Paraná we are using 60 percent of the yearly rental rate because soybeans are double-cropped with a less profitable crop. In Matto Grosso we are assuming the land is purchased on a fifteen-year amortization schedule and single cropped.

Conclusions
Both the Paraná and Matto Grosso appear to have a small advantage in non-land production costs. However, we cannot automatically conclude that they are more competitive in international markets. Two other cost components must also be considered.

When you add the cost of transporting soybeans to a port, the transportation cost advantage of Iowa farmers more than makes up for this small difference because the U.S. transportation infrastructure is already in place and paid for.

When you add the cost of renting land in Iowa, the advantage appears to go back to Brazil. However, if land values and rents drop, Iowa is competitive.

These three cost components will change over time. Our transportation infrastructure will remain superior for a long time. Our non-land costs will change also. The input sector is trying to decrease costs to lower prices. The value of Iowa land is being heavily supported by government program payments. Brazilian farmland near a transportation system has increased sharply in price.

The Iowa farmer is efficient at raising and shipping soybeans and will continue to be into the future.
What is a New Generation Cooperative (NGC)? *
by Deanna Hackman, director, Agriculture Innovation Center, Missouri Department of Agriculture, 573-522-3454, Deanne_Hackman@mail.mda.state.mo.us

A New Generation Cooperative (NGC) is a relatively new type of cooperative used primarily in the value-added processing of agricultural commodities. First used in the upper Midwest in the early 1970s, the NGC organizational form became popular in the early- to mid-1990s for producers interested in collectively adding value to their commodities. The NGC model has since been used for hundreds of new cooperatives across the United States, but has not yet been used extensively in Missouri.

The NGC is not a specific legal structure. Rather, the term New Generation Cooperative is used to describe how a firm operates. It primarily describes the relationship between the firm and its members and how the firm is financed. Unlike traditional cooperatives, in which start-up expenses are minimal and growth is financed through members’ retained earnings, permanent equity to fund NGC start-up and growth is financed through the sale of delivery rights. These delivery rights represent a member’s right to deliver a specific amount of commodities to the cooperative. Members benefit in proportion to their use, and nearly all NGCs are democratically controlled through one member/one vote.

There are six primary characteristics of NGCs:

1. Defined membership. Frequently, NGCs are referred to as closed cooperatives. However, defined is a more accurate term. The number of members in an NGC depends upon the proposed capacity of the cooperative’s operations. One of the key features of the NGC is its ability to control supply or access to the cooperative’s operations. In other types of cooperatives, members can enter and exit as they please, and cooperatives operating without marketing contracts with their members have no way to guarantee a specific operating capacity at any one time. By limiting membership to those members who purchase the right to supply the cooperative, the NGC is able to ensure a steady supply of the agricultural inputs required for running operations at the most efficient level possible. In an NGC, the membership is generally not permanently closed. If the cooperative decides to expand production, for example, it could seek equity from producers outside the initial membership.

2. Delivery rights: a right and an obligation to deliver. Once members contribute equity toward the NGC, they receive the right, and the obligation, to deliver a specific quantity of the commodity each year. This means if producers have purchased the right to deliver 5,000 bushels of corn each year, they must deliver 5,000 bushels—no more, no less. If they cannot deliver that amount or if the commodity does not meet the quality standards set forth in the marketing agreement, the cooperative may have the right to buy the commodity on the producers’ behalf and charge for the difference in price.

3. Upfront equity required from producers. Adding value to agricultural commodities can be capital-intensive. Before lending money to a project, banks and other lending institutions will require producers to raise part of the project cost. Often, this means producers must raise 50 percent or more of the total project cost. If the project is estimated to cost $1 million, for example, producers will need to raise $500,000 or more. Although it may be possible to find private investors to reach the required equity level, producers are often the sole source of equity. As a way to tie members’ use to the total project equity required, the total amount to be raised is broken into smaller units. These units are tied to the amount of product required to be delivered. A market feasibility study will help determine the most economically efficient size for the processing facility. Once you know the amount of commodities the plant will require each year, you should then determine how to allocate this total amount into shares. For example, if the most efficient size plant requires one million bushels of soybeans a year, you should divide one million into a specific number of shares. To determine the specific number of shares, you should set minimum and maximum amounts of delivery rights to be purchased. To determine this, you need to balance two issues: how many producers do you want involved in the business and what is financially viable for you and other producers to commit.

Example: Assume on the $1 million project above, producers need to raise $500,000. If one million bushels a year are required to run the plant at the most efficient level, you could divide the number of bushels into a minimum delivery right purchase of 5,000 bushels and a maximum of 50,000 bushels.

* This article first appeared in Innovations, Nov./Dec. 2001, newsletter of the Ag Innovation Center, Jefferson, MO. 65102
Thus, the cooperative could have as many as 200 members or as few as 20 members.

4. Delivery rights are transferable and may fluctuate in value. The delivery right is similar to a share of corporate stock because it represents a firm’s permanent equity. As with a share of corporate stock, the value of your delivery right will depend on your firm’s profitability. If an NGC is successful and provides value for its members, the delivery right may appreciate in value. If the NGC does not provide value to its members, the value of the delivery right may decrease. Unlike stock in a public corporation, however, the delivery right has a very limited resale or trading market. To comply with antitrust, securities, tax, and incorporation statutes, NGC bylaws limit transfer to other producers and usually require the board of directors to approve any transfer.

5. Marketing agreement entered into between member and cooperative. Upon purchasing delivery rights, members are required to sign a marketing contract outlining the duties of both the members and the cooperative toward each other with respect to the delivery, quality, and quantity of producers’ commodities. These contracts are usually evergreen contracts, meaning they are for specified periods of time (from one to five years). They are renewed automatically unless either party gives notice to the other within a window of time specified in the marketing agreement. The marketing agreement often specifies the high quality standards required of members’ commodities, especially in cooperatives producing consumer-level goods. The marketing agreement outlines the specific quality required to be delivered, how quality will be measured, and the producer’s rights and obligations if the quality standard is not met.

6. Members and their NGC share three primary legal relationships.

   - Members must purchase a share of common stock or other membership interest to enable them to vote in all decisions set forth in the bylaws.
   - Members also purchase delivery rights, which are both a right and an obligation to deliver. The delivery rights are evidenced by legal documentation and are usually transferable upon approval from the board of directors.
   - Finally, members must sign a marketing agreement when purchasing delivery rights and voting stock. The marketing agreement defines the rights and obligations of both the member and cooperative toward each other with respect to the delivery of commodities from the member to the cooperative.

As a result, members must pay money to the cooperative for both the voting stock (usually very minimal) and the delivery rights (amount varies on project size, minimum and maximum purchase requirements, and the specific amount of commodity to be delivered by the member). Members also are required to deliver the specified quality and quantity of commodities at pre-specified intervals for the length of the marketing agreement (which is usually, through evergreen contracts, perpetual in nature). The cooperative, in turn, is required to pay members a pre-specified price for the commodities delivered (usually a formula price based on spot market prices at a specified exchange, with additions or subtractions based on quality). The cooperative also is required to return any profits to members on a pre-specified schedule determined by the board of directors. Depending on operating cash requirements, the timeline for returning profits could be immediately. Due to securities law issues, cooperatives are not actively involved in the transfer of delivery rights. The cooperative usually requires approval from the board of directors before any transfer is complete, and sometimes an outside broker handles the actual transfer of delivery rights.