FARM BUSINESS MANAGEMENT

FARM ECONOMICS Facts & Opinions

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GRIP-HR: AN ANALYSIS OF RETURNS AND RISKS

Group Risk Income Plan (GRIP) is a revenue insurance that insures county revenue. In 2004, a harvest revenue option was added to GRIP. At the county level, GRIP with the harvest revenue option (GRIP-HR) is conceptually similar to farm-level products that have guarantee increase provisions (i.e., Crop Revenue Coverage (CRC) or Revenue Assurance (RA) with a harvest revenue option). How GRIP-HR works is described in a previous *Illinois Farm Economics: Facts and Opinions* entitled "Group Crop Insurance Plans". This previous article also details the working of the other two group products (Group Risk Plan (GRP) and Group Risk Income Plan without the Harvest Revenue option (GRIP-NoHR)). The purpose of this *Facts and Opinions* article is to quantify the returns and risks associated with GRIP-HR.

Return and Risk Analysis

Returns and risks associated with GRIP-HR are compared to the other group insurance products and to CRC. Comparing GRIP-HR to CRC allows returns and risks of a county product to be contrasted to returns and risks available from farm-level products. The group products are evaluated at their highest coverage level and highest protection level. Several different coverage levels are analyzed for CRC to compare the impacts of coverage level on results. CRC premiums are based on basic units. Comparisons are made for both corn and soybeans.

Evaluations are conducted using the *Marketing and Crop Insurance: Risk Model*. This model is a Microsoft Excel spreadsheet that is available for download from the FAST section of *farmdoc* (www.farmdoc.uiuc.edu/fasttools). This model calculates gross revenues under alternative insurance products using prices and yields from 1972 through 2002 stated in today's terms. These gross revenues equal crop revenue given that the crop is sold at harvest plus insurance payments minus insurance premium costs. In this article, the average gross revenue over the 31 years is reported as a measure of return from each insurance product. The lowest revenue over the 31 years is reported as a measure of risk.

For each county where GRIP-HR is sold, returns and risks are calculated for the group products and CRC. These typical farms are contained as defaults in the beta 1.3 version of the *Marketing and Crop Insurance: Risk Model*.

Corn Results

Table 1 shows average premiums and gross revenues across all Illinois counties for corn. Gross revenue without insurance averages $336 per acre and lowest revenue averages $167 per acre. From a risk standpoint, lower risk is indicated by having a higher "lowest revenue".

Table 1. Return and Risk Results Averaged Across Illinois Counties for Group Products and CRC, Corn, 2004.[1]

Product[2]	Premium[3]	Average Gross Revenue[4]	Lowest Revenue[5]
	---------- $ per acre ----------		
No insurance		336	167
GRIP-HR 90%	17.98	351	230
GRIP-NoHR 90%	11.79	344	210
GRP 90%	8.21	339	241
CRC 65%	5.89	333	246
CRC 75%	7.76	333	246
CRC 85%	28.21	321	258

[1] Developed using the *Marketing and Crop Insurance: Risk Model (beta 1.3)* available for download in the FAST section of farmdoc (www.farmdoc.uiuc.edu).

[2] Letters denote products (see text for definitions) and percents indicate coverage levels.

[3] Estimated 2004 premium. Premiums will not be known with certainty until after March 1.

[4] Gross revenues calculated using prices and yields from 1972 through 2002, stated in today's terms.

[5] Lowest revenue between 1972 through 2002.

Compared to no insurance, GRIP-HR at the 90% coverage level (GRIP-HR 90%) has higher average gross revenue and higher lowest revenue. GRIP-HR's average gross revenue is $351 per acre, $15 per acre higher than the no insurance case. Revenue for GRIP is higher because our estimates indicate that over time GRIP-HR will pay out more indemnities than will be paid in premiums. Lowest revenue is increase by $63 to $230 per acre. Compared to the no insurance, GRIP-HR both raises return and reduces risk.

Overall, GRIP-HR compares favorably to GRIP-NoHR. GRIP-HR 90% has higher revenue and lower risk when compared to higher GRIP-HoHR 90% (see Table 1). This comes at a cost of higher premiums. GRIP-HR averages $17.98 premium across Illinois compared to $11.79 for GRIP-NoHR. While more costly, GRIP-HR also has higher payments that, over time, offset

premium costs.

Compared to GRP 90%, GRIP-HR has higher returns ($344 for GRP 90% compared to $351 for GRIP-HR 90%) but lower risk reductions (GRP 90% averages a lowest revenue of $241 across all counties compared to $230 for GRIP-Hr 90%). The choice here is between $12 higher average return for GRP-HP versus $11 higher lowest revenue for GRP.

At a 65% coverage level, average revenue for CRC is $333 per acre, $3 below the no insurance case. This indicates that over time premiums on CRC exceed payments by $3 per acre. Average revenue using CRC 85% is reduced to $321 per acre, $15 below the no insurance case. At the same time, the lowest revenue increases from $246 at CRC 65% to $258 for CRC 85%.

Compared to CRC 65%, GRIP 90% has higher average gross revenue: $351 per acre for GRIP-HR compared to $333 for CRC 65%, a difference of $18 per acre. Lowest revenue, however, is lower for GRIP-HR: GRIP-HR 90% has a $230 per acre compared to $246 for CRC 65%, a difference of $16 per acre. In essence, the tradeoff between GRIP-HR 90% and CRC 65% is between $18 of higher average revenue per year versus $16 higher lowest revenue. A similar tradeoff exists for CRC 85%, CRC 85% has $30 lower average gross revenue and $28 higher lowest revenue when compared to GRIP-HR 90%.

Soybean Results

Table 2 shows results averaged across Illinois counties for soybeans. Major points are:

- GRIP-HR compares favorably to the other group products. GRIP-HR has higher returns and larger risk reductions than GRIP-NoHR. Unlike the corn case, GRIP-HR 90% also has higher returns and higher risk reductions than GRP 90% in the soybean case. In soybeans, GRIP-HR has a stronger showing compared to the other group products than for corn.

- CRC has lower average gross revenue than GRIP-HR. Unlike corn, GRIP-HR has higher lowest revenue when compared to CRC 65%. These results suggest that GRIP-HR may reduce risk more than revenue products at low coverage levels. If a farm-level product has been purchased at a low coverage level, a farmer may wish to consider purchasing GRIP-HR instead.

Variability across the State and Tools for Evaluating Crop Insurance

The above results do vary across the state. In general, GRIP-HR results are more favorable in the central part of Illinois when compared to southern Illinois. Northern Illinois is in between central and southern Illinois. The following tools available on *farmdoc* can be used to examine county results:

- The above mentioned *Marketing and Crop Insurance: Risk Model* is available for download in the *FAST* section of *farmdoc* (www.farmdoc.uiuc.edu/fasttools). This tool is a Microsoft Excel spreadsheet that compared the risks and returns of crop insurance products and marketing strategies by crop and county. Farmers can enter their own yields for analysis.

Table 2. Return and Risk Results Averaged Across Illinois Counties for Group Products and CRC, Soybeans, 2004.[1]

Product[2]	Premium[3]	Average Gross Revenue[4]	Lowest Revenue[5]
	---------- $ per acre ----------		
No insurance		277	152
GRIP-HR 90%	8.32	284	194
GRIP-NoHR 90%	6.07	281	155
GRP 90%	3.95	278	188
CRC 65%	3.98	275	190
CRC 75%	8.15	273	196
CRC 85%	20.40	265	208

* See the footnotes at the end of Table 1.

- *IFARM Crop Insurance Evaluator* is available in the crop insurance section of *farmdoc* (www.farmdoc.uiuc.edu/cropins). This evaluator shows risks and returns from alternative crop insurance products by county in Illinois, Indiana, and Iowa. GRIP-HR will not be available in this tool until March 2004.

- *IFARM Crop Insurance Premium Calculator* is available in the crop insurance section of *farmdoc* (www.farmdoc.uiuc.edu/cropins). The *Premium Calculator* shows premiums for different insurance policies based on user input (i.e., county, crop, insurable unit, and APH yield). GRIP-HR premiums will not be available to 2005.

- The *2003 Group Crop Insurance Plan Calculator* is available for download in the crop insurance section of *farmdoc* (www.farmdoc.uiuc.edu/cropins). This *Calculator* gives premiums for the group products and shows average payments over time from the insurance products. This product fills the gap that exists because the web-based *IFARM* tools because do not currently have GRIP-HR information available. The *Calculator* requires Microsoft Excel version 97 or higher to run.

Summary

This article provides an analysis of the returns and risks associated with GRIP-HR. GRIP-HR compares favorably with other group products, particularly in soybeans. If an individual is purchasing group products, GRIP-HR should be given consideration. GRIP-HR does not have as great as risk reductions as farm-level revenue products (CRC and RA), particularly in corn. GRIP-HR likely has higher returns than the farm-level products. This presents a risk-return tradeoff: GRIP-HR has higher returns but lower risk reductions when compared to farm-level revenue products.

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