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Iowa Crop Insurance: What is the Coverage Level?

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To show how a yield put option effectively sets a minimum corn yield, let's construct a hypothetical example. Assume we have a 75-acre field with an expected corn yield of 140 bu/ac. We can forward contract harvest delivery of our corn for $3.00 per bushel at the local elevator. The January 1997 Iowa corn yield insurance futures contract is trading at 127 bu/ac. To find the number of put options needed to protect the field, multiply the forward price by the number of acres, divide by $100, and round to the nearest whole number. In our case, (75 x $3.00) / $100 = 2.25, two put options are suggested.

Assume we choose to purchase two January 1997 Iowa corn yield put options with a strike yield of 125 bu/ac (the closest option contract to the futures contract) at a premium of 9.00 bu/ac or $900 per option contract. We forward contract all expected production (10,500 bushels) at $3.00 per bushel.

We will analyze two possible scenarios:

1) Farm yield = 125 bu/ac, Iowa yield = 117 bu/ac
   Corn price = $3.30 per bu.

2) Farm yield = 155 bu/ac, Iowa yield = 137 bu/ac
   Corn price = $2.70 per bu.

In scenario 1, the farm’s corn production is 9,375 bushels, 1,125 bushels below what was contracted at the elevator. We receive $28,125 ($3.00 x 9,375) for the delivered corn, but pay back $394 to make up the production shortage (market difference in price and cancellation fee times bushel shortage) for a total revenue of $27,731 from the elevator. The Iowa corn yield futures contract stands at 117 bu/ac. As the futures contract fell, the premium on the put option rose. Supposing the put option premium is now 15 bu/ac, we sell back the put options for $1,500 per option. Therefore, we gain $1,200 through the option transactions. Adding this to our elevator revenue gives us $28,931.

In scenario 2, the farm’s corn production is 11,625 bushels of corn. The forward contract generates $31,500 in revenue. Selling the additional production at the cash price of $2.70 per bushel provides $304, for a total of $31,804 of corn revenue from the elevator. The Iowa corn yield futures contract stands at 137 bu/ac. Thus, the put option has lost value. Let’s assume the put option has some time value left at harvest and has a premium of 3.00 bu/ac or $300 per contract. We sell back the put options and take a $1,200 loss on the options. Total revenue in scenario 2 is $30,604.

These scenarios show how the yield insurance put options help alleviate revenue shortfalls due to lower than expected yields. The average revenue under the two scenarios with or without the put options is the same. However, the use of the put options reduces the variability in the revenue stream. In scenario 2, the loss on the put options can be considered as an insurance cost to protect against low yields.

Following the introduction of Iowa corn yield insurance contracts in 1995, the CBOT expanded the yield contracts to cover corn yields in Illinois, Indiana, Nebraska, Ohio, and the United States as a whole. Over 6,600 Iowa corn yield contracts were traded in 1995. With the expansion in contract coverage and the experience gained with the Iowa yield contracts, the CBOT hopes for even greater success in meeting the farmer’s needs in risk-sharing.

**Emerging Issues**

**Iowa Crop Insurance: What is the Coverage Level?**

(Darnell B. Smith, 515/294-1184)
(Chad Hart, 515/294-6307)

In light of changes in the agricultural “safety net” brought about by this year’s Farm Bill, volatile market conditions, and the 1994 crop insurance reforms, questions arise concerning the extent that Iowa’s row crop producers are purchasing additional insurance to facilitate risk management. Here we present preliminary coverage numbers for 1996 crop insurance purchases for Iowa and compare these to 1995 figures.
percent in 1996, an increase of 12.6 percent over 1995 levels.

In summary, preliminary numbers indicate that crop farmers in Iowa are actively using insurance to manage production risk. The popularity of CRC indicates that revenue insurance is a well-received risk management tool for Iowa agricultural producers.

**The Future of the Conservation Reserve Program**

*(Michael Duffy, 515/294-6160)*

*(Darnell B. Smith, 515/294-1184)*

The Conservation Reserve Program (CRP), enacted in 1985, was the largest single land retirement program in history with current enrollment above 36 million acres. When initially passed in the 1985 Food Security Act, the CRP was intended, primarily, to provide an incentive to remove highly erodible land from production for 10 years. In subsequent years its use was expanded to include, among other objectives, producer income support and the reduction of surplus commodities by restricting production.

The 1996 farm bill, the Federal Agriculture Improvement and Reform (FAIR) Act, contains several key provisions that will affect CRP administration and enrollments in the years ahead. This column discusses some of the key features of the FAIR Act with respect to CRP. To provide insights about potential Iowa enrollment, the results of a survey funded by the Leopold Center covering land use for early terminated CRP contracts are also presented below.

**Changes in CRP Provisions of the FAIR Act**

- The FAIR Act reauthorizes CRP allowing for contract extension and for new enrollments but limits the total number of acres that can be enrolled to the current level of 36.4 million acres. New sign-up procedures have not yet been announced but the Act states that the new payment rates cannot be higher than the prevailing local market rates. Although there is uncertainty about future sign-up criteria and payment structure, new sign-ups will probably be based on the criterion established for the 13th sign-up. In other words, priority will be given to water quality protection.

The FAIR Act allows some participants to terminate contracts that have been in effect for more than five years. There are several restrictions on which contracts can be terminated, and not all contracts are eligible for

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### Table 1: FCIC 1996/97 Iowa crop year statistics as of June 3, 1996

<table>
<thead>
<tr>
<th>Policy</th>
<th>1995/96</th>
<th>1996/97</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Number of Policies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Corn</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPCI</td>
<td>101,342</td>
<td>84,750</td>
</tr>
<tr>
<td>CRC</td>
<td>NA</td>
<td>30,780</td>
</tr>
<tr>
<td>GRP</td>
<td>2,008</td>
<td>2,116</td>
</tr>
<tr>
<td>IP</td>
<td>NA</td>
<td>22</td>
</tr>
<tr>
<td><strong>Soybeans</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPCI</td>
<td>94,132</td>
<td>84,405</td>
</tr>
<tr>
<td>CRC</td>
<td>NA</td>
<td>22,259</td>
</tr>
<tr>
<td>GRP</td>
<td>1,269</td>
<td>1,415</td>
</tr>
<tr>
<td><strong>Corn &amp; Soybean Policies as a Percent of Total Iowa Policies</strong></td>
<td>93.6</td>
<td>95.6</td>
</tr>
<tr>
<td><strong>Buy-Up Policies as a Percent of Total Iowa Policies</strong></td>
<td>67.2</td>
<td>79.8</td>
</tr>
</tbody>
</table>

NA = Not applicable

The Crop Insurance Reform Act of 1994 redirected federal farm policy toward a more structured approach to agricultural risk management. It effectively made ad hoc agricultural disaster legislation more difficult to enact and established the Catastrophic Coverage (CAT) insurance program. Additionally, CAT coverage became mandatory for most farm program participants. (This requirement was removed in the FAIR Act.) These federal policy changes would tend to increase crop insurance program participation. Before this, average participation for Iowa was approximately 45 percent.

For the current crop year, two new revenue insurance products, Crop Revenue Coverage (CRC) and Income Protection (IP) were made available on a limited basis — see Iowa Ag Review, Vol. 2, No. 2 for details. As Table 1 illustrates, the 1996 sales for CRC were quite interesting. Even though the product was newly developed with little time for marketing, CRC was very well received in Iowa and Nebraska, the two states in which it was offered. The number of policies sold in Iowa for corn and soybeans for traditional Multiple Peril Crop Insurance (MPCI) Group Risk Plan (GRP), and CRC are shown in the table. For these two crops, preliminary numbers indicate that almost 25 percent of policies sold this year were for revenue insurance.

Sales were roughly five times greater than anticipated. The numbers indicate that, proportionately, Iowa producers are purchasing buy-up coverage in 1996 (additional insurance above minimum requirements) to a greater degree than before. As a percentage of total policies, buy-up policies accounted for 79.8