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Crop Selection and The Potential of Drought

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Crop Selection and The Potential of Drought

Three years ago I wrote an article in Cornhusker Economics on the possibly of the dry conditions in 1999 continuing into the 2000 crop year. I commented that we had not dealt with a serious drought in Nebraska for many years. I hope that was not an omen, or a curse, but we have been dealing with moisture shortfalls ever since. The state average yield for dryland corn was 84 bushels per acre in 2000. In 2002 timely rains, at least for non-irrigated corn, were only a mirage resulting in a state average yield of 60 bushels per acre.

In the past 10 years, non-irrigated corn acreage in Nebraska increased from about 2.5 million acres to over 3 million acres. Non-irrigated soybeans increased by a million acres during the decade of the 1990s from 1.7 to 2.7 million acres. During the same period non-irrigated sorghum acres declined by more than two-thirds, with only about 300,000 acres being harvested in 2002.

Now the big question. In the face of the continuing drought this winter, what about crop selection for 2003?

Comparison of Crops

Table 1 presents the basic information to compare the expected returns. Note that the expected prices are the prices which have been set by the Risk Management Agency for the APH-MPCI crop insurance program for this year. The planting or spring prices for the CRC program will be established during the month of February. Historically, grain sorghum prices have been from 85 to 95 percent of corn prices, per bushel. In the last couple of years there have been time periods when sorghum was at a premium to corn, due to a strong demand and reduced supply. Sorghum is 95.5 percent of corn in the RMA prices.

You can do your own analysis using your yields and the prices you expect to prevail. This analysis shows that the expected returns over cash costs are about the same for sorghum and soybeans, based on the prices and costs used.
To produce the same returns with corn as those shown for sorghum, the corn yield would have to be 109.5 bu.

Sorghum return over costs + corn production costs = $125 + $116 = $241.
Breakeven corn yield = Costs to be covered divided by expected selling price = $241 / $2.20 = 109.5 bu

An alternative approach is to look at the probabilities of different moisture conditions and the equivalent breakeven corn yields. This analysis is shown in Table 2.

These probabilities show there is a 35 percent chance or about one chance in three that the moisture conditions through the growing season will be normal or better, and a two-thirds chance that they will be below normal. Again, you can insert your own numbers and work through the calculations. By multiplying the probabilities and the equivalent corn yields and adding them up, the expected equivalent corn yield is 88 bushels. [$(.1 x 119) + (.25 x 110) + (.45 x 85) + (.20 x 66)]

This means that if you expect a corn yield of 88 bushels or more, given the current soil moisture conditions and a dry growing season, you are better off growing corn rather than sorghum. If this is questionable for your soil conditions, grain sorghum is the better alternative.

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Extension Farm Management Specialist

<table>
<thead>
<tr>
<th>Crop</th>
<th>Expected Dryland Yield</th>
<th>Cash Costs*</th>
<th>Expected Harvest Price per Bushel**</th>
<th>Expected Gross Income</th>
<th>Expected Returns over Cash Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn, NoTill, after Soybean</td>
<td>100 bu</td>
<td>$116</td>
<td>$2.20</td>
<td>$220</td>
<td>$104</td>
</tr>
<tr>
<td>Soybean, NoTill, R.R.</td>
<td>38 bu</td>
<td>$77</td>
<td>$5.30</td>
<td>$201</td>
<td>$124</td>
</tr>
<tr>
<td>Grain Sorghum, NoTill</td>
<td>95 bu</td>
<td>$75</td>
<td>$2.10</td>
<td>$200</td>
<td>$125</td>
</tr>
</tbody>
</table>

* Includes labor and interest on operating costs. Does not include crop insurance, depreciation or interest on machinery.
** Prices established by the Risk Management Agency for the APH-MPCI Crop Insurance Program for 2003.

Reference: Nebraska Crop Budgets. EC01-872-S. Nebraska Cooperative Extension

<table>
<thead>
<tr>
<th>Moisture Situation</th>
<th>Subjective Probability Based on Current Conditions</th>
<th>Expected Grain Sorghum Yield</th>
<th>Return over Cash Costs</th>
<th>Corn Yield for Equivalent Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average</td>
<td>.10 or 10%</td>
<td>105</td>
<td>$146</td>
<td>119 bu.</td>
</tr>
<tr>
<td>Average</td>
<td>.25</td>
<td>95</td>
<td>$125</td>
<td>110 bu.</td>
</tr>
<tr>
<td>Below Average</td>
<td>.45</td>
<td>70</td>
<td>$72</td>
<td>85 bu.</td>
</tr>
<tr>
<td>Very Dry</td>
<td>.20</td>
<td>50</td>
<td>$30</td>
<td>66 bu.</td>
</tr>
</tbody>
</table>