12-9-2008

Is All Well that Ends Well? Iowa Corn – 2008

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Is All Well that Ends Well? Iowa Corn – 2008

Abstract
Shakespeare penned “All's well that ends well” over 400 years ago. Scholars say the play itself cannot easily be classified either as a tragedy or a comedy. Can the same be said of the 2008 growing season? The Dec. 1, 2008 USDA-NASS report says with 6 percent of Iowa’s corn is yet to be harvested the 2008 crop finished well, with the third best yield expected in Iowa's history – 172 bushels per acre based on USDA’s November estimate. And yet 2008 started out with low expectations. We’ll be talking about this season for years.

Keywords
Agronomy

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences
Is All Well that Ends Well? Iowa Corn – 2008

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(This article is a summary of the complete report and all figures, which is available from this link Iowa Corn - 2008 full report.)

Shakespeare penned “All’s well that ends well” over 400 years ago. Scholars say the play itself cannot easily be classified either as a tragedy or a comedy. Can the same be said of the 2008 growing season?

The Dec. 1, 2008 USDA-NASS report says with 6 percent of Iowa’s corn is yet to be harvested the 2008 crop finished well, with the third best yield expected in Iowa’s history – 172 bushels per acre based on USDA’s November estimate. And yet 2008 started out with low expectations. We’ll be talking about this season for years.

The Growing Season
Planting started slow because of rain and cool weather. The rate of planting progress in 2008 was similar to 1975-1979 until rains and flooding necessitated replanting over a million acres. Replanted or ‘to be replanted’ area reached a maximum of 11 percent on June 23 - please realize that Figure 1 displays these percentages as not planted even though some were already replanted before that date. Iowa’s corn was not completely planted until the end of June 2008.

We also know that in general, early planting dates are better than later ones when it comes to yields. We generally recommend to plant corn in Iowa by May 10. Yet this year, only half of the acres were planted in the western third of the state by then. It took until May 15 for the rest of the state to reach 50 percent planted. And then, over a million acres were replanted after flooding or drowning out (Figure 1).

Figure 1. Iowa Corn Planting Progress.
Although projected corn acreage was high in late March, 13.3 million acres, only 12.5 million acres of corn were harvested in Iowa; this is a reduction of 6 percent from the initial estimate. These reductions were most likely the result of producers switching some acres to other crops, or flooding or ponding, and the inability to replant corn. The difference in estimated and actual corn acreage in 2008 is second only to 1993 when there was an acreage reduction of 8.3 percent. After the crop was in the ground, the growing season — and corn growth — crept along, not unlike a Shakespearean play — sorry Shakespeare lovers!

Silking is the most critical growth stage for corn with late silking dates typically causing greater yield reductions. Again, 2008 went against this trend. Silking dates in 2008 are clearly different when compared to the last few years (Figure 2). Fifty-percent silking occurred 15 days later in 2008 than in the two previous years. In fact, 2008 was the slowest year on record. Incidentally, we should question the rule-of-thumb that a late-silking date correlates to lower yields as it is dependent on weather conditions after silking. Note that corn in 2004 was also “behind” in silking yet resulted in the highest Iowa corn yields ever.

![Figure 2. Iowa Corn Silking Dates 2004 - 2008.](image)

Delayed planting and silking dates obviously resulted in a delayed harvest. Although harvest timing hasn’t changed much on average over the last 30 years (data not shown), 2008 is much slower than recent years and is two weeks behind last year.

**Yields and Estimated Yields**

In spite of the seemingly poor year and all of the doomsday talk, USDA-NASS estimated Iowa yields third best in history. Average corn yield in Iowa continues to increase 2.25 bushels per acre per year. The 2008 estimate, 172 bushels, is four bushels above the trend line. Gross production will be high, 2.15 billion bushels, because of the acres grown and high yields.

The northwest Iowa cropping district posted exceptional yields this year due to near normal heat unit accumulation, ordinary planting dates and less saturated soils in the spring. Yields in southwest Iowa were reduced from drought and storm damage. High reported yields surprised most of us. Yield-reducing factors, such as insect pressure and fungal diseases, had minimal impact this year.

**Why did 2008 turn out well?**

During the 2008 growing season we used a crop model, Hybrid-Maize, to help us understand weather interactions with the crop. Using the model, we developed a synopsis for the Ames 2008 growing season with weather data.
from 1986 through October 5, 2008.

Weather conditions this year, provided an excellent opportunity to maximize corn yield. In fact, according to the model, 2008 had the second highest potential yield. Only weather and the input parameters affect yield potential in the model; it does not consider yield reductions due to diseases, insects, weeds, soil compaction, hail, lodging, etc.

The model calculates potential yield weekly during the growing season. As harvest approached, the range in predicted yield narrowed between the best possible and the worst possible outcomes. For example, on June 29 if the worst possible weather year occurred from that point forward, potential yield was 45 percent of that of the best possible weather year, about 140 bushels per acre. Because late season weather was conducive to higher yields, the projected yields continued to move upward from what was predicted earlier in the season. After silking on 3 August, yield potential in the worst possible year was up to 64 percent – about 188 bushels per acre. At maturity it was 87 percent of potential or about 277 bushels per acre. As the season played out, yield potential for 2008 was 94 percent of maximum, 299 bushels per acre.

How did this happen? The answer lies in the late-season weather, Table 1 provides data on solar radiation, temperatures, rainfall, and silking and maturity dates for 2008 in addition to three other possible years. Although 2008 silk dates were late, sunlight (solar radiation) after silking, and rainfall were similar to those of the best year. Temperatures after silking were cooler than in the worst years. This, coupled with slow heat unit accumulation, resulted in slow crop development (Figure 2) and subsequently longer grain fill period. Without a late frost though, this all would have been for naught (note crop maturity dates in Table 1). The crop season finished well, better than we could have ever hoped.

<table>
<thead>
<tr>
<th>Year rank by potential yield</th>
<th>Silking date</th>
<th>Solar radiation Longley</th>
<th>Temperature</th>
<th>Rain inches</th>
<th>Maturity date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Year in Simulation</td>
<td>17-Jul</td>
<td>34344</td>
<td>72.7</td>
<td>54</td>
<td>9.7</td>
</tr>
<tr>
<td>Median Year in Simulation</td>
<td>20-Jul</td>
<td>29906</td>
<td>75</td>
<td>49.8</td>
<td>15.4</td>
</tr>
<tr>
<td>Worst Year in Simulation</td>
<td>4-Jul</td>
<td>21992</td>
<td>81.8</td>
<td>63.3</td>
<td>2.3</td>
</tr>
<tr>
<td>2008</td>
<td>25-Jul</td>
<td>32572</td>
<td>75.9</td>
<td>55</td>
<td>8.1</td>
</tr>
</tbody>
</table>

The late harvest and cool fall did contribute though to high grain moisture, an increase in grain molds, and in some cases low test weights. Much attention should be applied towards handling grain this winter.

2008: Tragedy or Comedy?
The curtain is nearly down. The last act is coming to a close. Was all well in 2008 since it ended well? The first acts made us think it was a tragedy. We can certainly say that the 2008 drama certainly wasn’t a comedy. Those who know about dramas would say 2008 was a tragicomedy, it provided a happy ending to a potentially tragic story. During a critical point in a tragicomedy, the viewer is uncertain whether to laugh…or cry. That was 2008!

And in the end, the tragicomedy, Iowa Corn-2008, turned out well. Yields were better than we could have expected. We will remember this one!
Roger Elmore is a professor of agronomy with research and extension responsibilities in corn production. Lori Abendroth is an agronomy specialist with research and extension responsibilities in corn production.

This article was published originally on 12/9/2008. The information contained within the article may or may not be up to date depending on when you are accessing the information.

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