The 2003 Iowa Corn Yield Test Report, District 5

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The 2003 Iowa Corn Yield Test Report, District 5

Abstract
Results of the Iowa Crop Performance Test-Corn are published to aid Iowa farmers in selecting corn hybrids. This is the 84th consecutive year for the test. These data are first released on the Iowa Crop Improvement Association's homepage at http://www.agron.iastate.edu/icia! usually around the end of November.

Disciplines
Agriculture
2003
Iowa Crop Performance Test—Corn
District 5

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The next released format of these data is in the Iowa Crop Management Database program. A description of this program and an order form can be found at http://extension.agron.iastate.edu/CMD/. A short description of how this program manages these data is provided in the “Other Reports” section of this report.

In 2002, DTN (Data Transmission Network) began including a summarized version of these data on their system. The final format is the printed version, which is printed and distributed by Iowa Farmer Today in its Dec. 13, 2003 issue. A few days later, the printed reports also are available from county extension offices.

The presentation of data for the hybrids tested does not imply approval or endorsement by the authors or the agencies sponsoring or conducting the test. Entries in Tables 1, 1A, and 2 are designated by brand name and variety.

Use of These Data in Advertisements
Iowa State University and the Iowa Crop Improvement Association desire to maintain the credibility of data from the Iowa Crop Performance Test—Corn. Misuse of these data in advertisements can have a negative effect on the perception of the value of these data. For advertising purposes, brand-to-brand comparisons should not be made unless more than one competitor brand is used in the ad and all entries of competitor brands in a reported table are included in the ad. Advertisements statements by an individual company about the performance of its entries can be made as long as they are accurate statements about the data as published with no reference to other companies’ hybrids. A statement similar to: “See the official Iowa Crop Performance Test—Corn report, PM 660 (1–7) 03, for details,” should be included in the ad.

2003 Procedure
Producers of seed corn and Iowa State University were eligible to enter hybrids in the Iowa Crop Performance Test—Corn. Each producer was allowed a maximum of 12 paid entries per district. All commercial entries had to be available in a quantity of at least 10 bushels of seed.

In 2003, data are reported on 154 entries in this district. Ten of the entries determined to be check hybrids were entered by the Iowa Crop Improvement Association. In June, survey cards were mailed to a random sample of corn growers in Iowa. Based on the survey results, the 10 hybrids grown on the most acres in the district were classified as check hybrids for the district. The check hybrids (& and !) in this report were determined by the 2002 survey. The Iowa Crop Improvement Association entered a maximum of three check hybrids of any given brand. These entries were given priority over the remaining 144 entries made by seed producers.

Each entry was replicated four times in four-row plots at a planting rate of 29,000 kernels per acre at each location. All locations were machine planted. The center two rows of each plot were harvested with a corn combine. No gleanings or dropped ears were included in yield data. A moisture determination was made from each plot and yields were corrected to 15.5 percent moisture for shelled corn.

Since 1988, data for protein, oil, and starch percentages have been included in the Iowa Crop Performance Test—Corn reports. Protein, oil, and starch were measured on an Infratec 1225 near-infrared transmittance analyzer calibrated against accepted chemical methods as done by Woodson-Tenant Labs, Des Moines, Iowa. Dr. Charles R. Hurburgh, Jr. of the ISU Department of Agricultural and Biosystems Engineering was responsible for analyzing the samples. Samples for nutrient analysis were collected from one field in each district. Data presented are averages of the four replicated plots in that field. To be consistent with the yield data, the protein, oil, and starch data were corrected to 15.5 percent moisture.
How Information Is Presented

The agronomic data presented are averages of three locations in 2001, 2002, and 2003. Yield in bushels per acre and percentages of moisture, root lodging, stalk lodging, dropped ears, stand, protein, oil, and starch are shown for all entries in 2003 and for those tested in 2001 and 2002 that were in the 2003 test.

Interpretation of Results

Yield differences due to variation in soil, fertility, moisture availability, insect infestations, and diseases, plus any variation due to planting and harvesting techniques, are identified through statistical analysis. The LSD values for yield shown in Tables 1, 1A, and 2, represent, in bushels per acre, the amount of yield variation that could be due to variations in the factors just mentioned. In comparing varieties, yield differences greater than the LSD value can be attributed to genetic differences in the yield potential of these varieties; yield differences less than the LSD value are not statistically different and could have been due to other factors.

Grain moistures shown in Tables 1, 1A, and 2 are indications of maturity and natural drying rate. Maturity of varieties entered generally ranged from short to full season. Yield comparisons should be made among varieties of similar maturity.

It is important to select varieties having stable performance over a range of environmental conditions. High yields for two or more consecutive years, Table 2, indicate stable performance. Also, starting in 2002, to increase the range of environmental conditions reported on in one year, 18 additional tables are provided electronically on the Iowa Crop Improvement Web page that merge data across districts. These tables double, and in some cases even triple, the number of locations reported on for hybrids entered in several districts. Supplemental yield and agronomic information about specific varieties may be obtained from seed corn dealers, crop consultants, and from neighbors who have grown these varieties.

The protein, oil, and starch percentage data (Tables 1, 1A, and 2) are quality traits important to different end-users of corn. For feed, protein is of primary interest; for wet-mill processing (ethanol and sweeteners), oil and starch content are important. Seed companies have begun testing these characteristics on a routine basis. There are now more than 50 Iowa grain elevators with this testing capability.

Whole-grain near-infrared equipment measures composition of unground corn kernels in 1 to 1.5 minutes per sample. The equipment measures moisture simultaneously with composition. Using these instruments, country elevators can test and segregate grain as it is received. Obviously, all compositional factors cannot be high in the same hybrid. The grain market is expanding the production and marketing of these hybrids for specific uses. This is an important change from the generic commodity approach widely used now.

The economic impact of compositional factors can be significant. Corn protein trades off with other protein sources in many feed rations. At $2.00 per ton for 44 percent protein soybean meal, the value of a 1 percent increase (e.g., from 8 percent to 9 percent) in corn protein is about 12 cents per bushel of corn. Likewise, segregating grain as it is received. Obviously, all compositional factors cannot be high in the same hybrid. The grain market is expanding the production and marketing of these hybrids for specific uses. This is an important change from the generic commodity approach widely used now.

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The additional ethanol or sweetener from an extra percent of starch provides 8 to 10 percent of oil yields about 20 cents per bushel more revenue. Producers feeding livestock are in the best position to capture immediate benefits from these composition data. The protein, oil, and starch percentage data (Tables 1, 1A, and 2) are quality traits important to different end-users of corn. For feed, protein is of primary interest; for wet-mill processing (ethanol and sweeteners), oil and starch content are important. Several firms have begun testing these characteristics on a routine basis. There are now more than 50 Iowa grain elevators with this testing capability.

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The 2003 Iowa Crop Performance Test—Corn

PM 660 1 03 District 1
PM 660 2 03 District 2
PM 660 3 03 District 3
PM 660 4 03 District 4
PM 660 5 03 District 5
PM 660 6 03 District 6
PM 660 7 03 District 7

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Cooperating Organizations

Iowa Crop Improvement Association
Iowa Agriculture & Home Economics Experiment Station
Iowa State University Extension
Iowa Corn Promotion Board

U.S. Department of Agriculture

And justice for all . . .

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Table 14. Top Yielding Hybrids During 2009-2013

<table>
<thead>
<tr>
<th>Variety</th>
<th>Seed Source</th>
<th>Seed Type</th>
<th>Yield 2009</th>
<th>Yield 2010</th>
<th>Yield 2011</th>
<th>Yield 2012</th>
<th>Yield 2013</th>
<th>Average Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety 1</td>
<td>Source A</td>
<td>Type 1</td>
<td>100</td>
<td>98</td>
<td>96</td>
<td>94</td>
<td>92</td>
<td>95.8</td>
</tr>
<tr>
<td>Variety 2</td>
<td>Source B</td>
<td>Type 2</td>
<td>99</td>
<td>97</td>
<td>95</td>
<td>93</td>
<td>91</td>
<td>93.8</td>
</tr>
<tr>
<td>Variety 3</td>
<td>Source C</td>
<td>Type 3</td>
<td>101</td>
<td>100</td>
<td>99</td>
<td>98</td>
<td>97</td>
<td>98.8</td>
</tr>
</tbody>
</table>

*Table notes:*
- Source A: Local seed producer.
- Source B: National seed producer.
- Source C: International seed producer.
- Seed Type 1: Traditional hybrid.
- Seed Type 2: Improved hybrid.
- Seed Type 3: Transgenic hybrid.

With the quick development of new hybrid maize, it is becoming more difficult for growers to choose the best hybrid for their specific needs. The average yield for each hybrid is calculated over the years 2009-2013. The data shows that the average yield for Variety 3 is the highest among the three varieties, with a yield of 98.8 bushels per acre. Overall, the performance of the transgenic hybrid has been superior to the traditional and improved hybrids. This trend is expected to continue as the technology advances.
## Table 2

### Table 2: Averages of 2000-03 (2-Year) and 2001-03 (3-Year) of Varieties Tested in District 5. LSD for Yields Are 5 Bushels for 01-03 (2-Year) and 7 Bushels for 02-03 (2-Year).

<table>
<thead>
<tr>
<th>Variety</th>
<th>Cross</th>
<th>3-Year Yield</th>
<th>2-Year Yield</th>
<th>3-Year LSD</th>
<th>2-Year LSD</th>
<th>3-Year Starch LSD</th>
<th>2-Year Starch LSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacobsen</td>
<td>1267</td>
<td>SX</td>
<td>183 18.1</td>
<td>183 18.1</td>
<td>13</td>
<td>1</td>
<td>89 9.8</td>
</tr>
<tr>
<td>Golden Harvest</td>
<td>HH88P</td>
<td>SX</td>
<td>187 16.1</td>
<td>187 18.0</td>
<td>16</td>
<td>2</td>
<td>64 9.0</td>
</tr>
<tr>
<td>Middaup</td>
<td>1266</td>
<td>SX</td>
<td>183 17.4</td>
<td>183 17.4</td>
<td>17</td>
<td>2</td>
<td>64 9.3</td>
</tr>
<tr>
<td>Battleground</td>
<td>2379</td>
<td>SX</td>
<td>183 17.4</td>
<td>183 17.4</td>
<td>17</td>
<td>2</td>
<td>64 9.3</td>
</tr>
<tr>
<td>DEKALB</td>
<td>41350-24RRYG</td>
<td>SX</td>
<td>272 17.6</td>
<td>272 17.6</td>
<td>1</td>
<td>1</td>
<td>64 9.0</td>
</tr>
<tr>
<td>DEKALB</td>
<td>3381-7190YG</td>
<td>SX</td>
<td>186 17.7</td>
<td>186 17.7</td>
<td>3</td>
<td>1</td>
<td>64 9.0</td>
</tr>
<tr>
<td>Golden Harvest</td>
<td>1213</td>
<td>SX</td>
<td>183 16.0</td>
<td>183 16.0</td>
<td>16</td>
<td>2</td>
<td>64 9.0</td>
</tr>
<tr>
<td>DEKALB</td>
<td>9126-1914YG</td>
<td>SX</td>
<td>182 20.6</td>
<td>182 20.6</td>
<td>16</td>
<td>2</td>
<td>64 9.0</td>
</tr>
<tr>
<td>#Kiddahop</td>
<td>1380</td>
<td>SX</td>
<td>183 18.1</td>
<td>183 18.1</td>
<td>13</td>
<td>1</td>
<td>89 9.8</td>
</tr>
</tbody>
</table>

### Varieties

- **Golden Harvest**: HH88P
- **Middaup**: 1266
- **Battleground**: 2379
- **DEKALB**: 41350-24RRYG, 3381-7190YG
- **Golden Harvest**: 1213
- **DEKALB**: 9126-1914YG
- **Kiddahop**: 1380

### Average of All Entries

- **Yield LSD**: 0.1
- **Yield LSD**: 0.1
- **Yield LSD**: 0.2
- **Yield LSD**: 0.2

**Note**: 3-Year LSD = 0.1, 2-Year LSD = 0.1, 3-Year Starch LSD = 0.2, 2-Year Starch LSD = 0.2.