The 2004 Iowa Corn Yield Test Report, District 4

Kendall R. Lamkey  
*Iowa State University*

W.H. Vinson  
*Iowa State University*

C.J. Turnbull  
*Iowa State University*

Follow this and additional works at: https://lib.dr.iastate.edu/cornyield

Part of the Agriculture Commons

**Recommended Citation**

https://lib.dr.iastate.edu/cornyield/236

This Report is brought to you for free and open access by the Extension and Experiment Station Publications at Iowa State University Digital Repository. It has been accepted for inclusion in Iowa Corn Yield Tests by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Abstract
Results of the Iowa Crop Performance Test-Corn are published to aid Iowa farmers in selecting corn hybrids. This is the 85th 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
Iowa Crop Performance Test—Corn District 4

Results of the Iowa Crop Performance Test—Corn are published to aid Iowa farmers in selecting corn hybrids. This is the 85th 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.

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.

The final format is the printed version, which is printed and distributed by Iowa Farmer Today in its Dec. 11, 2004 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. Advertisement 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) 04, for details,” should be included in the ad.

2004 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 2004, data are reported on 125 entries in this district. Ten of the entries determined to be check hybrids were entered by the Iowa Crop Improvement Association. 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 (5 and 1) in this report were determined by the 2003 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 115 entries made by seed producers.

Each entry was replicated four times in four-row plots at a planting rate of 30,000 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 2002, 2003, and two locations in 2004. 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 2004 and for those tested in 2002 and 2003 that were in the 2004 test.
**Interpretation of Results**

Yield differences due to variation in soil, fertility, moisture availability, insect infestation, 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. Several firms 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 certain 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, an additional percent of oil yields about 10 to 14 cents per bushel in increased oil output in a wet processing plant or when substituted for white grease in feed rations.

The additional ethanol or sweetener from an extra percent of starch provides 8 to 10 cents per bushel more revenue. Producers feeding livestock are in the best position to capture immediate benefit from these composition data. Country elevators with feed mills also have the ability to capitalize on increased protein in corn. The Iowa Corn Growers Association has prepared a publication to aid growers in using the nutrient data in the Iowa Crop Performance Test—Corn reports. Nutrient Content and Feeding Value of Iowa Corn, Iowa Corn Growers Association, Des Moines, Iowa 50265.

Hybrids with similar yields and agronomic characteristics may not be identical in corn composition. Therefore, feed costs can be reduced by selecting higher protein hybrids from a group with similar yield potential. Weather and soil conditions affect composition, but the relative ranking of hybrids does not change greatly. A higher protein hybrid will be higher than average regardless of environmental conditions that raise or lower the averages. The protein percentages reported are measures of crude protein and may not give an accurate indication of feed value if feed rations are balanced on individual amino acids rather than crude protein content.

**2004 Field Data**

The District 4 test was planted on farms operated by Maurice Wilt near Salix in Woodbury County, Rod Backhaus near Westside in Crawford County, and the McIntosh brothers near Missouri Valley in Harrison County. The Westside location was abandoned due to herbicide injury. Field data are presented in Table A.

<table>
<thead>
<tr>
<th>Table A. Field Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fertilizer applied, lb.</strong></td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td>Witt Farm</td>
</tr>
<tr>
<td>MePaul Farm</td>
</tr>
</tbody>
</table>

*Field sampled for protein, oil, and starch percentage data.

**Other Reports**

Separate reports are available for each district shown in Figure 1. A limited supply of these publications is available at your county extension office or from Extension Distribution Center, 119 Printing and Publications Building, Iowa State University, Ames, Iowa 50011. Also, these data are available along with a hybrid selection program as a part of the Iowa Crop Management Database program. Along with all of the information as it appears in these written reports, the section of the Iowa Crop Management Database program that uses these data allows farmers to insert their own drying and shrink costs, expected price of corn, and final moisture percentage after drying. Using these specific criteria, the program calculates an adjusted economic value for each hybrid in the test. Farmers can then determine which hybrids might best fit their own production practices and provide the most profit.

The computer program also can sort the hybrids by yield, moisture, adjusted value, root lodging, stalk lodging, dropped ears, protein, oil, starch, or brand and then print the data as sorted. It will also allow the user to tag selected hybrids and then list those selected hybrids as a new table for ease of viewing. A Pentium 1 computer or higher running Windows 95 or newer with a CD ROM drive and 30 megabytes of hard disk space are required to run the program. The cost of the program is a onetime purchase of $100. Future years' data can be downloaded from the Web at no charge. If the user cannot access the Web to download the new data, the price will be $25 for all seven districts' data. Order forms and a description of the program are available from Agribusness Education Programs, telephone 515-294-6429 and on the Web at http://extension.agron.iastate.edu/CMVD/.

The 2004 Iowa Crop Performance Test—Corn:

PM 660 1 04 District 1
PM 660 2 04 District 2
PM 660 3 04 District 3
PM 660 4 04 District 4
PM 660 5 04 District 5
PM 660 6 04 District 6
PM 660 7 04 District 7

File: Agronomy 2-2 © 2004 by the Iowa Crop Improvement Association. Used with permission.


**Cooperating Organizations**

Iowa Crop Improvement Association
Agriculture & Home Economics Experiment Station
Iowa State University Extension
Iowa Corn Promotion Board
U.S. Department of Agriculture

**And justice for all . . .**

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status (Not all prohibited bases apply to all programs). Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 330-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202/720-5964.

With the rapid development of new hybrids today, it is becoming more difficult for growers to review several years of data on each hybrid to help them decide which hybrids to select for planting the following year. The tables below give results on hybrid performance across several locations in one year. No data from additional locations or years along with the standard deviations provided are on the Iowa Crop Improvement Association’s Web page at http://www.agron.iastate.edu/. These additional tables, accounting data across districts, make it possible to look at hybrid performance averaged across more locations than in the past to help predict which hybrids may have the best relative performance potential under next year’s growing conditions. These tables double or triple the number of locations available in such hybrid performance data.

Table A - 15 Top Yielding Hybrid Elevations (Table 6) - 25,574 lb/ac Planting Dates - 5/18/01 in Sauk Rapids to 17/1 for 2003 and 15/15 for 2002 - 2004 Precision Plot CID: 8.0 - 2004 OH Plot CID: 17.0 - 2004 Dunes CID: 120.4

<table>
<thead>
<tr>
<th>State</th>
<th>Year</th>
<th>Area</th>
<th>Yield (lb/ac)</th>
<th>Avg Yield (lb/ac)</th>
<th>Standard Deviation</th>
<th>Average Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa</td>
<td>2001</td>
<td>1</td>
<td>562</td>
<td>566</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2002</td>
<td>2</td>
<td>573</td>
<td>576</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>2003</td>
<td>3</td>
<td>587</td>
<td>590</td>
<td>18</td>
<td>19</td>
</tr>
</tbody>
</table>

Average Deviation: 16.5
<table>
<thead>
<tr>
<th>Brand</th>
<th>Variety</th>
<th>Notes</th>
<th>Yield Prof</th>
<th>Moisture Prof</th>
<th>Root Ldg Prof</th>
<th>stalk Ldg Prof</th>
<th>Drop Ear Prof</th>
<th>Stand Prof</th>
<th>Protein Prof</th>
<th>Oil Prof</th>
<th>Starch Prof</th>
<th>Variety</th>
<th>Brand</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack</td>
<td>HK1791YGCB</td>
<td>Gi</td>
<td>153</td>
<td>14.9</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>94</td>
<td>7.4</td>
<td>3.7</td>
<td>0.3</td>
<td>HK1791YGCB</td>
<td>Rack</td>
<td></td>
</tr>
<tr>
<td>Multishade</td>
<td>3300BI</td>
<td>Gi</td>
<td>177</td>
<td>14.9</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>93</td>
<td>7.4</td>
<td>3.8</td>
<td>0.5</td>
<td>3300BI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNK Brand</td>
<td>MS-01</td>
<td>Gi</td>
<td>167</td>
<td>14.8</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>94</td>
<td>7.3</td>
<td>3.2</td>
<td>0.1</td>
<td>MS-01</td>
<td>SNK Brand</td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>22491YGCB</td>
<td>Gi</td>
<td>153</td>
<td>15.1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>94</td>
<td>7.9</td>
<td>3.8</td>
<td>0.3</td>
<td>early</td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>22491YGCB</td>
<td>Gi</td>
<td>153</td>
<td>15.1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>94</td>
<td>7.9</td>
<td>3.8</td>
<td>0.3</td>
<td>early</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>179</td>
<td>17.9</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>93</td>
<td>7.9</td>
<td>3.3</td>
<td>0.4</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>179</td>
<td>17.9</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>93</td>
<td>7.9</td>
<td>3.3</td>
<td>0.4</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>N. Merk</td>
<td>MS-01</td>
<td>Gi</td>
<td>157</td>
<td>15.1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>93</td>
<td>7.2</td>
<td>3.8</td>
<td>0.7</td>
<td>N. Merk</td>
<td></td>
</tr>
<tr>
<td>Rack</td>
<td>HK1791YGCB</td>
<td>Gi</td>
<td>165</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>94</td>
<td>7.1</td>
<td>3.4</td>
<td>0.6</td>
<td>Rack</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
<tr>
<td>Cornhusk</td>
<td>22555YGCB</td>
<td>Gi</td>
<td>156</td>
<td>15.6</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>91</td>
<td>7.2</td>
<td>3.5</td>
<td>0.7</td>
<td>Cornhusk</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2. Averages of 2093-04 (2-Year) and 2092-04 (3-Year) of Varieties Tasted in District 4.**

- LSD for Yields are 7 bushels for 2092-04 (3-Year) and 9 bushels for 2094-04 (2-Year).

- 3-Year Protein LSD = 0.1.
- 2-Year Protein LSD = 0.2.
- 3-Year Oil LSD = 0.1.
- 2-Year Oil LSD = 0.2.
- 3-Year Starch LSD = 0.2.
- 2-Year Starch LSD = 0.3.

- g = Transgenic Hybrid.
- + = Use of Insecticide Seed Treatment.
- B = Balance hybrid entered by the Iowa Crop Improvement Association.
- M = Short Cycle Hybrid grown in short blocks.
- H = Hybrid entered as a Short Hybrid and grown in short blocks.
District 4
Designations and Brands in the Test

Access Seed
Ag Source
Agro
Channel Seed Corp.
Cornels
Crow
Epley Brothers Seed
Four Sisters Seed
Golden Harvest
Highway
KSC/Corn Star
Krugner Seed Co.
Mark Seed Co.
Midwest Seed Genetics
Mark Seed Co.
Mycogen Seeds
Nister Hybrid Co.
Pioneer Hi-Bred
Rainbow Seeds
Renk Seed
Renz Hybrids
Sand Seed Service
Stine Seed
Thompson/NUTech
Wilson Seed

*Companies with one or more check hybrids entered by the Iowa Crop Improvement Association.

Acro Source
Ag Source
Agro
Channel Seed Corp.
Cornels
Crow
Epley Brothers Seed
Four Sisters Seed
Golden Harvest
Highway
KSC/Corn Star
Krugner Seed Co.
Mark Seed Co.
Midwest Seed Genetics
Mark Seed Co.
Mycogen Seeds
Nister Hybrid Co.
Pioneer Hi-Bred
Rainbow Seeds
Renk Seed
Renz Hybrids
Sand Seed Service
Stine Seed
Thompson/NUTech
Wilson Seed

*Companies with one or more check hybrids entered by the Iowa Crop Improvement Association.