The 1991 Iowa Corn Yield Test Report, District 4

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Iowa State University

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The 1991 Iowa Corn Yield Test Report, District 4

Abstract
Results of the Iowa Corn Yield Test are published to aid Iowa farmers in selecting corn hybrids. This is the seventy-second consecutive year for the test. Data from these tests are available in three different formats. These data are first released on Iowa State University's Cooperative Extension Services' computer communication network (EXNET) usually around Thanksgiving and are available at county extension offices. Anyone can subscribe to EXNET at a cost of $25 per year and receive the data as soon as they are released. All that is required is a computer, a modem, and the cost of a telephone call.

Disciplines
Agriculture

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THE 1991 IOWA CORN YIELD TEST REPORT

District 4

Results of the Iowa Corn Yield Test are published to aid Iowa farmers in selecting corn hybrids. This is the seventy-second consecutive year for the test. Data from these tests are available in three different formats. These data are first released on Iowa State University’s Cooperative Extension Services’ computer communication network (EXNET) usually around Thanksgiving and are available at county extension offices. Anyone can subscribe to EXNET at a cost of $25 per year and receive the data as soon as they are released. All that is required is a computer, a modem, and the cost of a telephone call. For additional information contact:

EXNET
108 Atanasoff Hall
Iowa State University
Ames, Iowa 50011
Telephone 1 515 294-8658

The next released format of the data is on computer diskettes that include a hybrid selection computer program (described in another section of this report). These are usually available a week to 10 days after the data are released on EXNET.

The final format is this publication. This year, in an effort to make this a free publication and get it into the hands of as many farmers as possible, Iowa State University Cooperative Extension Service and Iowa Farmer Today have agreed to try this format as a method of distribution.

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

1991 Procedure

Producers of corn seed and Iowa State University were eligible to enter varieties in the Iowa Corn Yield Test. Each producer was allowed a maximum of six paid entries per district. All entries had to be available in a quantity of at least 10 bushels of seed. One hundred sixty-nine entries were evaluated in this district. Fifteen of the entries were determined to be widely grown and were entered by Iowa State University. In June, of even numbered years, approximately 21,000 survey cards are mailed in the state. Recipients of these cards are determined by a random drawing of names from land owners listed in the county plat books. Based on the survey results, the 15 hybrids grown on the most acres in the district are classified as widely grown for that district. The widely grown hybrids (*) in this report were determined by the 1990 survey. Iowa State University entered a maximum of three widely grown hybrids of any given brand. These entries were given priority over the remaining 154 entries made by seed producers.

Each entry was replicated four times in four-row plots at a planting rate of 25,500 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.

IOWA STATE UNIVERSITY
University Extension
Ames, Iowa

Starting with the 1988 report, data for protein, oil, and starch percentages are included in the Iowa Corn Yield Test Report. Protein, oil, and starch were measured on a near-infrared reflectance analyzer that was calibrated against accepted chemical methods. Charles R. Hurburgh, Jr. of the Department of Agricultural Engineering at Iowa State University is 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 two locations in 1989, 1990, and 1991. Yield in bushels per acre and percentage of moisture, root lodging, stalk lodging, dropped ears, stand, protein, oil, and starch are shown for all entries tested in 1991 and for those tested in 1989 and 1990 that were in the 1991 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 and 2 represent, in bushels per acre, the amounts 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 and 2 are indications of maturity and natural drying rate. Maturity of varieties entered generally ranged from early 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 indicate stable performance. Supplemental yield and agronomic information about specific varieties may be obtained from seed corn dealers and neighbors who have grown these varieties.

The protein, oil, and starch percentage data (tables 1 and 2) are represented on a near-infrared reflectance analyzer that was calibrated against accepted chemical standards as optional criteria. Several firms have begun testing these characteristics on an exploratory basis.
<table>
<thead>
<tr>
<th>BRAND</th>
<th>VARIETY CROSS</th>
<th>YIELD BUSH/AC</th>
<th>MOISTURE %</th>
<th>MOIST. PCT</th>
<th>ROOT LOG PCT</th>
<th>STALK LOG PCT</th>
<th>OAT EAR PCT</th>
<th>STAND PCT</th>
<th>PROTEIN PCT</th>
<th>OIL PCT</th>
<th>STARCH PCT</th>
<th>VARIETY</th>
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<td>86.1</td>
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<td>0</td>
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### Table 1: Average Performance of Varieties Tested in District 4

<table>
<thead>
<tr>
<th>BRAND</th>
<th>VARIETY CROSS</th>
<th>PROTEIN PCT</th>
<th>MOISTURE PCT</th>
<th>RELN PCT</th>
<th>STALK LDS PCT</th>
<th>DROP EAR PCT</th>
<th>STAND PCT</th>
<th>PROTEIN PCT</th>
<th>GEL PCT</th>
<th>STARCH PCT</th>
</tr>
</thead>
</table>

**Note:**

- **AVERAGE OF WIDELY GROWN ENTRIES:**
  - DEKALB KRUGER 9010
  - GARST CROWS COUNTRY
  - OTTILIE 2465
  - JACOBSEN
  - KRUGER 8111A
  - HORIZON
  - MIDDLEKOOP
  - GARST CURRY
  - WILSON SOI 9080 MSX
  - TENBERG 7205

- **AVERAGE OF NEWLY GROWN ENTRIES:**
  - TR1120 SX 140
  - DK636 SX
  - 7877
  - A8812
  - 3503
  - 8539

- **AVERAGE OF MODIFIED SINGLE CROSSES:**
  - 4X WAY CROSS
  - 4X WAY CROSS
  - 5X BLEND OF SINGLE CROSSES

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**THE IOWA CORN YIELD TEST COMPUTER DISKETTE HYBRID SELECTION PROGRAM ORDER FORM**

Starting in 1985, data from all seven districts of the Iowa Corn Yield Test were made available on computer disks to further assist farmers in making decisions about which corn hybrids to plant. Along with all of the information as it appears in the written reports, the computer diskette allows computer programs that allow farmers to insert their own data and their by-yield, protein, adjusted value, risk, lodging, ear-dropping, root, race, protein, oil, starch, or yield and then print the disk of data as sorted. An IBM personal or compatible computer supporting MS-DOS 2.0 or higher, with at least 80K memory is required. Call Extension Software Service at (515) 294-6089 for more information. See order form back of this cut out section.
Since 1988, new test equipment has been developed to measure composition of unground corn kernels. These instruments take 1 to 1½ minutes per sample, and measure moisture simultaneously with composition. Using these instruments, country elevators could test and segregate grain as it is received. Obviously all compositional factors cannot be high in the same hybrid. The grain market is exploring segmentation (identity preservation)—the production and marketing of certain hybrids for specific uses. This is an important change from the generic commodity approach now used.

The economic impact of compositional factors can be significant. Corn protein trades off with other protein sources in many feed rations. At $200 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 14 cents per bushel in increased oil output in a wet processing plant. 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 benefits from this 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 this Corn Yield Test Report: 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 protein. Therefore, feed costs can be reduced by selecting higher protein hybrids from a group with a similar yield potential. Weather and soil conditions will 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.

ORDER FORM
Iowa Corn Yield Test Hybrid Selection Program

Please send me computer diskettes of the following districts of the Iowa Corn Yield Test Results.

Year:

District 1 □ District 2 □ District 3 □ District 4 □
District 5 □ District 6 □ District 7 □ Set of 7 districts □

Each District @ $20/copy

Complete set @ $125/set

IB&M-compatible

Disk Size: 5.25” □ 3.5” □

Make of computer:

Do you have a hard disk? (20 MB, 40 MB, etc.) yes □ no □

Name ____________________________

Address ____________________________

Phone ____________________________

Mail and make check payable to:
Extension Software Service
Iowa State University
108 Atanasoff Hall
Ames, Iowa 50011-1040
1 515 294-8658

Table A. Field Data

<table>
<thead>
<tr>
<th>Fertilizer applied, lb.</th>
<th>N</th>
<th>P₂O₅</th>
<th>K₂O</th>
<th>N</th>
<th>P₂O₅</th>
<th>K₂O</th>
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<td>69</td>
<td>30</td>
<td>130</td>
<td>45</td>
<td>46</td>
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<td>—</td>
<td>130</td>
<td>45</td>
<td>46</td>
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<td>69</td>
<td>30</td>
<td>—</td>
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<td>—</td>
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*Field sampled for protein, oil, and starch percentage data.

1991 Field Data

The District 4 test was conducted on farms operated by Maurice Wilt near Salix in Woodbury County and by Gerald Thiedeman near Westside in Crawford County. Field data are presented in table A.

At planting time, subsoil moisture for the district ranged from somewhat dry in the west to adequate in the east. Rainfall for the district was well below normal in July and August. The Woodbury County location received above normal rainfall in April and May, and below normal rainfall in June and September. The Crawford County location received well above normal rainfall in April and June, below normal rainfall in May, and near normal rainfall in September. Temperatures for the district were well above normal in April, May, and June, below normal in July, and near normal in August and September. The average district yield was 20 bushels per acre below the mean of the five preceding years' averages. Average location yields are listed in table A.

Other Reports

Separate reports for variety performance are available for each district shown in figure 1. Limited supplies of these publications are available at your county extension office or from Publications Distribution, Printing and Publications Building, Iowa State University, Ames, Iowa 50011. Also, an IBM compatible diskette containing these data along with a hybrid selection program is available from Extension Software Service. See accompanying order form for details.

The 1991 Iowa Corn Yield Test Report:

Pm-660-1-91 District 1
Pm-660-2-91 District 2
Pm-660-3-91 District 3
Pm-660-4-91 District 4
Pm-660-5-91 District 5
Pm-660-6-91 District 6
Pm-660-7-91 District 7

Use of the Data in Advertisements

Iowa State University desires to maintain the credibility of data from the Iowa State Corn Yield Test. Misuse of this data in advertisements can have a negative effect on the perception of the value of this 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 those brands in a given table are included in the ad. Specific 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. A statement similar to: “See the official Iowa State University Extension Corn Yield Test Report, Pm-660-(1-7) for details,” should be included in the ad.


File: Agronomy 1