The 1993 Iowa Corn Yield Test Report, District 4

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The 1993 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-fourth consecutive year for the test. Data from these tests are available in three different formats. These data are first released on Iowa State University Extension's computer communication network (EXNET) usually around Thanksgiving. 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 the telephone call. For additional information about EXNET, contact EXNET, 108 Atanasoff Hall, Iowa State University, Ames, Iowa 50011, telephone number 515/294-8658.

Disciplines
Agriculture

This report is available at Iowa State University Digital Repository: https://lib.dr.iastate.edu/cornyield/159
A supplement to the December 18, 1993, issue of Iowa Farmer Today.

THE 1993 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-fourth consecutive year for the test. Data from these tests are available in three different formats. These data are first released on Iowa State University Extension's computer communication network (EXNET) usually around Thanksgiving. 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 the telephone call. For additional information contact EXNET, 108 Atanasoff Hall, Iowa State University, Ames, Iowa 50011, telephone number 515/294-8658.

The next released format of the data is on computer diskettes, which 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 the printed version, which is being printed and distributed by Iowa Farmer Today in its Dec. 18, 1993 newspaper.

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 and 2 are designated by brand name and variety.

USE OF THE DATA IN ADVERTISEMENTS

Iowa State University desires to maintain the credibility of data from the Iowa Corn Yield Test. 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 those brands in a given 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 State University Extension Corn Yield Test Report, Pm-660-(1-7)-93, for details”, should be included in the ad.

1993 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.

In 1993, 196 entries were evaluated in this district. Fifteen of the entries determined to be widely grown were entered by Iowa State University. In June, survey cards are mailed in the state. Recipients of these cards are determined by a random sample of names from Iowa Farmer Today's mailing list of corn and soybean growers. Based on the survey results, the 15 hybrids grown on the most acres in a district are classified as widely grown for that district. The widely grown hybrids (*) in this report were determined by the 1992 survey. Iowa State University entered a maximum of three widely grown hybrids of any given brand. These entries were given priority over the remaining 181 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-plant ed. 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 15.0 percent moisture for shelled corn.

Starting with the 1988 report, data for protein, oil, and starch percentage 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. Dr. Charles R. Hurburgh, Jr. of the ISU Department of Agricultural and Biosystems Engineering 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 15.0 percent moisture.

HOW INFORMATION IS PRESENTED

The agronomic data presented are averages of two locations in 1991 and 1992, and one location in 1993. 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 in 1993 and for those tested in 1991 and 1992 that were in the 1993 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 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

IOWA CROP IMPROVEMENT ASSOCIATION

Ames, Iowa

IOWA STATE UNIVERSITY

University Extension

Ames, Iowa
<table>
<thead>
<tr>
<th>BRAND</th>
<th>VARIETY</th>
<th>CROSS</th>
<th>YIELD (BU)</th>
<th>MOISTURE (%)</th>
<th>STEM (PCT)</th>
<th>TANAL (PCT)</th>
<th>DROP (PCT)</th>
<th>STAND (PCT)</th>
<th>PROTEIN (%)</th>
<th>OIL (%)</th>
<th>DRY (PCT)</th>
<th>STARCH (%)</th>
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<td>78</td>
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<td>61.0</td>
<td>36.1</td>
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AVERAGE OF ALL ENTRIES: 132.6 132.0 132.4 132.4 132.3 132.5 132.8 132.8 132.3 132.4 132.4 132.7 132.3
### TABLE 1. AVERAGE PERFORMANCE OF WIDELY GROWN ENTRIES

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<thead>
<tr>
<th>Variety</th>
<th>District 4</th>
<th>District 5</th>
<th>District 6</th>
<th>District 7</th>
<th>District 8</th>
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<th>District 10</th>
<th>District 11</th>
<th>District 12</th>
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<td>6.5</td>
</tr>
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<td>8.9</td>
<td>8.2</td>
<td>7.4</td>
<td>6.7</td>
</tr>
</tbody>
</table>

### Notes
- Companies with one or more widely grown entries made by Iowa State University.
- The Iowa Corn Yield Test Computation Diskette Order Form
- Iowa Corn Yield Test results are published each year to help farmers select corn hybrids. Since 1967, a computer program has been available that includes the information in the written report and a program to calculate an economic return value for each hybrid based on farmer-supplied expected corn crop, local moisture and drying, and other costs. These reports can be easily changed and the computer will calculate new economic return values for all hybrids. The economic return values provide information on whether full-season hybrids produce enough extra yield to compensate for drying costs. The computer program also can determine the hybrids by yield, moisture, adjusted economic values, root lodging, stalk lodging, dropseed, protein, oil, starch, or flour. For more information, call Extension Software Service at 515-294-4508. If you want to order the program, please complete and return the order form on the back.
indicate stable performance. Supplemental yield and agronomic information about specific varieties may be obtained from seed corn dealers and from neighbors who have grown these varieties.

The protein, oil, and starch percentage data (tables 1 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. These factors are under development as additions to the U.S. standards as optional criteria. Several firms have begun testing these characteristics on an exploratory basis.

Since 1988 new test equipment has been developed to measure composition of unground corn kernels. These instruments take 1-1.5 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 about 8-10 cents per bushel more revenue. Producers feeding livestock are in the best position to capture immediate benefits 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 Corn Yield Test Reports: "Nutrient Content and Feeding Value of Iowa Corn," Iowa Corn Growers Association, Des Moines Iowa 50285.

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 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.

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 at $20/copy

Complete set at $125/set

Total amount

IBM/compatible

Disk Size: 5.25"  3.5"  

Make of computer:

Do you have a hard disk? (20MB, 40MB, 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>Thiedeman Farm* Marshall silty clay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soybeans</td>
</tr>
<tr>
<td>Preplant</td>
<td>135</td>
</tr>
<tr>
<td>TOTAL</td>
<td>135</td>
</tr>
<tr>
<td>1992 crop</td>
<td></td>
</tr>
<tr>
<td>Row width</td>
<td>30 inches</td>
</tr>
<tr>
<td>Planting date</td>
<td>May 18</td>
</tr>
<tr>
<td>Harvest date</td>
<td>Oct. 26 &amp; 27</td>
</tr>
<tr>
<td>Average yield</td>
<td>82 bu/a</td>
</tr>
</tbody>
</table>

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

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.

1993 FIELD DATA

The District 4 test was planted on farms operated by Maurice Wilt near Salix in Woodbury County and by Gerald Thiedeman near Westside in Crawford County. The Woodbury County location was not harvested for data because excessive variability at the test site caused by overly wet areas prevented making fair comparisons between hybrids. Field data for the Crawford County location are presented in table A.

At planting time, subsoil moisture for the district was adequate. Rainfall at the Crawford County location was near normal in April and September, above normal in May, June, and August, and far above normal in July. Temperatures were way below normal in April, below normal in May, June, and July, near normal in August, and very far below normal in September. The average district yield was 73 bushels per acre below the mean of the five preceding years' averages. The average location yield is listed in table A.

OTHER REPORTS

Separate reports for variety performance 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, 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 Services, 108 Atanasoff Hall, Iowa State University, Ames, Iowa 50011. Along with all of the information as it appears in the written reports, the computer diskettes include computer programs that allow 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. An IBM personal or compatible computer supporting MS-DOS 2.0 or higher, with at least 512K memory is required. The cost of this diskette is $20. All seven districts can be purchased for $125. When ordering, along with the payment, indicate diskette size, 3 1/2 or 5 1/4, and district(s) wanted. Order forms, Pm-660-OF-33, are available from county extension offices and included in the printed reports.

The 1993 Iowa Corn Yield Test Report:

Pm-660-1-93 District 1
Pm-660-2-93 District 2
Pm-660-3-93 District 3
Pm-660-4-93 District 4
Pm-660-5-93 District 5
Pm-660-6-93 District 6
Pm-660-7-93 District 7

File: Agronomy 1

Prepared by K. E. Ziegler, W. H. Vinson, and D. E. Carroll, instructor in agronomy and technicians

Cooperative Extension Service, Iowa State University of Science and Technology and the United States Department of Agriculture cooperating.


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