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THE IOWA STATE CORN YIELD TEST

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The seventy-fourth year for the test was completed in 1993. For each of those 74 years Iowa State University has provided Iowa corn growers with performance evaluation data on varieties and hybrids of corn available for them to grow. Over the course of the past 74 years, the program has changed a lot. For a description of the early history of the Corn Yield Test see Chapter 8 in the book "The Iowa Crop Improvement Association" by Joe L. Robinson and Oliver A. Knott, Iowa Crop Improvement Association, Ames, IA 50011, 1963. Mention of other early historical events of the Iowa Corn Yield Test is also found in the book "The Hybrid Corn-Makers", the Golden Anniversary Edition: 1942-1992, by Richard Crabb, West Chicago Publishing Co., West Chicago, IL 60185, 1993. The main objective of the project, however, has not changed over the past 74 years: To provide Iowa corn growers with unbiased performance data about corn varieties and hybrids available for them to grow. I want to emphasize the word "unbiased." We do a lot of extra work to assure that all entries are treated exactly the same and later I'll mention how we do this. We could also add "release the data in a timely manner" to the objectives. In the early years of the program, data were not made available until mid-February. Today, the data are usually available on Exnet around the first of December.

The Iowa State Corn Yield Test project provides an unbiased, third-party evaluation of most corn hybrids available to Iowa farmers to grow. In fact, in the 1993 test we are evaluating 684 hybrids from 88 companies and Iowa State University.

The best way to describe the program is to go through what we do during one year. In mid-January, we mail out the procedures and application forms to seed corn companies. Companies pay an entry fee of $200 per entry per district and can enter up to six hybrids in any district. During January, we also request seed of hybrids that were determined to be widely grown in a district based on a survey of acres planted the previous year. Fifteen widely grown hybrids are entered in each district. The companies do not pay an entry fee for widely grown hybrids and each company can only have three in a district. The widely grown hybrids function as the check hybrids for the district.

The deadline for entry in the test is around mid-February, so the first part of February is spent cataloging in entries and assigning key numbers. I emphasized earlier the unbiased part of the project. In order to eliminate biases, each hybrid is assigned a four-digit key number which becomes its identification number for the remainder of the year. Hybrid names and numbers are
not added back onto the data until after the data are analyzed, so when we are collecting data we
have no idea whose hybrid we are evaluating.

The month of March is spent counting seed, randomizing the seed packets, and getting
the packets put together in planting order. Each year during this time, we fill from 60,000 to
70,000 coin envelopes with either 23 or 25 kernels and handle each of these envelopes four times
getting them in planting order.

The seed is boxed up and ready to be delivered to each of the testing locations in April.
It takes about 10 to 14 days to travel the state, drop off the seed, and pick the exact testing site.

For the State Corn Yield Test, the state has been divided into seven districts (Figure 1)
with two or three locations in a district. In 1994 we will be making the switch to 4-row planting
equipment. One of the benefits of the new planters will be the addition of three testing sites, so
there will be three locations in each of the seven districts. With only two sites in a district and
the loss of one site, we have to publish one location, single-year data which have limited
prediction value. It takes about 1200 to 1500 miles to cover the state. All of our testing sites are
on private farmers' land.

The end of April and first part of May we plant the test sites with two planting crews.
An individual plot is 4 rows wide and 18 feet long. Data are collected on the center two rows
with each hybrid replicated four times at a location. The overall size ranges from three to five
acres at a location. Our cooperating farmers prepare the ground and apply fertilizer and
herbicides. We blend the test plots right into the farmer's field. We want the farmer to prepare
the ground just exactly the way the rest of the field is prepared. There is no show and tell or
field day at the sites because we have no idea whose hybrids are planted where. It generally takes
three to four weeks to plant the state and next year, with our new four row planters, we
shouldn't have any trouble keeping up with the planting pace set by Iowa farmers. After
planting, we put together a Progress Report listing all the hybrids tested and what district they
are entered, along with all the planting dates and companies entered. These Progress Reports are
available from the Iowa Crop Improvement Association, telephone 515/294-6921.

In June, we cultivate the plots for weed control or to open up the soil if needed. Many
years ago, when farmers had smaller equipment, they did the cultivating for us, but now, when
we are planting 2 to 4 rows and they are planting 8-12 rows, we do the cultivating to reduce
cultivator damage as much as possible. In July and August, we travel to each location and make
a stand count. And then in September, we get ready for harvest and plan to start harvesting the
last week in September, although that has not happened the last couple of years. During the
month of October and sometimes into mid-November, we harvest the plots. We have 2 crews of
2 men each that harvest the plots. Before they pick the corn, they walk the field and collect root
lodging, stalk lodging, and dropped ear data. On the combine, pounds per plot and moisture
percentage are electronically recorded for each plot and stored in a solid-state data pack. For
one field in each district, a subsample from each plot is brought back to the Grain Quality lab at Iowa State University managed by Dr. Charles Hurburgh, for protein, oil, and starch analysis.

During the month of November, data proofing and analysis are completed, and the report is written and prepared for release.

The data are released in December in three different formats. The first place the data are available is on EXNET, the Extension Service communication network. The reports are available 7 to 10 days later on computer diskette which includes a hybrid selection program. We will cover this computer program in detail in the demonstration part of this presentation. The printed report is released shortly after that. Since 1991 the printed report has been printed and distributed by the "Iowa Farmer Today." Every corn grower on the "Iowa Farmer Today's" mailing list receives one district report for the district their farm's address indicates. At last count, this mailing list included approximately 70,000 names. Farmers can pick up reports for neighboring districts from their county extension offices.

In utilizing data in these reports there are a few items to remember:

1. We cannot manage individual hybrids. Every hybrid is treated exactly the same. The data can, however, identify hybrids that need some management, for example, hybrids that have good yields but are susceptible to stalk lodging.

2. Don't let anyone else interpret the data for you unless you feel real comfortable with their biases. I can present completely unbiased data but I cannot interpret the data or use it to make recommendations without including my own biases.

3. These reports are just one source of data and should be used in conjunction with as much other information that is available when picking hybrids to recommend or to grow the following year.

Before I get started with the demonstration part of this session, I want to review a new program called the "Iowa Gold Catalog Test" that we are conducting in cooperation with the Iowa Department of Agriculture and Land Stewardship (IDALS). Our part of the program involves testing specialty corn hybrids. We collect data similar to the Corn Yield Test data and provide samples to the Grain Quality Laboratory for analysis of quality traits. For this program, we again provide third party, unbiased evaluations of different specialty corn hybrids for companies. Companies use the grain quality data to market their specialty corn hybrids to end users and use the agronomic data to show potential contract growers how their specialty corns perform agronomically. We are just getting started with this project with 1993 the second year for the test. The 1993 report should be released in February of 1994, and will be available from the IDALS, telephone 515/242-6237.

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Now we'll move on to the demonstration part of the presentation. The computer diskette includes all the data and text that are in the printed reports. The computer program that accompanies the data on this diskette can sort the hybrids by yield, harvest moisture, adjusted economic value, root lodging, stalk lodging, dropped ears, protein, oil, starch, or brand. One of the reasons it was developed was to provide users with a data management tool that could quickly sort through as many as 256 different hybrids. The main function of the hybrid selection program, though, is to calculate an adjusted economic return value per acre for every hybrid in the test. These values are specific to each unique combination of drying and shrink costs, expected price of corn, and final moisture content that are entered in the program. These economic return--per-acre values provide information on whether full-season hybrids produced enough extra yield to compensate for drying costs. Order forms for the computer diskette version of the Iowa Corn Yield Test are available from county extension offices (Bulletin Pm660-OF-93) and included in the written reports.

Examples of some of the program’s menus that list choices are attached (A-H).
Figure 1. Iowa State Corn Yield Test Locations:

- 1993 locations
- Additional locations proposed for 1994
- Additional District 6 location proposed for 1994 but not sure of exact location.
Districts of the 1992 Iowa Corn Yield Test

<table>
<thead>
<tr>
<th>Tables List Hybrid Data by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Individual Year, or</td>
</tr>
<tr>
<td>2 - Multi Year Averages</td>
</tr>
</tbody>
</table>

Enter Your Choice of Table: __

Enter Your Choice of District: ___
USER INPUTS

Press ENTER to accept current value
or type new value, then press ENTER.

<table>
<thead>
<tr>
<th>Current Values</th>
<th>Allowed Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Price:</td>
<td>$2.00 per bu</td>
</tr>
<tr>
<td>Cost of Drying:</td>
<td>$.035 per pt per bu</td>
</tr>
<tr>
<td>Final Moisture:</td>
<td>15.0 %</td>
</tr>
<tr>
<td>Shrink Factor:</td>
<td>1.35 %</td>
</tr>
</tbody>
</table>

HELP! For additional explanation, press F1
1992 Iowa Corn Yield Test ISU District 1 Table 2

MAIN MENU

1 - Resort the Hybrids
2 - Edit your User Inputs
3 - Produce a Report
4 - Change District &/or Table
5 - Quit the Hybrid Selection Program

Enter Your Choice:

Sort: 91-92 Moisture, Price: $2.00, Drying: $.035, Moisture: 15.0%, Shrink: 1.35%
1992 Iowa Corn Yield Test  ISU  District 1 Table 2

SORT HYBRIDS

Factors

<table>
<thead>
<tr>
<th>0 - Yield</th>
<th>Sort By</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Moisture</td>
<td>Enter Sort Factor: ___</td>
<td>1 - 91-92 Data</td>
</tr>
<tr>
<td>2 - Adjusted Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 - Root Lodging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 - Stalk Lodging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - Ear Drop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 - Brand Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 - Protein</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 - Oil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 - Starch</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HELP! For additional explanation, press F1
1992 Iowa Corn Yield Test     ISU     District 1 Table 2

REPORTS

1 - Hybrid Data
2 - Text of the Iowa Corn Yield Test
3 - Documentation of the Hybrid Selection Program
r - Return to Previous Menu

Enter Your Choice: ___

Sort: 90-92 Yield, Price: $2.00, Drying: $.035, Moisture: 15.0%, Shrink: 1.35%
F

1992 Iowa Corn Yield Test    ISU    District 1 Table 2

HYBRID DATA
1 - Send Report to Printer
2 - Send Report to Screen
3 - Send Report to Disk File
4 - Return to Previous Menu

The report you have selected includes: hybrid performance data. (i.e., yield, moisture, etc.)

Enter Your Choice: ___
Sort: 90-92 Yield, Price: $2.00, Drying: $.035, Moisture: 15.0%, Shrink: 1.35%
HYBRID DATA

1 - Yield, Moisture, and Adjusted Value
2 - Root Lodging, Stalk Lodging, Ear Drop, and Stand
3 - Protein, Oil, and Starch
r - Return to Previous Menu

Enter Your Choice: ___
Sort: 90-92 Yield, Price: $2.00, Drying: $.035, Moisture: 15.0%, Shrink: 1.35%
## VIEW HYBRIDS

u - Up the List  
d - Down the List  
r - Return to Main Menu

Enter Your Choice: 

### District 1 Table 2

<table>
<thead>
<tr>
<th>Variety</th>
<th>YIELD</th>
<th>B/A</th>
<th>MOISTURE</th>
<th>ADJ VALUE($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90-92</td>
<td>91-92</td>
<td>91-92</td>
<td>90-92</td>
</tr>
<tr>
<td><strong>CORN COUNTRY</strong></td>
<td>8107++</td>
<td>SX</td>
<td>136</td>
<td>139</td>
</tr>
<tr>
<td><strong>GOLDEN HARVEST</strong></td>
<td>H2404</td>
<td>SX</td>
<td>132</td>
<td>134</td>
</tr>
<tr>
<td><strong>JACOBSEN</strong></td>
<td>JS22</td>
<td>SX</td>
<td>135</td>
<td>140</td>
</tr>
<tr>
<td><strong>CENEX/LAND O’LAKES</strong></td>
<td>522</td>
<td>SX</td>
<td>133</td>
<td>135</td>
</tr>
<tr>
<td><strong>CARGILL</strong></td>
<td>5327</td>
<td>SX</td>
<td>130</td>
<td>128</td>
</tr>
<tr>
<td><strong>PIONEER</strong></td>
<td>3417</td>
<td>SX</td>
<td>134</td>
<td>133</td>
</tr>
<tr>
<td>*CARGILL</td>
<td>4327</td>
<td>SX</td>
<td>129</td>
<td>126</td>
</tr>
<tr>
<td><strong>CROWS</strong></td>
<td>414</td>
<td>SX</td>
<td>123</td>
<td>123</td>
</tr>
<tr>
<td><strong>NORTHROP KING</strong></td>
<td>N4428</td>
<td>SX</td>
<td>122</td>
<td>123</td>
</tr>
<tr>
<td><strong>PFISTER</strong></td>
<td>2250</td>
<td>SX</td>
<td>127</td>
<td>125</td>
</tr>
<tr>
<td>*PIONEER</td>
<td>3475</td>
<td>SX</td>
<td>124</td>
<td>118</td>
</tr>
<tr>
<td>*PIONEER</td>
<td>3615</td>
<td>SX</td>
<td>119</td>
<td>119</td>
</tr>
</tbody>
</table>

**AVERAGE OF ALL VARIETIES**  

|            | 124.4 | 123.3 | 22.9  | 23.0  | 205  | 207  |

**AVERAGE OF WIDELY GROWNS**  

|            | 121.0 | 119.5 | 22.1  | 22.9  | 203  | 201  |