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2008 Maryland Corn Hybrid Performance Tests

<http://www.mdcrops.umd.edu>

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Test Procedures

A fee-based, performance-testing program for corn hybrids is offered to seed corn companies by the Maryland Cooperative Extension and Agricultural Experiment Station at the University of Maryland. The Extension Specialist for grain and oil crops is director of these tests. The results from these replicated trials provide Maryland corn producers with agronomic performance information for the submitted corn hybrids that are grown at five Maryland locations considered to be representative of the state's geography and weather conditions. Table 1 (Location and Management Information) summarizes the important agronomic and production information for each test site.

Hybrids tested during 2008 were submitted in three ways. First, participating seed companies (Table 2, Brands and Company Addresses) were solicited for submission of hybrids for our fee-based program. These entries ranged from currently available to experimental hybrids still under evaluation. Second, the Maryland Grain Producers' Utilization Board provided funding for the purchase of seed and to cover the costs for testing commonly grown hybrids that are familiar to farmers and that otherwise would not be tested in the fee-based testing program. The inclusion of the performance data for these benchmark hybrids allows for comparisons between newer hybrids and some that are considered standards for the industry. Third, the top performing hybrids in each of the respective tests for 2007 were included in the 2008 tests, gratis. These hybrids also are used as check hybrids.

Hybrids were grouped according to maturity, randomized within their appropriate maturity group and replicated three times per location. The tests were planted with a modified, four-row John Deere 1750 planter equipped with coulters and trash-wheels for no-till planting. This planter has modified planter units manufactured by Clewell Precision Machine, Inc., Milton, PA that allows plot planting. Each plot was 32 feet long and consisted of four rows spaced 30 inches apart. The planter was set to deliver a target population of 28,000 seeds/acre. Each plot was trimmed to a length of 26.5 feet (harvest length) at growth stage V6-V8. Emerged population counts were made approximately one month after planting. Harvest population and number of lodged plants per plot were counted within one week of harvest and frequently this activity occurred the same day as harvest. The center two rows of each plot were harvested for yield and harvest moisture content measurements of the grain. These data were collected with a HarvestMaster HM 1000 Grain Gauge and recorded on an Allegro Field PC.

Growing Season

The 2008 crop year was highlighted by relatively normal accumulation of precipitation during the winter and early spring that established adequate soil moisture for planting. Weather and soil conditions became suitable for planting to begin during mid-April on much of the Lower and Central Eastern Shore with 30% of the crop, according to Maryland Department of Agriculture (MDA), reported planted by the end of April. Suitable planting weather continued through the first week of May allowing an estimated 65% (MDA) of the crop to be in the ground by May 10 when corn planting was slowed by approximately ten days of cool, wet weather. Statewide planting progress was reported as only 70% (MDA) complete by May 18 compared to the normal pace of 80%. These weather conditions impacted corn planting primarily in parts of Central and Western Maryland, regions of the state that typically do not start planting until approximately May 1. Following May 18, planting progress regained normalcy with 90% completion (MDA) for the state occurring by June 1, the same rate of progress that had occurred over the previous five years. Since good soil moisture conditions existed throughout much of the state, seedling emergence and stand establishment was good to excellent for the most part. There were a few reports of corn replanting because of poor emergence following the cool, wet mid-May period.

Precipitation continued to be timely and adequate for most of the state during June and through mid-late July. Crop conditions were considered good to excellent for approximately 70% of the crop on July 27 (MDA). However, rainfall during August was short causing crop conditions to decline with only an estimated 40% of the crop in good to excellent condition on September 1 (MDA). The dry August weather allowed harvest of early planted corn to begin the last week of the month with about 15% of the crop reported harvested by September 1

(MDA). September provided good harvest conditions and a number of suitable days that allowed nearly 60% of the crop to be shelled by October 1, a pace that exceeded the five-year average by 20 percentage points (MDA). The harvest pace slowed in October as farmers waited for the later planted corn to dry-down in order to avoid the high cost of drying. MDA reported 78% of the crop harvested by October 19, a rate comparable to the five year average. As of the week ending November 3, MDA reported approximately 90% of the corn had been shelled. Most of the acres remaining to be harvested were in the Central and Western Maryland areas that had planting delayed. Precipitation received at each location during April – September, 2008 can be found in Table 3.

Test Results

The performance of the hybrids (Tables 4-6, Hybrid Information) in the 2008 State Corn Hybrid Tests reflected the yields that were attained statewide for corn. Averaged over the five locations, the mean yield for the 24 early season hybrids was 179 bu/acre, 166 bu/acre for the 49 mid-season hybrids and 154 bu/acre for the 20 full season hybrids. However, these average yields do not reflect the range of conditions that were present throughout the state during the growing season. Keedysville, the Western Maryland location that received timely rainfall throughout the season, averaged 198 bu/acre even though corn planting was approximately two weeks later than what is considered optimum. In contrast, average yield at Clarksville, the Central Maryland location that suffered the most from July-August drought conditions, was 115 bu/acre. This range in hybrid performance at the five locations is reflective of the variability in yield experienced across the state. Rainfall was, as the weather service often stated, scattered.

The agronomic characteristics reported in Tables 7-21 are yield in bushels/acre at 15.5% moisture content, harvest moisture content, per cent lodging at locations where it was observed, and both emerged and harvest plant populations. Lodging was not recorded at the Salisbury and Keedysville locations because there was none.

A least significant difference (LSD) value is reported for yield for each test where statistically significant differences for that variable were observed among hybrids. This mean separation test value has been calculated at the 10 percent probability level. Readers of this report can use the LSD value to compare two hybrids within the same test. When the yield difference between two hybrids is greater than or equal to the LSD value, there is a 90% certainty that the difference is real rather than the result of random variability. The coefficient of variation (CV) that is reported is a measurement of the variability at a test site and is used as an indicator of the degree of precision for that particular test. In general, CV values below 15% are an indication that the precision of a variety test was good for distinguishing differences among hybrids. The highest CV's observed were at the Clarksville location (Tables 19-21) where yield was affected because of droughty conditions during much of the summer. These higher CV's at Clarksville are attributed to the soil moisture variability within the field site where the tests were conducted.

The selection of a hybrid based solely upon its performance at one location is not recommended. It is better to select a hybrid based upon its performance over a number of locations and/or years. In order to compare the performance of each hybrid across the five locations, relative yield tables for 2008 (Tables 22-24) are included. Relative yield is the ratio of the yield of a specific hybrid at a location to the mean yield of all the hybrids at that location expressed in percentage. A hybrid that has a relative yield score consistently 100 or greater across the testing locations can be considered to have good stability. During 2008, there were four early season hybrids that had relative yield scores that exceeded 100 at all five locations (Table 22), Augusta A06-07CBLL, Augusta A08-16CB, Trisler T-4S61VT3, and Trisler T-5N51VT3; two mid-season hybrids had relative yield scores 100 or greater at the five locations (Table 23), Augusta 08-10BT and Dekalb DKC 62-99RR2/YGCB; and two full season hybrids that scored 100 or greater at four of five locations (Table 24), Augusta A76-64CB, and Garst 832A22CB/LL.

Another measure of hybrid stability is the performance of a hybrid over years. Table 25 has the relative yield values for all hybrids that have been included in the tests during the past two and/or three years. Of particular interest in this table is the furthest right column that identifies the number of times that a hybrid has a relative yield score 100 or greater. The highest rated hybrid that has been tested the past three years was Southern States 777VT3 (achieved a relative yield score of 100 or greater at 12-15 testing locations). For hybrids tested during 2007 and 2008 only, the highest rated hybrid was Augusta A06-07CBLL (achieved a relative yield score of 100 or greater at 9-10 testing locations).

Acknowledgments

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Additional Information

The inclusion of hybrids in the Maryland Corn Hybrid Test does not constitute an endorsement by the University of Maryland. Advertising statements about the performance of a company's entries can be made as long as they are accurate statements about the data as published, with no reference to the other companies' hybrids. Statements similar to either "See the Maryland Corn Hybrid Tests Agronomy Facts No. 54" or "Endorsement or recommendation by the University of Maryland is not implied" must accompany any information that is reproduced. Previous issues of Agronomy Facts No. 54 can be obtained at the Maryland Cropping Systems webpage: <http://www.mdcrops.umd.edu>

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