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Missouri 2005 Corn Performance Tests

This report is a contribution of the Division of Plant Science, University of Missouri College of Agriculture, Food and Natural Resources. The work was supported by fees provided by companies submitting hybrids for evaluation. The University of Missouri's hybrid performance testing program began in the mid-1930's, with results first published in 1937. The number of entries in the program has grown from fewer than 50 in the early years to 241 today. The large number of commercial hybrids available makes selection of a superior hybrid difficult. To select intelligently, producers need a reliable, unbiased, up-to-date source of information that will permit valid comparisons among available hybrids. The objective of the University of Missouri's Performance testing program is to provide this information. The tests are conducted under the most uniform conditions possible. Small plots are used to reduce the chance of soil and climatic variations occurring between one hybrid plot and another. Results obtained should aid the individual grower in judging the relative merits of many of the commercial corn hybrids available in Missouri today.

Comparing Hybrids

The performance of a hybrid cannot be measured with absolute precision. Uncontrolled variability is involved in the determination of each yield average. This variability exists in all field experimentation; statistics are used as a tool to assist in making decisions. The statistical tool used in these tests is the test of least significant difference (L.S.D.). The L.S.D. is simple to apply. When two entries are compared and the difference between them is greater than the L.S.D, the entries are considered to be significantly different. Differences smaller than the L.S.D. may have occurred by chance and are considered non-significant.

Hybrid performance may seem inconsistent from location to location and from year to year. The factors for these differences are rainfall, temperatures, soil fertility, diseases, insects, and other factors. To obtain an improved estimate of relative hybrid performance, readers should consider results from more than one location or year. In this publication, the authors have tried to facilitate comparisons across years and locations. In each test, the "top yielding" hybrids have been identified. These hybrids are those that did not yield significantly less than the highest yielding hybrid in the test. They are denoted in the tables by an asterisk (*) next to their yields. Thus, by going down a column, readers can readily identify the highest yielding hybrids in a test. By going across, readers can evaluate the relative performance of a hybrid during several years or at several locations. From the standpoint of yield, the most desirable hybrids will be those that are among the "top yielding" hybrids the greatest number of times.

Although yield usually receives first consideration, other agronomic characteristics may be equally important when selecting a corn hybrid. Stalk strength, maturity and resistance to insects and diseases are among the hybrid characteristics that deserve careful consideration. Later maturing hybrids may require more drying. The maturity classification listed for each hybrid in this bulletin is based solely on information supplied by the entry's sponsor. A hybrid with abnormally low or high moisture content may be incorrectly classified for Missouri conditions. Poor stalk strength and/or susceptibility to pests may decrease harvestable yield because of lodging or stand loss.

The Missouri Variety Testing Program does not make specific recommendations for hybrids. Farmers growing a new hybrid for the first time should consider all the information available and then grow a small acreage to determine adaptability. This should be the practice for all new hybrids regardless of origin.

The Authors

William J. Wiebold is a Professor of Plant Sciences and State Extension Specialist; Howard L. Mason is a Senior Research Specialist; Delbert Knerr, Richard W. Hasty, Eddie G. Adams, David M. Schwab, and Scotty L. Smothers are Research Specialists; Travis Belt is a Research Associate in Plant Sciences and Bruce Burdick is the Superintendent of the Hundley-Whaley Research Center.

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Experimental Procedures

Test Descriptions:

Non-Irrigated Corn Test: This test is performed at 5 non-irrigated locations each in the north and central regions of the state.

Irrigated Corn Test: This test is performed at 2 irrigated locations each in the central and southwest regions and 3 irrigated locations in the southeast region of the state.

New Technology Corn Test: This test was new for 2002 and consisted of hybrids not approved for export to Europe or Japan (e.g. CRW or Herculex hybrids). Entries were compared to three high-yield standard hybrids. Grain from this test will be marketed into approved channels.

Entries: All producers of hybrid seed were eligible to enter the 2005 corn evaluation tests. Participation was voluntary and the test coordinators exercised no control over which, or how many hybrids were entered. To help finance the evaluation program, the participants paid \$100 per location for each hybrid entered.

Plot Management: All tests were planted and harvested with commercial equipment modified for small plot work. Row spacing for all corn tests was 30 inches. Seeding rate for non-irrigated corn tests was 28,600 seeds/Acre and irrigated corn tests was 34,200 seeds/Acre. Preplant fertilizer was applied at each site at the discretion of the farmer or the station manager. Herbicides were used to control weeds, and additional hand weeding was done as required. Management details varied from location to location and are specified in the regional crop management summaries.

Data Recorded: Cornstalks of non-Bt hybrids were split to survey the natural infestation of corn borer. Counts were taken on border rows of the test for a random survey. Survey results are provided in the heading of each table. Plant stands were recorded mid-season and lodging was determined immediately before harvest. Plants leaning more than 30 degrees from vertical and those bent or broken below the ear were counted as lodged. During harvest, plot grain weights were measured and an electronic moisture tester was used to determine the moisture content of the grain. Yields were calculated from the data collected and reported in bushels (56 pounds) per acre at moisture of 15.5 percent.

Accessibility of Data: The results of the 2005 Crop performance tests are also available online at <http://agebb.missouri.edu/cropperf/vartest> . If you need assistance in accessing the system; call 573-882-4827 for the staff's help.

Field Plot Design: Full season hybrids were evaluated in non-irrigated and irrigated tests. Tests were arranged in lattice or randomized complete block field plot designs depending on the number of entries in each test. At all locations, plots were four rows wide and 25 feet long with a between the row spacing of 30 inches. Only the center two rows were harvested to determine yield.

Locations: On the basis of geographical characteristics, the state was divided into regions. Corn hybrid evaluation tests were located in the northern, central, southwestern and southeastern regions of the state. Test locations are shown on the adjacent map. In 2005, the locations for these tests were:

1. Steve Cunningham Farm near Craig in Holt Co.;
2. Hundley-Whaley Farm near Albany in Gentry Co.;
3. Beetsma Farm near Mooresville in Livingston Co.;
4. Greenley Memorial Center near Novelty in Knox Co.;
5. Roger Tiemann Farm near LaGrange in Lewis Co.;
6. John Williams Farm near Henrietta in Ray Co.;
7. Frank Swisher Farm near Marshall in Saline Co.;
8. Bradford Research & Ext. Center near Columbia in Boone Co.;
9. Kevin Freyer Farm near Laddonia in Audrain Co.;
10. Roy Cope Farm near Truxton in Montgomery Co.;
11. Bob Burkemper Farm near Annada in Pike Co.;
12. Doug Roth Farm near Harrisonville in Cass Co.;
13. Ron Bean Farm near Lamar in Barton Co.;
14. Glenn Nothdurft Farm near Oran in Scott Co.;
15. Dale Glenn Farm near Charleston in Mississippi Co.;
16. Delta Research Center near Portageville in Pemiscott Co.



Results are presented by region within the state. For each location, data on seed treatment, final plant stand, lodging, moisture at harvest, and yield adjusted for moisture is given for each hybrid. Growing season (April-August) rainfall and irrigation applied at each location are shown on individual data tables. In this report, hybrids are ranked according to yield.