

Crop Performance Tests: 2021 Corn

Procedures

Regions and Locations

The MU Variety Testing Program divides the corn growing area of Missouri into four regions: North, Central, Southeast, and Southwest. Each region contains two to five locations, depending on the tests conducted in a region. The same hybrids are tested in all locations of a test within a region. Locations for corn tests are as follows:

North Region

Albany (1), Canton (2), Mooresville (3), Novelty (4), Rock Port (5)

Central Region

Columbia (6), Vandalia (7), Henrietta (8), Norborne (9), Truxton (10)

Southwest Region

Nevada (11), Garden City (12), Lamar (13), Urich (14),

Southeast Region

Dexter (15), Charleston (16), Fisk (17), Portageville (18)



The MU Variety Testing Program depends upon and is highly appreciative of the cooperators that allow it to use their farms. Thank you, Ron Bean, Beetsma Farms, Bill Cook, Roy Cope, Kyle and David Durham, Nathan Goldschmidt, Nathan and Kurt Gretzinger, Lincoln Hughes, Tom Kurzweil, Bill Lloyd and Dan McCuthan, Don McCann, Aaron Porter, John Williams, Brian and Tim Kurz, and the Missouri Agriculture Experiment Station.

Entries

All seed companies were eligible to enter hybrids into the corn tests. Participation was voluntary and the MU Variety Testing Program exercised no control over which, or how many hybrids, were entered. The MU Variety Testing Program receives no Missouri tax dollars, so a fee was collected for each entry to fund the program.

Test Descriptions

Non-Irrigated Corn Test consists of five locations in the North region, five locations in the Central region, and three locations in the Southwest region. Plots were not irrigated in this test.

Irrigated Corn Test consists of two locations in the Central region, three locations in the Southwest region, and four locations in the Southeast region. Plots were irrigated as weather conditions warranted.

Field Plot Design and Plot Management

Hybrids were randomly arranged in the field according to a lattice design with three replications. At all locations, plots were four rows wide (10 feet) and 27 feet long. All tests were planted and harvested with

commercial equipment modified for small plot work. Row spacing for all corn tests was 30 inches. Planting rates were 30,000 kernels/acre for the Non-Irrigated Corn Test and 38,000 kernels/acre for the Irrigated Corn Test. The center two rows of each plot were harvested to determine yield.

Fertilizer was applied at each site at the discretion of the farmer or the research station manager. Herbicides were used to control weeds, and additional hand weeding was performed as required. Management details varied among locations and are specified in the crop management summary.

Data Recorded

Lodging was rated immediately before harvest using a scale of 1 to 5 where 1 = less than 20% plants lodged, 3 = all plants leaning moderately or 40% to 60% lodged, and 5 = 80% or more plants 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 corrected to a grain moisture content of 15.5% and expressed as bushels/acre.

Comparing Hybrids

The performance of a hybrid cannot be measured with absolute precision. Uncontrolled variability is involved in the determination of each plot's yield. This variability exists in all field experiments and in farmer fields. Statistics are used to account for this variability and to assist farmers in selecting superior hybrids. The statistical tool used by the MU Variety Testing Program is called "least significant difference" (LSD). The LSD is simple to use. When two hybrids are compared and the difference between them is greater than the LSD, the entries are considered to be significantly different. Differences between two hybrids that are smaller than the LSD may have occurred by chance and are considered to be not significant. In other words, the two hybrids might have the same yield, grain moisture or other characteristics of interest. The LSD can be found at the bottom of each table.

The MU Variety Testing Program arranges hybrids within each table from highest yield to lowest yield. The "top yielding" hybrid in each test is identified by a double asterisk (**) placed next to its yield. Hybrids that did not yield significantly less than the highest yielding hybrid in the test are denoted in the tables by a single asterisk (*). Thus, by reading down the yield column, readers can readily identify the highest yielding hybrids at a location.

Hybrid performance may seem inconsistent from location to location and from year to year. These differences are caused by differences among environments for rainfall, temperatures, soil fertility, diseases, insects, and many other factors. To obtain an improved estimate of relative hybrid performance, readers should consider results from more than one environment (locations and/or years). The vast majority of hybrids are entered into our tests for only one year, so comparing hybrids across multiple locations becomes even more important. The MU Variety Testing Program facilitates hybrid comparisons across locations by publishing Region Means. Region Means tables contain yield data from all individual locations in the region with yields averaged across the locations. The hybrid with the highest average yield and hybrids that do not differ for yield from that hybrid are designated with double (**) and single (*) asterisks.

Although yield usually receives first consideration, other agronomic characteristics may be important when selecting a corn hybrid. Stalk strength, maturity, and resistance to insects and diseases are among the hybrid characteristics that deserve careful consideration. We provide a table that contains several important characteristics of hybrids entered into the MU Variety Testing Program. This information was provided by seed companies. Please contact seed company representatives for the latest information. Seed entered into the MU Variety Testing Program is usually treated with one or more seed treatments. These seed treatments are identified in the table listing the hybrid characteristics.

Accessibility of Data

Results of the crop performance tests are available in print format (region summaries only) and online at varietytesting.missouri.edu. If you need assistance in accessing the web site or would like to receive a printed copy, please call 573-882-2307.

Authors

William J. Wiebold, Carl (Will) Knuckles, Mark Wieberg, Carson Miller and Paul Koelling.