

2023 Grain Sorghum Crop Performance Test Procedures

Regions and locations

The MU Variety Testing Program tested grain sorghum hybrids at four locations distributed throughout the grain sorghum growing region in Missouri. The same hybrids are tested in all four locations.

Locations for 2023 are as follows:

1. **Mooreville** (Livingston County), Beetsma Farm
2. **Columbia** (Boone County), Bradford Research Center
3. **Mt. Vernon** (Lawrence County), Southwest Research Center
4. **Portageville** (Pemiscot County), Delta Research Center



Entries

All seed companies were eligible to enter hybrids in the 2023 grain sorghum 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.

Field plot design and plot management

Hybrids were randomly arranged in the field according to a randomized complete block design with three replications. At all locations, plots were four rows wide (10 feet) and 25 feet long. The center two plot rows were harvested to determine yield. All tests were planted and harvested with commercial equipment modified for small plot work. Row spacing was 30 inches and planting rate was 100,000 seeds/acre at all locations.

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 individual regional crop management summaries.

Data recorded

Plant height was measured at maturity. Lodging was rated immediately before harvest using a scale of 1 to 5 where 1 = fewer 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 moisture content of 14% and expressed as bushels/acre.

Comparing hybrids

The performance of a hybrid cannot be measured with absolute precision. Uncontrolled variability is involved in determining 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 help farmers select 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 in a test.

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. For 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 statewide means. 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 grain sorghum hybrid. Maturity, 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.