Missouri 2011 Soft Red Winter Wheat Performance Tests

This report is published by the MU Variety Testing Program, Division of Plant Sciences, University of Missouri. The work was supported by fees from companies and organizations submitting varieties for evaluation. The large number of varieties available makes selection of a superior variety difficult. To select intelligently, producers need a reliable, unbiased, up-to-date source of information that will permit valid comparisons among available varieties. The objective of the MU Variety Testing Program is to provide this information. Tests are conducted under as close to uniform conditions as possible. Small plots are used to reduce the chance of soil and other variations occurring among variety plots. Results obtained should aid individual growers in judging the relative merits of many of the commercial wheat varieties available in Missouri.

Comparing Varieties

The performance of a variety 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 varieties. The statistical tool used by the MU Variety Testing Program is called "least significant difference" (LSD). The LSD is simple to use. When two varieties are compared and the difference between them is greater than the LSD, the varieties are considered to be significantly different. Differences between two varieties smaller than the LSD may have occurred by chance and are considered to be not significant. The LSD can be found at the end of each table.

The MU Variety Testing Program arranges varieties within each table from highest yield to lowest yield. The "top yielding" variety in each table has been identified by a double asterisk (**). Varieties that did not yield significantly less than the highest yielding variety in the table are denoted by a single asterisk (*). Thus, by reading down the yield column, readers can readily identify the highest yielding varieties in a location.

Variety 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 variety performance, readers should consider results from more than one environment (locations and/or years). The vast majority of varieties are entered into our tests for only one year, so comparing varieties across multiple locations becomes even more important. The MU Variety Testing Program facilitates variety comparisons across locations by publishing Region Means. Region Means tables contain yield data from all individual locations in the region and yields averaged across all of the locations. The variety with the highest average yield and varieties that do not differ for yield from that variety are designated with double (**) and single (*) asterisks.

Although yield usually receives first consideration, other agronomic characteristics may be equally important when selecting a wheat variety. The MU Variety Testing Program measures test weight and plant height and rates plant lodging. These data are presented in each location table. Winter hardiness, maturity, resistance to Hessian fly, and resistance to several diseases are among the variety characteristics that deserve careful consideration. We provide a table that contains several important characteristics of varieties 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 indentified in the table listing the variety characteristics.

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Experimental Procedures

Regions and Locations

The MU Variety Testing program divides the wheat growing area of Missouri into three regions: North, Southwest, and Southeast. Each region contains three locations, and the same varieties are tested in all locations within a region. Locations for 2011 are as follows:

1. Trenton (Grundy County); Peter Brewer farm
2. Novelty (Scott County); Greenley Memorial Research Center
3. Columbia (Boone County); Bradford Research and Extension Center
4. Hughesville (Pettis County); Kenny Tevis farm
5. Adrian (Bates County); Darrel Tenholder farm
6. Lamar (Barton County); David Sheat farm
7. Chaffee (Scott County); Martin Eftink farm
8. Charleston (Mississippi County); Don Deline farm
9. Portageville (Pemiscot County); Delta Research Center

Entries

All seed companies were eligible to enter varieties in the 2011 wheat test. Participation was voluntary and the MU Variety Testing Program exercised no control over which or how many varieties 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

Varieties were randomly arranged in the field according to a lattice design with three replications. Plots were eight rows wide and 25 feet long. Row spacing was 7.5 inches. Planting

rate was 1,500,000 seeds/acre. All eight rows were harvested with a combine designed for small-plot work.

Fertilizer was applied at each location at the discretion of the farmer or research station manager. Herbicides were used to control weeds, and a fungicide was applied to prevent disease incidence. Management details varied among locations and are specified in individual region 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 = all plants erect, 3 = all plants leaning moderately or 20 to 50% lodged, 5 = all plants lodged. During harvest, plot grain weights were measured and an electronic moisture tester was used to determine the moisture content of the grain and test weight. Yields were corrected to a moisture content of 13% and expressed as bushels/acre.

Accessibility of Data

Results of the 2011 crop performance tests are available in print format 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.