

PROCEDURES

Regions and locations

The MU Variety Testing Program divides the wheat growing area of Missouri into three regions: North, Southwest and Southeast. The North Region contains four locations, and the Southwest and Southeast regions contain three locations each. The same varieties are tested in all locations within a region. Locations for 2023 are as follows:

North

Columbia (1), Martinsburg (2),
Novelty (3), Albany (4)

Southwest

Lockwood (5), Garden City (6), Lamar (7)

Southeast

Charleston (8), Fisk (9), Portageville (10)



The MU Variety Testing Program depends upon and is highly appreciative of the cooperators that allow it to use their farms. Thank you, Don Deline, Bill Cook, Cal Luthi, Warren Hale, Russ Niehoff, Dwight Niehoff, Nathan Goldschmidt and Missouri Agriculture Experiment Stations.

Entries

All seed companies were eligible to enter varieties in the Soft Red Winter 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 six rows wide and 25 feet long. Row spacing was 7.5 inches. Planting rate was 1,500,000 seeds/acre. All six 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. Fungicides and insecticides were applied as needed for disease and insect management. Management details varied among locations and are specified in the crop management link.

Procedures (continued)

Data recorded

Plant height was measured at maturity. Lodging was rated immediately before harvest using a scale of 1 to 5, where 1 = less than 20% plants lodged and 5 = 80% or more plants lodged. During harvest, plot grain weights and test 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 13% and expressed as bushels/acre.

Comparing varieties

The performance of a variety 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 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 entries are considered to be significantly different. Differences between two varieties that are smaller than the LSD may have occurred by chance and are considered to be not significant. In other words, the two varieties 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 varieties within each table from highest yield to lowest yield. The "top yielding" variety in each test is identified by a double asterisk (**) placed next to its yield. Varieties that did not yield significantly less than the highest yielding variety 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 varieties in a location.

Variety performance might 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 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 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 identified in the table listing the variety characteristics.

Procedures (continued)

Accessibility of data

Results of the Soft Red Winter Wheat Test are available online at *varietytesting.missouri.edu*. If you need help accessing the website, please call 573-882-2307. You may print tables from the online version.

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