South Dakota State University
College of Agriculture, Food and Environmental Sciences

South Dakota State University Extension
South Dakota Agricultural Experiment Station at SDSU

2021 South Dakota Winter Wheat Variety Trial Results Regional Summaries

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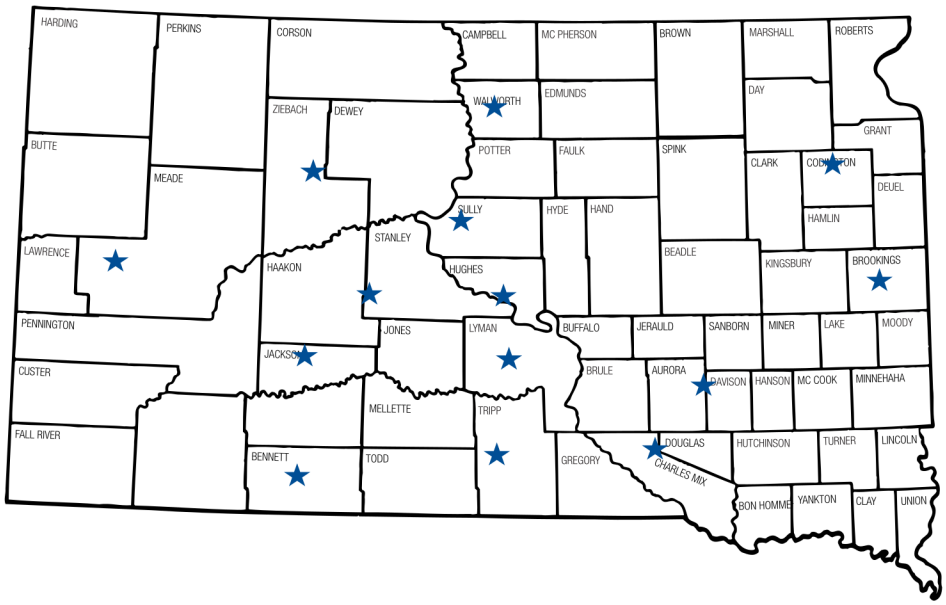

Eastern trial locations: Brookings, Mount Vernon, Platte, South Shore

Central trial locations: Hayes, Onida, Pierre, Selby, Vivian, Winner

Western trial locations: Lantry, Martin, Sturgis, Wall

Individual trial location results can be accessed online at:
https://extension.sdstate.edu/winter-wheat-variety-trial-results

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2021 South Dakota Winter Wheat Performance Trial Highlights

Jonathan Kleinjan | SDSU Extension Agronomist

There isn't much more stress that could have been thrown at the 2020-2021 winter wheat crop in South Dakota. Very dry conditions in the fall of 2020 resulted in delayed emergence until after October precipitation in many parts of the winter wheat production areas, which in turn resulted in very little fall growth. An open winter with an extremely cold snap in February raised concerns of winterkill. A late frost event in early May further raised concerns about the survival of the crop. Finally, severe drought conditions plagued most of the state throughout the 2021 growing season. On the upside, the dry conditions led to essentially no disease issues in 2021. Several acres of winter wheat were harvested for hay in western growing regions but in areas where grain harvest did occur, it progressed rapidly and produced yields that generally ranged from 20 – 80 bushel/acre.

Meridian Seeds was the sole new participant in the South Dakota State University (SDSU) Crop Performance Testing (CPT) winter wheat trials for 2020-2021. Several new CoAXium™ varieties were tested from four separate companies/ public programs. These varieties have a natural mutation that confers tolerance to Aggressor™ herbicide, providing a new grass control option for wheat producers.

SDSU CPT winter wheat trials in eastern South Dakota locations (Brookings, Mount Vernon, Platte and South Shore) yielded an average of 67 bu/acre, ranging from 47 bu/acre at Platte to 87 bu/acre in Brookings. Varieties yielding in the top third of the eastern South Dakota trials over three years (2019-2021) were **SD Andes, Ideal, Winner, Oahe** and **Redfield**. Promising new varieties for eastern locations tested for the first time in 2021 include **Whistler** and **AP Clair**.

Yields in central South Dakota (Hayes, Onida, Pierre, Selby, Vivian and Winner) averaged 69 bu/acre, ranging from 48 bu/acre at Vivian to 107 bu/acre at Pierre (irrigated). Data from Selby was not available at the time of this publication. Varieties yielding in the top third of the central South Dakota trials for 2019-2021 were **Winner, WB4462, SY Wolverine, Overland** and **Draper**. Promising new varieties for central locations tested for the first time in 2021 include **AP Clair, AP Bigfoot, LCS Steel AX** and **Whistler**.

Western South Dakota trial locations (Faith, Sturgis and Wall) had a good year, averaging 61 bu/acre, ranging from 39 bu/acre at Martin to 75 bu/acre at Wall. Sturgis data was not compiled due to a planting error. Varieties yielding in the top third over three years in the western trial locations were **Winner, WB4462, SD Andes, Oahe** and **Draper**. New varieties did not perform as well as those in trials for two or three years in the western regions of South Dakota.

The protein content of the crop was very good statewide, averaging 13.1%, 14.2% and 13.4% in eastern, central and western South Dakota, respectively. Detailed trial results, including yield, test weight, protein content, height and lodging (where measured) for each location are available at: https://extension.sdstate.edu/winter-wheat-variety-trial-results.

Consider as much performance information as possible when selecting a variety, and give more weight to information from trials close to home, as some varieties may be better suited to certain geographic areas. Also pay close attention to relative performance over many locations. This type of performance is an indication of "yield stability." Good yield stability refers to the ability of a variety exhibit high yield potential at many locations over years. For example, a variety that ranks in the upper 40% at all locations exhibits better yield stability than a variety that is number one for yield at one location but ranks in the lower 40% at some other locations. Performance over multiple years is also very important. Growing conditions in a single season may favor certain varieties, providing a poor representation of yield potential over time. For example, growing conditions in 2021 tended to favor later-maturing varieties and the absence of stripe rust allowed susceptible varieties to perform better than average. Varieties with a slow growth pattern in the fall also did not fare well in late-planted trial locations. A good rule of thumb is to plant 65%-75% of your acres to varieties with a proven track record (i.e. a good multi-year average) and plant the remaining 25%-35% to a promising new variety.

It is important to remember that varieties may differ by 5 bu/acre or even more and still be statistically similar. This is due to inherent variability in the environment and the yield testing process. Varieties that are statistically similar to the top performing variety at each location can be calculated by subtracting the least significant difference (LSD) value from the top performing variety. The LSD is a statistic used to determine if varieties are truly different from one another.

The coefficient of variation (CV) listed at the bottom of each data column, which is often expressed as a percentage of a given trait mean, is a relative measure of the amount of test variation for that trait. Generally, in yield trials, a CV of 15% is considered acceptable and a CV of 10% or less indicates good quality data. Higher variability (and thus higher CVs) can be caused by several environmental factors, such as stand loss due to winterkill or drought, and reduces the ability to detect true differences between varieties.