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Project Title: Spring Wheat Breeding for Scab Resistance in South Dakota.

PROJECT 1 ABSTRACT

(1 Page Limit)

The SDSU Hard Red Spring Wheat (HRSW) breeding program contains an ongoing component where development of FHB resistant germplasm and cultivars is the priority. Since inception of this component, resistance to FHB has increased among program cultivar releases. As an example, through resistance phenotype testing within the program, we know that FHB resistance has increased by greater than 40 percent. Specifically, 'Brick' (released in 2008), 'Forefront' (2012), and 'Focus' (released in 2014) consistently have lower disease index ratings (17.0, 13.6, and 16.1%) than older cultivars, such as 'Oxen' (released in 1995; 27.1%) and 'Traverse' (2006; 26.3%) when tested from 2012 - 2014. Unfortunately, under severe FHB pressure, even the most resistant cultivars and germplasm lines can become highly diseased. It is therefore important that breeding programs continually strive to further enhance FHB resistance levels. As such, this research is being proposed to specifically address VDHR research priorities 1, 2, and 3 as goals. The overarching objective is to continue operations of the SDSU-HRSW-FHB resistance breeding program component. Continued success of this component should arise through accumulation of resistance phenotypes and molecular marker data associated with breeding populations, experimental breeding lines, and released cultivars. These observations serve as important factors for making and advancing selections through the breeding program and also in the selection of parents for creating new populations. Additionally, this program contributes information and germplasm to others with similar goals. Through cooperation with other research programs, steadily increasing levels of FHB resistance within this program, and helping to promote growing only the most resistant HRSW cultivars, growers and end-users should be less prone to devastating FHB epidemics.