

0203-FR-081 Development of hard red spring wheat cultivars resistant to scab.

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PROJECT ABSTRACT

(1 Page Limit)

The development of genetically resistant cultivars is the best strategy for an efficient, economical and safe control of Fusarium head blight (FHB) in hard red spring wheat (HRSW) produced in North Dakota. The long-term goals of this project are to: 1) develop improved HRSW cultivars with resistance to FHB that are adapted to ND production and have acceptable breadmaking quality; and 2) identify and introgress FHB resistance from diverse germplasm sources into the germplasm base of the HRSW breeding program. Selected parents will be used to develop segregating populations for early generation selection and advancement of lines that combine FHB resistance with desired agronomic and quality characters. Elite advanced lines will be tested in multiple site field trials in ND to identify FHB resistant genotypes that meet the desired adaptation, agronomic and quality criteria for cultivar release. The complex inheritance of FHB resistance in wheat necessitates the employment of breeding strategies and selection methodologies to deal with a diverse germplasm base and very large breeding populations. Techniques for field and greenhouse evaluation for FHB resistance have been developed but need to be changed and improved for increased selection efficiency and to combine several types of resistance to FHB. Utilization of an off-season nursery in New Zealand aids the breeding process. Introgression of diverse germplasm sources of FHB resistance will provide the germplasm base for selection of enhanced and combined types of FHB resistance. This project accelerates the successful development of improved HRSW cultivars with resistance to FHB as a control measure to minimize the effect of FHB on the production, export, processing and consumption of HRSW.