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Research Area: GIE

Project Title: Maintain a germplasm center of scab resistant spring wheat.

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PROJECT 2 ABSTRACT

(1 Page Limit)

The use of resistant cultivars will be one of the major components in managing Fusarium head blight in wheat. The availability of diverse resistant sources is paramount for the success of developing and maintaining a high level of resistance in commercial cultivars. Thus, identification of additional sources of resistance and incorporation of these new resistances are critical for diversifying the current resistance gene pool and for enhancing the level of resistance. This project confronts the issues of finding additional or new sources of resistance in spring wheat, maintaining and characterizing the resistance, and facilitating the utilization of these resistances. We have successfully developed a germplasm evaluation and enhancement system that can increase the efficiency of screening and information/germplasm distribution. This system includes: 1) a large number (~1000 accessions per year) of spring wheat lines with diverse origins are evaluated for scab resistance under high-disease pressure conditions in the field in a Preliminary Screening Nursery (PSN); 2) selections from PSN are evaluated in the greenhouse to characterize the types and levels of resistance and further evaluated in an Elite Germplasm Nursery (EGN); 3) most resistant selections are entered into the Uniform Regional Scab Nursery (URSN) for spring wheat to be evaluated at multiple locations; and 4) data and seed are promptly distributed to interested parties. Most elite resistant selections are crossed to a susceptible parent or intercrossed to develop recombinant inbred populations for genetic studies. Populations will be used in allelic testing and molecular mapping after phenotyping at as early as F5:6 generations. Accomplishment of the proposed research objectives will significantly contribute to the national wheat improvement efforts for scab resistance and successful management of this disease.