

0203-IB-111 Winter wheat breeding for scab resistance in South Dakota.

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PROJECT ABSTRACT

(1 Page Limit)

Resistant varieties will be the main component of an integrated strategy to control scab. The use of resistant varieties is the most economical, sustainable, and long lasting means of control. Although immunity to this disease is unknown, genetic variability for resistance is well documented. Steady progress has been documented by breeding programs that have implemented proper screening techniques. Breeding programs must continue to simultaneously select for resistance and desirable agronomic characteristics. The objective is to use traditional breeding techniques to develop scab resistant hard winter wheat varieties.

We have established a proactive effort to develop scab resistant hard winter wheat varieties. Reasons for this decision include: 1) Recent changes in winter wheat production practices could lead to an increase in scab (increase in reduced tillage and changes in cropping systems.); 2) South Dakota is on the northern edge of the high plains winter wheat production area and is thus in a unique geographical position. 3) Inoculation methods and screening procedures were already established at South Dakota State University.

A mist-irrigated scab evaluation nursery for winter wheat has been established near the campus of SDSU. This nursery will be used to evaluate elite breeding lines, regional nurseries, commercial varieties, and segregating populations. Both field and greenhouse screening nurseries will be used to evaluate the populations.

A Ph.D. graduate student is part of the proposed research. This student will continue assisting with the breeding program and will conduct independent research regarding the genetics of scab resistance in hard winter wheat germplasm.