

0203-GA-039 Spring 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 spring wheat varieties.

The scab resistance breeding project began after the 1993 epidemic in the spring wheat region. Mist-irrigated greenhouse and field screening nurseries were established and disease evaluation methods were developed. Breeding materials are evaluated for scab resistance using three generations per year: two generations in the greenhouse and one generation in the field. We have the capacity to screen 4000 individual hills in each greenhouse season. We now have 3 acres in the field under mist-irrigation. Both the field and greenhouse nurseries are inoculated with infected corn and conidial suspensions. A mist-irrigation system is used to provide a favorable environment for infection and disease development. The breeding populations contain sources of resistance that can be traced back to Sumai 3, from other identified sources, and advanced breeding lines that have various "field tolerance" qualities.