

0203-EL-071 Development of Durum Wheat resistant to Fusarium Head Blight.

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PROJECT ABSTRACT

(1 Page Limit)

Fusarium head blight (FHB) caused by the fungus *Fusarium graminearum* Schwabe (teleomorph *Gibberella zea* (Schwein.) Petch. has been seriously attacking durum wheat (*Triticum turgidum* L. var. *durum*) in North Dakota and the surrounding states. There is continuous decline in harvested durum acreage and production in ND because of FHB. The harvested acreage and durum production in the year 2001 were 22% less than the year 2000. The decline in harvested acreage and durum production in ND is disastrous to the farm economy and has direct impact on the national pasta industry and the international export market since ND on average produces 75% of the durum in the United States. Fungicides may reduce the disease but the most environmentally safe and economical way to control the disease is with genetic resistance. Our objective is to develop FHB resistant durum wheat cultivars/germplasm with good agronomic and quality traits. In previous studies we have identified 23 lines that have a moderate level of type II resistance. Twenty of these lines are from crosses of adapted durum wheat germplasm with Sumai-3 and the other three are from durum with durum crosses. We are in the process of evaluating these lines for agronomic and quality traits for possible release. We have developed 25 populations from crossing the best three FHB resistant lines with new ND released durum cultivars. F₃ lines from 13 populations are being advanced in greenhouses and winter nursery in New Zealand for FHB screening in the Fall and Spring 2002-03 greenhouses and 2002 field nurseries in Prosper, ND and Shanghai, China. To date only three of the 13 populations have been screened for FHB resistance in the greenhouse. The remaining 12 populations are being advanced as bulk for future selections and evaluations. We also are evaluating F₃ lines and subsequent generations from six populations that were developed from crossing Langdon *Triticum dicoccoides* 3A substitution line, a line from a recurrent selection established in 1995, and a doubled haploid line to the two durum cultivars Ben and Maier. We are in the process of developing new populations from crossing durum cultivars/experimental lines with five durum FHB resistant lines from CIMMYT and two Tunisian lines that we have identified. We will be using the two molecular markers *Xgwm2* and *Xgwm533* for screening some of the populations. Any FHB resistant line we identify will be either released as a cultivar or used as parent in crosses depending on their agronomic and quality traits.