

0203-EL-070 Identify sources of resistance to Fusarium head blight in durum wheat.

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PROJECT ABSTRACT

(1 Page Limit)

Durum wheat is one of the major cereal crops in the world and its production in North Dakota accounts for about 75% of the U.S. production. Durum wheat is very susceptible to Fusarium head blight (FHB) caused by the fungus *Fusarium graminearum* Schwabe (telomorph *Gibberella zeae* (Schw.) Petch. Fungicides may reduce the disease, but the most environmentally safe and economical way to control the disease is with genetic resistance. Resistant durum cultivars or lines are not available yet. Our objectives are in line with the US Wheat and Barley Scab Initiative, which are to identify FHB resistant durum wheat that can be shared with other durum wheat researchers working on durum wheat improvement. In the Fall 1999 we evaluated 115 lines that were obtained from ICARDA and CIMMYT. Five lines were identified as moderately type II resistant after a second evaluation in the Spring 2000. We have successfully increased the five lines for distribution and use in breeding programs. We are using these five lines as parents in our crossing block to develop FHB resistant durum wheat cultivars. We also have obtained five moderately type II FHB resistant lines from CIMMYT for evaluation and crossing with North Dakota germplasm. In 1998-99 and 1999-00, we evaluated 2500 durum wheat accessions from the world collection at the Academy of Agricultural Sciences, Plant Protection Institute Shanghai, China (AASPPIS). Thirty accessions were selected and reevaluated in the Spring 2001 greenhouse. After the second evaluation eight were selected to be evaluated in the Fall 2001, Spring and Fall 2002. The best 2-3 FHB type II resistant accessions will be selected for seed increase and use in breeding programs. In 2000-2001, we evaluated 2000 durum wheat accessions from the world collection at AASPPIS. Only four accessions were identified as moderately susceptible to FHB. We will reevaluate the four accessions in the Spring 2002 and Fall 2002-03 greenhouses. To our knowledge, the five lines from Tunisia, the five lines from CIMMYT, and the eight accessions are the best available source of resistance in durum wheat. The level of resistance of these lines is not as good as Sumai-3 since they have been characterized as moderately susceptible. We need to identify sources of resistance that approach or exceed the level of resistance in Sumai-3. We have obtained 1300 new accessions from the world collections to be evaluated in the 2001-02 growing season in China and subsequent greenhouse evaluations.