

Project Abstract

Project Title:	Developing FHB Resistant Durum Varieties for Montana	
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Montana averages 600,000 acres of durum production and ranks second in the US as a durum producer. Late season rainfall can cause high deoxynivalenol (DON) levels caused by Fusarium head blight (FHB) in harvested grain resulting in it being rejected. To address FHB concern in Montana grain we have acquired durum lines from our collaborator, Dr. Xiwen Cai (NDSU), with *Fhb1*, *Fhb7* and non-*Fhb1* sources of resistance integrated from hexaploid wheat that we will test for FHB resistance. We will conduct field-based screening for FHB resistance at the MSU Eastern Agricultural Research Center (EARC, Sidney, MT) which is in the center of the most important region for durum production in Montana. In fact, the northeast region of Montana where EARC is located is on the border of North Dakota and their most important durum production area and thus is the most relevant region for durum FHB resistance screening. The development and release of FHB resistant durum lines will substantially decrease durum yield losses due to FHB and reduce DON levels in MT grown durum.

Our objectives are:

1. Screen breeding progeny to allow early identification of FHB resistant or low DON accumulation genotypes. We anticipate that the hexaploid derived sources of resistance will segregate normally and be associated with increased FHB resistance and decreased DON.
2. Intercross genotypes with good FHB resistance and low DON levels to allow pyramiding of best FHB resistance alleles including *Fhb1*, *Fhb7*, and non-FHB sources of resistance. We expect that the addition of *Fhb7* to *Fhb1* will substantially reduce FHB susceptibility and decrease DON.

We expect to identify lines from the experimental durum lines provided by Dr. Cai that have FHB infection and DON levels that are significantly lower than currently grown varieties. Once identified we will begin intercrossing these lines to try and pyramid the resistance loci as well as outcross them with Montana breeding lines. Future low FHB/DON varieties will be released and made available to MT and ND growers and used as parents for further breeding.