

PI: Mike Giroux

PI's E-mail: mgiroux@montana.edu

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Project Title: Developing FHB Resistant Durum Wheat Varieties for Montana

PROJECT 1 ABSTRACT

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Montana averages more than 600,000 acres of durum production and ranks second in the US as a durum producer. Due to increasing late season rainfall high deoxynivalenol (DON) levels have been seen in harvested grain from some areas resulting in it being rejected. To address the concern of FHB in Montana we have acquired durum lines from our collaborator, Dr. Xiwen Cai (NDSU), with Fhb1 and non-Fhb1 sources of resistance integrated from hexaploid wheat that we will test for FHB resistance. Additionally, we have carried out preliminary screening of FHB susceptibility and grain DON levels using currently grown durum varieties from the US and Canada. Significant variation exists between durum varieties both for FHB resistance and DON levels in the grain. We have made crosses between varieties having better FHB resistance and lower grain DON levels and have breeding lines to 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.

Our objectives are:

1. Screen new sources of FHB resistance integrated from hexaploid wheat or wild relatives under Montana growing conditions.
2. Screen breeding progeny to allow early identification of FHB resistant or low DON accumulation genotypes.
3. Intercross genotypes with good FHB resistance and low DON levels to allow pyramiding of best FHB resistance alleles.