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Project Title: Genetics and Breeding of FHB Resistant Soft Winter Wheat for the Northeast U.S.

PROJECT 2 ABSTRACT

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FHB resistant wheat cultivars are essential for wheat produced in the northeastern U.S. FHB is the single greatest threat to successful production of soft winter wheat in New York. We successfully commercialized Jensen and Medina soft white and Otsego and Erie soft red winter wheat varieties all of which have improved resistance to FHB. Because most of the DON is in the bran, FHB resistance in white wheat is more important than for red because white wheat bran is widely marketed to the food industry for use as an additive in high bran food products. All wheat varieties grown in this region are used for both milled and whole grain products.

Our specific objectives are to:

1. Develop FHB resistant soft wheat cultivars for the northeastern U.S. in collaboration with Gary Bergstrom, Department of Plant Pathology. Evaluate our elite lines in the Cornell University FHB Advanced Line nursery.
2. Pyramid FHB resistance genes by hybridizing elite lines with native FHB resistance to new sources of FHB resistance both Asian and other sources.
3. Evaluate FHB resistant lines in New York regional trials for release, farmer recommendations, and seed increase.
4. Participate in the coordinated sharing of information from the above activities to generate a comprehensive source of information that can be used in forward breeding strategies.

We use a misted field evaluation nursery and a backpack CO_2 sprayer to apply a spore suspension 3 to 4 times bracketing the flowering times of the entries. Each plot is scored for incidence and severity approximately 21 days post flowering. Each plot is harvested and sampled for DON and percent damaged kernels. Results are reported to the uniform nursery coordinator and in our annual small grains testing reports. New crosses are planted each year for selection and generation advance. We are advancing lines for our FHB breeding program into our regional testing program each year.