0203-FR-072 Enhanced resitance to Fusarium in two-rowed barley.

PI: Franckowiak, Jerome D.; E-mail: jfrancko@badlands.nodak.edu
North Dakota State University, Department of Plant Sciences, Fargo, ND 58105-5051

Grant #: 59-0790-9-034; $73,259; 1 Year
Research Area: VDUN

PROJECT ABSTRACT
(1 Page Limit)

The development of two-rowed barley cultivars (*Hordeum vulgare*) for the Upper Midwest having better resistance to Fusarium head blight (FHB), *Fusarium graminearum*, is the primary focus of this project. The goals of the project are 1) to identify two-rowed barley lines that exhibit more resistance to FHB, 2) to accumulate genes for FHB resistance in two-rowed barley lines adapted to North Dakota (ND), and 3) to examine genetic factors in chromosomes 2HL and 4HS that restrict incorporation of FHB resistance into Midwest barley cultivars. A modified pedigree scheme will be used to generate breed lines having more FHB resistance and adaptation to ND. The FHB reactions of lines will be evaluated in FHB screening nurseries in China and ND. Lines are also tested in ND for other diseases, agronomic traits, and malt quality using field plots, disease nurseries, and laboratory facilities. The best lines will be considered for release to growers. A group of linked genes in chromosome 2HL near the six-rowed spike 1 (*vrs1*) locus has restricted progress made in combining desirable agronomic traits and FHB resistance (*Rfg* genes). The agronomic effects of genes in 2HL and their interactions with the intermedium spike-c (*Int-c*) locus in 4HS will be investigated. Morphological markers will be used to rapidly identify recombinants in 2HL between the *vrs1* and the early maturity 6 (*Eam6*l) loci. Restructuring genetic control of maturity and height in Midwest two-rowed barley using the semidwarf 1 (*sdw1*) and early maturity 9 (*eam9*) genes is an alternative approach to resolution of the linkage problems. The restructuring of genetic control of adaptation traits is a backup scheme in case breeding FHB resistance barley cultivars fails.