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Project Title: Coordinated Phenotypes of Soft Wheat Germplasm for the Midwest

PROJECT 2 ABSTRACT

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The use of resistant varieties is environmentally friendly and the most economical way to manage the disease. However, strong FHB resistance can only be identified after line testing in multiple seasons and locations. The goal of this project is to identify and regional characterize lines with strong and stable FHB resistance across seasons and environments.

Each year the several breeding programs in Northern Winter Wheat group generate breeding lines that are in the advanced stages of development. Due to low to moderate heritability of FHB resistance multi-location testing is needed to determine the FHB resistance of these lines, as well as their yield, quality, agronomic value, and resistance to other diseases. The breeders in this CP use a series of eight coordinated nurseries to achieve this objective. Each state also conducts an Official Variety Trial (OVT) of the cultivars that are available to their growers. However, Indiana does not have OVT. Our specific objectives are 1) phenotype advanced breeding lines that are candidates for release: 2) place FHB and other agronomic, disease resistance, and quality data in database: 3) report on purification and seed increase of the best lines.

The coordinated testing of advanced lines in the various uniform trials and OVTs plus the data summaries for lines that are candidates for release is an efficient method to determine the FHB resistance of nearly all germplasm that is currently released, or likely to be released in the near future. We anticipate that all data from the trials of breeding lines will be placed in the database. Each breeder in this coordinated project has breeding lines with improved levels of FHB resistance and other traits that warrant their release. The purification and seed increase of these lines in some states is funded by non-USWBSI sources. However, states such as Indiana does not have other sources of funding for wheat except USWBSI. We propose to summarize the information that supports the release of the advanced lines and to make that information available to all breeders and extension personnel when appropriate.