

Project Abstract

Project Title:	Breeding Soft Red Winter Wheat for Improved Yield and Fusarium Head Blight Resistance	
USWBSI Project ID:	FY24-NW-001	
Principal Investigator:	Mohsen Mohammadi	Purdue University

By checking this box, I confirm this can be used as my project abstract for public reference.

Project Summary

Include the project summary from your Pre-Proposal, with any edits/recommendations incorporated that were requested in your confirmation email. All the same format requirements/page restrictions apply.

In this VDHR research the goal is to develop high yielding soft red winter wheat varieties that are resistant to Fusarium head blight disease of wheat. Bringing these phenotypes together rather a difficult task, requiring creating and testing useful genetic diversity. We accomplish this goal by three objectives: We continuously perform breeding crosses between high yielding and scab moderately resistant germplasm on a yearly basis in greenhouse conditions. The resulting lines from these crosses were entered yield testing program since 2021 and continued. We will do ~200 crosses between high yielding and moderately resistant germplasm per year. The segregating generations (F2-F4) will be in the field using bulk methods and single heads will be selected from bulk F4, and planted in head-row nursery for line extraction as F5. The expected outcomes will be nearly 600-900 new lines every year that will be tested for stage-1. The line testing includes stage-1, stage 2, and elite lines in the program which will identify consistently high yielding lines in WL locations across the years. Using multi-location tests with neighboring states (5/6-states and uniform eastern trials), the agronomically selected and high yielding lines will be tested in multiple location. We perform FHB testing of the elite trial and P/NUWWSN nursery in replicated rows under artificially inoculated and misted irrigation system to evaluate their scab resistance and ensure the high yielding lines are also equipped with the FHB disease resistance package.

Project Timeline (YR 1)

Include the project timeline from your Pre-Proposal.

Project timeline as per crop calendar that is fit to the funding cycle includes:

Prepare for planting	July-September 2024
Planting	Mid-Septemb October 2024 weather permitting
Crosses and F1 increases	November – December 2024 and January – March 2025
Field spray	March -April 2025
Field observation and maintenance	May-June 2025
Harvest	Late June – Early July 2025

