Project 1: A Double Haploid Initiative to Speed Development of FHB Resistant Soft Winter Wheat.

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1. What are the major goals and objectives of the research project?

This proposal aims to use double haploid technology to combine favorable loci for more rapid improvement of FHB resistance. This is done collaboratively with the exchange of DH lines.

2. What was accomplished under these goals or objectives? *(For each major goal/objective, address these three items below.)*

What were the major activities?

I. Increasing seeds from 112 DH lines. We selected some of these lines and will be tested in the 2025 Yield trial.
II. Testing several DH lines in multi-state trials, including 11 in the Sun-Pre trial, 1 in the Arkansas variety testing trial, and 1 in sun wheat trials.
III. Making several crosses for developing new DH line populations. We will finalize the most suitable ones for DH development.
IV. I presented the new DH wheat cultivars developed by Sun Grain consortium during AR wheat field day. Furthermore, one of the DH lines demonstrated in the Wheat Field Tour was from Arkansas.

What were the significant results?

Extensive field studies identified Several lines with good yield potentials and agronomic traits. Some of these lines showed tolerance to moderate tolerance to FHB.

List key outcomes or other achievements.

Overall, the outcomes of our activities on DH lines can be classified into three categories.

I. Introducing new DH lines from the SunGrain: The outcome was increasing seeds and selecting several suitable lines for yield trials
II. Developing New DH lines: This year, we initiated several crosses for the first time. We will select the two best lines for development.
III. Evaluating DH lines via field study: The outcome was the identification of several lines currently tested in multi-state trials.
IV. Several DH lines produced good yields in Arkansas and other states.

3. What opportunities for training and professional development has the project provided?

I trained new employees to make crosses for initiating new populations.

4. How have the results been disseminated to communities of interest?

We shared yield and other agronomic phenotypic data from DH lines developed by Arkansas and other SunGrain members via evaluation of these lines in different Arkansas wheat trials with the community of interest.

5. What do you plan to do during the next reporting period to accomplish the goals and objectives?

We will continue making more crosses for developing DH lines and testing more DH lines through field studies.