Project 2: 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?**
   The goal of this proposal is to expand the regional Double Haploid (DH) initiative to more quickly develop and release high-yielding varieties that contain an effective FHB resistance pyramid.

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

   What were the major activities?
   Seed were received from the 9 crosses with pedigrees listed below from LSU, Clemson, TX A&M and UGA. Four of the five crosses had NC lines in the pedigree. A total of 120 doubled haploid lines were targeted per cross, so 1080 total. Currently harvesting the DH plants and expect to be close to the target number of lines with seed.

   The NCSU program assisted in production of DH lines for all southern wheat breeding programs. NCSU provided the Raleigh ARS doubled haploid project with labor and facilities access as needed.

   What were the significant results?
   Twenty-four of the DHs evaluated in head rows were advanced to first year yield testing in 2023. Of the 468 lines in the F7 and later generation yield trials in 2023, 20% are doubled haploids.

   List key outcomes or other achievements.
   Materials are successfully moving through the variety development pipeline with savings of three to four years. The value of this effort is seen by the overrepresentation of DH's in advanced generation yield trials.

3. **What opportunities for training and professional development has the project provided?**
   Three undergraduate students worked in the DH nursery at harvest and on post-harvest processing of materials in preparation for fall planting. They worked with the project leader and PhD graduate student on these activities.

4. **How have the results been disseminated to communities of interest?**
   The materials are shared with other members of the small grains breeding community.

5. **What do you plan to do during the next reporting period to accomplish the goals and objectives?**
   A new research specialist is expected to be onboard by September of 2024. The doubled haploid operations will be resumed. New breeding materials are expected to be generated using the DH technology.