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PROJECT 1 ABSTRACT

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The level of Fusarium resistance from native sources within our program has significantly increased. Breeding lines with Truman background, GAO51173W-S11 (H13), GAO51173W-S12, and GAO51173W-S13 (H13) have shown high levels of FHB resistance in greenhouse and/or field evaluations. These lines have also shown adequate grain yield along with Hessian fly resistance (H13). Native sources of Type II resistance from other breeding programs, (Truman, Neuse, Jamestown, (INW 0411 (P97397E1-11), McCormick, OH 02-12686, OH 02-7217, IL8641, IL 02-18228, IL 02-1828, MO 050699, and MO 050146) have been crossed with GA scab resistant lines and were evaluated in the field. Our program has also developed segregating BC populations using both native and exotic sources of Truman, Bess, Jamestown, PIO26R32, and IL02-18228. When markers are available, individual plants will be selected based on the marker data and then transplanted to the field for phenotypic evaluations.

In cooperation with other wheat scab initiative scientists, FHB double haploid lines (NC03-11458 / Bess // SS8641); (NC05-21937(Fhb1) // P26R31 / Jamestown); (NC05-21937 / GA991209-6E32); (MD01W233-06-1 / SS8641); (NC04-15460 / Oglethorpe // NC05-21937) were evaluated and selected for adaptation. In collaboration with the Genotyping Lab., selected lines with Type II resistance from populations (SS8641*2/ Neuse), (Neuse*3/ VA476), (McCormick*3/ Ning7849) will be further evaluated in the field for agronomic and disease resistance (Lr and Yr).

Marker Assisted Backcrossing (MABC) of QTL (3BS, 5A, 2B, 2D, 3BSc, and 4B), Jamestown, IL 02-18228 and Truman into SRWW background was performed using high yielding and moderately resistant FHB lines as recurrent parents. Pyramiding QTL will greatly facilitate development of cultivars that have more effective FHB resistance.