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Project Title: Enhancement of Scab Resistant Wheat Cultivars Adapted to the Southeast.

PROJECT 1 ABSTRACT
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The overall goal of the project is to develop facultative wheat cultivars with scab resistance and improved yield potential for commercial use in the lower Southeast and to accelerate the development of scab resistance using marker-assisted selection. The specific objectives of the project are: (1) to identify, incorporate, and pyramid resistance to FHB in elite lines and (2) to transfer resistance into adapted cultivars by using DNA marker for markers-assisted selection. These objectives will help to accelerate the development of resistance cultivars to Fusarium head blight.

Several wheat sources from diverse origin with FHB resistance has been transferred into elite lines that are adapted to the Southeast. Segregating populations from these crosses of scab resistant germplasm with adapted cultivars and elite lines will be evaluated in the field for scab resistance. Resistant sources to scab from CIMMYT, Indiana, Missouri, and Virginia will be crossed and backcrossed to elite lines adapted to the southeast which have excellent leaf rust and powdery mildew resistance, agronomic or milling and baking traits for soft red winter wheat. Sixty wheat elite lines and the two uniform FHB nurseries will be evaluated for Type II resistance to FHB. The resistant lines will be used as parents in the breeding program. Eleven lines from our elite nursery were identified in 2002 with good FHB resistance. These eleven lines will be further evaluated in the greenhouse. Progeny from several backcrosses will be individually evaluated in the greenhouse for type II resistance. Type-II resistance will be transferred resistance into adapted cultivars and elite lines by backcrossing and double haploid techniques.

SSR will be used on backcross and F2 populations to identify FHB resistance derived from Sumai 3 and N7840 on 3BS (Xgwm 533, Xgwm 493, XBARC133) on 2BL and 2AS (Xgwm 120 and Xgwm 614). The most productive, multiple pest resistant cultivars and elite lines developed at UGA will be used as recurrent parents in a marker-assisted backcrossing program.