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**Project ID: 0405-JO-047**

**FY03 ARS Agreement #: 59-0790-9-046**

**Research Area: VDUN**

**Duration of Award: 1 Year**

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

PROJECT 1 ABSTRACT

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The 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.

Resistant germplasm will be crossed and backcross with adapted cultivars to Southeast and segregating populations will be screened under field conditions. The selection of lines with resistance initially equal to Ernie and later to the level of resistance of Sumai 3 is continuing. One hundred and five elite wheat lines and the two uniform FHB nurseries will be evaluated for resistance to FHB as well as 2000 headrows in inoculated field nurseries. Nine lines from our elite nursery were identified in 2003 with good FHB resistance. These nine lines will be further evaluated in the greenhouse. The Uniform Winter Scab Nursery and the Southern Regional Scab Nursery will be planted and evaluated in Griffin, GA for 2004 to identify broadly adapted scab-resistant lines with good leaf rust and septoria nodorum resistance. Five elite lines will be entered for evaluation in the Southern Scab Nursery in 2004.

SSR will be continuously used on backcross and F2 populations and F3 headrows 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), from Freedom (Xgwm296) and from IN9824 (Xgwm 264 and Xgwm 112).