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**Research Area: VDUN**

**Project Title: Development of Fusarium Head Blight-resistant wheat for the Southeastern United States.**

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**Duration of Award: 1 Year**

**PROJECT 2 ABSTRACT**

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The goal of this research is to develop varieties of soft red winter wheat with enhanced Fusarium Head Blight (FHB) resistance for the Southeastern United States. The focus of the research at N.C. State will be twofold: a) to develop cultivars adapted to North Carolina, the largest wheat-growing state in the region, and b) to facilitate development of cultivars adapted throughout the region by coordinating the 2003-04 Uniform Southern Soft Red Winter Fusarium Head Blight Nursery. During the 2003-04 season the North Carolina wheat program will contain breeding populations segregating for FHB resistance in the F<sub>1</sub> to F<sub>7</sub> generations. The pedigrees of the populations will contain over 50 different exotic and adapted parents exhibiting partial to high levels of FHB resistance, and numerous superior soft red winter wheat cultivars and breeding lines used as sources of disease, insect, yield and end-use quality alleles. Approximately 400 bulk populations in the F<sub>2</sub> and F<sub>3</sub> generation will undergo generation advance. Approximately 20,000 F<sub>3:4</sub> lines will undergo selection for plant height, maturity, powdery mildew, leaf rust, Septoria, BYDV and perhaps Hessian fly resistance. F<sub>4:5</sub> and F<sub>5:6</sub> lines will be evaluated in a mist-irrigated nursery. Selection will be imposed for maturity, plant height, leaf and head fungal diseases. Limited information is available to southeastern soft red winter wheat breeders concerning the FHB resistance levels in their advanced generation breeding lines. A Uniform Soft Red Winter Wheat FHB Screening Nursery for the 2003-04 season will be coordinated from N.C. State University. All FHB researchers will be entitled to enter materials and/or evaluate the nursery. Data will be returned to N.C. State, summarized and distributed to interested parties in a timely fashion. This project will provide breeders with critical information in a comprehensive, rapid and efficient manner to aid release of FHB-resistant varieties for southeastern producers. An added benefit will be the free exchange of breeding lines between variety development programs. These proposed objectives are related to the USWBSI goal of developing, as quickly as possible, control measures that minimize the threat of Fusarium Head Blight (scab) to the producers, processors, and consumers of wheat.