

**BIOTRANSFORMATION OF THE
PHYTOALEXIN HIBISCANONE BY
VERTICILLIUM DAHLIAE AND TOXICITY OF
THE BIOTRANSFORMED PRODUCT**

**R. D. Stipanovic, L. S. Puckhaber and A. A. Bell
USDA, ARS, Southern Crops Research Laboratory
Cotton Pathology Research Unit
College Station, TX**

Abstract

Phytoalexins are an essential component in the disease response of cotton to fungal wilt pathogens. The speed of response and the potency of the phytoalexins are critical elements that determine the success of the resistance response. Modern Acala cottons have reached a level of resistance comparable to the most resistant *Gossypium barbadense* variety. Significant improvements in resistance can probably be achieved only by introducing more potent phytoalexins from other plants. Kenaf, a species in the Malvaceae, could provide such compounds. It exhibits a very high level of resistance to *Verticillium* wilt, and produces a phytoalexin, hibiscanone (3,8-Dimethyl-1,2-naphthoquinone), which is several times more toxic to the wilt pathogens than any of the phytoalexins produced by cotton. We found *Verticillium dahliae* reduces hibiscanone to the hydroquinone (1,2-dihydroxy-3,8-dimethylnaphthalene). Under our bioassay conditions, the hydroquinone at a concentration of 40 ug/ml did not kill *V. dahliae* conidia, whereas hibiscanone kills all conidia.