

EFFICIENCY OF BINUCLEATE *RHIZOCTONIA* FOR CONTROLLING DAMPING-OFF OF COTTON CAUSED BY *RHIZOCTONIA SOLANI* IN THE GREENHOUSE AND FIELD

**N.M. Gomaa and C.S. Rothrock
University of Arkansas
Fayetteville, AR**

Rhizoctonia solani occurs worldwide in most cultivated soils and is indigenous in many uncultivated soils. At present, *Rhizoctonia* diseases on some hosts are treatable with fungicides and a few diseases can be controlled using resistant cultivars. Biological control could reduce dependence on fungicides by replacing or reducing fungicide applications on different crops. Of the promising biocontrol agents that have been tested with different crops, including cotton, in the last 20 years are binucleate *Rhizoctonia* spp. (BNR) and hypovirulent isolates of *Rhizoctonia solani* in both greenhouse and field studies. Three isolates of BNR were tested in both greenhouse and field studies to evaluate their ability to reduce damping-off of cotton caused by *Rhizoctonia solani* AG-4. The cotton cultivar DP451 B/RR treated with Allegiance FL (metalaxyl) was planted in soil artificially infested with *R. solani*. Soil was infested with potato-soil inoculum in the greenhouse and millet-seed inoculum in the field. The field experiments were planted on 29 April 2003 in Crittenden County, AR. Other treatments included *Trichoderma virens* (wheat bran dried preparations of TV-116, TV-117 and G-6), Baytan (triadimenol) -Thiram, and Actigard. The three BNR treatments increased cotton stand in both the greenhouse and the field to a similar level as the fungicide treatment. In the greenhouse, the control had 55% cotton stand, while the fungicide and the three BNR treatments had 86, 94, 83, and 76% stand, respectively. In the field, the BNR and fungicide treatments increased cotton stand only in the artificially infested experiment. Cotton stand was 6, 56, 51, 46, and 44% for the control, fungicide, BNR1, BNR2 and BNR3, respectively. All the other treatments, including the three *Trichoderma* treatments and Actigard, did not increase cotton stand in either the greenhouse or the field. In conclusion, BNR showed promise as an alternative to fungicides for the control of damping-off of cotton. One advantage of BNR fungi is that they are physiologically and ecologically similar to *R. solani*, which may increase their efficiency.