

**REDUCTION OF VERTICILLIUM WILT  
SYMPTOMS IN COTTON FOLLOWING SEED  
TREATMENT WITH *TRICHODERMA VIRENS***

**L.E. Hanson  
USDA-ARS, SPARC, CRPU  
College Station, TX**

**Abstract**

*Trichoderma virens* is an effective biocontrol agent of soil-borne pathogens that affect the cotton root system such as *Rhizoctonia solani* and *Fusarium oxysporum*. However, its ability to induce systemic protection in cotton is unknown. Other *Trichoderma* species are reported to induce systemic resistance in other crops, e.g. *T. harzianum* in bean and *T. viride* in tobacco and grape. Therefore, *T. virens* might also provide some systemic protection. Cotton seeds (cvs. DeltaPine 50 and Rowden) were treated with dried preparations of *Trichoderma virens* in a wheat bran and peat moss carrier or with carrier alone as a control, and planted in field soil. The *T. virens* strains used are highly effective for controlling damping-off in cotton seedlings. Two strains of *T. virens*, a "P" strain, effective against *Pythium ultimum*, and a "Q" strain, effective against *Rhizoctonia solani*, were included in the tests. When cotton plants had six true leaves, the plants were inoculated with *Verticillium dahliae* by stem puncture. After 10 days, plant heights were measured and plants were examined for foliar symptoms to determine Verticillium wilt severity. Plants treated with the "P" strain of *T. virens*, strain G4, were significantly taller than untreated control plants. This suggests a possible growth promotion activity with this strain. Treatment with either of the two strains of *T. virens* reduced the disease severity rating significantly in *Verticillium dahliae*-inoculated plants on both cultivars ( $\alpha=0.05$ ). This suggests that *T. virens* may induce a systemic resistance response in cotton. However, no increased stimulation of terpenoid phytoalexins or tannins was observed in the stems of cotton plants with the *T. virens* treatments. Therefore this resistance response does not appear to be due to priming of the plant to respond more rapidly to pathogen attack.