

**VARIABILITY IN PROGENY FROM  
PROTOPLAST FUSIONS BETWEEN  
*TRICHODERMA VIRENS* AND OTHER  
*TRICHODERMA* SPECIES**

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**Abstract**

Several *Trichoderma virens* (*Gliocladium virens*) strains have been found with good biocontrol activity against *Rhizoctonia solani* on cotton seedlings. However, these strains lack several characteristics required to be commercially viable. Many of these characteristics are found in other *Trichoderma* species which are not effective as biocontrol agents on cotton. Protoplast fusion has been used in several *Trichoderma* species to incorporate desirable characteristics and improve biological control efficacy. However, protoplast fusions have not been performed with *T. virens*. We used a highly effective biological control strain of *T. virens* in protoplast fusions with strains of *T. harzianum* and *T. koningii* in an effort to develop improved biological control strains. Nine isolates were obtained which were stable through multiple transfers. Of five fusants between *T. virens* and *T. koningii*, three were *T. koningii* and two were *T. virens*. Two of the three *T. koningii* fusants had significantly greater biological control activity on cotton than the *T. koningii* parent and all three fusants had acquired resistance to the fungicide Maxim (fludioxonil). One of the two *T. virens* fusants was reduced in biological control activity compared to the *T. virens* parent. The *T. virens* and *T. harzianum* fusions yielded two isolate of each species. The two *T. harzianum* fusants did not differ significantly from the *T. harzianum* parent in biological control activity. Both of the *T. virens* fusants were still effective biological control agents, but differed from the parent in the production of secondary metabolites. These results indicate that protoplast fusions can be performed using *T. virens* and that a variety of progeny can be isolated from these fusions. The isolates above are being tested for their ability to remain viable and effective in storage. Further fusions are being performed to incorporate other characteristics into isolates.