

Kriengsak Sangsridum 2003: Integrated Application of *Trichoderma* spp. and *Gliocladium* sp. for Biological Control of Soilborne Plant Pathogenic Fungi. Master of Science (Agriculture), Major Field Plant Pathology, Department of Plant Pathology. Thesis Advisor: Assistant Professor Chiradej Chamswang, Ph.D. 117 pages. ISBN 974-358-736-5

Five isolates of selected *Trichoderma* spp. (T-50-CO3, T-50-CO12, T-50, T-144, CB-Pin-01) and five of *Gliocladium* sp. (Gv.16, Gv.38, Gv.47, Gv.81, Gv.101) showed inhibitory effect on mycelial growth of *Pythium aphanidermatum*, *Sclerotium rolfsii* and *Rhizoctonia solani* *in vitro*.

The experiments under screenhouse condition revealed that the combinations of *Trichoderma* spp. and *Gliocladium* sp. which were most effective for controlling *P. aphanidermatum*, *S. rolfsii* and *R. solani* were isolates CB-Pin-01 and Gv.101 (88% surviving plants), T-50 and Gv.81 (68% surviving plants), and T-50-CO12 and Gv.81 (88% surviving plants), respectively. The percent of surviving plants of these three combinations were significantly higher than the untreated control (control 2), but were non-significantly different with the treatments of single isolate application. Higher populations of *Trichoderma* – *Gliocladium* and lower pathogen populations in planting soils were detected from the combinations with higher disease control efficacy.

Results from field testing of these three effective combinations were similar to the results from screenhouse tests. The plants survived from infection of *P. aphanidermatum*, *S. rolfsii* and *R. solani* were 69.6, 62.4 and 64.8% higher than the untreated control (control 2). The disease control efficacies of these combinations were comparable to the use of chemical fungicides (control 3). Populations of *Trichoderma* spp. and *Gliocladium* sp. in planting soils were $0.4-2.3 \times 10^4$ and $0.6-0.7 \times 10^4$ cfu/g-soil, respectively, while pathogen populations were 86.95, 62.78 and 61.33% less than from untreated controls (control 2).

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