

Khwanet Hin-on 2007: Potential of *Trichoderma harzianum* for Inducing Resistance in Tomato Against Black Leaf Mold Caused by *Pseudocercospora fuligena*. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program.  
Thesis Advisor: Assistant Professor Wanwilai Intanoo, Ph.D. 85 pages.

Spore suspensions of *Trichoderma harzianum* (strains CB-Pin-01, T50 and T152) were sprayed every other week (5 times) on soilless planting medium and on whole tomato plant. After the 5th spraying of *T. harzianum* or mancozeb spray for 24 hrs., *Pseudocercospora fuligena*, a causal agent of black leaf mold (BLM) at  $1 \times 10^4$  spore/ml was inoculated on test plants. In *P. fuligena* inoculated treatments strains CB-Pin-01, T50 and T152 significantly reduced BLM by 50.62%, 62.74% and 37.51%, respectively as compared to a pathogen inoculated control (51.24%). These efficacies were comparable to a mancozeb treatment which reduced BLM by 54.22 %. Natural infection of BLM (uninoculated control) was 39.01 %. Spray application of *T. harzianum* strains CB-Pin-01 and T50 significantly reduced disease severity of BLM by 45.55 % and 47.81 %, respectively, when compared to a pathogen uninoculated control.

Study on pathogenicity and specific activities of  $\beta$ -1,3-glucanase and chitinase by spraying spore suspensions of *P. fuligena* at  $1 \times 10^4$  spore/ml on tomato leaves at 4 weeks after transplanting showed that disease severity was 12.60 % significantly increased as compared to a non-inoculated control. Determination of specific activities of  $\beta$ -1,3-glucanase and chitinase after spraying spore suspensions of *P. fuligena* everyday until 14 days revealed the increase of enzyme activity in plant at the 1<sup>st</sup> and 3<sup>rd</sup> day with amount of 45.47 and 29.36 U/mg protein, respectively.

On experiment for inducing resistance in tomato against BLM, tomato plants were drenched with spore suspensions of *T. harzianum* strains CB-Pin-01, T50 and T152 every week for four times and then sprayed with spore suspensions of *P. fuligena* at  $1 \times 10^4$  spore/ml. The BLM incidences were reduced by 21.26 - 60.95%. While drenching of tomato plants with spore suspensions of *T. harzianum* in combination with inoculation of *Pythium aphanidermatum*, a causal agent of tomato root rot revealed that all strains of *T. harzianum* reduced colonization of *P. aphanidermatum* on tomato roots and induced resistance in tomato against BLM with 18.70 – 67.95 % of disease reduction. In addition, *T. harzianum* strains CB-Pin-01, T50 and T152 promoted growth of tomato plant by increasing weight and height of stem, weight and length of roots, however, yield of tomato was not significantly different as compared to a pathogen inoculated control.

Khwanet Hin-on

Student's signature

Wanwilai Intanoo

Thesis Advisor's signature

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