

Tida Sangsawang 2014: Efficiency of Hyphomycetes Isolated from Soil and *Meloidogyne* Egg Masses in Chilli Plantation for Controlling Root Knot Disease. Master of Science (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Professor Leka Manoch, Ph.D. 74 pages.

Fifteen soil samples and five root knot samples were collected from chilli plantations infested with root-knot nematode (*Meloidogyne incognita*) in Kanchanaburi, Nakhon Pathom and Suphan Buri provinces. Fungi were isolated from soil samples by the dilution plate and soil plate methods and from chilli roots by placing egg masses on different agar media. Morphological characteristics of the fungi including the conidia and conidiophores were examined under a light microscope. Forty-two Hyphomycetes fungi comprising five genera were found including *Penicillium* spp. (38%), *Paecilomyces* spp. (29%), *Aspergillus* spp. (21%), *Fusarium* spp. (7%) and *Trichoderma* spp. (5%). *In vitro* pathogenicity tests on *M. incognita* eggs were conducted using one isolate from each of the five fungal genera. The results revealed that *Paecilomyces lilacinus* (KB8) reduced the egg hatching rate 69%. *P. lilacinus* (KB8) was cultivated on five different kinds of cereal and grain including maize, sorghum, Thai jasmine rice, brown rice and soybean through solid state fermentation. The sorghum and maize were the best substrates for maximum spore production. *P. lilacinus* (KB8) was tested for the efficiency to control the root-knot nematode, *M. incognita* on chilli plants in pots under planting house conditions. In pot experiments, 20 g of fungal colonized sorghum seeds were applied into 6-inch-diameter pot contained with 50:50 parts per volume of loamy soil and sand. The results showed that the treatment with 2, 3, 4 applications of *P. lilacinus* (KB8) effectively reduced galls on root systems by 50-70% with root gall index values of 2.50, 2.64 and 2.87 respectively. Higher rates of *P. lilacinus* (KB8) application reduced the root-knot nematode population in soil by infecting the nematode eggs and inhibiting egg hatching.

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Thesis Advisor's signature