

Chanjira Ayawong 2007: Biology, Infection, Epidemiology and Seed Transmission of *Phaeophleospora destructans* (M.J.Wingf. & Crous) Crous, F.A. Ferreira & B. Sutton, the Fungal Pathogen of Eucalyptus Leaf Blight. Master of Science (Agriculture), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Associate Professor Somsiri Sangchote, Ph.D. 79 pages.

Survey on leaf blight of *Eucalyptus* spp. caused by *P. destructans* was conducted in 8 provinces including Chachoengsao, Prachin Buri, Sa Kaeo, Kanchanaburi, Chon Buri, Rayong, Nakhon Ratchasima, and Loei. *P. destructans* produces light yellowed lesions on the infected leaves and later, causes leaf blight and defoliation. The highest disease severity was shown during rainy season on *E. camaldulensis* in Dan Sai district, Loei province. Natural infection by the fungus on 19 clones in Tha takhiab district, Chachoengsao, showed that clone A2, A3 and KS1 were highly resistant (0.0%) whereas SI1 and A5 were susceptible to the disease (83.3%).

The 10 isolates of *P. destrucans* were consistent in thei morphological characteristics. They produced substomatal pycnidia of the size 92 x 83.8 µm. These pycnidia produced conidial mass which protruded through stomata as cirri. Conidia were curved and filiform shape of the size 42.9 x 2.4 µm. Physiological studies showed that growth of *P. destructans* on four media including Potato Dextrose Agar (PDA), Carrot Agar (CA), V8-Agar (V8A) and Malt Extract Agar (MEA) was rather slow. At 25°C, PDA was the most suitable media for mycelial growth; the average colonial diameter was 2.9 cm. CA was the best for conidial production; conidia concentration on this medium was 2.12 x 10⁶ spore/ ml within 60 days. Optimal temperature for the fungal growth was tested on PDA and CA at 15°C, 20°C, 25°C and 30 °C. It was found that 25°C was the optimal temperature for the fungus on both media. After 12 hours of incubation at ambient temperature, conidial germination on water agar was 8.08 %. On leaf surface of the seedling growing in the greenhouse with >80% relative humidity, conidial germination was 5.03 %. The conidial germ tubes penetrated through stomata of infected leaves and caused symptoms around two weeks later. Susceptibility of 6 clones of *E. camaldulensis* and its hybrids to *P. destructans* was evaluated. After two weeks of inoculation in the greenhouse, clone ST2 and S4 were moderately resistant and S2 was moderately susceptible with the disease indexes at 31.25, 31.25 and 72.9 %, respectively. The transmissions of this pathogen from fruit to seed and seed to seedling were investigated using blotter and agar methods and the results revealed no occurrence of infection and transmission.

Student's signature

Thesis Advisor's signature