

Jutarat Petchkeaw 2011: Efficacy of Antagonistic Microorganisms for the Control of Grape Anthracnose. Master of Science (Plant Pathology), Major Field: Plant Pathology, Department of Plant Pathology. Thesis Advisor: Assistant Professor Wanwilai Intanoo, Ph.D. 108 pages.

Ninety epiphytic microorganisms isolated from the leaf surface of grape including 24 isolates of fungi, 15 isolates of bacteria and eight isolates of yeasts were evaluated for the inhibition of mycelial growth of *Colletotrichum gloeosporioides*, a causal agent of anthracnose on grape by dual culture technique. Fungal and bacterial isolates inhibited mycelial growth of *C. gloeosporioides* by 25.33 – 65.60 and 0-55.67 %, respectively. Only some isolates of yeasts inhibited mycelial growth of *C. gloeosporioides*. Some promising isolates of antagonistic microorganisms were screened for the control of anthracnose on the detached fruits of grape (cv. White Malaka). The results revealed that two fungal isolates (DLP 8-3 and Epi 3-2), a bacterial isolate (Endo 2(2)) and a yeast isolate (Epi 3(2)) effectively controlled anthracnose on grape's fruits with 86.90, 74.60, 86.90 and 78.96% of disease suppression, respectively. From dual culture test on PDA medium, five strains of *Trichoderma harzianum* inhibited mycelial growth of *C. gloeosporioides* by 43.74-49.38 %. Strain PM9 was the most effective isolate with 49.38% of inhibition. The efficacy of antagonistic *Bacillus* from spot inoculation on PDA medium showed that six isolates of *Bacillus* spp. inhibited mycelial growth of *C. gloeosporioides* by 41.64-64.15 %. *Bacillus* sp. isolate Endo 2(2) was the most effective isolate with 64.15 % of inhibition. Efficacy of *Trichoderma harzianum* (5 strains), *Bacillus* spp. wild type (6 isolates) and mutant (6 isolates) were evaluated for the suppression of anthracnose incidence on harvested White Malaka fruits. All antagonists effectively suppressed fruit rot by 74.30-93.42 %. Efficacy of antagonistic microorganisms for the control of anthracnose on grape fruits was determined at the commercialized production orchard in Ratchaburi Province during March and April, 2010. The results revealed that high populations of antagonistic *Bacillus* isolates BB165 and Endo 2(2) were detected on leaves and fruits surface. Although anthracnose and Lasiodiplodia fruit rot could not be found, the bitter rot incidence was significantly reduced as compared to the control. For the experiment during May and September, 2010, antagonistic *Bacillus* isolate Endo 2(2) effectively colonized the grape branches, while isolate BB165 was mostly detected on grape leaves. Incidences of black mold rot and bitter rot were slightly found in all treatments whereas, anthracnose and Lasiodiplodia fruit rot were observed in some treatments. All disease incidences were not significantly different when compared to the control.

---

Student's signature

Thesis Advisor's signature