

Jittima Chinthaisong 2012: Differential Resistances to Chili Anthracnose Caused by Two *Colletotrichum* Pathotypes. Master of Science (Plant Breeding), Major Field: Plant Breeding, Faculty of Agriculture at Kamphaeng Saen. Thesis Advisor: Associate Professor Orarat Mongkolporn, Ph.D. 48 pages.

Chili anthracnose, caused by *Colletotrichum* spp., is one of the major diseases to chili production in Asia. Three *Colletotrichum* species including *C. acutatum*, *C. gloeosporioides*, and *C. truncatum* (syn. *capsici*) have been reported as the existing pathogens in Thailand, which have been grouped into several pathotypes based on differential reactions on a set of differential chili host genotypes. Breeding for chili anthracnose resistance has been aimed for a durable resistance, therefore, an understanding of resistance mechanisms to different pathotypes is essential to achieve the breeding goal. Inheritance of differential resistances to two *Colletotrichum* pathotypes was investigated on F₂ and BC₁s intraspecific *Capsicum baccatum* (PBC80 x CA1316) populations. A double fruit inoculation with two pathotypes of *C. acutatum* ie. PCa-2 and PCa-3 was performed on five mature green and five ripe fruit from each plant. Disease scoring was performed on the ninth day after inoculation. Mendelian segregations of the resistance and susceptibility to PCa-2 and PCa-3 on the mature green and ripe fruit stages was analysed using chi-squared test. The resistance to PCa-2 appeared to be controlled by a single recessive gene on the mature green fruit, and by a single dominant gene on the ripe fruit. While the resistance to PCa-3 was controlled by two recessive genes on the mature green fruit, and by one single dominant gene on the ripe fruit. Linkage analyses revealed that the resistance genes of different fruit maturity were independent to each other, The resistance genes conferring PCa-2 and PCa-3 on mature green and ripe fruit stages were linked 31.67 % and 33.87 %, respectively.

Student's signature

Thesis Advisor's signature