

**A-06 Characterization of disease outbreak of perilla sclerotinia rot caused by *Sclerotinia sclerotiorum* under structured cultivation condition.** B. D. Shin<sup>1</sup> and S. B. Song<sup>2</sup>. <sup>1</sup>Plant Pathology Division, National Institute of Agricultural Science and Technology, RDA, Suwon 441-707, Korea; <sup>2</sup>Plant Environment Division, National Yeongnam Agricultural Experiment station, RDA, Milyang, 627-803, Korea

Sclerotinia rot frequently causes serious and unpredictable yield losses of the leaves of perilla growing under structured cultivation as vegetable in Korea. The incidence of perilla Sclerotinia rot caused by *Sclerotinia sclerotiorum* was observed throughout the growing season at greenhouse. The occurrence of this disease was especially severe from January to February of low temperature period. The average incidence rates of this disease were up to 15%. The significant occurrence of this disease was showed mainly in the continuous cropping field for more than five years. The incidence of this disease increased according to the increase of continuous cropping year. The incidence rates of this disease reached up to 20% in the continuous cropping field for ten years. Also It was first investigated the natural infection caused by *S. sclerotiorum* on weed plants, Gnaphalium affine due to perilla plants diseased in farmer's field. The casual fungus showed pathogenicity on 10 weed plants species tested, and more severe pathogenicity on Gnaphalium affine, Lатуca indica and Ixeris dentata included in the family Compositae. This result suggests that effective crop rotation and weed eradication can be the method for organic control of perilla sclerotinia rot, and sudden outbreaks of this disease in perilla field that were previously mono-cropped to continuous rice can be explained by the presence of weed hosts.

**A-07 Weeds as potent multiplication hosts of *Sclerotinia sclerotiorum* in organic vegetable farms.** Hyeong-Jin Jee, Byung-Mo Lee, Jong-Ho Park, and Kyoung-Yul Ryu. Organic Farming Div. National Institute of Agricultural Science and Technology, Rural Development Administration, Suwon 441-707, Korea

Sclerotinia rot caused by *Sclerotinia sclerotiorum* was the most destructive disease in the organic vegetable cultivation. Infection rate of the disease at Yangpyung and Namyangju reached up to 50% in some fields and the sclerotinial density in the upper 10cm soil ranged from 65 to 520 per 100g. In the heavily infested fields, seven weed species among 18 identified weeds showed typical symptoms of sclerotinia rot. The causal pathogen was readily isolated from the diseased weeds and pathogenic to

their corresponding hosts. They also showed pathogenicity to the cultivated vegetables such as lettuce, cabbage and broccoli. The seven weeds have not been recorded as hosts of *S. sclerotiorum* in Korea and in many other countries were *Mazus pumilus*, *Rumex crispus*, *Chenopodium ficifolium*, *Stellaria aquatica*, *Galinsoga parviflora*, *Stellaria media*, and *Erigeron annuus*. Among the weeds, *Mazus pumilus* and *Rumex crispus* were similarly susceptible to the pathogen as cultivated vegetables in pathogenicity tests. In the fields, sclerotinia rot on the two weeds occurred often earlier than the cultivated vegetables and other weeds. Consequently, it is considered that the two susceptible weeds play an important role in multiplication and dispersion of the pathogen in the organic farming system. Detailed roles of the weeds in multiplication and dispersion of the inoculum to the vegetables are under investigation.

**A-08 Red-pinkish *Colletotrichum acutatum* isolates associate copper-dependent enzyme activities, laccase and tyrosinase.** Jae Sung Park<sup>1</sup>, Myung Yong Shim<sup>1</sup>, Chang Won Choi<sup>1, 2</sup> and Seong Hwan Kim<sup>3</sup>. <sup>1</sup>Department of Biology & Medicinal Science, Pai Chai University, Daejeon 302-735, Korea, <sup>2</sup>Biomed RRC, Pai Chai University, Daejeon 302-735, Korea, and <sup>3</sup>Department of Microbiology, Dan Kook University, Cheonan, Korea.

Eight isolates of *Colletotrichum acutatum* showing red, pink, brown and black pigmentation were investigated for their possible association with copper-dependent oxidase such as laccase and tyrosinase activities. Both enzymes are known to be involved in melanin synthesis. The pigmentation depends on the composition of the growth medium. Three isolates grown in malt agar show pink color, on the other hand six isolates grown in PDA produce strong red color. Those isolates in PDA medium produce initially pink color that turns into reddish color after prolonged incubation. In addition, the intensity of both laccase and tyrosinase activities was higher in PDB than in malt. The localization of tyrosinase activity was also found in the hyphae of *C. acutatum* incubated with L-DOPA (3,4-dihydroxy phenylalanine), showing strongly positive reaction by histochemical analysis. Inhibitors of melanin synthesis such as hydroquinone, arbutin and kojic acid effectively inhibit the tyrosinase activity. DOPA staining after native PAGE identified one band with significant tyrosinase. This is the first report of red-pink pigmentation produced by *Colletotrichum* sp., associated with enzyme activities of fungal laccase and tyrosinase.