

5. The Genus *Phytophthora* in Korea. Hyeong-Jin Jee. Plant Pathology Division, National Institute of Agricultural Science and Technology, RDA, Suwon 441-707, Korea

Since Anton de Bary established the genus *Phytophthora* (Gk. *Phyton*=plant, *phthora*=destroyer) in 1876 with *P. infestans* as the type species, 59 species and 5 varieties have been reported worldwide attacking most important plant groups (Erwin & Ribeiro, 1996). In Korea, studies on *Phytophthora* were initiated by Japanese scientists Nakata and Takimoto (1928) in early 1900's, however, researches on the subject came virtually to a halt until 1960's and resumed thereafter. Currently, topics on *Phytophthora* rank high in the plant pathology field and 13 species from 33 host plants were recorded in the 3rd ed. 'List of Plant Diseases in Korea' (1998). In order to establish a taxonomic scheme for *Phytophthora* species inhabited in Korean, a survey on *Phytophthora* diseases has been carried out throughout the country since 1996. To date, 990 isolates were collected from 66 host plants and classified into 17 species. Among the surveyed host plants, 49 were unrecorded hosts and *P. cinnamomi*, *P. citricola*, *P. cryptogea*, *P. megasperma*, and *P. sojae* were new species in the country. However, *P. allii*, *P. colocasiae*, and *P. vignae* and the diseases on Welsh onion, buckwheat, chestnut, taro, adzuki bean, chrysanthemum, aster and peperomia have not been found yet among listed. Distinctive characteristics(C) for the *Phytophthora* species found in Korea and their host plants(H), distribution or isolation locality(L), and number of isolate collected(I) in this study are summarized as follows in alphabetical order.

1. *P. boehmeriae*. (C); Conspicuously papillate, broadly ovoid to subspherical, caducous sporangia, homothallic, amphigynous antheridia (H); Ailanthus, (L); Kyeongbuk, (I); 1, Note; Firstly identified by Dr. Byung-Soo Kim, Kyeongpook National University, in 1993.
2. *P. cactorum*. (C); Caducous sporangia with short pedicels, homothallic, paragyous oospores, (H); Apple, pear, peach, lily, strawberry, ginseng, Japanese angelica(두릅), (L); Nationwide, (I); 132.
3. *P. cambivora*. (C); Bullate or verrucose, big oogonia(ca. 40~60 μ m in diam), (H); Apple, pear, (L); Kyeongbuk, (I); 12, Note; The ink disease of chestnut caused by the fungus has not been found yet.
4. *P. capsici*. (C); Conspicuously papillate, tapered base and spindle shape of caducous sporangia with long pedicels, (H); Pepper(paprika, bell pepper), watermelon, oriental melon(melon), eggplant, tomato, pumpkin, cucumber, lavender, (L); Nationwide, (I); 253.
5. *P. cinnamomi*. (C); Coralloid hypha and abundant big chlamydospores, (H); Japanese larch(낙엽송), Japanese maple(단풍나무), Korean pine(잣나무), Hinoki cypress(편백), Lily, (L); Chonnam, Chonbuk, Kyeongnam, Chungbuk, Cheju, (I); 31.
6. *P. citricola*. (C); Semi-papillate, variable, flattened on one side, and bifurcated sporangia, plerotic oospores with paragyous antheridia, (H); Jujube, (L) Kyeongbuk, (I); 3.
7. *P. citrophthora*. (C); Papillate, not caducous and highly variable shapes of sporangia, no oospores normally, (H); Peach, apple, orange, yuzu, citron, Chinese magnolia vine(오미자), (L); Kyunggi, Kyeongbuk, Kyeongnam, Cheju, (I); 18.
8. *P. cryptogea*. (C); Non papillate and internally or externally proliferated sporangia, hyphal swellings, heterothallic, amphigynous antheridia, (H); Gerbera, Chinese cabbage, (L); Nationwide, (I); 27, Note; This species is not readily distinguished from *P. drechsleri* in morphology and genetics. Isolates fell into a genetic group of *P. drechsleri*-*P. cryptogea* complex based on RFLP analysis of rDNA (Hong *et al*, 1998).
9. *P. drechsleri*. (C); Non papillate, slightly elongated, either rounded or tapered base of sporangia, hyphal swellings, heterothallic, amphigynous antheridia, (H); Kiwi, grape, tricolor sage, boxthorn(구기자), Angelica(당귀), Atractylodes(삼주), Chinese magnolia vine(오미자), Rehmannia(지황), Astragal(황기), azalea, poinsettia,

Japanese larch, Japanese black pine(해송), lettuce, spinach, somato, Ligularia(곰취), (L); Nationwide, (I); 163, Note; Isolates were divided into four genetic groups based on RFLP of rDNA and each group likely has host preference (Hong *et al.* 1998). 10. *P. erythroseptica*. (C); Non papillate variable shapes of sporangia, homothallic, aplerotic, amphigynous antherida often elongated, (H); Atractylodes(삼주), Astragal(황기), Benjamina rubber tree, arrowroot, (L); Kyunggi, Kyeongbuk, Kyeongnam, (I); 20. 11. *P. infestans*. (C); Semi-papillate, highly caducous, limoniform sporangia with short pedicels, nodes on sporangiophore, (H); Potato, tomato, (L); Nationwide, (I); 31.

12. *P. macrospora*. (C); Highly caducous, non-papillate, big size (60~110 x 30~60 μ m) sporangia, abundant oospores in plant tissues sized ca. 55~100 μ m in diameter, not culturable, (H); Rice, (L); Chungnam, Kyeongbuk, Kyeongnam, Chonnam (could be nationwide), (I); 0.

13. *P. megasperma*. (C); Non-papillate sporangia, abundant large oospores (42~52 μ m) in host tissues or by single culture, antheridia are mainly paragynous but a few amphigynous, (H); Tomato, (L); Kyeongbuk, (I); 9. 14. *P. melonis*. (C); Similar to *P. drechsleri*-*P. cryptogea* complex group in morphology but differ in genetics and physiology, (H); Cucumber, watermelon, oriental melon(melon), (L); Nationwide, (I); 36. Note; Previously, isolates were identified as *P. drechsleri* because of similar morphology. However, a subsequent study resulted that the isolates have significantly distinct characteristics from *P. drechsleri*-*P. cryptogea* complex group but same as *P. melonis* originated from Taiwan. 15. *P. nicotianae*. (C); Not caducous, ovoid to spherical sporangia, small oospores (<24 μ m) with all amphigynous antheridia, abundant chlamydospores (H); Cactus, lily, baby's breath(안개초), anthurium, kalanchoe, citron, jujube, orange, yuzu, cinnamon(계피), boxthorn, Angelica(당귀), Rehmannia(지황), diskidia, poinsettia, (L); Nationwide, (I); 145.

16. *P. palmivora*. (C); Conspicuously papillate, limoniform to elliptical highly deciduous sporangia with short pedicels, abundant chlamydospores, (H) Cymbidium, fig, Areca palm, benjamina, lavender, lady lavender, pringed lavender, (L); Kyunggi, Chonnam, Cheju, (I); 26.

17. *P. sojiae*. (C); Abundant oospores in hot tissues with mostly paragynous but a few amphigynous antheridia, no growth on PDA, pathogenic only to soybean, (H) Soybean, (L); Kyunggi, Chungnam, Kyeongbuk, (I); 17. Note; This species has not been found in Asia but Japan, although the soybean has emerged and cultivated for several thousand years in the region.