Phytophthora citricola Sawada, in relation to shoot blight of lilacs and crown rot of elders in Alberta

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Phytophthora citricola a fungus described by Sawada in 1927 (4) as the cause of a brown rot of oranges in Formosa, is now known to be capable of attacking a number of other plants in various parts of the world. In the United States it was studied by Chester as a pathogen of lilac. He described it in 1932 as a new variety of Phytophthora cactorum and called it P. cactorum var. applanata (3). Later, in 1957, this variety was shown by Waterhouse to be the same as P. citricola, which name, as she points out, has priority (4).

A disease of common lilac, Syringa vulgaris, L.. in the form of a shoot blight of suckers, was observed in Edmonton in 1965. From aboveground necrotic stem tissues of the diseased shoots we isolated a fungus and sent a culture of it to Dr. D. L. McIntosh of the Canada Department of Agriculture at Summerland, B. C., who identified it as P. &-ricola (4). This, as far as we are aware, constituted the first finding of this pathogen in Alberta and the first record of its occurrence on lilac in Canada (1).

During the last few years a serious disease of elders (Sambucus sp.) has been observed in the Edmonton district and specimens affected, apparently with the same disease, have been received by the Crop Clinic of the Alberta Department of Agriculture from other sections of Alberta. The disease, which we have called Crown Rot, appears to be widespread in the province, and to have caused the death of numerous individual elder plants. To our knowledge, it has not been reportedelsewhere. It is characterized by a brownish necrosis of the basal part of the stem, the crown and attached roots and in time by a wilting of the foliage of part or of the whole plant.

From the symptoms shown by elders affected with Crown Rot we suspected that it was caused by a species of Phytophthora, but until recently were unable to isolate a member of this genus from the necrotic tissues. We did find a Pythium quite commonly associated with diseased tissues (2) of some specimens, but were unable to satisfy ourselves that it was the main pathogen involved. Species of Fusarium were also commonly present, but they too, appeared to be secondary organisms. Recently, we have isolated a species of Phytophthora from necrotic basal stem tissues of diseased red elders from two widely separated points in Alberta, namely, Three Hills and Fairview. Moreover, the two isolates so far obtained from these two points appear to be the same and to resemble closely our lilac isolate of P. citricola. Both proved to be highly pathogenic when stems of red elders were artificially inoculated. Noteworthy, as well is the fact that our known isolate of P. citricola from lilac has produced infection as readily as have the two elder isolates when red elder stems have been inoculated with all three isolates under similar conditions. It would appear, therefore, that P. citricola is an important pathogen of elders as well as of lilacs and that it may be a major cause of Crown Rot of the former.

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Storage rot of carrots incited by a Sclerotinia - Candida complex

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Most of Alberta's commercial carrot crop must be held in either common or cold storage for extended periods lasting as long as seven or eight months. During this time it is essential that storage temperature be low and humidity very high. Such conditions often favor fungal development.

A disease of stored carrots (Daucus carota L. var. sativa) in the form of a cup rot, as yet undescribed in the literature, was observed in Edmonton in 1963. These carrots had been in cold storage nearly three months, after harvest, in closed heavy-duty polyethylene bags. Early symptoms of cup rot were discoloration and softening of tissue in a section about an inch wide extending approximately halfway around the circumference of the carrot. Later, the centre of the affected area caved inward and the damaged surface tissue took on a glistening, slimy appearance, and was eventually covered by a thick creamy-white ooze. No weft of surface mycelium was evident in either early or late stages of cup rot development.

Preliminary investigations indicated that Sclerotinia sclerotiorum (Lib.) deBary was initially associated with the rot. This association was eventually obscured by a yeast, Candida kruzei (Cast.) Berkh., which frequently overgrew the entire affected area. Cup rot was reproduced in the laboratory, during later investigations, and it was shown that the Sclerotinia-Candida complex was primarily responsible. Also, some of the physiological factors involved were studied to show reasons for the successive appearance of the two fungi.

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