BRIEF ARTICLES

OCCURRENCE OF PYTHIUM APHANIDERMATUM ON TABLE BEETS IN BRITISH COLUMBIA[1]

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In June 1967, large areas of a 30-acre field of table beet, Beta vulgaris L. 'Detroit Dark Red', near Armstrong, British Columbia, contained fewer plants than the average number throughout the field Plants in these portions of the field were stunted and had yellow leaves and small roots. Plants in the rest of the field appeared normal. The soil of this area, which had been reclaimed from swamp 15 years previously, was black and high in organic matter. Crops that had preceded the beets included timothy, potatoes, parsnips, carrots, and oats. The grower stated that in 1966, the first year when table beets were grown, the crop had shown similar unsatisfactory growth in certain areas. In 1966, and again in 1967, many plants in the affected areas had died shortly after emergence, while the survivors had grown slowly to display the effects that were observed. Affected plants had scurfy black lesions on the roots at the soil level, but attempts to isolate pathogens from such lesions failed to yield any organisms deemed likely to be responsible for the disorder.

Subsequently, soil was collected from the areas of the field that were most affected and was sown with seed of 'Detroit Dark Red' beets in flats in a greenhouse that was maintained at 21 C. Seedlings emerged after 5 days, but most of them collapsed within a few hours of emergence. Wilted seedlings had conspicuous, black, wet lesions that girdled the plants at the soil level Pure cultures of a rapidly growing fungus were consistently isolated on Difco corn meal agar from such lesions. The fungus was identified on the basis of Middleton's description (2) of Pythium aphanidermatum (Edson) Fitap.

The pathogenicity of the fungus was confirmed in greenhouse tests at 21 C A homogenate, prepared by blending four petri-dish cultures of the fungus, in 100 ml water, was applied to three 2-ft rows of newly emerged 'Detroit Dark Red' seedlings growing in steamed potting soil in flats. Seedlings in a second flat were similarly treated with a fungus-free homogenate of corn meal agar. Thirty hours after inoculation, seedlings began to collapse in the flat to which inoculum had been added and additional plants were affected during the next 3 days. Pure cultures of P. aphanidermatum were readily recovered from affected seedlings.

From the evidence obtained, it has been established that P. aphanidermatum was present in the soil of the problem portions of the field, and that this pathogen causes damping-off of table beet seedlings. It has not been established with certainty that stunting and scurfy root lesions were due to infection by P. aphanidermatum. It is however conceivable that these symptoms were caused by chronic attacks by the pathogen on plants that had grown beyond the stage at which they succumb completely to damping-off.

P. aphanidermatum, although known to cause damage to sugar beets in Ontario (1), has not been recorded previously on table beets in Canada.

Literature cited

1. Conners, I. L. 1967. An annotated index of plant diseases in Canada. Can. Dep. Agr. Pub. 1251. 381 p.

2. Middleton, J. T. 1943. The taxonomy, host range and geographic distribution of the genus Pythium. Mem. Torrey Bot. Club 20: 1-171.

OBSERVATIONS ON THE GERMINATION OF THE OOSPORES OF PHYTOPHTHORA CITRICOLA

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The observations reported here are preliminary ones having to do mainly with the germination of the oospores of Phytophthora citricola Saw., which is associated with a shoot blight of lilac (*Syringa vulgaris* L.) and a crown rot of elder (*Sambucus* sp.) in Alberta (4). P. citricola is homothallic and it produces oospores rapidly and abundantly on slants of lima bean agar in test tubes. In its sexual state, particularly, it closely resembles Phytophthora cactorum (Leb. & Cohn) Schroet. (6).

About 1 week after the initiation of a new colony of P. citricola on Diffo lima bean agar (ph 5.8), numerous oospores may be formed under ordinary laboratory conditions at 70-75 F (21-24°C). The first

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