OCCURRENCE AND PATHOGENICITY OF GODRONIA CASSANDRAE F. VACCINII ON LOWBUSH BLUEBERRY IN NOVA SCOTIA[1]

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Abstract

Cankers caused by Godronia cassandrae f. vaccinii were found on lowbush blueberries (Vaccinium angustifolium) in several areas of Nova Scotia and in one location in Prince Edward Island. An isolate of this funqus from lowbush blueberry was pathogenic on lowbush blueberry, highbush blueberry (V. corymbosum), and cranberry (V. macrocarpon).

In 1970, cankers caused by the fungus Godronia cassandrae (Peck) f. vaccinii Groves (stat. conid. Fusicoccum putrefaciens Shear) (1) were found for the first time in Nova Scotia on lowbush blueberry (Vaccinium angustifolium Ait.). Previously it was reported on lowbush blueberry in Quebec in 1968 (3) and in Michigan (4) in 1969. In Michigan isolates of G. cassandrae from Spiraea spp. and from V. angustifolium were pathogenic to highbush blueberry (4). In Nova Scotia this disease is recognized as a limiting factor in the production of highbush blueberries (2). This study reports on the occurrence of G. cassandrac on lowbush blueberry and on the pathogenicity of an isolate of this Eungus from lowbush blueberry on lowbush blueberry, highbush blueberry (Vaccinium corymbosum L.), and cranberry (Vaccinium macrocarpon Ait.).

Isolations from lowbush blueberry

In April 1970, F. putrefaciens was isolated from cankers found on lowbush blueberry plants in a headland bordering a commercial highbush blueberry field at Sheffield in Kings County, N.S. (Figures 1 and 2). At Debert in Colchester County, cankers were found on 5% of the plants in hedgerows and in scattered areas of a poorly burned commercial lowbush blueberry field. Severely infected clones were found by the roadside near Musquodoboit, Halifax County, and on plants near a cranberry bog at Aylesford, Kings County. Recently G. cassandrae f. vaccinii was isolated from a sample of lowbush blueberry plants from a commercial field at Lewes, Prince Edward Island.

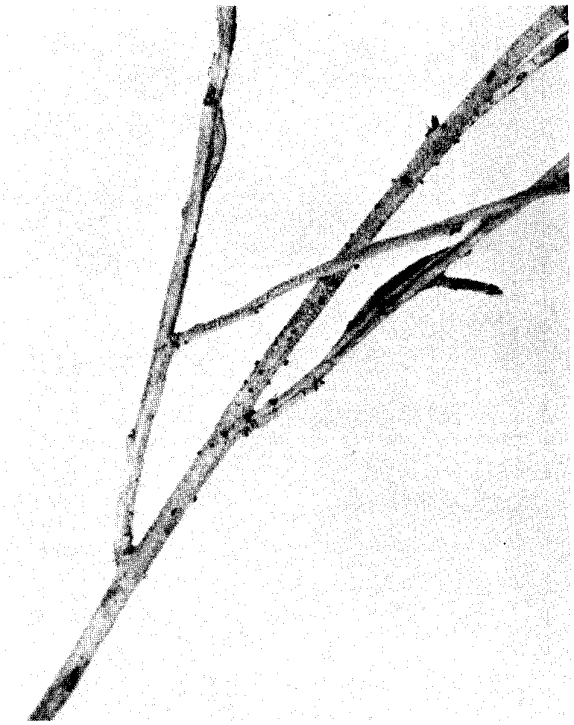

Figure 1. Three-year-old shoot of lowbush blueberry infected with Godronio cossondroe f. voccinii.

Pathogenicity

An isolate of G. cassandrae f. vaccinii from a canker on the lowbush blueberries at Sheffield was used for all pathogenicity tests. The inoculum was grown on lowbush blueberry twigs that had been previously placed in test tubes containing water and sterilized in the autoclave. Twelve plants grown in pots in the greenhouse were wound inoculated by making an incision in the bark with a sterile scalpel and inserting conidia of F. putrefaciens scraped from a twig

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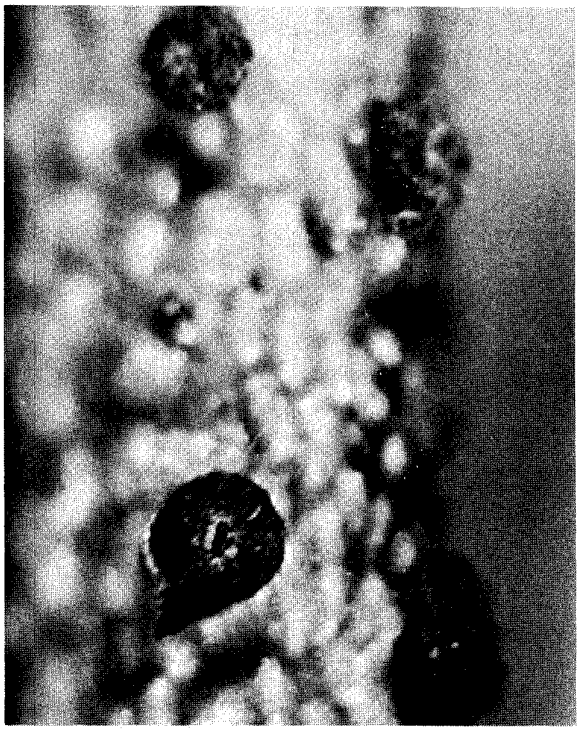

Figure 2. Pycnidio of Fusicoccum putrefociens, the conidiol state of Godronio *cassandrae* f. *vaccinii*, on lowbush blueberry.

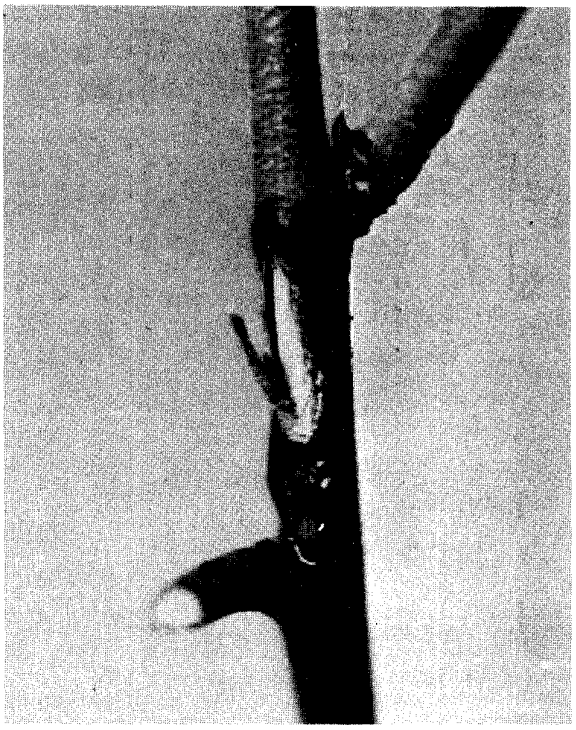

Figure 3. Canker produced on lowbush blueberry artificially inoculated with Fusicoccum putrefociens.

culture. The incisions were wrapped with moistened cotton held in place with cellulose tape. One week after inoculation the cotton was removed. Controls consisted of incisions without inoculum.

Following inoculation, the plants were placed in a growth chamber (Controlled Environments Ltd., EY8VH) under a regime of 18 C days (16 hr) and 10 C nights (8 hr). Light in the day period was provided by six 40-W fluorescent bulbs and eight 100-W incandescent bulbs. Relative humidity was 92% during the day and 98% at night.

After 1 month, cankers were evident on the inoculated plants. After 2 months the plants were transferred to a greenhouse. Nine months after inoculation, cankers 4 to 9 cm long (Fig. 3) had developed. At this time, one of the cankers was dissected and yielded the fungus on isolation. The remaining plants were held for another 5 months, during which the cankers enlarged slightly. No fungus fruiting structures developed on the cankers. No cankers developed on the control plants and the incisions healed completely.

Nine highbush blueberry plants, 3 each of the cultivars Bluecrop, Blueray, and Earliblue were inoculated in the same manner as the lowbush blueberry plants. They were placed in the growth chamber for 6 months and then transferred outdoors in June. Cankers first became evident on Earliblue 8 months after inoculation. At 12 months cankers were 2 cm long on Earliblue and 1 cm long on Bluecrop, and the wood was discolored under these affected areas. No definite cankers developed on Blueray but the fungus was readily isolated from the inoculated areas on this cultivar and from the cankered areas on the other two cultivars.

Nine cranberry plants, cultivar Stevens, were inoculated in the same manner as the blueberry plants and held in a growth chamber for 7 months. By 1 month, swollen callus tissue had surrounded the incisions and by 7 months this tissue was 1 cm in length, but these areas did not appear to have healed. Pycnidia of F. putrefaciens developed on one infection site and the fungus was isolated from all the inoculated plants. The control incisions calloused over but did not yield the fungus on isolation.

Discussion

G. cassandrae f. vaccinii has been found to be confined to lowbush blueberries on headland areas, roadsides, or improperly burned lowbush blueberry fields. The

practice of burning commercial lowbush blueberry fields every two or three years, apparently has effectively controlled this disease. The findings from these experiments confirm those of Weingartner (4), indicating that infected lowbush blueberry plants serve as a reservoir of the fungus for this disease on highbush blueberry. Its status as a canker causing organism on cranberry is not known.

Literature cited

1. Groves, J.W. 1966. The genus Godronia. Can. J. Bot. 43:1195-1276.

2. Lockhart, C.L. and D.L. Craig. 1967. Fusicoccum canker of highbush blueberry in Nova Scotia. Can. Plant Dis. Surv. 47: 17–20.

3. Smerlis, E. 1968. The occurrence and pathogenicity of forms of Godronia cassandrae in Quebec. Can. J. Bot. 46:597-599.

4. Weingartner, D.P. 1969. Studies of canker and stem blight diseases of highbush blueberry (Vaccinium corymbosum L.) in Michigan. Diss. Abstr. Int. B 30:2498B-2499B.