

Three Species of *Botryosphaeria* Cause Peach Tree Gummosis in Georgia

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ABSTRACT

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Peach tree gummosis cankers were sampled in three regions of Georgia. *Botryosphaeria obtusa* was isolated more frequently than *B. dothidea*. *B. rhodina* was infrequently isolated. All three species caused gummosis cankers in greenhouse inoculations.

In 1970 a gummosis disease of peach trees was observed in the Fort Valley, GA, area. By 1974, D. J. Weaver reported

reproduction of symptoms by inoculating healthy wounded trees with mycelium of *Botryosphaeria dothidea* (Moug. ex Fr.) Ces. & de Not. (6).

In the past 10 yr, the disease has spread throughout most of the peach-growing region of Georgia (2). At Fort Valley, the heart of this district, it is so severe that some trees in almost all orchards show symptoms by the fourth year after planting, and in many older orchards 100% of the trees are infected.

MATERIALS AND METHODS

Survey. During the last 3 yr, we have sampled hundreds of cankers in the Fort Valley area (central) and in other areas where the disease has appeared, including McDuffie County (east central), the eastern limit of the disease, and Morgan County (north central), the northern limit. At least 200 cankers were sampled in each region, using a bark increment hammer. Five cores were taken from the border of each canker. These were plated on acidified potato-dextrose agar (APDA) made with fresh potatoes and incubated under fluorescent lights at 24 C for 14 days.

Inoculations. Rooted cuttings (cv. Washington) were grown in 15.2-cm pots in the greenhouse for approximately 6 mo. Fourteen inoculations were then made on hardened wood and 14 on new

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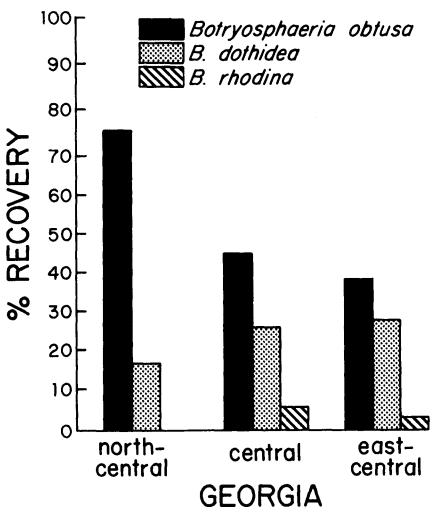


Fig. 1. Percentage of recovery of *Botryosphaeria* spp. from cankers sampled in McDuffie County (north central), Peach County (central), and Morgan County, GA (east central), representing the eastern limit, origin, and northern limit of peach gummosis, respectively.

wood with *B. dothidea*, *B. obtusa* (Schw.) Shoemaker, and *B. rhodina* (Berk. & Curt.) Arx. Each group was wounded with a scalpel to produce a bark flap beneath which a mycelial plug was placed. Control trees were inoculated with sterile APDA. The wound site was wrapped with adhesive tape. One isolate per fungal species was used. Trees were maintained in the greenhouse for 1 yr.

RESULTS

Survey. Examination of the cultures obtained from natural cankers revealed a much larger percentage of *B. obtusa* than

B. dothidea. A third species, *B. rhodina*, is much less common in the field (Fig. 1). There was no apparent difference in the proportion of these species recovered from orchards where the disease has only recently appeared (east central and north central) compared with orchards that have been diseased for many years (central).

Inoculations. *B. rhodina* applied to wounded new growth resulted in dieback to the inoculation point as early as 3 mo after inoculation. No dieback occurred on older wood.

Within 6 mo, the trees inoculated with each of the three *Botryosphaeria* spp. on wounded new growth were producing gummy exudates. Very little gum was produced on uninoculated controls. *B. obtusa* caused much less gum than the other species, and this was dry, black, and crusty after 6 mo. Copious gum deposits, which remained gelatinous throughout the year, were produced by *B. rhodina*. *B. dothidea* appeared intermediate to the other species relative to gum production. After 1 yr, isolations on APDA yielded *B. rhodina* from 85% of inoculated new wood and from none of the older wood. Thirty percent of the new wood and 66% of the older wood inoculated with *B. obtusa* were infected. None of the older wood and 66% of the new growth inoculated with *B. dothidea* became infected.

DISCUSSION

It is not surprising to find several *Botryosphaeria* spp. parasitizing the same host. In their investigation of the host ranges of *B. ribis* (= *B. dothidea* Arx & Muller [4]) and *Physalospora malorum* (= *B. obtusa* (Schw.)

Shoemaker), Shear et al isolated the latter from *Prunus* spp. in Madison County, FL, and from so many other hosts that they concluded it "...probable that either of these species or both of them may be found on almost any deciduous host in the eastern United States" (3).

B. B. Higgins (1) in 1916 reported *Lasiodiplodia triflorae* (= *B. rhodina* [5]) as the cause of plum wilt. The symptoms of this disease, aside from wilting, are similar to those of peach tree gummosis: dead bark, blackened cambium, and gumming.

All three species of *Botryosphaeria* can infect wounded peach trees and induce gumming. Our survey indicated that *B. obtusa* was more common than *B. dothidea* and that *B. rhodina* was relatively rare. The symptoms caused by these organisms are visually indistinguishable from those caused by *B. dothidea*. However, the identity of the causal species in the field may be totally inconsequential unless differences in etiology or control are uncovered.

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