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CYTOSPORA CANKER OF PEACH IN FLORIDA

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Abstract. Dieback, canker, and wilting shoots have been observed with increasing frequency since 1969 in the peach and nectarine production areas of Florida. *Cytospora leucostoma* has been consistently isolated from trees showing these symptoms. *C. leucostoma* is known to be a wound pathogen, and its occurrence in Florida has most often been observed in association with cold injury, borer damage, and pruning. This disease is known to cause serious damage in other peach production areas, both in the U.S. and in Canada, and potentially poses a threat to the growing Florida peach and nectarine industry. Observations made in the spring of 1973 showed a close relationship between early pruning and increased disease incidence.

Cytospora canker caused by *Cytospora leucostoma* (Pers.) Sacc. (imperfect form of *Leucostoma persoonii* (Nits.) Höhn.) is becoming an important disease problem on peaches and nectarines in Florida. It is of increasing concern to growers, researchers, and regulatory officials since this newly developing industry is now valued at 5 million dollars annually. This disease has caused serious losses to peach orchards in Colorado, New York, Idaho, and Illinois. Young trees are most severely damaged with early mortality resulting, while on older trees a loss in production and eventual mortality occurs (3).

Cytospora canker has been found in all major peach and nectarine production areas in Florida.

Additional species of *Cytospora* have also been found on numerous other hosts: red maple, *Acer rubrum* L.; camphor tree, *Cinnamomum camphora* Nees & Eberm.; *Cryptocercus* sp.; dracena, *Dracaena* sp.; apple, *Malus* sp.; plum, *Prunus domestica* L.; rose, *Rosa* spp. (cultivars and rootstocks); Chinese elm, *Ulmus parvifolia* Jacq.; and grape, *Vitis labruscana* Bailey (1).

The pathogenicity of *C. leucostoma* has been well established (3,4). Infection occurs through injured or dead tissues as might be associated with buds, leaf scars, shoot internodes, fruit pedicels, blossom spurs, and cankers induced by other fungi. The time of greatest canker activity occurs in the spring with progressive development of symptoms to sporulation of the fungus occurring in 6 to 8 weeks. During periods of high humidity the pycnidial fruiting structures of the fungus exude tendrils of spores and contain up to 100,000 spores per pycnidium. The probable agents of spore dispersal are insects, birds and man, and undoubtedly splashing or wind-driven rain (4).

Cytospora canker is associated with winter injury, pruning, mechanical wounds, drought injury (2,4,5) and, to some extent, injuries produced by insects (4). Symptoms manifested by this disease are cankers, gummosis, sunken bark, tissue discoloration, and dieback of branches (Fig. 1). Of the various type injuries common to peaches and nectarines, pruning wounds are considered the most important contributing factor to the incidence of *Cytospora* canker. The severity of *Cytospora* canker can be such that up to 90% of the trees in a young orchard of 2- to 3-year-old trees can be affected with an average of one to two cankers per tree, but more commonly developing on 10% of the trees the first year after planting. Older, more mature trees do not appear to be as susceptible (4).

In Florida, *Pseudomonas syringae* van Hall, the cause of bacterial canker of peach, is often found in association with cankers caused by *Cytospora*. Their relationship is not clear at this time. Investigators have also found such common fungi as *Alternaria*,

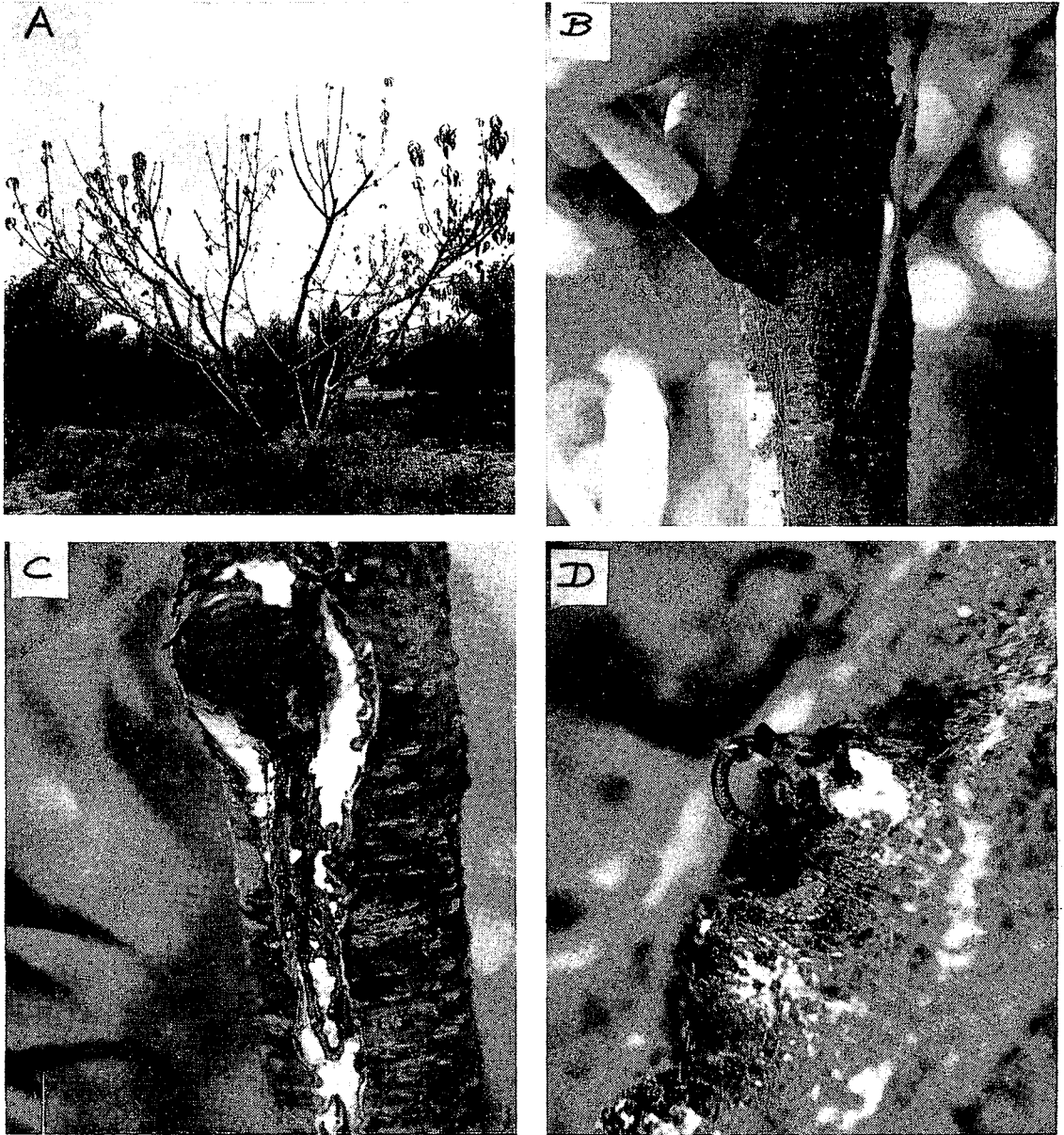


Fig. 1. *Cytospora* canker of peach: A) peach tree with advanced stages of dieback; B) canker with sunken bark area; C) internal discoloration of canker; D) enlarged pycnidial fruiting structure with oozing tendril of spores.

Epicoccum, *Candida*, *Nigrospora*, *Geotrichum*, *Cladosporium*, *Sphaeropsis*, and *Phoma persicae* Sacc. associated with old cankers. The role of these presumably saprophytic bark fungi has not been determined (3).

For control of this disease the effects of sun scalding can be minimized by wrapping trunks,

or painting them in the fall with a white interior latex paint. Injuries induced by the use of equipment should be avoided and all pruning tools such as knives, shears, and saws should be disinfested with denatured alcohol, 10% formaldehyde solution, or Clorox. Diseased or injured bark should be excised with a sharp knife disinfested with

70% ethyl alcohol, particularly when cankers are young. This should be followed by sealing with an orange shellac and a thin coat of asphaltum tree dressing. Kolofog sulfur has also shown promise as a wound dressing when used at 4 oz per pint of water (2). In Florida, keeping trees in good vigor and delaying pruning until just prior to blossoming help reduce the incidence of *Cytospora* canker. Also, since drought conditions appear to increase this problem, consideration should be given to timely irrigation practices.

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BACTERIAL CANKER OF PEACH IN FLORIDA

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Abstract. Bacterial canker caused by *Pseudomonas syringae* is an important disease of stone fruits in the Pacific Coast and southeastern United States. Although generally recognized as a weak pathogen, the organism has, in the southeast, been associated with the short life of peach trees. In 1973 the disease was identified on peach trees in Florida for the first time. Symptoms of the disease are described and control methods are discussed.

Florida's peach industry ranks 10th in the United States based on tree population. According to the Florida Crop and Livestock Reporting Service there were 807,000 peach and nectarine trees in the state on approximately 7,500 acres. The vitality of the industry is reflected in the fact that in the past 2 years there has been a 25% annual increase in peach acreage. Peaches are grown commercially in northern Florida, primarily in Madison County, and several areas in central Florida.

The major diseases affecting peaches and nectarines statewide are phony peach, brown rot

(*Monilinia fructicola* (Wint.) Honey), scab (*Cladosporium carpophilum* Theum.), and rhizopus rot (*Rhizopus* sp.). In certain areas clitocybe root rot (*Clitocybe tabescens* (Scop. ex Fr.) Bres.) and rust (*Tranzschelia discolor* (Fckl.) Traz. & Litv.) are also serious problems.

Recently bacterial canker, a disease heretofore unreported in Florida, was found on peach trees in Madison County. The disease is known in most of the stonefruit producing regions of the world but is of most importance in the Pacific coast (1) and southeastern states where it has been associated with the decline or short life of peach trees (4). Some of the symptoms of bacterial canker, winter injury, and general physiological stress are difficult to separate. The purpose of this paper is to describe the disease and relate its destructive potential to growers, fruit crop specialists, and agricultural extension personnel.

Symptoms

In 1972 several 6-year-old peach trees died suddenly after setting fruit and foliating normally. The following year symptoms of stress appeared in neighboring trees. Most of the affected trees bloomed normally but began to exude gum from scaffold limbs and trunks as the leaves were appearing. During various stages of foliation, leaves wilted, yellowed, and died but usually remained attached to the branches. Cankers, which appeared as slightly depressed streaks or oval areas in the bark, were present on limbs, branches, and trunks. The tissues under the bark appeared brown or with brown streaks, watersoaked, gummy, and were sour smelling. Scaffold limbs and branches were