

Survey of blueberry plantings in New York

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Project location(s): Essex, Washington, Saratoga, Albany, Columbia, Dutchess, Tioga, Niagara, and Orleans counties in New York

Abstract:

Blueberry canker diseases are challenging to manage since management relies exclusively on proper pruning and plant health maintenance. Knowing which of the canker fungi are prevalent in NY blueberry plantings will allow growers to improve IPM practices aimed at maintaining plant health. A survey was continued in 2008 to ascertain which canker fungi are most common. On 12 farms surveyed in eastern NY, *Phomopsis* canker was prevalent, and in some locations quite severe. *Fusicoccum* canker and mummyberry were not found. *Botryosphaeria* canker was found at three farms. Other diseases of minor occurrence included *Botrytis* blight, a dieback (*Pestalotia* spp. or *Pestalotiopsis* spp.), and micronutrient deficiency. This work will be continued in 2009 in other regions of NY.

Background and justification:

New York ranked 10th in the nation in blueberry production, with 700 acres producing 1.5 million pounds valued at \$1.96 million in 2005 (Anonymous 2006). This survey was undertaken primarily to determine the prevalence of canker pathogens in blueberry plantings, but also to survey for other problems impacting blueberry production in NY. Carroll had worked in the Plant Disease Diagnostic Lab, Cornell University, where samples of blueberry cankers were the most commonly received for this crop, and included *Fusicoccum* canker and *Phomopsis* canker. Knowing which of the canker fungi are prevalent in New York blueberry plantings will allow growers to improve IPM practices aimed at maintaining plant health. With better knowledge of the diseases affecting blueberries in NY, growers will be able to apply targeted IPM practices for improved yields.

Canker management relies exclusively on proper pruning and plant health maintenance. These diseases can be associated with winter injury, occurring on weakened branches, but can be serious primary causes of plant decline, reducing planting longevity. Other diseases that affect blueberry include anthracnose, which has emerged as a major threat to berry crops, *Botrytis* blight, mummy berry, and viruses. A canker disease found in states to the south, *Botryosphaeria* canker, had not been reported from NY prior to 2007 on blueberry (Carroll 2007b), although the

pathogen occurs on other woody plants in NY. Virus diseases can be propagated along with systemically infected cuttings and lead to serious decline of plantings. Viruses have been found in blueberry plantings in NY, though the extent and impact of their occurrence is not well understood. Carroll contacted extension educators in eastern NY regions to set up surveys to expand on the surveys of blueberry plantings done in western NY in 2007.

Objectives:

1. Survey blueberry plantings in New York State for canker and dieback diseases.
2. Identify other prevalent pest problems impacting blueberry production in New York State.

Procedures and Results:

1. *Survey blueberry plantings in New York State for canker and dieback diseases.*

Blueberry plantings were surveyed and samples were collected July 7-8 and 23 from 12 farms, one in Essex county, five in Washington county, one in Saratoga county, one in Albany county, two in Columbia county, and two in Dutchess county. The focus was to find out the prevalence of Phomopsis canker and Fusicoccum canker in blueberry plantings. Also, to look for Botryosphaeria canker since this disease has not been reported on blueberry from NY until it was identified in western NY in 2007.

Table 1. Prevalence of canker diseases found on blueberry in a survey of 12 farms in eastern NY.

Canker Disease	Samples with Disease	Farms with Disease
Fusicoccum canker, <i>Fusicoccum putrefaciens</i>	0	0
Phomopsis canker, <i>Phomopsis vaccinii</i>	47	11
Anthracnose on twigs, <i>Colletotrichum</i>	0	0
Botryosphaeria canker, <i>Botryosphaeria dothidea</i>	4	3
Dieback, <i>Pestalotia</i> or <i>Pestalotiopsis</i> spp.	8	6

Samples were kept on ice in a cooler and brought back to the lab. A total of 150 twig and branch samples were incubated in moist chambers and the resulting fungal fruiting bodies were



Figure 1. Blueberry plant with 50% of branches infected with Phomopsis canker.

microscopically identified after several days' incubation. Putative identity of the fungi was based on morphology of the fungal fruiting bodies and characteristics and size of the spores. If no species is given, more than one species might have been involved. Results of the canker survey are given in Table 1.

Phomopsis canker was prevalent in blueberry plantings in eastern NY. Two of the plantings were severely affected; over half of plants were diseased and many of the diseased plants had 50% infected branches (Fig 1).

No *Fusicoccum* canker or anthracnose on twigs was found. A *Pestalotia*-like fungus was found on eight samples and this may be the same species, *Pestalotiopsis clavispora*, as reported from blueberry plantings in Chile (Espinoza et al 2008). This fungus was also observed on a small number of samples collected in 2007 from western NY, but thought to be secondary and not reported. Evidence of *Botryosphaeria* canker was found on three farms, most likely *Botryosphaeria dothidea* based on the botryose, stromatic fruiting body and large elliptical hyaline spores. This substantiates the find of this disease on one farm in western NY in 2007 (Carroll 2007b).

2. *Identify other prevalent pest problems impacting blueberry production in New York State.*

Other problems found included insect oviposition injury resulting in dieback and *Botrytis* blight. Only one farm had some symptoms that might have been attributable to virus infection. No

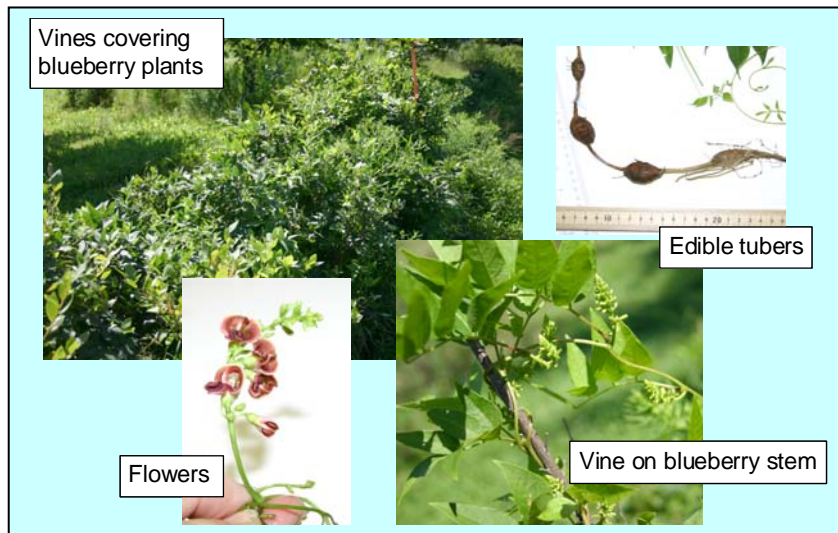


Figure 2. Groundnut, *Apios Americana*, vines were found infesting two blueberry plantings in eastern NY.

evidence of mummy berry on fruit was found. In addition, two plantings were infested with the weed groundnut, *Apios americana*, a perennial vine which grows from edible tubers (Iungerman 2008) (Fig 2).

Follow up on the 2007 identification of tobacco ringspot and tomato ringspot virus in a blueberry planting in Tioga county (Carroll 2007a), Marc Fuchs, virologist, and George Abawi, nematologist, confirmed the two viruses in

tissue samples and the presence of the nematode vector, *Xiphinema americanum*, in soil samples collected in spring 2008.

Discussion:

Phomopsis canker was found in all but one of the blueberry plantings surveyed in eastern NY. *Botryosphaeria* canker was found in three plantings, in Washington and Columbia counties, confirming the 2007 first find on blueberry in NY.

In general, plantings that are pruned routinely, irrigated, and fertilized appropriately are less prone to serious canker problems. However, wounds are not required for infection by Phomopsis or *Fusicoccum* cankers, spores can infect 1-, 2-, or 3-year old wood, and they are released throughout the growing season (Caruso and Ramsdell 1995). The severity of Phomopsis canker in three of the plantings in eastern NY suggests the need for research on specific treatments for managing this disease if it is unable to be controlled through cultural means.

We will continue surveying NY blueberry plantings for canker diseases and other problems in the coming years. A brief report on this study to the NY Berry Growers Association board meeting was received with interest and encouragement to continue.

References:

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Photo credits

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Figure 2, Kevin Iungerman, NE NY Fruit Program, Cornell Cooperative Extension