

# Godronia Canker and Phomopsis Canker of Lowbush Blueberry

## Introduction

There are two major canker causing organisms that infect lowbush blueberry in Nova Scotia. The fungus *Godronia cassandrae* (*Fusicoccum*) causes the disease Godronia canker and the fungus *Phomopsis vacinii* causes Phomopsis canker. Of the two diseases, Godronia canker is more destructive. Historically, both canker diseases have not been a problem in lowbush blueberries and when they did occur, they were confined to edges of fields that were poorly pruned by fire. The first indication that these diseases were increasing in importance occurred in 1996 when one field was found to be severely affected with Godronia canker. Since then, both Godronia and Phomopsis canker have been identified in a number of fields. In 2002, another field showed very severe symptoms of Godronia canker which prompted a survey of 54 randomly selected fields throughout the Province. This survey showed that most fields (91%) had some disease which ranged from <1% to 38% of the stems infected. The Provincial average was 13%. Currently, the level of Phomopsis canker is not known. Although it is probably less than Godronia canker, it is thought to be increasing as well.

## Symptoms

### Godronia canker

Godronia canker occurs in cropping fields in the spring time. Early spring infections result in tip dieback which appears in late May or early June. The dieback may appear in patches or randomly throughout the field. Upon closer inspection of stems, a lesion can usually be seen about midway up the stem. The lesion is almost always centered around a leaf bud and is dark orange-brown in colour and surrounded by a purplish border. In time, the centre of the lesion begins to turn a tan colour and small black fruiting bodies may be seen near the lesion centre (see inset picture). The lesion may be small or up to 2 cm in length. Developing leaf buds above the lesion become stunted and begin to die followed by complete stem death above of the lesion giving a typical dieback appearance.

Leaf buds below the lesion grow vigorously so that by early July a severely infected field can look deceptively lush and healthy, but it will have a reduced yield. Infections that begin in July may not result in tip dieback, but the stems become unthrifty with reddish leaves and small berries.

### Phomopsis canker

Phomopsis canker usually occurs in sprout fields and can be seen in late July or early August through to the end of September. Lesions are not well defined and appear as brown blemishes near the base of sprouts. Within a few days the entire stem begins to turn brown and the leaves turn a reddish brown which stand out against the lush green colour of healthy sprouts. After this colour change, the leaves fall off quickly. Phomopsis canker also occurs in cropping fields, but it is less common than in sprout fields. Affected stems also have leaves that turn reddish brown and drop off which sometimes can be confused with Godronia canker. Unlike Godronia canker which usually kills the



Godronia canker



Phomopsis canker

upper portion of the stem, *Phomopsis* canker kills the entire stem because the infection point is usually at the stem base (see inset picture).

### Life cycle

Little information is available on the life cycles of these pathogens in lowbush blueberry and research is currently underway to determine this. The *Godronia* pathogen overwinters on dead infected stems and produces its spores in early spring until early July. Early spring infections can cause considerable damage while infections occurring in July are less damaging. The *Phomopsis* pathogen also overwinters on dead infected stems but produces most of its spores beginning in late July through to early October. Late fall infections do not appear to kill sprouts, but these infections overwinter and then continue to develop in the spring and kill the cropping stems.

### Monitoring

The best time to determine disease levels of *Godronia* canker is in early July before foliar growth becomes too dense and early September for *Phomopsis* canker in sprout fields. For both diseases, 5-7 acres representative of the entire field should be surveyed along three parallel transects. To ensure randomness in sampling, repeatedly toss a stick about 2 m in front of you and then cut and bag the stem closest to the end of the stick. Cut the stem at ground level. Sample about 200 stems in total. Once collected, keep the stems from direct sunlight. Separate the healthy stems from the diseased or dead stems. A magnifying glass may be helpful. Stems from fruiting fields with *Godronia* canker will have a distinctive lesion while sprouts with *Phomopsis* canker will be dead or dying with symptoms as shown above.

### Management

The survey for *Godronia* canker conducted in 2002 showed that origin of a field (pasture or woodland), geographic region, or age of the field were not important factors associated with disease level, but pruning method was important. When the last 3 pruning cycles were examined, fields that had been burned in each cycle had very little disease. Fields that were never burned, had high amounts of disease (see graph). There was no difference between burning with oil, propane or straw. From this, it is clear that burn pruning is important in destroying diseased stems which serve as inoculum sources for new infections. If canker levels are high, two or more burn prunes may be needed to reduce disease levels. After that, a burn prune every third year may be adequate to keep disease levels down. Do not mow prior to burning as this seems to insulate the stems from the heat. Upright stems are burned more effectively. There are no data yet on pruning method in relation to *Phomopsis* canker, but it is safe to assume that burning will have a similar beneficial effect in reducing this disease as well. The decision to prune by the more expensive method of fire versus mowing will be based on disease levels and the price of berries. Because the two canker diseases kill the stems, the percentage of diseased stems can be considered as a direct loss. For example, if 10% of the stems are infected in a field that routinely produces, 4000 lb/acre, the loss is 400 lbs./acre. If the price of berries is \$0.35/lb. the financial loss is \$140/acre.

No fungicide efficacy studies on the two diseases have been conducted on lowbush blueberry.

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