

IPM Fact Sheet Series**UMass Extension Fruit Team**

Fact Sheet #BD-006

**Blueberry – Witches' Broom (*Pucciniastrum goeppertianum*)****ID/Disease Cycle:**

Witches' Broom (WB) is caused by a rust fungus (*P. goeppertianum*) that requires two hosts (blueberry and balsam fir) to complete its life cycle. Diseased plants have broom-like masses of swollen, spongy shoots with short inter-nodes. Leaves may be small or absent. Young stems on the brooms are initially yellow or reddish, but later become brown and shiny, and, eventually, dry and cracked. Canes infected with witches' broom produce little to no fruit; the remainder of the plant may still produce fruit but will become less productive over time. The brooms can persist for many years, producing infected new growth every year. While not common in Massachusetts, nearly all blueberry plants may be infected in fields located near fir trees. This is important when considering planting blueberries near Christmas tree plantings.

Airborne spores produced on fir needles infect blueberry leaves and stems in the summer. The fungus becomes systemic and permanent in blueberries. The characteristic witches' broom does not appear until the next growing season. Overwintering spores develop in the swollen stems and, in the spring, produce spores that reinfect fir needles. The disease requires both hosts to be present to complete its life cycle. Once infected, blueberry plants cannot be cured and must be removed from the planting.



**Figure 1)** Dense broom-like growth on a blueberry bush. [Photo: (left) S. Schloemann, (right) N. Brazee, UMass]

**Damage:** Newly infected plants may remain productive for many years if 'brooms' are cut out every year; however, a steady decline in productivity will occur. Heavily infected plants produce no fruit.

**Management:** Because the pathogen is perennial and systemic in blueberry crowns and rhizomes, burning and other pruning methods do not eliminate witches' broom. The best control strategy is to eradicate the alternate host (fir trees) within 400-500 yards of the blueberry plants; this may not be practical, however, in areas where balsam fir is abundant in natural stands or in Christmas tree plantings. Eradication of diseased blueberry plants by rouging out bushes and burning them effectively eliminates the disease from an affected field.

**Monitoring:** All blueberry fields near wild or cultivated balsam fir trees should be carefully monitored 2-3 times per year for symptoms of this disease.

**Control strategies:**

*Cultural/Biological:*

- Avoid planting blueberries near wild or cultivated balsam firs. If this cannot be avoided, consider planting tolerant cultivars. At this time the only cultivar thought to have resistance is 'Rancocas'.
- Eliminate wild or cultivated balsam firs within 400 -500 yards of cultivated blueberries.
- Prune out and destroy symptomatic tissue as soon as it appears. Remove the entire branch the witches' broom arises from. This will only slow the progress of decline.

*Chemical:*

Fungicides are not effective for this disease.

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