



FACT SHEET

Actigard Paint Therapy to Manage Fire Blight Canker

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Fire blight cankers are overwinter tissues that produce bacterial ooze, the major inoculum for fire blight in the next growing season. Pruning out these cankers is no doubt the most effective control measures to sanitize the orchard to get rid of fire blight. However, when cankers are occurring on central leaders of full-grown trees, taking down the entire tree could significantly affect the livelihood of growers, especially for high-value cultivars. As an alternative to cutting down the whole tree, growers may consider using plant defense inducer Actigard (active ingredient acibenzolar-S-methyl) to manage cankers, making them less active and even completely eliminated.

Materials: Actigard 50WG (Sygenta) and Pentra-Bark surfactant (Quest Product Corp., Westminster, CO)

Principle: Actigard is a plant defense inducer. Painting Actigard to bark tissue induces plant defense genes (*Pathogenicity related* genes, or *PR*-genes), which helps to deactivate the fire blight pathogen *Erwinia amylovora* and potentially eliminate cankers. Pentra-Bark is a silicone surfactant that helps the penetration of Actigard through the bark tissue.

Methods

1. Prepare paint solution:

Weigh out 30 grams of Actigard 50WG (15 g of active ingredient) dissolve in 1 liter of water, add 2 ml of Pentra-Bark surfactant (2%).

2. Painting

Apply the painting solution with a flat foam brush (5 by 7 cm, model 140-2; Solo Horton, Torrington, CT) to **1.** the fire blight canker, and 5 inches above and below the canker area; **2.** a 60-cm length of woody trunk tissue, with the proximal edge of the treated area located just above the graft union (pear cultivars) or just above the soil-line (apple cultivars).

3. Timing

Painting needs to be done twice every season.

1st application: between green tip to half inch green.

2nd application: 4 weeks after the 1st application (at petal fall).

Keep an eye on the canker activity (size expansion, ooze production) throughout the season.

Repeat this for at least two seasons.

Expected effect:

Pentra-Bark surfactant will help drive Actigard (acibenzolar-S-methyl) into the tissue, which will induce the expression of *PR* genes in host tissue. Overall, *PR* gene expression is expected to be induced by 5-100 fold as to none-treated (Johnson and Temple, 2016). This will inactivate the fire

blight pathogen *E. amylovora* in canker. Research showed that painting trees with Actigard twice effectively reduce canker formation (Figure 2).

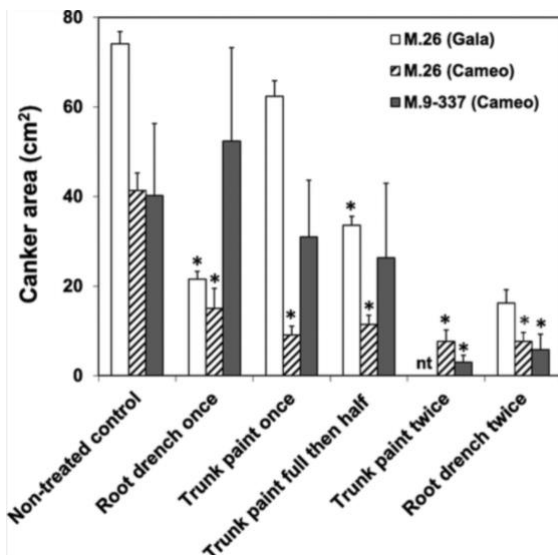


Figure 2. Effect of acibenzolar-S-methyl (ASM) drench and trunk paint treatments applied prophylactically to greenhouse-grown, potted, 2-year-old apple rootstocks under 1-year-old scion cultivars to suppress fire blight canker expansion in the rootstock tissue below the graft union (Johnson and Temple, 2016).

Note: This method has not been tested on all cultivars, the effect of canker elimination is dependent on host susceptibility as well as tree vigor. **For highly vulnerable, young trees under high density production, taking down the entire tree is still the best option to for complete elimination of fire blight risk in the orchard.**

Reference:

Johnson, K.B., and Temple, T.N. 2016. Comparison of Methods of Acibenzolar-S-Methyl Application for Post-Infection Fire Blight Suppression in Pear and Apple. Plant Dis 100:1125-1131.
Johnson, K.B., and Temple, T.N. 2017. Induction of Systemic Acquired Resistance Aids Restoration of Tree Health in Field-

Grown Pear and Apple Diseased with Fire Blight. Plant Dis 101:1263-1268.

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