

ACTIGARD MAY REDUCE DISEASE IN STRAWBERRY

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Strawberries are contributing to Virginia growers' profits and I foresee them becoming more important in the years to come. In 2001, Virginia produced about \$5.1 million worth of strawberries on 500 acres while our neighbor to the north, New Jersey, produced \$1.3 million worth but on almost the same acreage (400 acres) (Agricultural Statistics Board, 2001). It appears to me that there is potential for high-quality, locally produced, environmentally conscious strawberry production in Virginia.

However, one of the biggest problems facing strawberry production in Virginia is disease management. The two biggest problems are often gray mold (*Botrytis cinerea*) and anthracnose (several *Colletotrichum* species, *Colletotrichum acutatum* on fruit in VA). Furthermore, Chandler and Camarosa, two cultivars widely grown throughout Virginia and the Mid-Atlantic are highly susceptible to anthracnose. One of the big problems with anthracnose is that all plant parts can be infected, even runners and crowns. This is especially important on carry-over plasticulture and matted-row production in Virginia. Propagation with infected plants can also result in many more infected plants and a substantial increase in disease each succeeding year.. Additionally, none of the pesticides labeled for use in Virginia on strawberry are particularly effective at controlling anthracnose, especially when conditions are severe.

Therefore, it is imperative that we find other means of managing anthracnose on strawberry. One possible option has been the use of compounds that induce disease resistance systemically. One such compound is acibenzolar-S-methy (Actigard), manufactured by Syngenta Crop Protection (Greensboro, NC).

Actigard belongs to the class of compounds called "plant activators" or inducers of the plant defense response known as systemic acquired resistance or SAR. The active ingredient is a synthetic analogue of salicylic acid, the principal ingredient in aspirin, and it can confer resistance to a broad spectrum of pathogens including fungi, bacteria, and viruses. Recent results by Graves and Alexander (2002) showed that Actigard was "equal to or better than the standard copper-based bactericide for controlling bacterial speck and spot, with no adverse affect on yield" on tomato. Actigard has recently been registered for control of bacterial spot and speck on tomato, due largely to Dr. Alexander's efforts. Actigard is also registered for blue mold of tobacco.

Little is known about Actigard's effectiveness in controlling anthracnose or other diseases on strawberry. Three nice attributes of actigard are: application rates are low (probably 0.2 to 1 oz. per acre); mammalian toxicity is negligible, and potential systemic, broad-spectrum resistance.

Therefore, we (Tony Bratsch and I) decided to evaluate actigard for its ability to control anthracnose on strawberry in greenhouse and field studies. Some questions to be answered are: (1) What is the most effective, low rate of Actigard; (2) What are the most effective timing and number of applications; and (3) How does actigard compare to other pesticides. Phytotoxicity has been a problem in other plants. Several studies are currently underway in the greenhouse at Virginia Tech. Studies in the greenhouse will be supplemented/verified with a 2-year field trial at Kentland Farm (Whitethorne, VA).

Strawberry plants have been potted up and are growing in the greenhouse. Flowers will be hand-pollinated and then actigard will be spray-applied at several rates when the first flower is observed and continue on a weekly basis until end of harvest. Plants will also be sprayed with spores of the fungus causing anthracnose. We're also not sure when to apply actigard. Thus, we will treat plants with Actigard at staggered weekly intervals. The first treatment will be applied at 4 weeks after transplanting and continue on a weekly basis thereafter. Plants in the second treatment will be sprayed with Actigard the following week and then on a weekly basis thereafter. Each new set of treatments will be initiated each consecutive week until the first green fruit is observed.

The first-year field study was planted in late August last fall and the plants are beginning to grow vigorously (Fig. 1). Cultivars that were planted are Chandler, Camarosa, Sweet Charlie, and Bish. Actigard will be compared to several other pesticides including azoxystrobin (Quadris) and chlorothalonil (Bravo 720). Pesticides will be applied as recommended. Actigard will be first applied at flowering and continue on a weekly basis thereafter. The amount of anthracnose will be compared for plants treated with actigard compared to the other fungicides.



Figure 1. Field study in early December, 2002 at Kentland Farm (Whitethorne, VA). Plants are on fumigated, raised, double rows. Each 20-plant plot is 10' long. Each row will be sprayed with a pesticide (actigard, water control, Quadris, or Bravo 720). Note the slant fence around the plot for deer-exclusion.

Preliminary results look promising. Phytotoxicity does not appear to be a problem except at higher rates of actigard.

Additionally, it is possible that other diseases besides anthracnose may also be suppressed. Stay tuned for future reports! We might soon be able to recommend aspirin rather than other pesticides. We would also like to thank the Virginia Agricultural Council for their support: none of this project would have been possible without them.

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