



Berry Insider 2004



Photo courtesy of Bill Sciarappa

Spinosad for blueberry maggot control requires modified application equipment and large orifice nozzles to create a spray stream and splatter large droplets on blueberry leaves.

Blueberry Maggot Breakthrough

Researchers at Rutgers have evaluated new materials to control this major pest.

By Bill Sciarappa, James Barry, and Sridhar Polavarapu

BLUEBERRY maggot is the number one insect problem in commercial highbush blueberry. Few things are more repulsive to the consumer than unexpectedly discovering a large, white wiggling maggot in the middle of their beautiful "blue" berry. USDA grading systems require careful inspection, and Canada has very strict quarantine rules targeted against this major pest. While these international export regulations concern many operations, most large wholesale growers and local retail marketers are just as badly affected when supermarket or U-Pick clients find out that the product is infested. A 0.1% infection rate will immediately lose initial sales and jeopardize future contracts. With severe economic penalties

and zero tolerance for blueberry maggot, intensive IPM scouting programs and numerous insecticide applications are made to combat the pest.

Blueberry maggot adults in New Jersey typically oviposit eggs beginning around June 20th. Early season blueberry varieties like Early Blue, Bluetta, and Weymouth can nearly escape maggot infestation because they come to harvest before the bulk of the blueberry maggot adult population is ready to lay eggs. On the other hand, mid-season varieties like Duke and Bluecrop are much more susceptible. Conventional growers will spray middle- and late-season varieties with three or four organophosphate applications on a seven- to 10-day schedule to eliminate maggot fly adults. Organic growers in the East have been held back by the lack of Organic Materials Review Institute (OMRI)-approved

materials. Recent trials by the Rutgers University Extension Blueberry Working Group have tested potential new tools for this persistent pest.

New Materials And Testing

Dow AgroSciences recently received small fruit registrations for a microbiological product called Spintor with the active ingredient spinosad. Now a new formulation called Entrust has been registered for organic blueberry growers. Entrust also has activity on caterpillars and thrips.

An additional spinosad formulation is called GF-120 Naturallyte Fruit Fly Bait, formulated exclusively for fruitfly control. This bait formulation has proteins and sugars known to enhance feeding of fruitflies. Thus, lower doses of spinosad are needed to act as a stomach poison compared to broadcast applications requiring complete coverage and contact. These two formulations join other organic fruitfly materials Pyganic (pyrethrin, McLaughlin Gormley King) and Agroneem (azadirachtin, Agro Logistic Systems).

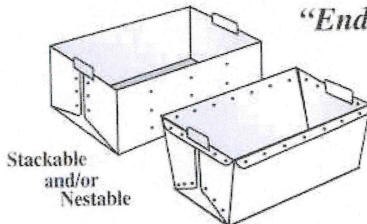
In commercial testing, a 20-acre block of certified organic blueberries was randomly divided into four 1-acre replications for each treatment. All treatments were sprayed with a commercial air blast sprayer four times in July. First spray was applied approximately 10 days after the first sustained captures of adult flies. The ripening fruit was harvested by a team of 20 people who picked 1000 blueberries per replication. Berries were processed with a microwave extraction technique to count blueberry maggot larvae.

Test Results

Under very heavy maggot pressure of over 12% infection in the untreated check, all four organic type insecticides performed very well, even in comparison to a synthetic insecticide

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check. Results of this commercial trial revealed the high level of efficacy for these new treatments.

These results are even more impressive when one understands that even "maggoty"-looking berries were harvested and taken randomly, whereas in a commercial situation these berries would simply not be hand-harvested to begin with or sorted out mechanically. With these results, alternative insecticide tools advance considerably for both conventional and organic farm use.


A rotational spray program to preserve the high level of efficacy of spinosad is essential to avoid resistance. Growers should not rely on just one material but rotate with two other chemical modes of action. Organic growers will have the rotational options of pyrethrin and azadirachtin. In combination with a strong cultural management program, these new materials will help reduce risk and sustain future market growth.

Since 1993, conventional growers in New Jersey have enjoyed an expanding market rising from \$25 million to over \$45 million. Acreage has also increased to almost 8000 acres. This profitable industry will also benefit with the inclusion of these new OMRI materials in terms of better protecting their investments, lowering toxicant load, improving resistance management programs, and better reducing blueberry maggot pressure on their fields internally and externally. For example, perimeter sprays of the low-rate bait on a different 40-acre organic blueberry farm prevented the immigration of a large population of flies living on wild blueberry in the adjacent woodlands.

These new tools demonstrate strong commercial utility with cost, control, and environmental advantages. From an insect management standpoint, the development of new control strategies opens the door to accelerated growth of organic acreage. Similarly, conventional acreage will be better able to ward off resistance, reduce off-site and in-field threats and more confidently transition some acreage to organic certification. Marketing insect-free fruit produced through biorational programs provides a win-win situation for consumers and growers alike. These breakthroughs may just be the beginning of increasingly safer and effective production tools. ●

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