

# PLANT & PEST ADVISORY

CRANBERRY EDITION \$1.50

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## Cranberry Agriculture and Mosquitoes

*Raymond J. Samulis, Burlington County Agricultural Agent*

Many scientists are predicting that this year will be one of the most prolific seasons on record for mosquitoes. For those of us who work around wetland areas in the normal course of our day, it appears that it is business as usual despite the threat of the West Nile virus and other mosquito vectored illnesses. I think it is good to evaluate some of the current information and scientific knowledge on mosquitoes periodically in order to protect our families and ourselves from these threats as much as possible. Most cranberry waters are free flowing, and thus have less chance of harboring mosquitoes. However, the still, open waters have the type of environment that is conducive to mosquito larvae.

As with most pests, there are many misconceptions that are spread about mosquitoes. It is a known fact that mosquitoes need a blood meal in order to reproduce. The blood meal, however, is not for food, but rather a necessary element for the female mosquitoes to properly fertilize their eggs. Since each female can lay multiple egg batches, they need numerous blood meals. According to Dr Wayne Crans of Rutgers, mosquitoes actually need nectar that oozes from plants. As with humans and other animals, mosquitoes utilize sugars in order to produce the energy needed to fly.

Mosquitoes do cause an allergic reaction in the form of an itch when they bite humans. This reaction however, is not from the bite itself, but rather from the saliva the mosquito injects into the skin for easier penetration, and to prevent your blood from clotting and stopping blood flow. Numerous research projects have investigated the reasons why some people are more attractive to mosquitoes than others. In all honesty, much is still unknown but there are some facts that explain part of this attraction. Female mosquitoes use carbon dioxide that we exhale in order to hone in on a subject. Folic acid in people has been shown to attract mosquitoes, as well as certain colors, especially dark colors, that tend to retain more heat. Interestingly, strong fragrances like perfume, deodorant, and soaps can either repel or attract according to the type and chemical makeup of the material. Mosquitoes have a very short (2 week) life cycle. Also, birds, dragonflies, and other creatures like spiders usually eat them.

*See Mosquitoes on page 2*

*Mosquitoes from page 1*

Mosquito research at Rutgers has a colorful history all the way back to J. B. Smith, who has the entomology building at Cook College in New Brunswick named after him. Smith was a very practical man who took great interest in working on problems of importance to the New Jersey agricultural industry. One area he had interest in was insect control in cranberries where he instituted early research studies and tested materials like tobacco mixtures, kerosene, pyrethrum, hellebore, "London Purple", and other products.

There are many products out on the market that claim to be the best materials to repel mosquitoes. You can find many sources such as news media, product salesmen, and others who tout products, but in 1998 the American College of Physicians did a thorough study on which products performed the best. DEET has been shown to be one of the most effective materials for mosquito repellency. The length of control is somewhat rate dependent, and usually a concentration of 10% to 35% is adequate for most situations. DEET can be skin applied. Sometimes DEET has drawn questions as to its safety; however, over 40 years of use has shown it to be very safe. *Skin-So-Soft* has long been touted as good as a mosquito repellent, but when compared to DEET the control period only lasted 30 to 40 minutes. Permethrin is another good material that can be applied to socks, pants, and clothing for mosquito control. One of the names that it is sold under is *Permanone* and it not only works on mosquitoes, but is also a product of choice for tick protection. One new product contains microencapsulated citronella but its effectiveness remains to be evaluated. □

## Management of Fruit-Feeding Pests During Bloom

*Sridhar Polavarapu, Ph.D., Specialist in Entomology*

Traditionally **spotted fireworm** and **Sparganothis fruitworm** populations have been managed in New Jersey with an organophosphate insecticide applied soon after the removal of honeybees (post bloom). Typically this period is around July 5-12 in most years, with some exceptions like the 2003 season. This strategy evolved over the years mainly to manage *Sparganothis* fruitworm populations. Recommended timing for *Sparganothis* management (two weeks after peak pheromone trap captures) also coincides with the post-pollination spray window.

While this strategy has been generally effective, at times we have seen growers applying this spray very late in the season (late third week of July) because of operational difficulties. This delay may cause fruit damage, especially as a result of feeding by the earliest hatching spotted fireworm larvae. Furthermore, this strategy makes no sense when *Sparganothis* is not your primary target for post-pollination insecticide applications. Sweepnet samples in May and early June as well as pheromone trap catches indicate that *Sparganothis* populations are lower this year than in previous years. Conversely, the spotted fireworm populations appear to be higher this year compared to the last couple of years.

An alternative strategy is to apply Intrepid 2F or Confirm 2F during bloom, targeting the early instar spotted fireworm larvae (see accompanying article on Intrepid 2F). Spotted fireworm egg masses typically begin hatching from the third week of June onwards (this year we are at least one week behind). This season we predict that more than 60% of the eggs will hatch by July 4. For low to moderate infestations (here you are not finding egg masses everywhere!), a single application made around early July during bloom (60-75% egg hatch) should bring down spotted fireworm populations to acceptable levels. Two applications of Intrepid 2F or Confirm 2F may be necessary for managing very high population levels. In this case, a second application should follow 7-10 days after the first application. You may not need an organophosphate application specifically for managing spotted fireworm and *Sparganothis* fruitworm, if you use either of these insecticides during bloom.

The advantages of this strategy include 1) better survival of natural enemies and beneficials as Intrepid 2F and Confirm 2F are practically non-toxic to insects other than caterpillars, 2) extended pollination as honeybees can be kept as long as needed, and 3) more effective control of other caterpillar pests such as **Sparganothis fruitworm**, **Blackheaded fireworm**, and **Spanworms** during bloom. This alternative strategy also has a major disadvantage. Intrepid 2F and Confirm 2F being target-specific insecticides, have activity only against caterpillar pests. Minor pests such as **bluntnosed leafhoppers**, **flea beetles** etc., which are controlled by organophosphate sprays will not be controlled by these insecticides. □

# Intrepid 2F and Admire 2F: Two New Insecticides for Use on Cranberries

*Sridhar Polavarapu, Ph.D., Specialist in Entomology*

EPA has approved tolerances for methoxyfenozide (Intrepid 2F) and imidacloprid (Admire 2F) for use on cranberries. The amended master labels have been submitted to NJ DEP by the registrant. We are working on getting supplemental labels from the registrants. I expect that these supplemental labels will be available to you in the next few days. Check the Rutgers Cooperative web page for NJ-Specific Labels at: <http://www.rce.rutgers.edu/labels>. You must have a copy of the supplemental label in your possession at the time of use of both these products.

The Cranberry Institute, Ocean Spray, NJ Blueberry and Cranberry Research Council, and Wisconsin Cranberry Board have funded and facilitated research and registration work on both these insecticides over the past five years. The IR-4 program conducted residue work and prepared registration documents.

Intrepid 2F (methoxyfenozide), a Dow AgroSciences product, is a second generation Insect Growth Regulator with activity only against **caterpillar pests**. The mode of action of Intrepid is identical to Confirm 2F. Both these compounds cause premature lethal molt upon ingestion in the larval stage of target pests. Intrepid 2F is generally regarded to provide superior efficacy compared to Confirm 2F. Both insecticides are safe to honey bees. Intrepid 2F should be used at 10-16 fl oz/acre for a maximum of 64 fl oz/acre/season. The PHI is 14 days. This product can be applied by air in a minimum of 10 gal per acre or by ground in a minimum of 20 gal. per acre. **This product should not be applied by chemigation.**

Admire (2F) (imidacloprid), a Bayer CropScience product, is a neonicotinoid insecticide registered for use on cranberry against **cranberry rootworm** and **scarab grubs**. This insecticide is a contact and stomach poison that affects the insect nervous system. Admire 2F is highly systemic and effective in managing insects with piercing and sucking mouthparts such as **aphids, leafhoppers, scales, mealybugs**, and other true bugs. This product can be used at 16-32 fl oz/acre. A maximum of 32 fl oz of Admire 2F can be used per acre per season. The PHI is 30 days. Admire 2F is highly toxic to honey bees and therefore can be used only as a post-pollination insecticide. Admire 2F can be applied by ground or by chemigation. **Aerial application of this product is prohibited.**

The full expanded Section 3 label for Admire 2F is currently available on the Rutgers Cooperative web page for NJ-Specific Labels at: <http://www.rce.rutgers.edu/labels>. □

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**Pesticide User Responsibility:** Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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