

EXECUTIVE DEAN
OF AGRICULTURE AND NATURAL RESOURCES

Report to the New Jersey State Board of Agriculture
January 2011

Spotlight on Breakthrough in Drip Chemigation for Insect Control

The Vegetable Growers Association of New Jersey (VGANJ), representing vegetable growers across the state for over 55 years, held its annual convention from January 11-13. Planned with extensive input from Rutgers New Jersey Agricultural Experiment Station researchers and extension faculty, the VGANJ convention offered a wide range of educational panels and workshops covering topics like Farm Safety, Greenhouse Floriculture, Bioenergy, Brown Marmorated Stink Bug, Agritourism, Season Extension for Vegetable and Fruit, Tomatoes and Grafting, and New Technology. A large number of panels and workshops were moderated and presented by Rutgers extension specialists. The general session on January 12 was chaired by **Wesley Kline** (agricultural and resource management agent, Cumberland County), while session speakers included **Brad Majek** (director, Rutgers Agricultural Research and Extension Center - RAREC) and **Gerald Ghidui** (extension specialist in vegetable entomology, RAREC).

One week earlier, on January 6, New Jersey Secretary of Agriculture Douglas H. Fisher announced that the state's horticulture industry ranked eighth in the nation for gross sales of horticulture crops, with \$347.6 million in sales in 2009. The latest figures were included in the earlier United States Department of Agriculture National Agricultural Statistics Service (NASS) release of the 2009 Census of Horticulture in Washington, D.C. Read the NJDA press release at <http://www.nj.gov/agriculture/news/press/2011/approved/press110106.html>.

The USDA figures cite "**transplants for commercial vegetable and strawberry production**" among the 623 New Jersey horticulture operations that achieved the high ranking, underscoring the importance of the commercial vegetable sector to New Jersey agriculture.

NJAES scientists are committed to investigating novel ways to support commercial vegetable growers in New Jersey and new innovations are being tested and perfected at our research farms. A shining example of a new innovation to mitigate an age-old problem is a breakthrough process in drip chemigation for insect control that has been met with great success in the field.



After entering pepper fruit through the cap, European corn borer larva feed on the interior

Many of us have become acquainted with the European corn borer (ECB) while shucking a fresh ear of corn. The worm tunneling through the ear, along with its frass, is not only a pest for its namesake, but other vegetable crops as well. European corn borer damage on peppers— where the worm bores through at the cap and feeds on the fruit interior renders the peppers unmarketable.

To target ECB, farmers have had an arsenal of useful insecticides, most of which have environmental problems with toxicity to non-target

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species or workers, and practical problems with repeated application efficacy and costs. Beginning in 1980, Ghidiu started looking at a new method of controlling ECB in peppers using a more effective means of applying insecticides. Trials at RAREC in Upper Deerfield, NJ, investigated applying insecticides through drip irrigation – known as chemigation. These pioneering trials were the first in the U.S. to research the viability of this mode of insecticide application. Application through drip irrigation reduces so many of the hazards that come with spraying of insecticides: potential farm worker and applicator exposure, killing non-target beneficial insects, crop damage, resistance, and soil compaction from spray equipment, along with increased chemical and labor costs.

The use of drip chemigation was very promising on all fronts. There was just one big problem –



there just happened to be no systemic insecticide – that could be taken up by the roots - that would work effectively in the system, and yet remain absolutely safe for crops and consumers who enjoy them.

According to **Jack Rabin** (NJAES director, Farm Programs), “the extensive maze of drip irrigation control valves, shunts, by-passes, solenoids, tubing, lines, hoses, injector pumps, and other items it takes to lay out and properly conduct a study like this takes years to evolve.”

Pictured above is application equipment for experimental chemigation trials. Chemigation through a drip irrigation system requires equipment that controls application and prevents backflow contamination of the water source

In 2000, when DuPont developed

Coragen, a new generation low toxicity pesticide that was effective on worm pests and worked via a systemic mode of action, Ghidiu immediately deployed it for use in chemigation trials on ECB in peppers. After the many years of drip chemigation trials, the missing piece was in place and the results were ground breaking.

Trials at RAREC from 2004-2007 determined the timing, rate, effectiveness, application methods, bioassays on location within the plant. Not only was the drip chemigation application of Coragen extremely effective, it is now labeled and used throughout the pepper growing areas of the U.S. More importantly, it led to two publications from DuPont and Syngenta on how to properly chemigate, not just for Coragen, but for other materials as well, such as Admire, and Platinum. Rutgers, in turn, made a major upgrade to the New Jersey Commercial Vegetable Recommendations manual, by adding a chemigation section as well as specific recommendations for chemigation.

“Without the research farm infrastructure, the long-term research experience, the fields, and the



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evolved infrastructure that Gerry evolved over many, many years, we would not be able to conduct this field work,” Rabin added.

The chemigation application of Coragen results in a number of benefits for commercial vegetable growers. How does it compare to spray applications of existing labeled materials for European corn borer control in peppers? The older recommendations included foliar sprays every 5-7 days or so with Lannate or Orthene. These require over one pound per treatment, are toxic materials, have efficacy problems in hot weather, and require up to 15 or more applications weekly or more frequently between August 1 to the end of growing season, usually around October. Alternatively, chemigation in peppers enables growers to use just two applications of Coragen at rates of three to five ounces. Some existing materials like pyrethroids made matters worse because they kill beneficial insects, leading to spider mite and aphid outbreaks.

As Ghiudu see it, this innovation “has become an excellent management tool that reduces time and chemical inputs, protects beneficial and non-target organisms, reduces labor and material costs (spray equipment and fuel), reduces chances of plant damage by sprayers, reduces soil compaction, and actually increases effectiveness.” A win-win situation for growers, he emphasizes.



Coragen chemigation field trial for European corn borer control on pepper at RAREC

What’s on the horizon? This system with Coragen is being heavily used for armyworm and fruitworm control in tomatoes throughout the U.S., and with other insecticides such as Platinum or Admire for aphid and beetle control in vegetables like eggplant, tomatoes, and lettuce.



Faculty and Staff Activities and Accomplishments

Rutgers Master Gardener Program Wins Governor's Award

The 2010 Governor's Environmental Excellence Awards honoring individuals, organizations, institutions, communities and businesses that have made significant contributions in protecting New Jersey's environment was held at the New Jersey State Museum on December 15. The winner in the Environmental Education/Student Activity Category was the Rutgers Master Gardener Program. This award, which honors "the educator, student, group of students or class that has planned and implemented a project/program with measurable positive environmental impacts" was presented by Bob Martin, commissioner of the Department of Environmental Protection (NJDEP). "New Jersey residents are the winners through the hard work of these individuals and organizations," Commissioner Martin said. "They have made the State a better



L-R: Former New Jersey Governor James Florio, **Nicholas Polanin**, and NJDEP Commissioner Bob Martin

place to live. We owe them all a great deal of thanks." Accepting the award was **Nicholas Polanin** (statewide coordinator for the Rutgers Master Gardener Program, and agricultural and resource management agent, Somerset County).

Initiated in 1984, The Rutgers Master Gardener program is an educational volunteer training program offered in New Jersey through the efforts and expertise of faculty and staff of Rutgers Cooperative Extension. The program is designed to increase environmental awareness and stewardship through increased

availability of University-based horticultural information to local communities and individuals through trained volunteers known as Rutgers Master Gardeners. These volunteers are well known for their sincere desire to help others and great interest in expanding their working knowledge of gardening, horticulture, and the environment. They are members of the local community who willingly and with dedication use this knowledge to then serve as volunteer environmental educators to fellow residents. This trained volunteer base has greatly expanded the visibility and capacity of Rutgers Cooperative Extension in fulfilling our educational mission through the distribution of horticultural information to individuals and groups all across New Jersey. Active in 18 counties throughout the state, the program has developed and enhanced many community programs related to gardening, horticulture, and environmental well-being. In 2009 alone, approximately 2,400 Master Gardener volunteers gave nearly 158,000 hours in pursuit of horticultural and environmental education efforts all across New Jersey. The annual awards event is sponsored by the NJDEP, the New Jersey Corporation for Advanced Technology, and the State League of Municipalities.

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Mark Your Calendars!

Managing Insect Pests of Ornamental Plants

WHEN: February 1, 2011, 9 a.m. to 3:30 p.m.

WHAT: Workshop sponsored by the Rutgers NJAES Office of Continuing Professional Education

MORE INFO: Contact Dan Serpico, 732-932-9271, ext. 648, serpico@njaes.rutgers.edu.

<http://www.cpe.rutgers.edu/courses/current/al0406ca.html>

Central Jersey Vegetable Growers Association

WHEN: February 4, 2011, 8:30 a.m. to 2:55 p.m.

WHERE: RCE of Monmouth County, Ag Building, 4000 Kozloski Road, Freehold, NJ.

WHAT: Annual meeting sponsored by RCE of Monmouth County.

MORE INFO: Contact Terry Hansen, 732-431-7260.

<http://co.monmouth.nj.us/documents/57/CJVGA11.pdf>

Pepper and Tomato Hot Water Seed Treatment and Vegetable Crops Update

WHEN: February 7 & February 11, 2011.

WHERE: RCE of Cumberland County & RCE of Gloucester County

MORE INFO: Contact Michelle Infante-Casella, 856-307-6450, minfante@njaes.rutgers.edu.

http://events.rutgers.edu/pdfs/2011_hot_water_and_disease_workshop.pdf.

New Jersey State Agricultural Convention

WHEN: February 8-9, 2011, 8 a.m. To 9 p.m.

WHERE: Crowne Plaza Hotel, Cherry Hill, NJ.

WHAT: Annual convention sponsored by the New Jersey State Board of Agriculture and NJDA.

MORE INFO: Contact Linda Walker, 609-633-7794.

<http://www.nj.gov/agriculture/pdf/2011programflyer.pdf>.

Greenhouse Growers Conference

WHEN: February 15, 2011, 9 a.m. to 3:30 p.m.

WHERE: RCE of Cumberland County, 291 Morton Avenue (County Rt. 634), Millville, NJ.

WHAT: A class focused on fruit and vine growing problems in the home orchard and vineyard.

MORE INFO: Contact Viola Carson, 856-451-2800, ext.4, violaca@co.cumberland.nj.us.

Sustainable Tree Fruit Production in Southern New Jersey

WHEN: February 22, 2011, 8 a.m. to 4 p.m.

WHERE: Gloucester County, Office of Government Services, Building A Auditorium, Clayton, NJ.

WHAT: Workshop co-sponsored by the Peach Promotion Council and Northeast SARE Program.

MORE INFO: Contact Jerome Frecon, 856-307-6450, ext.1, frecon@njaes.rutgers.edu.

http://events.rutgers.edu/pdfs/South_Jersey_Fruit_Mtg_2-22-2011.pdf.

This report is produced by the Office of Communications and is available online at

<http://execdeanagriculture.rutgers.edu/boa/>.

For information or to provide comments, please contact Paula Walcott-Quintin at

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