THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS COOPERATIVE EXTENSION
New Jersey Agricultural Experiment Station

2003-2004

Annual Report Highlights

Vegetable Integrated Pest Management Program

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

MISSION

The Vegetable Integrated Pest Management (IPM) Program is dedicated to developing and improving integrated pest management techniques and practices that will enhance vegetable production in the state of New Jersey. Program objectives are accomplished through the development and delivery of pest monitoring and field scouting programs, grant-funded and sponsored research, and educational outreach.

PROGRAM PERSONNEL

Dr. George Hamilton
Statewide IPM Coordinator

Mr. Joseph Ingerson-Mahar
Vegetable IPM Program Coordinator

Mr. Kristian Holmstrom
IPM Research Project Coordinator (North Jersey)

WEBSITES

Rutgers Cooperative Extension Pest Management Office.
Find information on the activities of the RCE Vegetable IPM Program with links to the Plant and Pest Advisory newsletters, current and archived insect maps:
http://www.pestmanagement.rutgers.edu/index.htm

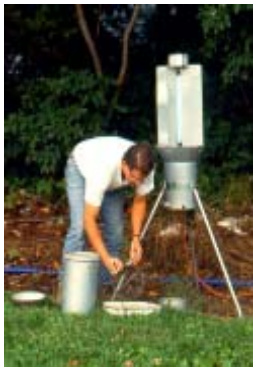
Sweet Corn Pest Monitoring Network.
The NJ Vegetable IPM Program trap data is represented on regional pest maps published seasonally by Penn State:
http://pestwatch.cas.psu.edu/SC/default.html

USDA/OPMP Crop Profiles Database.
The VegetableIPM Program is developing vegetable crop profiles for NJ. This web site contains the completed crop profiles for all states.
http://cipm.ncsu.edu/cropprofiles/

PROGRAMS

The Vegetable IPM Program impacts more than 36,000 acres through programmatic efforts provided to the agricultural community via on-farm programs, newsletters, web sites, and collaborations with consultants. The two main programs delivered to the agricultural community are on-farm IPM/field scouting programs and blacklight trap monitoring. In 2003-04 85 growers participated in all of our on-farm programs or projects.

On-Farm IPM/Field Scouting Programs. The Vegetable IPM Program actively supports the development of private consulting to deliver field scouting services to farmers. Currently three companies are offering pest management services to vegetable producers in the southern and central counties. In areas where consultants are not available growers provide funding for the Vegetable IPM Program to hire field scouts. In 2003-04, RCE provided scouting services primarily in the northern counties for 31 growers and 1136 acres of vegetable crops.



Blacklight Trap Monitoring Program. The IPM Program maintains a statewide network of eighty-five blacklight traps for monitoring the levels of several major agricultural insect pests of commodities valued at $64,890,000. Blacklight trap counts provide information for growers to forecast pest problems and improve the timing of pest control treatments. Growers, industry (agrichemical companies, processors, and private consultants) and grants provide 100% of the funds to support the trap network. The benefit extends to the entire agricultural community through published summaries of pest populations.

RESEARCH PROJECTS AND PROGRAMS

Vegetable IPM Program personnel, in cooperation with industry, university, and other government partners, conducted 12 studies and 5 programs on various crops for 2002. Below are selected project and program titles. For more information contact the Vegetable IPM Coordinator.

Pumpkins

One hundred copies of the new Pumpkin and Winter Squash Scouting Manual was produced and distributed at grower vegetable meetings.

High Tunnel Pest Management

Demonstration and Evaluation of Two-spotted mite Biological Control Using Predatory Mites

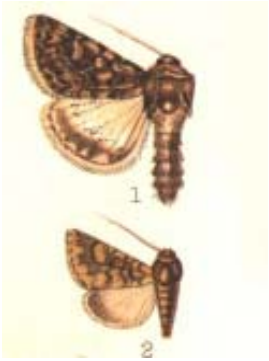
Carrots

Continued Improvement of Monitoring for Carrot Weevil Using Bait, Pitfall traps and other trapping innovations.

Assisted in Insecticide Trialsfor Management of Carrot Weevil.

Potato leafhopper
Evaulation of Organic Control Methods in White Potatoes.

Surveys
Copitarsia spp. and Marmorated Stinkbug Survey From Selected Blacklight Traps.



Tomatoes

Developing Trapping Techniques for Stinkbugs

Identification of Thrips

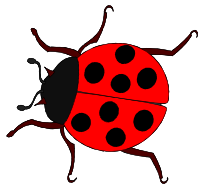
Research Plot Scouting at the Snyder Research and Extension Center.

2003-04 Program and Research Highlights

Several significant projects and program activities were undertaken during the 2003-2004 seasons. The selections below represent some of our efforts in biological control and least toxic alternatives research, as well as rapid detection of disease epidemics.

1)**Biological Control of Two-Spotted Spider Mite in Tomato High Tunnels - Overview of a 3 year study**

High tunnel production systems are still a new technique for most of New Jersey's growers. These semi-permanent structures allow farmers to get an early start in the spring on producing tomatoes, summer squash and other crops. Pest management concerns are minimal except for two-spotted spider mites which can build up to high numbers. The warm, generally dry conditions are particularly suitable for the spider mites' buildup. Because of the concern of using pesticides in an enclosed area, biological control of mites seems particularly well suited. Between 2002 and 2004, RCE IPM staff have introduced the biological control agent *Neoseiulus fallacis* (a predatory mite) into high tunnels of various vegetable crops with emerging spider mite populations. Our work has helped identify the parameters necessary to achieve satisfactory biological control of spider mites in high tunnels, as well as reducing miticide use. We are incorporating this form of biological control into our regular scouting program for high tunnel vegetable crops with full support of New Jersey growers.



2)**Evaluation of Potato Leafhopper Controls for Organic Potato Production.**

A 2 year research project was setup at the Snyder Research Farm in Hunterdon County, to investigate the management of potato leafhopper in white potatoes using organically certified materials. Treatments were: untreated check; Surround (kaolin clay), PyGanic (pyrethrins), Surround+PyGanic (2003); DiatectV (pyrethrins+silicon dioxide)(2004). The target insectin the study was potato leafhopper, a serious pest of potatoes in the Eastern U.S.

Pyganic and DiatectV both increased marketable yield 80-95% and 44-55% respectively (bareground-plastic mulch) over the untreated check and the Surround treatment. This information is extremely useful to the organic farming community, as it demonstrates organicallly acceptable controls for a very difficult and damaging pest of potatoes.

3) **Disease Detection Activities**

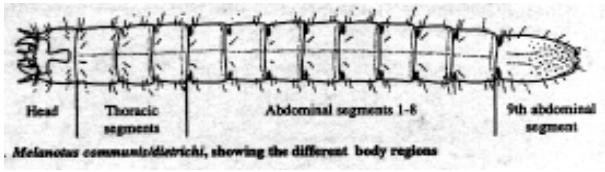
Disease monitoring is a critical parts of the Vegetable IPM Program. Some vegetable crop diseases are annual problems that must be managed each season, while others are related to weather patterns and the availability of inoculum. Among the latter type are two serious diseases with epidemic potential: Late blight of potato and tomato, and downy mildew of cucurbits. In 2003, IPM staff detected and identified downy mildew on 8/19, in northern NJ. In 2004, downy mildew was again identified in northern NJ on 7/21. Additionally, in 2004, late blight was discovered on tomatoes in northern NJ on 8/5. In all cases, growers, county agents and industry personell were notified immediately via phone, email and through the Plant and Pest Advisory. Rapid detection and notification allowed for timely management of these epidemic diseases.

2003-04 Educational Outreah Highlights

A key mission of the RCE IPM Program is advancing grower and field scout education in IPM methods and strategies. We provide many opportunities for growers and others to receive IPM training, including participation in the field scout and trapping programs (fee-based), participation in summer and winter educational meetings, as well as through one on one consultations. If a farmer is interested in obtaining a blacklight or other IPM services contact your county agent or the IPM office at 732-932-9802.

Wireworm Informal Conference

Joe Ingerson-Mahar and Joanne Whalen, University of Delaware, conducted an informal conference on wireworm management at the Eastern Branch Meeting of the Entomological Society of America, Harrisburg, PA, in March, 2003. Thirty three researchers, consultants, extension agents and growers from Connecticutt to North Carolina were invited.



Melanotus communis/dietrichi, showing the different body regions

Wireworms are the soil inhabiting larvae of click beetles which can cause economic losses in vegetable and field crops and are particularly difficult to manage. Conference goals included reviewing current pest status and work and improving communication between participants.

The Vegetable IPM Program, in cooperation with NJ NOFA, held 3 twilight meetings during the 2004 growing season at organic farms, focusing on insect and disease pest recognition and control options. These meetings demonstrate the committment of RCE to the organic farming community, and are an excellent opportunity to get RCE IPM personnell and organic farmers and consumers together to discuss pest management and learn from each other. Attendance ranged from 18 to 35 people.

RCE Vegetable IPM on the Web.
A number of significant updates have been made to the Vegetable Integrated Pest Management site, (http://www.pestmanagement.rutgers.edu/IPM/Vegetable/index.htm). New content includes Power Point presentations on selected IPM topics, IPM related publications, current and archived insect population maps, information on program availability, scouting forms for selected crops, archived annual reports, vegetable crop guidelines for IPM certification, and selected crop profiles.

Pest Watch is a regional interactive pest map produced by Penn State in cooperation with other states in the Northeast. Formerly known as Shelby's Sweet Corn Monitor, Pest Watch now includes several crops and information on many insect pests. The Vegetable IPM Program has been sharing data with Penn State since 2001. The web address is http://www.pestwatch.psu.edu/

Presentations and Publications: Vegetable IPM Program staff:

- Presented information and research at 6 regonal or state and 18 local meetings.
- Organized and held a conference on wireworm management.
- Produced 7 state or regional proceedings articles.
- Contributed 26 regular columns for the Vegetable Crops edition of the Plant and Pest Advisory newsletter('03 and '04), and 3 feature articles for that publication as well as one feature for the Organic edition.
- One article was produced for national trade publication.
- The Pumpkin and Winter Squash Scouting Manual was produced.
- An article on Tillage and Cultivation was written for the Encyclopedia of Pest Management

Vegetable IPM Summer Employees 2003-04

IPM Field technicians are hired each summer to carry out research and program efforts. Their time and mileage is financed completely by outside funds including grants and grower and industry fees:
Kirsten E. Haberkern; Roger Garrison; MarkManacle; Patrick Samulis; Fred Ingerson-Mahar; Nicholas Dibble; Elizabeth Fisch; Kate Belski; Jana Green; Lauren Theis

Vegetable IPM Working Group

RCE county agents and specialists meet at least 4 times a year with the Vegetable IPM Program personnel to discuss vegetable pest management issues and program research actions and priorities.
Dr. Wesley Kline, Cumberland County Agricultural Agent
Mr. Peter Nitzsche, Morris County Agricultural Agent
Ms. Michelle Infante-Casella, Gloucester County Agricultural Agent
Mr. Richard VanVranken, Atlantic County Agricultural Agent
Mr. Peter Probasco, Salem County Agricultural Agent
Dr. William Sciarappa, Monmouth County Agricultural Agent
Mr. Ray Samulis, Burlington County Agricultural Agent
Mr. Winfred Cowgill, Hunterdon County Agricultural Agent
Mr. William Tietjen, Warren County Agricultural Agent
Dr. Stephen Johnston, Specialist in Plant Pathology
Dr. Christian Wyenandt, Specialist in Plant Pathology
Dr. Stephen Garrison, Specialist in Vegetable Crops
Dr. Gerald Ghidiu, Specialist in Vegetable Entomology
Dr. Melvin Henninger, Specialist in Vegetable Crops
Dr. Bradley Majek, Specialist in Weeds

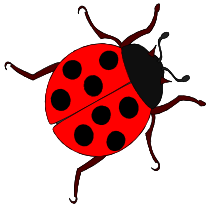
Other Advisory Groups

IPM Program personnel participate in the RCE Vegetable Working Group, which meets six times a year to discuss current vegetable crop issues. Additionally, personnel participate in the annual Pepper Grower Advisory Group meeting and Tomato Advisory group meeting, select groups of growers who advise RCE agents and specialists on the direction of pepper and tomato research.

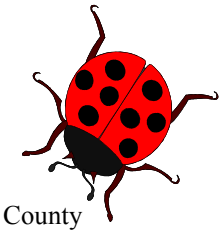
Research and Program Collaborators

In addition to members of the RCE Vegetable IPM Working Group, these individuals and companies have worked with or contributed to the Vegetable IPM Program research and program development:

Ms. Martha Maletta, Research Associate, Hunterdon County
Dr. Marilyn G. Hughes, Program Associate, Center for Remote Sensing and Spatial Analysis (CRSSA)
Mr. Edwin Dager, Supervisor, Snyder Research and Extension Farm
Dr. Shelby Fleischer, Penn State University
Mr. Mike Smith, Penn State University
Ms. Joanne Whalen, University of Delaware
Dr. Edwin Green, Rutgers Dept.of Ecol., Evol. and Nat. Res.
Dr. William Strawderman, Rutgers Dept. of Statistics
Dr. David Robinson, Rutgers Dept. of Geography



Furman Foods
Garden State Pest Management
McConnell Agronomics
Seabrook Bros. and Sons
Violet Packing
White Potato Association
Mr. Charles Muzzarelli, Atlantic County
Mr. Fred VanMeter, Cumberland County
Mr. John Micek, Hunterdon County
Mr. Joe Ruggieri, Mercer County
Mr. Grant Hitchner, Salem County
Mr. Charles Paulitis, Salem County
Mr. Doug Race, Warren County
Mr. Andy Buzby, Salem County
Mr. Peter and George Melick, Hunterdon County
Mr. Bill Brooks, Salem County
Mr. Dave Sheppard, Cumberland County
Mr. Ed Byrnes, Salem County
Mr. Frank and Sam Piazza, Warren County



==========

Front Cover Photo - Dead tomato hornworm with parasite coccoons on its back - Joe Ingerson-Mahar

Back Cover Photo - Robber fly feeding on a captured hornet - Kris Holmstrom

RUTGERS COOPERATIVE EXTENSION
N.J. AGRICULTURAL EXPERIMENT STATION
RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY
NEW BRUNSWICK

Distributed in cooperation with U.S. Department of Agriculture in furtherance of the Acts of Congress on May 8 and June 30, 1914. Rutgers Cooperative Extension works in agriculture, family and consumer sciences, and 4-H. Adesoji O. Adelaja, Director of Extension. Rutgers Cooperative Extension provides information and educational services to all people without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status (Not all prohibited bases apply to all programs.) Rutgers Cooperative Extension is an Equal Opportunity Program Provider and Employer.