

EXECUTIVE DEAN
OF AGRICULTURE AND NATURAL RESOURCES

August 2008

Spotlights

Promoting Oyster Restoration Through Schools: Project PORTS



Lisa Calvo (photo, left) is passionate about teaching children to appreciate our marine resources. Through Project PORTS (Promoting Oyster Restoration Through Schools), Calvo, a visiting scientist at the New Jersey Agricultural Experiment Station's Haskin Shellfish Research Laboratory, is getting school children and teachers alike excited about marine science.

Calvo launched Project PORTS in early 2006 as a community-based restoration and education program focusing on the importance of oyster populations in the Delaware Bay ecosystem. Through teacher workshops, in-school enrichment programs, curriculum materials, and an intensive oyster habitat restoration project, Project PORTS has inspired teachers and students alike to get involved in restoring and maintaining the bay.

"The eastern oyster, *Crassostrea virginica*, is one of—if not the most—important species of the Delaware Estuary," Calvo explained. "Dating back thousands of years, the oyster has served as a keystone organism in the estuary, positively influencing water quality and providing food, habitat, and refuge to many organisms. Challenged by disease, habitat deterioration, and historical overfishing, the resource is presently a fraction of what it once was."

In 2006-2007, more than 1,500 students from nine schools participated in Project PORTS, and 1,200 shell bags were constructed and deployed in the lower Delaware Bay. More than 2 million oyster larvae settled on the shell. In late August 2007, a team of nearly 50 volunteers assisted in transplanting the seed oysters to a conservation area located in the upper bay where they will help maintain a healthy bay. As a follow-up, students participated in the scientific assessment of the oysters. Calvo hopes to expand this project each year by teaching more communities about New Jersey's remarkable marine resources.

Rutgers University's Cook Campus is buzzing with the news of a recent \$750,000 U.S. EPA grant that will fund important and innovative research about biodiversity and West Nile Virus. A group of investigators at Rutgers is looking at the link between biodiversity and this potentially deadly virus in hopes that their findings will help save lives in the near future. The Rutgers researchers are collaborating with members of the New Jersey DEP and the New Jersey Audubon Society to find an integrated understanding about this illness.

During this project, researchers at Rutgers will study the urban northeastern wetlands of New Jersey and their surrounding neighborhoods. The group is made up of **Joan G. Ehrenfeld**, **Rebecca Jordan** and **Michael Sukhdeo** of Rutgers' School of Environmental and Biological Sciences, Branden B. Johnson of the New Jersey Department of Environmental Protection, and Nellie Tsipoura of the New Jersey Audubon Society.

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

School of Environmental and Biological Sciences and New Jersey Agricultural Experiment Station
SEBS.RUTGERS.EDU • EXECDEANAGRICULTURE.RUTGERS.EDU • NJAES.RUTGERS.EDU

Outreach Efforts: Public/Community Service

Blueberry/Weeds/Pest Control/IPM

Blueberries are a unique agricultural commodity as they are one of only several native foods in commercial production in the United States. In New Jersey, most blueberries are grown in the ecologically sensitive Pinelands, which is characterized by porous soils with high water tables that are subject to vertical movement of a number of agricultural chemicals. This area is a source for much of the surface and shallow ground water found in the southern and central part of the state, and encompasses the Cape May, Rancocas, Great Egg Harbor, Mullica, and Barnegat Bay watersheds, home to over 2.6 million people. The pest complex on blueberries is extensive, with pests attacking virtually all parts of the plant, and pest management requiring up to 12 pesticide sprays per year. The vast majority of these sprays are high-risk organophosphate (OP) and carbamate materials, which are likely to adversely affect farm workers present during harvest.

Organophosphates and carbamates have been the cornerstone of insect pest management programs in blueberries for the past 40 years. Insecticide use data collected by university IPM programs in New Jersey, Michigan, and Maine indicated that approximately 90% of insecticide applications in these states are with broad-spectrum OP and carbamate insecticides. In 2003, blueberry growers used 3.62 lb active ingredient (ai) per acre of various insecticide products. With 7,500 acres of blueberries in NJ, this translates to about 27,150 lb ai statewide. Most of the ai was from OP and carbamates (98.3% or 26,688 lb), with only 1.7% of all insecticide materials classified as reduced-risk.

Over 40 different insect and disease pests can attack highbush blueberries. Pest management costs continue to increase. The Food Quality Protection Act has led to restrictions and changes in the types of pesticides that may be used to produce blueberries. Many of the new pesticides are narrow spectrum, that control only one or a few pests and must be used with degree day phenology models and other integrated pest management (IPM) practices. As labels for older products are restricted and newer more expensive products come on the market, production costs have increased. Some blueberry growers can spend up to \$250,000 per year in pesticide materials. Objectives of the IPM program are to:

- Maintain or increase crop quality and yield, and marketing ability through modern integrated pest management practices.
- Develop new and novel techniques for pest management and pest detection, and employ new methods for blueberry IPM delivery.
- Provide IPM information to blueberry growers primarily in Atlantic and Burlington counties, but also statewide through demonstration trials, scouting, meetings and other training methods.
- Reduce the use of OP, carbamate, and other toxic pesticides in favor of reduced-risk technologies and alternate management strategies.
- Minimize nonpoint source pollution through the reduction of fertilizer and pesticides sources, and enhance water quality through similar means.
- Reduce farm worker exposure to pesticides.
- Reduce or minimize production costs.

An IPM program is being delivered to commercial blueberry growers. The program employed seasonal field scouts who collected weekly pest management data. The program





reached all blueberry growers in New Jersey, but collected farm specific data on those farms participating in the scouting program. Results of scouting data were summarized in two statewide newsletters (*The Blueberry Bulletin* and *The Plant & Pest Advisory-Fruit Edition*). Results were also disseminated to growers with farm visits, seasonal update meetings, and a broadcast fax system. The program collected data on insect and disease pests as well as fertility levels through soil and plant tissue sampling. Based on the scouting results, pesticide recommendations were made to all growers, within the objectives listed above. A research/demonstration component demonstrated and refined the use of alternative pest management practices such as the use of trapping methods for determining treatment timings for blueberry maggot, and mating disruption for Oriental beetle. A GIS-based management program was started that demonstrated the effectiveness of farmwide spatial management for blueberry maggot.

Activities and outcomes:

- Growers cooperated with the program in the use of new detection, monitoring and sampling methods that reliably predict pest levels.
- Growers were educated about novel management methods for a variety of pests in blueberries.
- Through demonstrations, articles, county reports, and other outreach, public awareness on IPM was improved. Articles appeared in two newsletters with 45 editions and 379 subscribers. Newsletters were also web-based and recorded 6,397 downloads.
- New pest management programs were utilized using new reduced-risk materials and practices. Growers managed pests with the use of intensive monitoring, GIS-based data collection and pesticide use record keeping, and trapping methods for key pests like blueberry maggot. Growers managing blueberry maggot under IPM methods reduced insecticide use on average from six applications to 1–2 applications, or over 66%.
- Growers participated in an IPM program and maintained high fruit quality while minimizing pesticide use. In 2007, this included 38 growers who grew 4,400 acres of blueberries or about 60% of the state acreage, and about 70% of the state production.
- Use for OP and carbamate pesticides was reduced. Overall pesticide use was minimized. After 4 years of working with reduced risk alternatives in a USDA RAMP program, the following results were seen: Blueberries managed under the RAMP program had between 45% and 58% lower amounts of insecticide active ingredient applied than those grown using grower's standard programs, with even greater reductions in the total amount of insecticide residue detected on leaves and fruit at harvest. Overall, growers who practiced IPM at high levels, used from 6-8 lb ai of pesticide per acre, while growers treating on a pure calendar schedule, used up to 34 lb ai per acre.
- Growers minimized on farm pest management costs. Some growers spent as much as \$235/acre for pesticides while the average IPM participant spent \$132/acre. The average grower using IPM practices saved about \$100/acre.
- New pest management practices such as mating disruption and whole farm GIS based monitoring were used. Small plot research/demonstration trials for Oriental beetle mating disruption showed that Oriental beetle could be managed with mating disruption in place of soil applied insecticide.
- IPM training of students and farm employees created new IPM interns, professionals and researchers. The program trained 5 students and seasonal workers, and 1 farm employee as



IPM scouts, enabling the 60% of NJ blueberry acreage to be under IPM practices, and 16% of NJ acreage to be self scouted.

- Fertility monitoring leads to recommendations of lower fertilizer use. During 2007, over 500 samples were taken for combined monitoring of plant fertility and nematode levels. Soil and plant fertility tests demonstrated that about 75% of fields sampled had sufficient to high levels of soil phosphorous.

Collaborators/Partners on this program included the following: **Peter Oudemans** (associate professor, blueberry and cranberry pathology); **Cesar Rodriguez-Saona** (specialist in blueberry/cranberry entomology); **Nick Vorsa** (research professor, blueberries/cranberries); **Gary Pavlis** (Atlantic County Agricultural and Resource Management agent); **Jerome Frecon** (Gloucester County Agricultural and Resource Management agent); **Bradley Majek** (specialist in weed science); **Joseph Heckman** (specialist in soil fertility); **George Hamilton** (specialist in pest management); Peter Cottingham; and the New Jersey Blueberry Industry Advisory Council, New Jersey Department of Agriculture Division of Plant Industry – CAPS program, NJ DEP-Bureau of Pesticide Control, USDA Farm Services – EQIP Program.

Faculty and Staff Activities and Accomplishments

The **Center for Turfgrass Science** has been selected as the recipient of New Jersey Golf Course Owners Association's President's Award for 2008. The New Jersey Golf Course Owners Association represents over 75 golf courses in the state and is an affiliate of the National Golf Course Owners Association, which represents thousands of golf courses across the nation. The President's Award is given annually to "the individual or organization that has contributed greatly to the game and business of golf in the New Jersey." The center was selected for its "many contributions to the game, industry, and science of golf" and will be recognized at the association's annual golf outing and meeting in October at the Fiddler's Elbow Country Club.

Nicholi Vorsa (Plant Biology and Pathology, Marucci Blueberry-Cranberry Research Center) has received a patent award from the Research and Development Council of New Jersey for his most recent cranberry patent.

Joseph V. Florentine (Greenhouse Operations and Planning) has been named the chair of the Association of Education and Research Greenhouse Curators, an organization composed primarily of university, botanical garden, and industry greenhouse managers. The organization serves to bring together greenhouse management professionals from all over the globe by sharing information and resources through an annual meeting, quarterly newsletter, and email forum. Florentine will be serving as chair for two years.

Gef Flimlin (Marine Extension agent for Monmouth, Ocean and Atlantic Counties) was honored on June 9 at the Jersey Shore Partnership's Summer Celebration on Sandy Hook. Flimlin received the Seafood Industry Award for his 30 years of work with commercial fisheries and aquaculture in the state of New Jersey. His program, the Barnegat Bay Shellfish Restoration Program, won this honor two years ago.



The following Rutgers NJAES Cooperative Extension faculty and staff received awards at the National Association of County Agricultural Agents' 93rd Annual Meeting and Professional Improvement Conference, held July 13–17 in Greensboro, NC:

Robert Mickel; Stephen Komar; William Hlubik; Laura Bovitz; Richard Weidman; Abbie Kesely; M. Bickerton; J. Baculis; J. Ochoa-Alvarez; Nicholas Polanin; George Hamilton; Mark Vodak; Richard Weidman; Daniel Kluchinski; Everett Chamberlain; Raymond Samulis; Mary Cummings; Michelle Infante-Casella; Jerome Frecon; William Bamka; Peter Nitzsche; Gef Flimlin; Wes Kline; Madeline Flahive DiNardo; and Brian Oleksak.

Publications and Editorships

Lou Cooperhouse (Food Innovation Center) and **Tom Orton** (Extension specialist) are the authors of "Breaking the Perishable Products Paradigm: Hurdle Technology Solutions from Field to Fork," which is the cover story in the current edition of *Food Safety Magazine*. **Don Schaffner** (Food Science) and **Wes Kline** (Agricultural & Resource Management agent) reviewed the article, and photos taken by **Jack Rabin** (NJAES) were used to illustrate the article.

Conferences, Seminars, and Other Events

Rutgers Cooperative Extension personnel continue to collaborate with the NJ Environmental Federation, NJ Department of Environmental Protection and others to develop and conduct IPM trainings focusing on the landscape and turf component for school district IPM programs. To date nearly 3,000 school IPM coordinators have been trained. A session was held on July 10 in Bordentown and was attended by 54 participants. Fifty-five participants attended another session, held on July 31 in South Brunswick. **William Hlubik** (Middlesex County Agricultural and Resource Management agent, was one of the presenters). Comments on the training value and speakers were excellent.

Mark Your Calendars!

A Taste of Jersey Fresh: Annual Open House and Tomato Tasting

WHEN: Wednesday, August 27, 3:00 p.m.

WHERE: Snyder Farm, 140 Locust Grove Rd., Pittstown, NJ

Fee: \$5 fee, free kids 10 & under

WHAT: A farm open house and research tour. The event will include opportunities to taste approximately 80 varieties of tomatoes suitable for New Jersey farms and gardens, along with a sampling of other farm grown produce. The Melda C. Snyder Teaching Garden will showcase culinary herbs and "chef" gardens, perennial beds of deer-tolerant landscape plants, plants that can attract beneficial insects to your garden, the Rutgers ornamental plant breeding program, columnar varieties of fruit trees for the home landscape, and award-winning Jersey Grown daylilies. Wagon tours will be available throughout the event, highlighting Rutgers NJAES agricultural research. Rutgers NJAES faculty, staff, and Master Gardener volunteers will be available throughout the event to answer gardening questions.

RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY

School of Environmental and Biological Sciences and New Jersey Agricultural Experiment Station
SEBS.RUTGERS.EDU • EXECDEANAGRICULTURE.RUTGERS.EDU • NJAES.RUTGERS.EDU

Cream Ridge Nursery Research & Extension Meeting

WHEN: August 28, 1:30–6:30 p.m.

WHERE: Rutgers Fruit & Ornamental Research Extension Center, Cream Ridge, NJ

WHAT: Learn about what's happening at Cream Ridge, earn Pesticide License Recertification credits, and take a field tour.

MORE INFO: Register with Rich Obal, (732) 431-7260, or Monmouth County Extension Office, (732) 431-7260 or -7261.

Growing Organic Grain and Forage Crops

WHEN: September 4, twilight

WHERE: Rutgers Agricultural Research and Extension Center, 121 Northville Road, Bridgeton

FEE: \$20.00 for public and \$10.00 for NOFA members

MORE INFO: NOFA, 609-737-6848

Rutgers Gardens Gala

WHEN: September 13, 5 to 9 p.m.

WHERE: Rutgers Gardens

WHAT: 2nd annual garden gala in honor of the Garden Club of New Jersey. The Garden Club will be presented with the "DOC" award—Dedication and Outstanding Commitment to the Rutgers Gardens. A silent auction featuring unusual plants and other garden-related items and raffle tickets for gift baskets of donated items will also be available. The funds from the Gala will go toward day-to-day operations and will help with the costs of expansion construction.

MORE INFO: www.rutgersgardens.rutgers.edu/2007GardenGala.htm

2008 Plastic Pesticide Container Collection Program

WHEN: September 11, 9:00 a.m.–3:00 p.m.

WHERE: Helena Chemical, 66 Route 206 (North of the Route 30/206 intersection), Hammonton

WHAT: This program is free and open to anyone who has a NJDEP Pesticide License and 1 Core credit will be issued to each participant. Containers must be either triple rinsed or pressure rinsed, drained and dry inside. They must be free of residue, other than stains. Also, the container must be punctured. Containers up to 55 gallons in capacity will be accepted. If you are brining a 55 gallon container it must be cut into at least 8 pieces and 30 gallon containers cut into 4 pieces. Pesticide containers must have originally held an EPA-registered pesticide.

MORE INFO: Contact Karen Kritz, (609) 984-2506

The Annual Conference of the Community Food Security Coalition: Restoring Our Urban & Rural Communities with Healthy Food

WHEN: October 4–8

WHERE: Crowne Plaza, Cherry Hill

WHAT: Eleven concurrent tracks on issues such as local food systems, community food security, urban agriculture, and food business incubation. In addition, there will be 12 field trips on Saturday and Sunday before the conference.

MORE INFO: www.healthyfoodsconference.com

