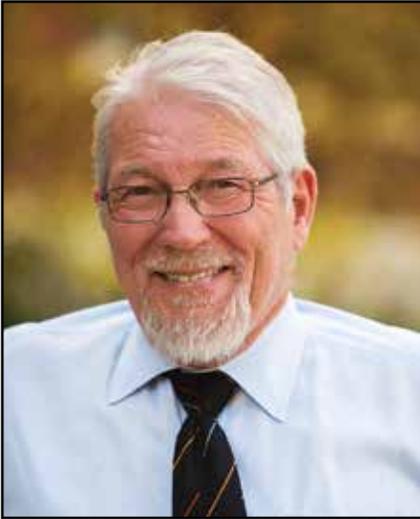


New Jersey Agricultural Experiment Station



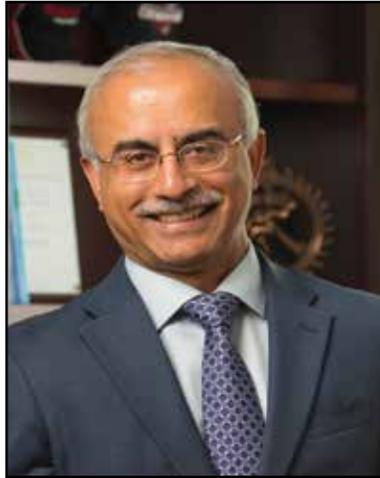
Addressing tomorrow's challenges today



Robert M. Goodman

Executive Director, New Jersey Agricultural Experiment Station

The New Jersey Agricultural Experiment Station (NJAES) remains as relevant today to New Jersey's agricultural industry as it was at the time of its establishment in 1880. By virtue of strategic investment in infrastructure and personnel over the past century and more, NJAES research has been at the forefront of scientific knowledge crucial to sustained economic expansion. A leader in the early years of the emergence and growth of the "green industries," NJAES continues to be an innovative force in building a world-class turfgrass and nursery crops research program. A more recent illustration of NJAES' responsiveness can be found in how we addressed—before it was clear—the threat of the brown marmorated stink bug, as well as other invasive species and pathogens that imperil crops, and the important gains of New Jersey's competitive agricultural sector.



Debasish Dutta

Chancellor, Rutgers University–New Brunswick

One of America's greatest innovations is the creation of land-grant institutions. As New Jersey's land-grant public research university, Rutgers is committed to ensuring broad access to higher education and creating new knowledge and solutions to contribute to the well-being of every resident. Among the core activities of Rutgers NJAES is conducting innovative research that anticipates and solves a wide range of emerging needs in areas as diverse as agriculture and fisheries to youth and community development. And from Mahwah to Cape May, dedicated county agents and extension specialists fulfill the essential mission of service and outreach in every county. I could not be more proud to serve as the new Chancellor of Rutgers University–New Brunswick, the premier land-grant institution serving all of New Jersey.



Douglas H. Fisher

New Jersey Secretary of Agriculture

The partnership that New Jersey farmers have with NJAES continues to play a critical role in the protection and development of the agriculture industry in the Garden State. New Jersey continues to rank in the top 10 states in agricultural production of several categories, including horticulture, floriculture, fruits, and vegetables. NJAES also assists the aquaculture industry, helping New Jersey rank ninth in the nation in value for seafood catch. The dedicated research and specific data provided by NJAES are essential elements for the New Jersey agriculture industry to continue its highly prized and valued status.



*Participants in NJAES
‘Large Tree Climbing and Rigging’ course.*

What’s Inside:

- ii Did You Know?
- iii NJAES Financial Summary
- 1 Commercial Agriculture
- 3 Environment and Natural Resources
- 5 Fisheries and Aquaculture
- 7 Food, Nutrition, and Health
- 9 Youth and Education
- 11 Community Development
- 13 Economic Development
- 15 Advancement
- 17 Board of Managers
Centers, Institutes, and
Continuing Education
County Extension Offices
- 18 Off-Campus Facilities
Related Links

New Jersey Agricultural Experiment Station Administration

Robert M. Goodman

Executive Dean of Agriculture and Natural Resources
Rutgers, The State University of New Jersey
Executive Director
New Jersey Agricultural Experiment Station
848-932-3600 | execdean@njaes.rutgers.edu

Bradley I. Hillman

Senior Associate Director
Director, Research
848-932-3777 | hillman@njaes.rutgers.edu

Larry S. Katz

Senior Associate Director
Director, Cooperative Extension
848-932-3591 | katz@njaes.rutgers.edu

Margaret Brennan-Tonetta

Associate Director
Director, Economic Growth and Development
848-932-3776 | brennan@njaes.rutgers.edu

Michael Christian

Budget Manager
848-932-3773 | christian@njaes.rutgers.edu

Joseph Cronin

Director, Grants Facilitation
848-932-3751 | cronin@njaes.rutgers.edu

Lisa Estler

Associate Director, Planning and Budgets
848-932-3575 | estler@njaes.rutgers.edu

Diane French

Federal Projects Manager
848-932-3567 | dfrench@njaes.rutgers.edu

Elaine M. Griffin

Research Contract/Grant Specialist,
Office of Grants Facilitation
848-932-3657 | griffin@njaes.rutgers.edu

Kathleen Howell

Associate Director, Administration and Personnel
848-932-3581 | howell@njaes.rutgers.edu

Kenneth M. Karamichael

Associate Director, Strategic Initiatives and External Affairs
Director, Office of Continuing Professional Education
848-932-9271 | kenneth@njaes.rutgers.edu

Laura Lawson

Senior Associate Director
Director, Agriculture and Urban Programs
848-932-8010 | ljlawson@njaes.rutgers.edu

Melissa McKillip

Senior Associate Director
Director, Philanthropy and Strategic Partnerships
848-932-4214 | mckillip@njaes.rutgers.edu

Rachele Sylvan

Director, Financial and Business Administration
848-932-3792 | rsylvan@njaes.rutgers.edu

The New Jersey Agricultural Experiment Station

Helping New Jersey Grow

Did you know?



Each year, 4-H Youth Development reaches more than 50,000 New Jersey youth. They are supported by over 2,000 adult volunteers, who each contribute more than 200 volunteer hours, valued at approximately \$11 million annually.



Twenty years of research investment in fruit, vegetable, nursery, and aquaculture have created disease-resistant, drought-tolerant, and high-yield products (e.g., turf, cranberries, oysters, hazelnuts, and tomatoes). These products are used by New Jersey commercial producers, significantly enhancing New Jersey's food and agricultural system, which directly contributes more than \$126 billion annually to the state economy and employs more than 440,000 workers, or approximately 1 out of every 8 jobs.



The New Jersey Agricultural Experiment Station helps to combat obesity and obesity-related illnesses, the health care and related costs of which have grown from \$2.2 billion in 2008 to a projected \$9.3 billion in 2018.



Each year, more than 28,000 New Jersey residents take classes and attend other educational programs offered by the NJAES Office of Continuing Professional Education.

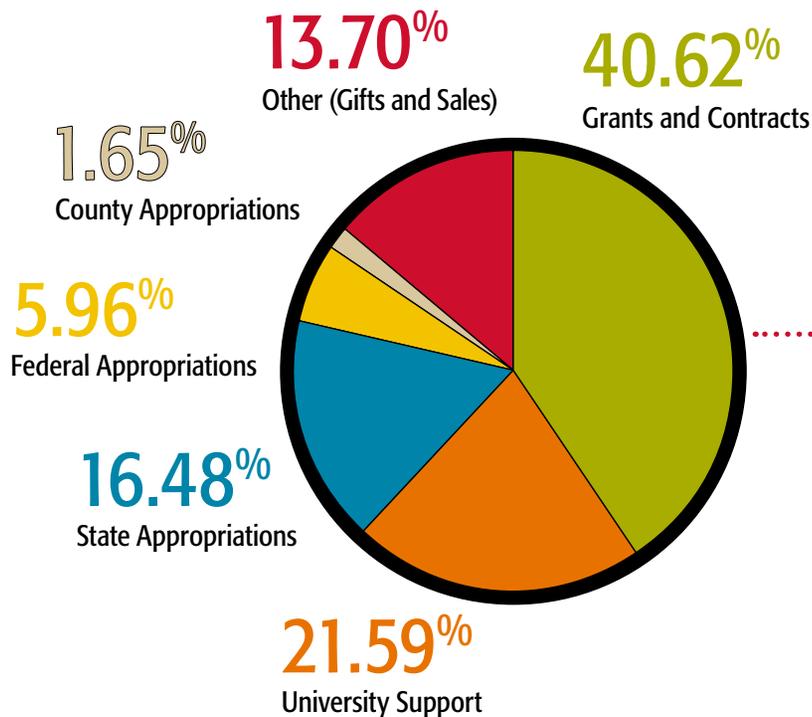
njaes.rutgers.edu



NJAES Financial Summary

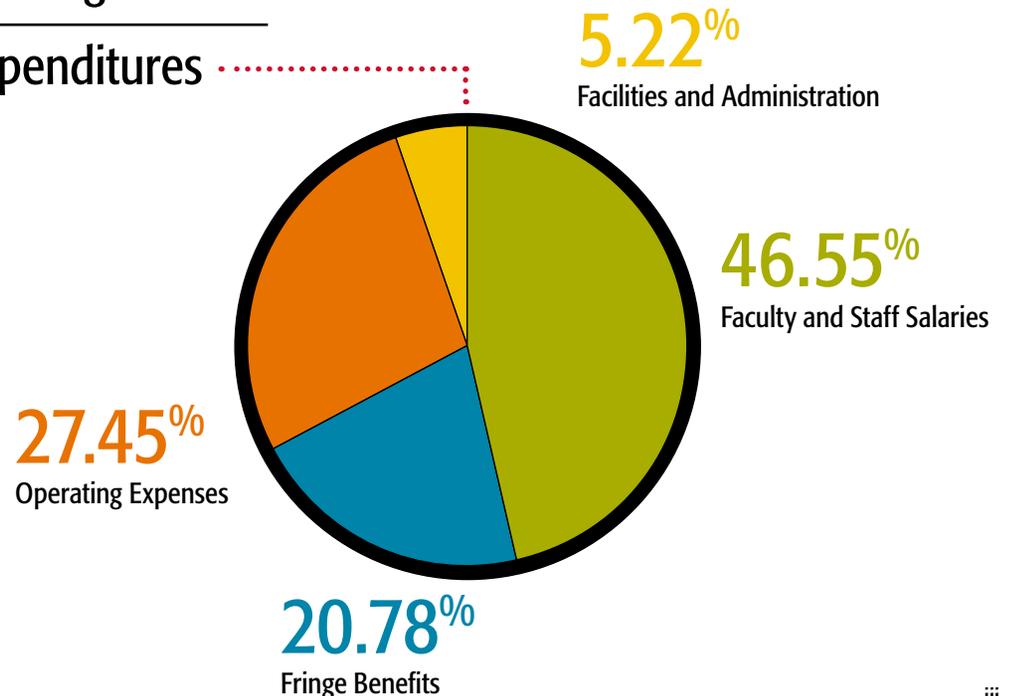
Extension and Research Funding Sources and Expenditures for 2017

Base funding from government sources provides Rutgers New Jersey Agricultural Experiment Station (NJAES) with a foundation for program development and delivery, while competitive grants, contracts, and gifts increase the scope and impact of applied research and education programs.



NJAES received \$126.9 million from grants and contracts; university support (fringe and operational); a combination of state, federal, and county government appropriations; and gifts, endowment revenue, income from sales and service activities, as well as patent and plant licensing income. NJAES relies on this combination of funding sources, particularly grants and contracts, and will continue to depend on a mix of public and private funds, appropriately balanced and focused, to address critical issues in New Jersey.

Funding Sources Expenditures



RUTGERS

New Jersey Agricultural
Experiment Station

Commercial Agriculture

Sustainable farming on the urban fringe

New Jersey is an anomaly in U.S. agriculture.

One of the smallest states, it is nonetheless a top 10 producer of numerous commodities. Agricultural production per acre is more than three times higher than the national average. Ensuring a vibrant and robust agriculture means focusing attention on developing novel markets while sustaining a strong showing in conventional commodities. New Jersey's growing and diverse population offers ample opportunities for expanding into new markets. NJAES' extensive research on ethnic crops has resulted in the release of the pumpkin habanero from its exotic pepper breeding program. Meanwhile, on the heels of the state's thriving development of wineries and wine grape production, New Jersey's "farm-to-mug" movement is taking off, with a doubling in the number of microbreweries in the last few years. As many craft brewers seek locally grown ingredients, NJAES researchers are examining the best practices for growing and analyzing hops, and conducting trials to evaluate malting barley varieties to meet the demands of this expanding market.

9,560 Jobs
provided by the
CRAFT BEER INDUSTRY
in New Jersey

Source: NJ Brewers Assoc.



Bradley I. Hillman

Director, Research

The Research Office of the New Jersey Agricultural Experiment Station serves as the coordinating center for projects that are performed on the George H. Cook campus and around the state, and helps to ensure that NJAES-sponsored research has tangible goals of value to the communities we serve. Among the resources that enhance our research capacity are our many off-campus farms and facilities, our Office of Grants Facilitation, and our Office of Research Analytics.



*Pumpkin habanero
pepper plant.*

Pictured left: A high-value crop, locally grown hops can sell for \$12 to \$15 per pound.



RU Ready to Farm participants at Specca Farms, Springfield, NJ.

New Jersey agriculture brings in over
\$1 billion dollars
 in revenue to the state.

Source: Census of Agriculture for New Jersey.

While NJAES researchers have been enabling growers to improve production and develop new markets,
the question looms...

Who will serve as the next generation of farmers?

The average age of a New Jersey farmer is 59.5 years old. Without a next generation to sustain family farms, they are at risk of ceasing operations or being sold for development. In a continuing effort to stem the tide of dwindling family farms and cultivate the next generation of growers, NJAES' focus goes beyond conventional agriculture to reflect on the changing face of agriculture in the state and the nation. The RU Ready to Farm program provides aspiring farmers the basics of starting an agricultural operation. This course for beginner farmers was first offered to the public through Rutgers Cooperative Extension, a unit of NJAES, and later incorporated into the undergraduate curriculum at the Rutgers School of Environmental and Biological Sciences.

The school has also been gifted an endowment to begin an Agribusiness Scholars Program (*more on page 16*) that is designed to prepare students for leadership roles in agribusiness. To invigorate student interest in agriculture in an urban landscape, faculty installed a hydroponics system in a campus greenhouse to teach indoor cultivation of high-value crops. In addition, a new Student Sustainable Farm located at Rutgers Gardens serves as an outdoor classroom that focuses on organic production and community outreach.

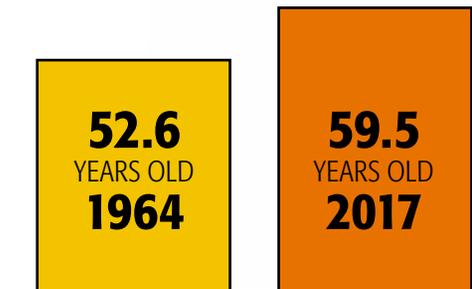
Wherever I travel across New Jersey, I see new agricultural practices being implemented. Ag producers have to evolve to stay in business. Rutgers NJAES provides both scientific research and the tools to implement new technology and strategies, affording ag producers like myself better opportunities to succeed.

– Farmer Ryck Suydam, President,
 New Jersey Farm Bureau



New Jersey lost more than
50%
 of its farms and farmland in the past
50 years

Source: Annual Statistical Bulletin,
 USDA National Agricultural Statistics Service.

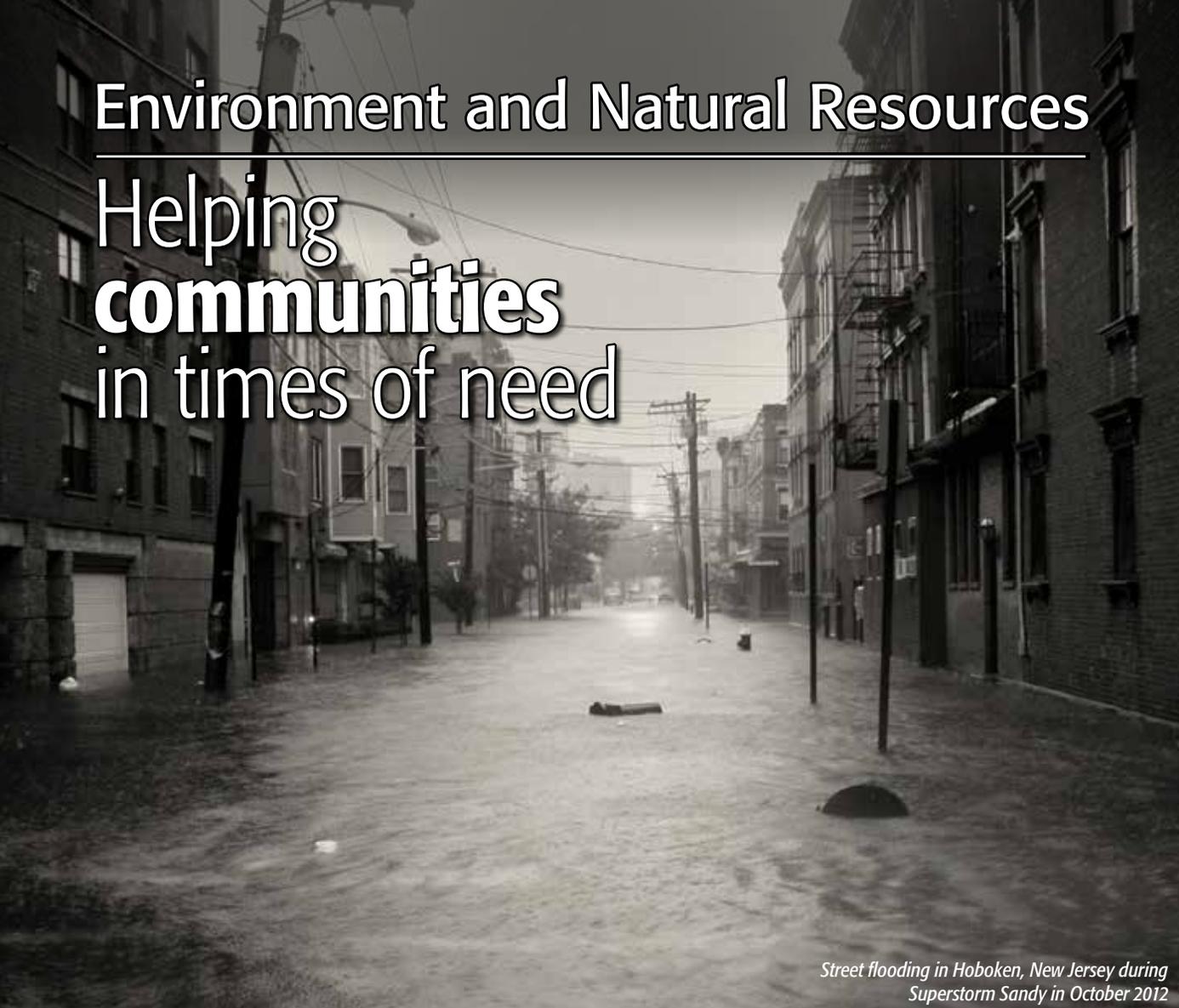


Average age of a New Jersey farmer

Source: 2012 Census of Agriculture, USDA,
 National Agricultural Statistics Service.

Environment and Natural Resources

Helping communities in times of need



Street flooding in Hoboken, New Jersey during Superstorm Sandy in October 2012



Larry S. Katz
Director, Cooperative Extension

Extension faculty and staff are committed to offering New Jersey residents innovative programs addressing a broad array of contemporary challenges. Youth development, community health and nutrition, agricultural production, food security, and natural resource conservation remain at the foundation of our community-engaged scholarship. Our work has never been more relevant, as we face major impacts like global climate change and fresh-water shortages.

Floodplain restoration

By actively engaging in partnerships across New Jersey, Rutgers Cooperative Extension (RCE) has prepared floodplain restoration plans for 12 communities where flood-prone properties have been voluntarily acquired. The program has also directly assisted with implementation by securing funding, restoring habitat, and planting trees. By improving flood runoff capacity, we've increased resilience in many communities against severe storms while, at the same time, enhancing public amenities and increasing biodiversity.

- improved flood runoff capacity and biodiversity
- enhanced public amenities
- a model for improving sustainability



In the 12 communities more than
1,000 NATIVE TREES PLANTED
15 ACRES OF NATURAL HABITAT RESTORED
\$200,000 IN FUNDING SECURED FOR FLOODPLAIN RESTORATION



Urban environmental sustainability

Community engagement by Rutgers Cooperative Extension has benefited the City of Perth Amboy. Working with the Rutgers Center for Urban Environmental Sustainability (CUES) made it possible for the community to get the funding dollars it needed to convert a contaminated site into a community park that will meet the needs and interests of the residents of the surrounding neighborhood. Collaborating with the Bloustein School and SCAPE Landscape Architecture, public open space will be integrated with innovative storm water management and coastal ecological restoration at the 2nd Street Park, which is scheduled to open in 2018.

The involvement of Rutgers CUES in our city has been an invaluable support for our efforts to offer residents exceptional recreational opportunities and to protect our natural assets.

– Wilda Diaz,
Mayor, Perth Amboy



Students from the Perth Amboy sports program, participating in one of the community workshops.



Aerial view of the 2nd Street Community Park development site.



Brochures and cards distributed at Perth Amboy's Los Andes Festival in June.



Proposed view of the Plaza.



View of the Community Garden.

A Park Through Partnerships

Center for Urban Environmental Sustainability
Bloustein School for Planning and Public Policy
Middlesex County Improvement Authority
City of Perth Amboy
United States Environmental Protection Agency's
Brownfields Program
Perth Amboy Recreation Department

Brighton Avenue Community Center
Wilentz Elementary, McGinnis Middle School,
Perth Amboy Freshman Academy
Family Community Fair Committee
Residents of the 2nd Street Park
2nd Street Park Steering Committee
SCAPE Landscape Architecture, DPC

Fisheries and Aquaculture

Farming the oceans



David Bushek

Director, Haskin Shellfish Research Laboratory

New Jersey sits in the heart of some of the most productive fishing grounds in the world: the mid-Atlantic bight. Fishing is a major economic driver. Aquaculture represents the fastest growing segment of agriculture, and many opportunities exist within New Jersey. NJAES researchers are constantly developing innovative technologies for fisheries management and aquaculture production to ensure ecological sustainability and economic viability.

Widely considered the most productive and prolific oyster research center in the nation, the Rutgers Haskin Shellfish Research Laboratory has been breeding Eastern oysters since 1960. One of the most significant achievements of the lab's oyster genetics program is the development of tetraploid oysters, which have four sets of chromosomes. These disease-resistant lines of tetraploids are used to produce triploid oysters, which have three sets of chromosomes and greatly outperform normal diploids, with two sets of chromosomes. In addition, the triploid oysters possess several desirable characteristics, like superior growth and improved meat quality, that have proved ideal for aquaculture. In fact, Rutgers' invention of tetraploids has led to rapid commercialization of triploid oysters in the U.S. and worldwide.

NJAES oyster genetics program is part way through a major, five-year USDA grant (2014–2019) for continued research and improvement of tetraploid oysters, from which the superior triploid oysters are derived and widely distributed to promote oyster farming in New Jersey and beyond. In addition, NJAES robust aquaculture program has the added benefit of helping restore and create a sustainable Delaware Bay for future generations.

The farmed oyster industry generates about \$8 million annually for the NJ economy.

From 2005 to 2013

NJ aquaculture SALES grew nearly 3 times faster than the rest of the Northeast.

NJ farmed oyster PRODUCTION grew 5 times quicker than the rest of the Northeast.

Source: 2013 Census of Aquaculture, USDA National Agricultural Statistics Service.

Professor Ximing Guo leads oyster and scallop genetics research at Haskin Shellfish Research Laboratory.



PROJECT PORTS:

Then 10-year-old Project PORTS participant Maggie Elgin, who went on to major in marine biology in college.

An NJAES initiative, Promoting Oyster Restoration Through Schools (PORTS) celebrated an impressive record on its 10th anniversary in 2017. Nearly 17,000 students from 56 schools created 24,000 shell bags that have restored five acres of oyster reef habitat. The program places Rutgers scientists in the classroom and provides students with hands-on experiences in research, restoration, and environmental stewardship.

“Changes in sea temperature, migratory patterns, and the fish we catch are demanding greater accountability in fisheries management, sustainability programs, and food security. NJAES is positioned to lead adaptation to the changing environment in coastal waters for the commercial fishing industry.”

Captain Brick Wenzel with a codfish caught five miles off Manasquan Inlet. Codfish have become more abundant in coastal New Jersey waters over the last decade.



Shellfish production represents a large and growing segment of the United States and global seafood industry, accounting for nearly 20 percent of domestic and 27 percent of worldwide aquaculture production. However, today, the shellfish aquaculture sector in New Jersey is small relative to other coastal states and production focuses on two species, the hard clam and the Eastern oyster. The industry in New Jersey is poised to expand, and developing the tools for species diversification is underway at the Haskin Shellfish Research Laboratory.

The surfclam, *Spisula solidissima*, is a tasty, fast-growing clam species found along the New Jersey coast. The clam is easily spawned in captivity and the meat is distinctly buttery-tasting. Researchers at the lab are working in collaboration with shellfish farmers to identify optimal aquaculture conditions for culturing the surfclams on New Jersey farms, and to assess market potential for this unique product.

Assistant professor Daphne Munroe and summer intern Nate Morris sample yearling surfclams at a New Jersey clam farm.



Food, Nutrition, and Health

Working for a **healthier** tomorrow



Peter Gillies

Founding Director, New Jersey Institute for Food, Nutrition, and Health

Child health research is a strategic investment in our future. It is imperative that we develop evidence-based programs and policies that create a culture of health in our society. At the institute, our research focuses on children and their families, and examines ways to improve nutritional literacy, culinary skills, and the development of long-term healthy lifestyles.

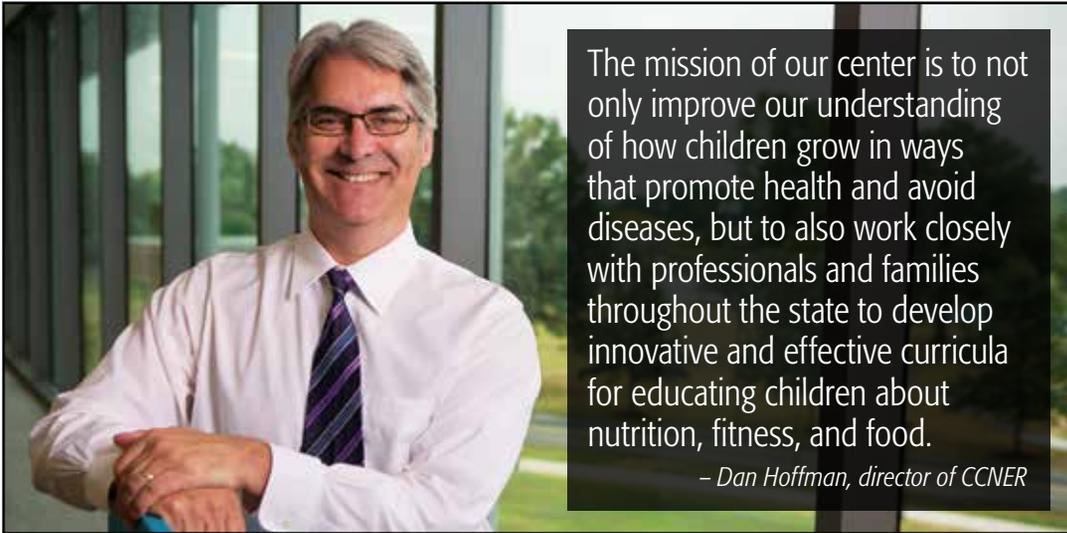
The New Jersey Institute for Food, Nutrition, and Health (IFNH) and the NJAES Department of Family and Community Health Sciences are working for a healthier tomorrow through programs that put evidence-based knowledge to work in people's lives.

The Culture of Health Academy in the IFNH Center for Childhood Nutrition, Education, and Research (CCNER) is partnering with the Douglass Psychology Child Study Center to offer children, ages 3 through 5, the opportunity to learn about nutrition, cooking, and active play. Healthy growth is being studied and an increased awareness of the ties between agriculture, diet, and cooking is being promoted using Rutgers' own greenhouses and in-house chefs. CCNER is also developing new, innovative curricula that integrate research and education. This research is combined with extension activities to ensure that children across the state benefit from the knowledge gained about healthy diets and activity, and furthers a culture of health in New Jersey.



As part of the Healthy Dining Team, alumna Cortney Flynn SEBS'16 teaches children about nutrition and food identification.

Children play on the educational playground at IFNH's Childhood Nutrition Education and Research Laboratory.



The mission of our center is to not only improve our understanding of how children grow in ways that promote health and avoid diseases, but to also work closely with professionals and families throughout the state to develop innovative and effective curricula for educating children about nutrition, fitness, and food.

– Dan Hoffman, director of CCNER



is a school-wide wellness program, developed and presented by the Department of Family and Community Health Sciences (FCHS). FCHS educators enhance the knowledge of teachers, school food service staff, administrators, and school nurses through instruction on food, nutrition, and agriculture topics. Using the school garden as a teaching and learning tool, students connect their food to the environment and learn about health, nutrition, science, and math while being physically active at the same time. In a measure of outcomes among the schools that received FCHS instruction, about 80 percent of the whole fruit offered was consumed, while fruit and vegetable intake increased by 30 percent.



A Red Bank Elementary student picks up a tomato in her school's garden.

- 🍅 **100%** of Plainfield and Elizabeth schools have updated their meal standards and most have transitioned to the new standards successfully, exceeding the **94%** average for U.S. school districts, according to USDA.
- 🍅 **13** grow healthy institutes in **8** counties have reached **298** teachers, school food service staff, administrators, and school nurses.
- 🍅 Youth have increased their fruit and vegetable intake in Plainfield schools by **30%**.

1 OUT OF 4 NEW JERSEY RESIDENTS ARE OBESE
HALF OF NEW JERSEY ADULTS ARE PROJECTED TO BE OBESE BY 2030
OBESITY-RELATED HEALTH CARE EXPENDITURE IS PREDICTED TO INCREASE TO \$9.3 BILLION BY 2018.

Source: NJ Department of Health 2015.



Students ready to start digging in their school garden at Red Bank Elementary in Gloucester County.

Youth and Education

Building productive futures



Kenneth M. Karamichael

Director, Office of Continuing Professional Education

Key principles in positive youth development are a strengths-based approach, intentionality, and individualized, leadership-minded support of young people, no matter the background or difficulties they bring to the table. Rutgers 4-H, T.E.E.M. Gateway, and our vast community partners are encouraging lifelong learning among youth and families, carrying the Rutgers Cooperative Extension mission of community outreach and service into urban areas across New Jersey.

1766-2016
RUTGERS
250

Rutgers Transitional Education and Employment Management (T.E.E.M.) Gateway, the youth development unit of the Office of Continuing Professional Education (OCPE), offers high school equivalency and workforce development programming for out-of-school, court-involved, adjudicated, or otherwise disconnected youth, ages 16–24.

While it's a population that's traditionally difficult to engage, disconnected youth nonetheless have the potential to make positive contributions to our state's economy and communities. To this end, our programs adopt a strengths-based, individualized approach to prepare youth to succeed in school and at work. By starting with the basics of problem-solving—the skill of learning itself—in our High School Equivalency and Work Readiness classrooms, our goal is to reinforce their belief in their own ability to learn and make meaningful contributions to society.

In Newark, and replicated in several urban areas in New Jersey, T.E.E.M. Gateway operates the Youth Success Center program for engaging disconnected youth. This model was applied on a county-wide basis for the first time in 2017 with the launch of the Youth Success Network of Ocean County, with federal funding from the Workforce Innovation and Opportunity Act.

The success of the T.E.E.M. Gateway and OCPE model has led to new opportunities for Rutgers in the area of juvenile justice. The university's interdisciplinary Program in Juvenile Justice and Youth Development has proposed a comprehensive plan to address the demands of juvenile justice and to work with young people impacted by the justice system. This plan, designed to attract, recruit, train, and retain youth for the workforce, is supported by the New Jersey Juvenile Justice Commission and the Pennsylvania Juvenile Justice and Delinquency Prevention Committee, and positions Rutgers as a leader in the changing national discourse on improving the juvenile justice system.

Proud members of Newark's T.E.E.M. Gateway Class of 2017 take a moment to celebrate their latest milestones: high school diplomas, new jobs, and exciting plans for college.



“I’ve always wanted to finish. I’ve wanted to go to college...be a nurse. I’m going to get there. This program has made it easier for me to continue my education.”

- T.E.E.M. Gateway alumna Mischel C.



To teach spatial thinking, the GeoHealth Lab CRSSA made New Jersey’s 21 counties into sets of wooden puzzles, shown being put together by Elizabeth students participating in a leadership program sponsored by Future City, Inc.

The Rutgers GeoHealth Lab at the Grant F. Walton Center for Remote Sensing and Spatial Analysis (CRSSA) has carved out a unique niche teaching youth about spatial technology and what it reveals about health in the urban landscape. Since the GeoHealth Lab at CRSSA launched its first workshop in 2015, the lab has focused on the city of Elizabeth, where a dense, walkable urban landscape makes for an ideal health mapping study. In partnership with Future City, Inc., an Elizabeth-based non-profit, the lab has been involved with summer and semester mapping projects involving city youth. In one workshop, participants created new spatial datasets, mapping the locations of community health clinics. They mapped healthy food outlets, community gardens, supermarkets, and fruit stands, which they integrated into one detailed, interactive map. In another project, city youth mapped gyms and walkable neighborhoods, and created an inventory of parks and amenities that promote or deter active, healthier lifestyles for city residents. In the process, they grasped the complex relationship between exercise and health. Community groups like Future City, Inc. utilize the maps in community health outreach, and share data with policymakers and residents alike.

Youth

who earn a GED will earn approximately
\$640,000 more
 in their lifetime than if they did not
 have their diploma

In 2017, T.E.E.M. Gateway
 celebrated its
120th Newark student
 earning a high school diploma

\$76.8 Million Reasons to Celebrate

Source: 2010 Georgetown Center on Education and the Workforce Report: Help Wanted: Projections of jobs and education requirements through 2018. Note: calculations adjusted to 2017 dollars for inflation.

Million Reasons Figure: in 2008 numbers...were adjusted to 2017 dollars using this site: in2013dollars.com/2008-dollars-in-2017

Community Development

Developing a volunteer corps



BOOTS ON THE GROUND:

The creation of the first Rutgers Cooperative Extension (RCE) office in 1912 extended the land-grant mission of outreach to communities through services offered via county offices. County extension personnel further the reach of university-based information by training volunteers in many areas of expertise to reach diverse audiences. The earliest use of extension volunteers began with 4-H Youth Development programs in the early 20th century, aided by volunteer leaders and mentors.

The model of developing a volunteer corps to meet the needs of educating the state's adult residents began with the establishment of the Rutgers Master Gardener program within RCE's Department of Agriculture and Natural Resources (ANR). Launched in 1984 in Bergen County, Rutgers Master Gardener programs train volunteer residents in the fundamentals of horticulture, who then in turn educate fellow residents within their communities. ANR further applied this training/volunteer model in 2005 with the creation of the Rutgers Environmental Stewards. Following the training, stewards perform internships addressing environmental issues and concerns in their community. A third example grows out of Union County, where residents answered the call for "who will speak for the trees?" by volunteering as Master Tree Stewards, helping school children and residents alike appreciate and conserve valuable urban and suburban treescapes.



Laura Lawson

Director, Agriculture and Urban Programs

NJAES is committed to addressing the interconnected environmental, social, and economic concerns facing New Jersey communities. We value our work with citizen stewards who are actively nurturing our parks and open space through Master Gardener and Environmental Stewards programs, improving quality and access to food through Master Food Preservers, and engaging in urban planning and design through the Center for Urban Environmental Sustainability.

Rutgers Master Gardeners of Passaic County get updated on fruit tree research at Rutgers' Snyder Farm.

In 2016 and 2017...

Rutgers Environmental Stewards were awarded a combined **\$6,825** in competitive grant funding.

The program produced a total of **4,540 hours** of service towards environmental issues.

"My granddaughter can't stop talking about the gardening program at school run by the Rutgers Master Gardeners—now she's growing her own tomatoes!"

— Theresa Z., Flemington

"There is so much confusing information online. It's great talking to a Rutgers Master Gardener for answers so many universities stand behind!"

— Audrey B., Towaco

In New Jersey, the value of volunteer services is more than **\$27/hour, higher than the national average** of about **\$24/hour.**

Rutgers Master Gardeners

Over the past five years:

Presented **4,738 seminars and workshops** for audiences of **104,800 adults** and **40,102 youth**

Volunteered **864,196 hours worth \$23.33 million dollars** on behalf of their county, NJAES, and Rutgers University

NJAES has instituted newer citizen-volunteer programs, modeled after its more established programs.

The Department of Family and Community Health Sciences (FCHS) established a Master Food Preservers program for volunteers who wish to increase their food preservation knowledge using canning, freezing, and drying techniques. In return, trained volunteers assist FCHS in teaching the public about home food preservation to promote safe practices and scientifically-tested recipes at home.

As the corps of NJAES citizen volunteers grows and expands so does its areas of expertise. Personnel from the RCE Department of Agriculture and Natural Resources conducted a pilot Master Composter training, focused on community gardens where compost piles suffer from neglect. The train-the-trainer sessions are being assessed to determine whether they can be integrated into existing Rutgers Master Gardener programs.

In 2017, the Rutgers Climate Institute was awarded a planning grant to determine the feasibility of a Climate Master volunteer program. A study is underway to analyze the need for this type of program and determine the potential format and curriculum. **Climate Masters training would educate volunteers about climate change, adaptation, and community resiliency, and how to give back at the local level.**



FCHS Master Food Preservers and FCHS faculty trainers.



Rutgers Environmental Stewards 2017 stream assessment training on the Stony Brook in Hopewell, NJ.



Students from Greater Brunswick Charter School in New Brunswick learn about composting in their community garden.

Economic Development

Helping create new markets and products

The global food industry is rapidly evolving as consumers continually seek food products that are distinctive and differentiated, and at the same time, promote health and sustainability.

The Rutgers Food Innovation Center (FIC) is a globally recognized and award-winning food business incubator and economic development accelerator of the New Jersey Agricultural Experiment Station. Since its launch in 2001, it has served over 2,000 clients.

FIC provides extensive programs in training and workforce development; customized and comprehensive business and technical mentoring services; and USDA- and FDA-inspected facilities that enable design, development, analysis, commercialization, and manufacture of value-added food products for sale to retail and foodservice markets.

FIC supports both domestic and international businesses, and is recognized as the only certified "Soft Landings" program in the world that focuses on supporting global food businesses with the services they need to be successful in the U.S. marketplace. It boasts an international client base that includes companies from Greece, Israel, Italy, Spain, Switzerland, Jamaica, and Colombia. Nationally, its clientele is drawn from across the U.S., with the majority of client companies originating in New Jersey, but several from as far away as California and Hawaii.

In 2017, FIC launched the Food Business Innovation Network, or FoodBIN, as a global food incubator network to foster collaboration and share resources with similar organizations around the world. FoodBIN held its inaugural conference at Rutgers in September 2017, in which leaders from more than 20 different food

A client produces marinara sauce on a Rutgers Food Innovation Center bottling line.



Peggy Brennan-Tonetta

Director, Economic Growth and Development

NJAES is proud to be a leader in business development for the state. Home to all of Rutgers' incubators, the innovation centers at NJAES are a vital economic engine for New Jersey. Encompassing food, renewable energy, and aquaculture, the centers provide essential business and technology development services that build and support viable businesses, spur public-private partnerships, and improve the skills of New Jersey workers.

incubators and accelerators shared information about food trends, new technologies, and best practices that will result in economic growth within regional economies worldwide.

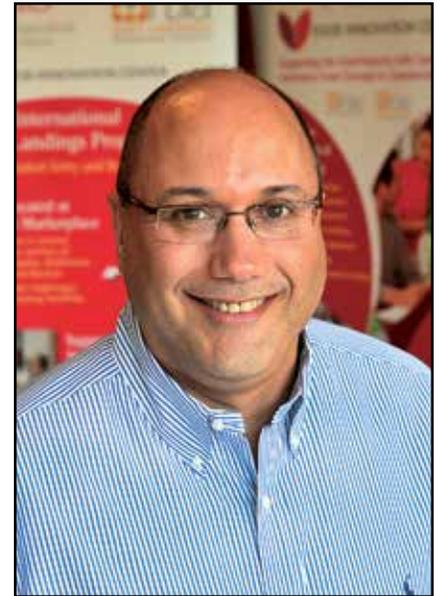
FoodBIN serves as an association specifically for food business incubators, accelerator programs, and shared-use commercial kitchen operations and is a new kind of resource for the industry. It is designed to communicate the diversity of food incubation models that exist today and play a critical role in communicating the impact of such programs in fostering entrepreneurship in communities worldwide. FoodBIN is a way for Rutgers to highlight its success as a major economic driver for the state that has helped to launch scores of local food businesses and also attract international companies to New Jersey.

Similar to the impact of Silicon Valley, which is a business cluster for the tech industry, NJAES' goal is to develop a reputation and model of a business cluster in New Jersey for our food sector.

FOOD BUSINESS INCUBATION NETWORK

A best-practice incubation program like the Rutgers Food Innovation Center can serve as the catalyst for significant economic growth in communities, regions, and nations.

– Lou Cooperhouse
Executive Director, Rutgers
Food Innovation Center



New Jersey's food system generates **\$126 billion** annually to the state economy

Source: Schilling, B. & Sullivan, K. "The economic impact of New Jersey's food system in 2012" Rutgers Cooperative Extension bulletin E355 (2016).

Since 2009, more than **90 client** companies have manufactured food products for sale to consumers from the Rutgers Food Innovation Center

Advancement

Supporting a lifelong passion



Melissa McKillip

Director, Philanthropy and Strategic Partnerships

NJAES research and extension programs are primarily funded through appropriations and sponsored research. Private giving provides an opportunity for individuals and organizations to also make an impact on the diverse range of research, extension, and education programs that serve the people of New Jersey and the urban, suburban, and rural communities in which they live.

HER LEGACY LIVES ON THROUGH EQUINE RESEARCH

Gwendolin E. Stableford was an avid horsewoman and international traveler. She was treasurer of the New Jersey Horse Council, the Middlesex Horse Show, and the American Saddlebred Horse Association of New Jersey, which she also founded in 1968. She showed and won with her American Saddlebreds and Hackney ponies all over the country. She also firmly believed in the work and mission of the Rutgers Equine Science Center, donating annually since its inception in 2001.

So it was only fitting that she ensured her support of the Equine Science Center continued well past her lifetime. **Thanks to a generous bequest, an endowed fund in Stableford's name will support equine research for years to come.**

So far, the fund has directly supported a new research project led by center director Karyn Malinowski, which assessed the impact of equine-assisted activities therapy on the horses themselves. This study is pending publication.

Two new studies led by doctoral candidates are also on deck: one examines the biological effects of chronic training and detraining; the other examines cool and warm season equine rotational grazing systems and their effects on pasture production, forage preference, and the metabolism and gut microbiomes of horses.



Left: Gwendolin Stableford with her beloved horse Vauxhall's Kentucky Rex. Above: Gwendolin Stableford with Ellie.

\$1,000,000

ENDOWMENT BRINGS AGRIBUSINESS SCHOLARS PROGRAM TO THE GEORGE H. COOK CAMPUS

This spring, The Clearing Corporation Charitable Foundation, a not-for-profit of the State of Illinois, endowed \$1 million to develop a new agribusiness scholars program at the School of Environmental and Biological Sciences and New Jersey Agricultural Experiment Station. **The foundation will match up to an additional \$250,000 in donor contributions to the program through March 31, 2018, bringing total potential support to \$1.5 million.** The Clearing Corporation Charitable Foundation Agribusiness Scholars Program will equip high-achieving students with the knowledge, leadership qualities, analytical skills, and experiences required for successful careers in the domestic and global agribusiness sector.

In addition to advanced coursework, the program will incorporate experiential learning as well as the opportunity to engage with agribusiness leaders, regulators, and government agencies. In this way, the program will ensure that Rutgers students not only learn about agri-economics, but have first-hand exposure to day-to-day issues impacting real-world business. Program leadership—Stephen Komar, agricultural agent for Sussex County, and Brian Schilling, associate extension specialist in agricultural policy—will begin inviting students to apply during the spring 2018 semester, for enrollment in fall 2018.

“The goal is to broaden their horizon,” says Ira Polk RC’71, RBS’73, a director at the foundation. “It’s not just growing and producing things; there’s a whole world beyond that. We want to train these students so they’re up and running when they get into that business environment.”

The New Jersey
Agricultural Experiment Station
doesn’t receive tuition revenue, so
your support matters



Pictured from left to right: Brian Schilling, Ira Polk, and Stephen Komar.

Board of Managers

The New Jersey Agricultural Experiment Station Board of Managers, appointed by the Rutgers Board of Governors, is an advisory group to the executive dean of agriculture and natural resources and executive director of NJAES. The board consists of a representative from each county, nominated by the County Board of Agriculture or Board of Chosen Freeholders, and a six-member statewide advisory committee. The president of Rutgers, the executive director of NJAES, and the state secretary of agriculture serve as *ex officio* members.

County Contacts

Atlantic.....	Jerome Irick	Middlesex.....	Robert VonThun
Bergen.....	Vacant	Monmouth.....	Pat Butch, Vice President
Burlington.....	Raymond Hlubik	Morris.....	Carol Davis
Camden.....	Vacant	Ocean.....	Jeff Adams
Cape May.....	Allen D. Carter, Jr.	Passaic.....	Harry Bartlett
Cumberland.....	Harold Keith MacIndoe, Jr.	Salem.....	David Dolbow
Essex.....	Frank Yesalavich, President	Somerset.....	Kenneth Osterman
Gloucester.....	Ann Dorsett	Sussex.....	Raj Sinha
Hudson.....	Vacant	Union.....	Richard C. Montag
Hunterdon.....	Meredith Peters	Warren.....	Tracy Smith, Corresponding Secretary
Mercer.....	Monica Drazba		

County Extension Offices

Atlantic.....	609-625-0056	Middlesex.....	732-398-5262
Bergen.....	201-336-6781	Monmouth.....	732-431-7260
Burlington.....	609-265-5050	Morris.....	973-285-8300
Camden.....	856-216-7130	Ocean.....	732-349-1152
Cape May.....	609-465-5115	Passaic.....	973-305-5740
Cumberland.....	856-451-2800	Salem.....	856-769-0090
Essex.....	973-228-3179	Somerset.....	908-526-6295
Gloucester.....	856-307-6450	Sussex.....	973-948-3040
Hudson.....	201-369-3432	Union.....	908-654-9854
Hunterdon.....	908-788-1339	Warren.....	908-475-6505
Mercer.....	609-989-6833		

njaes.rutgers.edu

Centers, Institutes, and Continuing Education

Center for Environmental Prediction
cep.rutgers.edu

Center for Lipid Research
rclr.rutgers.edu

Center for Turfgrass Science
turf.rutgers.edu

Center for Urban Environmental
Sustainability
cues.rutgers.edu

Center for Urban Restoration Ecology
i-cure.org

Center for Vector Biology
vectorbio.rutgers.edu

Equine Science Center
esc.rutgers.edu

Grant F. Walton Center for Remote
Sensing and Spatial Analysis
crssa.rutgers.edu

Hutcheson Memorial Forest
hmf.rutgers.edu

Institute of Earth, Ocean, and
Atmospheric Science
eoas.rutgers.edu

New Jersey Institute for Food, Nutrition,
and Health
ifnh.rutgers.edu

New Jersey Water Resources
Research Institute
njwrri.rutgers.edu

Office of Continuing Professional
Education
cpe.rutgers.edu

Rutgers Climate Institute
climatechange.rutgers.edu

Rutgers Ecological Preserve
ecopreserve.rutgers.edu

Rutgers Energy Institute
rei.rutgers.edu



Off-Campus Facilities



Clifford E. and Melda C. Snyder Research and Extension Farm (Rutgers Center for Sustainable Agriculture), Pittstown
snyderfarm.rutgers.edu



Haskin Shellfish Research Laboratory, Bivalve
hsrl.rutgers.edu

IR-4 Project: Center for Minor Crop Pest Management, Princeton
ir4.rutgers.edu



Lindley G. Cook 4-H Youth Center for Outdoor Education, Branchville
nj4hcamp.rutgers.edu

New Jersey Aquaculture Innovation Center, Cape May
aic.rutgers.edu

New Jersey Center for Wine Research and Education, Upper Deerfield
njvines.rutgers.edu

Philip E. Marucci Center for Blueberry and Cranberry Research and Extension, Chatsworth
pemaruccicenter.rutgers.edu

Rutgers Agricultural Research and Extension Center, Upper Deerfield
njaes.rutgers.edu/rarec



Rutgers EcoComplex (Clean Energy Innovation Center), Bordentown
ecocomplex.rutgers.edu

Rutgers Food Innovation Center–North, Piscataway
foodinnovation.rutgers.edu



Rutgers Food Innovation Center–South, Bridgeton
foodinnovation.rutgers.edu

Rutgers Fruit and Ornamental Research Extension Center, Cream Ridge
njaes.rutgers.edu/creamridge

Rutgers Plant Science Research and Extension Farm, Adelphia
njaes.rutgers.edu/plantscience



Rutgers University Marine Field Station, Tuckerton
marine.rutgers.edu/rumfs

YE²S Center–Camden, Newark, Ocean
teemgateway.rutgers.edu/yescenter.html

Related Links

Rutgers, The State University of New Jersey
rutgers.edu

School of Environmental and Biological Sciences
sebs.rutgers.edu

SEBS and NJAES Newsroom
sebsnjaesnews.rutgers.edu



facebook.com/
RutgersCooperativeExtension



youtube.com/RutgersNJAES



twitter.com/RutgersNJAES

Acknowledgments:

This publication was designed and produced by the Rutgers Office of the Executive Dean of Agriculture and Natural Resources and the Division of Advancement.

Photo credits: **Cover:** Nick Romanenko, stock, Roy Groething, and Anna Phung. **Inside Cover:** John O'Boyle and Nick Romanenko. **Page i:** Jeffery Heckman. **Page ii:** Nick Romanenko, stock, and Jeffery Heckman. **Page 1:** stock, John O'Boyle, and Cameron Bowman. **Page 2:** Gillian Armstrong and Jeff Heckman. **Page 3:** stock, John O'Boyle, and Courtesy of Rutgers Cooperative Extension Water Resources Program. **Page 4:** Courtesy of Mayor Wilma Diaz, Google Earth, and Richard Alomar. **Page 5:** John O'Boyle and T&F Camera. **Page 6:** Lisa Calvo, Richard DeSordo, and Mike Acquafredda. **Page 7:** John O'Boyle. **Page 8:** John O'Boyle and Courtesy of Red Bank Elementary in Gloucester County. **Page 9:** Sara Nolan and John O'Boyle. **Page 10:** Janet Mendez and David Tulloch. **Page 11:** Elaine Fogerty and John O'Boyle. **Page 12:** Jill Esposito and Michele Bakacs. **Page 13:** Courtesy of Food Innovation Center and John O'Boyle. **Page 14:** Courtesy of Food Innovation Center. **Page 15:** Courtesy of Rutgers Equine Science Center and John O'Boyle. **Page 16:** stock and John O'Boyle. **Page 17:** Courtesy of Rutgers Equine Science Center and Nick Romanenko. **Page 18:** Curtis McKittrick, John O'Boyle, Nick Romanenko, Jerry Casciano, Courtesy of Food Innovation Center, and Courtesy of the Department of Marine and Coastal Science. **Back Cover:** Dena Siedel, Lisa Calvo, Ryan Larum, and Kevin Weller.



Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.