



NEW JERSEY AGRICULTURAL EXPERIMENT STATION

ANNUAL REPORT 2025





The Rutgers New Jersey Agricultural Experiment Station (NJAES): Serving New Jersey Since 1880

The New Jersey Agricultural Experiment Station, a research and extension arm of Rutgers, The State University of New Jersey, is dedicated to enabling science-based education, research, and extension to ensure the vitality, health, and sustainability of agriculture, natural environments, and communities of New Jersey. NJAES is the third oldest Experiment Station in the U.S. and continues to be at the forefront of capacity building and workforce development through community- and industry-informed research and education programs that address critical challenges related to food, health, the environment, and the economy across the state.

New Jersey is the nation's most densely populated and fully metropolitan state, yet it is also home to a vibrant agricultural sector, extensive coastal and marine resources, and urban, suburban, and rural communities. As part of Rutgers University, NJAES and its outreach arm, Rutgers Cooperative Extension (RCE), operate a statewide network of facilities, including eight research farms, five marine field stations, four forest management areas, three business incubators, soil and plant diagnostic laboratories, camps, and cooperative extension offices in all 21 counties. Through this statewide network, our faculty, staff, and volunteers work directly with communities to connect research expertise with local needs and develop innovative solutions. Working closely with county governments, public agencies, policymakers, and community partners, NJAES delivers practical, science-driven solutions that support economic vitality, environmental stewardship, and the well-being of New Jersey's residents.

Our Mission

To enhance the vitality, health, sustainability, and overall quality of life in New Jersey by developing and delivering practical, effective solutions to current and emerging challenges relating to agriculture; fisheries; food; natural resources; the environment; public health; as well as economic, community, and youth development.

Our Vision

To be the leading public research and service-based institution for the development and delivery of practical, science-based solutions that contribute to the vitality, health, and sustainability of agriculture, environments, people, and communities of New Jersey.



LAURA LAWSON

EXECUTIVE DIRECTOR, *Rutgers New Jersey Agricultural Experiment Station*
EXECUTIVE DEAN, *Rutgers School of Environmental and Biological Sciences*

Letter from NJAES Executive Director

The Rutgers New Jersey Agricultural Experiment Station plays a unique and essential role in connecting science with the everyday needs of New Jersey's people, industries, and communities. Across research, education, and outreach, NJAES brings together faculty, staff, and partners to address complex challenges and translate knowledge into practical action that delivers direct public benefit.

Our work is organized around four critical issue areas that reflect both current demands and long-term priorities for the state. We advance viable agriculture and aquaculture by supporting innovation, competitiveness, and stewardship across New Jersey's farm and fishery industries. We focus on wellness outcomes through food, nutrition, and health by informing public practice, strengthening food systems, and expanding access to evidence-based resources. Through youth development, we invest in the next generation by fostering leadership, skills, and pathways that contribute to positive lifelong outcomes and workforce development. We protect and sustain New Jersey's natural resources by advancing environmental resilience, conservation, and science-based management of land, water, and ecosystems.

Individually, each of these issue areas addresses a distinct set of needs. Collectively, they represent a coordinated, systems-based approach to our broader objective: building resilient, sustainable communities across New Jersey. This integrated focus allows NJAES to respond to emerging challenges, support informed decision-making, and ensure that the benefits of research and outreach are felt statewide.

As reflected throughout this report, Rutgers stays committed to advancing solutions that are practical, inclusive, and grounded in science. These solutions strengthen New Jersey today while preparing for the challenges and opportunities of the future.

RUTGERS NJAES CRITICAL AREAS



ADVANCE VIABLE Agriculture + Aquaculture



Farmers, food producers, and aquaculture operators in New Jersey face growing economic and environmental pressures, including shifts in weather patterns, uncertain markets, rising production costs, and competing land and coastal uses.

As the most densely populated state in the nation, New Jersey presents a unique landscape of urban centers, suburban development, and productive farmland and coastlines. Agriculture and coastal industries are increasingly vital to local economies, food systems, and natural resources. Coastal communities are especially vulnerable to long-term environmental shifts and extreme weather events that threaten aquaculture and fisheries. These interconnected challenges require innovation, resilience, and sustainable management across terrestrial and aquatic systems. NJAES is committed to advancing research-based solutions and integrated, multistate collaborations that support commercial growers and coastal industries while strengthening long-term economic viability and environmental sustainability statewide.



NEW JERSEY GROWERS HAVE PLANTED NEARLY 100 acres
of Rutgers disease-resistant hazelnut cultivars



HASKIN LAB RESEARCH EFFORTS SUPPORTED SUSTAINABLE HARVEST OF ~20M
oysters with an economic impact of **~\$60M** to New Jersey

Scarlet Sunrise, a bicolor grape tomato developed by Rutgers researchers using traditional plant breeding methods, blends sweetness, crack resistance, and New Jersey-inspired flavor.





Clam Fisheries

RUTGERS RESEARCH SUPPORTS ADAPTATION

Fishing regulations prevent landing any mixture of the two clam species, Atlantic surfclams and ocean quahogs, on the same trip. As ocean warming drives surfclams deeper into cooler waters occupied by ocean quahogs, fishers are forced to either harvest from grounds occupied by both species or from suboptimal grounds of single species. Both options result in costly and inefficient fishing. Managing this fishery to support possession and landing of mixed-catch must first be supported by data related to discard volumes and landings mix. Scientists at Rutgers Haskin Shellfish Research Laboratory are developing and testing methods for evaluating discards and species mixing on fishing trips, in collaboration with three seafood processors and 15 fishing vessels. This data collection and reporting mechanism being developed by Rutgers researchers plays a vital role in supporting the New Jersey clam fishery.



NJAES advances New Jersey's economic development by translating land-grant research into commercial-ready innovations and workforce capacity, while generating evidence-based policy insights that inform public decision-making and strengthen agriculture, food systems, and communities statewide.



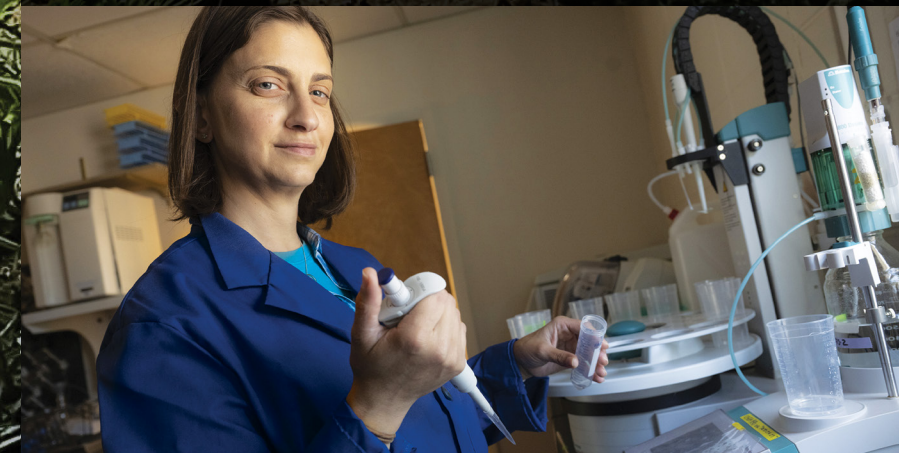
JAMES F. OEHMKE
Director, Office of Economic Development



Plant Breeding in the AI Age

RUTGERS RESEARCH INTEGRATES EMERGING TECHNOLOGIES

Rutgers scientists are modernizing plant breeding by integrating advanced sensors, robotics, artificial intelligence (AI), and data analytics to rapidly measure traits and accelerate crop improvement. Technologies such as drones with digital and multispectral cameras support turfgrass breeding by enabling high-resolution field data collection for difficult traits like drought, heat, and salinity tolerance. Computer vision and AI enhance blueberry and cranberry breeding through precise berry counts and risk assessments. At the same time, DNA-based tools advance selection for disease resistance and nutrient density in basil and other high-value greens, and color traits in crops such as hazelnut and dogwood. The integration of automation, genomics, and computational modeling enables faster, more precise development of cultivars that meet both environmental challenges and consumer demands for local growers.



Healthy Outcomes

FOOD, NUTRITION, AND HEALTH



Health challenges facing New Jersey residents are complex and shaped by interconnected lifestyle, genetic, social, and geographic factors, with nearly one million residents living in food-insecure households.

NJAES researchers address these issues through integrated studies of nutrition and health, focusing on the biochemical, physiological, and behavioral factors that contribute to poor health outcomes. In partnership with state and local governments, businesses, professional organizations, and non-profits, NJAES delivers research-based education, training, and resources in food, nutrition, health and wellness, and food safety across all 21 counties. These efforts prioritize vulnerable populations, including children and families in schools and early care settings, and focus on expanding access to healthy foods in urban food deserts. Through coordinated research and outreach, NJAES advances equitable access to nutrition and empowers New Jersey residents to achieve better health outcomes statewide.



**RUTGERS GARDENS
STUDENT FARM
DONATED
16,211 lbs**
and
**SNYDER FARM
DONATED
123,000 lbs**
of fresh produce to
community members
in need



**FAMILY AND
COMMUNITY
HEALTH SCIENCES
LED
1,515**
educational sessions
reaching over
31,500
community members

Rutgers Cooperative Extension co-authored the **New Jersey Food Donation Guidelines**, a first-of-its-kind statewide resource clarifying safe and legal food donation.





Healthy Aging

RUTGERS EXPANDS RESOURCES FOR SENIORS

New Jersey's population is aging rapidly, with adults over 60 expected to outnumber those under 19 by 2030. In Ocean and Cape May counties where 22.8% and 29.5% of residents are 65 or older, Family and Community Health Sciences (FCHS) supports healthy aging through initiatives that promote aging in place, Alzheimer's support, chronic disease prevention, and overall well-being. Through community outreach, education, and research, FCHS serves both counties' growing older adult population, now exceeding 200,000 residents. In 2025, FCHS at Rutgers Cooperative Extension of Ocean County, in partnership with the Ocean County Office of Senior Services, received a 15-month Age-Friendly Community grant from the New Jersey Department of Human Services. Rutgers Cooperative Extension of Cape May County was also awarded an Age-Friendly Community grant. These initiatives assess community needs, strengthen cross-sector partnerships, and advance sustainable policies supporting older adults, including developing a Multisector Plan for Aging to guide local action.

Community Food Security

CREATING A HEALTHY HARVEST HUB



Healthy Harvest is a dedicated and publicly accessible site on the Rutgers–New Brunswick campus that aims to provide critical support to New Jersey's food-insecure households by ensuring access to fresh, affordable, and healthy food while strengthening local food systems. It serves as a living-learning laboratory that actively demonstrates year-round, small-scale cultivation approaches and food access and distribution models in order to provide hands-on learning and community education in food preservation, safety, and nutrition.

Healthy Harvest promotes health and wellness by increasing access to fresh produce, supporting affordable food options, and offering education in healthy meal preparation. Innovative and sustainable farming practices ensure efficient operations while serving as an educational model for communities across the state and beyond. Through education, research, and outreach, the initiative demonstrates a scalable model for community food security.



FCHS partners with nonprofits, schools, government agencies, and advocacy organizations to address food insecurity and advance equitable access to food in New Jersey.



SARAH ELNAKIB
Chair, Department of Family and Community Health Sciences



PROMOTE POSITIVE Youth Development



Too many New Jersey youth face risk factors that contribute to negative outcomes, including poor physical and mental health, substance abuse, and poor academic performance.

Addressing these challenges requires sustained, structured opportunities that help young people build a sense of belonging, independence, and competence. Rutgers 4-H youth development programs play a critical role in fostering resilience, life skills, and positive youth and workforce development.

Through a hands-on, learn-by-doing approach, 4-H engages youth in meaningful educational experiences that build knowledge, confidence, leadership, and civic responsibility. 4-H faculty and staff work collaboratively with Rutgers research faculty and extension specialists as well as partner institutions to design and deliver evidence-based programs that reflect current research and best practices. Together, these efforts prepare young people to become capable, caring, and contributing members of their communities and the broader society.



456

active Rutgers 4-H clubs across New Jersey



863

New Jersey youth attended Rutgers 4-H Summer Camp

For the past 75 years, **Rutgers New Jersey 4-H Camp** has offered generations of youth a transformative sleep-away summer experience.





Building Productive Futures

4-H ENGAGES YOUTH ACROSS INTERESTS AND COMMUNITIES

Rutgers 4-H programs are often New Jersey youth's first connection to the university, grounding them in local communities while opening doors to broader opportunities. In 2025, 4-H programs statewide offered hands-on experiences that fostered curiosity, leadership, and civic engagement, spanning local activities, national convenings, and even aerospace exploration. Rutgers 4-H delegates represented New Jersey at the National 4-H Congress in Atlanta, participating in workshops, service projects, and keynote sessions alongside peers from across the country and around the world. Closer to home, the Morris County ResistoJets Rocketry 4-H Club demonstrated advanced STEM learning in NASA's Student Launch Initiative, applying real-world engineering skills and reaching more than 1,500 people through outreach. These examples reflect the breadth and impact of 4-H programming that engages and inspires youth in every county across New Jersey.



Through Rutgers University 4-H, we are preparing the next generation with the skills, confidence, and character needed to lead, serve, and strengthen our communities.



MATTHEW NEWMAN
Chair, Department of 4-H Youth Development

Changemakers for Global Food Security

THE NEW JERSEY YOUTH INSTITUTE

In partnership with the World Food Prize Foundation, Rutgers hosted approximately 200 high school students at the annual New Jersey Youth Institute (NJYI), a daylong interactive and supportive learning environment in which youth present their research on food accessibility and global issues in small-group settings led by expert judges. NJYI also serves as a launchpad to national leadership for these young changemakers as several standout participants are selected to represent New Jersey at the Global Youth Institute (GYI) held each year in Des Moines, Iowa. Hosted by the World Food Prize Foundation, GYI enables New Jersey youth to learn from international experts, including Nobel and World Food Prize Laureates, alongside their peers from around the U.S. and the world. Rutgers is committed to providing a platform for high school students to pursue STEM career paths relating to agriculture and global food security.



PROTECT AND SUSTAIN **Our Resources**



**CHRYSLER
HERBARIUM,
WHICH CONTAINS
200,000+**
scientific specimens,
celebrated its
100 year
anniversary



**NJAES MAINTAINS
A NETWORK OF
70**
weather stations
across New Jersey,
reporting real-time,
publicly available data



New Jersey's dense population patterns and extensive development place significant pressure on ecosystems and intensify challenges related to water quality, aging infrastructure, industrial and residential wastewater discharges, and regulatory demands on municipal stormwater and agricultural water use.

These issues are increasingly urgent as extreme weather events amplify environmental stressors and risks to communities, farms, and businesses. In response, NJAES delivers integrated, science-based programs that promote sustainable natural resource management. These include environmentally sound remediation, conservation planning, and environmental assessment and analysis, as well as research to improve ecological quality, monitor wildlife health and behavior, and apply economic analysis to inform environmental policy. NJAES programs advance best practices in land and water use, strengthen resilience to climate variability, and help New Jersey communities protect and restore natural systems while supporting long-term environmental and economic sustainability.

Rutgers Environmental Stewards program
celebrated 20 years of training New Jersey residents to lead local conservation and habitat restoration efforts.



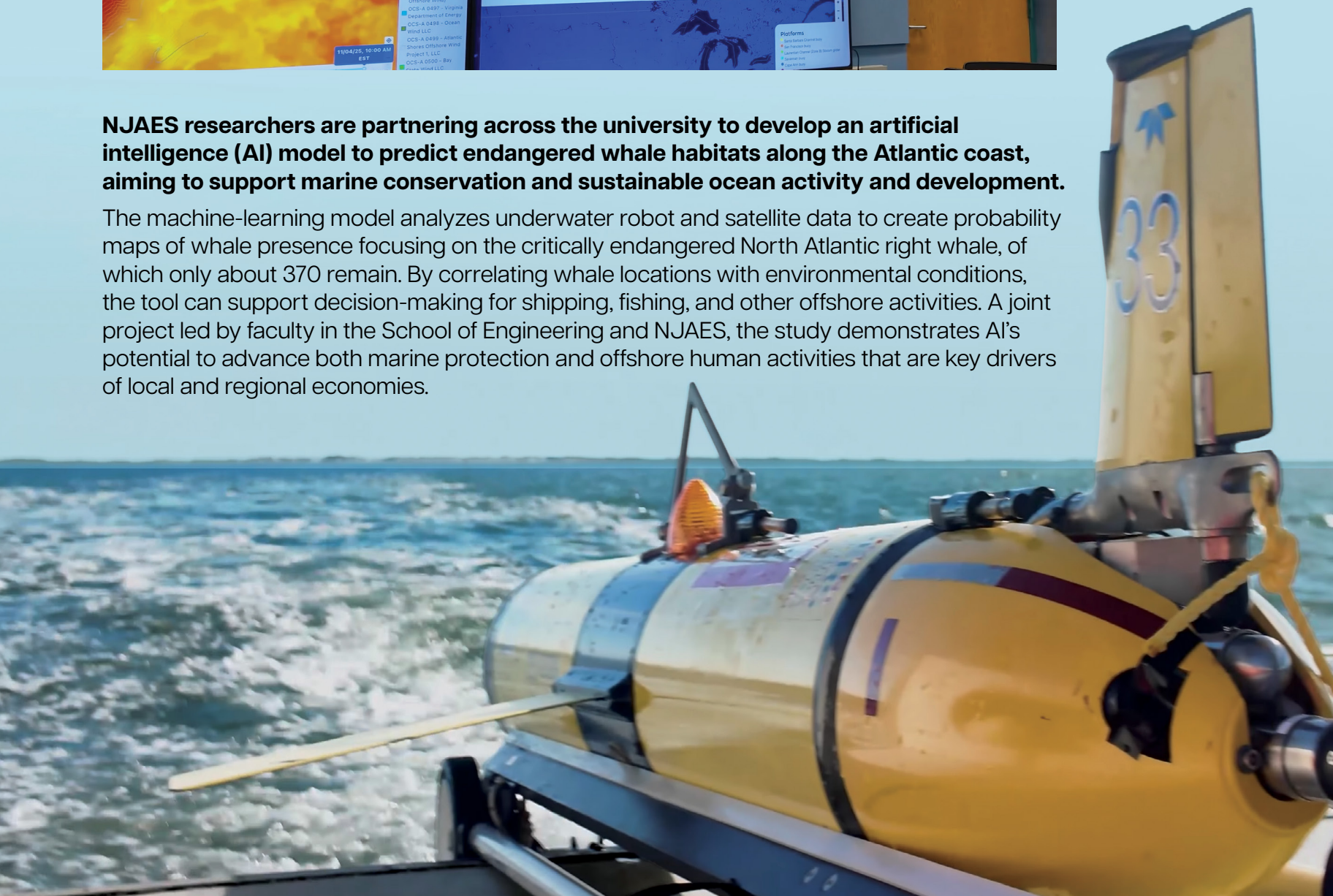
Protect Endangered Whales

PREDICTING VULNERABILITIES USING ARTIFICIAL INTELLIGENCE



NJAES researchers are partnering across the university to develop an artificial intelligence (AI) model to predict endangered whale habitats along the Atlantic coast, aiming to support marine conservation and sustainable ocean activity and development.

The machine-learning model analyzes underwater robot and satellite data to create probability maps of whale presence focusing on the critically endangered North Atlantic right whale, of which only about 370 remain. By correlating whale locations with environmental conditions, the tool can support decision-making for shipping, fishing, and other offshore activities. A joint project led by faculty in the School of Engineering and NJAES, the study demonstrates AI's potential to advance both marine protection and offshore human activities that are key drivers of local and regional economies.



Detecting Invasives in Natural Ecosystems

RUTGERS ENVIRONMENTAL DNA (eDNA) LAB

Environmental DNA (eDNA), which refers to the genetic material shed by organisms into their surroundings, allows scientists to confirm a species' recent presence without needing visual observation or physical capture. By filtering and analyzing water samples, the Rutgers eDNA Lab uses techniques like next-generation sequencing to monitor biodiversity in rivers and lakes and detect invasive species across New Jersey. Survey results from eDNA closely align with those from traditional methods, providing a more cost-effective, non-invasive alternative to time-consuming video surveys or disruptive techniques such as electrofishing.

The lab has built genetic reference data for more than 50 freshwater fish species in New Jersey, enabling state partners to perform Index of Biotic Integrity assessments to evaluate stream health. Early detection with eDNA also helps resource managers proactively respond to invasive species, preventing their spread and reducing ecological damage.



Through environmental DNA, we can uncover the hidden stories of our rivers and lakes, helping New Jersey communities protect biodiversity and stop invasive species before they spread.



JULIE LOCKWOOD
Distinguished Professor
Department of Ecology, Evolution, and Natural Resources





1: Lindley G. Cook 4-H Youth Center for Outdoor Education



2: Clifford E. and Melda C. Snyder Research and Extension Farm



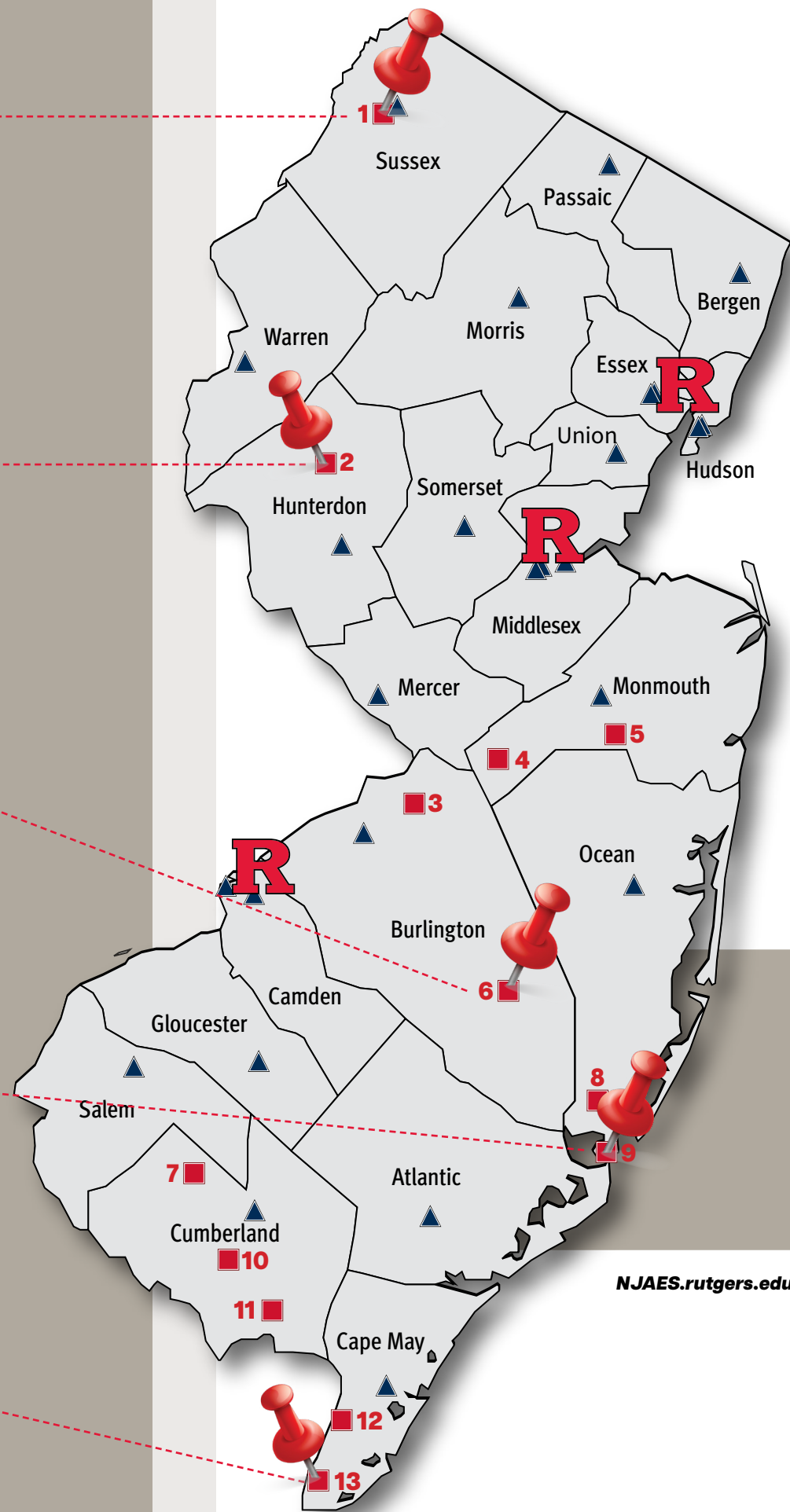
6: Philip E. Marucci Center for Blueberry and Cranberry Research



9: Rutgers University Marine Field Station



13: New Jersey Aquaculture Innovation Center



NJAES.rutgers.edu

WE HAVE THE STATE COVERED

Rutgers serves the state with faculty and staff at the G.H. Cook campus, outlying NJAES farms, field stations, and incubators, and across 21 county extension offices. Rutgers Cooperative Extension personnel provide regional, statewide, and/or county-level program leadership and direct technical service delivery in program areas, including commercial agricultural viability, marine fisheries and aquaculture, natural resource stewardship and environmental protection, positive youth development, health and wellness, and food/nutritional security.

Off-Campus Research Farms, Stations, and Centers

- | | |
|---|--|
| 1 Lindley G. Cook 4-H Youth Center for Outdoor Education | 8 Jacques Cousteau National Estuarine Research Reserve |
| 2 Clifford E. and Melda C. Snyder Research and Extension Farm | 9 Rutgers University Marine Field Station |
| 3 Rutgers EcoComplex – Clean Energy Innovation Center | 10 Rutgers Food Innovation Center |
| 4 Rutgers Specialty Crop Research and Extension Center | 11 Haskin Shellfish Research Laboratory |
| 5 Rutgers Plant Science Research and Extension Farm | 12 Rutgers Cape Shore Laboratory |
| 6 Philip E. Marucci Center for Blueberry and Cranberry Research | 13 New Jersey Aquaculture Innovation Center |
| 7 Rutgers Agricultural Research and Extension Center | |

Extension Locations

COUNTY EXTENSION OFFICES

- | | | |
|--|--|--|
| ATLANTIC: atlantic.njaes.rutgers.edu | GLOUCESTER: gloucester.njaes.rutgers.edu | OCEAN: ocean.njaes.rutgers.edu |
| BERGEN: bergen.njaes.rutgers.edu | HUDSON: hudson.njaes.rutgers.edu | PASSAIC: passaic.njaes.rutgers.edu |
| BURLINGTON: burlington.njaes.rutgers.edu | HUNTERDON: hunterdon.njaes.rutgers.edu | SALEM: saalem.njaes.rutgers.edu |
| CAMDEN: camden.njaes.rutgers.edu | MERCER: mercer.njaes.rutgers.edu | SOMERSET: someset.njaes.rutgers.edu |
| CAPE MAY: capemay.njaes.rutgers.edu | MIDDLESEX: middlesex.njaes.rutgers.edu | SUSSEX: sussex.njaes.rutgers.edu |
| CUMBERLAND: cumberland.njaes.rutgers.edu | MONMOUTH: monmouth.njaes.rutgers.edu | UNION: union.njaes.rutgers.edu |
| ESSEX: essex.njaes.rutgers.edu | MORRIS: morris.njaes.rutgers.edu | WARREN: warren.njaes.rutgers.edu |

- Off-Campus Research Farms, Stations, and Centers
- ▲ County Cooperative Extension Offices
- R Rutgers University Campuses



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



Scan here to find your local county office.

NEW JERSEY ROOTS



The New Jersey Agricultural Experiment Station relies on a variety of funding sources to address critical issues in New Jersey, including federal, state, and local government, grants and contracts, endowment revenue, income from sales and service activities, patent and plant licensing revenue, and Rutgers University. NJAES's impact and the work highlighted in this report are made possible through the sustained advocacy and support of legislators, partners, and stakeholders committed to New Jersey's future, ensuring that science-driven solutions remain accessible, responsive, and aligned with the state's evolving needs.

Thanks to the generous support of the New Jersey Governor and legislature, the State of New Jersey appropriated \$5.75 million in special purpose funding, in addition to the \$20.9 million in base operating funds to the New Jersey Agricultural Experiment Station. State of New Jersey Special Purpose Funds are vital to the success and long-term sustainability of NJAES, enabling critical investments in research and cooperative extension infrastructure, equipment, and programs. In the past year, these funds played a pivotal role in modernizing experiment station equipment and infrastructure, advancing high-impact research, and strengthening outreach services that support workforce development, public health, environmental resilience, and the competitiveness of New Jersey's agricultural and food systems.

We are sincerely grateful for this continued partnership and confidence in Rutgers NJAES and the land-grant mission.

STATE OF NJ SPECIAL PURPOSE FUNDING ALLOCATIONS

28% CAPITAL IMPROVEMENTS | **17%** INFRASTRUCTURE IMPROVEMENTS
4% IT MODERNIZATION | **28%** EQUIPMENT | **23%** RESEARCH & PROGRAM SUPPORT

Through strategic use of land-grant capacity and institutional investments, NJAES leverages funds to expand the scope and scale of its work, translating research into practical applications

100+ NJAES FACULTY supported research on
82 USDA-APPROVED LAND-GRANT CAPACITY PROJECTS
 and
1000s OF COOPERATIVE EXTENSION PROGRAMS
 that stimulated more than
100 COMPETITIVELY FUNDED GRANTS AND CONTRACTS
 expanding and amplifying NJAES research impact across the state and beyond.



