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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 future challenges relating to agriculture; fisheries; food; natural resources; environments; public health; and economic, community, and youth development.

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FUNDING SOURCES
Base funding from government sources provides the 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 research and extension education programs.

State appropriations for 2010 included $1,280,000 in federal ARRA stimulus funds. “Other” funding included restricted and unrestricted gifts, income from sales or service activities, patent and plant licensing income. County appropriations included salaries paid by counties to Rutgers Cooperative Extension (RCE) faculty and staff, as well as facilities and other support.

NJAES received $89.8 million in funding in fiscal year 2010. The percentage of funding from state and county appropriations declined again in the current fiscal year, which has been the trend over the last four years. Increased funding from grants and contracts, as well as a slight increase in our federal formula funds appropriation, have helped NJAES maintain its research and extension programs in the face of reductions in state and county appropriations. A large part of the increase in grants and contract funds for FY10 came from awards to the Office of Continuing Professional Education; the IR-4 Project; the SNAP-Ed program; the Department of Plant Biology and Pathology; the Department of Ecology, Evolution, and Natural Resources; and the Department of Animal Science.

EXPENDITURE BREAKDOWN
- **39.2%** GRANTS AND CONTRACTS
- **28.5%** STATE APPROPRIATIONS
- **16.0%** OTHER
- **9.4%** FEDERAL APPROPRIATIONS
- **6.9%** COUNTY APPROPRIATIONS

* Includes in-kind salaries paid by counties to RCE faculty and staff.
** Facilities and Administrative Costs (F&A) were previously referred to as Indirect Costs. These are costs that are incurred for common or joint objectives and therefore cannot be identified readily and specifically with a particular sponsored project, instructional activity, or any other institutional activity. Facilities costs include building and equipment depreciation, operation and maintenance expenses, interest on debt and library expenses. Administration costs include general administration and general expenses, departmental administration, sponsored projects administration, student administration and services.
WE HAVE THE STATE COVERED

- County Offices
- Centers and Institutes
- Off-Campus Stations
- Supplemental Nutrition Assistance Program - Education (SNAP-Ed) Offices
- Expanded Food and Nutrition Education Program (EFNEP) Offices

REACHING ALL 21 NEW JERSEY COUNTIES:

Rutgers Cooperative Extension Statistics

- 163,640 participants in educational outreach
- 10,958 volunteers trained
- 85,750 programs conducted
- 44,600 4-H Youth Development program participants
- 3,734 4-H volunteers
- 2,384 active Rutgers Master Gardener volunteers
- 44,882 one-on-one visits to homes, farms, fields, and industries
- 19,834 issues of various newsletters with a circulation of 60,110
- 1,282,093 downloaded publications and documents
- 8,788 adult and 7,356 youth EFNEP behaviorally focused nutrition education classes conducted
- 42,684 youth and 11,951 adult SNAP-Ed behaviorally focused nutrition education classes conducted

NJAES PLAYS A SIGNIFICANT ROLE IN THE STATE’S ECONOMIC GROWTH BY:

- Funding cutting-edge, innovative research
- Fostering technology and innovation transfer to industry
- Launching start-up enterprises through incubators and business development support
- Providing a well-educated, highly skilled workforce
- Developing sustainable growth strategies for urban and rural communities
Robert M. Goodman

sPeCIalTY C RoPs lI nK GRoWeRs an D Cons UMeRs

The Rutgers specialty crops research group, comprising extension agents and plant scientists, is led by Ramu Govindasamy, extension specialist in agricultural economics and marketing. For the past eight years, the group has worked to document and quantify ethnic produce market opportunities for farmers. To help farmers on the East Coast identify niche market opportunities for agricultural crops that can be grown locally, the team initiated a study that focuses on consumer research and crop production trials for four ethnic groups: Asian Indians, Chinese, Mexicans, and Puerto Ricans. A 2006 consumer survey of the total ethnic produce market on the East Coast was estimated at more than $1 billion for all four ethnic groups combined. In partnership with statewide stakeholders like the New Jersey Department of Agriculture and ethnic crops specialists committed to growing this emerging market, the Rutgers group conducts collaborative research with the University of Massachusetts, Pennsylvania State University, the University of Florida, and internal partners like the Food Innovation Center, Interregional Research Project No. 4, and the Rutgers Language Institute. This research links consumers, marketers, and growers through a strategic approach to ethnic specialty crops introduction and marketing in response to specific consumer demands.

What do annual bluegrass, bentgrass, switchgrass, dogwood, peaches, apples, asparagus, cranberries, strawberries, hazelnuts, and tomatoes have in common? All are integral to Rutgers’ world-class plant breeding programs, whose varieties and cultivars have been planted across the U.S. and around the world. New Jersey is ideal for a diverse breeding program, as varieties developed here are often highly adaptable and well rooted in the mid-Atlantic region to lower New England. The long partnership of NJAES with stakeholders in the turf industry has led to the development of valuable turfgrass varieties. Ornamental dogwoods and tree fruits such as peaches, nectarines, and apples have long been established programs. Newer efforts to breed hazelnuts as a sustainable bioenergy crop were boosted by a major USDA Specialty Crops Research Initiative grant to a partnership of Rutgers, two other universities, and the Arbor Day Foundation. Switchgrass offers potential as a feedstock for local bioenergy production. No other crops represent New Jersey agriculture quite like blueberries and cranberries, as they are native to this growing region, and outstanding cranberry varieties have been developed by NJAES. Rutgers plant varieties provide the farming, landscape, ornamental, and turf industries with first-rate genetic materials and, in turn, help to fund Rutgers research and breeding programs through royalty returns.

As we plan 150-year observances of the land-grant movement in 2012, we reflect on the radical changes to higher education and its impacts on society that resulted from the Morrill Act signed by President Abraham Lincoln in 1862. Today, Rutgers and the New Jersey Agricultural Experiment Station (NJAES) strive, through their missions of teaching and service, to be as transformative in the lives of New Jersey residents. Several important initiatives have blossomed in 2010, including the New Jersey Institute for Food, Nutrition, and Health and the reinvention of the major in agricultural science. Our solid partnerships with the New Jersey Department of Agriculture, the state and county boards of agriculture, the New Jersey Farm Bureau, and the U.S. Department of Agriculture indicate a bright future for New Jersey agriculture. The past five years have brought a major reinvestment in the faculty; among them 22 (of 56 total) carry primarily extension appointments, speaking to our commitment to maintaining New Jersey’s leadership in production agriculture and ensuring the viability of our farms and fisheries.

Rutgers Cooperative Extension programming also reaches further into the state’s urban communities than ever before, providing a wide range of youth development activities and innovative solutions to problems like food security, nutrition, and obesity.

As always, NJAES remains firmly committed to providing New Jersey residents with the tools and information necessary to improve their lives and communities.

4
GROWING THE WINE GRAPE INDUSTRY

With more than 1,000 acres of grapes under cultivation, some 192 New Jersey farms supply 43 state wine-making operations. These produce more than 40 different quality wines—from dry and semi-dry to sparkling, fruit, and dessert wines. In March, NJAES and New Jersey growers sponsored a statewide symposium, “Bordeaux–An Old World Terroir with Lessons for New Jersey,” which attracted leading authorities from Bordeaux, France, and the U.S. NJAES has undertaken a number of viticultural initiatives in collaboration with growers, including a USDA multi-state evaluation of wine grape cultivars and clones at the Rutgers Agricultural Research and Extension Center and Snyder Farm. An NJAES pilot evaluation of cold-tolerant Italian vinifera clones, which were collected by Rutgers and growers, is underway. Joint demonstration projects include investigating alternative herbicide and mulch systems for vineyard floor management and testing the interaction of rootstock and cultivar combinations for their adaptability to New Jersey. To examine fruit quality and reduce pesticide use, NJAES tested bagged grape clusters for pest exclusion, tested Clopyralid as a plant growth regulator to reduce excessive vegetative vigor, and conducted pilot Integrated Pest Management (IPM) surveys of key grape disease pests. Targeted field demonstrations of all these experiments will be conducted.

UNLOCKING THE SECRETS OF DISEASE

Genome analysis, which requires high-quality basic research facilities, instrumentation, and personnel, is increasingly being incorporated into application-based agriculture research projects at NJAES. The strategic hiring of Debashish Bhattacharya, a senior scientist with an outstanding reputation for establishing a first-rate laboratory for basic research in marine microbiology and genomics, has greatly benefitted mission-oriented programs of NJAES in plant breeding, vector biology, bioremediation, and plant-microbe interactions. In addition to his own research, Bhattacharya has partnered with other NJAES scientists to advance their research programs using his lab and expertise. A centerpiece of the Bhattacharya lab is an Illumina sequencer capable of reading billions of bases of sequence in a single run. Determining primary sequence information is often a critical step to advancing research projects. Among the important collaborations of the Bhattacharya lab are the description of the pathogen that causes eastern filbert blight, a devastating disease of commercial hazelnut trees; analysis of mosquito genomes for population assessment; examination of mechanisms of variability in geminivirus genomes, one of the most important genera of the plant-infecting viruses; and development of tools for rapid, sequence-based plant pathogen detection.
For nearly 150 years, Rutgers has served as New Jersey’s land-grant university, a responsibility we carry out with pride through the work of the New Jersey Agricultural Experiment Station.

While its deepest affiliations within Rutgers are with the School of Environmental and Biological Sciences, NJAES has built connections with other academic units in fulfilling its mission. For instance, the Mason Gross School of the Arts, the School of Social Work, and the Graduate School of Education have collaborated in the recent establishment of the Expressive Arts 4-H Program.

NJAES, whose first-rate research and outreach support families in every county, has taken an increasing role in helping some of the state’s most vulnerable populations. The Rutgers Against Hunger program has now entered its third year, providing food and other necessities to struggling families across the state. NJAES has led in the creation of Youth Education and Employment Success centers located in Newark and Trenton to help teenagers who are out of school or court-involved to find their way to productive futures. And NJAES administers two programs, the Expanded Food Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program (SNAP-Ed), that provide nutrition information to help families of limited resources to eat healthier and to manage food budgets.

In these ways and many more, NJAES helps the people of our state to achieve their full potential.

Richard L. McCormick

A Message from the University President

Environment and Natural Resources

FIGHTING BACK AGAINST THE ASIAN TIGER MOSQUITO

The five-year USDA-Rutgers Asian tiger mosquito cooperative agreement to develop and demonstrate area-wide management methods of the Asian tiger mosquito, *Aedes albopictus*, is in its third year. This temperate mosquito species, a relentless day biter in the U.S., has spread worldwide, vectoring dengue and chikungunya fevers in northern Europe. Conducted by the Rutgers Center for Vector Biology, in partnership with the Monmouth County Mosquito Extermination Commission, Mercer County Mosquito Control, and Brandeis University School of Social Policy and Management, the project involves research in basic biology and education, and assessment of economic impacts, as well as applied interventions in six 1,000-home sites in the two New Jersey counties. Through a door-to-door campaign by AmeriCorps volunteers, researchers discovered statistical evidence regarding the effectiveness of active education efforts over standard classroom education or passive brochure distribution. Further, Rutgers researchers are closer to the development of high-resolution spatial analysis and population genomics through sequencing of the Asian tiger mosquito genome. In addition, several new insecticides previously used in localized settings were deployed in area-wide applications. These combined efforts will lead to the creation of cost-effective control strategies for urban mosquitoes.

STEWARDING OUR WATER RESOURCES

Increasing development of coastal watersheds has altered groundwater and surface runoff patterns, resulting in increased nutrients and sediments in freshwater tributaries and adjacent coastal waters. In highly developed landscapes, properly engineered stormwater management is an important strategy in protecting our water resources. To help local officials manage their stormwater infrastructure more effectively, the Rutgers Center for Remote Sensing and Spatial Analysis, the Jacques Cousteau National Estuarine Research Reserve, and local partners have developed a StormWater Management and Planning Tool (SWMPT) for Ocean County. SWMPT provides a watershed-wide, geospatial inventory of existing stormwater management infrastructure, such as catch-basins, detention ponds, and infiltration areas, as well as hydrological modeling tools to assess the potential impact of existing and proposed stormwater basins on water resources, with the ultimate goal of enhancing the water quality of Barnegat Bay. Across New Jersey, outreach activities to mitigate stormwater runoff and manage water quantity through rain barrel and rain garden construction have been led by Rutgers Cooperative Extension’s Water Resources Program, which was honored by the EPA for its statewide “Stormwater Management in Your Backyard” program during Earth Day’s 40th anniversary celebrations in April.
BIOTECHNOLOGY ADVANCES INNOVATIVE RESEARCH

Biotechnology has emerged as a major contributor to the advancement of agriculture, medicine, and environmental sciences. Novel research underway at the university is a critical component of efforts at NJAES to sustain the environment and manage our natural resources. Eric Lam, professor of plant biology and pathology, has initiated an innovative research program on duckweed as an abundant bioenergy feedstock and bioremediation plant. Duckweed grows prolifically in lakes and waterways and thrives on the high levels of nitrogen and phosphorous in municipal waterways and wastewater treatment centers worldwide. The rapid growth of duckweed plants coupled with their simple architecture and soft tissues that are almost devoid of lignin led Lam to spearhead the Rutgers Duckweed Cooperative, which has collected over 500 natural isolates worldwide for research. Sequencing of the duckweed genome for potential genetic manipulation is underway. Nilgun Tumer, professor of plant biology and pathology, is investigating biological toxins of agricultural importance whose modes of action include interference with eukaryotic translation and protein synthesis. Tumer’s lab recently identified plant genes associated with resistance to the trichothecene toxin produced by the Fusarium head blight fungus, an advance that offers potential resistance to this devastating disease of grain crops.

DUKE FARMS PROJECTS YIELD CONSERVATION BENEFITS

Rutgers Cooperative Extension has been engaged in a fruitful alliance with the Duke Farms Foundation, whose sweeping plan to be a model of ecological sustainability entails integrating environmental stewardship and programming using the extensive and varied ecosystems and habitats of Duke Farms in Somerset County. Reflecting the foundation’s aspirations to provide leadership in wildlife ecology, plans are underway for Rutgers professional development courses on wetlands delineation and habitat regeneration. The Rutgers Environmental Stewards, an award-winning environmental stewardship certification program for New Jersey residents, is a long-established collaboration with the Duke Farms Foundation. Led by Agricultural and Resource Management Agent Bruce Barbour, the program has taught participants about land and water stewardship, best management practices, environmental public advocacy, and leadership at Duke Farms since its launch in 2005. The conservation of rare and endangered birds, especially the grasshopper sparrow, has been boosted by a collaborative effort among Rutgers, Duke Farms, and the New Jersey Audubon Society. Led by Julie Lockwood, professor in the Department of Ecology, Evolution, and Natural Resources, the project represents a valuable partnership in the university’s efforts to train students in conservation research and land management.
The 4-H Science, Engineering, and Technology program supported a broad range of marine science education outreach in 2010. Some 63 middle and 157 elementary students from seven schools participated in Marine Activities Resources and Education (MARE) Ocean Days, which were the culminating field trips for participants in the MARE school enrichment program. Rutgers students enrolled in the Communicating Ocean Science for Informal Audiences (COSIA) class, which is taught through the Institute of Marine and Coastal Sciences, served as teachers and mentors for Ocean Days participants, who in turn presented their science projects to their COSIA mentors. Students at all levels reported positive experiences about Ocean Days, captured in a podcast (coseenow.net/podcast/2010/05/positive) that was funded by the National Science Foundation Centers for Ocean Science Education Excellence Networked Ocean World. Pre-college MARE students reported increased awareness of Rutgers marine science programs and greater understanding of what it means to be a scientist, while Rutgers students benefited from practical experience in how to communicate science to children. Funded by the Geraldine R. Dodge Foundation for the past 15 years, the MARE program strives to expand science instruction and encourage youths’ competency in science, engineering, technology, and math.

PROTECTING NEW JERSEY’S AQUATIC RESOURCES

Michael Kennish, research professor and marine scientist, is leading a team of Rutgers scientists in a comprehensive ecological assessment of New Jersey’s coastal ocean and coastal bay ecosystems. In collaboration with the U.S. Environmental Protection Agency, U.S. Geological Survey, National Oceanographic and Atmospheric Administration, and New Jersey Department of Environmental Protection, Kennish and colleagues at the Institute of Marine and Coastal Sciences and the Center for Remote Sensing and Spatial Analysis at Rutgers are studying the overall ecological health of these waters, as well as where impairments currently exist and where environmental remediation must be focused in future years to improve estuarine and marine conditions. A major goal of this effort is to develop new measures of assessment for estuarine and marine waters with state and federal resource management agencies that will protect biotic communities, recreational and commercial fisheries, water quality, and habitats in all coastal waters of the state. Findings along the New Jersey shore will also provide a blueprint for the assessment of estuarine and marine ecosystem conditions in other coastal states in the U.S., demonstrating the vital role that the university plays in environmental protection of estuarine and marine waters nationwide.

ENGAGING K-12 YOUTH IN OCEAN SCIENCE

The 4-H Science, Engineering, and Technology program supported a broad range of marine science education outreach in 2010. Some 63 middle and 157 elementary students from seven schools participated in Marine Activities Resources and Education (MARE) Ocean Days, which were the culminating field trips for participants in the MARE school enrichment program. Rutgers students enrolled in the Communicating Ocean Science for Informal Audiences (COSIA) class, which is taught through the Institute of Marine and Coastal Sciences, served as teachers and mentors for Ocean Days participants, who in turn presented their science projects to their COSIA mentors. Students at all levels reported positive experiences about Ocean Days, captured in a podcast (coseenow.net/podcast/2010/05/positive) that was funded by the National Science Foundation Centers for Ocean Science Education Excellence Networked Ocean World. Pre-college MARE students reported increased awareness of Rutgers marine science programs and greater understanding of what it means to be a scientist, while Rutgers students benefited from practical experience in how to communicate science to children. Funded by the Geraldine R. Dodge Foundation for the past 15 years, the MARE program strives to expand science instruction and encourage youths’ competency in science, engineering, technology, and math.
AQUACULTURE TO BOOST REGIONAL ECONOMY

Aquaculture, fisheries, and related activities are an important part of the South Jersey economy, with an estimated annual value approaching $5 billion. In partnership with state and federal agencies, Rutgers launched the Multispecies Aquaculture Demonstration Facility (MADF) in Cape May County. This $7.5 million facility is a high-tech center for the growth and culture of finfish and shellfish, as well as training and outreach on species of commercial importance to New Jersey. Of considerable importance to the South Jersey economy, MADF has received significant investment from NJAES to integrate more closely research, teaching, and extension as equal components of its mission. Rutgers scientists have been on the forefront of research, developing triploid and tetraploid disease-resistant oysters and other shellfish that have been deployed in New Jersey and around the world. The first crop of oyster spat was grown and sold in 2010, and scaled-up production is set for the coming years. NJAES research and extension programs in aquaculture and fisheries have the potential to be significant drivers of economic growth in the development of non-seasonal jobs. In addition, research grants utilizing the facility, a new extension program associate funded by federal Sea Grant, and teaching programs are planned for MADF.

SUPPORTING HEALTHY MARINE ENVIRONMENTS

Rutgers Cooperative Extension of Ocean County has initiated a program to dispose of expired marine flares in a unique partnership with the Marine Trades Association and the New Jersey Department of Transportation IBOATNJ program, whose mission is to promote, improve, and enhance the state’s marine industry. In September, an inaugural disposal event at the Jersey Shore Boat Expo collected more than 600 flares from residents of five Central Jersey counties, while providing boater education about flare safety and proper disposal methods. For many New Jersey boaters, there is no established way to dispose of marine flares, required safety devices that can become a safety hazard and a potential water pollutant if mishandled. Marine Extension Agent Cara Muscio is working with stakeholders to establish a consistent disposal option for all New Jersey boaters. Under the auspices of the Barnegat Bay Shellfish Restoration Program, Marine Extension Agent Gef Flimlin worked with ReClam the Bay volunteers to institute the Junior Shellfish Program. The program reached eight schools and over 500 grade-school children in Ocean, Warren, and Hunterdon counties with its innovative “Shellfish in the Classroom” approach, which teaches bay ecology and water quality to both local and “upstream” students who visit the bay.
Rutgers newest institute will serve as the organizational hub for university and New Jersey Agricultural Experiment Station research in areas such as agriculture, food science, and nutrition science to address unmet problems of nutrition and health. The top priority of the institute is obesity and its co-morbidities, with a focus on early life-cycle intervention. In 2010, the institute achieved several major milestones, including the appointment of Peter Gillies as its founding director in March. In mid-July, the international architectural firm of Woods Bagot was retained to undertake a vision and concept design study for the institute. Through a series of visioning workshops, focus groups, stakeholder interviews, and benchmarking exercises, Woods Bagot designed an iconic building based on inter-dependent research neighborhoods operating in modular, open-space research laboratories, supported by core labs in metabolomics and culinology, clinical research facilities, a human performance center, a nutritional pre-school, a conference center, and healthy eating courtyards. In 2011, the institute will commence formal strategic planning and new faculty recruitment. Funded by an initial $10 million building grant from the Robert Wood Johnson Foundation, the institute has begun to receive significant donor support through the university’s capital campaign.

State and federal resources allocated to NJAES provide for the development and delivery of a wide range of programs, while competitive grants, contracts, royalty returns, and gifts are used to support specific initiatives. While base funding to NJAES has decreased over the years, strategic allocations have allowed us to continue critical-needs programs and even to expand in some key areas, as NJAES faculty members succeeded in promoting and gaining extramural funding for their mission-oriented programs. Recent faculty retirements have enabled us to hire new NJAES scientists who are developing excellent multi-dimensional programs. More than ever before, NJAES research programs are integrated with our extension and teaching programs. Among the programs that have gained attention this year are aquaculture, fisheries, and related activities, a critical component of the South Jersey economy and one of the strongest research areas of NJAES. Plant breeding programs include our worldwide leadership in turfgrass research and variety release, as well as dogwood, asparagus, and new cranberry varieties that are setting yield records in New Jersey and around the country.

New breakthroughs in the study of these plants promise exciting outcomes, like the research examining the inhibitory effects of cranberry extracts on dental caries, funded by the National Institutes of Health. Outstanding programs in lipid biology, vector biology, and endocrine research are all strongly supported by NJAES.

Bradley I. Hillman

A Message from the Director of Cooperative Research

Food, Nutrition, and Health

LIPID AND ENDOCRINE CENTERS OF EXCELLENCE

The Rutgers Center for Lipid Research and the Rutgers Endocrine Facility are two important units whose research is strongly supported by NJAES. Besides their focus on fundamental processes that are critically important to animal and human health, the two units have much in common: both are centers of excellence in existence for only a few years; both will be key to our overall efforts in food, nutrition, and health; and both are led by dynamic faculty members who were selected as MERIT (Method to Extend Research in Time) Award recipients of multimillion dollar grants from the National Institutes of Health (NIH). George Carman, professor of food science, is the director of the Center for Lipid Research. His research using yeast has sparked great interest, as genetic defects of particular enzymes in yeast, mice, and humans result in an array of disorders, including obesity and inflammation. Dipak Sarkar, professor of animal science and director of the Endocrine Facility, explores the damaging effects of alcohol on the nervous systems of the unborn. Findings in his lab have demonstrated that fetal exposure to alcohol is implicated in opioid neuron dysfunctions and hyperresponse to stress. The long-term funding provided by the NIH MERIT awards to conduct promising research at the core of these two centers helps to guarantee the future of endocrine and lipid research at Rutgers.

NEW JERSEY INSTITUTE FOR FOOD, NUTRITION, AND HEALTH

Rutgers newest institute will serve as the organizational hub for university and New Jersey Agricultural Experiment Station research in areas such as agriculture, food science, and nutrition science to address unmet problems of nutrition and health. The top priority of the institute is obesity and its co-morbidities, with a focus on early life-cycle intervention. In 2010, the institute achieved several major milestones, including the appointment of Peter Gillies as its founding director in March. In mid-July, the international architectural firm of Woods Bagot was retained to undertake a vision and concept design study for the institute. Through a series of visioning workshops, focus groups, stakeholder interviews, and benchmarking exercises, Woods Bagot designed an iconic building based on inter-dependent research neighborhoods operating in modular, open-space research laboratories, supported by core labs in metabolomics and culinology, clinical research facilities, a human performance center, a nutritional pre-school, a conference center, and healthy eating courtyards. In 2011, the institute will commence formal strategic planning and new faculty recruitment. Funded by an initial $10 million building grant from the Robert Wood Johnson Foundation, the institute has begun to receive significant donor support through the university’s capital campaign.
FAMILY AND COMMUNITY HEALTH INITIATIVES

For more than 96 years, Family and Community Health Sciences (FCHS) faculty and staff have educated and empowered New Jersey families and communities to adopt behaviors and lifestyles that promote health and prevent disease. Led today by Kathleen Morgan, the FCHS programs enable consumers to make informed health decisions, build community capacity to improve health, and educate professionals in health promotion and disease prevention. Outreach targets key issues affecting today’s families, like food, nutrition, and health; nutrition in underserved communities; school wellness to support learning; and food safety and food allergies. In 2010, Get Moving–Get Healthy New Jersey (GMGHNJ), a signature FCHS program, in partnership with 4-H Youth Development, won two national awards. The American Dietetic Association honored FCHS and GMGHNJ with the prestigious President’s Circle Award for Nutrition Education, while the Society of Nutrition Education Public Health Division award for Outstanding Public Health Nutrition Program honored GMGHNJ for excellence in contributions to public health nutrition. FCHS concluded a highly successful year, hosting its 11th Children’s Health Summit in December. “Fighting Back against Child Obesity through Environment and Policy” attracted more than 250 professionals to discuss strategies to reduce the epidemic of childhood obesity.

FOOD SAFETY FROM FARM TO FORK

Through a collaborative effort between NJAES and the New Jersey Department of Agriculture in 2010, 156 Jersey Fresh growers and produce suppliers received training to implement a food safety program in their operations, including how to evaluate the farm prior to planting through harvesting, packing, and shipping of produce. Research in risk modeling has been effective in helping food processors manage and control risk. Several projects investigating mathematical models for Salmonella persistence in low-moisture foods, quantifying microbial risks during growth of produce, and quantifying risks from consumer handling of fresh produce are underway at the university. Researchers at the Rutgers Food Policy Institute (FPI) have been examining how government, industry, and consumers respond to food recalls. FPI’s research-based recommendations, designed to improve the ability and motivation of consumers to respond appropriately to food recalls, have been adopted by government and food companies. Food poisoning resulting from the mishandling of food in home kitchens can cause significant problems, many of which can be avoided easily and inexpensively. Rutgers scientists have developed the Home Kitchen Check-Up (njaes.rutgers.edu/foodsafety/kitchencheckup) to help identify ways to reduce the risk of foodborne disease in home kitchens.
Industry interest in organic plant management and public concerns over pesticide use on school and municipal grounds led James Murphy, extension specialist in turfgrass management, and Brad Park, sports turf research and education coordinator, to develop two training courses in conjunction with the NJAES Office of Continuing Professional Education. “Organic Turfgrass Management” addressed improving soil health; reducing fertilizer and irrigation; over seeding and re-sodding using improved stress tolerant turf-grasses; non-pesticide approaches to weed, insect, and disease management; and critical organic turf management practices. “Exploring Organic Turf Options and Reduced Pesticide Inputs for Sports Fields” addressed organic turf management strategies and methods to reduce synthetic pesticide inputs. An NJAES summit with the Barnegat Bay Partnership and the New Jersey Department of Environmental Protection on the role of nutrient management in urban and suburban landscapes highlighted best management practices to reduce impact on water quality. In response to significant requests from owners of multi-acre home sites in northwestern New Jersey, Rutgers Master Gardener volunteers were trained to answer helpline questions about strategies on maintaining optimum turf quality while reducing use of fertilizer and pesticides.

**ORGANIC TURF AND NUTRIENT MANAGEMENT**

Industry interest in organic plant management and public concerns over pesticide use on school and municipal grounds led James Murphy, extension specialist in turfgrass management, and Brad Park, sports turf research and education coordinator, to develop two training courses in conjunction with the NJAES Office of Continuing Professional Education. “Organic Turfgrass Management” addressed improving soil health; reducing fertilizer and irrigation; over seeding and re-sodding using improved stress tolerant turf-grasses; non-pesticide approaches to weed, insect, and disease management; and critical organic turf management practices. “Exploring Organic Turf Options and Reduced Pesticide Inputs for Sports Fields” addressed organic turf management strategies and methods to reduce synthetic pesticide inputs. An NJAES summit with the Barnegat Bay Partnership and the New Jersey Department of Environmental Protection on the role of nutrient management in urban and suburban landscapes highlighted best management practices to reduce impact on water quality. In response to significant requests from owners of multi-acre home sites in northwestern New Jersey, Rutgers Master Gardener volunteers were trained to answer helpline questions about strategies on maintaining optimum turf quality while reducing use of fertilizer and pesticides.

**DIAGNOSING THE HEALTH OF PLANTS AND SOIL**

The mission of Rutgers’ Soil Testing and Plant Diagnostic laboratories is to provide accurate, timely diagnoses of plant problems and fertility analysis of soil to the public, for a nominal fee. The reports generated for these services not only document test results, but also offer interpretation and recommendations, serving as an invaluable opportunity for outreach about plant and soil management to enhance plant health and crop production, as well as information protecting the environment. Extreme weather in the Northeast region brought a record number of samples into the Plant Diagnostic Laboratory in 2010. Of the 1,850 plant samples it received, more than 900 were of dead and dying putting greens from area golf courses in July and August alone. While golf course samples from New Jersey, New York, and Pennsylvania dominated the submissions, samples were also sent from golf courses as far away as Texas, Ohio, and California. The Soil Testing Laboratory examined close to 7,500 samples in 2010, providing appropriate recommendations to optimize soil health. New equipment acquired by the lab, including convection cabinets to speed processing of samples and a plasma spectrophotometer for more reliable results and throughput, greatly enhanced its capacity. A customized database was implemented to increase laboratory efficiency and improve reporting time.

**HOME, LAWN, AND GARDEN**

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**ORGANIC TURF AND NUTRIENT MANAGEMENT**

Industry interest in organic plant management and public concerns over pesticide use on school and municipal grounds led James Murphy, extension specialist in turfgrass management, and Brad Park, sports turf research and education coordinator, to develop two training courses in conjunction with the NJAES Office of Continuing Professional Education. “Organic Turfgrass Management” addressed improving soil health; reducing fertilizer and irrigation; over seeding and re-sodding using improved stress tolerant turf-grasses; non-pesticide approaches to weed, insect, and disease management; and critical organic turf management practices. “Exploring Organic Turf Options and Reduced Pesticide Inputs for Sports Fields” addressed organic turf management strategies and methods to reduce synthetic pesticide inputs. An NJAES summit with the Barnegat Bay Partnership and the New Jersey Department of Environmental Protection on the role of nutrient management in urban and suburban landscapes highlighted best management practices to reduce impact on water quality. In response to significant requests from owners of multi-acre home sites in northwestern New Jersey, Rutgers Master Gardener volunteers were trained to answer helpline questions about strategies on maintaining optimum turf quality while reducing use of fertilizer and pesticides.
Horticultural Therapy Promotes Health Benefits

Rutgers offers bachelor’s, master’s, and certificate programs in horticultural therapy, which is the use of plants, gardens, and therapeutic landscapes to foster improved behaviors and positive responses in individuals with disabilities and health challenges. Through prescribed activities, the therapy provides meaningful experiences like exercise, beautification, creative expression, sensory stimulation, and social bonding. New collaborative programming with the Douglass Developmental Disabilities Center brings horticultural therapy to individuals with autism. Agricultural and Resource Management Agent Joel Flagler coordinates the horticultural therapy curriculum and Rutgers Master Gardener volunteers assist in the statewide delivery of programs to diverse special-needs populations. Seiko Goto, assistant professor of landscape architecture, conducts research by constructing a temporary Japanese-style garden in a nursing home and inviting late-stage Alzheimer’s patients to experience the garden for 15 minutes, twice weekly for four weeks. Notwithstanding the difficulty of assessing the effect of the viewing experience, anecdotal evidence suggests that Alzheimer’s patients, typically unable to retain memory for more than four hours, have successfully recalled aspects of the garden experience even after 10 days—a highly unusual occurrence in late-stage dementia.

Monitoring Urban Pests Statewide

In 2010, bed bugs had a significant health and economic impact on New Jersey residents and businesses, while the stink bug invasion created a household nuisance and inflicted damage to tree fruits and vegetables. NJAES provided training and surveillance, study of novel management tools and methods, and implementation of integrated pest management (IPM) programs in partnership with the New Jersey Pest Management Association, the state chapter of the National Association of Housing and Redevelopment Officials, the National Pest Management Association, the USDA Northeastern IPM Center, the U.S. Department of Housing and Urban Development, statewide fruit and vegetable IPM programs, and the mid-Atlantic Brown Marmorated Stink Bug (BMSB) Working Group. Changlu Wang, assistant extension specialist, invented two low-cost but highly effective bed bug monitoring devices widely used by residents and pest management professionals. A series of educational videos to control bed bug outbreaks is under development. Using a USDA grant, George Hamilton, extension specialist in entomology, tracked the spread of stink bugs in the U.S. and began testing a novel control system for homeowners. In addition, he worked with the BMSB working group on control methods for tree fruit and vegetable growers throughout the Northeast and Mid-Atlantic.
NJAES is an economic engine for the state and its programs impact many sectors—from food to bioenergy to aquaculture.

The internationally recognized Food Innovation Center provides business and technology expertise to small and mid-sized food and agricultural businesses in New Jersey and nationwide. Over the last year, 35 companies have received services key to growing their business, 28 new products have been commercialized, and 36 local residents have been employed.

The EcoComplex is dedicated to growing green business in New Jersey by offering services and resources to entrepreneurs not available elsewhere. To date, total revenue generated by clients is $64 million, while 178 new jobs have been created. In addition, NJAES is leading an effort to grow the state’s economy through the development of a renewable energy business cluster to attract and retain companies.

The economic impact of New Jersey’s commercial fisheries, recreational fisheries, and aquaculture is valued at $4.5 billion annually. In the coming year, NJAES is increasing its commitment to this important sector. New leadership of key research and outreach units, such as the Multispecies Aquaculture Demonstration Facility, will increase the economic impacts generated by these programs.

Even in times of shrinking public investment, NJAES remains committed to bringing the diversity of expertise from across the university to bear on the economic issues and concerns of the state.

Margaret Brennan-Tonetta

Youth, Community, and Economic Development

SKILLS TRAINING FOR URBAN YOUTH

Youth throughout New Jersey are gaining skills in science, engineering, and technology through 4-H Youth Development clubs, afterschool programs, and camps. Since 2008, with the support of a Cooperative Extension Community Enhancement Award, New Jersey 4-H has expanded its Science, Engineering, and Technology (SET) outreach to youth in the state’s urban centers. Now in its second year, the Rutgers 4-H Urban Summer Science Program, held on the university’s George H. Cook Campus in New Brunswick, hosted 48 high school youth from Camden, Englewood, Newark, Paterson, and Trenton. The students engaged in a series of interactive activities in biochemistry, biotechnology, environmental science, geomatics, and marine science with faculty and students. The youth returned to their home communities to serve as 4-H SET Ambassadors, working with their local 4-H program to promote 4-H and science to other youth. Rutgers 4-H is also leading New Jersey’s involvement in the National Partnerships for After School Science project in partnership with the Center for Science Education at Education Development Center, Inc. In this three-year project, 4-H is training and supporting a network of fifteen Out-of-School Science Trainers who are collaborating with ninety-five afterschool programs to increase the quantity and quality of afterschool SET programming.

STATE 4-H AND EXPRESSIVE ARTS CAMPS

Since 1951, the Lindley G. Cook 4-H Youth Center for Outdoor Education, the state’s premier 4-H camp, has offered research-based programs using the learn-by-doing approach to enable youth to develop the knowledge, attitudes, and skills they need to become competent, caring, and contributing citizens of the world. The center is utilized by a wide range of programs from schools to youth groups, 4-H clubs, families, and other interest groups. Its premier program, “Becoming an Outdoor Family,” is an outdoor educational activity jointly conducted by the Get Moving–Get Healthy New Jersey program and 4-H Shooting Sports in the spirit of the “Get Outdoors, It’s Yours” national campaign. In 2010, close to 600 non-4-H campers and 128 4-H club members attended the summer camp. In addition, Rutgers Cooperative Extension (RCE) launched a new Expressive Arts 4-H program, which focuses on building self-esteem, socialization, and self-expression through the expressive arts. In partnership with Rutgers’ Mason Gross School of the Arts, 4-H Expressive Arts offered an innovative Kids Create camp, enrolling close to 60 campers, ages 6-12, in August. The campers, including several youth from New Brunswick who were awarded RCE scholarships to attend, engaged in visual arts, music, theatre, and dance activities taught by Mason Gross faculty and Expressive Arts 4-H Agent Ellen Williams.
Building Productive Futures for Youth

Based on the successful model of the Newark Youth Education and Employment Success (YE’S) Center that began operating in Essex County in 2008, NJAES Transitional Education and Employment Management (T.E.E.M.) Gateway launched a YE’S Center in Trenton, in Mercer County. Both centers will greatly expand partnerships in building productive futures for youth, especially in New Jersey’s urban centers. Over 3,000 youth have been served by YE’S Center programming that reconnects out-of-school youth to academic and employment opportunities. T.E.E.M. Gateway was involved in far-reaching initiatives in urban outreach this year, such as Mayor Cory Booker’s Let’s Move! Newark, modeled after First Lady Michelle Obama’s Let’s Move! national campaign to end childhood obesity. As part of the Newark Youth Policy Board, T.E.E.M. Gateway supported the campaign by creating the letsmovewnewark.org website and public service announcements designed to increase physical activity and healthier food choices for children and adults. The First Lady’s visit to Newark this fall sought to further engage youth and families in the city. T.E.E.M. Gateway received national recognition with the first annual Diversity Leadership Award by the University Professional and Continuing Education Association for advancing innovative youth development opportunities in urban communities.

Climate Change Literacy for At-Risk Populations

The USDA’s National Institute for Food and Agriculture, through annual congressional appropriation for the national Children, Youth, and Families at Risk (CYFAR) program, has awarded $100,000 to the Department of 4-H Youth Development at Rutgers Cooperative Extension (RCE) to conduct a new community-based program for at-risk children and their families. Aligned with the Rutgers University slogan “Jersey Roots, Global Reach,” the RCE science literacy program teaches at-risk youth in the cities of Camden and Newark about the science, causes, and impacts of climate change. The program encompasses the major themes of teaching youth about the differences between climate and weather; evidence of climate change; the impacts of climate change; and exploring potential solutions to climate change. In addition, CYFAR funding makes it possible for youth in Camden and Newark to work alongside Rutgers scientists in hands-on activities exploring climate science and using the tools they learn to collect and analyze climate data in their own communities. Youth not only learn about the scientific principles behind the causes of climate change, but also how to address this global problem through character building, teamwork, and collaboration. The program seeks to empower youth to take action in their daily lives at home, at school, and in the community.
New Jersey Agricultural Experiment

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.

Atlantic County ................................................................. August Wuillermin
Bergen County ........................................................................ Guy Nicolosi
Burlington County .............................................................. Raymond Hlubik
Camden County ....................................................................... Vacant
Cape May County ................................................................. Warren Stiles
Cumberland County ............................................................. Maurice Sheets
Essex County ........................................................................ Frank Yesalovich
Gloucester County ................................................................. Amy Link
Hudson County ........................................................................ Vacant
Hunterdon County ............................................................... Meredith Compton, Corresponding Secretary
Mercer County ................................................................. Louis Makrancy, Vice President
Middlesex County ................................................................. Robert VonThun
Monmouth County ................................................................. Stephen Dey, President
Morris County ......................................................................... Carol Davis
Ocean County .......................................................................... John Van Pelt
Passaic County ........................................................................ Edith Wallace
Salem County ........................................................................... Vacant
Somerset County ..................................................................... Chan Leung
Sussex County .......................................................................... Carladean Kostelnik
Union County ......................................................................... Richard Montag
Warren County ......................................................................... Anna Sodtalbers

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Community Resources ......................................................... Lisanne Finston
Environment ........................................................................... Gene Huntington
Food Science ........................................................................... Pearl Giordano
Marine Science ..................................................................... Stephen Carnahan
Public Policy ........................................................................... Vacant
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