

PLAN OF WORK

State of Delaware

University of Delaware

Delaware State University

College of Agriculture and
Natural Resources

School of Agriculture,
Natural Resources, Family and
Consumer Sciences

**Federal Fiscal Years
2000-2004**

A comprehensive Plan of Work for the
1890 and 1862 Land Grant University
Research and Extension Programs
Serving the Citizens of the State of Delaware

July 15, 1999

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INTRODUCTION

This Plan of Work is a comprehensive statement of Delaware's research and extension activities for the next five years, as required by the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA), and follows the USDA "Guidelines for Land Grant Institution Plan of Work." This Plan includes the research and extension activities supported by USDA at Delaware State University and the University of Delaware.

Point of Contact

All correspondence regarding this Plan of Work should be directed to:

Dean and Director
College of Agriculture and Natural Resources
University of Delaware
Newark, DE 19717-1303

Voice: (302) 831-2501

Fax: (302) 831-6758

e-mail: nye@udel.edu

Adoptions by Reference:

1. We adopt by reference the national Coordinated Multi-state Research Framework for fulfillment of our obligation to the AREERA's multi-state, multi-disciplinary and integrated activities (see <http://www.agnr.umd.edu/users/NERA/workshop/RPAFramework.html>). Accomplishments reporting on our multi-state, multi-disciplinary, and integrated activities for Delaware will be through the annual Northeast impact statements and the Northeast results reported through institutionally integrated AD-421s. Financial statements on expenditures will come directly from AD-419s.
2. We adopt by reference the University of Delaware's and Delaware State University's procedure for reporting Civil Rights compliance and Equal Employment Opportunity requirements. These reports will be filed through the Office of Presidents of the University of Delaware and Delaware State University to the U. S. Department of Education.
3. We adopt by reference the National Standards for Peer Review (see <http://www.agnr.umd.edu/users/NERA/workshop/peerreviewstandards.html>).

PLANNED PROGRAMS

Function	Goal 1 An Agricultural System that is Highly Competitive in the Global Economy	Goal 2 A Safe and Secure Food and Fiber System	Goal 3 A Healthy, Well-nourished Population	Goal 4 An Agricultural System which Protects Natural Resources and the Environment	Goal 5 Enhanced Economic Opportunity and Quality of Life for Americans
	Programs	Programs	Programs	Programs	Programs
1862 Research	1. Poultry and Livestock Production	5. Food-borne Illness	6. Quality and Variety of Foods	8. Fate and Remediation of Nutrients, Organics and Metals	11. Rural Development
	2. Agronomic, Vegetable and Horticultural Crop Production			9. Land Use	
	3. Risk Management			10. Ecosystem Balance	
1862 Extension	1. Poultry and Livestock Production	5. Food-borne Illness	6. Quality and Variety of Foods	8. Fate and Remediation of Nutrients, Organics and Metals	11. Rural Development
	2. Agronomic, Vegetable and Horticultural Crop Production		7. Foods and Nutrition, Dietary Habits and Exercise	9. Land Use	12. Financial Management
	3. Risk Management			10. Ecosystem Balance	13. Family and Youth Development
1890 Research	1. Poultry and Livestock Production			8. Fate and Remediation of Nutrients, Organics and Metals	
	4. Culinary Herbs and Essential Oils			10. Ecosystem Balance	
1890 Extension			7. Foods and Nutrition, Dietary Habits and Exercise	10. Ecosystem Balance	13. Family and Youth Development

GOAL 1. AN AGRICULTURAL SYSTEM THAT IS HIGHLY COMPETITIVE IN THE GLOBAL ECONOMY

Program 1. Poultry and Livestock Production

Statement of Issue: Because agriculture is one of the largest enterprises in Delaware (\$2.3 billion annually) and a major exporter, the profitability of this sector of the economy is essential. Poultry production accounts for approximately 75% of the total value of agriculture in Delaware and broiler production on the Delmarva Peninsula contributes approximately 11% of the total number of broilers processed in the United States. Accurate diagnosis and effective control of infectious diseases that affect commercially produced chickens are essential to the economic viability of the poultry industry in Delaware and surrounding states. In order to insure the economic viability of local and regional poultry and livestock industries, it is necessary to continue to improve feed and reproductive efficiencies.

Performance Goals: Increased profitability and competitiveness of the poultry and livestock industries through reduced disease losses and improved efficiency of production.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives, technical reports, bulletins, manuals and workshops for producers; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Implementation of new disease control measures.
2. Improved competitiveness of the local poultry and allied industries relative to other poultry producing regions.
3. Increased recognition of the quality of science.
4. Identification of chicken genes that are regulated by growth hormone and the importance of prolactin to the productive performance in the domestic fowl.
5. Increased understanding of the feasibility, production costs and benefits of alternative (range) poultry production.
6. Increased producer understanding of the importance of forage quality and its relationship to milk production, resulting in improved forage management, proper silo management and improved forage quality.
7. Improved sustainability of year-round forage systems (alfalfa, tall fescue and bermuda grass) for beef cattle.
8. Reduced use of dietary inorganic phosphorus in broiler diets and reduced phosphorus content of broiler litter.

Key Program Components:

1. Poultry Disease Mechanisms. Research will be directed at understanding basic mechanisms of disease induction with an emphasis on economically important respiratory diseases and diseases with oncogenic and/or immunosuppressive consequences. New and variant forms of disease agents will be characterized and studies designed to explain pathogen evolution would be conducted. Important pathogen genes and gene products that contribute to pathogenicity, disease persistence and host pathogen interactions will be evaluated.
2. Fundamental Immune Processes. The role of the major histocompatibility complex (MHC), in relative disease susceptibility of broiler chickens will continue to be assessed. Non MHC related genes that may influence disease susceptibility will be examined.
3. Enhanced diagnostics and disease control measures for important poultry diseases. Evaluation and development of molecular and ELISA based diagnostics for current and emerging poultry diseases will continue. The efficacy of available and developing technologies for maximizing disease control and prevention strategies will be determined, including conventional vaccination methodologies and the use of immune modulators and recombinant derived viable and non-viable immunogens.
4. Growth and development. Research will be directed at increasing our understanding of the basic molecular and cellular mechanisms, which regulate poultry growth, development and reproductive performance.
5. Alternative Poultry Production Systems. Research will be conducted to evaluate feasibility and costs associated with alternative (range) poultry production systems. Product quality will also be evaluated.
6. Nutrient utilization in ruminants and poultry. Increased nutrient utilization through the use of chemical and biological inputs will be studied. Procedures will be evaluated that can alter rumen and silage fermentation to improve milk production, weight gain and feed efficiency in ruminants. Studies will be conducted to evaluate the effect of fertilization regimes on the quality, productivity and sustainability of alfalfa, bermuda grass and tall fescue forage systems, and the impact of forage species on productivity and conception rate in beef cattle. The effects of enzymes and feed ingredients on phosphorous metabolism and excretion in broiler chickens will be evaluated.

Internal and External Linkages:

Multi-function: Joint appointments of research, extension, and teaching faculty.

Multi-institutional/Multi-state: University of Maryland, Virginia Tech, Ohio State University, North Carolina State, Penn State, University of Georgia, Rutgers University, USDA/ARS, Northeast Pasture Research and

Extension Consortium, Maryland-Delaware Forage Council, Intervet Inc., Maine Biologics, Biomune Inc., Immunogenetics Inc., Merial Select, Inc., Multiple Poultry Companies, Cargill, Inc., Chr. Hansen's Biosystems, Agway, Inc., Ecosyl, Ltd., Kemin Industries.

Multi-disciplinary:

Virology, Pathology, Molecular Biology, Bacteriology, Immunology, Veterinary Medicine, Physiology, Nutrition, Animal Science, Agronomy

Target Audiences: Poultry Integrators, Poultry Growers, State and Federal Agencies, Animal Health Companies, Peer Scientists, Dairy and Beef Producers, Forage Producers, Industry Sales and Technical Services Personnel, Poultry Breeders, Animal Health Companies.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						
1890 Research	Funds		\$ 200,417	\$ 222,504	\$ 228,059	\$ 230,500	\$ 284,500
	People		2.3	2.7	4.0	4.0	4.0

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 2. Agronomic, vegetable and horticultural crop production

Statement of Issue: Although poultry is the major agricultural commodity in Delaware, market premiums are paid to local producers of grain consumed by the poultry industry which offset transportation costs of grain shipment. Hence, agronomic crops, particularly corn and soybeans, provide significant contributions to the state's economy. The location relative of Delaware's crop producing areas to major markets in the Northeast supports significant fresh market and processing vegetable industries. In addition, proximity to beach and local resorts has led to an ever-expanding horticulture industry, focusing on greenhouse, nursery and turf production and management.

Performance Goals: Increased productivity and profitability of agronomic, vegetable, and ornamental crop producers through reduced costs of production, improved percentage of marketable product per acre, improved cultural techniques and adoption of improved crop and vegetable varieties.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives, technical reports, bulletins, manuals and workshops for producers; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Adoption of higher yielding varieties and varieties with end-user specified traits (e.g. low phytate corn).
2. Reduced crop and nursery production costs as a result of adopting improved fertility, pest management, and other cultural practices.
3. Increased vegetable harvest efficiency through reduced field losses.

Key Program Components:

1. Agronomic, vegetable and horticultural crop production. Research and education will be directed at improved varietal selection, disease and pest resistance, and cultural production practices involving fertility, planting method and date, tillage, cover crops, irrigation efficiency, pesticide applications, and improved harvest efficiency. Research focusing on biotechnology initiatives related to improved understanding of crop genomes and utilization and application of genetically engineered plants will be conducted as well as on improved understanding of soil microorganism interactions and symbiotic relationships to crop growth. Research and education efforts will also focus on understanding pesticide movement and interactions within the soil, and identifying herbicide combinations that improve weed control and reduce active ingredient applied. Research and education emphasis will be focused on the area of improved nutrient management as it relates to crop production and the environment (See also Goal 4).
2. Pest Management strategies. Research and extension activities will be focused on development and delivery of improved methods for control of insect pests, weeds, and plant pathogens, especially those of importance to Delaware.

Internal and External Linkages:

Multi-function: Joint appointments of research, teaching, and extension faculty.

Multi-institutional/Multi-state: University of MD, Virginia Tech, Penn State University, University of West Virginia University, Rutgers University, Michigan State University, University of Wisconsin, Cornell University, University of Florida, Clemson University, University of

California-Davis, Monsanto, Dupont, Dow Ag. Sciences, AgrEvo, Mobay, BASF, Terra, Ag. Chem, FMC, Rhone Poulenc, Novartis, Zeneca, Griffin, Rohm and Haas, Cyanamid, Valent, and New Holland.

Multi-disciplinary: Soil Science, Plant Science, Plant Pathology, Entomology, Weed Science, Bioresource Engineering, Food and Resource Economics, and Horticulture.

Target Audiences: Crop Producers, Green Industry, Certified Crop Advisors, Private Agricultural Consultants, State Agencies (DDA, DNREC), Federal Agencies (USDA), Chemical/Seed/Fertilizer Companies, Agricultural Equipment Companies, Peer Scientists.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 3. Risk Management

Statement of Issue: Agricultural producers have always endured significant risks associated with market price fluctuation and other financial factors, weather variability, and decision-making about adoption of new production practices, technologies and marketing strategies. With the passage of the 1996 farm program legislation, additional risk was shifted from the federal government to the producer. To remain competitive, Delaware producers must manage their risk effectively. Risk management requires the control of both production and marketing risks. While new risk management alternatives have been and continue to be developed, these new alternatives create more complex decisions for producers in terms of selecting appropriate risk management tools and marketing strategies.

Performance Goals: Development, evaluation and delivery of new risk management strategies to assist producers in decision making about adopting new production practices, marketing alternatives and technologies.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives, technical reports, bulletins, manuals and workshops for producers; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Improved profits from participating in marketing and production risk management strategies and programs.
2. Evaluation and adoption of new production technologies.
3. Improved public perceptions and attitudes about adoption of new production technologies.
4. Increased adoption of crop and livestock insurance programs along with the futures markets.
5. Increased knowledge of global competitiveness and other policy issues and their impact on domestic production.
6. Improved production efficiency resulting from adopting improved procurement, production, inventory, quality, marketing and distribution systems.

Key Program Components:

1. A framework to identify and assess socio-economic impacts and risks associated with new technologies, products, industry structure, and global trade policy reforms will be developed.
2. The appropriate mix of marketing alternatives and strategies, and evaluate domestic and global market demand for these farm products will be determined
3. Various risk management strategies such as hedging, forward contracting, crop and livestock insurance, and revenue insurance will be examined.
4. Whole-farm financial management and marketing training programs will be developed and evaluated.
5. Current procurement, production, inventory, quality, marketing and distribution systems will be evaluated.

Internal and External Linkages:

Multi-function: Joint appointments of research, teaching, and extension faculty.
 Multi-institutional/ Multi-state: USDA, University of Maryland, Rutgers University, Penn State University, Cornell University, University of Tennessee and others.
 Multi-disciplinary: Agricultural Economics, Animal Science, Plant Science, Entomology, Bioresource Engineering

Target Audiences: Poultry Growers and Integrators, Grain Farmers, Vegetable Producers, State Agencies (DE Dept. Of Ag, DEDO), Federal Agencies (USDA), Peer Scientist, Students, and the General Public.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 4. Culinary Herbs and Essential Oils

Statement of Issue: The United States continues as the world's largest importer and consumer of herbs and spices. The per capita importation of herbs and spices rose 174% capita between 1960 and 1997. The per capita increase in importation of essential oils likewise has increased 78% from the early 1960's to 1997. In 1997 the value of imported condiments, seasonings, and flavoring materials totaled \$550 million while exports totaled \$174 million. Similarly, the value of imported essential oils totaled \$324 while exports totaled \$548 million. Increasingly, third world sources of these plant materials have become contaminated, threatened and/or eliminated (e.g., as a result of geopolitical events). Domestic procurement of safe, reliable sources of these plant materials is essential to meet the demand. Yet, this ever-increasing market has not been fully exploited by small U.S. farmers because of a lack of information on efficient agronomic management and marketing and authentic germplasm that meets current market specifications.

Performance Goals: Development and release of new, improved germplasm for plant flavor, fragrance and medicinal uses.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; technical reports, bulletins, manuals and workshops for producers; contract and grants to support research, outreach and education activities.

Outcome Indicators:

1. Increased total value of U.S. herb and essential oil products and commodities.
2. Increased number of non-formal education programs conducted to improve productivity and global competitiveness of the U.S. herb and essential oil production system.

Key Program Components:

1. The field area for propagation of plants of flavor, fragrance and medicine will be fully developed. New sources of economically important flavor and fragrance constituents will be explored.
2. Agronomic, harvesting and distillation techniques will be demonstrated and disseminated to producers.

Internal and External Linkages:

Multi-function:	Joint appointments of research, teaching, and extension faculty.
Multi-institutional/Multi-state:	Delaware Herb Grower & Marketers Association, International Herb Association, The Herb Society of America, Delaware Department of Agriculture, Delaware Department of Natural Resources and Environmental Control, National Herb Garden (National Arboretum, U.S.D.A.), U.S. Botanic Garden, McCormick, Tone Brothers, Baltimore Spice, R. J. Reynolds, Florasynth, CDC, Interweave Press, Mantanzas Creek, Energy Essentials, Prima Fleur.

Target Audiences: Primarily Growers, Processors, Marketers of Plants of Flavor, Fragrance, and Medicine in Delaware, the U.S. and Internationally

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1890 Research	Funds	\$ 175,000	\$ 175,000	\$ 178,500	\$ 181,800	\$ 187,000	\$ 190,000
	People	1.4	1.4	1.7	1.7	2.0	2.0

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

GOAL 2. A SAFE AND SECURE FOOD AND FIBER SYSTEM

Program 5. Food-borne Illness

Statement of Issue: The American food system is admired around the globe for its ability to provide consumers with an abundant supply of convenient, economical, high-quality, and safe food products. Food-borne illness, however, still occurs in the United States and outbreaks of food-borne illness due to microbial contamination continue to be a major but preventable public health problem. While advances in understanding and controlling food-borne pathogens have been significant, new pathogens, new food products, increases in imported foods, and increasing anti-microbial resistance present new challenges to the nation's food safety programs.

Performance Goals: Improved access to a safe, healthful, affordable food supply by all citizens. Increased consumer understanding of food-borne risks and illnesses, and of safe food handling procedures.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives, technical reports, bulletins, newsletters, fact sheets, interactive displays, workshops and training programs for consumers; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels; in-service training programs

Outcome Indicators:

1. Improved understanding of intestinal microbiology; improved competitive exclusion preparations and probiotics.
2. Development of gene-based pathogen detection methods for the testing of foods; expansion of the use of these rapid diagnostic assays to a large segment of agriculture and the food industry.
3. Development of safe, new food products preserved by non-thermal food processing methods that minimize excessive heat treatments, maintain product quality and retain original levels of nutrients.
4. Adoption of at least one food safety practice that reduces the risk of food-borne illness by consumers.
5. Training and certification of commercial foodservice managers.
6. Development and adoption of Hazard Analysis Critical Control Point (HACCP) plans by food facility owners and managers.

Key Program Components:

1. Characterization of intestinal microbial communities in chickens. Research will be directed at genetically identifying bacteria that inhabit the intestinal tract of chickens that might prevent or reduce intestinal colonization by bacterial pathogens of concern to human health.
2. Detection methods for food borne pathogens. Research will be directed towards the testing, modification and development of rapid, gene-based method for the detection of food-borne pathogenic bacteria.
3. Non-thermal antimicrobial treatment of foods. Research will involve the development and use of novel, non-thermal methods (especially high hydrostatic pressure processing) as preservative methods for commercial food products.

4. Food handlers (foodservice workers, youth, childcare givers, limited-resource individuals and families, elderly, immune-compromised individuals, and pregnant women) will be trained in food safety practices that reduce the risk of food-borne illness.
5. Foodservice managers will be trained for certification.
6. Owners/managers of food facilities (schools, deli operations, convenience shops, day care centers, nursing homes, dinner theaters, casinos, restaurants, and volunteer organizations such as firehalls, churches, and civic groups) will develop Hazard Analysis Critical Control Point (HACCP) standards of handling foods.
7. Food producers and processors will be trained in food safety practices that reduce the risk of food-borne illness.

Internal and External Linkages:

Multi-function:	Joint appointments of research, teaching, and extension faculty.
	Multi-institutional/Multi-state: Federal agencies (USDA, HHS), Qualcom, Inc., Delaware Departments of Agriculture, Education, and Public Health; Delaware Food Safety Council; all school districts in Delaware; Food Bank of Delaware, Inc.; Delmarva Poultry Industry; Delaware Vegetable Growers Association.
Multi-disciplinary:	Animal and Food Science, Nutrition and Dietetics, College of Marine Studies.

Target Audiences: Poultry Integrators, Food Processors, Poultry Growers, Peer Scientists, Federal and State Agencies, Food Quality Assurance Groups, Foodservice Workers, Youth, Childcare Givers, Limited-resource Individuals and Families, Elderly, Immune-compromised Individuals, Pregnant Women; Professionals and Volunteers Working with Consumers, Foodservice Managers/Owners, Food Producers, and Food Processors.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

GOAL 3. A HEALTHY, WELL-NOURISHED POPULATION

Program 6. Quality and Variety of Foods

Statement of Issue: Although Americans have access to an abundant, nutritious, affordable food supply and have many tools such as the Food Guide Pyramid and Nutrition Facts labels to help them select a nutritious diet, many individuals do not consume a well-balanced diet, which leads to increased human health concerns. Food recalls of low-income participants enrolling in the Delaware Expanded Food and Nutrition Education Program (EFNEP) compared similarly to a national USDA survey in that only 17, 10, 32, and 29 percent of Delaware families were eating the minimum number of servings from the dairy, fruit, bread/cereal, and vegetable groups, respectively. Research has unraveled the role of many dietary components, including phytochemicals, in the maintenance of good health. More effort is needed to determine the effects of processing on these constituents and to provide us with new products so we can continue to enjoy nutritious, affordable foods.

Performance Goals: Increased understanding of the effect of ingredients and processing technologies on food quality and consumer preference. Improved quality, variety, and nutritional value of foods.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives, technical reports, bulletins, manuals and workshops for producers; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Increased use of production by-products to produce value-added food ingredients and nutraceuticals and expand the number of food choices for consumers.
2. Improved understanding of the interaction among various food components and phytochemicals/nutraceuticals during processing on food quality, nutritional value and preference by consumers.

Key Program Components:

1. Changes in food constituents which occur during processing and the interaction of these components will be studied, especially as they relate to nutritional quality and consumer health implications.
2. Utilizing agricultural production by-products as ingredients for manufacturing new food products and expanding the number of food choices will be evaluated.

Internal and External Linkages:

Multi-functional: Joint appointments of research, teaching, and extension faculty.
 Multi-institutional/Multi-state: Delmarva Poultry Industry, Inc.; Delaware/Maryland Soybean Board; United Soybean Board; Mid-Atlantic Food Processors Association; National Food Processors Association; DuPont Agriculture and Life Sciences; Hercules; Florida Department of Citrus
 Multi-disciplinary : Food Science, Chemical Engineering, Mechanical Engineering, Environmental Engineering, Food and Resource Economics, Chemistry and Biochemistry;

Target Audiences: Food (dairy, soybean, poultry, citrus, nutraceutical, and processing) Industry, Peer Scientists.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 7. Foods and Nutrition, Dietary Habits and Exercise

Statement of Issue: Although Americans have access to an abundant, nutritious, affordable food supply and have many tools available to help them select a nutritious diet, concerns about diet and human health continue to escalate. Of the ten leading causes of death due to disease, five are linked with diet. Compared to national averages, mortality rates in Delaware are higher for heart disease, cancer, and diabetes mellitus. Nationwide data suggest that the minority, low-income and educationally disadvantaged individuals carry a disproportionate burden of diet-related diseases. Although many diseases occur more frequently with advancing age, dietary practices in young people have a significant effect on occurrence and onset of these diseases. Results from a 1995 survey demonstrate that 37% of students in the Youth Risk Behavior Survey had not participated in vigorous exercise of at least 20 minutes on three of the preceding seven days. Delaware's educational programs designed to assure a healthy population were carefully selected to address issues identified by Delawareans as critical.

Performance Goals: Improved lifelong skills and knowledge base about healthy food choices, preparation of healthy meals, personal safety, and reduced health risk factors through educational programs to improve dietary habits and exercise practices in the general public.

Output Indicators: Trained volunteers, cooking classes, workshops/programs, one-on-one educational programs, media releases, internet site, fact sheets, newsletter series, interactive displays, in-service training programs, presentations at regional and national meetings.

Outcome Indicators:

1. Increased use of the Food Guide Pyramid and Nutrition Facts to meet the US Dietary Guidelines and to choose a healthy diet.
2. Increased understanding of the relationship between diet and chronic diseases such as heart disease, cancer, and osteoporosis, and adoption of dietary patterns that protect against these illnesses.
3. Improved management of food resources (money, WIC vouchers, food stamps, etc.) to meet basic nutritional needs by limited-resource individuals and.
4. Increased ability of consumers, especially youth, to acquire domestic skills, i.e. prepare meals, with foods to meet their nutritional needs.
5. Enhanced consumer knowledge of poisonous and non-poisonous products.
6. Improved social skills in youth.
7. Increased understanding of safe food handling procedures by youth.
8. Recognition by peers.

Key Program Components:

1. Youth, child care givers, limited-resource individuals and families, and the general public will be trained to use the Food Guide Pyramid and Nutrition Facts to meet the US Dietary Guidelines for Americans and to choose a healthy diet.
2. Youth, parents, child care givers, limited-resource individuals and families, and individuals at risk for chronic diseases will be trained to provide increased understanding of the relationship between diet and chronic diseases of heart disease, cancer, and osteoporosis and will be encouraged to adopt dietary patterns that protect against these illnesses.
3. Limited-resource individuals and families will be trained to manage their food resources (money, WIC vouchers, food stamps, etc.) to meet basic nutritional needs.
4. Youth and limited-resource individuals and families will be trained to prepare meals with foods to meet their nutritional needs.
5. Programs will be developed and delivered to provide poison awareness and prevention training.

Internal and External Linkages:

Multi-institutional/Multi-state: UD-DSU Cooperative Extension, Delaware 5-A-Day For Better Health Coalition; Delaware Nutrition Support Network; Delaware Departments of Education (school lunch, summer feeding program, and child and adult care feeding programs) and Public Health; Emergency Medical Services for Children, Delaware State Housing Authority Management, Residents of McGlane Garden Public Housing, Safe Kids Coalition, WIC; Delmarva Poultry Industry, Inc.; Dairy Council, Inc.; Delaware Affiliates of the American Cancer Society and American Heart Association; Perinatal Association of Delaware; Delmarva Rural Ministries; Produce for Better Health Foundation; and National Cancer Institute.

Multi-disciplinary: Food Science, Nutrition and Dietetics

Target Audiences: Consumers, Youth, Parents, Public Housing Residents, Childcare Providers, Individuals at Risk for Chronic Diseases, Limited-Resource Individuals and Families, Pregnant Women, Public and Private Schools and Professionals and Volunteers Working With Consumers.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Extension	Funds						
	People						
1890 Extension	Funds		\$ 26,000	\$ 34,000	\$ 35,400	\$ 36,400	\$ 36,400
	People		0.4	0.4	0.4	0.4	0.4

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

GOAL 4. AN AGRICULTURAL SYSTEM WHICH PROTECTS NATURAL RESOURCES AND THE ENVIRONMENT

Program 8. Fate and Remediation of Nutrients, Organics and Metals

Statement of Issue: To achieve greater harmony between agricultural production and the environment, Delaware must focus on several critical issues that can have negative impacts on surface and ground water quality: 1) more efficient use of nitrogen and phosphorus in animal and crop production; 2) enhanced understanding of fate/mobility, speciation, and bioavailability of metals and organic chemicals in soil and water environments, more efficient use of ground water for irrigation; and 3) reduce pesticide use. The degradation of water quality associated with nutrients and pollutants is the result of inputs from many sources. However, agriculture is clearly a significant contributor of nitrogen and phosphorus to the environment given the large quantities of both used annually in crop and livestock production and landscaping related activities.

Performance Goals: Improved understanding of the transport of nutrients, metals, and organics through soil. Development of new practices, technologies and educational programs to assist producers in managing plant nutrients and animal wastes. Improved surface and ground water quality on the Delmarva Peninsula.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives, technical reports, bulletins, manuals and workshops for producers; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Development of enhanced research/extension/education programs on nutrient management, metal speciation, soil remediation, and organic chemical fate and use.
2. Enhanced agricultural income and profitability derived by implementation of improved nutrient management programs.
3. Increased sustainability of agriculture enterprises on the Delmarva Peninsula through improved preservation of soil and water quality.
4. Recognition of the quality of the science by peers.

Key Program Components:

1. Fate, transport, and reaction mechanisms. Research will be directed at understanding the fate, transport and reaction mechanisms of plant nutrients (nitrate, phosphate), metals (copper, chromium, arsenic, mercury, other heavy metals), wastes (manures, sludges, industrial by-products and co-products) and organic chemicals (pesticides, industrial organic chemicals) in soils and soil components, and their effects on soil and water contamination. Soil processes that determine the distribution of inorganic and organic materials in all phases and at different scales (soil solid surfaces, soil column, soil profile, farm and watershed) will be studied using an array of novel techniques including kinetic, spectroscopic, microscopic, fiber optic and biochemical approaches and mathematical modeling. New practices, methodologies, and educational programs will be developed in concert with colleagues from multiple disciplines, state and federal agencies, national laboratories, and state and local governments that will be useful in management of nutrients, wastes, and other contaminants to enhance and preserve water environmental quality, to restore the health of the region's aquatic ecosystems, and to sustain agriculture in Delaware and elsewhere.
2. Cost-effective, in-situ remediation. Research will be directed at developing cost-effective, in-situ methods for the remediation and speciation of contaminated soils, including phytoremediation, bioremediation, and atomic and molecular approaches. Protocols for using tissue culture to study the

mechanisms used by plants to take up, transport and tolerate metals will be developed. Innovative in-situ decomposition techniques including the use of rhizosphere organisms in bioremediation will be studied. X-ray absorption spectroscopy and other atomic and molecular techniques will be used to accurately speciate contaminants in soils.

Internal and External Linkages:

Multi-function: Joint appointments of research, teaching, and extension faculty.
Multi-institution/Multi-state: University of Maryland Campuses, Virginia Tech, Penn State University, North Carolina State University, University of Texas, Clemson University, Brookhaven, Lawrence Berkeley and Pacific Northwest National Laboratories. DuPont, Monsanto, Agrevo, DPI, Mobay, American Cyanamid, Dow Agri Sciences, BASF, DNREC, EPA, USDA, NSF, USGS and State Commodity Boards. States of Maryland, Pennsylvania, Virginia, North and South Carolina, and Texas
Multi-disciplinary: Animal and Food Science, Bioresources Engineering, Chemistry, Civil and Environmental Engineering, and Plant and Soil Sciences

Target Audiences: Crop Producers, Poultry Growers, State Agencies (DDA, DNREC), Federal Agencies (USDA, EPA, NSF, DOE), Environmental Groups, Peer Scientists, Dupont and Other Industries, and Commodity Groups.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						
1890 Research	Funds		\$ 89,445	\$ 92,128	\$ 93,970	\$ 121,000	\$ 124,630
	People		1.6	1.6	1.6	2.0	2.0

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 9. Land Use

Statement of Issue: Conversion of agricultural land and forests to other uses continues to escalate in Delaware and the region. Critical land use issues in Delaware involve aspects of population growth; traffic congestion; costs of providing services such as water, sewer, and schools; development patterns; and the preservation of agricultural lands. Delaware maintains an active Agricultural Lands Preservation program to purchase development rights to agricultural lands.

Performance Goals: Reduced conflict between competing forces in land use and development. Protection of agriculturally productive land for future generations.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives; technical reports, bulletins, manuals and workshops for farmers, land-owners, developers, community members and local governments; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Implementation of land use strategies to balance the conflicts between economic development and farmland preservation.
2. Quantification of economic costs and benefits of alternative ground water quality protection strategies.
3. Farmers, landowners, and community members trained to use tools for optimize land use for appropriate functions.

Key Program Components:

1. Strategies to minimize land use conflicts and protect natural amenities in an urbanizing environment will be investigated.
2. A framework to examine the economic benefits and costs of alternative surface and ground water quality protection strategies will be developed.
3. Current strategies to protect and preserve agricultural land will be evaluated.
4. Training programs in land use to provide farmers, landowners and community members with tools to deal with land use issues will be developed and delivered.

Internal and External Linkages:

Multi-function:	Joint appointments of research, teaching, and extension faculty.
Multi-Institutional/Multi-state:	USDA, University of Maryland, Rutgers University, Penn State University. State agencies in Maryland, New Jersey, Pennsylvania.
Multi-disciplinary:	Resource Economics, Sociology, Community Development, Geographical Information Systems.

Target Audiences: Farmers, Landowners, State Agencies (Dept of Agriculture, DEDO, DelDOT, Federal Agencies (USDA), Land Use Organizations, Environmental Organizations, Students, and the General Public

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 10. Ecosystem Balance

Statement of Issue: Maintaining and restoring native biological resources on the Delmarva Peninsula after 400 years of urban and agricultural utilization is a critical issue. The impact of past agricultural practices and encroachment of urban/suburban populations on the native landscape is not fully understood. New technologies in agricultural production, including control of insects, weeds, filamentous algae, and plant pathogens are needed to insure sustainability of the agricultural enterprise in Delaware while maintaining biodiversity and natural ecosystems.

Performance Goals: Sustainability of long range, competitive agricultural enterprise and life-style using technologies and production systems that are environmentally sensitive and socially acceptable.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives; technical reports, bulletins, manuals, fact sheets, workshops for producers, consumers, homeowners; Master Gardeners trained; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Increased number of production units that utilize IPM strategies and systems for selected commodities
2. Increased diversity of IPM practices used for selected commodities
3. Reduced total input costs for selected commodities using IPM strategies and systems
4. Increased number of producers with expertise in sustainable agriculture who serve as extension trainers
5. Increased number of extension personnel who complete training and who recommend one or more sustainable agricultural practices after completing training
6. Increased adoption of recommended sustainable agriculture practices
7. Increased participation in education programs related to responsible environmental management of natural resources, nutrients, and pesticides; and increased adoption of recommended practices or technologies based on these programs.
8. Increased knowledge base and awareness of environmental issues, awareness of biodiversity and its importance in the general public.
9. Increased volunteerism and dollars saved through volunteer intervention.

Key Program Components:

1. Integrated pest management. Research and extension activities will be directed at developing and delivering balanced, integrated pest management (IPM) programs, a systems approach using chemical, cultural, mechanical, and biological control to increase net profits to producers while protecting the environment. Biological, cultural, and integrated control methods for insect pests, weeds, filamentous algae (in aquaculture ponds) and plant pathogens will be developed. Studies aimed at understanding interactions among herbivores, their host plants, and their parasites, and understanding processes leading to development of pesticide resistance will be conducted.
2. Sustainable agriculture. Research and extension will be directed at understanding and promoting activities that contribute to a long-range, viable agricultural lifestyle and industry that is economically profitable, environmentally sensitive, and socially acceptable. Activities will include development and promotion of efficient and sustainable agricultural, forestry, and other resource conservation policies, programs, technologies, and practices that ensure ecosystem integrity and biodiversity, including crop

diversification/alternative crops; agroforestry; windbreaks; cover crops; living mulches; use of hedgerows, field border systems, conservation buffers, etc.

3. Renewable resources. Research and extension activities will be directed at understanding and mitigating the impact of agricultural practices and urbanization on Delaware's biological resources, including wildlife and woodlands; understanding the fundamental processes that create and maintain biodiversity, e.g. speciation, predator-prey interactions, community and ecosystem structure and extinction processes.
4. Master Gardener training: Extension programs will be developed and delivered that provide training in Wildlife Habitat Gardening, Waterwise Gardening for residents through the Master Gardener Training Program, including skill development for inmates of the Delaware Correctional Center.

Internal and External Linkages:

Multi-function: Joint appointments of research, teaching, and extension faculty.
 Multi-institutional/Multi-state: UD-DSU Cooperative Extension; Penn State; University of Maryland; DSU-UD Sea Grant, DuPont, Monsanto, other agrichemical companies; US Forest Service; USDA Beneficial Insects lab; Delaware Correctional Center; Ministry of Caring Childcare; Kent County Conservation District, Local Newspapers
 Multi-disciplinary: Wildlife Conservation, Biological Sciences; Inter-departmental Major (Natural Resources Management) includes Entomology & Applied Ecology; Food & Resource Economics; and Plant & Soil Sciences, Plant Pathology, Weed Science; Joint Faculty Appointment across Departments; Joint Major (Plant Protection); Bioresources Engineering; Marine Studies;

Target Audiences: Farm Owners and Operators, Aquaculture Producers, Water Quality Managers, Agribusiness and Private Consultants, Horticultural Professionals, Home Gardeners, Child Care Providers, Inmates at Delaware Correctional Center.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						
1890 Research	Funds		\$ 141,861	\$ 198,000	\$ 203,940	\$ 219,940	\$ 226,538
	People		2.3	2.8	2.8	3.0	3.0
1890 Extension	Funds		\$ 64,000	\$ 64,000	\$ 65,900	\$ 68,900	\$ 68,900

	People		0.8	0.8	0.8	0.8	0.8
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People = Effort of human resources in terms of FTE (full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

GOAL 5. ENHANCED ECONOMIC OPPORTUNITY AND QUALITY OF LIFE FOR AMERICANS

Program 11. Rural Development

Statement of Issue: Delaware's economy is growing, diverse and ever changing, but economic development remains a critical issue for Delaware. Agriculture remains an important economic base, but major growth in Delaware's economy now comes from the manufacturing, banking, retail/wholesale trade, and service sectors. As the economy changes, there is a need to understand the changes and provide assistance in the transition for members of our rural communities. Concerns about employment, skill development, education, careers, and family financial stability are intertwined with the strength of the state economy, as well as that of local communities. The state and local communities must continue to attract new businesses, retain existing business, including the agricultural sector, and grow new ones. New approaches are needed to focus on rural and family development given changes in cultural composition, community structure and family organization.

Performance Goals: Increased capacity of rural communities and families to enhance their economic well being.

Output Indicators: Research reports to the scientific community, including refereed journal articles, books, paper presentations, abstracts; professional consultations with industry, government, and private sector representatives; technical reports, bulletins, fact sheets, and workshops for individuals and families, community groups and community leaders; contract and grants to support research, outreach and education activities; courses taught at the undergraduate and graduate levels.

Outcome Indicators:

1. Increased participation in economic development programs in communities
2. Increased number of new businesses started and existing businesses maintained as a result of economic development programs
3. Jobs created or saved through existing business strategies
4. Increased participation in developing sustainable, community-based "aging in place" options for the elderly
5. Implementation of strategies for economic development

Key Program Components:

1. The process of change in rural economies will be monitored and opportunities for rural revitalization and community development will be identified.
2. Factors that encourage individual academic and family financial success will be identified and strategies for enhancing those assets will be developed.
3. Programs to assist communities in building the social and economic capital that will contribute to the civic, social, emotional and educational development of all family members - including youth and the elderly - will be developed and delivered.
4. Business expansion and retention strategies for rural communities that encourage and/or manage economic growth will be developed and delivered.

Internal and External Linkages:

Multi-function:

Joint appointments of research, teaching, and extension faculty. Research, extension and teaching personnel will be involved in program development and delivery.

Multi-Institutional/Multi-state:

USDA, University of Maryland, Rutgers University, Penn State University, Cornell University, West Virginia University, State Agencies in Maryland, New Jersey, Pennsylvania, New York, West Virginia others.

Target Audiences: Business and Community Leaders, Families, State Agencies (Delaware Development Office, Departments of Agriculture, Health and Human Services) and Federal Agencies (USDA), Students, and the General Public

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Research	Funds						
	People						
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 12. Financial Management

Statement of Issue: Financial security is one of the most pressing concerns for Delawareans. Studies show the importance of financial well being to overall well being of families, On average, income in Delaware has not changed much between 1990 and 1995, with families experiencing a \$1200 increase in this time period. There has also been an increase by 50% in the number of personal bankruptcies filed. Data indicate that most families are three to six months away from bankruptcy if their income was unexpectedly lost, pointing to the insecurity faced by many families with respect to their income.

Performance Goals: Improved financial status and stability of families through financial management education programs.

Output Indicators: Newsletter series, referred journal articles, financial health care curricula; local, county, regional and national presentations, contacts and courses, county and state workshops; grants and contracts, educational program participants, volunteers participating, volunteers trained, volunteer hours.

Outcome Indicators:

1. Increased number of families setting financial goals
2. Increased number of families who develop a spending plan
3. Increased number of families who report reducing debt
4. Increased number of families who increase savings
5. Increased number of people who make a will or review their current will

Key Program Components:

1. Programs will be developed and delivered in Family Economic Well-being, including

- a. High School Financial Planning Program
- b. Financial Management Counselor Training
- c. Basic Budgeting and Credit Management Programs

2. Programs will be developed and delivered in Workforce Preparation, including

- a. Technology training programs
- b. Pesticide applicator training
- c. Child care provider training
- d. 4-H career exploration programs

Internal and External Linkages:

Multi-function: Joint projects between teaching/research/extension professionals

Multi-Institutional/Multi-state: University of Delaware, Delaware State University, Rutgers, University of Maryland - College Park, National 4-H Council, NCALL, Consumer Credit Counseling Service, Banks, National Center for Workforce Preparation, Family and Workplace Connection, Delaware Prevention Network

Multi-disciplinary: Departments of Individual and Family Studies, Child Development and Life Span Development; College of Urban Affairs and Public Policy.

Target Audiences: 4-H members, teachers and youth serving educators, high school students, professionals and others working with limited resource audiences, Master Gardeners, Master Food Educators, after-school child care providers, nursery professionals.

Program Duration: Five years

Allocated Resources:

		FY99 (Base)	FY00	FY01	FY02	FY03	FY 04
1862 Extension	Funds						
	People						

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

Program 13. Family and Youth Development

Statement of Issue: The family has changed more in the last ten years than any other social institution. Rapid economic and social changes increasing challenge the capacity of families to function well, placing extremely high demands and workloads on those charged with raising children. Strong families are the basic building unit for our future citizens, yet those charged with this important responsibility do not have the time, often the money or skills to carry out parenting in a positive, productive manner. Preparing citizens to take prominent roles in shaping their future and the future of their communities as been a signature trait of Cooperative Extension from its beginnings. While many challenges face society today, perhaps none is more critical than help youth develop the leadership and decision-making skills necessary to survive in the 21st century. To insure an enhanced quality of life for Delawareans, Governor Carper's Family Services Cabinet Council developed indicators reflecting issues affecting citizens' quality of life, organized into the following categories: Healthy children, successful learners, resourceful families, nurturing families and strong ad supportive communities.

Performance Goals: Increased capacity of families, individuals, and communities to improve their quality of life.

Output Indicators: Publications, newsletter series, journal articles, county, state, regional and national presentations, fact sheets, teaching modules, video satellite conferences, take-home short courses, contacts and courses, grants and contracts, educational program participants (volunteers, volunteers trained, new volunteers, volunteer hours, youth community service projects, hours contributed to community involvement/service, public policy education, families receiving family education newsletters, newsletters distributed, families completing strengthening families training.

Outcome Indicators:

1. Improved academic performance of youth
2. Decreased percentage of youth using substances
3. Increased percentage of youth participating in Extension programming who demonstrate improved academic, social and job preparedness skills
4. Increased percentage of parents/families participating in Extension programming who demonstrate positive parenting skills
5. Enhanced oral and written communication skills in youth and adults
6. Enhanced decision-making skills and leadership skills in youth and adults
7. Increased family communication skills
8. Increased adoption of critical nurturing skills by families
9. Increased adoption of conflict resolution techniques
10. Increased adoption of safety rules and regulations
11. Increased knowledge base about safe ad secure child care environments
12. Dollars saved through volunteer intervention
13. Parents/families adequately supporting the development of their youth.

Key Program Components:

1. Volunteer Leadership Development programs will be developed and delivered, including:
 - a. Public Policy Education

- b. Volunteer Leadership Development - recruitment, screening, training, in-service and recognition - 4-H adult and teen volunteers, 4-H camp counselors, Master Gardeners, Master Food Educators; T.R.Y. (Teens Reaching Youth) training, 4-H Teen Conference, 4-H Jr. Council, 4-H Leaders' Associations, 4-H club officers
- c. Middle Management Volunteers - volunteers managing volunteers
- d. Extension Advisory Committees development
- e. Enhancing the Quality of Life for Youth and Families programs will be developed and delivered, including:
 - a. Workforce Preparation - technology training, job readiness skills needed to compete in the workforce focusing on academic success and resume writing; aquaculture business ventures for rural and urban youth,
 - b. Building the capacity of individuals, families and communities to build and support strong families - USDA State Strengthening Project, Pathways from Poverty – Adult Resource Development, Brookmont Farms project, Dover Air Force Base project, Pinetown project, Strengthening Families training, Child Care Provider training, Growing Up Female, Great Beginnings, Families Matter!, Solo Parenting, and Keeping Your Marriage Strong.
- c. Life Skills Development through 4-H Youth Development programs will be delivered- development of decision-making, conflict resolution, communication, teamwork, leadership and community involvement skills through hand-on learning experiences.
- d. Safe Communities programs will be delivered - drug and alcohol education, bicycle safety education, pedestrian safety education, farm safety and car seat safety.

Internal and External Linkages:

Multi-function: Joint projects with teaching, research and extension personnel.

Multi-institutional/Multi-state: UD-DSU Cooperative Extension, University of Maryland - College Park, Rutgers University, Virginia Wesleyan, State of Delaware (Children, Youth and Families; Health and Social Services; Governor's Cabinet Council, Office of Highway Safety, Department of Education, Delaware Bicycle Safety Commission, Delaware Aquaculture Association, Northeast Regional Aquaculture Center, Dover Air Force Base, Christiana Care, National 4-H Council, Christina School District, Red Clay School District, Caesar Rodney School District, Cape Henlopen School District, local child care centers, Delaware Helmet Bank, Greenwood Trust, Delaware housing Coalition, First State Action Agency,

Multi-disciplinary: Nursing and Health Sciences, Education, Urban Affairs and Public Policy, Child Development and Life Span Development, Social Work, Family and Consumer Sciences.

Target Audiences: Children age 0-5, Youth age 5-19, 4-H members, 4-H volunteers, Master Gardeners, Master Food Educators, Community Leaders, at-risk youth and families, youth agency professionals, key decision-makers, human service professionals, child care providers, family day home providers, social clubs, church groups, private and public school youth and teachers.

Program Duration: Five years

Allocated Resources:

	FY99 (Base)	FY00	FY01	FY02	FY03	FY 04

1862 Extension	Funds						
	People						
1890 Extension	Funds		\$ 110,000	\$ 108,000	164,300	\$ 171,300	\$ 171,300
	People		1.6	1.6	2.2	2.2	2.2

People = Effort of human resources in terms of FTE(full time equivalent) including extension agents, associates and specialists, faculty, research scientists, associates and technicians.

STAKEHOLDER INPUT

In the state of Delaware, the University of Delaware and Delaware State University, use a multi-faceted approach to securing stakeholder input. We believe in direct contact with people and attempt to solicit input from a wide variety of clientele, users and stakeholders. Opportunities for input include, but are not limited to, the following: extension overall advisory committees, extension issue-based advisory committees, strengthening families statewide advisory committee, 4-H volunteers, 4-H Foundation, LINKS, agriculture commodity groups, environmental interests, the green industry, agribusinesses, agriculture associations (i.e., Farm Bureau, Grange, Pork Producers Association, Delmarva Poultry Industry, Soybean Board, Sheep Producers Association, etc.), Master Gardeners, Master Food Educators, and Master Financial Planners. We hold a variety of regular meetings across the state, which include a diverse mix of clientele, users, and stakeholders. These meetings include such things as: Agriculture Visiting Committee, State Chamber of Commerce, Kids County Advisory Council, Delaware Public Policy Institute Task Force, Friends of Agriculture Breakfast series, Council of Farm Organizations, USDA Food and Agricultural Council, State Agriculture Technical Committee, and user groups like 4-H regular and day camp parents. Students enrolled in our colleges and faculty, professionals and salaried staff are encouraged to provide input on program priorities. We have conducted random surveys of users and non-users of the programs and activities on a variety of issues including land use and economic development. Other tools that we use to get input include visioning processes and focus groups.

These efforts have been focused on both building commitment and getting input from stakeholders such as government agencies, industry partners and regulatory agencies. Our programs have expanded and input continues to increase. We are recognized as a source of not only useful but also reliable information. We will continue to seek input in a variety of ways. These methods will change as the issues themselves change.

Feedback to stakeholders is essential if they are to remain engaged in the input process. Reports back to groups are made whenever possible. This is a continuing effort and is adjusted to fit each issue.

REVIEW PROCESS FOR RESEARCH AND EXTENSION PROGRAMS

Peer Review of Research Programs

We adopt by reference the National Standards for Peer Review (see <http://www.agnr.umd.edu/users/NERA/workshop/peerreviewstandards.html>).

Merit Review of Extension Programs

Merit review for Delaware Cooperative Extension consists of five levels of peer and stakeholder review. Extension professionals submit county plans that have been

reviewed by their peers within the county and by county stakeholder advisory groups. These stakeholder groups provide input on critical needs and issues within their communities, which is used to develop the county plans. After county plans are complete, stakeholders review them for inclusion of the previously identified needs and issues as well as program delivery and evaluation methodologies. Each of these plans includes specific objectives that are examined for relevance, usefulness and potential impact of the programs. This feedback is used to refine county plans and develop future plans.

The second level of review is by college-wide issue teams that are cross-functional and multi-disciplinary. From this review, county plans are combined into a college-wide five-year plan.

The third level of review is both within and outside the university community. Copies of the plan are submitted to university administrators and related agency personnel who function as both present and future partners. These individuals are invited to comment on the objectives identified, areas of collaboration, and potential impacts. University administrators are also asked to comment on ways in which we might work across colleges and schools to increase our outreach efforts.

A fourth level is with statewide stakeholder groups, including advisory groups, commodity organizations, volunteers, research partners, state and local funders, etc. These groups are asked to provide feedback regarding objectives, potential impacts, and how it meets their specific needs.

The final level is the Northeast Extension Directors, who have agreed to share all state plans among each other. This peer review helps states advise each other on opportunities to strengthen individual state plans and ways that we can collaborate across state lines.

Certification

John C. Nye, Dean and Director
College of Agriculture and Natural Resources
Delaware Agricultural Experiment Station
Delaware Cooperative Extension
University of Delaware

Date

Kenneth W. Bell, Director
School of Agriculture,
Natural Resources and
Consumer Sciences

Date

Delaware State University