Cornell University
FY03 Annual Report for Agricultural Research and Extension Formula Funds

Cornell University Agricultural Experiment Station
NYS Agricultural Experiment Station
Cornell Cooperative Extension
College of Agriculture and Life Sciences
College of Human Ecology
College of Veterinary Medicine

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FY2003 Annual Report
Cornell University

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Background and Methods

Planning Option: Statewide activities -- integrated research and extension plan.

Period Covered: October 1, 2003 through September 30, 2003

Program Definition and Scope

This report directly reflects our approved plan of work. As indicated in our approved plan, all program descriptions were framed as ongoing major programs. We have not, therefore, separated results into timeframe categories (short-term, near-term, long-term). Data and narrative documentation were collected for the indicators included in our approved plan of work and supplement.

Methodology and General Comments

A variety of data sources and documentation procedures were used to generate this report. For extension, the primary sources were system-wide annual accountability reports and fiscal and personnel accounting records. The annual reports include participation data, reports against our approved performance indicators, and program impact statements. For research, The CRIS reporting system, annual faculty activity reports, and fiscal and personnel accounting records were the primary sources.

Our approach reflects the approved plan directly. For example, as outlined in the plan supplement, we used joint extension/research appointments as direct evidence of integrated activity and rely on personnel accounting to do so. In the case of multi-state extension activity, we relied on project proposal ear-marking and direct reports by faculty on a project-by-project basis. With final approval of our plan and supplement, we have worked to include appropriate indicators in our project documentation and reporting structures to facilitate reporting. For example, persons submitting preproposals for both Hatch and S-L funding now are expected to address the integrated activity and multistate extension components of the proposed work.

For each of the five goals, we provide indicator, expenditure and effort data to reflect the scope and reach of programming in that area. Also included are selected impact statements to convey the nature of programming within each goal area. For each of the indicators, we report results for 2003 followed by the plan of work target result. All extension indicators were met or exceeded for the reporting period. This is in part due to significantly improved reporting compliance for the report year. As a result, we are increasing many of the indicator targets for those items carrying forward to our FY05-06 Plan of Work Update.

Subsequent to the 5-Year Plan of Work being developed in 1999, the annual CRIS-GPRA Summaries have been introduced and employed in the state to provide a much more accurate method of calculating both Scientist Years (SYs) and percentages of research funds expended per national goal. As a result, total expenditures and effort, particularly those of Goals 2 and 3, have been adjusted accordingly.

We did not attempt to communicate in detail the work within or across goals. Rather, we selected examples to provide a broad view of our efforts related to each goal. This approach is best illustrated by our use of impact statement data. Impact statements are solicited annually from research and extension faculty and off-campus educators. The scope of reported results is very broad. We have selected a small number of impact statements from both research and extension to illustrate primary themes within each goal. While priority is placed on examples that demonstrate outcomes and impacts, we have included a few that describe promising new initiatives as evidence of the dynamic nature of our programming. It should be noted that the impact statements included reflect both federal formula funds and associated matching and/or supplemental funding. In most cases, Smith-Lever and Hatch funding is significantly enhanced by other sources in carrying out any given project.

The process for receiving and considering input from stakeholders, described in Cornell University's 5-Year Plan of Work and in the Annual Reports of Accomplishments and Results, also pertains to projects supported by McIntire-Stennis and Animal Health and Disease research funds. The Stakeholder Involvement section outlines how our revised program development process is enhancing our long tradition of effective stakeholder involvement. Our approaches for stakeholder involvement continue to evolve based on feedback from participants. Note that at least 13 of the impact examples included in this report include specific efforts to reach underserved populations (New Farmer Development Project, Farmer’s Market Meets Low Income Audience Needs, Farmer’s Market Nutrition Program, Bullthisell Bounty Shares Program, Family Fare: Colorful Eating for Good Health, Senior Fitness Program, Nutrition and Chronic Disease, Program Helps Integrate Immigrants in Rural Communities, Assessment Tool Allows Researchers to Identify and Help Children in Low-Income Families, Practical Management Strategies for Reducing Risk of Exposure to Indoor Air Pollutants for Limited-Resource Families, Parents Involved in Education, Power Partners Financial and Energy Education Program).

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

Agricultural production systems in the United States are part of the overall growing global economy of food and fiber products. On a more localized level our production systems are the basis for maintaining the rural economy and providing a safe and nutritious food supply to our diverse population. Our agricultural systems in the northeast are broad and encompass small and large scale plant and animal farming; regional and specialty market production and processing; and, local, national and international marketing. This diversity has enabled our agricultural systems to remain competitive in the global economy. The foundation for this has been our ability to develop and integrate new technology into our agricultural production systems through the combined efforts of fundamental and applied research programs linked with effective extension efforts. However, as the global market changes, we must understand where our opportunities lie.

Although our efforts are extremely diverse, they can be subdivided into the areas of production, protection, processing and marketing.

Production

Improving the yield and quality of plants and animals in agricultural production systems is fundamental to improving our ability to compete in a global economy. These improvements can be accomplished through:

0) traditional and modern breeding programs which select for desired traits (such as yield, flavor and pest resistance) and an understanding of how they can be expressed under different environmental regimes;
0) improving our understanding of the nutritional requirements for plants and animals so that inputs and waste products are minimized;
0) improving our understanding of soils in order to maintain or improve the health of the soil;
0) improving our understanding of the impact of environmental conditions on plant and animal production.

Protection

Plants and animals are stressed by various organisms including insects, pathogens and weeds. Traditional control of these pests through the application of synthetic pesticides has allowed farmers to manage some of these pests, but concerns about their effects on the environment and the development of resistance must be taken into account. Improvements in protection of our production systems can be accomplished through:

0) genetic engineering of plants to express pesticidal traits and the development of management systems which ensure the durability of the deployment of these plants;
0) utilization and/or improvement of insects and microbes which may act as pesticides against insects, pathogens and weeds;
0) improvements in the production systems for mass producing natural enemies;
0) an improved understanding of the non-target effects of pesticides.

Processing

The value of agricultural raw products is multiplied through processing them into foods and fiber which become distributed through wholesale and retail markets traded worldwide. The value of grapes at harvest, for example, is minimal compared with the value of the wines they produce. Improvement of our agricultural production systems on a global market can be achieved through processing which:

0) recovers components from what would be engineering waste and converts them into marketable items (particular enzymes, flavors, bulk materials, etc.);
0) enhances the food product by preserving or increasing the level of nutrients or flavors;
0) maximizes the freshness of the product through minimal processing;
0) minimizes the process of converting the raw product into foods.

Marketing

The competitiveness of our agricultural products is influenced by domestic and international factors and an understanding of the production, distribution and marketing costs will influence what agricultural production systems are most competitive for our region. Improvement of our agricultural production systems on a global market can be achieved through: 1) an understanding of the costs for our production systems compared with other domestic and regional production areas; 2) an understanding of the specific desires of the consumers in various regions of the world economy; 3) an understanding of the political, regulatory and social structures which influence the production and distribution of agricultural products which are produced in other regions.

The agricultural production systems of the northeast are diverse. Over the decades some of our systems have lost their relative strengths compared to other regions while other systems have grown in their relative strengths. The majority of the population of the US is centered in the northeast region and the opportunities for agricultural systems should be high. However, presently we import ca. 80% of our food. In many cases this is the result of more favorable agricultural conditions (lower labor costs, longer season, etc.) outside our region. Future research investments should be directed toward those projects which provide us with the best opportunities to compete both nationally and internationally. Dairy systems, floriculture and ornamental and fresh foods are examples of areas in which northeastern agriculture can effectively compete. The growth of community food systems, such as local and roadside markets, should be encouraged as well. For any of these areas, there will continue to be a need to increase research investments in fundamental and applied sciences to improve the production, protection, processing and marketing of our agricultural products so they can be competitive on the regional, national and international markets.

PERFORMANCE GOALS FOR INITIATIVES RELATED TO GOAL 1

Empower individuals and enterprises in agriculture and food systems to thrive in order to:

- maintain strong, rural communities;
- advance a clean healthy environment;
- promote attractive landscapes;
- assure a safe, nutritious, and abundant local food supply; and
- support a thriving New York State economy.

Indicator Data Specific to Goal 1

(For each indicator, both actual and annual target results are included, the latter in parentheses.)

INDICATOR 1.1 The total number of refereed or peer reviewed articles or materials reporting research on topics related to agricultural production and competitiveness.

Year	# refereed items	# patents, licenses, varieties
2003	850 (675)	47 (40)

OBJECTIVE 1.1 To produce new and value-added agricultural products and commodities.

INDICATOR 1.1.2 The total number of persons completing non-formal education programs on production of new and value-added commodities and products and the number of these persons who actually adopt one or more recommended practices or technologies within six months after completing one or more of these programs.

Year	Output: # completing programs	Outcome: # adopting practice/ technology
2003	14363 (5000)	2403 (2300)

OBJECTIVE 1.2 To annually increase agricultural producer awareness, understanding, and information regarding the production of new and value-added commodities and products in U.S. agriculture.

INDICATOR 1.2.1 The total number of persons completing non-formal education programs to improve the productivity and global competitiveness of the U.S. agricultural production system and the number of these persons actually adopt one or more new production techniques or strategies within six months of completing one or more of these programs.

Year	Output: # completing programs	Outcome: # adopting practice or technology
2003	21669 (10000)	6583 (4000)

OBJECTIVE 1.3 To improve decision-making on public policies related to the productivity and global competitiveness of the U.S. agricultural production system.

INDICATOR 1.3.1 The total number of persons annually completing non-formal education programs on topics related to public policy issues affecting the productivity and global competitiveness of the U.S. agricultural production system and the number of those persons make use of such knowledge within six months of completing one or more of these programs.

Year	Output: # completing programs	Outcome: # utilizing information
2003	14741 (5500)	7517 (2400)

Resources Allocated to Goal 1 (FFF & Match)

Dollars x 1000 and (FTE) or (SY)

	FY2003 Target	FY2003 Actual
Extension	3,378	2,934
Total	(60.9)	(60.3)
Research	5,200	5,009
Total	(34.1)	(80.6)

Impact Examples Related to Goal 1

Agricultural Practices Program Helps Growers Reduce Risk of Disease-Causing Microbes on Fruits and Vegetables

Key Themes: Agricultural Competitiveness, Food Safety, Food-borne Illness, Food Handling

In the past three decades, the number of produce related outbreaks in the United States has increased significantly as recently highlighted by the Hepatitis A outbreak in green onions that affected more than 9,000 individuals and resulted in the death of three people. Produce related outbreaks cause consumers to avoid commodities associated with outbreaks and directly impact all people involved in growing, harvesting, packing, transporting, and selling fruits and vegetables. The good news is that microbial risks associated with producing fresh fruits and vegetables can be minimized by implementing good agricultural practices (GAPs) on farms and in packinghouses. To effectively and efficiently reduce microbial risks, growers, packers, and farm workers need to know about GAPs, how they can be implemented, which ones are the highest priorities, and where to begin.

Since 1999, the National GAPs Program has worked with growers, packers, and farm workers to develop education and training materials that provide guidance for understanding and implementing GAPs. This comprehensive food safety program, funded through multiple grants lead by Cornell University, addresses diverse topics that dovetail to impact the overall microbial safety of fresh fruits and vegetables. Developing a collaborative effort with 25 Land-Grant Institutions throughout the U.S. that combines expertise in food science and horticulture, addressing the unique education and extension needs of farm workers, determining the economic impact of GAPs implementation, and assessing the microbial risks associated with surface water irrigation and topical spray applications are all part of the program's focus. A tool kit of resources that includes an award winning booklet entitled Food Safety Begins on the Farm: A Grower's Guide, a grower self assessment of food safety risks, a CD containing PowerPoint presentations with ready-to-present information, a resource manual, and multiple bi-lingual materials including a field hygiene poster series, a farm working training video, and a bi-fold GAPs pamphlet has been created. GAPs Program team members have conducted national and international education workshops to extend and distribute scientifically sound and practical information that growers in all 50 states and in 26 foreign countries have utilized. Contamination of fruits and vegetables can occur anywhere in the food system, from farm to fork, but food safety begins on the farm. Preventing contamination on farms and in packinghouses remains the focus of the National GAPs Program.

Utilizing educational materials developed by the GAPs program, growers have evaluated their operations to identify microbial risks and some have sought voluntary third-party audits to certify GAPs implementation. By meeting buyer food safety demands, growers and packers maintain current sales and create new markets for their commodities. Many growers are working towards improving hygiene facilities and implementing worker training programs and these efforts have resulted in more workers washing their hands as indicated by increased soap and hand towel use. Although maintaining economic viability is important, the main objective is to reduce microbial risks. Many collaborators have capitalized on the program's flexibility to meet state and regional needs by developing unique hands-on demonstrations and training tools. In 2003, a national collaborators meeting was held to share this information and other novel approaches for enhancing produce food safety education and extension around the nation. In a survey of New York growers

and packers, 66.5% of respondents knew what GAPs where and of those, 92.5% had begun implementing GAPs. Although this is only one state it highlights two important things, that two thirds of the growers in New York have been reached and that once they are aware of GAPs and how to implement them, growers begin the process of reducing microbial risks. Collaborators in Texas, Florida, and California are considering the use of the Cornell survey instrument to further evaluate GAPs implementation in their states. By preventing contamination on the farm, growers, packers, and farm workers help assure safe and wholesome fruits and vegetables that reach consumers around the world.

Harnessing Genomics of Model Systems for Vegetable Improvement

Key Themes: Plant Genomics, Biotechnology, Agricultural Competitiveness, Agricultural Profitability, Plant Production Efficiency

Improved crop varieties are the packages that deliver benefits of research in crop genetics and genomics to farmers and consumers. For a few crops, the pipeline that delivers these varieties, beginning with genetic diversity and ending in farmers' fields, is working well. For many crops loss of public sector plant breeding capacity coupled with a globalized seed industry has reduced the array of available varieties. In recent years, an explosion of knowledge about crop genes and genomes has resulted in the identification of many genes responsible for important crop traits. With support from USDA's Initiative for Future Agriculture and Food Systems, a team based at Cornell is building on these investments to enhance delivery of improved vegetable varieties through the Public Seed Initiative.

Cornell researchers are developing genetic and genomic resources for under-invested high value crops in the U.S. with a focus on vegetables. The Public Seed Initiative (www.plbr.cornell.edu/psi) aims to improve the delivery of benefits from upstream research in genomics to farmers and consumers. Existing grower networks in the Northeast and Northwest have been recruited to conduct on-farm trials of new varieties developed with tools from genomic research. Links between public breeders and seed companies, large and small, have also been strengthened. A critical bottleneck identified by some smaller companies was seed processing infrastructure, so a prototype mobile seed cleaning unit and a series of workshops to train seed growers were designed. This unit, currently serving several states, is transported from farm to farm, providing education and the opportunity to enhance farm income with commercial seed crops. Streamlined procedures for the transfer and commercialization of germplasm that have been made available as templates for use by farmer-breeders, small seed companies, non-profit organizations interested in seed-saving, biodiversity etc. and other land-grant institutions.

Results from this project demonstrate that genomic tools developed for major crops will transfer directly for use in the improvement of related crops, dramatically expanding the impact of these investments. Through the PSI, more than a dozen public varieties are being evaluated by companies and on farms from Maine to California, and through extension networks, viewed by wide audiences at a series of annual field days. Hundreds of growers have attended seed production workshops and hands-on breeding workshops. Based in part on demand created by participatory trials, more than a dozen of these varieties and breeding lines have been licensed on a non-exclusive basis to recipients including large multinational seed companies, smaller companies focused on regional, organic or

specialty markets, and have been distributed to non-profit groups interested in genetic diversity and sustainable agriculture. These results have also identified new objectives for vegetable breeding programs, particularly aimed at higher value under-served markets. New genomics-assisted variety development programs have been launched, integrating innovative technologies with existing crop germplasm improvement programs and participatory farmer-based trailing strategies to meet these market demands while enhancing rural economic viability.

Honeycrisp Apple Cultivar Research

Key Themes: Agricultural Competitiveness, Diversified Agriculture, Food Handling

Honeycrisp is a relatively new apple cultivar that has won wide consumer acceptance for its flavor, crispness and juiciness in fresh-eaten form—even when air-stored for as long as nine months. Honeycrisp has been extensively planted by enthusiastic growers in New York because of this marketing advantage and the future potential for premium pricing. Successful cultivation and harvest of such a preferred varietal is viewed as one key to maintaining the market competitiveness of apple-growing enterprises in the Empire State.

The popularity of this cultivar with consumers and growers, however, has outstripped the “learning curve” on the challenges of growing and marketing this new apple. Research-based knowledge on disease susceptibility, proper maturity and cropping management, and storage disorders of Honeycrisp has been lacking. Reliable and increased commercial production hinges on the development of such information.

A multi-state Hatch effort evaluated cropload effects and postharvest characteristics of Honeycrisp. Fruit size, preferred coloration, return bloom, flavor, and firmness (after five-months storage) were found to be reduced when individual tree croploads were too high. In addition, the cultivar was found to have extreme susceptibility to the low temperature-related disorder, soft scald. A trial involving five states that indicates the potential variation in fruit susceptibility to soft scald was completed and has been accepted for publication. Storage of Honeycrisp at 36 degrees F (as opposed to the lower temperatures most other apple varieties are stored at) resulted in significantly reduced incidence of soft scale and also soggy breakdown.

In reality, however, the new Honeycrisp variety is currently harvested in volumes so low as to preclude running large storage facilities at the warmer 36 degree F. storage temperature. In response, researchers tested and found that the most effective treatment for control of soft scale is to delay cold storage for a week, i.e., letting apples sit at 50 degrees F. for 7 days before cold storage.

This research has not only advanced the prospects for greater production and marketing of a consumer-preferred apple in New York and the Northeast, but has increased storage operator interest in using storage temperature “delays” to control losses due to soft scale in apple varieties. Several New York storage operators have adopted this delay procedure into their operations. Manuscripts about the effects of maturity, and pre- and post-harvest treatments to alleviate the disorders are being prepared for publication. The effect of factors that aggravate or alleviate soft scald on fermentation and other volatile compounds is still being studied.

Adding Value to New York Onions

Key Themes: Adding Value to Agricultural Products, Agricultural Competitiveness, Agricultural Profitability

Onion farms in Oswego County and New York State have long suffered from declining profitability as production costs continued to rise and prices for products remained stagnant or declined. This decline in prices is the result of increasing onion production in other US production areas as well as foreign production areas. Per capita onion consumption continues to increase, but increases in consumption are due largely to consumption of meals away from home and the large increase in popularity of mild-flavored, sweet onions. These "sweet" onions are ideal for fresh consumption, but reveal their lack of flavor and texture when cooked. New York storage onions, on the other hand, are too "hot" for raw consumption, but have superior cooking characteristics, such as nearly double the sugar content of "sweet" onions, great flavor development, and good texture, as well as long storage life.

Cornell Cooperative Extension, Oswego County helped growers form a marketing organization to educate consumers about the superior cooking qualities of New York onions. In addition, this organization helped consumers determine the proper end use of different types of onions found in the marketplace. To this end, Extension was closely involved in the design of the organizational structure of “New York Bold,” the design and implementation of a branding and marketing strategy, the development of innovative packaging, and making the connection between the grower organization and the equipment and packaging manufacturers. Extension was instrumental in providing leadership support by involving managing members in Business Plan Development classes (NxLeveL). In addition, Extension secured financial support for this grower effort through the writing of grants to a variety of agencies, including New York State Department of Agriculture and Markets, USDA-Rural Development and Operation Oswego County (County's Industrial Development Agency). Overall, Extension helped to secure over $300,000 in funds.

As a result of this effort, the prices of onions sold through “New York Bold” have averaged 15 percent above open market prices. The volume of onions sold through the “New York Bold” brand is approximately ten percent of Oswego County production, and is expected to continue to increase by five percent annually. The centralized packing and marketing of onions has resulted in the creation of four new jobs in office management, corporate management, sales and marketing, and operations management. “New York Bold” onions are recognized by consumers for their superior cooking qualities, and consumers are buying onions in Tops supermarkets (New York and Ohio), Price Chopper (New York), Giant Eagle (Maryland, Pennsylvania), and Del Monte (Kansas).

Agricultural Workforce Training Program

Key Themes: Agricultural Competitiveness, Agricultural Profitability, Small Farm Viability

A clear need was identified for the Jefferson County dairy industry to attract, train, motivate and retain high quality farm employees. Because farm operations cannot justify dedicated human resources staff, a common, centralized approach to training that could be shared among multiple farm operations was needed. Several area veterinary consultants were working with several large

operations, all with recognized need for retention of well-trained, motivated work force. However, without centralized support and sharing of resources, everyone was "re-inventing" their own wheel. Cornell Cooperative Extension, Jefferson County, in collaboration with Jefferson County Agricultural Coordinator, applied for and received grant funding through Empire State Development to conduct a training program targeted at existing dairy farm workers. Extension was able to provide the educational component of the training program. Utilizing the educational resources of Pro-Dairy, Cornell University and other instructors, training materials, delivery methods and curriculum design were shared among farms making the delivery of training consistent and more efficient but still delivered locally and tailored to each farm.

In 2003, more than 100 employees on 8 farms were trained in 7 areas of dairy production technology from fresh cow care to milking to biosecurity. Four veterinary consultants provided classroom instruction and hands-on training to area dairy farm workers. Participating dairy farms now have farm specific standard operating procedures and re-usable training materials available for use with new hires and retraining.

New Farmer Development Project

Key Themes: Niche Marketing, Small Farm Viability, Diversified Agriculture, Adding Value to Agricultural Products

The New Farmer Development Project (NFDP) was created to address the declining number of farms in the region as well as to respond to increased demand for farmers markets in underserved communities within New York City. Across the country, farmers are unsure of who will take over their farms when they retire. This concern represents not only the fears of individual farmers, but a national crisis: who will be the next generation of farmers? The new farmer shortage is acute in the Northeast, where there are twice as many farmers over age 65 as under 35. In New York State, the number of farms dropped from 49,273 to 31,757 between 1978 and 1997. The lack of new farmers has severe implications for the economic viability of agriculture, the preservation of farmland, and the continued supply of locally grown food. Immigrants are the only group of farmers whose numbers are growing. While there is significant potential for immigrants to become farmers, there are tremendous risks associated with agricultural operations, especially for socially disadvantaged producers.

Cornell University Cooperative Extension-New York City Programs collaborated with Greenmarket to develop a project to respond to these needs and the result was the New Farmers Development Project (NFDP). The NFDP's goal is to assist socially disadvantaged and limited resource immigrant farmers in the NYC region in establishing economically sustainable farms, drawing on the breadth of agricultural skills and knowledge found in many immigrant communities. Our model for farmer entry targets immigrants with agricultural experience and encompasses education, technical assistance, financial management, one-on-one assistance, risk management tools, marketing outlets, and access to credit. We reconnect immigrants with their agricultural roots, providing the resources and support necessary to assist them in becoming regional food producers. The geographic impact of this project spans New York, New Jersey, Pennsylvania, and Connecticut.

The NFDP has made significant strides in recruiting and training participants, as well as creating demonstration sites and facilitating the farming activities of program participants. More than 60 Latino farmers are actively participating in the NFDP through training, production, and marketing opportunities. Through our current partnership with USDA's Risk Management Agency (RMA), we refined our training series, La Nueva Siembra (New Planting). Thirty-two people graduated from this winter's class, which included training in production, marketing, financial management, and a special presentation by David Wiggins, Outreach Program Specialist from USDA/RMA. The NFDP has matched more than fifteen participants with local farmers who serve as mentors and provide valuable hands-on experience in markets or on farms. At NFDP training farms, where participants acquire production and marketing experience, fifteen participants are cooperatively farming and marketing their produce. The NFDP has facilitated the establishment of four independent farms by farmers from Colombia, Ecuador, the Dominican Republic, and Chile. They grow specialty crops such as herbs, vegetables, small fruits, traditional ethnic produce, and pastured poultry. These farmers are not only successful as individuals; they are also role models for future farmers. This year we expect more than fifteen NFDP participants to sell their produce at sixteen farmers' markets. Many of these markets are located in immigrant neighborhoods, where NFDP farmers sell culturally appropriate produce to members of their community.

Loss of Fruit Crops

Key Themes: Agricultural Profitability, Risk Management

Late spring frosts and summer hail storms wiped out 70 percent of the tree fruit in Eastern NY during the 2002 growing season. Fruit growers did not have an understanding of the most effective methods to evaluate their losses to determine if they should continue to try to carry their remaining crop to harvest. In addition, growers were unprepared to deal financially and emotionally with losses of this magnitude. A CCE educator collaborated with Cornell Faculty to provide immediate recommendations to growers, teaching them how to evaluate those orchards that could still produce an economically profitable crop versus those orchards that would best be abandoned for the season. Recommendations were also given on best horticultural and pest management practices for blocks that would be abandoned for the season while still maintaining future crop potentials. NY FarmNet was involved to educate growers and agri-business personnel on the crisis and resources that were available to help growers cope with it. Meetings of local growers were used to organize and work together to apply for disaster aid.

Over 60 fruit growers were trained about cost effective method of dealing with damage fruit crops. These growers also received information on the FarmNet program and what it could offer them. Over 20 agri-business personnel were educated about the crisis and what impacts it could have on the Hudson Valley fruit industry. They also learned about resources available to help growers. The Hudson Valley Fruit Grower Task Force was very successful at educating elected officials and the public regarding the current apple industry situation and the weather-related crisis it was facing. The Task Force's efforts helped get specialty crops (such as apples) included in a Federal Disaster Program. As a result, over $3 million in disaster payments were made to fruit growers in the Hudson Valley during 2003.

Alfalfa Cut Management Research

Key Themes: Plant Production Efficiency, Agricultural Profitability, Agricultural Competitiveness

For years, farmers have been cutting their haylage in a narrow swath/ windrow and returning to the field to directly chop each narrow windrow. What these farmers may not remember, is when their fathers or their grandfathers cropped the land, they mowed into wide swaths. The theory is that wide swath haylage dries faster than narrow and so saves the digestible components, which normally are respired (burned off) when it sits there longer in the windrow. The result should be shorter time from cutting to chopping and more milk in each ton of feed. Field data showed that we could make a significant difference getting the crop in and in the amount of milk in each ton of feed. Tests were conducted on uniform stands first cutting alfalfa and first cutting stands of intensively managed grass. It was repeated on the same stands in second cutting. With a recording device placed in the center of each swath to measure the temperature and relative humidity over time, we were able to measure the exact temperature inside the windrows. Samples were taken at 65% moisture level, chopped, vacuum bagged and allowed to ferment for two weeks. Forage analysis was performed on these samples.

In the alfalfa study there was 20.1% more milk in a ton of fermented wide swath compared to fermented narrow swath. In the second cutting grass, which had excellent drying conditions, there still was 10.8% more milk in a ton of forage wide swath than that in a narrow. The bottom line at this preliminary stage says that the wider the swath the faster the drying. The faster the drying the more milk potential is preserved in a ton of forage.

Cooperative Beef Marketing Project

Key Themes: Agricultural Profitability, Agricultural Competitiveness, Animal Production Efficiency

Due to a lack of a conveniently located regional USDA inspected slaughter house, Sullivan County beef producers are forced to drive 75 or more miles one way to have meat processed. This is a major inconvenience in terms of lost time on the farm or additional cost to hire a cattle hauler. Some producers have sought to lower these costs by selling at a regional livestock auction, but are generally disappointed in the price they receive. A regional packer was contacted to discuss the possibility of saving costs through cooperative marketing. It was learned that if a group of thirty head of cattle could be assembled at one location, the packer would assume the hauling costs and producers would be paid on yield and quality grade. Working with a small group of producers as an advisory group, it was decided to pool resources and try the cooperative marketing approach.

Letters were sent to all known producers in the County during the summer of 2001 to announce that the project would commence that Fall. While there was some interest, a sufficient amount of cattle could not be secured. Additional contacts were made over the Winter and Spring, including discussion at some producer meetings, and a second letter was sent out in the summer of 2002. At that time, four producers (one with over 20 head) pledged cattle to make a load. Cattle were assembled at one farm and the packer made arrangements for a tractor trailer to load and haul the cattle. Producers received payment within a week's time based on prevailing market price based on yield and quality grade of the hanging carcass.

Producers were able to ship cattle to market at little or no direct cost to them. They received the current market price based on the value of their cattle. In 2003 a second load of cattle were shipped from six consignors. Producers are now planning for the event and several have plans to increase their numbers to take advantage of this program. A similar project involving feeder cattle has also been implemented. Producers share the cost of hauling rather than each sending or taking a few head on their own.

GOAL 2 – A SAFE AND SECURE FOOD AND FIBER SYSTEM

To provide a safe and secure food supply our research program currently maintains three broad initiatives: food safety research program, food quality and functionality program and value-added enhancement program. The three programs combine to address the issues of a safe and secure food system.

We improve the safety and nutritional quality of foods to promote wellness and reduce the risk of disease. We identify and study important consumer and processor food safety issues in the areas of microbiological safety, chemical safety and naturally occurring plant toxicants as well as health promoting opportunities from food components.

Our food safety research program includes initiatives to study the agents, environments and controls related to microbial contamination of fresh and processed foods. Expand research on foodborne pathogens, both emerging and long- recognized species. Develop and utilize modern immunological and molecular biological techniques to study the effect of innovative processes and products on microbial growth and survival and to detect microbial contaminants at very low levels.

This program conducts studies to help processors develop HACCP programs. It includes developing computer simulation/modeling systems to improve food quality and safety and models of microbial growth inhibition. Our scientists investigate putative natural toxicants or antinutrients in genetically modified plant and animal foods. We study the chemistry and toxicology of production-enhancement chemicals used in plant and animal production and manifesting themselves as residue or chemical changes in foods. We investigate health-promoting phytochemicals. This program establishes both required and toxic concentrations of consumption. We investigate risks/benefits associated with increased consumption of plant-based foods. In this program we investigate factors that influence bioavailability of nutrients in foods and diets. We study the effects of processing, preservation and storage on nutritional value and quality of foods. We develop improved chemical and instrumental methods for measurement of macro and micronutrients in foods that can be used for analysis in support of nutrition labeling or for process control. We utilize this knowledge to provide direct assistance to companies to insure the processing of safe foods.

Our program on value added processing systems improves technologies and systems that enhance food value including nutritional value, safety and cost thus securing our food system for the future.

In this effort we evaluate new plant and animal foods and food components as well as production management techniques that add nutritional value and economic benefit. We develop new methods for quality assessment and help set goals for plant and animal breeding and selection. We explore process technologies (e.g., fermentation, thermal processing, extraction, concentration, separation, sensor development) and new modeling techniques that can improve the profitability of the food industry. We study methods of minimal processing and packaging of foods. We also study the economic potential of new products and processes. Our scientists develop engineering systems based on microbiology, enzymology and mechanical techniques to minimize waste disposal problems of the industry. This program develops processing methods for fractionating major and minor components of foods. A major effort includes the development and/or evaluation of processes and/or ingredients designed to improve the sensory quality of low fat foods. We seek to generate the

knowledge base to provide leadership in value-added processing for the food manufacturing industry.

Our program on food quality and functionality uses a multidisciplinary effort as we seek to improve the understanding of mechanisms affecting food acceptability and probe the molecular basis of functionality and quality with special emphasis in the areas of biochemistry of plant and animal foods/post harvest physiology, sensory quality of foods, physical/chemical properties of foods and ingredients and microbiology of foods. Quality foods are a key component to ensuring the security of our food system.

In this program on food quality we develop methods to define and improve quality in fresh and processed foods by studying the factors that influence composition, appearance, flavor and texture with a focus on post harvest storage management and enhancement. We study the biochemistry and genetics of plant and animal products that determine appearance, flavor, and texture. We study the microbial population of foods, and their relationship to quality and shelf life. In order to understand food quality we investigate physical and chemical properties of fresh, raw, and processed foods and ingredients. The development of mathematical models of the relationships between product properties, instrumental measurements and human perceptions are key efforts in this program. Industry directly utilizes this research through outreach and advisory programs.

As effective as these initiatives are, numerous issues will combine to affect changes in their direction over the next five years. The emergence of new pathogens is increasing and will demand greater attention by our scientists. Clearly an interrelationship of both water and food safety issues in our food supply will drive an integration of these research areas. Also the need for unique functional ingredients for food manufacture and health will drive research programs in this area. The need for advanced systems to ensure freshness, quality and safety in fresh and minimally processed foods will require highly interdisciplinary teams of scientists.

PERFORMANCE GOALS FOR INITIATIVES RELATED TO GOAL 2

Improves the health, nutrition, and safety of communities and individuals

- Prepare and keep foods safely
- Reduce food insecurity
- Increase citizen participation in local food related policy decisions
- Expand knowledge of health behaviors that effect women’s health status
- Increase fruit and vegetable consumption

Indicator Data Specific to Goal 2

(For each indicator, both actual and annual target results are included, the latter in parentheses.)

INDICATOR 2.1 The total number of refereed or peer reviewed articles or materials reporting research related to a safe and secure food and fiber system and the number of related patents, licenses, or varieties issued.

Year	# refereed items	# patents, licenses, varieties
2003	80 (125)	2 (5)

OBJECTIVE 2.1 To improve food accessibility, affordability, safety, and nutritional value.

INDICATOR 2.1.2 The total number of persons completing non-formal consumer education programs on food accessibility and food affordability, and the total number of these persons who actually adopt one or more recommended practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually Adopt practices
2003	43940 (20000)	22167 (14000)

OBJECTIVE 2.2 To increase the effectiveness of constituent and citizen participation on public policy issues affecting food security (i.e., food access, affordability, and recovery).

INDICATOR 2.2.1 The total number of persons completing non-formal education programs on public policy issues affecting food security (i.e., food access, affordability, and recovery) and the total number of these persons who actually become actively involved on such issues within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually become involved
2003	8211 (2000)	6249 (600)

OBJECTIVE 2.3 To annually increase consumer awareness, understanding, and information regarding food safety and food borne risks and illnesses.

INDICATOR 2.3.1 The total number of persons completing non-formal, consumer education programs on food safety and/or food borne risks and illnesses and the total number of these persons who actually adopt one or more recommended food safety behaviors or practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt behaviors
2003	54142 (30000)	27561 (17000)

Resources Allocated to Goal 2 (FFF and Match)

Dollars (x 1000) and FTE or SY

	FY2003 Target	FY2003 Actual
Extension	2,360	1,874
Total	(31.5)	(30.6)
Research	790	566
Total	(5.2)	(7.7)

Impact Examples Related to Goal 2

Reduced Risks of E. Coli Contamination of Apples and Cider

Key Themes: Food Safety, Foodborne Illness, Foodborne Pathogens, Food Handling, HACCP

Numerous food-borne illness outbreaks across the United States, particularly the Northeast region, have been associated with the consumption of apple cider contaminated with *E. coli* O157:H7. It was speculated that this foodborne pathogen was entering into the juice on apples from the orchard that had been contaminated with manure from animals shedding *E. coli* O157:H7. Prior to this research, the survival of *E. coli* O157:H7 on apples and its ability to penetrate the various parts of the apple were not known. The results of this collaborative research with Virginia Polytechnic University identified critical entry points for *E. coli* O157:H7 through farming practices and juice manufacturing practices, and recommendations to prevent the entry of foodborne pathogens into finished juice were developed.

Birds, deer and cattle have been shown to shed *E. coli* O157:H7 in their feces. These animals can be found in orchards and it is believed that using apples contaminated with the feces of these animals may be the source of *E. coli* O157:H7 found in apple cider outbreaks. The survival of *E. coli* O157:H7 on the surface of apples in the orchard was not known. Using fluorescent *E. coli* (green fluorescent protein expressing), the survival of E. coli due to environmental factors could be determined. Fluorescent *E. coli* were spotted onto the surface of various apples at different stages of maturity on 4 different varietals of apples commonly used in the Northeast region. The inoculated areas on the apple were excised over a time course and assayed for surviving *E. coli*. It was found that *E. coli* only survived for short periods of time (less than 5 days) before they were below detectable levels. An additional entry point for *E. coli* is through various parts of the apple (blossom scar, stem or skin) when immersed in wash water just before juice production. Wash water was inoculated with fluorescent *E. coli* and the penetration of *E. coli* was measured using confocal scanning electron microscopy as well as sectioning the apple and isolating fluorescent *E. coli* from the different sections. It was found that when the wash water was colder than the apples, the apples would take water into the core through the bloom scar. Certain varieties of apples were found to be more prone to larger bloom scars, which allowed for greater uptake of contaminated water into the interior of the apple.

Recommendations for apple growers and juice manufacturers were developed to help prevent the contamination of apples and juice. Based on the research findings, it was suggested that apple growers prevent or minimize domestic and wild animals in apple orchards; avoid using apples that have been on the orchard floor; have the apple wash water at least 10°F warmer than the temperature of the apples and include a sanitizer in the apple wash water. These recommendations are aimed at preventing the entry of *E. coli* O157:H7 into apple cider. In combination with control measures such as pasteurization of apple cider, the consumer risks associated with the consumption of apple cider will be greatly reduced. Cornell's Annual Cider Workshop and Juice HACCP training sessions for apple growers and juice manufacturers have incorporated these current recommendations.

Farm to School Collaboration

Key Themes: Food Accessibility and Affordability, Niche Markets, Human Nutrition, Agricultural Profitability

The Cornell Farm to School Program couples the goals of improved school meals and increased agricultural viability through creative partnerships among schools, farmers, educators, and government agencies. One way to increase farm revenues is through direct or brokered sales to schools, a large-volume target market. Across NYS alone, public schools serve more than two million meals daily, with only a very small proportion of the food served grown in the state. The state school system represents a significant untapped market for area farmers, who need assistance in overcoming the barriers to selling to schools.

The essence of this program is partnerships. New York State food service directors, farmers, suppliers, agriculture and nutrition extension educators, policy makers, state agencies, and food and farming organizations have joined together to identify strategies for overcoming barriers to forming beneficial farm-school partnerships. Technical assistance to project partners is provided through website and listserve communication. Barriers have been identified through workshops, in-services, and conferences. As potential solutions are identified, these are shared throughout the state. A statewide steering committee provides direction, encouragement, and support. This committee includes wide representation from commodity organizations, state departments of health and agriculture, city and state boards of education, community food and agriculture organizations, food service associations at K-12 and university levels, Cornell Cooperative Extension associations, and the Cornell Farm to School Program.

This is a multi-level program including components directed to school administration, classroom teachers, and college dining services. It provides practical tips to help food service directors, teachers, farmers, parents, and others establish farm-school connections in their communities. Participants learn how different schools are adjusting menus and purchasing local foods from farmers and distributors. Special farm-school events are employed to help children learn about New York agriculture. The program provides food service providers with current information on New York products and availability and even suggests recipes employing local products.

A collaboration of more than 18 agricultural and educational organizations has been established to promote farm to school connections. At least 15 school districts across NY have active programs to incorporate local foods in their meals and many more are exploring such programs. In one pilot school, local product purchases increased from essentially zero to over $5600.

Food Safety at Home

Key Themes: Food Safety, Foodborne Illness, Human Nutrition

Food-borne illness can range from mild to severe and life threatening, with chronic complications. People need to be aware of the control they have in their own kitchen for food-borne illness. Teaching the basics of safe food handling in acquisition, storage, preparation and serving food can help prevent food-borne illness in families struggling economically to have food on the table to eat. Food Safety at Home has been a two year Cooperative State Research, Education and Extension Service, US Department of Agriculture (CSREES-USDA) funded project designed to improve food handling by high-risk, hard-to-reach audiences. Extension educators in three states: Wisconsin, New York and Louisiana, piloted English-language computer-based food safety lessons targeting Expanded Federal Nutrition Education Program (EFNEP) families the first year and EFNEP and Food Stamp Nutrition Education Program families the second year. In Delaware County, we enrolled 72 families in the research project in 2002-2003. An extension nutrition teaching assistant visited families who agreed to participate in the study in their homes. Staff visited the home over a series of one to three visits to work with the homemaker to respond to a series of 19 computer-based food safety assessments. The food safety lessons were administered using a laptop computer. The assessments looked at behavior in five areas: chilling food promptly; cooking food to proper temperatures; storing and handling food safety; cleaning hands, utensils and kitchen surfaces; and preventing cross contamination. Six weeks after the assessment visits were completed, the educator returned to the participant's home to administer a post-test and a project evaluation.

An analysis of results from the first year of the project indicate that behavior change as a result of the food safety lessons was positive in many areas. The greatest behavior change was seen in 5 areas: 66% of participants improved in using a thermometer to cook meat, chicken, turkey and fish thoroughly; 52% improved handling of hot leftover food; 43% adopted positive behaviors in washing fresh fruits and vegetables; 34% learned to properly handle fresh meat, chicken, or fish; and, 32% properly used a microwave oven to cook and reheat foods. Overall, positive behavior change was seen in all areas that were evaluated on the post-test. In addition, all participants (100%; N=129) responded that the computer-based food safety lessons were of value to them. Over half of those responding (53%) indicated that the best part of the project was learning the food safety information; 27% liked using the laptop computer the best; and 26% found that the teaching materials that they received were the best part of the project.

Milker Training

Key Themes: Food Safety, Food Handling, Agricultural Profitability, Small Farm Viability

There are many kinds of farms in Delaware County, among them dairy, sheep, horse, beef, and goat farms. All have a need for specialized services such as relief milking and/or farm sitting. The majority of these farms are small farms that have a limited pool of trained, hired help available to them. Life events such as weddings, funerals, illnesses, graduations, and the rare vacation make it necessary to have trained relief milkers or farm sitters to enable farmers to leave their farms with a reliable workforce confident that their businesses are in good hands and that applicable food safety procedures are followed.

An annual workforce certification training has been organized and offered in order to solve the issues related to providing training for interested parties that want to begin a relief-milking business or a farm sitting business that would enable them to work on area farms. This has been an ongoing program offered during high-school spring break to enable a larger pool of participants into the program. An annual program makes it easier for people to plan on attending and offers continuity of program efforts rather than a one-time program. The program consists of 30 hours of classroom and on-site training followed by 20 hours of actual milking on local farms. People from all walks of life have attended the Milker Training Program: high school and college students, farmers (established and new), unemployed and low income people, farm workers, and retirees.

Results from the training have been significant. Farmers can rely upon trained employees to fill in temporarily when there are illnesses, special needs that require the farmer to be away, or for the rare vacation. There is an on-going list of trained people that is on file at the Extension office so that when farmers call, they are given several people in their area to call for reliable, trained help. Over 50 people have been trained over the last five years and an up-to-date list is always available. Several trainees have begun their own relief-milking or farm sitting business. This is agricultural economic development and helps people have full-time or part-time work. Farmers and their employees have been re-trained on the finer points of milking procedures as some of them had a need to perfect their skills in that area. The Milker Training Certification Program helped farmers who had quality or procedural issues do a better job with their own animals.

Farmer's Market Meets Low Income Audience Needs

Key Themes: Food Accessibility and Affordability, Human Nutrition, Niche Markets, Food Resource Management

Jefferson County has seven farmers markets but only a few hard to find vendors that accept Farmer's Market Nutrition Program vouchers. In collaboration with a group of small growers a new farmers market was started that served a low income audience/neighborhood, was a highly profitable market for small growers, and, acted as a venue for nutrition education for low income seniors and families. The criteria for participation by the vendors included they must accept senior and WIC farmers Market Coupons, and they must only sell locally grown produce. Nutrition education and human development activities were provided each week. Community agencies also participated based on their audience needs. Activities included bike safety rodeos, story telling hours, petting zoo and animal care, food safety, Food Stamp advocate information (CAPC), taste testing of new recipes. Recipe cards were developed for each week with handling safety information.

This market was quickly flooded with WIC and senior participants because the vendors were so friendly and appreciative of the FMNP coupons. Vendors reported that of the 7 farmers markets in the county this was one of the most profitable due to the FMNP participants. Residents in the neighborhood verbalized appreciation because there is a lack of fresh produce in this urban area. The next closest store with decent fresh produce is four miles away. Over 300 participants received nutrition education or other educational resources as part of the activities Extension organized each week.

Farmer's Market Nutrition Program

Key Themes: Food Accessibility and Affordability, Human Nutrition, Food Resource Management

The goal of the Farmers Market Nutrition Program (FMNP) is to increase consumption of locally grown fresh vegetables and fruits by low-income women, children, and senior citizens, expand awareness and use of local farmers markets, and enhance farmers' incomes by attracting new customers and increasing sales. Two summer nutrition program assistants from CCE were assigned to work on outreach with the Farmer's Market Nutrition Program (FMNP). One student worked at WIC clinics distributing the FMNP checks and promoting use at the 4 Farmer's Market in the county including ways to select and prepare local produce. Food samples were shared with participants as part of the project. The other student worked with the Office for Aging on distribution of the FMNP checks to seniors. She also developed handouts and an exhibit on "Eat A Rainbow of Colors" that was shared at the four farmer's markets.

Students worked in 58 WIC clinics reaching 750 WIC participants. 207 participants were added to the Eat Smart NY (ESNY) newsletter mailing list and 40 participants were referred for home visits from CCE ESNY staff. Participants enjoyed the opportunity to taste new recipes and WIC staff felt by having our staff on site that there was more emphasis on the FMNP and connection with additional resources (i.e. referral to ESNY staff for follow-up visits and newsletter signup). 440 senior citizens were contacted through 9 of the Office for Aging FMNP check distribution sessions. 400 consumers were reached at the 4 Farmer's Markets (10 sessions). With the increased presence at the Farmer's Markets this season, more rapport was gained with the vendors and market managers. This helped in getting farmers to add a special market for the "Eat Well/Play Hard" event at the WIC office in Herkimer in July for the second year. New audiences were reached, referrals for follow-up were received, and more participants were exposed to ways to purchase and prepare local produce.

Bullthisell Bounty Shares Program

Key Themes: Food Accessibility and Affordability, Food Recovery/Gleening, Food Resource management

Awareness of locally produced food and making that food available to those who can afford it and providing it in a way that it becomes more available to those who don't know its value and may not be able to improve their diet by learning about local food. Through working with local Chenango County organizations, a local script-like program was developed to identify and provide incentives to seek out locally grown foods. The organizations involved included a local bank, WIC, Catholic Charities, the Hunger Coalition, a procurement person for five school districts, Farm Bureau, Cornell Cooperative Extension, Farmers Markets, individual farmers and producers, United Way, Chamber of Commerce and our Agricultural Development Council. A grant was developed to initiate the program and a fundraiser was conducted to infuse money into the program to assist with sharing more script with the needy. Fifty needy families have been able to purchase script for thirty cents on the dollar to assist them in locating locally grown food items. Ten food pantries have been able to support their local farmers and purchase items to be donated for thirty cents on a dollar. Farmers are now more aware of organizations which may buy their produce in bulk and the farmers may be more willing to donate or provide a gleening opportunity to these groups.

GOAL 3 -- A HEALTHY, WELL-NOURISHED POPULATION

Improving the health of our population through food/nutrient-based strategies will become increasingly important in the next five years in achieving health goals designed to reduce preventable mortality and morbidity in the United States. These strategies will be of special significance to USDA because they will serve as important bridges between the country's food production and health sectors. These strategies will be particularly valuable to approaches that seek to empower individual consumers in taking increased responsibility for their health, assure that our food system is consistent with health goals, and refashion our health system, particularly approaches most concerned with cost containment through prevention of chronic, debilitating diseases.

Research areas of current interest include (1) the study of glucose, lipids, vitamin E and homocysteine in cardiovascular disease, obesity, and/or diabetes, (2) role of various nutrients in fetal neural and cognitive development (e.g. genetic polymorphisms and folic acid metabolism), retinoic acid and gene transcription, (3) nutrition and cancer (e.g. modes of action of selenium and vitamin E, role of predominant plant based diets, and the physiochemical properties of dietary fiber), (4) the role of nutrition in the regulation of inflammation (e.g. effects of dietary fat on the expression of genes during the inflammatory response), (5) maternal nutrition during pregnancy and lactation, (6) postpartum weight retention, (7) fetal metabolic imprinting and its relationship to chronic disease, (8) neurohormonal and psychological influences on eating behavior, (9) food security, (10) domestic and international food and nutrition policy, (11) iron and other micronutrient deficiencies, (12) nutritional impact of parasitic infections, (13) behavioral determinants of food choices, (14) dietary assessments among ethnic minorities, and (15) social patterns of obesity and weight control.

The most recent dietary guidelines reemphasize the increased reliance on plant-based foods as a means of controlling caloric consumption, reducing fat intake, modifying the composition of ingested fats, enhancing the consumption of foods associated with reduced cancer risk, and simultaneously insuring that macro- and micronutrient needs are met. For the first time the dietary guidelines also provide information to consumers who restrict their consumption of animal foods completely or rely on only selected few to meet their dietary needs. Future research activities must explicitly recognize the health goals, policy aims, and consumer practices that support these guidelines.

Thus, future research investments will be made in activities that (1) explore how complex genetic interactions determine developmental and other physiological pathways (and thus specific phenotypes) under diverse nutritional conditions (The impending description of the human genome make this an especially exciting opportunity.), (2) capitalize on an improved understanding of the determinants of human behavior to design effective interventions for behavior change related to nutrition, (3) analyze outcomes of food policy options related to food security, health, and disease prevention, and (4) enhance international collaborations that recognize the globalization of the US food supply.

PERFORMANCE GOALS FOR INITIATIVES RELATED TO GOAL 3

Improves the health, nutrition, and safety of communities and individuals.

- Increase citizen participation in local health and safety policy decisions
- Expand knowledge of health behaviors that effect women's health status
- Increase fruit and vegetable consumption

Indicator Data Specific to Goal 3

(For each indicator, both actual and annual target results are included, the latter in parentheses.)

INDICATOR 3.1 The total number of refereed or peer reviewed articles or materials reporting research on human nutrition and health or health promotion and the number of related patents, licenses, or varieties issued.

Year	# refereed items	# patents, licenses, varieties
2003	140 (300)	1 (2)

OBJECTIVE 3.1 To achieve a healthier, more well-nourished population.

INDICATOR 3.1.2 The total number of persons completing non-formal nutrition education programs on better management of health risk factors (e.g., obesity, hypertension, etc.) and the total number of these persons who actually adopt one or more recommended nutrition practices to reduce health risks within six months of completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually Adopt practices
2003	69966 (35000)	36033 (16500)

OBJECTIVE 3.2 To annually increase consumer awareness, understanding, and information on dietary guidance and appropriate nutrition practices.

INDICATOR 3.2.1 The total number of persons completing non-formal nutrition education programs that provide dietary guidance to consumers and the total number of these persons who actually adopt one or more recommended Dietary Guidelines within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt recommendations
2003	70978 (38000)	39766 (19000)

OBJECTIVE 3.3 To promote health, safety, and access to quality health care.

INDICATOR 3.3.1 The total number of persons completing non-formal education programs on health promotion and the total number of these persons who actually adopt one or more recommended practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt practices
2003	28022 (20030)	13140 (12003)

OBJECTIVE 3.4 To annually increase the level of individual and family safety (or reduce risk levels) from accidents in the homes, schools, workplaces, and communities.

INDICATOR 3.4.1 The total number of persons completing non-formal education programs on home and workplace safety and risk reduction and the number who actually adopt one or more recommended practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt practices
2003	15416 (4500)	10445 (2003)

OBJECTIVE 3.5 To annually increase the effectiveness of constituent and citizen participation on public policy issues affecting health community decision-making.

INDICATOR 3.5.1 The total number of persons completing non-formal education programs on public policy issues affecting health community decision-making and the total number of these persons who actually become actively involved in one or more public policy issues within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually become involved
2003	2813 (2500)	2352 (500)

Resources Allocated to Goal 3 (FFF and Match)

Dollars x 1000 and (FTE) or (SY)

	FY2003 Target	FY2003 Actual
Extension Total	3,758 (50.2)	3,272 (49.0)
Research Total	1,295 (8.0)	504 (3.5)

Impact Examples Related to Goal 3

Alternative Press Improves Quality of Berry Juices

Key Themes: Human Nutrition, Food Quality, Food Safety, Food Handling, New Uses for Agricultural Products

The use of small fruit (berries) has shown large growth in the juice industry, particularly in blended juice products. With raw berries being expensive, high yields are important; therefore, press aids are used to maximize juice extraction. Common press aids include rice hulls and paper; however, off-flavors can be imparted into the juice from these press aids. Also, the remaining berry pomace containing rice hulls or paper cannot be fed to cattle, so the berry pomace is disposed of as landfill.

Apple pomace, which is the largest waste of apple juice production, has been investigated as an alternative press aid. Results have shown that berry juice yields using dry apple pomace press aid were similar to juice yields produced with standard press aids. However, sensory tests indicated the berry juice pressed with apple pomace was preferred. Strawberry, raspberry and blueberry juices pressed using apple pomace were reported as sweeter with a fuller flavor and a fresh taste, while juices processed with either rice hulls or paper were describes as bitter, stringent and having a woody flavor. Flavor analysis of these juices confirmed these sensory results. Concerning berry pomace disposal, use of apple pomace as a press aid has an advantage over rice hulls and paper since berry pomace containing apple pomace can be used as cattle feed. Therefore, apple pomace press aids are more environmentally friendly than other traditional press aids.

The results of this research have generated serious interest from major fruit processing industries. Motts is a major producer of cider and applesauce and generates high volumes of apple pomace and peel waste, and they have expressed interest in either drying or selling their waste to a dehydration facility. Atwater Foods, the largest dehydration plant in New York, has expressed interest in drying apple pomace and peel for press aid production. Several large juice manufactures, such as Ocean Spray, Welshes, and Cadbury-Schwepps, have expressed interest in changing from their current practice of using rice hulls and paper to using dried apple pomace and peel for their juice extraction operations. Good Nature, a large manufacturer of pasteurization and juice extraction equipment in Buffalo, NY, has also expressed interest in this research because the use of press aid is critical to their pressing equipment.

Links Between Maternal Obesity and Infant Growth Informs Obesity Prevention Efforts

Key Themes: Human Health, Human Nutrition, Birth Weight

The Office of the Surgeon General and the National Institutes of Health have recently underscored the current crisis of obesity in the American public, with 55 percent of the adult U.S. population now determined to be at least overweight. Moreover, the Surgeon General's health goals for the nation have sought initiation of breast-feeding by 75 percent of new mothers and continuation of breast-feeding by half the new mothers through the first 5-6 months of the infant's life. Yet, initial studies in New York showed that overweight and obese women were at significantly higher risk of failing to initiate breast-feeding successfully than women of normal weight at conception.

Cornell researchers investigated the relationship between maternal obesity before pregnancy, as well as weight gain during pregnancy, and early infant growth. The objective was to determine whether the association between obesity and lactation failure and the known association between breastfeeding and infant growth and health are related.

The completed studies provided evidence that maternal obesity before conception has several negative effects on infant health. In particular, maternal obesity contributes to higher infant weight-at-birth, earlier cessation of breastfeeding, earlier introduction of solid food and, as a result of all of these intermediate effects, a higher infant weight at one year of age than observed among infants of normal-weight mothers. From a technical perspective, these studies illustrate the importance of controlling for maternal obesity when examining predictors of growth during infancy. From a public health perspective, these studies illustrate one means by which obesity can be transmitted from one generation to the next. Highly concordant results were obtained in both New York and Denmark, which testifies to the likely applicability of these results across human populations. These results suggest that interventional education approaches be considered in nutrition and diet-related extension programs directed at prospective, expectant, or new mothers.

Healthy Heart Worksite Wellness

Key Themes: Human Health, Human Nutrition

Poor diet and lack of exercise are two leading causes of death and disability. Since a large majority of the adult population is now in the workforce and spends at least 1/3 of their day at work, our targeted audience is employees at Nassau County worksites. Studies show that worksite wellness programs increase productivity, improve morale, and decrease health care costs and absenteeism. Cornell Cooperative Extension, Nassau County received a grant from the New York State Department of Health to work with 20 worksites in Nassau County. Through this grant, these worksites made changes to support and encourage employees to live a healthier lifestyle, focusing primarily on promoting increased physical activity and healthy eating.

Example outcomes include: 10 worksites (consisting of 1,991 employees) started a walking program, "Increase Your Steps." Employees wore pedometers to learn how many steps they were walking daily and then tried to increase their number of steps. One worksite (consisting of 210 employees) is now offering exercise video classes twice per week after work. Three worksites (consisting of 1,427 employees) are now offering 6 heart-healthier snack items in their vending machines that are labeled with red heart stickers. One worksite (consisting of 1,005 employees) is now offering at least one heart-healthy meal each day for breakfast, lunch and dinner in their company cafeteria. Ten worksites (consisting of 3,736 employees) offered health risk assessments (blood pressure screenings, body fat measurements, and body mass index calculations) for employees. Eighteen worksites (consisting of 6,910 employees) offered "lunch and learn" programs to educate their employees on topics such as sodium, healthy eating, heart healthier vending machine foods, making heart-healthier choices when eating out, and making heart healthier choices when eating in the company cafeteria. Two worksites (consisting of 319 employees) have established a wellness

resource center at their worksite, where employees can receive current information on nutrition and physical activity. Six worksites (consisting of 2,629 employees) are now offering weight loss programs at work.

Family Fare: Colorful Eating for Good Health

Key Themes: Human Nutrition, Food Resource Management

Family Fare: Colorful Eating for Good Health is an innovative "train the trainer" program designed for frontline human service workers serving families and individuals in low-income communities of primarily Hispanic and African American residents. These frontline workers (who are representative of the population they serve) are Family Development Training and Credentialing (FDC) skilled professionals, working throughout New York City. Family Fare training is designed to enable these workers to deliver one simple nutrition message to better serve their communities in the area of nutrition and health while promoting positive behavior changes for themselves, their families, coworkers, and the clients they serve. In addition to increasing participants' knowledge about healthy eating, Family Fare has the potential to strengthen a variety of their skills ranging from individual goal setting and reflection; food/diet planning; organizational planning and activity development; and, accessing resources.

A curriculum composed of 6 to 8 self-contained three-hour workshop sessions featuring interactive, hands-on learning activities was designed, combining family development skills and practices with nutrition education. The curriculum was designed to help individuals in the program and the organizations where they work create an environment for change to support healthy behaviors. Family Fare participants leave with the ability to implement simple healthy lifestyle and nutrition behaviors in their own lives and to deliver these messages to their coworkers and clients they serve, which will in turn resonate throughout the community.

To date, a spring 2003 training cycle consisting of six interactive three-hour workshops was successfully implemented for two classes of FDC graduates. Twenty-six of the initial thirty-two participants (81%) attended at least five of six training sessions. A fall cycle has recently been completed; data analysis is underway. Family Fare participants consistently reported the positive impact of the program in their own lives and those of their families and friends. At the completion of the spring 2003 training cycle of Family Fare, 84% of participants reported eating more vegetables and fruits per week. Over 65% were consuming the recommended five or more servings of fruits and vegetables per day after the intervention compared to only 35% before. Participants also report that they are preparing more meals at home and that their families are eating more fruits and vegetables after the program. Comments include "Family Fare is a wonderful makeover for the mind and body. It is a very good program that others should experience." Family Fare messages were incorporated into workplaces using workshops, in-service trainings, bulletin board displays, introduction of fruits and vegetables at meetings, and other food-tasting demonstrations. Family Fare inspired participants to create many environmental changes in the workplaces that may have long-term impact. Participants report that fruit and vegetable platters are now served at meetings, fruits and vegetables are on display on the desks of coworkers, nutrition information is featured on bulletin boards and there is increased discussion about healthy eating among staff. Participants also noticed positive improvements in the eating habits and nutrition knowledge of the clients and coworkers that they reached.

Senior Fitness Program

Key Themes: Human Health, Aging

The Delaware County Rural Healthcare Alliance at Cornell Cooperative Extension conducted a research study over a three year period to assess the effect of fitness on the physical and mental health of 100 senior participants (ages 61-81) in their weekly senior fitness program conducted at 7 rotating sites each spring and fall over a 23 week period each year. In the last two years of the study, senior leaders were trained to lead an additional class per week at two community sites.

Post participation surveys indicated 65% of the 100 senior participants reported a marked improvement in flexibility, respiration, improved energy,strength, balance and overall health. Sixty-eight percent reported their mood is improved by attending fitness class, while 94% reported that exercising with a group helps motivate them and provides them with a sense of belonging, from a socialization perspective.

Nutrition and Chronic Disease

Key Themes: Human Health, Human Nutrition, Food Safety, Food Handling

Low-income parents and parents-to-be are at increased risk of developing diabetes, heart disease, cancers and other chronic diseases due to poor dietary choices and physical inactivity. Their children are also at increased risk. Many of these parents lack basic nutrition information, as well as food shopping, meal planning, and food preparation skills. As a result, they often rely on expensive, generally unhealthy prepared foods for themselves and their families. The cost of these chronic diseases will be high, both for the individuals as well as society. The Expanded Food and Nutrition Education Program (EFNEP) of Cornell Cooperative Extension of Nassau County provided a series of six to eight hands-on food and nutrition education classes to small groups of low-income parents and parents-to-be. The participants learned how to make healthier food choices, save money on food, prepare easy, nutritious, meals and snacks, keep food safe, take the first steps to fitness, and help their children develop healthier eating habits. 281 parents of young children or parents-to-be participated in EFNEP classes this year. 192 participants (68%) completed the six to seven lesson series. and 52 (19%) left the program before completion. 37 participants (13%) entered EFNEP in the fourth quarter of FY03 and will be completing their lessons during the first quarter of FY04.

The twenty-four hour dietary recall and behavior checklist survey questions completed by the participants at entry and program completion were analyzed indicating that: 92% of the graduates made at least one positive change in their diets, 78% adopted at least one new food budgeting strategy, and, 83% made at least one improvement in safe food handling. In addition, many participants told their instructors of other behavioral changes they had made. Some examples included reports by participants of switching their toddlers from bottles to cups to prevent baby-bottle tooth decay, losing weight by watching portion sizes and walking more, and, stopping “forcing” children to eat at meals.

GOAL 4 – GREATER HARMONY BETWEEN AGRICULTURE AND THE ENVIRONMENT

Improving the integrity of our environment and maintaining the ecological systems that enable human prosperity will continue to be high priorities of society, and therefore high priorities of its publicly supported research and educational institutions for the next five years. Growing human populations cause growing consumer demands on the agriculture and food system, which magnifies the challenges of balancing agricultural production and food processing with stewardship and protection of the environment.

CUAES has invested heavily in science to avoid and mitigate impacts of agriculture on the environment. We view the long-term sustainability of agriculture as being inexorably linked to environmental quality. As part of our strategy, we are emphasizing a higher level of integration of research and extension to accelerate: identification of problems, focusing scientific effort to resolving problems, field testing and evaluation of technology and cultural practices, and introduction of environmentally superior innovations/practices to the agricultural community.

The research program is necessarily broad, with complementary thrusts in:

Minimization of chemical inputs--(a) research to improve pest management in plant agriculture, (b) development of viable biological control of pests, (c) improved cultural practices (plant systems management), (d) plant and animal breeding research to improve pest resistance and minimize nutrient inputs, (e) soil-plant systems investigations to improve nutrient management, and (f) technological innovations to reduce pathogens associated with animal agriculture.

Development of agricultural practices that minimize negative impacts on other natural resource values—(a) protect the integrity of water quality, fish and other aquatic resources, wetlands, terrestrial wildlife habitat, forests, and aesthetic considerations; (b) minimize consumption of energy and petroleum-based materials on farm.

Development of environmentally friendly and profitable alternative agricultural products—(a) identify new products and production methods that result in less impact on the environment, (b) develop markets and design marketing strategies that increase profitability of environmentally friendly agricultural products.

Improvement of waste management associated with the agriculture and food system–(a) reduce quantity of on-farm waste, (b) improve management of farm-produced waste, including quality and disposal, (c) reduce quantity of waste in food processing, (d) improve management of waste produced in food processing, including quality and disposal, (e) develop scientific understanding of potential for use of agricultural land for environmentally safe application of municipal sewage sludge.

Future research investments will continue to be made in fundamental and applied science areas leading to improvements in chemical management, nutrient management, waste management, and habitat protection on the farm; energy conservation on farm and in food processing; waste management associated with food processing; and natural resource stewardship.

Issues, Opportunities and Constraints

Issues--Accelerated time frame of society's expectations for "cleaning up agriculture" versus reality of pace of science progress, especially given modest funding levels; public image of agriculture and AES system

Opportunities—Keen interest of excellent scientists to address the problems and discover solutions; public support for this kind of work; graduate student interest is high

Constraints—Lack of sufficient federal funding directed at this area so that science can be accelerated (need facilities improvements, fellowships for best grad students, research operating dollars, etc.)—society's desire for improvements in this area are not matched with financial commitments required to do the job at the rate we all would like; AES's can move some FFFs to this need, but many other agricultural production needs exist that make it very difficult to redirect large portions of the FFF research portfolio.

PERFORMANCE GOALS FOR INITIATIVES RELATED TO GOAL 4

Improves the quality and sustainability of human environments and natural resources.

- Ensure quality and conservation of water supply
- Promote environmental stewardship and sound decision making about the management of natural resources
- Promote community, agricultural, and residential environmental enhancement
- Prepare youth to make considered environmental choices
- Enhance science education through the environments

Indicator Data Specific to Goal 4

(For each indicator, both actual and annual target results are included, the latter in parentheses.)

INDICATOR 4.1 The total number of refereed or peer reviewed articles or materials reporting research on agricultural, natural resource, and environmental policies, programs, technologies and practices and the number of related patents, licenses, or varieties issued.

Year	# refereed items	# patents, licenses, varieties
2003	267 (255)	1 (2)

OBJECTIVE 4.1 To develop, transfer, and promote adoption of efficient and sustainable agricultural, forestry, and other resource policies, programs, technologies, and practices that protect, sustain, and enhance water, soil and air resources.

INDICATOR 4.1.2 The total number of persons completing non-formal education programs on sustaining and/or protecting the quantity and quality of surface water and ground water supplies and the total number of these persons who actually adopt one or more water management practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually Adopt practices
2003	22201 (15000)	12712 (5000)

OBJECTIVE 4.2 To annually increase producer adoption of agricultural production "best practices" that conserve, protect, and/or enhance the soil resources on or adjacent to agricultural production sites or land uses.

INDICATOR 4.2.1 The total number of persons completing non-formal education programs on conserving, sustaining, and/or protecting soil resources and the total number of these persons who actually adopt one or more soil conservation practices within six months of completing one or more non-formal education programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt practices
2003	17856 (6500)	4240 (3250)

OBJECTIVE 4.3 To annually increase the effectiveness of constituent and citizen participation on public policy issues affecting agricultural production, the environment, and ecosystem integrity and biodiversity.

INDICATOR 4.3.1 The total number of persons completing non-formal education programs on public policy issues affecting agricultural production and ecosystem integrity and biodiversity and the total number of these persons who actually become actively involved in one or more public policy issues within six months after completing one or more of these programs.

Year	Output: # persons completingprograms	Outcome: # who actually become involved
2003	52045 (30000)	2820 (2000)

Resources Allocated to Goal 4 (FFF and Match)

Dollars x 1000 and (FTE) or (SY)

	FY2003 Target	FY2003 Actual
Extension Total	3,184 (50.4)	2,704 (49.1)
Research Total	2,150 (13.6)	2,329 (23.0)

Impact Examples Related to Goal 4

Soil Health Applied Research and Extension Program Work Team Meets with Early Success

Key Themes: Soil Quality, Nutrient Management, Agricultural Profitability

The growing soils in New York are under increasing pressure on many fronts. Soil-borne diseases, insects and weeds require expensive control measures each year. Chronic soil compaction leads to poor root growth, poor drainage and increased erosion, while declining soil fertility requires increased fertilizer inputs, which then threaten our waterways with over-enrichment of nutrients. Vegetable growers are faced with powdery soils that transform into hard crust after rainfall or irrigation, and with lifeless soils holding few beneficial organisms to suppress disease, improve soil structure, decompose crop residue, and recycle nutrients.

A Program Work Team (PWT) on soil health, jointly sanctioned by Cornell Cooperative Extension and the Cornell University Agricultural Experiment Station, was established in late 2001 and seeks to address these soil problems through applied research and extension efforts. The team, made up of "equal parts" faculty, off-campus educators and external stakeholders, seeks to identify those critical soil quality issues currently reducing profits on New York vegetable farms, and to present growers with alternative solutions to those problems, using cutting edge research-based information and educational approaches.

The PWT has developed an educational flyer about the team which includes a soil health status check-list to help farmers think about the health of their own soils and encourage them to contact the team. It has established special regional sub-teams around the state, composed of growers and led by CCE educators, to help in hands-on training and use of various soil health assessment tools as they seek to establish baseline soil health information. Soil health assessment kits (including the Cornell Sprinkle Infiltrometer, a soil penetrometer, augurs and cylinders for soil sampling, and various educational materials) were assembled for use by these sub-teams. The regional sub-teams have established 10 large demonstration trials with collaborating growers that will collect soil health information over 3 growing seasons. These trials compare two or more soil/crop management practices, consisting of various tillage systems, crop rotations, cover crops or compost use. Each regional sub-team also held open field days or visits at demonstration sites across the state. In Central New York alone, over 156 growers visited these sites

The Soil Health PWT has established a website (http://www.hort.cornell.edu/soilhealth) that describes the teams' work, defines and illustrates soil health improvement options, and provides links to worldwide resources on soil health. In partial testimony to their inaugural efforts on the topic, the PWT was awarded funding from the Northeast Sustainable Agriculture Research and Extension (SARE) program for a statewide project on soil health assessment, management and training.

New Tools to Address Water Quality Issues

Key Themes: Water Quality, Agricultural Waste Management, Nutrient Management

Current models for predicting pollution risks, landscape management practices, and watershed planning strategies aimed at protecting water quality lag behind scientific understanding by several decades, especially with respect to hydrology. For example, in the northeastern United State, water quality models and management practices assume that surface runoff, an important pollutant transport mechanism, is generated when rainfall exceeds soil infiltration capacity despite decades of scientific evidence that the region's runoff is rarely produced this way. Rather, surface runoff is produced from small fractions of a watershed that, because of a system of interconnected hydrological processes, are prone to saturation. New water quality tools need to be developed, contemporary scientific findings need to be made more accessible to water quality professionals, and educational curricula need to be updated so water quality issues can be addressed using the best scientific understanding.

Researchers in the Department of Biological and Environmental Engineering at Cornell University are working to develop new water quality prediction tools, disseminate information, and continue investigations into the basic and applied sciences associated with pollutant transport in the landscape. Among their new tools is the Soil Moisture Routing (SMR) model, which was developed to simulate the unique hydrology that dominates New York State by incorporating important hydrological processes that no previous models considered. They also have reinterpreted and modified popular and traditional models, such as TOPMODEL and the Soil Conservation Service's "curve number" (SCS-CN) method, to account for the hydrological controls that govern New York watershed hydrology. The environmental engineers also are developing web-based resources for information dissemination for educators, water quality professionals, and producers. The web resource will include a tool to determine hydrological sensitivity for any location in New York State, starting with Delaware County. Their field and laboratory research activities are improving understanding of basic watershed hydrology, especially in the context of pollutant and nutrient transport. They continue to employ these new insights in their teaching, extension/outreach, and tool development activities and publish their findings and emerging concepts in professional and popular journals as well as present them at professional conferences and meetings.

This Cornell project has coined several key concepts that have become part of the water quality vernacular and are helping to shape the ways people address water quality solutions. Two of the most popular concepts are "whole farm planning" and "hydrologically sensitive areas" (HSAs), which encourage water quality professionals and land managers to perceive watershed activities within the larger, dynamic hydrological system rather than focus on static, point-specific characteristics such as soil type or local land slope. The Cornell researchers' modeling efforts have been well received by scientists and practitioners alike. Although the SMR model was originally developed to characterize New York's unique hydrology, it has found wide application throughout the Northeast, Idaho, Missouri, and other areas with similar hydrology. Also, their reinterpretations of the Soil Conservation Service's "curve number" method are now being incorporated into the

USDA's popular water quality model, SWAT, and they are cooperating with the SWAT developers in this endeavor. Cornell graduate and undergraduate students benefit from the researchers' work. Their students often contact them from their jobs with agencies, engineering firms, and NGOs to let them know how progressive they feel with respect to the status quo of many water quality programs.

Waste Management Technology Development

Key Themes: Agricultural Waste Management, Air Quality, Water Quality, Soil Quality

Manure application systems have been under growing scrutiny by the public in regards to offensive odors and ground/surface water contamination. Dairy farmers are looking for ways to apply manure in a manner that is less offensive to their neighbors and environmentally sound while making a profit. A draghose system is a manure application system that pumps liquid manure from storage to a field through underground PVC pipe or above ground extension hose. The draghose application system meets many needs, but lacked the ability to reach fields further away from storage.

Cornell Cooperative Extension, Cayuga County identified and tested various manure application methods and technologies over several years. We worked closely with our local Soil and Water Conservation District office and got cost sharing for a draghose system for a custom manure applicator and cost sharing for farmers to use this service. After a few years of evaluation of the standard draghose system, CCE Cayuga then pursued grant funding to create a mobile system with in collaboration with Dairy Support Services. We saw the necessity of getting manure to fields further away from the farm with the benefits of a draghose system and developed a tougher draghose connected to a tillage implement. Manure drops onto the ground right in front of the tillage implement or is injected on a tillage tooth directly into the soil. This process eliminates manure odors, runoff, and only needs a light tractor, eliminating heavy tankers on fields.

The mobile system worked well. Now, farmers can apply manure with reduced or no odor, retains valuable nutrients (cutting down their purchased inputs), reduce soil compaction (by keeping heavy equipment off the fields), and keep heavy machinery off the public roads. Our efforts also created jobs, saved jobs, and enhanced agri-business (economic development) in a multi-county region. Dairy Support Services now has a mobile system in addition to their current draghose system. They are expanding their business and hiring 2 more individuals to run the new system. In addition, Dairy Support Services gained 6-10 more clients with the system. The farms will be re-deploying their labor to more profitable work in their businesses that hauling manure, ensuring their job survivability. Five farms in the state representing 4000 acres will be purchasing a draghose system based on the state-wide demonstrations, enhancing their nutrient management program, reducing costly compaction (saving an average of $125/acre on corn silage), and ensuring overall farm viability be eliminating odor, which greatly reduces neighborhood pressures. Ten farms who are current participants will be utilizing the new mobile system in addition to the standard system to get manure to fields further away, reducing neighbor complaints, and saving an average of $140/acre in reduced soil compaction and fertilizer savings. Through two formal field demonstrations and 3 informal demonstrations we have exposed the draghose system to 180 farmers, agriculture consultants, and certified farm waste management planners.

Engaging New York Communities In Community Forest Management

Key Themes: Forest Resource Management, Land Use, Community Development

Land is being developed at an ever-faster pace and the importance of developing and managing community trees and open spaces to protect concomitant environmental benefits are becoming paramount in creating sustainable communities. Trees and parks are an integral component of livable communities. They contribute to improved water quality by slowing urban run-off and preventing erosion, conserve energy by direct cooling of structures, sequester carbon and filtering air particulates, contribute to noise reduction, provide habitats for wildlife, separate commercial and residential land uses, provide for recreational land uses, and improve property values. These benefits need to be recognized and quantified in our communities if budgets are to be passed that fund sustainable landscape management. At the same time, communities need the educational and technological tools to evaluate and manage their green resources.

A street tree inventory and planning program was piloted using students from Cornell University and SUNY Morrisville and College of Environmental Science and Forestry (ESF). Students were trained to take street tree inventory data on tree location, species, size, condition and management recommendations using hand held palm pilot computers. This Student Weekend Arborist Team (SWAT) then inventoried two villages on successive weekends. In 2003, SWAT team efforts were expanded to three communities and added a program to train volunteers to do inventories. This new effort collected data on four more communities in New York State. The USDA Forest Service Northeast Urban Forest Experiment Station was engaged and modified its Urban Forest Effects Model (the UFORE model provides environmental benefit information such as tree replacement costs, energy conservation, carbon sequestration, and pollution reduction). The model was modified to use municipal tree census data, thus allowing dollar values to be assigned to a community's tree resource.

Communities involved in the project then attended training workshops to learn how to analyze data collected using simple spreadsheets and the decision making process to develop community forest plans. Each community was given a CD-ROM with their actual data, environmental benefits dollar values, and sample analysis. Communities used data and technical training to develop vision and operational plans to enhance their community forests and leverage future funding. Training included coverage of urban tree cultivation technologies and recommendations, developed via several Hatch-supported research projects undertaken by the Urban Horticulture Institute at Cornell. Technologies noted included the composition and use of CU-Structural Soil (a porous soil amalgam of angular pieces of stone, clay loam and a hydrogel stabilizer), bare-root planting, and identification, selection and planting of tree species and varieties especially adaptable to extreme soil compaction and heavily paved microenvironments.

Six communities received electronic data and technical training in community forest inventory and planning. Inventory data was used to prioritize operations, plan future activities, and leverage funding. For example, the Village of Liverpool used inventory information to correctly prune and remove hazardous trees. The village board further voted to increase the department of public works budget by 25 percent to enhance future tree restoration efforts after seeing the inventory and plan.

Minimizing Woodpecker Damage

Key Themes: Wildlife Management, Wildlife Damage Control

Woodpeckers can be delightful birds to watch, hear and otherwise appreciate in the wild. But when the nature's "hammerheads" start assaulting human dwellings, farm buildings, and even public facilities, the damage wrought and the required repairs can be costly. Beyond the toll on structures, woodpecker drumming can take its toll on human peace-of-mind and sleeping patterns in domestic settings and on concentration and productivity in the workplace. A Hatch-supported project undertaken by ornithologists at Cornell sought to monitor the behavior of woodpeckers living in suburban neighborhoods, with the goals of understanding why the birds attack particular homes and what might serve as appropriate deterrents to such attacks.

Researchers surveyed approximately 2000 homes in Ithaca, NY for evidence of woodpecker damage. About 43 percent of homes in more wooded neighborhoods were found to have sustained damage from the birds. Wood-dwelling insects in more wooded locales and residing in certain types of structural siding (e.g., board-and-batten, grooved plywood, and cedar shakes) appeared to serve as attractive prey for woodpeckers and be the direct cause of attacks on such sidings. The project identified leafcutter bees, grass bagworm larvae, and carpenter bee larvae as favored prey items for woodpeckers in Ithaca. The color of siding also was found to correlate with woodpeckers attacks. White and bright pastel-colored painted homes were much less likely to be assaulted and damaged by woodpeckers when compared to homes covered by natural earth-toned stains.

To extend new information stemming from this research to homeowners and the general public, a webpage (http://www.birds.cornell.edu/wp_about/index.html) describing the causes of woodpecker damage to housing structures and listing some potential deterrent strategies was created and linked to the world-renown Cornell Lab of Ornithology website. Additional research currently underway will devise and evaluate the effectiveness of some novel deterrents such as alternative drumming devices (using the "scratch post" approach that cat owners have employed for decades) and insulated nest boxes to direct the birds away from valued structures.

Groundwater Protection in Agricultural Areas

Key Themes: Water Quality, Pesticide Application

There is a great concern for the soil and groundwater in agricultural areas because of the use of chemical fertilizers and pesticides. CCE staff developed a proactive program to address the issues of chemical use on farms and ways to lessen the impact particularly on groundwater. Staff called stakeholders together to identify the problems, reviewed the current research based information and developed criteria for documenting a farmers stewardship level. These worksheets were submitted to the NYS Dept of Agriculture and markets and approved for use in the NYS Agricultural Environmental Management (AEM) program making the farmers eligible for cost sharing using public funds. The worksheets are now accepted for use throughout New York State in potato, vegetable, nursery, greenhouse and fruit production.

The specific criteria to document stewardship has been approved by New York State Department of Agriculture and accepted by growers; over 100 farms in Suffolk County have utilized the stewardship checklist to audit their operations and best management practices. Several of the best management recommendations have already been implemented: three pesticide mixing pads have been designed and installed on farms; three greenhouse managers are using the ebb and flow technique of plant irrigation, this closed system results in no loss of the plant nutrients into the groundwater.

GOAL 5 – ENHANCED ECONOMIC OPPORTUNITIES AND QUALITY OF LIFE FOR AMERICANS

Economic and social well-being are deeply intertwined through opportunities for healthy human development that is nurtured by strong families and communities. Over the next five years, the significance of the local community in economic and human development will become increasingly important as federal and state governments continue to devolve authority and accountability for employment, education, public health, social services and general enhancement of a more self-reliant population.

Cornell's research program in these areas includes faculty from the College of Human Ecology and the College of Agriculture and Life Sciences. Their interests are in economic development (especially in rural communities), human development from pre-natal through elderly stages of the life-course, and design that centers on human environment, health, and well-being. Research areas of current interest include the following:

The Economy

- Collaboration with New York State business and industry in fiber science such as ceramic composites, adhesion problems in fiber glass reinforced circuit boards, and fatigue of joints in plastic pipes, and application of computer-assisted design and manufacturing to the textile and apparel industry through the Apparel Industry Outreach that provides educational programming to firm in the New York metropolitan area and throughout New York State;
- Health and welfare economics, local economic effects of changes in the health sector including mandated managed care for Medicaid and Medicare recipients, consumer behavior in medical care choice and disease prevention, effects of taxation policies on alcohol consumption, health impact of unemployment, and the effects of public finance policies on low-income households and development of human capital;
- Family-based businesses and the interplay between family dynamics, inter-generation transfer of ownership, and economic viability, and time-use in households as it affects household and non-household productivity;
- Management of the nonprofit sector including improved techniques for planning and evaluation, inter-organizational collaboration at the community level, strengthened volunteer involvement in local communities, and organizational change.

Family and Community

- Human development and family functioning, including cognitive and personality dynamics, biological bases of personality and abnormal development, language development and intellectual growth in infancy and early childhood, the effects on human growth and development of parenting practices, family and school environments and child care programs, and the impact rural work opportunities and community resources on retirement and life-transition decision making;
- Health care cost and quality including finance and organization of health care, employer-financed health insurance, the effects of managed care on service quality, equity and access, and Medicaid and Medicare policy, health and menopause among rural women;
- Social welfare and family policies and programs including issues of child support, foster care, adoption of hard-to-place children, the effects of divorce on children, and management,

leadership and evaluation of human service organizations, food security and food resource management;
- Rural economic and community development including local government and business collaborations on job development and community decision making, rural housing quality and community vitality including issues of affordability, energy efficiency and structural integrity, rural housing conditions and children's psychological development, youth development and mentoring, housing for the elderly and disabled, interior design including furniture and facilities for the elderly, Alzheimer's patients, and child care facilities.

The Human Environment
- The effects of the physical environment on the workplace and employee including innovative workplace design, non-territorial offices, technological infrastructure, work processes, and formal and informal organizational policies and practices, home-based telecommuting and virtual work environments, the effects of ergonomic factors such as office lighting, computer stations and ventilation systems on employee health and productivity, impact of environmental toxicants such as low-level lead exposure on child development, air and water quality and toxic substance safety for households and communities;
- Innovative uses of computers in design decision making and design education, creative problem solving, human/computer interface issues, and visual, historical and cross-cultural bases of interiors, apparel and textiles;
- Health and safety issues including apparel design that protects employees from workplace contaminants and injury including HIV and other blood borne pathogens, development of new methods to determine skin exposure from pesticide contaminated clothing;
- Fiber science applications to understand the mechanics of fibrous materials, the micromechanics of failure processes, plasma surface modifications, and the development of fiber-based synthetic prostheses and surgical aids.

Future investments in research should be targeted at efforts that (1) link empirical findings to planned economic development and other extension programs; (2) integrate economic with other social science perspectives for a deeper understanding of the influence of family, organizational and community factors on long term development of human capital; (3) integrate biological and psychological approaches to healthy human development; (4) strengthen collaboration among and between business and community organizations in furtherance of economic development and the quality of community life; (5) speed the diffusion of scientific innovation to commercial development that benefits small business and community-based enterprise, (6) integrate the social sciences with information science and its application.

PERFORMANCE GOALS FOR INITIATIVES RELATED TO GOAL 5

Develop the competence and character of youth and adults in families and communities.

- build strong families;
- develop capable, responsible, and caring young people;
- promote healthy, supportive communities;
- increase financial well-being
- support informed housing choices

Strengthen the economic and social vitality of communities.

- empower communities so that they are viable, dynamic, and sustaining;
- expand skills of both the current and future workforce;
- leverage and apply private and public sector resources wisely;
- enhance small business development and management; and
- develop, enhance, and retain a strong agricultural industry.

Indicator Data Specific to Goal 5

(For each indicator, both actual and annual target results are included, the latter in parentheses.)

INDICATOR 5.1 The total number of refereed or peer reviewed articles or materials reporting research on community or family economic or social well being.

Year	# refereed items
2003	208 (200)

OBJECTIVE 5.1 To increase the capacity of communities and families to enhance their own economic well-being.

INDICATOR 5.1.2 The total number of public officials and community leaders completing non-formal education programs on economic or enterprise development and the total number of these public officials and community leaders who actually adopt one or more recommended practices to attract new businesses or help expand existing businesses within six month after completing one or more of these programs.

Year	Output: # persons completing Programs	Outcome: # who actually adopt practices
2003	5892 (3500)	4035 (850)

OBJECTIVE 5.2 To annually improve the financial status of families through financial management education programs implemented in which CSREES partners and cooperators play an active research, education, or extension role.

INDICATOR 5.2.1 The number of persons completing non-formal financial management education programs and the total number of these persons who actually adopt one or more

recommended practices to decrease consumer credit debt or increase savings within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt practices
2003	24268 (10500)	10131 (4000)

OBJECTIVE 5.3 To increase the capacity of communities, families, and individuals to improve their own quality of life.

INDICATOR 5.3.1 The total number of persons completing non-formal education programs on community decision making or leadership development and the total number of these persons who actually become actively involved in one or more community projects within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually become involved
2003	34805 (6500)	15868 (3000)

OBJECTIVE 5.4 To annually increase the incidence of strong families resulting from non-formal education programs.

INDICATOR 5.4.1 The total number of dependent care providers completing non-formal education programs and the total number of these dependent care providers who actually adopt one or more new principles, behaviors, or practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt new principles, etc.
2003	20735 (7500)	6073 (3200)

INDICATOR 5.4.2 The total number of persons completing non-formal education programs on parenting and the total number of these persons who actually adopt one or more parenting principles, behaviors, or practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt principles, etc.
2003	31712 (20030)	11719 (8500)

INDICATOR 5.4.3 The total number of persons completing non-formal education programs on youth development and the total number of these persons who actually adopt one or more youth development principles, behaviors, or practices within six months after completing one or more of these programs.

Year	Output: # persons completing programs	Outcome: # who actually adopt principles, etc.
2003	24566 (18000)	18289 (11000)

Resources Allocated to Goal 5 (FFF and Match)

Dollars x 1000 and (FTE) or (SY)

	FY2003 Target	FY2003 Actual
Extension Total	4,842 (80.6)	4,344 (78.5)
Research Total	1,825 (11.5)	1,134 (10.2)

Impact Examples Related to Goal 5

Program Helps Integrate Immigrants in Rural Communities

Key Themes: Multicultural and Diversity Issues, Impact of Change on Rural Communities, Community Development

A large proportion of current immigrants to the United States are settling in rural communities. Since 1970, more than 50 percent of all immigrants have come from Spanish-speaking countries, and Latinos are estimated to account for 25 percent of population growth in more rural, non-metropolitan areas. U.S. Labor Department data indicate that almost 80 percent of all U.S. farmworkers are Mexican born. These workers are found in some of the most remote rural communities of New York and are increasingly settling in those communities. Sometimes they are easily integrated into the communities, but at other times their presence creates tensions with long-time residents.

The researchers have worked intensively with five New York communities to identify immigrant and community needs, opportunities and obstacles for immigrant integration in rural communities, and the potential for economic growth and community development associated with growth of the immigrant population. Community research is ongoing, but interviews have been completed with key informants from business, civic and political leaders, educators, and other professionals and with numerous focus groups, including established residents, immigrants, and migrant farmworkers.

The researchers have found that personal bonds exist between workers and between workers and farmers that are a form of “social capital.” When workers leave the migrant stream and settle in U.S. communities, they use this social capital to gain access to needed resources. Yet farmworkers who have settled in rural communities in New York are almost completely isolated from other social groups. Some organizations help migrants gain direct access to resources such as health care and education. Resources available through markets are more difficult to access, although recent changes in banking practices are helping to eliminate these barriers. Job opportunities for minorities appear to be limited to a few occupational niches, and clients of minority businesses are co-ethnic consumers. The researchers have met with town planners, elected officials, and chambers of commerce to evaluate ways in which individual communities can work with immigrants to promote economic growth and community development. Results of this research are also being used to customize Opening Doors workshops to address specific needs of the five communities in the study. Opening Doors, a nationally recognized diversity awareness training program, helps integrate immigrants into community life by (1) increasing understanding of diversity; (2) identifying personal feelings and experiences related to cultural and other differences among people; (3) examining how institutional and personal practices maintain inequalities among people and prevent them from reaching their potential; (4) developing a framework and common language to facilitate change collectively; and (5) building alliances.

Targeted workshops began in late 2003 in each study community. These workshops are expected to help develop community strategies to increase immigrant participation in various community organizations and create an inclusive community identity that enables immigrants to contribute to economic growth and community development.

Assessment Tool Allows Researchers to Identify and Help Children in Low-Income Families

Key Themes: Children, Youth and Families at Risk, Food Security, Family Resource Management

Researchers know that, in the US, households with children are more likely than other households to suffer from food insecurity—that is, they do not have assured access to sufficient food for a healthy, active lifestyle. It also is known that food insecurity is particularly harmful to children, resulting in lower test scores, poorer school achievement, increased absences, higher levels of hyperactivity and anxiety, and more frequent health problems. Using census data, researchers are able to determine the amount of food insecurity in a state as a whole and, by comparison, between states. However, there has been no method for identifying the different rates in various areas within a single state.

A Cornell faculty member who specializes in investigating how child and family policy affects children in limited-resource families has created an assessment tool as part of the School-Based Food Insecurity Project. It allows researchers to identify families that fit the USDA's definitions of those who are food secure, are food insecure without hunger, and are food insecure with hunger.

The tool is being used to help Cornell Cooperative Extension educators and county policymakers design programs and policies to meet the needs of limited-resource families by identifying the extent of the problems in their counties. It makes it possible to understand the food-insecurity situation for households with school-age children in a given school district or county. For example, in one county there are no cities, no public transportation, and no supermarket-type grocery stores. Implications regarding travel distances and competitive pricing are important to county legislators. In another county is was possible to target questions on use of farm markets where the state's Food Stamp Nutrition Education Program is implemented, and thus evaluate its effectiveness.

Close interaction between extension educators and participating schools has produced many positive outcomes. School cafeteria managers gathered information for improving school breakfast and lunch programs. This included not only rates of participation in the meal programs, but also specific factors associated with why limited-resource families do or do not avail themselves of these sources of nutritious food. Working in the field on the pilot survey for the School-Based Food Insecurity Project has furthered the opportunities for Cornell Cooperative Extension to offer more programming in the schools. Sharing data from the project has extended partnerships—with 100 agencies in one county alone.

Practical Management Strategies for Reducing Risk of Exposure to Indoor Air Pollutants for Limited-Resource Households

Key Themes: Air Quality, Family Resource Management, Promoting Housing Programs

Current research has corroborated earlier findings: the lower a household's income, the more likely it is to have higher levels of radon, lead, biological pollutants, and carbon monoxide. In addition, limited-resource families are more likely to live in older, poorer quality housing with chipping lead paint, friable asbestos, cracked foundations, and leaking combustion equipment. The average cost to have a house professionally mitigated for lead is $25,000; retrofitting radon mitigation systems costs about $2,000. Limited-resource families are likely to be more concerned with immediate needs like rent and family meals. There are virtually no public funds to help limited-resource families whose houses need such upgrades.

The Expanded Food and Nutrition Education Program (EFNEP) is an effective way to assist limited resource families to improve their nutritional status through peer educators. Using this model, an intervention study was developed to teach individuals to reduce indoor air pollutants in their homes. Practical Management Strategies for Reducing Risk of Exposure to Indoor Air Pollutants for Limited-Resource Households teaches about the five major household pollutants—radon, lead, asbestos, biological pollutants, and carbon monoxide—and how to recognize potential sources. The curriculum recommends a series of actions, all practical and inexpensive, that homeowners can take to reduce the pollutants.

The program has been pilot tested with 50 limited-resource households whose selection was based on federal income guidelines for participation in the Home Energy Assistance Program. Peer educators conducted 90-minute home visits that consist of a visual audit of the house, testing and inspection for pollutants, and a one-on-one presentation of the educational curriculum. The educators match practical resources to the needs of the participating households by emphasizing or de-emphasizing the appropriate parts of the program. If there is no asbestos on the premises, for example, that part of the instructional program is abbreviated. If there is a nonvented space heater, the curriculum section on carbon monoxide is taught in detail.

In comparing questionnaires from a control group with those from participants in the educational program, there was a significant increase in knowledge and awareness among the study group. Results of the pilot demonstrate that education works as a low-cost remedy for limited-resource household where there is indoor air pollution. Funding is being sought to institutionalize the homeowner education program statewide through Cornell Cooperative Extension associations.

Professional Development Mentoring Programs

Key Themes: Leadership Training and Development, Workforce Preparation

The Institute for Community College Development (ICCD), a Cornell-SUNY consortium, seeks to enhance the capacity of community colleges to meet societal needs for training and education across New York and the nation, and to provide educational programs of value in the global economy and marketplace. The Institute is committed to providing high-quality and timely research to community

colleges that is stakeholder-driven and that addresses topics of the most interest to community colleges and their peer institutions, in terms of social, economic, and policy considerations for bringing about change.

With Hatch grant support, researchers at ICCD at Cornell sought information on professional development mentoring programs in New York —an information need identified by community colleges via other ICCD programs and surveys. Such information is a critical need as increased retirements, tight professional development conference travel budgets, and changing local workforce needs force college leaders to find more efficient and effective ways to develop trained faculty and visionary local college leaders.

Researchers found that, in general, professional development mentoring programs were still new to New York, with only half the surveyed schools having such programs. Typically, mentoring programs were in existence for less than 5 years. New faculty were a focus of most programs, which were usually found to last about two years. The most important goals of mentoring programs across colleges surveyed included providing policy and procedure knowledge, improving the practice of teaching, and to urge senior faculty to guide and support their junior colleagues. Typically, mentors receive little to no formal training or guidelines, and evaluation of the effectiveness of mentoring relationships is left mostly to informal reporting from mentors or mentees. Mentoring was generally felt to be more beneficial than written guidebooks, off-site workshops/seminars, or traditional coursework. Other findings of the survey addressed issues such as mentor pairings, component make-up of mentoring programs, supervisor involvement, and recruitment, selection and match-making of mentoring relationships.

The results from this study were disseminated to community colleges in New York and nationally through publication in ICCD's research bulletin series, *Catalyst: Inquiry for Change.* In addition, the bulletin was posted on ICCD's website (http://www.ICCD.cornell.edu) for more global outreach purposes.

Parents Involved in Education (P.I.E.)

Key Themes: Leadership Training and Development, Parenting, Communication Skills, Children, Youth and Families at Risk

The Hamilton Elementary School community in Schenectady is a diverse population including families dealing with limited resources and multiple stressors. Many of the parents/caregivers lack knowledge regarding school and community resources. On average, the students in grades 3, 4, and 5 score 6 to 12 months below grade level in math and reading. Ongoing research shows that children do better academically and socially as parent involvement increases. Cornell Cooperative Extension, Schenectady County collaborates with the Schenectady City School District and the Schenectady County Youth Bureau to implement a program that provides valuable education to families in the community through the Hamilton Family Room. Working together to help individual families and plan school-wide events has helped both the school and PIE program participants strengthen the home/school connection. The Hamilton Family Room offers research-based resources for parents and youth focusing on topics such as parenting, nutrition, literacy and character education. Through workshops, events, and educational resources, parents and youth have increased their knowledge and skills to fulfill their family and community roles and responsibilities.

Parents/caregivers gained essential knowledge and skills to help them meet the social, emotional and educational needs of their families. Youth demonstrated character development in the areas of responsibility, caring and citizenship. More than 150 parents/caregivers and children attended the 2nd Annual Hamilton School Math Night, a collaboration of Hamilton School and the PIE program; attendees gained knowledge of the school match curriculum and learned ways to promote everyday math at home. Eighteen parents volunteered to help with school activities on National Read Across America Day, an increase of 22% over the previous year. Sixteen children whose parents/caregivers participated in the PIE program increased the number of times they engaged in literacy activities from once a week or less to four or more times per week. Seventy-five children completed the TV Turn-Off Week program sponsored by the PIE program, demonstrating success in goal setting, decision-making and self-discipline. Thirty-two children have demonstrated an increase in the positive character traits of responsibility, caring and citizenship. Discipline referrals within the school have decreased by 40% over the previous year.

Grandparents Raising Grandchildren

Key Themes: Parenting, Aging, Children, Youth and Families at Risk

According to the 2000 Census, there are 1,500 households in Wayne County in which grandchildren live with their grandparents. In over a third of these households, grandparents indicated that they are primarily responsible for raising their grandchildren. Many of these grandparents are caring for their grandchildren informally or with no legal standing. Many are afraid to pursue legal protection because family court laws favor the doctrine or parental rights, regardless of the interests of the children. Others have gained legal custody, guardianship, or adopted their grandchildren. Grandparents raising grandchildren face other challenges. Many have limited financial resources to support themselves and raise children with 44% of these families in New York State living in poverty. Given that grandparents are aging, they face physical challenges, especially when their grandchildren are young.

Cornell Cooperative Extension and the Brookdale Center on Aging developed a curriculum, "Parenting the Second Time Around" which recently received a national award. In Wayne County Cornell Cooperative Extension collaborated with the Wayne County Department on Aging and Youth to offer the six-session program this past spring that addresses the stressful situations experienced by grandparents raising grandchildren. Topics included rebuilding a family, discipline-it may look different today, legal issues (presented by a local district attorney), grandparent’s rights, and how to be an advocate. Seventeen grandparents participated in the sessions facilitated by the Extension Educator and a Sr. Caseworker from Wayne County Department on Aging and Youth. All received a binder of informational handouts and contact information for relevant local resources. The program was held at Roosevelt Children's Center. Staff from Roosevelt Center and Foster Grandparents provided childcare. Generous community volunteers donated snacks and dinner for the last session.

Of the 17 grandparents who participated, 10 completed and evaluation at the end of the program. All 10 (100%) experienced an increase in support of their role as a grandparent raising grandchildren. Seven (70%) increased their understanding of relevant legal issues. Six (60%) used new knowledge

of temperament and temperamental differences to understand their grandchildren and acknowledge and affirm their grandchildren's feelings. Two of the grandparents emerged as leaders and with encouragement from the group created an ongoing support group that meets monthly. The majority of the grandparents have accessed this group and found it to be of tremendous help in relieving stress, decreasing isolation, and increasing knowledge and ability to access community resources. The Extension Educator interviewed nine grandparents four months after completion of the program and asked what were the benefits of their involvement. One gained legal custody of her granddaughter. One said "I don't react as quickly to the girls and I don't feel guilty anymore" (about them not being with their mother). One indicated, "I am a lot more patient in caring for and disciplining my grandson." One gained understanding of the implications of bipolar disorder and accessed local mental health service. One indicated that now she is clear on her goals (to gain custody of my grandson) and role as an advocate and one cited better understanding of child development.

The Historic Catskill Point Strategic Planning Process

Key Themes: Community Development, Tourism Development, Leadership Training and Development

The Historic Catskill Point (HCP) sits at the confluence of the Hudson River and Catskill Creek in the Village of Catskill and represents a unique resource in Greene County, a site of historical, ecological and economic significance. The County-owned facility was renovated in 1999 and became the site of many events and festivals as well as a weekly Farmers and Artisans "Riverside" market each Saturday from June through October. However, after the first few years of operations at the HCP it became clear that the facility offers tremendous potential as an entry point and jewel for Greene County and the region. It was also clear to county and community leaders that in order to maximize the potential of the HCP an effort was needed to establish an inclusive vision and strategic plan for the facility that addressed governance, staffing, scheduling, promotion and established clear rules and regulations for use of the facility.

Cornell Cooperative Extension submitted a proposal to the County Administrator in November of 2002 to undertake a facilitation role about the HCP. The proposal outlined a process that extension would lead that would result in the following outcomes: a mission and vision statement would be adopted to guide future planning for the HCP; a governance structure would be proposed; policies would be drafted and sent to the Legislature recommending procedures for scheduling of events, fee structures and marketing strategies; implementation plans would be proposed for addressing long term challenges such as parking; and, priorities set for future projects and enhancements to be pursued through outside funds. The county accepted the proposal and educators developed a four session strategic planning process that took place during the months of January through March. All of the key stakeholders were invited to participate in the process that resulted in a strategic plan that was later adopted by the county legislature, including the adoption of the HCP Advisory Board that became a standing committee within the Greene County Tourism Promotion Department.

The Greene County Legislature adopted the strategic plan as a working plan for the HCP and also formed the HCP Advisory Board as a governance structure within the County Department of Tourism Promotions. The County retained Cornell Cooperative Extension for 2003 to serve as the facilitator of the advisory board, organizing agendas, planning and facilitation of meetings and

ensuring that progress was made towards implementation of the strategic plan. In addition, the following impacts have occurred during 2003. The Riverside Market had its most successful year with a significant increase in sales and attendance. The County Legislature adopted a rules and regulations document drafted by the HCP advisory board and these detailed operational guidelines will be implemented in 2004. A Historic Catskill Point Manager was hired by the County, as recommended in the strategic plan, to provide day-to-day management and promotion of the site. All members of the HCP advisory board have agreed to continue serving in 2004 and Cornell Cooperative Extension will once again serve in a convener/facilitator role. The advisory board has submitted over $300,000 in grant requests to support the highest priorities for site enhancement as outlined in the strategic plan. Several small grants have already been successfully obtained.

Power Partners Financial and Energy Education Program

Key Themes: Family Resource Management, Children, Youth and Families at Risk

Low and limited income households in Cortland County find it difficult to meet the cost of the energy used in their homes. While the cost of energy is a major household expense for all households, it is even more of a burden for low and limited income household, consuming resources needed for other basic living expenses. Many find themselves relying on assistance programs year after year that, while they provide cash assistance to solve the immediate crisis, offer no long-term solution. Consumers in this situation find it difficult to build any economic security for themselves and their families. CCE-Cortland worked with CCE-Tompkins County and New York State Electric and Gas (NYSEG) to develop a financial literacy and energy education program that is provided to the participants in NYSEG's low and limited income energy assistance program Power Partner. The program is designed to improve the economic security of the participants through a combination of improved financial management practices and energy efficiency education and improvements to the home.

Cortland County residents who have participated in the Partners program are provided with CCE developed financial management and energy education materials and workshops to assist them in getting the most from the limited finacial resources available to them and to reduce the amount of energy used in their homes. As a result of the program, over 50% of program participants report improvement in key money management practices such as paying bills on time, having enough money to meet monthly expenses, setting goals, setting up a spending plan and starting to save for emergencies. NYSEG reports that 89% of Power Partner program participants now pay their bills in full and on time, avoiding late fees and interest charges and feeing up money that can be used to cover other basic living expenses. Participants have been able to have energy improvements (furnaces, insulation, appliances replaced) done on their homes at no cost, thus reducing their cost for energy and improving their ability to make ends meet financially.

STAKEHOLDER INPUT PROCESS

During this reporting period, the stakeholder input approach to statewide program development jointly utilized by Cornell Cooperative Extension (CCE), the Cornell University Agricultural Experiment Station (CUAES), and the New York State Agricultural Experiment Station (NYSAES) since February 2001 continued to develop and mature. Program advisory councils and program work teams strove to improve program focus, relevance, development, and priority-setting via greater stakeholder engagement, campus-field staff interaction, and research-extension integration.

Five Program Councils address each of the common CCE/CUAES theme areas (including *Community and Economic Vitality, Quality of Life for Individuals and Families, Natural Resources and Environment, Youth Development,* and *Agriculture and Food Systems*). Each council is composed of external stakeholders, Cornell department chairs, and county extension association executive directors. In all, the total number of individuals serving on the councils tallies ove 130, including over 60 externals. The Councils advise the directors of CCE and CUAES on annual statewide program priorities, review PWT performance and "gaps" in programmatic coverage, and comment on the relevancy of preproposals seeking FFF support.

For the FY04-05 FFF funding cycle, the Program Councils were challenged by the directors of CCE/CUAES/NYSAES to develop more highly focused priorities. Previously, the councils (and their predecessor advisory committees) developed and conveyed long lists of detailed annual program priorities in each of their theme areas for inclusion in the FFF RFP. By June 2004, the councils succeeded in identifying a limited number of critical priorities in each theme area to be addressed in faculty preproposals. These priorities are incorporated in our FY05-06 Plan of Work Update.

Examination of these new focused priorities revealed one obvious focus area that reached across the interests of several of the councils-- the need for improved land use management and practices in rural landscapes. Given this commonality of council interest and concern, CCE and CUAES issued as special call for integrated (research-extension) preproposals in land use, offering funding support up to $100,000 annually over 3 years. Fifteen "Special Call" preproposals were submitted in late 2003 for funding during the 2004-05 cycle.

The PCs held their third annual conference on the Cornell campus during the week of January 13, 2004. A new conference format jointly convened all 5 councils in plenary session for the first time. Council members expressed satisfaction with this format change, indicating that it allowed for new perspectives and dialogue on the needs faced by stakeholders from different sectors and walks of life. During the conference, the councils viewed a faculty presentation on the socio-economic and demographic trends affecting New York State, and also worked in small discussion groups to revisit, share, and refine the focused priorities generated during summer 2003.

A publicly-accessible website (http://www.cce.cornell.edu/admin/program/pwts) provides comprehensive background and details about the Program Council-Program Work Team structure and process, including listings of works teams and councils, membership information, public announcements, originating PWT petitions, and PWT annual reports.

Since 2001, thirty-eight (38) program work teams have been authorized and supported to develop and deliver integrated applied research and extension programming across the state. All PWTs were

self-selected and self-directed affinity groups of external stakeholders, county extension educators, and campus-based researchers and extension specialists. PWTs were required to identify program needs in their selected issue areas and carry forth plans of work to meet those needs. PWTs were expected to nurture research-extension integration, to encourage campus-field interactions and collaborations, to take multi-disciplinary approaches, to evaluate their efforts, and to involve their external members in all aspects of their work. They were also expected to seek external funding support, and to report annually on their accomplishments to an appropriate Program Council. PWTs were sanctioned for 2 or 3 years. Approximately 750 individuals serve on at least one PWT, including more than 260 external stakeholders. The externals come from the business, banking, local/state/federal government, non-government organization and educational sectors.

Noteworthy in 2003 was the effective generation of significant external support by several PWTs for their efforts; the development of a petition to establish a new PWT in Parenting Education (received *without* an accompanying request for FFF operational support!); decisions by five teams to continue their program development efforts despite the terming of their operational FFF support; at least 3 examples of PWTs joining forces to convene collaborative planning, program development, or public educational sessions; and a "first" -- an external stakeholder volunteering and being elevated to the position off-campus PWT co-chair.

Beyond the new program development and stakeholder input structure/process, each of CCE's 55 county extension associations continued to work closely with stakeholders in their counties via stakeholder participation in their local governance (i.e. board of directors) and program guidance (i.e., advisory committee) structures. Formal advisory committees were also used to guide New York City Extension programs. In 2002, a statewide Council of Extension Associations was established (as recommended in the *Committed to Excellence* plan), providing another venue for enhanced stakeholder input and engagement within the CCE system. Well over 60,000 stakeholder volunteers from all walks of life continued to participate and assist in the direction, priority setting, and delivery of extension programs throughout the state. CCE local plans of work undergo formal review every four years and are updated at the mid point of the four-year period. A major review was carried during 2003 and will be reported upon in our FY04 annual report. At least 5,000 audience members and volunteers contributed to local and statewide "environmental scanning" data gathering to inform this process.

Lastly, the colleges of Agriculture and Life Sciences and Human Ecology, and numerous academic departments and specialized programs within those colleges maintain active advisory committees or councils having broad external stakeholder representation. These groups help to bring relevancy and focus to program decision-making and investments.

PROGRAM REVIEW PROCESSES

A revised program review process was implemented in 2002-03 to reflect our new program development and stakeholder involvement processes.

Review Process (Research Projects and Extension Projects with Designated Funding)

0. Principal investigators are asked to consult program priorities (established as outlined in the stakeholder involvement section above) and develop short pre-proposals for new or revised projects funded by Federal Formula Funds.
0. Pre-proposals are reviewed for purpose and relevancy by advisory Program Councils (see Stakeholder Involvement section), the principal investigator's department chair, Extension Program Associate/Assistant Directors, and Experiment Station Directors (Ithaca and Geneva). A new review form was developed for use by off-campus stakeholders serving on the councils. Pre-proposals are discussed with department chairs during annual budget conferences to put work in broader perspective of department program.
0. Pre-proposals are accepted/rejected; accepted proposals are developed into full project outlines by the Principal Investigator.

For research proposals:

0. The Department Chair recommends two or three peer reviewers to the Director's Office.
0. The Director's Office obtains the necessary reviews in accordance with CSREES rules using standard format.
0. Changes suggested by the peer reviewer are conveyed to the Principal Investigator. Peer reviewer names are not revealed to the Principal Investigator.
0. The revised proposal, with required CRIS forms, is submitted to the Director's Office.
0. The Director's Office submits the package to CSREES along with an attached statement certifying the peer review was completed.
0. Reviews are kept on file in the Director's Office.
0. The Director's Office attaches a statement to the proposal and sends this with the proposal and Form 10 to the CALS Research Office.
0. After approval by CSREES, funds are allocated to the appropriate research account.

For extension proposals:

4. Extension Program Directors receive Program Council and Dept. Chair comments on extension preproposals related to their program areas.
4. Extension Program Directors rank/recommend extension preproposals.
4. Extension Program Directors meet with Experiment Station (Ithaca and Geneva) staff to discuss potential R-E linkages among extension preproposals.
4. Extension Program Directors finalize Smith-Lever funding recommendations and communicate decisions and needed modifications

Cornell Review Criteria

0. Anticipated significance of results relative to current priority needs or opportunities
0. Scientific merit of objectives
0. Clarity of objectives
0. Appropriate methodology
0. Feasibility of attaining objectives

0. Accomplishment during preceding project (for revisions)
0. Research performance and competence of investigator(s)
0. Relevance of the proposed work to regional or national goals

Review Process Calendar

The calendar of our new, integrated research and extension review process follows below (dates are approximate):

Date	Step
SEP 20	Priorities finalized for federal formula funds (FFF) preproposal RFP
OCT 1	RFP for preproposals issued
NOV 15	Deadline for FFF preproposal submission
DEC 3-JAN 15	Preproposals provided to Program Councils for review
JAN 13-17	Annual Program Council Conferences (campus); discussions held on preproposal relevance. Preproposals available to P.I.s' department chair on-line for review and comment
FEB 25	Extension Program Directors' written comments on program-related RESEARCH preproposals due. Deadline for Program Councils and department chairs to comment on all preproposals.
MAR 6	Extension Program Directors receive Program Council and Dept. Chair comments on extension preproposals related to their program areas
MAR 9 – APR 30	CCE-CUAES program conferences with department chairs
MAR 18	Extension Program Directors rank/recommend EXTENSION preproposals Recommendations are forwarded to CCE director and CCE Assoc. Director for Finance
APR 1	Extension Program Directors meet with Experiment Station (Ithaca and Geneva) staff to discuss potential R-E linkages among extension preproposals
APR 8	Extension Program Directors meet to finalize Smith-Lever funding recommendations, which are then forwarded to CCE Director and CCE Associate Director for Finance
APR 1-15	CUAES and NYSAES Directors consider all research preproposals and make tentative funding decisions
APR 15-30	Joint session of CUAES, NYSAES and CCE Directors and Extension Program Directors to discuss/coordinate funding decisions and notification
MAY 15-30	FFF preproposal decisions communicated to principal investigators and Program Councils
JULY 1	FFF full proposals due
JUL-AUG	FFF full proposals peer reviewed
AUG	Focused priorities identified by Program Councils are incorporated into the RFP for the next FFF cycle
OCT 1	FFF FY begins; proposed projects funded

EXTENSION MERIT REVIEW

As described above, our governance and advisory structures, including the Program Councils, serve primary roles in identifying and determining merit of extension initiatives. In addition, program conferences are conducted with each academic department. In those sessions, extension and applied research priorities of each unit are discussed, accomplishments are summarized in general (e.g., number of educational activities, number of people attending, number of fact sheets, bulletins, videos, documented outcomes and impacts, etc.), and products and outcomes from funded projects are reviewed. The indicators of performance are discussed relative to current program priorities, and extension investments for each unit are adjusted accordingly. Extension projects receiving designated funding are an integral part of the review process outlined above. Final funding decisions are recommended by the extension program directors, all of whom serve as liaisons to Program Councils and work closely with a number of Program Work Teams.

MULTISTATE AND JOINT ACTIVITIES

Our multistate, multi-institutional, and multi-disciplinary activities occur within the same stakeholder involvement and program development processes as in-state activities and as such are directed to priority needs of priority audiences. Our program development structure for federal formula funds is interdisciplinary by definition (see stakeholder involvement and review processes above). All projects are expected to outline expected outcomes and report against them. We have taken steps to strengthen specific documentation of integrated activity and multistate programs and have included evidence of such activity directly in our pre-proposal and reporting criteria. The fundamental purposes of these efforts are to strengthen quality of programming by bringing together required disciplines and to assure efficient use and maximum leveraging of federal formula funds. The sections below and Appendices B and C provide additional detail.

MULTISTATE EXTENSION ACTIVITIES

When we set our multistate extension goals, we challenged our system by significantly exceeding what would have been the minimum required target based on 1997 expenditures. The mandated minimum based on this calculation would have been only about 1% of expenditures. Rather, we set targets of 3%, 8%, and 12% for FY00, FY01, FY02 and beyond because we fundamentally believe in the value of multistate collaboration. We are pleased to report that we have met our 12% target for the second year in a row despite extreme budget pressure within New York and collaborating states that greatly reduces flexibility for undertaking new multistate initiatives. Multistate extension activity is documented in Appendix B.

INTEGRATED RESEARCH AND EXTENSION ACTIVITIES

During 2003 we continued and expanded upon our integrated research and extension collaborative strategy as outlined in the approved plan of work. Please see the Stakeholder Involvement Section above for a description of our ongoing collaborative program planning and development approaches. Background information on our program development structure and process is available at: http://www.cce.cornell.edu/admin/program/pwts/ Specific documentation of integrated activities is included in Appendix C.

MULTI-COUNTY INITIATIVES

Multi-county initiatives are fostered through active encouragement of formal and non-formal program partnerships. At present time, there are 8 regional extension program teams involving 30 counties in which Cornell University is a formal funding partner. In addition, at least 12 collaborative relationships involving at least 30 counties exist without formal Cornell sponsorship.

As reported last year, electronic connectivity is one of our key strategies for promoting multi-county initiatives. We continue to add to our regional network of electronic classrooms and now have more than 20 across all regions of New York State. These are used increasingly for collaborative programming and professional development as well as facilitating internal advisement and governance by connecting partners across many sites.

Appendix A – FY03-04 Applied Research and Extension Priorities Identified by Program Councils

Natural Resources and Environment Priorities

(Program Council ranking by order of importance, high to low)

- Managing agricultural and environmental resources for long-term sustainable solutions that reduce use of chemical pesticides and fossil fuels
- Refining land use planning approaches and practices, especially growth management strategies that reduce water quality impacts
- Improving livestock waste management systems and approaches to control odor and reduce other environmental problems
- Analyzing and restoring watersheds, especially via incentive-based approaches to total maximum daily load (TMDL) implementation, and evaluation of where TMDLs are as appropriate management strategy
- Improving upland watershed management practices to lessen adverse impacts on estuary and marine water quality
- Improving the management of natural resources, especially with regard to recreation and tourism, commercial harvesting, human-animal conflicts (deer and birds, specifically management of Canadian geese), and park management
- Exploring alternative energy usage in agriculture
- Managing the impacts of climate change
- Developing competitive alternative agricultural productions systems
- Enhancing urban and community forestry and related management practices
- Assessing personal care product and prescription drug impacts on run-off and drinking water
- Studying salt-to-fresh water conversion feasibility and alternatives, as made necessary in times of drought, especially for Hudson River communities
- Analyzing and improving indoor air quality

Community and Economic Vitality Priorities

Building community capacity based on comprehensive research, models and tools

- community leadership and governance
- community visioning and strategic planning
- sustainable economic development

Developing effective and collaborative land use management approaches and policies that enhance connections among economic, environmental and infrastructure issues

- main street revitalization, working landscapes, water quality, affordable housing
- smart growth/quality communities
- rural-urban interface

Nurturing non-profit and neighborhood group development

- leadership and volunteer development
- grant writing and fund development education

Advancing community based agricultural economic development

- mainstreaming agricultural economic development
- enhancing local food systems (rural, suburban and urban)

Promoting workforce and entrepreneurial development
- strategic workforce development planning
- workforce composition research
- financial management education
- e-commerce

Cross-cutting themes (for these priorities)
- improving Public Issues education and community decision making approaches
- including and reaching out to under-represented groups
- promoting citizenship and community participation
- building collaborative partnerships

Quality of Life for Individuals and Families Priorities

(Numbers within each grouping indicate rank order)

Overarching Priority: Promoting Tolerance and Acceptance; Embracing Diversity

Group A--Nutrition, Health, and Wellness
0. Advancing healthy lifestyles, safety, and wellness
0. Improving food security
0. Enhancing competence in practice of nutrition

Group B--Life Course
0. Improving caregiving for children and elders
0. Strengthening family support across the life course--young to aging families and elders
0. Reducing stress and violence

Group C--Environments
0. Improving the quality of housing, home and grounds, school, and workplace environments and the horticultural environment in our communities.

Group D--Family and Consumer Economics
0. Enhancing personal skills in household economics, financial literacy, and resource management.

Agriculture and Food Systems Priorities

(The italicized items (1-6) were given clear consensus priority by the Agriculture and Food Systems Program Council.)
- *Managing animal wastes through whole farm nutrient management plans and practices*
- *Managing human resources, especially related to identifying, hiring, and retaining new workers and the education of middle management and owners*
- *Identifying market channels for value-added products*
- *Minimizing biohazards in the food chain*
- *Managing risk to reduce stress on resources and increase stress resistance*
- *Increasing production efficiency*

- Improving product quality
- Promoting NYS agriculture to youth, non-farm citizens, and the world's consumers
- Understanding and promoting agricultural economic development within the context of community
- Improving weed controls and developing herbicide resistant crops

- Educating the public on health related to genetically engineered organisms (GEOs)
- Managing turf grass
- Improving water resource management using precision agriculture and irrigation
- Managing farm business product pricing, profit maximization, and decision making
- Studying and advancing intra and interstate regionalism
- Enhancing animal welfare
- Meeting the challenge of competitive imports, especially Canadian
- Marketing agricultural products
- Analyzing agricultural businesses
- Creating new plant varieties
- Understanding the impact of retail level consolidations on production agriculture
- Increasing the efficiency and value of food manufacturing and marketing operations across agriculture

Youth Development Priorities

- Defining and applying principles of positive youth development
- Defining curricular standards
- Advancing life skill development (e.g., workforce/ career development, citizenship, caring, success in education)
- Enhancing science and technology literacy
- Developing and applying youth community service models and methods

Appendix B – Multistate Extension Activities Report

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities

Institution Cornell University
State New York

Check one: **_X_ Multistate Extension Activities**

Title of Planned Program/Activity	FY2003 Expenditures
Natural Resource, Agriculture and Engineering. Service	15,943
Human Resource Management	13,000
Milk Marketing	48,000
Farm Net	12,500
Dairy Waste Management	60,000
NYS 4-H Horse Program	36,000
CED Tool Box	14,178
Managing Waste	65,000
West Nile Virus	35,000
Calibration of Simple Amino-Sugar Soil Testing	38,500
Building Capacity and Sustainability in Workforce Food Systems	172,000
Insects: Bio & Pest Management for Adults & Youth	43,005
Food Safety	22,182
Youth Program Leadership	36,500
Educational Program for Professional Horticulturists.	38,000
Development of Synchronous & asynchronous Hort-Dist. Learning	26,500
Potato Breeding	2,000
Crop & Seed Improvement Project	10,000
Landscape Horticulture Industry	19,500
Lake Erie Regional Grape Program	16,193
Diversity Program	41,800
Indoor Air Quality	13,000
Food & Nutrition Prof Dev Initiative	92,000
Family & Social Welfare	34,000
Adolescent Sexuality Pregnancy Prevention	10,000
Youth Program Training, & Policy Development	93,000
Family Economics & Resource Management	40,000
Health & Safety Issues Related to Textiles & Clothing	15,000
Water Quality Education for Individuals & Community	8,000
Fiber Science & Textile Prog for Youth	23,000
Total	**1,093,801**

Helene R.Dillard March 1, 2004
Form CSREES-RPT (2/00)

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities
Brief Summaries

Institution Cornell University
State New York

Check one: _**X**_ **Multistate Extension Activities**
___ **Integrated Activities (Hatch Act Funds)**
___ **Integrated Activities (Smith-Lever Act Funds)**

Our total multistate extension expenditures of $1,093,801 represents 12.10 % of our total FY03 approved Smith Lever 3b & 3c funding of $9,040,013 exceeding our FY2003 target of 12.0%. The FY2003 project listing follows.

Natural Resource, Agricultural, and Engineering Service
This is a regional effort based in the Biological and Environmental Engineering Department. Purposes are to improve competitiveness and sustainability of agricultural and natural resource enterprises and promoting food safety and environmental enhancement. Primary activities include publishing resource materials and conducting conferences on current issues. Thirteen states plus the District of Columbia currently participate. For more info: http://www.nraes.org

Human Resource Management Extension Program
This project is based in the Applied Economics and Management Department and collaborates with extension faculty and educators in Pennsylvania, Vermont, Connecticut, New Hampshire and Maine. The focus is human resource management and labor regulations and policy applicable to agricultural producers an includes implications of changing workforce demographics.

Milk Marketing
Part of a national research and extension program that provided firs and policy makers with timely, this Applied Economics and Management department program provides relevant information on dairy markets, policy options, and business performance benchmarks.

Farm Net
The primary purpose of this Applied Economics and Management department based program is to develop and sustain strong farming families often in the face of significant stress. There are ongoing collaborative relationships with similar programs in New England, Pennsyslvania, Iowa, and Wisconsin and additional connections with New Jersey and Maryland.

Dairy Waste Management
This project of the Department of Agricultural and Biological Engineering involves extensive collaboration with the primary dairy industry states.

NYS 4-H Horse Program
This Animal Science Department effort is a broad educational program addressing animal science, equine science, veterinary science, animal welfare, health and diseases, etc. Important multistate collaborations include the American outh Horse Council and the Northeast Regional Leaders Forum. Collaborative training initiatives have involved Pennsylvania and New Jersey.

Community Economic Development Toolbox
This is a collaborative project of Penn State University and Cornell the latter through our Community and Rural Development Institute. For program details: http://www.cardi.cornell.edu/cd_toolbox_2/cdindex.cfm

Managing Wastes
This project based in the Center for the Environment works to improve management and recycling of organic residuals from farms, residences, insitituions and businesses through new and continued research and outreach programs. It is part of a broader multistate effort that involves New Hampshire, Pennsylvania, Massachusetts, and New Jersey.

West Nile Virus Resources
This project is based in the Cornell Center for the Environment and includes extensive collaboration with states in the New York Metropolitan area and elsewhere. For information: http://www.cfe.cornell.edu/erap/wnv/WNVupdate.html

Calibration of a Simple Amino-Sugar Soil Test for Determining Sites that are Non-Responsive to N Fertilization of Corn
The Crop and Soil Sciences Department in collaboration with University of Illinois is conducting this field test of an approach developed at the University of Illinois.

Building Capacity and Sustainability in Extension Workforce Development Programs for the Food System
This program is based in the Departments of Education and Policy Analysis and Management and includes collaborators at Rutgers, Delaware State University, and Penn State University. It is a comprehensive package of workforce needs assessment and training through various employment related organizations.

Insects Bio & Pest Management for Adults & Youth
This is a project of the Department of Entomology to develop educational materials that can be readily adapted by school, after school, and informal educational programs for youth in the subject area of entomology and gardening. Direct collaboration occurs with several northeastern states.

Food Safety
This project of the Department of Food Science includes extensive collaboration with food safety resource persons nationwide.

Youth Program Leadership
This Horticulture Department project is to develop, implement and evaluate materials for youth and adult gardening audiences that address core principles of the plant sciences. Direct collaboration occurs with a Texas A&M faculty member and several regional and national gardening organizations.

Educational Program for Professional Horticulturists
This Horticulture Department project develops, implements, and evaluates programs on environmentally responsible turfgrass and landscape management that results in reduced reliance on pesticides. Direct collaboration occurs with campus experts across the northeast region and national sources.

Development of Synchronous and Asynchronous Horticulture Distance Learning for Cooperative Extension
Based in the Horticulture Department, this project is working with the Natural Resource, Agriculture and Engineering Service to develop and deliver this effort through the 14 northeast land grant colleges. It includes modules for both commercial and consumer horticulture audiences.

Potato Breeding
This Plant Breeding Department aims to develop grower/processor consensus for release of improved potato varieties. This is related to a northeast regional project and involves cooperators in Pennsylvania, Maine, New Jersey, Virginia, and North Carolina.

Crop and Seed Improvement Project
This is a project of the Department of Plant Breeding to develop and promote use of foundation and certified seeds of superior crop varieties. Collaborators include the Northeast Seed Alliance and resource persons particularly in Pennsylvania and Maine.

Landscape Horticulture Industry
This project of the Plant Pathology department involves collaboration with horticulture pathology experts nationwide.

Lake Erie Regional Grape Program
On-going, joint research and extension program with Penn State serving the grape industry along Lake Erie. For more info: http://lenewa.netsync.net/public/lergphom.htm

Diversity Program
Cornell Cooperative Extension is one of the Change Agent States for Diversity national initiative. Key resources are available at: http://www.cce.cornell.edu/diversity/

Indoor Air Quality
This is a project of the Department of Design and Environmental Analysis that develops approaches to protect public health by reducing risks associated with indoor air pollution. It is a joint training project with New Jersey and linked to the CSREES/HUD nationwide “Healthy Homes Initiative.”

Food & Nutrition Professional Development Initiative
This is a project of the Division of Nutritional Sciences intended to provide the latest research-based information to professionals, paraprofessionals, and educators in food and nutrition related fields. It includes the nationally used WWW resource "Ask the Nutrition Expert" and involves collaborators in many states via active list-servs.

Family and Social Welfare
This project of the Department of Policy Analysis and Management aims to strengthen public sector responses to community issues. It involves multi-state instructional resource development and sharing with Pennsylvania and Kentucky being key partners.

Adolescent & Sexuality Pregnancy Prevention
This project of the Department of Policy Analysis and Management is a curriculum development effort involving collaborators from several states.

Youth Development Training and Policy Development
This Department of Human Development based project includes collaborators in Wisconsin and California and many private youth organizations. It is both a professional development strategy for youth service providers and a means for informing local youth policy development.

Family Economics and Resource Management
This project based in the Department of Policy Analysis and Management includes colleagues in four Cornell Departments and land grant collaborators in Minnesota and New Jersey. It is directed to creating financial management curricula for use by teachers, human service providers, and community organizations.

Health & Safety Issues Related to Textiles & Clothing
This Department of Textiles and Apparel project focuses on textiles and clothing systems and worker practices and attitudes relative to reducing pesticide exposure of handlers, workers, and their families. Collaborating states include California, Iowa, Illinois, Maryland, Michigan, Nebraska, Oklahoma, and Texas.

Water Quality Education for Individuals & Community
A project of the Department of Textiles and Apparel, this effort focuses on household water supplies and watershed protection. It is linked to several multistate and national initiatives including Home*A*Syst and the NEMO project.

Fiber Science & Textile Program for Youth
This project of the Department of Textiles and Apparel included developing and evaluating a broad textile program for youth that includes fiber science, lifeskills, community service, computer pattern-making, and cultural arts. Eleven states are participating on a design team.

Appendix C – Integrated Activities Report

Form CSREES-REPT (2/00)

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities

Institution Cornell University
State New York

Check one: ____ **Multistate Extension Activities**
_X_ Integrated Activities (Hatch Act Funds)
____ Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	**Expenditures FY2003**
Research/Extension Integration Grants Program	78,841
Departmental Support for Integrated Activities	1,223417
Total	**$1,302,258**

Daniel J. Decker — **Director**
April 1, 2004 — **Date**

Form CSREES-REPORT (2/00)

Form CSREES-REPT (2/00) – Smith-Lever

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities

Institution Cornell University
State New York

Check one: ____ **Multistate Extension Activities**
___ Integrated Activities (Hatch Act Funds)
_X__ Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	**Expenditures FY2003**
Research/Extension Integration Grants Program	33,584
Program Work Teams & Other Projects	160,032
Departmental Support for Integrated Activities	2,191,768
Total	**$2,385,384**

Helene R. Dillard — **Director**
April 1, 2004 — **Date**

Form CSREES-REPORT (2/00)

Form CSREES-REPT (2/00) – Hatch and Smith-Lever Integrated Activities Narrative

U.S. Department of Agriculture
Cooperative State Research, Education and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Multistate Extension Activities and Integrated Activities
Brief Narrative

Institution Cornell University
State New York

Check one: ____ **Multistate Extension Activities**
_X_ **Integrated Activities (Hatch Act Funds)**
_X_ **Integrated Activities (Smith-Lever Act Funds)**

For the past decade, we have progressively integrated planning processes for federal formula fund allocation for research and extension. Our joint plan of work was a natural extension of that effort. In the first year of this plan, our joint research and extension Statewide Program Committees reviewed virtually all project support proposals and allocations were made reflecting that input. Now that the Program Council/Program Work Team structure—that replaced the Statewide Program Committees—is in place (see Stakeholder Involvement section), Program Councils establish priorities that guide our call for proposals and provide relevancy reviews for all proposals. In identifying our target percentages for integrated activities, and in accordance with the final administrative guidance, we used two criteria:

0. Review and support of projects by Program Councils, OR,
0. Support to persons with joint appointments

Research/Extension Integration Grants Program
Please see approved FY00-04 plan of work page 36, paragraph 4 for a description of this program. (Note that we now are phasing out this separate funding mechanism because we include research/extension integration as a key criterion in funding all Hatch and Smith-Lever projects.) Smith-Lever project funds in FY03 totaled $33,583 while Hatch funds totaled $78,841. Projects included:

- An Analysis of Market Opportunities and Marketing Options for Expanding the Northeast Stone Fruit Industry
- Citizen Horticultural Science
- Evaluation of Weed Suppressive and Pest Resistant Ornamental and Grass Groundcovers for Use in the Landscape
- Linking Local Foods and the College Cafeteria to Strengthen Community Food Systems
- Strengthening Neighborhoods: A Participatory Action Research Initiative
- The Engaged Community Project (ECP): Participation as a Cornerstone of Main Street Revitalization
- Do Corn Silage Hybrids Respond Similarly to Kernel Processing?
- Community Design Service: Linking Teaching, Applied Research and Extension
- Integrated Research and Extension Approach to Community Economic Development

- Research-to-Practice Partnership in the Evaluation of Community Nutrition Outcomes for Low Income Audiences

Program Work Teams and Associated Projects
Our research/extension Program Work Teams (PWTs) are described specifically in the Stakeholder Involvement section of this report. During FY03, $160,032 of S-L funding was provided for PWT projects and activities.

Departmental Support for Integrated Activities

As per the final administrative guidance, this item consists of support to programs carried out by persons with joint extension and research appointments in academic departments.

Cornell Cooperative Extension provided Smith Lever 3 b and c funds totaling $2,191,768 to support faculty and staff who were responsible for research and extension programs in the Colleges of Agriculture and Life Sciences and Human Ecology and the Geneva Experiment Station. Total faculty supported equaled 38.29 FTEs and Senior Extension and Extension Associates equaled 8.88 FTE. These expenditures are fully documented by department and university financial and human resource records.

Smith-Lever Integrated Activities Target Percentage Attainment

The combined support for Research/Extension Integration Grants, Program Work Team Projects and Activities, and Departmental Support for Integrated Activities was $2,385,384, which is 26.4% of our total S-L 3b and 3c funds for FY03 thereby exceeding our target of 25%.

Hatch Act Integrated Activities and Target Percentage Attainment

The Cornell University Agricultural Experiment Station and the New York State Agricultural Experiment Station provided Hatch and Hatch-Multistate funds totaling $1,302,258 to support faculty and staff who were responsible for integrated research and extension programs in the Colleges of Agriculture and Life Sciences and Human Ecology and the Geneva Experiment Station. This is 25% of our total 2003 Hatch Act Appropriation, thereby meeting our target of 25%. Total research and extension appointments equaled 74.5 FTEs for faculty who were responsible for integrated research and extension programs in the Colleges of Agriculture and Life Sciences and Human Ecology and the Geneva Experiment Station. These expenditures are fully documented by department and university financial and human resource records.