PLAN OF WORK

ANNUAL REPORT
OF
ACCOMPLISHMENTS AND RESULTS

PURDUE UNIVERSITY
COOPERATIVE EXTENSION SERVICE

FEDERAL FISCAL YEAR
2006

Submitted by:

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April 1, 2007

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PREFACE

The "Indiana Annual Report of Accomplishments and Results" which follows provides information about accomplishments resulting from work performed by faculty and staff of the Purdue University Cooperative Extension Service during FY 2006. The report is organized so as to correspond with the five national goals and our plan as submitted under those goals. The Annual Report includes six components: Planned Programs; Stakeholders' Input Process; Program Review Process; Evaluation of the Success of Multi and Joint Activities; Multi-state Extension Activities; and Integrated Research and Extension Activities. This report indicates acceptable progress toward our overall goals.

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

Through research and education, empower the agricultural system with knowledge that will improve competitiveness in domestic production, processing, and marketing.

Overview

Purdue Extension focused on several programs related to Goal One. For FY 2006, a total of 1105 contact days were devoted to primarily three programs: Agricultural Competitiveness, Horticulture and Turf, and Alternative Agricultural Enterprises and Practices. Through state-wide and county based workshops, test plots, conferences, and educational materials, extension staff concentrated on crop and animal production systems, marketing, and risk management strategies that improves production efficiencies, makes producers more competitive, and adds value to Indiana agricultural products. Indiana's state population is 99% non-agricultural. Urban needs place a great demand on the state's natural resources as well as Purdue Extension's resources to meet these needs. The increased demand for home and consumer horticulture has caused us to reallocate resources to deliver programs and educational information to areas such as Master Gardeners, urban gardening, and life-style farms. These efforts resulted in a reported 614,345 people being contacted among these three programs.

Educating the general public on agricultural animal and crop issues is important if producers are to remain competitive and have their products accepted. Both adults and youth were introduced to the various aspects of environmental issues that are everyday challenges to the farmer and to the new emerging technologies or adaptive tools that are available to him as a means to improve his competitiveness. This past year field and campus staff, combined with help from our state and federal conservation partnering agencies, devoted 2,078 contact days to programs that exposed 317,926 adults and school aged youth to an awareness and understanding of agricultural issues.

Indiana is experiencing a rapid growth in diversification of crop and livestock production opportunities. Producers in Indiana have faced a multifaceted farming shift over the past decade, whereby small to mid-size farmers of traditional corn, soybeans, and swine production have had to take off-farm employment, and large producers have had to diversify their cropping system in order to stabilize their economic situation. Many traditional agronomic crop and livestock producers are adding horticultural crops to their mix of crops and are contracting with food processors for an increasing acreage of Indiana farmlands. This is a new but rapidly increasing area of outreach for the state, and Purdue Extension is building a local and statewide agency network to address this demand for transitioning to alternative opportunities. Last year Purdue Extension spent 678 days and made 34,491 direct contacts with citizens of the state who were exploring

the feasibility of alternative agricultural opportunities, which ranged from home-based businesses to organic crop and livestock production to direct marketing of produce.

Purdue Extension works closely with the extension programs in other states on issues of agricultural competitiveness. Many of the campus Extension staff has research appointments. They use these appointments to address the outreach needs of Indiana crop and livestock producers. Ongoing research and extension programs, in collaboration with research and extension staff in other states, are addressing the issue of on-farm quality assurance of value-added grains and livestock production as well as working on the proper and legal use of animal manure as crop nutrients. Several examples on this collaboration will be given in the Key Themes section of this report.

Purdue Extension feels that the accomplishments we are making in the issue areas identified under Goal One are positive and are meeting the intended objectives and goals that the stakeholders identified as needs for the state. Short-term outcomes of awareness and knowledge gained are being accomplished in our Agricultural Awareness programs, while we are noticing intermediate and long-term outcomes of adoption of practices and technology changes with the other identified issues. Great strides have been made at improving the competitiveness of the beef cattle and small diversified producers of Indiana through the efforts of Purdue Extension programs.

Priority programming for Goal 1 topics are determined with input from local Extension Boards, volunteer planning groups, and collaborations with cooperating agencies, organizations, and educational networks at the county and state levels interested in the same program outcomes.

Resources: Approximately $ 2,273,838.50 and 48.9 FTEs have been invested in Goal 1. This is a best estimate and these are not presented as auditable numbers.

Key Theme: Adding Value to New and Old Agricultural Products

Demand for Certified Meat Products

Consumer demand for process verified products appears to be rising, however it is unknown whether consumer willingness to pay exceeds the costs of certifying compliance with process standards. In addition, it is not clear to what extent markets will expand to increase market access for farmers who see dwindling alternatives in the marketplace. Estimated the willingness to pay for natural pork products and determined the potential for market expansion with the introduction of such a certified product. This was done in the context of an assumption of heterogeneity on the part of consumer demand whereas previous theoretical work assumed that all consumers uniformly preferred the certified product.

Impact: The results of our analysis suggest that there is a large segment of consumers (~43%) who have substantial willingness to pay for antibiotic free, environmentally friendly, and animal welfare certified pork. The results suggest that as much as 62 % of the market could transition to such a product in the long run. Members of the farm community and groups of farmers are beginning to examine the development of standards for similar products. I have been discussing the details of developing standards and the strategies associated with launching such new products with these groups. Members of the farm community can find new marketing opportunities in the area of natural pork production if they develop appropriate standards aimed at meeting concerns of consumers and use a third party to verify their compliance with those standards. The analysis was developed into a pilot business plan used by the Agricultural Innovation and Commercialization Center at Purdue as a model for marketing a process as a product attribute.

Source of Funds: Smith-Lever, Hatch, State

Scope of Impact: Nationwide

Key Theme: Agricultural Competitiveness

Progress continues in breeder development of CystX® lines, and new observations suggest that that presence of all the CystX® genes are essential for complete protection against the SDS soybean fungal disease.

Progress continues in the development of new commercial lines with CystX®, despite the complex genetics of CystX® technology. Clarification of the relationship between CystX® and the fungal SDS disease is needed. Researchers at Purdue have long observed that field plots planted with our original CystX® lines do not show symptoms of the fungal SDS disease, even when non-CystX® cultivars do. Preliminary field experiments suggest that the degree of protection against SDS is highest when all the CystX® genes are present in soybean lines that are not diluted with seeds of other lines. Reduction in the percentage of the CystX® content in a soybean line, owing to either incomplete inclusion of the CystX® in the line or to contamination with non-CystX® seeds, results in less protection against SDS. In experiments underway in three locations where both SCN and SDS have been problems in other years, CystX® lines showed a few or no symptoms of SDS while the susceptible cultivars or non- CystX® resistant cultivars showed pronounced SDS symptoms. These experiments will be continued.

Impact: Protection against SDS is an additional benefit of planting CystX® lines of soybeans, and should lend impetus to continued development of high-yielding soybean varieties with CystX® resistance to soybean cyst nematode. Although research continues

elsewhere to discover other ways to combat this perennial pest, none has yet been discovered. Introduction of CystX® germ plasm into commercial soybean lines has been slow to develop owing to the complex genetics involved. Demonstrations that the use of CystX® lines can also be a management tool for the fungal SDS soybean disease provides an additional incentive for breeders to increase the numbers of high-yielding CystX® varieties available in all soybean maturity groups.

Source of Funds: Smith-Lever, Hatch, State

Scope of Impact: Nationwide

Key Theme: Agricultural Profitability

Opportunities, Challenges, and the Future Role of the U.S. Crop Input Dealer

Retail crop input dealers have played an important role in the distribution channel for fertilizer, crop protection chemicals, seed, and agronomic services for decades. However, consolidation at the manufacturer and farm level, new crop production technologies such as genetically modified seed, new information technologies utilizing the Internet, and new competitors have all combined to challenge the traditional roles that retail crop input dealers have performed. These firms have been important local employers in many areas. Many of these firms are independent businesses or farmer-owned cooperatives. As retail crop input dealers develop longer-term strategies, information on what the future may hold can be extremely useful. This study explored how retail crop input dealers perceive their future: where are the opportunities; where are the challenges; and what roles do they expect to play in the future? More than 300 retail crop input retailers across the U.S. responded to a survey. The focus of this survey was two-fold: 1) to explore what crop input dealers believe to be the major opportunities and threats facing their firms over the next three years; and 2) to better understand how managers of these firms believe their firm's role in the distribution channel will evolve over the same period. The information has been distributed to the industry through a series of magazine articles, a staff paper, through presentations to trade groups, and an M.S. thesis.

Impact: This study explored how retail crop input dealers perceive their future: where are the opportunities; where the challenges are; and what roles do they expect to play in the future. Key findings suggest that 1) most dealers see their top challenges as internal issues such as insurance cost, access to quality employees, and energy costs; 2) the most important opportunities tend to be product and service focused, and are related to traditional sources of revenue, including seed sales, traditional agronomic services, and precision services; 3) dealers see their future sales and profit mix as including more seed, service, and information sales and profit, with less sales and profit coming from fertilizer and crop protection chemicals; and 4) most dealers see current high profile roles for both

farmers and manufacturers becoming more important in the future, with an increased role in helping farmers comply with government regulations and providing on-going crop management services for farmers, and an increased role in tracking crop input use for regulatory purposes for manufacturers.

Source of Funds: Smith-Lever, Hatch, State

Scope of Impact: Nationwide

Key Theme: Animal Production Efficiency

Pork Production Systems Modeling

Pork producers are striving to produce quality lean pork as efficiently as possible with minimal environmental impact. Feed represents approximately 65% of the costs of pork production. Feeding pigs the optimal levels of essential amino acids and phosphorus will reduce feed costs while reducing environmental impact. Recently a feed additive, PayleanTM has been approved to increase the rate and efficiency of lean growth. The use of PayleanTM must take into account the marking system and product system economies. The use of Paylean must also take the amount of variation that exists amongst the pigs being reared in the grow-finish facility. A stochastic version of the pig compositional model has been developed. The model has indicated that increasing levels of variation between pigs in growth rate reduces the profitability of grow-finish facilities for several reasons including efficient marketing, building use and Paylean use. The research results have been discussed with Elanco technical representatives and pork producers. The results indicate that (1) the profitability of pork production can be increased by the joint optimization of PayleanTM use, nutrition and marketing strategy, and (2) the new animal sorting technology can assist in the development, continued refinement, and implementation of the optimal strategies. Extension articles have been written and refined with input from industry representatives. The results have been discussed with Elanco, the manufacturer of PayleanTM and the manufacturers of animal sorting technology. The model determines the most profitable series of diets in terms of live weight growth, carcass composition, and feed conversion for Paylean-fed pigs for different carcass-value-based marketing systems. The model has been used to establish specifications for a series of diets which maximize profitability for pigs fed Paylean. We also assisted Elanco in the development of a simpler user-friendly version of the computer program which their technical representatives use to demonstrate the optimal marketing systems to commercial producers. Additional research has been conducted to evaluate the use of milk replacers prior to weaning to improve the growth of lightweight pigs and reduce the variation in body weight in the late finishing stages of growth. Data sets have been obtained from large pork producers in which pigs were weaned at different ages and assigned to different milk replacer management. The pigs were then weighed at two week intervals to normal market weights such that each pig had a birth to market weight

growth curve. A stochastic model has been developed in which reproduces the variation in pig growth from birth to market and the nonlinear relationships amongst the early and later stages of pig growth. The model can be used to evaluate alternative early weaning and milk replacer strategies for healthy lightweight pigs form large litters and sorting of pigs at different ages into different grow-finish facilities.

Impact: The feeding of PayleanTM can substantially increase the efficiency of swine growth and profitability. However, the benefits of Paylean feeding can only be fully achieved with improved feeding and marketing management. Initial research results indicate that the collection of serial live weight and compositional data as well as develop and implementation of the optimal marketing system via animal sorting technology can result in a $7,000 to $10,000 increase in profitability per 1000 head finishing facility. The optimal use of PayleanTM increased profitability almost an additional $9,000 per year for the 1000 head finisher. The birth to market weight stochastic model can be used to evaluate management alternatives to reduce variation and increase profitability.
Impact Summary Purdue Animal Sciences and Agricultural Economics Departments have developed a stochastic swine growth model that can optimize pork production. This is the first swine compositional growth model that has been developed, parameterized, and tied to a multi-variable decision making program. The program demonstrates that marketing strategies can be improved to increase producer profitability.

Source of Funds: Smith-Lever, Hatch, State

Scope of Impact: Nationwide

Key Theme: Diversified/Alternative Agriculture

Agricultural Innovation and Commercialization Center

Two groups of businesses are vital to economic prosperity of Indiana. New business ventures are important sources of economic growth. In addition, small businesses represent a critical component of the economy. However, because entrepreneurs exploring new business ventures get very excited about their new business idea they often do not conduct the appropriate analysis before making the business investment. The result can be poor investments that end as expensive failures. Existing small business owners often don't conduct the necessary analysis for business investments they are making. Easy to use and accessible business planning tools are needed. In addition, education for potential entrepreneurs and small business owners is needed. Educators at Purdue's Agricultural Innovation and Commercialization Center were awarded one of ten $1 million USDA grants to assist entrepreneurs with new business development. To achieve this objective they developed, InVenture, a web-based business planning tool, a set of 22 publications on business planning and statewide and national conferences to promote new business development. InVenture is a practical business planning tool that

guides entrepreneurs through the business planning process in stages. In each of the stages the entrepreneur answers the key questions that guide the business creation process. The entrepreneur's work becomes a business plan that may be taken to potential partners or investors. A series of 22 publications are available to assist entrepreneurs with the different stages of business planning, from setting goals, to determining necessary licensing requirements, to developing a marketing plan, to doing financial projections for potential lenders. Highly successful statewide and national workshops have been delivered. In addition to virtual delivery via the website, www.agecon.purdue.edu/planner, entrepreneurs may access one-on-one assistance through Purdue's New Ventures team of Extension educators.

Impact: Purdue educators looking for ways to assist in economic development have created InVenture, a useful web- based tool for entrepreneurs, along with a set of 20 publications and statewide and national workshops. InVenture has over 1200 registered users from Indiana and around the United States. The statewide and national workshops have been delivered to over 1100 participants and been very well received. Participants noted that they "have not stopped talking bout the enjoyment, satisfaction and usefulness we will get from attendance." They were "very impressed with the amount and quality of resources available to Indiana entrepreneurs" and described the program as "truly refreshing and gratifying." In addition, participants indicated that they had "not been able to find resources like these, so the material was invaluable!"

Source of Funds: Smith-Lever, State

Scope of Impact: Nationwide

Key Theme: Home Lawn and Gardening

"Can we do this every couple of months?" Garden tours a popular success

Since June 2000, Purdue Extension has had a horticulturist on site at White River Gardens, a public garden located in downtown Indianapolis. The garden has almost 1,000 different plants, making it a great place to learn about plants and plant problems. The garden does not offer tours to visiting Master Gardener groups and garden clubs. Indiana citizens eager to learn all they can about plants and gardening. Thus, there is a need for the Purdue horticulturist on site to develop and conduct tours for gardening enthusiasts. In the summer of 2006, I gave six tours to Master Gardener groups and tours to Indianapolis Zoo volunteers, Franklin College trustees, a garden club and group of elementary school teachers. The tours for Master Gardeners were two hours long and were accompanied by an extensive handout giving information on the plants they saw in the garden. Tours to garden clubs were of varying length, based on the request of club members. Handouts were prepared only for the longer tours. 86 Master Gardeners and 43

other Indiana residents attended these tours. Part of this effort involved marketing the tours to Master Gardener groups. Announcement of tours were sent to Extension educators around the state. Master Gardener groups were mainly nearby counties, but the group from Wabash County drove 2+ hours for the tour.

Impact: In order to use the plants of a local public garden as an educational resource, tours of the garden were developed and offered to Master Gardeners and garden clubs around the state. Over 85 Master Gardeners attended these tours. Overwhelmingly, these Master Gardeners agreed that the tour increased their knowledge of garden-worthy plants and that they would be better able to grow plants successfully as a result of the tour.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

Key Theme: Organic Agriculture

Beginning Organic Farmer

In recent years the demand for organically produced commodities has grown considerably, especially near larger cities. Organic products bring higher prices - sometimes double what their conventional counterparts earn. Profit potential per acre is thus often higher, a boon for farmers whose farm is small but expensive. USDA's national organic standards require a three year transition period between stopping the use of conventional chemicals and other conventional practices and applying for organic certification. Many farmers near large urban areas have a unique opportunity to capitalize on the growing demand for organics. For farming to remain a significant and valued way of life and source of income at the urban fringe, alternative forms of agriculture must be incorporated. Farmers living at the urban fringe, especially those who want to farm organically need more information about organic production. In late 2003 three members of the small farms team formed a sub team to develop programs to educate people about organic production opportunities. The first program developed was "Organic Marketing Opportunities for Production Agriculture" which was offered at 14 sites around the state via IPV network with good evaluations. This was followed by a summer tour of an organic crops farm which was also considered very successful, received good media coverage and was well attended. For the spring 06 educational program the topic "Beginning Organic Farmer" was selected. SARE funds were obtained to support the effort. Again the IPV network was chosen as the vehicle to distribute the program. The most qualified instructors from a multi state area were obtained, publicity was planned and executed, human subjects approval was obtained for the survey (ref #05-5040X). The program took place with one team member acting as site host, while the other two facilitated the program at the origination site.

Impact: Thirteen sites in Indiana plus 7 sites in Illinois viewed the program. One hundred ninety one people attended. A separate survey was done for Educators and other attendees. One hundred percent of the Educators and 68% of the other attendees reported that attending the program had definitely caused them to become more knowledgeable about organic marketing opportunities. Twenty eight percent of the other attendees indicated they were somewhat more knowledgeable. Eighty four percent of the other attendees and 25% of the Educators indicated after attending the program they were more interested in pursuing additional information about organic production. Seventy five percent of the Educators and 12% of the other attendees said they were somewhat more interested in pursuing additional information.

Source of Funds: Smith-Lever, State

Scope of Impact: North Central States

Key Theme: Ornamental/Green Agriculture

Midwest Urban Tree Care Forum

There is a shortage of skilled people to care for urban trees. An experiential program has been held annually in the Chicago area for the past three years to introduce students to the array of career options related to urban tree care. About two dozen 2-year and 4-year college programs in the Upper Midwest are invited to attend. The students spend two days visiting urban sites and meeting with tree care professionals that represent commercial, municipal, and utility arboriculture.

Impact: Of the 58 students that have attended and graduated from their college, 40 (69%) have gone into urban tree care in some capacity, 4 (7%) are in other parts of the green industry such as nursery and landscape design, 7 (12%) are in traditional forest management, and 7(12%) are not known to be employed in any part of the green industry. The fact that more than 75% of the attendees have entered the work force of the green industry has encouraged the Illinois Arborist Association to continue the program. Other chapters of the International Society of Arboriculture are looking at copying the program in their locations around the U.S.

Source of Funds: Smith-Lever, Hatch, State

Scope of Impact: North Central Region

Key Theme: Plant Health

Purdue's Plant and Pest Diagnostic Lab Provides Surveillance Protection for Indiana's Billion Dollar 'Green' and Timber Industries

Sudden Oak Death (SOD) is caused by a fungus-like organism, Phytophthora ramorum. P. ramorum was first identified in 1993 in Germany and The Netherlands on ornamental rhododendrons and was isolated in 2000 from dying trees in California. Since its discovery in North America, P. ramorum has been confirmed in forests in California and Oregon and in nurseries in California, Oregon, Washington and British Columbia. P. ramorum is known to infect over different plant hosts. In 2004 west coast nursery stock infected with P. ramorum was shipped across the United States, broadening the distribution and potential host range of this oak-killing pathogen. There are currently no curative fungicides available to stop P. ramorum. The only way to stop disease spread is to remove infected plants and trees. Although a Federal Act effective January 2005 mandates all nursery stock from CA, OR and WA must be inspected and certified free of P. ramorum before shipment to other states, the system is not 100% effective and infected plants have still been shipped to nurseries and retail outlets throughout the United States. Thus, contaminated plants shipped via nursery trade have the potential to cause infections in a wide range of other host plants and could potentially negatively impact Indiana's ¾ billion dollar oak timber industry. The Purdue Plant and Pest Diagnostic Lab (P&PDL), with the assistance of the Indiana Department of Natural Resources (IDNR) has been vigilant in surveying incoming nursery stock from potentially infected west coast nurseries for the presence of P. ramorum. Eight hundred nursery samples have been tested annually for the past three years to check for the presence of P. ramorum. Several dozen samples were also submitted by IDNR inspectors from separate Trace Forward Surveys for P. ramorum testing. Testing for the presence of this fungus is key to protecting the billion dollar IN Green industry and 3/4 billion dollar oak timber industry from losses due to this potentially devastating disease. Survey results were entered into the NAPIS data base to archive survey data and assist in tracking the distribution of P. ramorum nationwide.

Impact: Cooperation between the IDNR and the plant disease diagnosticians in Purdue's Plant and Pest Diagnostic Laboratory helps to provide the crucial surveillance of potentially infected nursery stock which in turn provides protection to the billion dollar 'Green' industry and 3/4 billion dollar timber industry in Indiana. In the P. ramorum National Nursery Survey, no P. ramorum was detected in any of the 800 samples tested; good news for our billion dollar Green and Timber industries. With regard to Trace Forward Surveys for the presence of P. ramorum, cooperation between the IDNR and the plant disease diagnosticians in the P&PDL was instrumental in the confirmation of P. ramorum on a viburnum plant shipped from an Oregon supplier to the garden center of a retail outlet in northern Indiana. Samples collected by an IDNR inspector as part of a trace forward survey were brought to the P&PDL for testing. One sample tested positive

for the presence of a Phytophthora spp. and thus, according to protocol, P&PDL plant disease diagnosticians shipped the sample overnight to the USDA/APHIS/PPQ lab in Beltsville Maryland where PCR testing confirmed the tissue to be infected with P. ramorum. Confirmation of this regulated pathogen resulted in destruction of all shipped host material at the greenhouse site and increased surveillance of the area.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

Key Theme: Urban Gardening

Spring Garden Clinic Helps Gardeners Dig In

Gardening is a popular activity in Marion County. There are over 264,000 households involved in gardening related activities. Contacts with local gardeners indicated the need for an inexpensive way to help gardeners grow. Purdue Extension-Marion County and the Capital City Garden Project provided a day-long Spring Garden Clinic for community gardeners, Master Gardeners and the general public on a Saturday in early spring. The workshop was designed for beginners and experts alike. It began at 9:15am and concluded at 3:00pm. The workshop was composed of 12 educational programs in four concurrent sessions along with another speaker at a catered lunch. A registration fee of $15.00 was charged for the lunch and educational materials. The speakers were Extension educators and specialists and other presenters from the community. The topics were: Designing with Herbaceous Perennials, Hiring Tree Pruners, the Garden in Winter, Vegetable Gardening ABC's, Water gardening, Landscape design basics, Diagnosing Tree problems, How to have a Healthy Lawn, Natural garden Companions, Gardening for Butterflies, So Easy to Preserve, A New Plant Sampler. Everyone attending received a reference publication that included information from all the presentations.

Impact: The Marion County Spring Garden Clinic had 214 people attend. Participants indicated the clinic was a great success: “It was a great event -- a lot of information for such a small price! “…the overall workshop was very successful and educational.” An evaluation was created to help measure impact. A total of 104 evaluations were filled out and returned at the end of the day. Post-clinic evaluations indicated that 100 percent of those who filled out the survey indicated that their knowledge of gardening increased as a result of the workshop. The evaluations also suggested that 96 percent of the participants felt they became a better gardener as a result of the clinic. According to the survey, 97 percent of attendees said they would change a gardening practice as a result. Participants indicated they would do the following differently as a result of the clinic: “use pesticides wisely,” “Select new, colorful, more resistant cultivars,” “more organic gardening", "plan before planting"," rotate my crops", "work more with nature", "lawn improvement is best done in the fall" "learned when to trim my trees and shrubs", "plant a butterfly garden".

The survey also stated that 96 percent of the people believed the handouts and other written materials were “excellent” or “good.” “It was great having a handout for all the lectures.” Participants indicated it was well worth their time and money. “What a bargain!

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

GOAL TWO. A SAFE AND SECURE FOOD AND FIBER SYSTEM. To ensure an adequate food and fiber supply and food safety through improved science-based detection, surveillance, prevention, and education.

Overview

Food safety and quality education provided by Purdue Extension continues to focus on all stages of the food handling system—production, processing, distribution, preparation, and consumption. Consumers expect a safe and wholesome food supply. The maintenance of that safe and wholesome food supply requires constant education of those that produce food, those that process and distribute it, those who prepare food and, ultimately, all consumers. The emphasis that Purdue Extension puts on this important issue is reflected by the 912 days of effort reported on this topic by campus and field staff, and the 33,640 direct contacts made with educational programming.

Specific programmatic focus relates to the food service industry and to general consumers. Programs emphasized in the FY 2006 program year focused on food service-related industry. Programs and research include: Technology That Makes Food Safe, HACCP, Retail Food Manager's Certification Programs and The Better Process Food School.

Purdue Extension food safety programs reach general consumers with research-based food safety basics. Curricula used encourage discussion, questions, participation, and involvement of the general public to help them learn basic concepts that can decrease the incidence of food-borne illness in this country. Food safety education is emphasized in both the Expanded Food and Nutrition Education Program and the Food Stamp Nutrition Education Program targeting low-income families. Other programs conducted in FY 2006 were: Professor Popcorn: Hooked on Health; and The Mystery of the Poisoned Panther Picnic, that teaches basic food safety concepts with games, music, and videotapes, and Food Irradiation.

The Better Process Control School offers a critical base of information for Indiana food processors to produce foods safe and also creates an opportunity for food entrepreneurs to be more successful and with technology Purdue is helping to make food safe.

Priority programming for Goal 2 topics are determined with input from local Extension Boards, volunteer planning groups, and collaborations with cooperating agencies, organizations, and educational networks at the county and state levels interested in the same program outcomes.

Resources: Approximately $ 195,599.01 and 4.15 FTEs have been invested in Goal 2. This is a best estimate and these are not presented as auditable numbers.

Key Theme: Food Safety

Technology that Makes Food Safe

Recent outbreaks of food borne illness, like *E. coli* in spinach, have heightened the need to quickly identify and then improve the safety of food before it shows up at our homes or restaurants. Two approaches to the problem are being developed and studied. Researchers are using laser technology to detect and identify many types of bacteria. Bacteria Rapid Detection Using Optical Scattering Technology works by shining a laser through a Petri dish containing bacterial colonies. A computer program determines the type of bacteria by analyzing how light is refracted. To date, the technology can recognize Listeria monocytogenes, microbial pathogen that is the leading cause of food borne illness and mortality. The second approach is to use an industrial tunnel system to spray chlorine dioxide on fruits and vegetables to kill existing bacteria. Tests were run on varying levels of ClO^2 against these bacteria. Ongoing research will help determine the most effective amount of the gas that will kill the pathogen and maintain the food quality.

Impact: With the laser detection technology, researchers are able to get information three times faster and one-tenth as expensive as current technology. Researchers are also able to determine more quickly and accurately what the pathogen is and where it came from. With the tunnel system, researchers were able to show significant reduction in pathogenic bacteria. In the present system, once produce is contaminated, there's little that can be done to decontaminate it. This technology has proven that once infected, food can be made safe. Patents are pending for both technologies.

Source of Funds: Smith-Lever, State

Scope of Impact: IN, National, International

Hazard Analysis Critical Control Point (HACCP)

HACCP is a systematic food safety program that is a mandatory regulatory requirement in certain food industries including meat/poultry, seafood, and fresh juice. Parts of the regulatory requirements include training and certification programs. The main audiences for this program are management, quality assurance, and quality control managers for food processing industries. Three 3-day workshops were offered; 1 offered in Indiana (26 participants), 1 offered in Ohio (34 participants), and 1 offered in Arkansas (28 participants). Participants represented the meat and poultry industry, fruit and vegetable industry, bakery industry, dairy industry, equipment manufacturers, distributors, and chemical companies.

Impact: After attending the program, participants learn how to set up important food safety systems that are specific to their products and processes that they use. They also gain an opportunity to network with other in the food industry and with regulatory officials. Providing HACCP based programs enables these industries to comply with state and federal food regulations and stay in business. It also provides a nice framework for industry and regulatory officials to interact with each other and discuss important food safety issues.

Source of Funds: Smith-Lever, State, USDA – Food Safety Inspection Service, IN State Poultry Association, University of Arkansas, The Ohio State University

Scope of Impact: IN, National, International

Retail Food Manager's Certification Programs

Purdue is waging war on food borne illness to combat some of the 76 million food borne illnesses that cost billions of dollars. Indiana mandates certification of food service personnel, and Purdue is providing the training to help educate them. The CDC estimates that there are 76 million cases of food borne illness resulting in 325,000 hospitalizations, and 5,000 deaths. The cost estimates range between $7.7 – 23 billion each year. Many of these illnesses originate at retail food establishments. A key to preventing these outbreaks is through effective education of employees. Indiana now requires one retail food manager from each retail food establishment be certified in retail food safety and pass a national exam. To help Indiana's food retailers meet the requirements for training, Purdue Extension delivered four retail food safety training programs across the state. In 20 counties, teams of Extension Educators offered retail food certification training using the ServSafe, Essentials of Food Safety and Sanitation, and SuperSafeMark programs. Topics covered were hand washing, temperature control for cooking, temperature control for cooling, separation of raw from ready-to-eat foods, and cleaning/sanitizing practices. To enhance the learning, they also offered a program called "Food Safety Day" as an excellent resource to train front line foodservice workers.

Impact: Of the more than 6000 participants, over 80% followed better food handling practices. In total, 111 retail food safety programs were offered in 20 counties by 21 different Extension Educator teams. For the certification programs, we had a 96% passing rate, compared to the national average of 81%.

Source of Funds: Smith-Lever, State

Scope of Impact: IN, National, International

The Better Process Control School

The Better Process Control School teaches the mandatory certification program for supervisors in the canned food industry that thermally processes foods. This school satisfies training requirements specified in the FDA and USDA regulations. The main audiences for this program are management and operators for low acid and acidified food products that are thermally processed and shelf stable. The Better Process Control School is a collaborative effort of Purdue, the FDA and Virginia Tech. Two outreach programs were offered this year. The first 2-day program (31 participants) was customized for food entrepreneurs and focused on acidified food products. The second 4-day program (83 participants) focused on low acid and acidified foods, different processing systems and different packaging systems.

Impact: For both programs, all 114 participants passed each of the exams required by FDA and USDA to receive the mandatory certification. This will provide the knowledge needed to produce safer food products under regulations stated in the Code of Federal Regulations.

Source of Funds: USDA, FDA, Smith-Lever, State

Scope if Impact: National

GOAL THREE. A HEALTHY, WELL-NOURISHED POPULATION. Through research and education on nutrition and development of more nutritious foods, enable people to make health-promoting choices.

Overview

The association between many chronic diseases and nutrition is becoming clearer. Careful nutritional choices can lead to decreased risks of certain cancers, coronary artery disease, diabetes, obesity, and osteoporosis. Nutrition education for adults and youth is essential to help form healthful dietary practices to support longer, healthier, and happier lives. Early educational interventions are critical, as it is easier to prevent the development of unhealthy eating and exercise habits than to change established habits. By increasing the knowledge base, especially of those who are educationally and economically at risk, healthy nutrition habits in children can be established early for higher quality of life. Purdue Extension emphasizes nutrition education across the state, devoting 4,111 days to nutrition education programming and making direct contact with 293,911 individuals.

The Dietary Guidelines for Americans continues to be the backbone of nutrition education in Indiana. Coupled with the My Pyramid and the Food Label, consumers can make informed dietary choices using basic nutrition information. Specific programs and settings vary throughout the state, but the Dietary Guidelines for Americans are included in all nutrition education programming.

Nutrition education for youth audiences focuses on building better food habits and maintaining healthy weight. The “Exploring the Food Pyramid with Professor Popcorn Hooked on Health” curriculum reaches elementary school children across Indiana in school classrooms and in after-school programs. The program helps children learn about nutrition in a fun and innovative way to help them make wise food choices.

The Expanded food and Nutrition Education Program (EFNEP) and the Family Nutrition Program (FNP) are two nutrition education programs specifically targeted at limited-resource families. Indiana has both of these programs in 69 FNP and 33 EFNEP counties across the state as indicated by need and program budget. Both programs address wise nutrition choices, careful meal planning, food safety and sound food budgeting information for Food Stamp-eligible clients. This information assists limited-resource families to stretch their food resources, while still maintaining high-quality nutrition and a balanced diet.

Chronic disease is not the only health parameter affected by sound nutrition. Pregnancy outcome is affected by nutrition and lifestyle choices. The “Have a Healthy Baby” program continues to reach at-risk pregnant women across the state with information on adequate weight-gain expectations, lifestyle habits for best pregnancy outcome, and good

nutrition information. In FY 2005, 726 at-risk pregnant women were reached with the "Have a Healthy Baby" program. Results of this program continue to show lower rates of low birth weight infants in women participating in the program compared to state averages.

Nutrition and health status are major concerns for all Americans. The Family Nutrition Program (FNP), part of the Food Stamp Nutrition Education (FSNE), provides education to low-income participants on food safety, diet quality, and economizing food dollars to help bring about nutrition related lifestyle changes and reduce food insecurity.

In 2004, Congress passed the Child Nutrition and WIC Authorization Act to establish a new requirement that all school district with federally funded school meals program(s) develop and implement wellness policies that address nutrition and physical activity by the start of the 2006-2007 school year. The National Alliance for Nutrition and Activity brought together a self-interest group from nutrition, health, physical activity and education to develop model policies for local school districts. The goal is to combat childhood obesity and create healthy environments for the prevention of childhood obesity and the health problems associated with poor nutrition and lack of physical activity.

Schools are being asked to set goals for nutrition education, physical activity and other school-based activities designed to promote student wellness. Schools must also set nutritional standards for all foods served during school time. Purdue Extension is partnering to help achieve a positive outcome.

With an aging population and a rapid increase in obesity and sedentary lifestyles, diabetes has become a major health concern in Indiana. The rate of this disease is expected to rise over the coming years. Purdue Extension has included the Dining with Diabetes program as one of five target programs. Seventeen educators held programs in 18 counties and taught to 243 participants in 2005.

Low birth weight and short gestational age are the two most important risk factors for infant health and survival. Pregnant teens and adults in homes, schools, community centers, and WIC clinics participated in the "Have a Healthy Baby" program. This prenatal nutrition education program consists of six lessons emphasizing nutrition and lifestyle choices—smoking, drinking, and drugs. It is a research-based curriculum taught by trained, caring professionals.

Healthy eating is not easy and it's even more difficult when you eat out. One key is having a plan in mind prior to eating away from home. "The Challenges of Healthy Restaurant Eating" was adapted to increase awareness of some of the challenges to eating healthy when eating away from home

Young people in grades 3-12 in Hendricks County create healthy recipes using foods high in Vitamin A, Calcium and/or fiber with a new program Kid's Kitchen Inventions ~ Bake Mine Healthy™. This program has been recognized by the food industry as a way to teach children about nutrition. They are working on a tiered competition.

Priority programming for Goal 3 topics are determined with input from local Extension Boards, volunteer planning groups, and collaborations with cooperating agencies, organizations, and educational networks at the county and state levels interested in the same program outcomes.

Resources: Approximately $ 953,545.20 and 20.43 FTEs have been invested in Goal 3. This is a best estimate and these are not presented as auditable numbers.

Key Theme: Human Nutrition

EFNEP Participants Make Healthy Changes

Poverty can put families at a higher risk for chronic disease, hunger and malnutrition. Studies show that people who run out of food or miss meals because they cannot afford them are among the most obese. Limited resource families in both rural and urban settings require practical knowledge and skills as well as the motivation to make healthy changes in nutrition and physical activity. Collaborations and partnerships with local agencies strengthen this community effort.

EFNEP utilizes Family Nutrition Advisors (trained paraprofessionals known as FNAs) to teach a series of food and nutrition topics that lead to behavior changes to limited resource families in their homes or community sites in 14 Indiana counties. Topics include food safety, meal planning, food resource management, selection and purchase of nutritious foods, and nutrition for pregnancy, lactation, and early childhood. Culturally appropriate lessons often include a food preparation activity to reinforce the principles taught. EFNEP works closely with agencies that serve this audience, including WIC, Food Stamps, Step Ahead, Healthy Families, Healthy Start, Head Start, Maternal and Child Health, and other local agencies.

Impact: Two thousand and ninety-nine families, including 3,546 children (over 7,428 persons) participated in EFNEP in 2005-2006; approximately 14,975 lessons were taught as part of a series. Ninety-one percent improved their intake of nutritious foods. Ninety-one percent improved other nutrition practices such as reading nutrition labels and planning meals. Eighty-four percent improved their food resource management skills such as using a shopping list. Sixty-four percent improved at least one food safety skill. Ninety one percent improved their hand washing skills. Sixty-seven percent improved their use of thermometers to measure doneness of meat. One thousand four hundred thirty one youth, ages 5-14, participated. Six hundred eighty four volunteers assisted in the youth and adult program. Collaborations involved 32 WIC clinics and 14 food stamp

offices. Six thousand one hundred twenty three dollars ($6,123) was contributed to EFNEP efforts by local agencies. The Produce for Better Health Foundation found that EFNEP is the most effective federal program in increasing consumption of fruits and vegetables (2002). Cost-benefit studies have shown that for every dollar invested in EFNEP, health care costs can be expected to decline $3.63 to $10.64.

The 2006 EFNEP Initiatives: Bilingual paraprofessionals in Lake and Marion counties as well as other FNAs continue reaching the Hispanic/Latino population. The program for pregnant adolescents and limited resource mothers-to-be, Have a Healthy Baby, continues to show healthier babies as result of participation. Safe Food and You, food safety habits especially during pregnancy, to reduce risk of listeriosis are included. This program was extensively revised in 2006 and includes a version to be used in clinic settings. Over 14,950 pregnant adolescents and adults have participated during the 16 year course of the program. 981 participants from 30 counties were involved in 2006, an increase of 260 participants. Funding from March of Dimes has provided Have a Healthy Baby video lessons and the Spanish version released in 2005. Exploring MyPyramid with Professor Popcorn continues to be utilized nationally. An extensive revision was developed in 2006. In Indiana, 11,810 youth (an increase of 2300) in 363 groups (an increase of 66) representing 33 counties participated either in the interim or pilot versions of the curriculum. Improvement was reported related to food selection, and food safety practices. Collaborations with the Indiana Department of Health include Breastfeeding Coalitions and Gestational Weight Gain initiatives. The collaboration with March of Dimes to facilitate Indiana Folic Acid Council as well as a focus on prematurity continues. Purdue's EFNEP program serves as the host site for the national EFNEP Coordinator's information web page. Examples of participant comments: "I've lost 40 pounds due to this awesome experience!"; "I have learned how to prepare healthier food, how to shop more wisely, and how to prepare healthy food for my baby girl. I always use the meat thermometer."; "I look for healthier foods to feed my kids now. By cooking healthier, reading labels and eating less fat and sugar.", "I'm more aware of what I'm eating and what the foods are doing to my body and my son's body", "I'm so glad you didn't give up on me because finishing this has showed me I can actually finish something I started.", "(the FNA) has helped my family and I save at least $100 a month in groceries.", "When we wrote a grocery list with everything we needed, it helped us save $30. We also did not have to go back to the store 3 or 4 times.

Source of Funds: Smith-Lever 3(d), State

Scope of Impact: IN

Indiana Family Nutrition Program (FNP)

Nutrition and health status are major concerns for all Americans. Years of research reveal a link between poor nutrition, lifestyle habits, and many of the chronic diseases that lead

to illness and death in our society. These issues have an even greater impact on low-income individuals and families who often lack the skills and resources to select and acquire nutritionally adequate food. Food insecurity, a condition associated with decreased nutritional status, sickness, long-term disease, obesity and many psychological and emotional problems, is also a problem faced by many Indiana families. The number of Indiana residents receiving food stamps in September 2006 was 577,610 and the average monthly food stamps per recipient were $93.21. The Family Nutrition Program (FNP), part of the Food Stamp Nutrition Education (FSNE), provides education to low-income participants on food safety, diet quality, and economizing food dollars to help bring about nutrition related lifestyle changes and reduce food insecurity. FNP is funded by Purdue University Cooperative Extension Service in partnership with Indiana Family and Social Services and the United State Department of Agriculture. In 2006 Purdue Extension requested and received federal funds in the amount of $2,012,913 in addition to $2,012,913 from state and local dollars to fund the program.

Impact: During 2006, the program was provided in 69 Indiana counties by 72 FNP Assistants. A total of 92,949 clients were reached with direct education and an additional 357,613 clients were reached through indirect contact. A total of 588 participants completed a pre and post questionnaire. Significant improvements in diet quality and food security were reported. There was a 20.3 percent increase of participants who regularly stayed within a budget by planning menus and shopping skillfully, a 28.1 percent increase in participants who read food labels to help choose foods. There was a 28.8 percent increase of participants knowing how to use MyPyramid to plan meals, and a 37.8 percent increase in the number of participants that knew proper serving sizes. There was a 24.9 percent increase in the number of participants that regularly ate five fruits and vegetables servings each day. Food insecurity and food insufficiency were measured with the 6-item U.S. Household Food Security Scale and USDA Food Insufficiency Question respectively. One hundred thirty-seven female head-of-household participants composed the experimental group, which completed a survey that included the 6-item U.S. Household Food Security Scale and USDA Food Insufficiency Question as a pre and post-test, before and after five educational lessons over five weeks. Eighty-two female head-of-household participants composed the control group, which completed a survey as a pre and post-test before and after five weeks without educational lessons. Results indicated that food insecurity in the experimental group compared to the control group was significantly improved ($p=0.030$) when employment status and food security pre-test score were included in the model. Food insufficiency was also improved in the experimental group ($p=0.029$) compared to the control group. Indiana FNP was successful in improving diet quality and the food insecurity and food insufficiency level of participants, indicating nutrition education is an appropriate intervention to improve nutrition and health status and decrease food insecurity.

Source of Funds: Smith-Lever, State
Scope of Impact: IN

Exploring the Food Pyramid with Professor Popcorn

Youth establish lifelong food, nutrition and physical activity habits during their early years. Overweight children and youth are much more likely to develop diabetes, high blood pressure, and serious orthopedic problems. Exploring the Food Pyramid with Professor Popcorn (Professor Popcorn) is a curriculum for youth in grades 1-6. Originally written in 1993, it was extensively rewritten in 2002. With the release of the 2005 Dietary Guidelines for Americans and MyPyramid, revisions were made to the 2002 curriculum. Extensive revisions were pilot tested in 2006. Partners for this revision included Wisconsin, Arizona, Colorado, Kansas, Montana, Nebraska, North Carolina, Pennsylvania, Texas and Washington as well as Purdue Extension staff. Major concepts included in the curriculum have been linked to Indiana's health and science education standards. Topics include: MyPyramid; physical activity; the Dietary Guidelines for Americans; and, the Fight Bac! Concepts of Clean, Separate, Cook and Chill. A web site with streaming video has been utilized for training with the 2006 version of the curriculum. In some counties, teachers have been trained by Extension staff and together teach the program. Credit has been obtained from the Indiana Professional Standards Board for teachers. Extension staff taught and provided evaluation data for the Professor Popcorn program in 33 Indiana counties. In 8 counties the program was taught only to grades 1-2; in 14 counties the program was taught only to grades 3-6; and, in 11 counties all grades were taught. Seven counties piloted and collected evaluation data on the 2006 revision. Eleven thousand eight hundred ten youth (an increase of 2300) in 363 groups (an increase of 66) were taught either the interim or pilot program; 6093 youth in 172 groups in grades 3-6; and 5717 youth in 191 groups in grades 1-2. These were all substantial increases from 2005.

For the interim version results:
4911 youth in grades 3-6 reported the following related to behavior change:

- 90% reported that they sometimes or almost always practiced one or more healthy food selection habits, 7% improvement was reported.
- 94% reported that they sometimes or almost always practiced one or more food safety habits. 9% improvement was reported.
- 96% reported that they sometimes or almost always practiced healthy physical activity habits, an increase of 2%.

4911 youth in grades 3-6 reported the following related to knowledge:

- 95% reported knowledge of healthy food choices and food preparation, an increase of 1%.
- 86% reported knowledge of safe food handling. 24% improvement was reported.
- 97% reported knowledge of the relationship of physical activity to health, an increase of 1%.

5581 youth in grades 1-2 reported the following related to knowledge:

- 96% reported knowledge of one or more nutrition, food choices and/or food preparation facts. 13% improvement was reported.
- 86% reported knowledge of safe food handling, an increase of 6%.

For the pilot version results:
233 youth in grades 5-6 reported the following related to behavior change:
- 80% reported that they practiced one or more healthy food selection habits, at least most days of the week. 18% improvement was reported.
- 96% reported that they sometimes or almost always practiced one or more food safety habits.
- 89% reported that they practiced healthy physical activity habits.
- 89% reported that they chose to eat breakfast, at least most days of the week, an increase of 1%.

233 youth in grades 5-6 reported the following related to knowledge:
- 90% reported knowledge of healthy food choices and food preparation, an increase of 25%.
- 83% reported knowledge of safe food handling, an increase of 9%.

949 Youth in grades 3-4 reported the following related to behavior change:
- 75% reported that they practiced one or more healthy food selection habits, at least most days of the week. 11% improvement was reported.
- 92% reported that they sometimes or almost always practiced one or more food safety habits, an increase of 1%.
- 92% reported that they practiced healthy physical activity habits, at least most days of the week, an increase of 5%.
- 86% reported that they chose to eat breakfast, at least most days of the week, an increase of 1%.

949 Youth in grades 3-4 reported the following related to knowledge:
- 87% reported knowledge of healthy food choices and food preparation, an increase of 9%.
- 92% reported knowledge of physical activity, an increase of 10%.

136 youth in grades 1-2 reported the following related to knowledge:
- 88% reported knowledge of one or more nutrition, food choices and/or food preparation facts, an increase of 11%.
- 88% reported knowledge of safe food handling, an increase of 4%

Source of Funds: USDA EFNEP

Scope of Impact: IN

School Wellness

In 2005 Congress passed legislation requiring schools receiving free and reduced breakfast and lunch to involve a team of local people interested in children's health and

wellness in the development a School Wellness Policy. Each school was to have a School Wellness Policy in place by July 1, 2006. Consumer and Family Sciences educators were encouraged to visit with local school superintendents and volunteer to work with the School Wellness committee already in place or help in the establishment of a School Wellness committee. An IP Video conference was held in December 2005 to provide educators with the following information: the details of the legislation; examples of school wellness activities to be considered in the development of policy; successful examples of what some school are already doing to offer nutritional food choices to students, show peers teaching peers about nutrition snacks, and increase physical activity during the school day. In the legislation, schools are being asked to set goals for nutrition education, physical activity and other school-based activities designed to promote student wellness. Schools must also set nutritional standards for all foods served during school time either from the school breakfast and lunch program, and from vending machines or snack shops. Schools are required to measure the implementation of the wellness policy and involve a broad group of individuals in policy development. The Indiana Department of Education has received a grant to evaluate the progress schools are making towards their goals. The survey was distributed in late fall and due by December 31. The results of the survey will be used to determine the agenda for workshops. The Department of Education has invited Cooperative Extension Educators to be involved in school wellness policy workshops around the state. Twelve Extension Educators have been identified to plan, organize and facilitate two workshops between February and May of this year. The workshops will be made up of a diverse group of individuals including principals, teachers, food service directors and parents. The objectives of the workshops include, identifying strategies for implementing, monitoring and evaluating the impact of wellness in the school. The workshops will be evaluated based upon the impact of wellness on the students.

Source of Funds: USDA

Scope of Impact: IN

Dining with Diabetes

The chronic disease, diabetes, is a major health and financial problem that affects Indiana's citizens more than most other states. Diabetes mellitus is a group of diseases characterized by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. There are several types of diabetes but Type 2 diabetes affects the largest number of people. Type 2 diabetes usually begins as an insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin. Type 2 accounts for 90%-95% of diagnosed diabetes cases and is linked to obesity and physical inactivity. Other risk factors include race/ethnicity and family history of diabetes. Type 2 diabetes used to be seen only in people older than 40, but is now being diagnosed in children and teens. An estimated 358,000 adults have been diagnosed with diabetes in Indiana, and another

estimated 193,000 adults in Indiana have diabetes, but haven't been diagnosed. The average yearly health care cost for a person with diabetes in the US was $13,243 in 2002, compared with $2,560 for a person without diabetes. Diabetes is the sixth leading cause of death in Indiana overall. Adults with diabetes have heart disease death rates about 2 to 4 times higher than adults without diabetes. Heart disease and stroke cause about 65% of deaths among people with diabetes. These deaths could be reduced by 30% with improved care to control blood pressure, blood glucose, and blood cholesterol levels. Diabetes is also the leading cause of new cases of blindness among adults and the leading cause of end-stage renal disease. Better control of blood pressure and blood glucose levels could reduce diabetes-related kidney failure by about 50%. While the state health department and other organizations have increased efforts to provide medical services to people with diabetes, there has been little done to help people learn how to adjust their food and nutrition lifestyle to better control their blood glucose, which is the most important factor in preventing the complications that arise from diabetes. A program called Dining With Diabetes was reviewed by a committee of Purdue Extension-CFS educators and a state specialist. The program was tailored for use by Purdue Extension educators in Indiana. The program utilized the expertise of the educators in demonstrating valuable food preparation techniques that lower the fat, salt and calories without losing the enjoyment of foods that people have been eating their whole lives. The program also provided education about diabetes and was complimented with information from healthcare professionals like medical doctors, podiatrists, certified diabetes educators and registered dietitians. People with diabetes and people who prepare food for a diabetic saw food preparation of and tasted familiar foods that were prepared to make the food fit into a diet for a person with diabetes. The program consisted of four, 2-hour sessions with a optional follow-up session. CFS Extension partnered with local hospitals, YMCA, community service groups, and dieticians.

Impact: During the two year period (2004-2006), the Dining With Diabetes program was given 59 times in 32 counties by 28 different Purdue Extension Educators. A total of 841 people attended one of the programs. Of the 841 people, 588 completed both the pre and post questionnaires for a 70% completion rate. Of those responding 278 responded to the question on diabetes status. Of the 278 who responded, 175 (63%) said they had diabetes, 66 (24%) said they did not have diabetes but prepared meals for someone with diabetes and 37 (13%) said they did not have diabetes and did not prepare meals for someone with diabetes. Eighty-two percent of all participants were female. Of those with diabetes, 50% had learned within the past 3 years that they had diabetes. When asked how many months ago they had seen a health care provider for diabetes of high blood sugar, of the 489 who responded to that question, over 50% indicated they had visited a health care provider about diabetes within the past 2 months and 89% said they had been within the past year. There were 11 questions assessing the participants' knowledge about diabetes. From the pre-questionnaire to the post questionnaire participants significantly increased the average score from 6.5 to 7.5. There was some indication that certain behaviors had changed after completion of the program. There was a significant shift in the number of times a week that participants stated they

exercised for 20 minutes or more (2.7 days pre to 3.4 days post). When asked "In the past week, how many times have you eaten fried foods?" there was a significant shift from a response of "1-3 times a week" to a response of "None". A program to increase awareness and explain how to deal with the effects of diabetes was given in 59 counties. Results of a pre/post questionnaire indicated an increased knowledge about the problems associated with diabetes. Behavior changes related to exercise and eating fried foods were noted.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

Key Theme: Healthy Lives

Have a Healthy Baby

Low birth weight (LBW) and short gestational age are the two most important risk factors for infant health and survival. Seventy-eight and one tenth percent of Indiana babies are born at low birth weight. Low birth weight infants were born to mothers age 10 to 17 at a rate of 9.7 percent. African-American infants were born at 13.7 percent LBW. Twenty-eight percent of LBW births are associated with maternal smoking. In Indiana, 18.5 percent of the mothers smoked during their pregnancies. LBW babies are 64 percent more likely to attend special education classes than normal birth weight babies. LBW accounts for 10 percent of all health care costs for children. The lifetime medical cost of caring for a premature baby is conservatively projected to be $500,000 per case. More than 60 percent of private-sector preterm births and LBW cases are preventable.

Pregnant teens and adults in homes, schools, community centers, and WIC clinics participated in the "Have a Healthy Baby" program. This prenatal nutrition education program consists of six lessons emphasizing nutrition and lifestyle choices—smoking, drinking, and drugs. It is a research-based curriculum taught by trained, caring professionals. It is a highly visual, interactive, and complete curriculum, including: Safe Food and You (food safety during pregnancy), a DVD created in 2005, Video lessons for use in physician offices and clinics – created 2003, Como Tener Un Bebe Sano (video lessons for the Latino community - 2005); The curriculum was revised and updated for Indiana EFNEP -2005 Throughout the state of Indiana - more than 239 middle and high schools, community agencies and sites. Thirty-five other states have purchased the curriculum. It has been replicated in Iowa, Kansas, and Oklahoma.

Impact: Thirty counties provided the program, teaching 981 pregnant adolescents and at-risk adults. Data was obtained on 611 live births. Fifty percent of smokers report decreased tobacco use. Fifty-four percent achieved appropriate weight gain. Fifty percent

of participants initiated breast-feeding. Decreased neonatal mortality—two deaths were reported—along with decreased days of hospitalization with subsequent savings; decreased long-term care costs due to healthier babies; significant increase in both nutrition knowledge and improvement in intake of healthy foods. Since program initiation, over 14,950 pregnant adolescents and at-risk adults were taught; fewer low birth weight infants, decreased neonatal mortality, and decreased days of neonatal hospitalization were reported. There was significant increase in nutrition knowledge and improvement was shown with the intake of healthy foods. WIC participation after birth showed a significant increase. Participant comments about the changes made were as follows: "The weight gain lesson with the picture of the seven month preemie really made me think about taking care of myself and the baby I will have very soon.", "I learned how to breastfeed – it helped me because I was scared.". "I'm trying to learn to just tell people to stop smoking around me." "I learned how breastfeeding is so important. Ate healthier and stop drinking pops. Been more protective about my food and body. I've been more active and eat more vegetables and eat less fast food.", "I learned to stop eating fast foods so much and drinking more milk." "If it wasn't for you guys I wouldn't know a lot of things I do now. I really appreciate it a lot."

Source of Federal Funds: USDA, March of Dimes, State

Scope of Program: IN

Healthy Restaurant Eating

Healthy eating is not easy and it's even more difficult when you eat out. Many people eat out more than 4 times per week which increases the risk of making less than healthy food choices. As one increases the number of times their eating food away from home, they may find it more challenging to meet their dietary needs. One key is having a plan in mind prior to eating away from home.

"The Challenges of Healthy Restaurant Eating" was adapted to increase awareness of some of the challenges to eating healthy when eating away from home. During the program, strategies to eating healthy were discussed and encouraged that would lead to behavior change in healthier food choices. Tips for making healthy restaurant selection at various types of restaurants, such as steak/seafood restaurants vs. buffets vs. Mexican vs. fast food were covered

Impact: One hundred and thirty-six Indiana families were reached through programming efforts with 97% of participants feeling more confident in selecting healthier restaurant menu items. When asked what the participant planned to do differently as a result of the program, post surveys indicated 80% would search out menu items with more fruits and or vegetables; 75% would order restaurant items "your way" instead of always taking the

item “as is”; 75% would order dressings or sauces on the side; 59% would plan ahead from healthier choice before arriving at the restaurant and only 1% indicated they didn’t plan to change. As a result of “The Challenges of Healthy Restaurant Eating”, 73% of participant indicated they were more aware of portion control and appropriate portion sizes and 70% of participants were more aware of healthier restaurants selections.

When asked what was most important thing they had learned as a result of “The Challenges of Healthy Restaurant Eating” participant’s comments were:
“Plan ahead before going out to eat” “Recognize the portions – determine ahead of time to only eat part” “Ask for a doggie bag to start off to reduce portion size” “I think that we often fool ourselves into thinking that because something is ‘small’ (as in French fry) that it is not calorie/fat/sodium dense. Making choices that realistically limit my choices, for example: sharing with another person or eating half is something I plan to implement.”

Source of Funds: Smith-Lever, State

Scope of Impact: Johnson County, Kosciusko County, IN

Kid’s Kitchen Inventions ~ Bake Mine Healthy™

Young people in grades 3-12 in Hendricks County create healthy recipes using foods high in Vitamin A, Calcium and/or fiber with a new program Kid’s Kitchen Inventions ~ Bake Mine Healthy™. Extension CFS Educator is beginning a partnership with Clabber Girl. They are working on a tiered competition from the local to national level. Upon completing the competition, 90% of the participants will identify ways they can use foods high in Vitamin A, Calcium, and/or Fiber in snacks and/or meals using Clabber Girl products.

Impact: Comments made by participants: “Healthy foods don‘t have to taste awful!”, “Healthy foods are easier to create than you think.”, “I can eat yummy foods that are still healthy”. Comments made by parents of the participants: “Thank you for creating a program where my child takes an interest in what they eat. It’s been great!”; “Kitchen Inventions has changed our whole family’s way of eating. In the past, I would only eat grease and fried foods. Now when my son cooks, I’m the first one to the table. If you would have told me my son’s desire to win a contest would change my eating habits, I would have never believed you. What a great program!”, “My daughter is already working on next year’s invention. It’s going to be a great school year...At least we are going to be eating healthy. Way to go!”

Source of Funds: USDA

Scope of Impact: IN

GOAL FOUR. GREATER HARMONY BETWEEN AGRICULTURE AND THE ENVIRONMENT. Enhance the quality of the environment through better understanding of and building on agriculture and forestry's complex links with soil, water, air, and biotic resources.

Overview

Purdue Extension provides education and outreach programs that allow the public to reach sound judgments regarding the use of natural resources. The quality of air, soil, and water resources is critical to the overall well being of the entire ecosystem of the state. Farmers, homeowners, public officials, and all citizens need to be aware that many of their decisions and activities affect the quality if the environment and the natural resources they use. Purdue Extension provides education and outreach programs that allow the public to reach sound judgments regarding the use of natural resources. Purdue Extension is developing and delivering educational information that provides all Indiana citizens the opportunity to analyze and adopt useful emerging technologies, which will maintain family farms, protect the waters of the state, and provide an acceptable wildlife habitat for future generations. A large part of Purdue Extension's efforts is to make farmers and the general public aware of the issues and consequences, from lack of action, to the land and the environment. During FY 2006, Purdue Extension devoted to environmental stewardship issues 2,338 contact days and made 49,907 direct contacts.

Purdue Extension County Educators have worked with county officials to address land use issues when planning the growth and development of Indiana counties. These efforts not only involve training county officials in planning and zoning for residential and industrial growth, but also involved training them the need for protecting critical natural resources from encroachment by development pressures, and teams the planning and zoning officials with conservation agencies that provide technical support on natural resource planning and strategies to protect these resources from being destroyed by development of the lands. In FY 2006, Purdue Extension spent 894 contact days on Land Use issues, making 14,777 direct contacts.

While manure management and soil erosion, with their related water quality issues, are of primary concern to the agriculture and forest producers, residential waste and water pollution are the issues that most affect the non-farming population of Indiana. Purdue Extension has focused its research and educational outreach resources to address the issues that affect both the farming and non-farming citizens of Indiana. The outcomes of these efforts have resulted in an increased awareness of these environmental issues, and through a combination of extension and research, significant progress is being made with educational programs.

Purdue Extension is in the forefront of environmental educational needs to address the issues facing the agricultural community of the state. While we have initiated several

new programs and experienced some short-term impacts of knowledge gained and human behavioral change, we have also accomplished some long-term goals and are noticing medium and long-term impacts of implementing new environmentally sound practices that will lead to a cleaner environment. Several examples of the results of these efforts are given below in the key themes section.

Priority programming for Goal 4 topics are determined with input from local Extension Boards, volunteer planning groups, and collaborations with cooperating agencies, organizations, and educational networks at the county and state levels interested in the same program outcomes.

Resources: Approximately $ 293,398.52 and 6.3 FTEs have been invested in Goal 4. This is a best estimate and these are not presented as auditable numbers.

Key Theme: Forestry Resource Management

Emerald Ash Borer Awareness

Emerald ash borer (EAB), an exotic pest that could eliminate billions of native ash trees from North America, was first reported in Indiana in the spring of 2004. With EAB now present in 6 townships in Steuben and LaGrange counties, Indiana citizens have good reason to be concerned. The EAB has already eliminated over 12 million ash trees in Michigan. Ash trees are important to the Indiana economy and environment. The timber value of woodland ash in Indiana has been estimated at $500 million. The cost of removing and replacing ash trees lost from Indiana urban forests could cost at least $300 million. As a key element of wetland forests, ash trees line much of the riverbanks and act as natural filters that help keep agricultural runoff out of our water supply. The national EAB Science Advisory Panel determined that the best strategy to protect North America's ash resource from the pest is to aggressively slow its spread. Natural spread of flying beetles can be slowed by destroying infested ash trees as they are found along with all other ash trees within a half mile of the find. Artificial spread of the infestation can be accomplished by stopping the moving of ash firewood and other ash products out of known infested areas. To facilitate this policy in Indiana, we at Purdue needed to significantly boost public awareness of EAB, thus equipping the public to actively participate in detection and eradication of EAB in Indiana. Further, to avoid public confusion, we realize the importance of harmonizing our message with that of other state agencies as well as messages of our neighboring states with EAB. As active members of the Indiana Exotic Forest Pest Advisory Committee and the EAB Tri-State Communications Committee (Ohio, Michigan, Indiana) we formulated clearly defined objectives for our educational program. The first objective was to make people care about ash trees and be able to recognize EAB and its injury. The second objective was to involve the public in the search and reporting of suspicious looking ash trees, or ash firewood. Last and probably most importantly, was to convince the public that they could

help stop the spread of EAB by changing their practice of bringing firewood along on camping trips. In addition to conducting a series of meetings with the affected public, various green industry and garden groups, and public educators, we launched a media campaign that included radio spots highway billboards and targeted audience education sessions. To reach people most likely to move firewood, we launched our media campaign to coincide with the start of the camping season.

Impact: The declaration of EAB Awareness Week by the governors of Ohio, Michigan and Indiana increased media coverage. At kick-off media event, we introduced our traveling EAB display and "Eric the EAB" costumed character, both of which were funded by USDA-APHIS. The display and costume have since been used in outreach at the Indiana State Fair, the LaGrange County Fair, Elkhart County Fair, the Farm Progress Show in Illinois and the Farm Science Review in Ohio. The week's events resulted in over 50 separate stories by newspaper, radio and television outlets at the start of the Indiana camping season. Our efforts to focus media attention on firewood as the primary vector of EAB have facilitated fundamental changes at campgrounds throughout the state. Many private campgrounds, especially in NE Indiana, no longer allow firewood of any kind to be brought to campgrounds. Some state parks such as Pokagon now telephone campers from Zip codes where EAB is quarantined who have made reservations at the park's campground, telling them not to bring firewood with them. EAB literature and information is given to all campers at the gate. EAB information is part of the naturalist curriculum around the state. At least eight RV dealerships now clearly display EAB posters to alert their customers about the issues. During town meetings, we met with over 150 individuals in recently quarantined areas. As a result of these meetings, over 50 compliance agreements were signed enabling citizens to extract some lumber or firewood value out of their trees before they were destroyed. At these meetings many attendees volunteered information about possible new EAB sites, both inside and outside of the quarantined townships. These leads were subsequently followed up on by IDNR. As a result of our work with the Indiana Nursery Industry, over 40 nurserymen and landscapers throughout the state requested EAB kits to use to educate their employees and to display in their businesses. As a result of local publicity about EAB, we were asked to examine dying ash trees at a shopping mall in Lafayette after the property manager was told by an Indianapolis landscaping firm that the trees had EAB and needed to be destroyed. Although the ash trees did harbor native borers, no EAB was found. As a result of their work Purdue Extension and Indiana Department of Natural personnel received more than 300 inquiries about emerald ash borer and over 10,000 website hits. Through the use of compliance agreements, residents of EAB infested areas were able to recoup thousands of dollars from ash slated for destruction.

Source of Funds: Smith-Lever, State

Scope of Impact: IN, OH, MI

Key Theme: Land Use

Land Use Basics

Continued developmental growth in Indiana has placed pressures on its land resources. Issues such as balancing growth and farmland protection challenge local decision makers and citizens to seek solutions to these issues. These issues were raised during local POW input meetings and the need to update the comprehensive plan and its ordinances. Four statewide two-way video programs have been conducted on current topics in land use. The programs included speakers included Purdue Specialists, Extension Educators, planners, local officials, and citizens.

Impact: Approximately 280 participants have attended the four sessions in as many as 23 viewing sites around Indiana. 97% of the surveyed participants indicated they would recommend these programs to others. 74% of the individuals survey indicated they will use something in their local community as a result of what they learned from this program. Many attendees feel more confident in their duties as a plan commission and board of zoning appeal members. They indicated that they will be better able to address issues more professionally and legally defensible. Attendees also indicated they realized the importance of involving the public in a comprehensive planning process. They gained ideas on how to increase public involvement in the comprehensive planning process. The attendees learned how the comprehensive plan can serve as their guide for their community development process.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

Key Theme: Natural Resources Management

Timber Marketing for Private Woodland Owners

Most private woodland owners fail to properly manage their timber resources, largely because they lack the knowledge to do so. Failure to manage timber stands degrades the quality of timber produced, slows tree growth, and reduces the value of standing timber. Furthermore, most landowners fail to properly market their timber at the time of sale, greatly reducing their potential and realized incomes. The Marshall County 4-H Youth Educator co-coordinated a timber management and marketing workshop with the Marshall County ANR Educator and the Forestry Committee of the Arrow Head Country RC&D. The workshop consisted of an afternoon visit to a professionally managed timber stand owned by Marshall County. The evening session was Extension Office-based and included speaker-led overviews and discussion of proper timber marketing, establishing a

timber sale, timber income tax management, and the end-product possibilities for Indiana timber.

Impact: A timber marketing and management workshop was provided to 52 private landowners (a number of "couples" attended, reducing evaluation response below the attendance total). Post program evaluation tool summary indicated that 100% of respondents (30 of 30) agreed or strongly agreed that they gained knowledge regarding how to properly sell their timber. Ninety percent (28 of 31) indicated they better understood the components of a properly managed timber sale. When asked the questions "Do you feel this workshop will have a positive impact on your future timber management decisions?" and "Do you feel this workshop will have positive impact on your future timber sale decisions?" 100% (31 of 31) responded positively. Through program participation participants gained knowledge about proper timber marketing. Such knowledge gain will lead to more informed decisions for these private landowners at the time of timber sale, resulting in greater financial gain in the near-term. Attendees were also introduced to the concepts of sound timber management techniques, the application of which will help them reduce the length of rotation between timber harvests and improve quality of future timber stands, thus increasing potential timber income in the long-term as well.

Source of Funds: Smith-Lever, Hatch, State

Scope of Impact: Nationwide

Key Theme: Pesticide Application

Atrazine in Indiana Surface Water

Atrazine is the number one corn herbicide used by Indiana farmers. According to Indiana Agriculture Statistics, in 2003, atrazine was applied to 83% of the corn acreage in the state. Because of the large volume applied and the solubility of atrazine, atrazine was detected in 47% of public surface water supplies from 1992-2003. EPA implemented a five-year monitoring program in 11 Indiana watersheds as a condition of re-registration for atrazine. Failure to lower atrazine levels in surface water after the five years could result in atrazine being banned or further restricted in that specific watershed. Farmers are required to be certified before purchasing and applying atrazine, a restricted-use pesticide. To retain their pesticide certification farmers attend recertification programs hosted by Purdue Extension educators. At a Boone County recertification programs, farmers learned about the atrazine monitoring program and the need to prevent atrazine from entering Indiana surface water. The local Ag educator explained practices that slow water and atrazine movement, such as reduced tillage, field drainage tiles, and delaying application before a rainfall event. The presentation addressed the specific setback

distances listed on the atrazine label for application and mixing of atrazine near surface water and wellheads. Farmers were encouraged to implement weed control options that reduce atrazine applications, such as substituting products, tank mixing with atrazine, incorporating atrazine and using atrazine post emergence. The atrazine presentation was heard by 43 Boone County farmers on March 6, 2006.

Impact: A total of 39 farmers (91%) responded to survey questions regarding their atrazine use and practices. When asked their level of concern of atrazine in surface water prior to the program, 33% thought atrazine was a major risk. After the program 51% categorized atrazine in surface water as a major risk. Atrazine is an important herbicide to 95% of the farmers who completed the Boone County survey. Of the farmers who use atrazine, 80% estimate they would lose 5-20 bushels/acre in corn yield if they could not apply atrazine. 91% of the farmers that use atrazine estimated their cost for corn herbicides would increase $4 to $10 per acre. Farmers were asked to select practices they would adopt in the areas of regulation, crop management, and environmental protection to reduce atrazine movement to surface water. The top choices of: "follow setback distances", "grass filter strip" and "do not apply if rain", reflect practices from the three categories presented during the atrazine program.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

Key Theme: Water Quality

Indiana Watershed Leadership Academy - 1st year

Community-based watershed planning is becoming an important means of addressing water quality across the U.S. To establish effective watershed management programs, watershed practitioners must integrate sound science and social values, incorporate stakeholder involvement, use current technology such as GIS and runoff estimation tools, and make management decisions that are appropriate for local conditions. Although passionate and dedicated, the majority of community-based watershed and river groups lack the knowledge and specialized skills to wade through the tools, regulations and relationships involved in managing watersheds. We initiated the Indiana Watershed Leadership Program (www.purdue.edu/watersheds) in 2005 to respond to the need to build watershed management capacity with the first offering of its major product, the Watershed Leadership Academy, from January to June 2006. In its first year, 24 emerging watershed leaders participated in this challenging five-month program. They learned together during six days of face-to-face training with overnight stays. They completed distance education modules between sessions. They learned from their peers during networking sessions, emails, and distance education exchanges. They also chose

an individual water topic to investigate during the class. Those who completed all requirements received a Professional Certificate of Watershed Management. The course was very successful, receiving outstanding evaluations from the first class. It is supported by all the major conservation organizations in Indiana. The unique strength of the Academy is that it accomplishes three things: (1) it requires participants to complete activities that reflect real tasks in watershed management, (2) it builds community among the participants, and (3) it holds them accountable to the group and to themselves to actually complete the things they set out to do.

Impact: The skills gained through the Academy advance and increase the number of effective community-based watershed partnerships in Indiana, equipping them to more effectively address non-point source pollution in their Watershed. One member of the Academy class of 2006 commented: "The Indiana Watershed Leadership Academy has been invaluable to me and my watershed group. The learning tools the Academy provided have helped us get our water quality monitoring program up and running, our meetings are shorter and more productive, and it has increased my credibility with my employer, stakeholders, and community." Numerous Indiana agencies have expressed their strong support for the program. For example, Jennifer Boyle, Executive Director of the Indiana Association of Soil and Water Districts, stated "The existence of the Indiana Watershed Leadership Program is paramount to helping us keep a healthy and sustainable environment in Indiana" Graduates of the Indiana Watershed Leadership Academy are now establishing networks, educating their communities, and helping make changes on the land through watershed planning and improvement actions.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

Key Theme: Wildlife Management

Wildlife Crop Depredation — Creating a Sustainable Coexistence Between the Agriculture Industry and Wildlife Conservation

Agricultural damage by wildlife species is substantial and widespread and has been estimated to cost agricultural producers over 4.5 billion dollars annually in the United States. A 1993 and 1994 research survey indicated that 80 percent of farmers and ranchers suffered wildlife damage in the prior year, and 53 percent suffered damage that exceeded their tolerance, which in turn, affected their willingness to manage for wildlife. Negative perceptions related to crop depredation by vertebrates are likely the fundamental causes of most conflicts arising between agricultural and wildlife interests. The development of viable solutions to such conflicts is the primary means to a more productive and sustainable coexistence between agriculture and wildlife in human-

dominated landscapes. We surveyed crop depredation by wildlife species across a 450-square mile portion of northern Indiana and have quantified wildlife damage occurring in corn (100) and soybean (60) fields from planting until harvest using multiple transect surveys throughout the growing season. We collected extensive telemetry data on target species including white-tailed deer, raccoons, and wild turkey to determine spatially explicit movement data for these species within the same landscape, specifically surveying crop damage. With this data, we produced a Web site, a DVD, and three publications that address differences in the perceived damage to crops and the actual damage determined from field transects, and assist landowners correctly identify wildlife damage culprits. This research has appeared in 11 manuscripts submitted to peer-reviewed journals and 17 presentations for public and professional audiences specifically interested in wildlife management and the agricultural industry.

Impact: Indiana DNR district biologists are using the materials to help them deal with crop damage complaints from farmers in their districts. These materials were distributed to state deer and turkey biologists in the Midwest to assist biologists in those states deal with crop damage complaints. The research indicates that landowners underestimated the number of damaged fields and overestimated the value of crops lost due to wildlife damage in terms of dollars lost rather than percent of total crop lost. Farmers believed that deer caused the most damage to corn when most of the damage was caused by raccoon. Misidentification of wildlife damage to crops leads to negative feelings towards that species, which in turn leads to unnecessary and unwarranted damage management practices resulting in a loss of time and money by the farmer. Accurate assessments are important because research shows that those experiencing damage may be less likely to appropriately manage for wildlife on their property.

Source of Funds: Smith-Lever, State

Scope of Impact: North Central States

GOAL FIVE. ENHANCED ECONOMIC OPPORTUNITY AND QUALITY OF LIFE FOR AMERICANS. Empower people and communities through research-based information and education to address economic and social challenges facing our youth, families, and communities.

Overview

Families are at the very heart of the strength and competitiveness of our nation. Indiana county-based needs assessments strongly indicated that increasing parenting skills was the topic of highest priority for Extension programming. Purdue Extension continues to respond to this high priority. The Strong, Resilient Families Plan of Work Issue is responded to with high priority. A diversity of programming was offered to strengthen families through the learning and use of positive personal development and relationship skills and teaching parents to know and use positive parenting practices. Over 129,029 direct contacts have been made with programming focused to strengthen families in FY 2006. These contacts represent 1,657 contact days of programming effort.

The hurricanes of 2005, especially Katrina, left families challenged to find a way to cope and to help their children. Thousands of people died, entire communities were destroyed or displaced, and families were separated. Although the people in the direct path of the storms were affected most severely, families across the country and across the world experienced the storms through the media and through contact with loved ones in the area.

Family child care providers and lead teachers in child care center settings in Indiana are required to obtain the Child Development Associate (CDA) Credential from the National Council for Professional Recognition in Washington, DC, to meet state child care licensing regulations. Purdue Extension provided classes for child care providers in 16 Indiana counties in preparation for the national CDA assessment. A total of 78 CDA candidates participated in CDA classes and advising. Their training will impact 1,086 children in their direct care and potentially impact a total of 5,357 children at the providers' sites.

Indiana consumers and Americans in general, need to become more aware of their money management practices. They need to take control of their finances and plan for the future. In other words, they need to become financially stable. The Making Your Money Work program resulted in a positive impact for more than 200 participants.

The Get Checking program is a "second-chance" program that provides financial education to consumers who have been reported to ChexSystems for account mismanagement. Because they are listed in ChexSystems they are unable to open a checking or savings account or use other services at financial institutions. From September 2003 to June 2006, 1,688 Indiana consumers earned Get Checking certificates

of completion and became eligible to open a checking or savings account at partner institutions. In a follow-up survey, nearly all of those responding reported opening a checking account, and many reported financial savings as they no longer had to pay check-cashing and money order fees.

Indiana is now ranked the 4th highest state for adult obesity and 17th for youth obesity in the nation. The most recent health statistics on the overweight crisis in Indiana indicate that 15% of our teens are overweight and an additional 14.3% of Indiana students are at risk of becoming overweight. The grim reality is that overweight teens have a 70% chance of becoming overweight adults. Early intervention with education and hands-on, experiential activities is an effective and tested way to reach youth to increase their knowledge of healthy eating habits and to change behaviors. Marion County is dealing with the problem collaboratively by teaching students a program called Now You're Cookin' during summer camp and after school programs. Adams County is collaborating with the local hospital and the Parks and recreation Department to teach the Super Kids 8 week series.

Youth Development

Purdue University, through its 4-H Youth Development Program, reached 329,842 youth throughout Indiana during FY06. We continue to focus on new audience development to reach youth beyond the community club program in order to meet youth needs and build youth competencies relevant to enabling them to become successful adults. Much of our success is due to the outreach being done county by county in collaboration with other organizations. We have continued our work to establish 4-H After school Clubs by working with a variety of organizations that provide ongoing after school child care. Extension staff in Indiana has reported 10,218 days of activity, with 357,133 direct contacts addressing issues related to youth development

Priority programming for Goal 5 topics are determined with input from local Extension Boards, volunteer planning groups, and collaborations with cooperating agencies, organizations, and educational networks at the county and state levels interested in the same program outcomes.

Resources: Approximately $ 4,433,577.60 and 95.21 FTEs have been invested in Goal 5. This is a best estimate and these are not presented as auditable numbers.

Key Theme: Child Care/Dependent Care

Providing Training to Childcare Providers

Since June 2001 in Indiana, obtaining the CDA (Child Development Associate) Credential is a requirement for family childcare providers and lead teachers in child care

center settings in order to meet state child care licensing regulations. The CDA Credential is considered the foundation for caregivers entering the early childhood profession. Child care providers work long hours (usually 6 a.m. to 6 p.m.), and many times do not have easy access to the needed classes. Having CDA training available in their local communities is a high priority for child care providers needing this Credential. Increasing the educational level of child care providers is also a high priority for Indiana, since research indicates "a strong relationship between the number of years of education and training and the appropriateness of a teacher's classroom behavior." *(Eager to Learn, 2000)***.** Purdue Extension provided 120 classroom hours of CDA Credential training (four classes of 30 hours each) plus advising for the CDA candidates in preparation for their National CDA assessment. Class topics included: safe, healthy, learning environment, physical, cognitive, communication, creative, self, social, guidance, families, program management and professionalism. The CDA grant began in October 2005 and will continue through September 30, 2006. CDA classes were offered to child care providers from the following 16 counties, several of them rural counties not currently having access to other formal CDA training: Carroll, Clark, Clinton, Crawford, Floyd, Grant, Harrison, Howard, Huntington, Lawrence, Madison, Orange, Tippecanoe, Tipton, Wabash, Washington.

Impact: Seventy-eight (78) child care providers needing the CDA credential participated in the grant-funded CDA program. All 78 participants had at least a GED or high school diploma but almost no other educational training prior to participating in the CDA classes. A five-question, open-ended evaluation instrument was administered at the beginning of each class period based on the previous class's instruction and experiences. The questions were designed to reflect changes implemented in the areas of attitude, knowledge gain, skill, and behavior. Content analysis of the returned self-report evaluations indicated that the CDA classes significantly influenced candidates who received CDA training. Candidates reported acquiring a more professional view of themselves. Candidates also positively changed their views about young children and their families, and changed their interactions or behaviors with young children. Many reported changing their child care environments to be more closely related to developmentally appropriate practices and acquiring new knowledge and skills. Individual candidate comments have also indicated positive personal changes and a high level of satisfaction with the CDA courses and their local delivery. In addition to qualitative self-reported data, pre- and post-tests based on specific curriculum content were administered at the beginning and end of each curriculum topic area studied. For the quantitative analysis, 5 modules showed on average a statistically significant mean difference from pre- to post-tests (module 2: healthy, 4: physical, 9: social, 12: program management, and 13: professionalism). In the post-test, on average the participants answered more of the questions correctly.

Source of Funds: Smith-Lever, IAYEC, FSSA

Scope of Impact: IN

Key Theme: Families Dealing with Disasters

After responding to a number of requests from mass media immediately after Hurricane Katrina and other storms a fact sheet was developed titled: Helping Children Understand Disaster. It was made available on the Internet. It was linked to numerous other pages, and Kentucky Extension requested and received permission to re-edit the piece and break into smaller publications. In addition, a fact sheet originally prepared several years earlier, Talking with Children When the Talking Gets Tough, was further edited and re-released in the official CFS Extension format. Several versions of a policy brief addressing families and disaster preparedness were prepared at the request of the National Council on Family Relations. A number of presentations were made on the topic of families, children, and disasters. One presentation included participation with a group of Extension professionals from the Gulf States to preparation of a DVD and online package on families and disasters. Direct presentations to groups were given at the regional Head Start conference in Ohio, to 16 sites using Centra technology and organized by CYFERnet (the national database of child, youth, and family materials), to the Human Development Educators in Indiana (provided both a presentation and a workshop outline for them to make presentations), to the Home & Family conference on the Purdue campus, to the American Association of Family and Consumer Sciences annual meeting, and through a workshop and keynote to the California Council on Family Relations annual meeting. A trip to New Orleans was also planned to help with the orientation and training of college students volunteering to help provide youth programming to young people in that city. As part of the educational outreach, Purdue provided information about some direct service efforts that could be undertaken by assembling relief kits for distribution by Church World Service. She was asked to coordinate an effort to collect items at Purdue and did so. Partners in this effort were undergraduate students and instructors in Child Development and Family Studies, families and staff in the Purdue Child Care Program, the Consumer and Family Sciences Student Council, faculty, graduate students, staff, and other groups with whom those people interacted.

Impact: Over 250 people in multiple states were reached directly through Myers-Walls programming. An unknown number were reached by written materials and through online access. The donations for the relief kits allowed the assembly of 250 health kits (valued at approx. $12 each), 54 kids kits (valued at approx. $24 each), 16 school kits (valued at approx. $13 each) and over $325 in cash donations. The total monetary value of the completed kits and cash is estimated at $5000. In addition, items that did not complete kits were donated to shelters or given to other groups who wished to complete other kits.

Source of Funds: Smith Lever, State

Scope of Impact: Nationwide, Alabama, California, Kentucky, Indiana, Louisiana

Key Theme: Healthy People Healthy Communities

Coalition Building

Indiana residents are concerned about the recent release of data identifying Indiana as having 28 percent of its population overweight (eighth in the nation), 27 percent of its population using tobacco products (second in the nation), and a state high school dropout rate at 27 percent. Purdue Extension CFS educators are creating awareness in their counties of some of the challenges we face with these three issues. Through the facilitation of Extension educators, many community partnerships have been established. Through the coalitions, CFS educators are working with local county residents and making the resources of Purdue University and Purdue Extension available to find workable solutions to address these issues.

Impact: Purdue University Extension CFS now has Healthy People, Healthy Communities coalitions in 46 Indiana counties. Beginning in January 2007, a survey will be sent electronically to the Extension CFS educators to identify the partners and the plans of action developed by the local coalitions, and to identify additional assistance needed by the coalitions to carry out their plans of action.
Partnerships Established: Indiana State Department of Health, Indiana State Department of Education, Local County Health Departments, INShape Indiana, Purdue University Landscape Architecture and Horticulture Department, Indiana Institute for Fitness and Sport, Purdue University Foods and Nutrition Department, Purdue University Health and Kinesiology Department, Ruth Lilly Health Education Center, Indianapolis, YMCA/YWCA, Tippecanoe County Vision 2020, Indiana Tobacco Cessation and Prevention Coalition, Indiana Diabetes Advisory Group.

Source of Funds: Smith-Lever, State

Scope of Impact: Indiana

Walk Across Indiana

Recent studies indicate that almost 28 percent of Indiana's population is overweight (eighth in the nation) but ranks 38th in number of citizens participating in physical activity at least once a month. To draw attention to the importance of physical activity in combination with sound nutrition to manage health and weight, the first Walk Across Indiana was held the week of October 21-October 28, 2006. Partners in this event were the Purdue University College of Consumer and Family Sciences, Purdue University Cooperative Extension, Clarian Health, The Coca-Cola Company, Dick's Sporting Goods, Indiana State Department of Health, Indiana State Police, and Governor Mitch Daniels' INShape Indiana. All 92 counties were encouraged to plan an October 28 walk in the county. Several Healthy People, Healthy Communities coalitions were involved in

planning the walks. Some of the counties planned their walks in conjunction with health fairs, and local walking/running/hiking clubs.

Impact: The walk generated the following impacts:

- 827 walkers from 24 counties
- walked a total of 4,713 miles and
- 9,425,889 steps.
- One participant walked from Evansville, Indiana, to Indianapolis, beginning October 21 and walking into Indianapolis October 28.
- First time in Indiana's history that one day was selected for the entire state to walk for health.
- The statewide 2007 Walk Across Indiana will be held October 6.

Source of Funds: Smith-Lever, State

Scope of Impact: Indiana

Coalition Building at Indiana Health Summit

The second Indiana State Department of Health INShape "Health Summit" was held November 27 in Indianapolis at the Convention Center. Its purpose was to bring together all the agencies, organizations, universities, and businesses working for a healthier Indiana. Scholars in the field of health shared current research on managing weight, physical activity, and tobacco health costs and monetary costs to the state of Indiana. Purdue University Consumer and Family Sciences Extension played a significant role in educating participants at this year's summit by teaching 10 workshops on coalition building. Twenty-five CFS educators and three Purdue Extension CFS specialists led the 10 workshops simultaneously. Summit participants were divided by the 10 Extension areas. Each area was represented by 8 to 11 counties. A section of the workshop focused on county members defining three goals for their county targeting obesity, physical activity, and tobacco cessation.

Impact: Purdue University Extension College of Consumer and Family Sciences and the Indiana State Department of Health continue to strengthen their partnership and address Indiana's health issues. The participation by Purdue University Extension CFS educators serves to increase the visibility of Purdue University's engagement activity and share the expertise of Purdue Extension CFS field staff.

- 80 Indiana counties participated in the one-day INShape Health Summit, with
- almost 900 registrants.

Participation in this Health Summit has already led to an invitation from the state tobacco cessation coalition executive director for our Extension CFS educators to teach coalition building workshops in 10 locations around the state in partnership with the State Department of Health tobacco cessation coalitions. The CFS educators and Economic Community Development (ECD) educators will partner to facilitate the workshops. These 10 area workshops will be scheduled for 2007. A committee of Purdue Extension CFS and ECD educators and tobacco cessation coalition members will plan the workshops.

Source of Funds: Smith-Lever, State

Scope of Impact: Indiana

Habitat for Humanity Partnership

Due to high (20%) foreclosure rate Habitat for Humanity of Greater Indianapolis explored the possibility of outsourcing its education program. While Habitat offers the opportunity for families with very low income to purchase first-time homes that are safe, decent, and affordable, the first time homeowner needs knowledge and skills to successfully manage the responsibility of homeownership and to maintain and improve their home, resulting in an improved quality of life. Habitat for Humanity homeowners are required to complete a money management series.

Purdue Extension partnered with Family Service to provide educational classes for Habitat for Humanity families on 11 different topics. An end of series IRB approved evaluation was developed and voluntarily completed by Habitat partner families.

Impact: Habitat partner families reported that following the educational program series 85% now track expenses, 65% write financial goals, 73% write and review a spending/savings plan monthly, 54% save for an emergency fund, and 65% have a record keeping system and know where personal and family documents are located. Seventy seven (77) % of the families reported as a result of this program series they saved money. The amounts saved ranged from $120 to $10,000 with most saving between $300 and $800 during the 6 months of the program series. 88% of the partner families reported they "do understand how their current money management practices affect their financial stability", 88% reported an increase in their knowledge of money management practices that lead to financial control, and 100% of the families reported "they have the knowledge and skills to make financial decisions that will assist them in acquiring and maintaining their Habitat homeownership" as a result of the financial management program series.

Source of Funds: Smith-Lever, State Habitat for Humanity of Greater Indianapolis Family Service, State Farm Insurance

Scope of Impact: Marion County

The Super Kids Program

Over 15% of children and adolescents ages 6-19 years of age are obese. More than a third of young people in grades 9-12 do not regularly engage in physical activity. Indiana has the dubious distinction of being the 5th FATTEST state in the nation. Obesity is the second leading cause of preventable disease in the United States and is known to be linked to diseases such as heart disease, stroke, diabetes, metabolic syndrome, hypertension, sleep apnea, osteoarthritis, polycystic ovarian disease and some forms of cancer. Overweight and obesity are associated with an increase in a variety of risk factors for cardiovascular disease, high blood pressure, type 2 diabetes, metabolic syndrome, osteoarthritis, gall bladder disease, sleep apnea, some psychosocial disorders, some forms of cancer and increased mortality. About 300,000 deaths each year are associated with obesity. The increased prevalence of individuals who are overweight and obese has also increased the health care costs associated with the increased risk factors. In fact, according to the Centers for Disease Control, in 2001 a little over 117 billion dollars was spent by Americans on direct or indirect health care. Over 39 million workdays, 62 million physician office visits, 89 million bed days and 239 million restricted activity days are lost each year due to obesity. Other factors include medications, hospital or nursing home care, and loss wages because of illness or disability, as well as the value of future earnings lost by premature death. Purdue Extension collaborated with the local hospital, county health department, and the parks and recreation department to address childhood obesity in the community. The committee includes all disciplines of the health care team including two registered dietitians, a registered nurse, exercise physiologist, mental health counselor, education coordinator, physical therapist, a nurse practitioner, and three physicians. A grant for $35,000 was awarded to the committee to provide an eight week series of programming for parents and youth, ages 11 to 16 years of age. Adams County CFS educator who is also a Registered Dietitian organized and presented the nutrition segment to both the youth and parents twice a week. In 2005-06, The Super Kids 8 week series was offered three times with 27 participants. A local coalition of health professionals and educators representing Adams Memorial Hospital, Adams County Parks and Recreation Department, and Purdue Extension of Adams County formed a coalition to address childhood obesity in the community.

Impact: Twenty-seven youth completed the eight week series of nutrition education, physical fitness, and behavioral health counseling. Post survey data revealed that each participant gained self-confidence and succeeded in weight loss. The eight youth reported a total weight loss of sixteen pounds in eight weeks. Parents reported an overall increase in confidence among their children and felt confident in modeling a healthier lifestyle for their children following the series. One participant has lost a total of 30 pounds and gave a presentation to the committee stating: "Thank you so much for offering this class, it

made a difference to me. I didn't want to participate but you all made it fun. I have lost 30 pounds and feel so much better about myself; I have gained confidence and have been trying new things because of this class."
Over 15% of children and adolescents ages 6 to 19 years of age are obese. A local coalition of health professionals and educators representing Adams Memorial Hospital, Adams County Parks and Recreation Department, and Purdue Extension of Adams County formed a coalition to address childhood obesity in the community. In 2005-06, 27 youth completed the eight week series of nutrition education, physical fitness, and behavioral health counseling. The youth reported gaining self-confidence after participating in the series. A total weight loss over the series was sixteen pounds. Parents reported an overall increase in confidence among their children and felt confident in modeling a healthier lifestyle for their children following the series.

Source of Funds: Smith-Lever, State, Adams Memorial Hospital, Adams County Parks and Recreation, and Adams County Health Clinic

Scope of Impact: Adams County

Now You’re Cookin’

Indiana is now ranked the 4th highest state for adult obesity and 17th for youth obesity in the nation. The most recent health statistics on the overweight crisis in Indiana indicate that 15% of our teens are overweight and an additional 14.3% of Indiana students are at risk of becoming overweight. The grim reality is that overweight teens have a 70% chance of becoming overweight adults. Early intervention with education and hands-on, experiential activities is an effective and tested way to reach youth to increase their knowledge of healthy eating habits and to change behaviors.
Working in collaboration with after school and summer camp programs, Purdue Extension - Marion County's Foods and Nutrition Educator presented Now You're Cookin' at one Indianapolis Public School (#15) and at seven summer camps throughout Indianapolis. Now You're Cookin' is a hands-on cooking program which consists of 6 sessions covering the topics, Go for the Grains, 5-a-Day the Color Way, Diary for You, Meat for Strong Bodies, and food safety. In the after school program, 31 students ages 5 - 9 prepared and sampled oatmeal and cornmeal pancakes, granola parfaits, veggie pita pockets, spinach Parmesan, fruit and juice breakfast shake, chili cheese dip, black bean dip and turkey sloppy Joes. A post program survey was administered to 18 youth to assess attitudes and behaviors. During the summer, a grant from the Summer Youth Program Fund for $11,000 helped support Now You're Cookin' programs in 7 summer camps. At total of 166 youth (86 girls & 80 boys; 43% White, 51% African American, & 55% Hispanic) ages 5 - 16 participated by preparing and sampling pancakes, popcorn trail mix, fruit smoothies, fruit roll-up, veggie roll-up, hummus, bean dip and spinach salad along with a variety of nuts. A pre- and post-program evaluation was given to some

of the youth and most all received post-program surveys.

Impact: Evaluation results confirm that youth are open to new experiences and that today's youth is responsible for some of their own meals. Eighty percent of youth surveyed from the summer camp program prepare their own breakfast and seventy-six percent reported preparing lunch. Youth like to cook and 83% reported using the microwave. Most youth were very receptive to Now You're Cookin' because 81% indicated that they liked to program a lot while 18% indicated that they liked the program somewhat. Of the five food groups, youth are not getting enough fruits and vegetables, grain foods and dairy. All participants of Now You're Cookin' were able to prepare and sample foods from all three of these groups including the meat group. Typically the fruit and dairy groups are well received and liked because 80% of the youth tried and liked the pineapple and orange smoothies from the fruit and dairy group. The youth made hummus and bean dip representing the meat group. Eighty percent tried and liked the bean dips sampled. Two important groups showed that children do not consume enough from are the grains and vegetable groups. All youth prepared oatmeal and cornmeal pancakes, veggie pockets and spinach. Fifty-two youth in both the after school and summer camp programs completed post-program surveys. Sixty-five percent of the youth evaluated tried the oatmeal pancakes and 58% liked them while 73% never had them before. Similarly, 60% of youth evaluated tried the cornmeal pancakes and 48% liked them while 50% had them before. As for the veggie pockets, 67% tried them, 36% liked them, while 69% never had them before. The veggies in the pita pockets were - zucchini, peppers (green, red and yellow), carrots, tomatoes and avocados. Likewise, spinach was not very well liked by 31% of those surveyed while 67% did try the spinach dishes (spinach Parmesan and spinach salad) and 65% never had them before.

Source of Funds: Smith-Lever, State, Summer Youth Program Fund

Scope of Impact: Marion County

Educational Attainment

Indiana has a low rating regarding educational attainment by youth; the high school drop out is very high. By organizing community partnerships, including school corporations and economic development councils, CFS educators and Indiana Extension Homemakers members are beginning to bring focus to communities on the issue and are organizing groups to begin working with youth who have limited opportunities for career mentoring and tutoring with homework.

Impact: Through an application process, seven pilot counties were identified for the program. Counties have or are in the process of establishing community coalitions to address the dropout and low literacy rate in their school corporations. Monthly IP videoconferences with the seven pilot county teams share data pertaining to the value of

education for cost- of-living expectations based on no high school degree, high school degree, associate's degree, bachelor's degree, and advanced education. The IP videoconference agendas also have included the sharing of models that have worked in other Indiana communities to increase value of education among students, their parents, and community members.

Source of Funds: Smith-Lever, Indiana

Scope of Impact: Indiana

Key Theme: Family Resource Management

Making Your Money Work

Indiana consumers and Americans in general, need to become more aware of their money management practices. They need to take control of their finances and plan for the future. In other words, they need to become financially stable. The Making Your Money Work curriculum consists of a series of six 90-minutge sessions designed to move low-literacy, low-income participants to financial stability. Since 2002, sessions have been taught in several Indiana counties. More than 200 consumers attended class sessions over that time period. Twenty-one percent of the participants were male; 34% were Hispanic, Black/African or American Indian. Eight six percent had earned at least a GED or high school diploma; 33% had attended some college courses while 21% had a college diploma. Participants were asked to describe the types of financial accounts they used. Over half had a savings account while nearly three out of four had a checking account. One out of three participants had car loans, mortgages and retirement savings beyond Social Security; 15% had student loans. Nearly half had access to credit cards. Participants were asked about their money management-related activities before and after participating in the program. The activities were: tracking some or all expenses, comparing prices when shopping, setting aside money for future needs/wants, using a spending plan, knowing the cost of buying on credit, repaying money owed on time, writing goals for managing money, discussing money management with family members, believing the way money is managed affects the future, confidence making decisions that deal with money.

Impact: More than 200 participants who completed Making Your Money Work evaluations reported changes in money management activities after completing the program. In tests of paired samples, participants reported a significant before/after difference for each of these activities. This suggests that participating in the Making Your Money Work program resulted in a positive impact for these participants.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

“Get Checking™”

Thousands of Hoosier adults can't get a checking account because their names have been reported to ChexSystems, a national database similar to a credit bureau that is used by financial institutions. Their names remain in ChexSystems for five years. Consumers who do not have access to financial services often pay high costs for check cashing, money orders and electronic money transfers. Get Checking opens doors to checking account services for thousands of Hoosiers Purdue Extension offered Get Checking™, a "second-chance" program that provides financial management education to consumers who have been reported to ChexSystems for account mismanagement. The program helps consumers develop the skills to manage and reconcile checking and savings accounts; establish a financial plan; and establish or re-establish a credit history. Upon successful completion of the Get Checking program, participants receive a certificate that allows them to open a checking and/or savings account at a participating financial institution. The program was started in Marion County in September 2003 with five educational partners and five financial institutions. The Indianapolis Metro Collaboration expanded in 2004, followed by the statewide program in September 2005. As of June 30, 2006, 1,688 people earned Get Checking certificates of completion. The program has 17 financial partners. In April 2006, a follow-up survey was mailed to participants in Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan and Shelby counties who had completed the program as of Dec. 31, 2005.

Impact: The 1,688 people who successfully completed the Get Checking program were eligible to open a checking or savings account at a partner financial institution, allowing them to put money previously spent on check-cashing and money order fees toward their financial goals.

Participants from the eight counties who were surveyed responded as follows:

- 98 percent reported opening a checking account
- 57 percent reported opening a savings account
- 75 percent reported keeping an up-to-date check register
- 35 percent reported they had no expenditures for cashing paychecks or buying money orders, saving an average of $16 and $23.48 a month, respectively.

Participant comments included: "I will now compare my statement to my book (register)." "New beginning for my finances."

Source of Funds: Annie E. Casey Foundation, Smith-Lever, State
Scope of Impact: IN

Indiana's First-Annual Money $mart Week

Purdue Extension was a partner in Indiana's first-annual Money $mart Week held October 15-21, 2006. We joined the Detroit branch of the Federal Reserve Bank of Chicago and dozens of other organizations across Indiana to implement the annual event of Money $mart Week. The goal is to provide free education aimed primarily at the elderly, unbanked, and youth.

Impact: Extension educators and their local partner organizations in 12 counties across the state sponsored events during the week. Nearly 20 events were held and 2,000 individuals were reached. In addition, working with WFYI public television, we received permission to air two educational videos on Boiler TV. They were "Affluenza" (go to http://www.pbs.org/kcts/affluenza/ for more information) and "Avoiding the Money Trap" (go to http://www.aecf.org/initiatives/fes/pdf/mt_press_release.pdf for more information). Each video aired seven times during the week. In addition to Purdue Extension's participation in Money $mart Week, there were 30 additional partners, including: Centier Bank, Chase, City of Gary – Homeownership Opportunity Network, City of Indianapolis, Consumer Credit Counseling Service of Northwest Indiana (CCCS), Family Strengthening Coalition, Federal Deposit Insurance Corporation (FDIC), Fifth Third Bank, General Motors Acceptance Corporation (GMAC), Huntington County, Veteran Service Office, Homecomings Financial GMAC-RFC, Indiana Bankers Association, Indiana Council for Economic Education, Indiana Credit Union League, Indiana Department of Education, Indiana Family, Career & Community Leaders of America, Indiana Family & Consumer Sciences Teachers, Indiana Mortgage Bankers Association, Inquisitive Kids, Inc., Internal Revenue Service, Junior Achievement, Momentive Consumer Credit Counseling Service.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

Key Theme: Leadership Training and Development

Teen Leadership Development

Description: In order to become productive members of society, youth need to develop and demonstrate interpersonal, organizational and leadership skills. Serving as a 4-H camp counselor assists teens in honing essential life skills while providing a benefit for and serving as a role model to younger 4-H members. For many teens, 4-H camp provides a first opportunity for them to test leadership abilities and perceive themselves as a role model for younger 4-H members.

Impact: 35 Indiana counties conducted an overnight 4-H camp opportunity for 2049 youth in grades 3-6 that were led by teens who served as camp counselors. Following the camp experience, teen counselors report having improved in the ability to provide directions, work as part of a team, serve as a positive role model for younger youth and feel good about themselves.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

Adult Volunteer Development

Description: The 4-H Youth Development Program is dependent upon volunteers to effectively deliver programming to youth. There is a need to provide the 4-H volunteers with the opportunity to develop knowledge, skills and competencies.

Impact: A variety of state, local and regional training opportunities were organized to target volunteer skill and competency development. Over 1,000 volunteers participated in these sessions that ranged from a focus on positive youth development, specific subject matter areas, organizational issues and 4-H policies and procedures, to youth/adult partnerships. Most of these activities occur within each of our 92 counties but several are conducted on an area or regional basis.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

Key Theme: Children, Youth and Families at Risk

Operation Military Kids (OMK)

Description: The children of National Guard, Army Reserve and other military parents living in civilian communities become "suddenly military" when a parent is mobilized. Typical support systems for these young people may no longer be adequate and these "new" military youth have a need to connect with other youth in similar situations and to seek individuals who can empathize and help them cope with their new world.

Impact: Military families have realized an increased support base and greater understanding by the general public of their situation. Youth and their parents know that they have resources available to assist them during their time of personal sacrifice. Over 1600 individuals, both military and non-military, have visited a Mobile Technology Lab

to create an electronic greeting, photo, video, or letter to send a service man or woman. County-based, collaborative teams in 23 Indiana counties have been awarded a total of $5400 to conduct local OMK projects or events. During the past year, Hero Packs which contain both fun and educational material for youth and informational material for a parent/guardian have been distributed to over 800 Hoosier youth and presentations were made to over 2700 individuals to share the OMK message and future program opportunities.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

Project LEAD: Legal Education to Arrest Delinquency

Description: Many Indiana counties participate in the 4-H *Project LEAD* program in school settings in order to help students develop skills that prevent antisocial and high-risk behaviors. Sessions are conducted in fifth-grade classrooms in partnership with schools. Through Project LEAD, students learn about laws, government and living together in a lawful society. Students can clarify their roles as citizens, develop decision-making skills, interact with positive role models and explore ideas on issues that are relevant to their lives.

Impact: 10,540 participant evaluations using the Scale of Juvenile Legal Attitudes (pre-post-test) show that after the program, youth have a better attitude toward laws, law enforcement, the judicial system, and the idea that they must take personal responsibility to abide by laws and report unlawful acts. Additionally, teachers in the classroom report a positive change in attitude after completion.

Source of Funds: Smith-Lever

Scope of Impact: State specific

Key Theme: 4-H Youth Development

Description: The 4-H component of Purdue Extension utilizes hands-on, research-based education that helps young people become competent, caring, confident, connected, and contributing citizens of character.

Impact: In 2006, 319,105 young people in Indiana (nearly 40% of the state's youth ages 10-18) were involved in some way with 4-H youth development programs. 75,955 participated with adult volunteers in organized community or school clubs, while 168,436 youth were involved in school enrichment programming and 74,714 were involved in

short term or camping programs. Additionally, 357,133 youth participated in educational workshops, events and activities or made an information request to a local Extension office or a state 4-H specialist. The 4-H program also involves 12,677 volunteers who contribute a modestly estimated $7,859,740 annually in time, mileage and out-of-pocket expenses.

Source of Funds: Smith-Lever, State

Scope of Impact: IN

Key Theme: Community Development

Entrepreneurship

Description: Economic development strategies have shifted from industrial recruitment to (a) the retention and expansion of existing firms and (b) the creation of new businesses. Extension provides educational offerings, resources and referrals designed to help existing and potential entrepreneurs enhance their prospects for success. Specific areas of emphasis are small businesses, especially in rural areas; new opportunities in entrepreneurial agriculture and natural resource enterprises (e.g., agritourism); and the strong and growing interest in entrepreneurship among youth and young adults, women, ethnic minorities, and new immigrants. Examples of specific programming follow:

1. Marion County Extension Educators established a partnership with Junior Achievement of Central Indiana to teach youth about entrepreneurship. Content included the characteristics of an entrepreneur, community mapping, and the economics of one unit of a product or service. Students also learned about the cost of running a business, legal structures, financials and business management for success.
2. The Purdue Agricultural Innovation and Commercialization Center (AICC) designed and developed a workshop for entrepreneurs called "The Entrepreneurial Challenge...from idea to income!" Over 100 people attended the workshop. The audience was composed of entrepreneurs and small business owners plus representatives of agencies who mentor entrepreneurs through various and numerous state programs.
3. Like many rural, Midwest communities, Daviess County has a great deal of interest in biofuels and several efforts are underway to create new biofuels enterprises. Extension in Daviess County executed a series of biodiesel awareness activities for the general public and some educational workshops for biodiesal producers.

4. Extension in multiple counties developed and delivered a workshop series focused on tourism-related enterprises. Over 150 individuals participated in the workshops.

Impact:

1. The students who participated in the Marion County program had greater interest in attending college. Sixty-three percent of participants indicated that they intend to continue their education by going to college and obtaining a business degree. Participants indicated that the engagement with real life entrepreneurs gave them clearer perspectives about career opportunities and the need to develop skills and competencies that will make them wealthy, successful and responsible. Parents surveyed said that their children have gained a better perspective about school, work and their career goals as result of attending this class.
2. The AICC workshop earned a 4.6 out of a possible 5.0 response. As a result of the success of this workshop, participants have asked for additional workshops on topics important to their success and activity on Inventure has grown steadily with a current log in base of over 400 participants working on business plans.
3. The biodiesel awareness activities in Daviess County resulted in significant increases in awareness of the opportunities related to biofuels and assisted the community in developing a better understanding of how biofuels-related opportunities fit into their overall economic strategies.
4. Extension's program related to tourism-based enterprises assisted a significant percentage of attendees to further their efforts in or toward a tourism-related enterprise. Workshop evaluations and six-month follow-up evaluations indicated that the information presented was helpful in planning the launching or expansion of attendees' ventures.

Source of Funds: Smith-Lever, grants and local and statewide sponsors and partners

Scope of Impact: Local, regional and statewide

Planning and Visioning

Description: Communities, neighborhoods and regions need to create their own road map for the future in today's fast paced world of change. Extension can help facilitate these efforts by mobilizing local resources to help plan for the future and by engaging in applied research and providing educational programs and resources that focus on community and regional priorities. Two areas of high priority in many communities and regions are economic development planning/strategies and land use issues. While Extension's visioning and planning efforts will not be limited to these areas, they will receive special emphasis. Examples of specific programming follow:

1. Four statewide two-way video programs were conducted on current topics in land use. The programs included speakers included Purdue Specialists, Extension Educators, planners, local officials, and citizens.
2. Parke County Extension led an effort to update and integrate both the comprehensive land use plan and the economic development strategic plan. Extension designed the process for integration and helped facilitate the process for public input into the integrated planning work.

Impact:

1. 280 participants have attended the four sessions in as many as 23 viewing sites around Indiana. 74% of individuals survey indicated they will use something in their local community as a result of what they learned from this program. Attendees indicate they are more confident in their duties as a plan commission and board of zoning appeal members. They indicated that they will be better able to address issues more professionally and legally defensible.
2. The last planning effort in Parke County was 50 years ago. Extension's effort resulted in an integrated plan for land use and economic development. The integration of these efforts was the true innovation and is resulting in a much more coordinated and sustainable plan for the future.

Source of Funds: Smith-Lever, grants and local and statewide sponsors and partners

Scope of Impact: Local, regional and statewide

Key Theme: Leadership Training and Development

Adult Leadership and Civic Engagement

Description: A rapidly growing body of research indicates that a strong civic infrastructure is a precursor to economic development and in the creation of strong and vibrant communities, neighborhoods and regions. Purdue Extension has a long history of creating and providing educational programs and leadership development opportunities for Indiana residents. Examples include such signature programs as Leadership 20/20, i-LEaD (Indiana Leadership Education and Development), the Master Gardener Leadership Program, and a new Natural Resources Leadership Development Institute. There are approximately 46 community leadership programs in Indiana and Extension Educators are involved in many of them, and Extension provides much of the base curricula, materials and updates even if Educators are not involved. Collateral programs include conflict management and facilitation training, building inclusive communities through multicultural education, grant writing workshops, the Myers-Briggs and Real

Colors personality assessment programs, and youth leadership development. Examples of specific programming follow:

1. Brown County Extension provides the educational content for Leadership Brown County. The content covers concepts of community leadership.
2. In several counties Extension developed and delivered a youth community leadership programs. Some programs included the placement of youth on a community boards for one year.

Impact:

a. Participants in the Brown County Leadership program indicated high-levels of increased understanding of community leadership concepts and the potential role they could play as leaders in their community. Also, new social networks were developed that are resulting in increased social capital.

b. Participants in the youth community leadership program responded that their knowledge had increased in the areas that include philanthropy, parliamentary procedure, trusteeship and community service.

Source of Funds: Smith-Lever, grants and local and statewide sponsors and partners

Scope of Impact***:*** Local, regional and statewide

Key Theme: Workforce Preparation—Youth and Adults

Community-Based Learning Centers and Workforce Development

Description: Extension, in partnership with Purdue's Division of Continuing Education, has been heavily involved in creating several community based learning centers. These centers provide a variety of credit and non-credit offerings based entirely on local demand, using both face to face and distance-education technologies. The offerings of these centers, including the emphasis placed on workforce development, are improving the quality of life and the economic opportunities of local residents--especially for those residents currently marginalized from educational opportunities and institutions. Extension will continue to nurture existing learning centers and be as helpful as possible to other communities and neighborhoods that wish to consider the establishment of such a center. Extension-Continuing Education supported learning centers are operating in Adam, Boone Clinton, Daviess, Hendricks, Jasper-Newton, Pulaski, Tipton, Wells, and Whitley Counties. Examples of specific programming follow:

1. The Education Center of Tipton County's, a program of Tipton County Extension, enrollments topped 3,500 during this reporting year. The Center offers a wide variety of educational programs related to professional development, workforce development, personal development, and tutoring.

2. Extension in LaGrange County designed and delivered a workforce preparation program for high school freshman. The course covered the skills needed for a successful start in the workplace.
3. In Whitley County, Extension offered workforce development training for 271 learners.

Impact:
The learning centers and workforce preparation programs have had a major impact on the availability and outcomes of a vast range of offerings. A handful of *selected examples* follow:

1. The Education Center of Tipton County and the efforts of Whitley County provided for residents of these communities, thousands of hours of instruction that otherwise would not be available in their communities. This resulted in significant numbers of people being educated who would not otherwise have been able to access these educational opportunities.
2. High school freshman in the LaGrange County workforce preparation program indicated significant increases in knowledge gained as a result of the workshop series.

Source of Funds***:*** Smith-Lever, grants and local and statewide sponsors and partners

Scope of Impact: Local, regional and statewide

Public Issues Education

Description: Communities are increasingly confronted with complex, controversial issues. Issues such as economic development, taxes and public finance, county health plans, school consolidation, local educational issues, to name just a few, are complex issues because there are no simple solutions. Many individuals, groups and organizations have a "stake" in the decision and, because the stakes are high, clamor is often heard. Stakeholders place different values on what is important and what the solution should be; consequently the issue is controversial. Many leaders come to Extension for assistance, either to gain information and/or analyses about alternative solutions, or for assistance in ways (process) to address the issue. Examples of specific programming follow:

a. Reynolds, Indiana is the nation's first "Biotown" and has a goal of being a model community for sustainable energy. White County Extension was called upon to develop a to design a process for civic engagement to assure that the general public was both informed of and involved in the Biotown-related efforts.
b. Marion County Extension developed a program called, "Building Inclusive Neighborhoods" to work with neighborhood residents to assist them understanding the value of inclusiveness and how being inclusive can result in stronger communities.

c. Several counties offered a series of workshops for local officials to examine issues related to county budgets and local government financing. Over 80 officials participated in the workshop.

Impact:
Extension is frequently called upon to both inform their constituents about relevant public issues and to develop processes for deliberation and planning for action. Impact of this programming can be seen in both the short and long terms. A handful of *selected examples* follow:

1. White County's civic engagement efforts related to Biotown resulted in new understanding of the public's perceptions of the Biotown initiative and assisted the community leadership in understanding the level of community support and what additional public education activities were needed.
2. The Marion County inclusiveness program resulted in an increased awareness among participants in the barriers to inclusiveness and the benefits of creating welcoming communities.
3. The local government finance programs resulted in high levels of knowledge gained and 96% of participants indicated that the program provided new knowledge and tools that will assist them in preparing their county budgets. 85% indicated that the program would have an impact on the fiscal well-being of their community.

Source of Funds***:*** Smith-Lever, grants and local and statewide sponsors and partners

Scope of Impact: Local, regional and statewide

B. STAKEHOLDERS' INPUT PROCESS

The 1999 -2004 Plan of Work and its 2004-2006 Update were developed from a comprehensive effort to gain input from all of Indiana's citizenry. Over 5,000 citizens representing the diversity of the state participated in a series of two meetings hosted by each county Extension staff. These meetings allowed Indiana's citizens to identify and to prioritize the important issues facing their communities, and how Purdue Extension could help address them. From these meetings, county Extension staff developed County Plans of Work. These 92 county Plans were transmitted to the state level where Program Leaders and State Specialists helped to categorize and organize the issues into 16 priority program areas that would comprise the Indiana Plan of Work.

Additional input of program priorities was again obtained from Indiana's citizens when County Extension staff and local Extension Board members conducted one-on-one interviews with individuals in their communities who represented the community's diversity. The information provided in these discussions provided additional information to form program directions.

In Indiana each county operates under the direction of a local Extension Board made up of citizens representing the communities. At least annually, these local boards review the local program and help Extension staff define local needs and establish program priorities and activities.

The Purdue Council on Agricultural Research, Extension, and Teaching (PCARET) also plays an active role in helping to define Purdue Extension's program priorities, projects and activities. This board, made up of representatives of county Extension Boards, elected officials, community leaders, staff from K-12 education, and business meet semi-annually in multi county meetings to hear from State Extension Administrators, the Dean of the College of Agriculture, and the Directors of Ag Research, Ag Programs, and International Ag Programs. Most of these discussions focus on issues of concerns of local citizens.

Each fall the members of PCARET and County Extension Directors meet for a State conference. These meetings, held on the Purdue Campus, are often broadcast to a variety of sites around the state. These sessions provide an opportunity for obtaining input from the participants in a facilitated and structured manner. The Conference serves as a vehicle to showcase Extension's current programming and seeks input from PCARET members on future educational needs and issues.

Purdue Extension also obtains input from stakeholders through the many collaborative efforts Administrators, Extension Educators, and campus faculty have with the many county and state agricultural and consumer and family sciences associations,

organizations, and agencies that serve Indiana citizens. Purdue staff is well represented on many of these organizations' boards and committees and receive stakeholder input through these interactions.

C. PROGRAM REVIEW PROCESS

There have been no significant changes in the program review process since Indiana's 5-Year Plan of Work was submitted.

D. EVALUATION OF THE SUCCESS OF MULTISTATE AND JOINT ACTIVITIES

Purdue Extension develops its program priorities through consultation and collaboration with Indiana's citizens, organizations, and agencies through ongoing meetings and discussions of their needs, issues and concerns. Information provided by these boards and organizations help Purdue Extension to deliver relevant educational programming to a wide variety of audiences throughout the state and region. This is accomplished by continually seeking input from Indiana's citizens; by integrating the Extension and research outputs and outcomes into program planning efforts; and by continuous scrutiny of developed and delivered programs through the reporting and evaluation system.

Over the life of this Plan of Work period Purdue Extension has aggressively addressed the responsibility of programming to new and diverse audiences as well as to continue to provide new knowledge to our traditional audiences. Purdue Extension audiences in 2006 are beginning to look and sound different than audiences of six or seven years ago. More and more efforts are directed toward Hispanic and minority audiences. Educators are continuously increasing their programming with limited resource audiences whether they are youth or adult. The number of counties that participate in the funded nutrition education programs has increased as well. Program efforts with court-ordered audiences and incarcerated individuals are also beginning to increase. Over the last several years, Purdue Extension has become much less traditional in its audiences and much more

capable of reaching out to audiences with a variety of high touch and high technology media.

Greater emphasis continues to be placed on Program Evaluation throughout the Purdue Extension system. Extension Educators and Specialists are provided with numerous training opportunities each year to increase their knowledge and skills with the LOGIC model and other aspects of program evaluation. Purdue's System for Accountability and Management (SAM) has provided a means for developing program plans and reporting against those plans. Additionally it allows staff to report underserved and under-represented audiences. Each of these efforts strengthens staffs' ability to show program impact, including knowledge gained, skills learned, and behaviors changed as a result of Purdue Extension's programming. SAM has recently undergone an upgrade which will allow Educators and Specialists to more easily report toward the new Plan of Work that is in effect for FY 2007.

An increased resource allocated to improved distance education technology has continued to allow Purdue Extension to work toward the successful elimination of county and state boundaries. More and more Extension programming is delivered from one site and broadcast throughout the state and region. Purdue Educators and Specialists now carryout a variety of successful programming across state lines, Although too numerous to mention individually, two of the most successful have been the Tri-State Diversity Conference held annual each year, the Bi-State Crop and Animal programs held jointly with Illinois.

Goal 1: Agriculture remains a prominent industry in Indiana even though the demographics of Indiana's population are significantly changing as a result of rapid growth during the decade of the 1990's. Profitability resulting from a strong competitive position remains a key to the continued strength and integrity of Indiana's farm families. However, emphasis by Extension on diversification of agricultural enterprises and value-added production and marketing has increased so that farm families may evaluate more alternatives to increase their net farm income. A "New Ventures" team has been developed within Extension. The team, composed of Specialists and Educators, provides intensive informational programming for anyone interested in developing new agriculturally-related enterprises. Extension has also established a "Ways to Grow" program in southeastern Indiana. The purpose of the program is to provide individualized counseling for farm families who want to assess the economic opportunities of enterprises that may be replacement for tobacco production.

With the rapid growth of the state's non-farm population, Extension has also increased emphasis on 1) urban gardening, 2) environmentally benign methods of pest management in lawn, turf, and garden, 3) Master Gardener programs, and 4) producer-to-consumer marketing and farmers' markets. While the proportion varies by county, as much as one-half of the extension resources devoted to "agriculture" may focus on the "green" industry associated with non-farm populations.

Goal 2: Food safety and quality education programs are included in many aspects of Purdue Extension. HAACP training is provided throughout agricultural production, processing, and marketing educational programming as well as at the point of contact with consumers. Much of the educational efforts of extension staff involved in agricultural production focus on the production of high quality and safe food products. An increasing proportion of food consumption occurs in restaurants or the food is provided for ready-to-eat, take-home consumption. Handlers of food in these businesses must understand that it is their responsibility to provide consumers with a safe food supply. Purdue Extension has reached out to a spectrum of audiences with its message of safe food handling.

Goal 3: A healthy and well-nourished population is essential to the establishment of a high quality of life in any family and community setting. Purdue Extension has reached to audiences across a breadth of age groups and resource levels in its educational programming. Extension's leadership has lead to the development of 43 "Healthy People, Healthy Communities" coalitions among the 92 counties of Indiana. Extension is also a highly visible partner in the Governor's methamphetamine prevention program. One of the strengths of Extension's involvement is its network of county offices and professional educational staff. Another is the ability to draw on materials developed in other Extension systems that are facing "meth" issues at the community level.

Goal 4: With knowledge provided by Purdue Extension, all citizens will potentially be better stewards of the environment and surrounding natural resources. Whether agricultural producers or homeowners, relevant information is effectively provided for all citizens to use in decisions that affect how they will impact their environment.

The industries associated with forest crops and products manufactured from timber are a significant segment of Indiana's economy. With Indiana's population growth, decisions regarding the use of land are becoming increasingly contentious. Seventy-two of the county extension staff are voting members of County or Area Plan Commissions. A team of staff, the Land Use Team, was developed in 1996 to provide a focused resource to assist communities in better understanding and participating in the process of arriving at public decisions. The team was selected for the prestigious Dean's Team Award in January 2002.

Goal 5: Relevant decision-making information is essential for citizens to address issues that affect their families, youth, communities, and businesses. The 4-H and Youth Development program has a long tradition of successful youth and adult participation. With the increasing complexity of issues faced by youth, traditional 4-H programs are being augmented with topics such as Character Counts, conflict resolution, and after-school enrichment activities, and through the establishment of community partnerships with other youth serving organizations. In addition to traditional youth audiences, Purdue

Extension is also providing information to enable local youth organizations to better serve at-risk youth audiences and their parents.

Purdue Extension is also focusing increased programming on workforce development and welfare to work programs. In addition, learning centers in rural communities are being developed by Extension collaborating with community partnerships that include private industry, community leaders, and other youth and adult educational entities. A variety of not-for-credit and for-credit educational opportunities are increasingly available to local citizens through these centers.

With the many changes that have taken place in the demographics of Indiana's population in the decade of the 1990's, community leaders and elected officials are seeking advice from Extension on methods to accommodate population growth and diversity.

E. MULTISTATE EXTENSION ACTIVITIES -CHART

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Actual Expenditures of Federal Funding for Multistate Extension and Integrated Activities
(Attach Brief Summaries)

Fiscal Year:_____ 2006

Select One: ☐ **Interim** ☐ **Final**
Institution: Purdue University
State: Indiana

	Integrated Activities (Hatch)	%	Multistate Extension Activities (Smith-Lever)	%	Integrated Activities (Smith-Lever)	%
Established Target %	5%	%	5%	%	5%	%
This FY Allocation (from 1088)	4,664,640		8,149,959		8,149,959	
This FY Target Amount	$233,232		$407,498		$407,498	
Title of Planned Program Activity						
Innovations in Handling Large-Scale Animal Mortalities			12,683			
Demand for Certified Meat Products	44,203		23,087		23,087	
Purdue University's National Software For Nutrient Management Planning			$27,542			
Indiana's Certified Crop Advisers Maintain Their Edge			68,965			
Impact of the 15th Annual Tri-state Dairy Nutrition Conference	19,427		54,628			
Impact of Dietary Manipulation on Odors and Gases from Swine Facilities in both Research and Field Setting			45,711		45,711	
Reduction of Laying Hen Emissions			28,081		28,081	
Delivery of a Weather-Based Spray Advisory Program to Illinois and Indiana	20,220		49,606			
Emerald Ash Borer Awareness	9,516		25,413			

Improving Quality of Indiana's Apple Crop	12,642	22,596	
Opportunities, Challenges, and the future Role of the U. S Crop Input Dealer	15, 635		58,630
Agricultural Innovation and Commercialization Center	23, 318		4,467
Crop Management Practices in Indiana Soybean Production Systems: A grower Survey	3, 788		103,464
Time Spent Selecting Forages is Important	12, 420		65,633
Drainage, Tillage, and Cover Crop Effects on Soil Properties and Corn yields	41, 800		17,204
Diet Modifications to Reduce Nutrient Excretions in Swine Operations	58,298	45,711	45,711
Increasing the Consistency and Predictability of Beef Products for Target Markets through Pre-Harvest Nutrition and Management	6,258		
Identity-Preservation Systems for Value-Added Quality Grains	23,549		
Corn, Soybean, and Soil Quality Responses to Alternate Cropping Systems	3,441		
Impact Title Turkey Nutrient Excretion and Volarization	9,674	28,081	28,081
Biology, Management and Distribution of Glyphosate Resistant Horseweed (Conyza canadensis) and Other Weeds	54,384		73,715
Total	$261,613	$432,104	$493,784
Carryover			

Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays represented here accurately reflect allowable expenditures of Federal funds only in satisfying AREERA requirements.

_____ ___03/21/2007_____

Director **Date**

E. MULTISTATE EXTENSION ACTIVITIES BRIEF SUMMARIES

Innovations in Handling Large-Scale Animal Mortalities

The United States exists with a heightened sense of awareness of its vulnerability to the effects of disease, weather, and terrorism. Widespread, large-scale livestock deaths could result from any of the aforementioned causes. The carcass disposal challenges stemming from large-scale livestock deaths could prove daunting and require careful planning and action to prevent major food security problems and massive economic losses. A team of Purdue University personnel including Don Jones, Stephen Hawkins, and Daniel Ess produced a chapter focused on non-traditional and novel technologies that was part of a report entitled, Carcass Disposal: A Comprehensive Review. The report was produced for the USDA-Animal and Plant Health Inspection Service (USDA-APHIS) by a consortium of collaborators that formed the Carcass Disposal Working Group. The group included personnel from the Kansas State University's National Agricultural Biosecurity Center, Texas A&M, Sandia National Laboratories, and Purdue University. The report contains 17 chapters in two parts, the first addressing a wide range of disposal technologies, the second dealing with cross-cutting and policy issues including economics, regulatory issues, and environmental impacts.

Impact: The report, intended to serve as an indispensable resource for officials tasked with planning for safe and timely disposal of animal carcasses, has been requested by interested parties in the United States, Australia, Great Britain, and Canada. It has also been downloaded from the Kansas State University Food Safety and Security website more than 8,000 times. The level of expertise and research-based information involved in putting together the report is already shifting the current response approach of USDA-APHIS in major animal disasters.

KS, TX

Demand for Certified Meat Products

Consumer demand for process verified products appears to be rising, however it is unknown whether consumer willingness to pay exceeds the costs of certifying compliance with process standards. In addition, it is not clear to what extent markets will expand to increase market access for farmers who see dwindling alternatives in the marketplace. Estimated the willingness to pay for natural pork products and determined the potential for market expansion with the introduction of such a certified product. This was done in the context of an assumption of heterogeneity on the part of consumer

demand whereas previous theoretical work assumed that all consumers uniformly preferred the certified product.

Impact: The results of our analysis suggest that there is a large segment of consumers (~43%) who have substantial willingness to pay for antibiotic free, environmentally friendly, and animal welfare certified pork. The results suggest that as much as 62 % of the market could transition to such a product in the long run. Members of the farm community and groups of farmers are beginning to examine the development of standards for similar products. The details of developing standards and the strategies associated with launching such new products with these groups are under discussion. The analysis was developed into a pilot business plan used by the Agricultural Innovation and Commercialization Center at Purdue as a model for marketing a process as a product attribute.

OK

Purdue University's National Software for Nutrient Management Planning

According to the USEPA 35,000 livestock and poultry producers may be required to develop comprehensive nutrient management plans (CNMPs). The USDA-NRCS estimates that approximately 270,000 livestock and poultry producers are in need of CNMPs. Purdue University's Manure Management Planner software (MMP) can be used to create nutrient management plans for crop and livestock producers in 31 states (AL, AR, CO, DE, GA, FL, IL, IN, IA, KS, MD, MA, MI, MN, MS, MO, MT, NE, NJ, NM, ND, OH, OK, OR, PA, SD, TN, UT, VT, WA and WI), and support for about 5 more states will be added in 2006. MMP is the only software for generating nutrient management plans that is supported nationally by both NRCS and EPA. We have developed a 'smart' document generator that can automatically create tables and other required information and insert this information in the appropriate sections of a state-specific document template. We have added 24 new 'smart document templates' that automatically generate state-specific reports like nutrient management plan documents and state-specific P risk assessment tool reports. These 'smart' documents reduce the time required to prepare a comprehensive nutrient management plan (CNMP) document from more than a week to a few hours.

Impact: By using MMP and its smart document generator tool, the time required to generate a CNMP document can be reduced from several days to a few hours. The use of this smart document generator also eliminates calculation errors in the numbers used to generate the CNMP and provides a standardized, state-specific format that is easier to review. We have added 24 new 'smart document templates' that automatically generate state-specific reports like nutrient management plan documents and state-specific P risk assessment tool reports. These 'smart' documents reduce the time required to prepare a

comprehensive nutrient management plan (CNMP) document from more than a week to a few hours.

AL, AR, CO, DE, GA, FL, IL, IN, IA, KS, MD, MA, MI, MN, MS, MO, MT, NE, NJ, NM, ND, OH, OK, OR, PA, SD, TN, UT, VT, WA and WI

Indiana's Certified Crop Advisers Maintain Their Edge

The Certified Crop Adviser (CCA) Program is one of the professional certification programs offered by the American Society of Agronomy. There are approximately 800 CCA professionals in Indiana alone. One of the requirements for maintaining CCA status is to complete 40 hours of continuing education every two years. Purdue University Extension Ag. & Natural Resource specialists collaborate annually with the Indiana CCA State Board to offer a comprehensive two-day continuing education conference that offers the opportunity for CCA professionals to acquire a full year's worth of continuing education credits in one setting. The conference topics encompass all of the required subject areas including Crop Management, Soil & Water Management, Nutrient Management, Pest Management, and Professional Development. Conference speakers include not only specialists from Purdue Extension, but other nationally-recognized experts from throughout the country.

Impact: The 2005 Conference, held in Indianapolis, attracted over 500 registrants from Indiana and adjacent states. Over 90% of survey respondents gave the program content a rating of 4.2 on a scale of 1 (poor) to 5 (excellent). The average number of years of consulting or advising experience reported by survey respondents was nearly 16 years and ranged from 1 to 48 years. The average amount of crop land impacted professionally on an annual basis by survey respondents (50 responses or 9.4% of total registrations) was nearly 47,000 acres and the total number of acres impacted by these few number of respondents was 2,347,500. Over 77% of the respondents indicated that the information gained at the conference would help them provide better crop management advice to their clients. The average estimated dollar value per acre for the information gained at the conference for individuals or their clients was estimated to be nearly $19 per acre. The total financial impact for the information gained at the conference was estimated from those responses where both dollar impact per acre and number of impacted acres were reported (34 responses or 6% of the total registrations). For just these few number of respondents, the total dollar benefit to Indiana agriculture resulting from the information gained at the conference was estimated to be an astounding $26 million.

IL, KY, OH, MI

Impact of the 15th Annual Tri-State Dairy Nutrition Conference

In 2006 the 15th Annual Tri-State Dairy Nutrition Conference (TSDNC) will be held in Fort Wayne, IN. This conference is held in conjunction with Michigan State University, Purdue University, and The Ohio State Universities Dairy Nutrition Extension Specialists and a seven member planning committee which helps organize the conference. This volunteer committee meets directly following the current year's conference and talks about successes and opportunities to improve next year's conference. During the past 15 years attendance has increased from 135 when first held on the IPFW campus in 1992 to 465 participants when held this past year. Planning committee members serve three year terms and members represent the conference participants, from each state and from each individual group of participants. Four are members of the commercial feed industry in sales and technical services working directly with dairy producers, one is a practicing veterinarian, one a private nutritional consultant, and one is a county Extension Educator or Agent. Creative ideas for the TSDNC come from the planning committee. At the suggestion of the planning committee the 2006 conference registration will be FREE of charge for undergraduate students from any of the three sponsoring Universities. Further development of the conference for the 15th year has spawned 1.) a feed or pharmaceutical industry pre-conference, 2.) a graduate student poster competition with a $1,000 first prize, a $ 300 second prize, and a $100 third prize, 3.) an industry sponsored dinner for veterinarians, and 4.) a post-conference round-table meeting for privet nutritional consultants which in the past have been an under served clientele group for university Extension service.

Impact: Tri-State Dairy Nutrition Conference provides an excellent opportunity for potential employers to mix with students, get to know graduate students and pre-interview potential future employees. The interaction and the availability of representatives from the larger feed ingredient, pharmaceutical, and animal health industry in the trade show gives students an unprecedented chance to meet potential employers and to get contacts with personnel from other universities that can benefit further academic pursuits. The tradeshow was started to encourage companies which supply feed ingredients and products used by members of the feed industry. The objective was not to suggest that competing feed companies offering product or services make displays of their final products and services.

MI, OH

Impact of Dietary Manipulation on Odors and Gases from Swine Facilities in both a Research and Field Setting

As swine facilities continue to grow in size to remain economically viable, the amount of nutrients and odors the farm generates increases as well. Finding ways to reduce the odors from large swine farms will enhance their survival and neighborhood relations.

Diet manipulation may be one of the easiest avenues to reduce odor and environmental impact of a swine farm. The use of synthetic amino acids to reduce the dietary crude protein and excess amino acids in the pig diet can greatly reduce the nitrogen excreted by the pig and potentially the odor coming from the facility. In addition the use of fermentable carbohydrates, like soybean hulls, can serve as an energy source for microorganisms in the large intestine and by using excess nitrogen from the digestive tract can convert this nitrogen into microbial protein that is less volatile during manure storage. The effect of feeding low nutrient excretion (LNE) diets containing high levels of synthetic amino acids on odor and gas emissions was monitored in 2 intensive studies and two field studies.

Impact: In the first study feeding LNE diets reduced odor detection and recognition thresholds from the facility's room exhaust air by 51.5% ($P < 0.06$ and $P < 0.08$, respectively) during the grower period when higher crude protein diets are normally fed. At the end of the finishing period, feeding LNE diets reduced exhaust air odor detection and recognition thresholds 23% ($P < 0.09$ and $P < 0.01$, respectively). The second intensive study added soybean hulls (SH) and a non-sulfur trace mineral premix (NSTM) to the LNE diet formulations and measured ammonia and hydrogen sulfide emissions and odor concentrations of the exhaust air. During week 12 of the grow-finish period, LNE diet formulations, on the average, decreased ammonia emissions from the swine facility 20.6%, with the greatest reduction (32.6%) occurring with the LNE diet that contained the SH and NSTM. All the LNE diet formulations had a greater impact on hydrogen sulfide emissions, with LNE diet formulations averaging a 51.2% reduction in hydrogen sulfide emissions compared to the control diets. There was only a slight numerical improvement in hydrogen sulfide emissions when SH and NSTM were added to the LNE diet formulation. The LNE diet formulations numerically decreased odor detection thresholds immediately, with an 18.7% decrease during the grower period. During week 12 of the grow-finish period, odor detection threshold was reduced by 24.6%, 29.5%, and 42.6% for the LNE+SH, LNE+SH+NSTM, and LNE diets ($P < 0.05$), respectively, compared to the control diet. Interestingly, adding SH to the LNE diet formulation tended to decrease ammonia and hydrogen sulfide emissions, but numerically increased odor detection 25% over the LNE formulation alone. This was likely related to increased VFA production because of the fermentable carbohydrate, soybean hulls. The feeding of LNE diets in commercial settings appears to hinder growth performance, especially during the grower phase. These reductions in performance are further increased when the pigs are reared under low health conditions. While performance was reduced, carcass characteristics were maintained in both experiments when the LNE diets were consumed. Barns in which the LNE diets were fed contained 60% lower aerial ammonia concentrations than the control barns. Total manure production and water consumption were reduced with the feeding of these diets. In addition, total nitrogen and phosphorus excretion was reduced when the LNE diet was fed to grow-finish pigs. Further research is needed to better define the nutrient requirements of high lean gain potential swine, not only in research settings but true commercial settings as well.

MI, MO

Reduction of Laying Hen Emissions

Due to upcoming regulations, livestock and poultry producers will need know what air emissions are and in some cases adopt strategies to reduce certain pollutants. A study was conducted to evaluate the effectiveness of feeding a reduced emission diet containing 6.9% of a gypsum-zeolite mixture and slightly reduced crude protein to laying hens on emissions of NH3, H2S, NO, NO2, SO2, CO2, CH4 and non-methane total hydrocarbon as compared to feeding a commercial diet.

Impact: Emergency Planning and Community Right-to-Know Act (EPCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) reporting requirement allow daily emissions 100 pounds per day of both NH3 and H2S from poultry farms. The current study illustrated that feeding a reduced emission diet could reduce NH3 emissions by 40%. Even though gypsum addition increases H2S emissions considerably, these concentrations did not surpass reporting limits even for larger laying hen complexes. Reporting requirements for laying hens operations for CERCLA/EPCRA, therefore, will be driven by NH3. Dietary strategies that sequester and acidify the manure can have dramatic impacts on reducing ammonia emissions in laying hens.

IA

Delivery of a Weather-Based Spray Advisory Program to Illinois and Indiana

Foliar diseases of muskmelon and watermelon represent potential yield losses for vegetable growers in the Midwest every season. The major foliar diseases of watermelon are anthracnose and gummy stem blight, while Alternaria leaf blight represents the primary threat to muskmelon. At this time, no significant host resistance exists to either of these diseases. While production practices such as crop rotation and fall tillage can mitigate the severity of these diseases, most commercial growers in the Midwest rely on preventive fungicide applications. In a conventional preventative fungicide application program for muskmelon or watermelon, growers rely on a calendar-based application schedule. Most growers apply fungicides on a weekly schedule. Typically, growers transplant into the field in the first week of May. The initial fungicide application occurs by mid-May. Harvest may extend through July for muskmelon and until Labor Day for watermelon. This represents approximately 8 and 14 fungicide applications for muskmelon and watermelon, respectively. The cost of these fungicides represents one of the major expenses to muskmelon and watermelon growers. In an effort to reduce fungicide costs and limit the amount of fungicides in the environment, the MELCAST program was developed at Purdue University. MELCAST is a weather-based spray-

advisory program that uses leaf wetness and temperature to quantify the disease potential for a given time period. Instead of using a calendar-based schedule to apply fungicides to muskmelon or watermelon, commercial growers can now use MELCAST Environmental Favorability Index (EFI) values as a weather-based threshold. Purdue University recommends a 35 EFI threshold for the management of both gummy stem blight and anthracnose on watermelon. A 20 EFI schedule is recommended for management of Alternaria leaf blight on muskmelon. In an average year, the MELCAST program saves the commercial watermelon grower 2 to 3 fungicide applications by indicating when fungicide applications are most critical. During the 2003 and 2004 season, the MELCAST program was used in Illinois, Maryland/Delaware, Georgia as well as Indiana. The MELCAST system is currently being tested in Iowa.

Impact: Conventional disease prevention programs for vegetables often include a calendar-based fungicide application schedule. Weather-based disease forecasting systems deliver weather information to growers so that fungicides may be applied when weather conditions are most conducive to disease outbreaks. MELCAST is a weather-based spray advisory program for foliar diseases of muskmelon and watermelon. In an average year, growers who use MELCAST apply 2 to 3 fewer fungicide applications than if a calendar based system were used. The MELCAST system will be delivered to the major muskmelon and watermelon growing regions of Indiana and Illinois so that fewer fungicides are applied over a season. In particular, we propose to lower the amount of carbamate fungicides used by muskmelon and watermelon growers in a season. Weather information will be purchased and converted into a form usable to growers. Growers may obtain this information either through a toll-free telephone number, FAX and/or web page. Weather information can be recorded in a MELCAST record keeping book provided by the project and fungicide applications made accordingly. The performance target is to have one third or 130 growers in the Illinois and Indiana region convert to MELCAST use. Success toward the target will be measured by attendance at meetings, newsletter subscriptions, telephone logs, submitted record keeping books, interviews and surveys.

IL

Emerald Ash Borer Awareness

Emerald ash borer (EAB), an exotic pest that could eliminate billions of native ash trees from North America, was first reported in Indiana in Spring 2004. With EAB now present in 6 townships in Steuben and LaGrange counties, Indiana citizens have good reason to be concerned. The EAB has already eliminated over 12 million ash trees in Michigan. Ash trees are important to the Indiana economy and environment. The timber value of woodland ash in Indiana has been estimated at $500 million. The cost of removing and replacing ash trees lost from Indiana urban forests could cost at least $300 million. As a key element of wetland forests, ash trees line much of the riverbanks and act as natural filters that help keep agricultural runoff out of our water supply. The

national EAB Science Advisory Panel determined that the best strategy to protect North America's ash resource from the pest is to aggressively slow its spread. Natural spread of flying beetles can be slowed by destroying infested ash trees as they are found along with all other ash trees within a half mile of the find. Artificial spread of the infestation can be accomplished by stopping the moving of ash firewood and other ash products out of known infested areas. To facilitate this policy in Indiana, we at Purdue needed to significantly boost public awareness of EAB, thus equipping the public to actively participate in detection and eradication of EAB in Indiana. Further, to avoid public confusion, we realize the importance of harmonizing our message with that of other state agencies as well as messages of our neighboring states with EAB. As active members of the Indiana Exotic Forest Pest Advisory Committee and the EAB Tri-State Communications Committee (Ohio, Michigan, Indiana) we formulated clearly defined objectives for our educational program. The first objective was to make people care about ash trees and be able to recognize EAB and its injury. The second objective was to involve the public in the search and reporting of suspicious looking ash trees, or ash firewood. Last and probably most importantly, was to convince the public that they could help stop the spread of EAB by changing their practice of bringing firewood along on camping trips. In addition to conducting a series of meetings with the affected public, various green industry and garden groups, and public educators, we launched a media campaign that included radio spots highway billboards and targeted audience education sessions. The green industry (Indiana Nursery and Landscape Association and Midwest Regional Turf Foundation), Master Gardener (Indiana and Illinois) groups, and public educators school groups (Hoosier Association of Science Teachers Incorporated and County Extension Educators) were informed about the EAB in their state, county and regional meetings. To facilitate the ability of these attendees to train their clients, communities, and students, we provided them with EAB-themed literature and slide shows. To consolidate reporting of EAB incidents, all individuals were directed to a toll free number staffed by DNR and campus personnel. We also directed all participants to our regional and state EAB Web sites to gain access to information on the rapidly changing status of the EAB distribution. To reach people most likely to move firewood, we launched our media campaign to coincide with the start of the camping season. To pave the way for this campaign, we ran radio spots throughout the state and direct mailed over 1,000 EAB informational packets to Purdue Extension educators, state and private campgrounds, public libraries, local government officials and RV dealers in towns and cities throughout northern Indiana.

Impact: The declaration of EAB Awareness Week by the governors of Ohio, Michigan and Indiana increased media coverage. At kick-off media event, we introduced our traveling EAB display and "Eric the EAB" costumed character, both of which were funded by USDA-APHIS. The display and costume have since been used in outreach at the Indiana State Fair, the LaGrange County Fair, Elkhart County Fair, the Farm Progress Show in Illinois and the Farm Science Review in Ohio. The week's events resulted in over 50 separate stories by newspaper, radio and television outlets at the start of the Indiana camping season. Our efforts to focus media attention on firewood as the primary

vector of EAB have facilitated fundamental changes at campgrounds throughout the state. Many private campgrounds, especially in NE Indiana, no longer allow firewood of any kind to be brought to campgrounds. Some state parks such as Pokagon now telephone campers from Zip codes where EAB is quarantined who have made reservations at the park's campground, telling them not to bring firewood with them. EAB literature and information is given to all campers at the gate. EAB information is part of the naturalist curriculum around the state. At least eight RV dealerships now clearly display EAB posters to alert their customers about the issues. During town meetings, we met with over 150 individuals in recently quarantined areas. As a result of these meetings, over 50 compliance agreements were signed enabling citizens to extract some lumber or firewood value out of their trees before they were destroyed. At these meetings many attendees volunteered information about possible new EAB sites, both inside and outside of the quarantined townships. As a result of our work with the Indiana Nursery Industry, over 40 nurserymen and landscapers throughout the state requested EAB kits to use to educate their employees and to display in their businesses. As a result of local publicity about EAB, we were asked to examine dying ash trees at a shopping mall in Lafayette after the property manager was told by an Indianapolis landscaping firm that the trees had EAB and needed to be destroyed. Although the ash trees did harbor native borers, no EAB was found. As a result of their work Purdue Extension and Indiana Department of Natural personnel received more than 300 inquiries about emerald ash borer and over 10,000 website hits. Through the use of compliance agreements, residents of EAB infested areas were able to recoup thousands of dollars from ash slated for destruction. Most private campgrounds in northern Indiana now prohibit campers from bringing firewood with them

MI, OH

Improving Quality of Indiana's Apple Crop

According to a survey conducted in 2005, the codling moth is the most important insect pest that Indiana's apple growers have to manage. For several decades, apple growers have relied on organophosphate insecticides for managing codling moth and other important insect pests. In 2001 and 2002, there were several reports of control failures with these insecticides. Because resistance had been reported in other states, it was feared that codling moths in Indiana were also developing resistance to these insecticides. One grower reported that he had to discard over 60% of his apples because they were infested with codling moths. He also reported that attempts to use expensive alternative insecticides did not provide adequate levels of control. In 2003, an insecticide trial was conducted at the farm of the grower who had reported control problems. The organophosphate insecticide Guthion (azinphosmethyl), which had not provided adequate control in recent years, was tested as well as a number of alternative products. The data collected from that study showed that Guthion provided the best control of all products tested, at a level of control that the grower was very pleased with. Several alternative products also provided excellent control. When we investigated further the reasons for

the control failure of the past, we found that the grower had been using reduced rates of the insecticides. In addition, the Indiana Horticultural Society held its summer meeting at the orchard where the study was conducted. The results were presented to approximately 90 growers who attended this meeting. These results were also presented in a poster, along with results from colleagues in Illinois, Missouri, Ohio, and Kentucky at the 2003 national meeting of the Entomological Society of America.

Impact: Growers were shown that the short term economic benefit of using reduced rates of insecticides can result in very serious long-term economic consequences. Growers were also shown that there are several alternative insecticides that are less toxic that can be used to provide excellent levels of control of codling moth. The grower who previously lost a major portion of his apple crop because of codling moth has reported that in 2004 and 2005 he has achieved almost 100% control of codling moth, resulting in fewer culled apples and higher profits.

IL, KY, MO, OH

F. INTEGRATED RESEARCH AND EXTENSION CHART

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the Annual Report of Accomplishments and Results
Actual Expenditures of Federal Funding for Multistate Extension and Integrated Activities
(Attach Brief Summaries)

Fiscal Year: 2006

Select One: ☐ **Interim** ☐ **Final**

Institution: Purdue University

State: Indiana

	Integrated Activities (Hatch)	%	Multistate Extension Activities (Smith-Lever)	%	Integrated Activities (Smith-Lever)	%
Established Target %	5%	%	5%	%	5%	%
This FY Allocation (from 1088)	4,664,640		8,149,959		8,149,959	
This FY Target Amount	$233,232		$407,498		$407,498	
Title of Planned Program Activity						
Innovations in Handling Large-Scale Animal Mortalities			12,683			
Demand for Certified Meat Products	44,203		23,087		23,087	
Purdue University's National Software For Nutrient Management Planning			$27,542			
Indiana's Certified Crop Advisers Maintain Their Edge			68,965			
Impact of the 15th Annual Tri-state Dairy Nutrition Conference	19,427		54,628			
Impact of Dietary Manipulation on Odors and Gases from Swine Facilities in both Research and Field Setting			45,711		45,711	
Reduction of Laying Hen Emissions			28,081		28,081	
Delivery of a Weather-Based Spray Advisory Program to Illinois and Indiana	20,220		49,606			
Emerald Ash Borer Awareness	9,516		25,413			

Improving Quality of Indiana's Apple Crop	12,642	22,596	
Opportunities, Challenges, and the future Role of the U. S Crop Input Dealer	15, 635		58,630
Agricultural Innovation and Commercialization Center	23, 318		4,467
Crop Management Practices in Indiana Soybean Production Systems: A grower Survey	3, 788		103,464
Time Spent Selecting Forages is Important	12, 420		65,633
Drainage, Tillage, and Cover Crop Effects on Soil Properties and Corn yields	41, 800		17,204
Diet Modifications to Reduce Nutrient Excretions in Swine Operations	58,298	45,711	45,711
Increasing the Consistency and Predictability of Beef Products for Target Markets through Pre-Harvest Nutrition and Management	6,258		
Identity-Preservation Systems for Value-Added Quality Grains	23,549		
Corn, Soybean, and Soil Quality Responses to Alternate Cropping Systems	3,441		
Impact Title Turkey Nutrient Excretion and Volarization	9,674	28,081	28,081
Biology, Management and Distribution of Glyphosate Resistant Horseweed (Conyza canadensis) and Other Weeds	54,384		73,715
Total	$261,613	$432,104	$493,784
Carryover			

Certification: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays represented here accurately reflect allowable expenditures of Federal funds only in satisfying AREERA requirements.

_____ ___03/21/2007_____

Director **Date**

F. INTEGRATED RESEARCH AND EXTENSION ACTIVITIES BRIEF SUMMARIES

Opportunities, Challenges, and the Future Role of the U.S. Crop Input Dealer

Retail crop input dealers have played an important role in the distribution channel for fertilizer, crop protection chemicals, seed, and agronomic services for decades. However, consolidation at the manufacturer and farm level, new crop production technologies such as genetically modified seed, new information technologies utilizing the Internet, and new competitors have all combined to challenge the traditional roles that retail crop input dealers have performed. These firms have been important local employers in many areas. Many of these firms are independent businesses or farmer-owned cooperatives. As retail crop input dealers develop longer-term strategies, information on what the future may hold can be extremely useful. This study explored how retail crop input dealers perceive their future: where are the opportunities; where are the challenges; and what roles do they expect to play in the future? More than 300 retail crop input retailers across the U.S. responded to a survey. The focus of this survey was two-fold: 1) to explore what crop input dealers believe to be the major opportunities and threats facing their firms over the next three years; and 2) to better understand how managers of these firms believe their firm's role in the distribution channel will evolve over the same period. The information has been distributed to the industry through a series of magazine articles, a staff paper, through presentations to trade groups, and an M.S. thesis. This study explored how retail crop input dealers perceive their future: where are the opportunities, where the challenges are, and what roles do they expect to play in the future.

Impact: Key findings suggest that 1) most dealers see their top challenges as internal issues such as insurance cost, access to quality employees, and energy costs; 2) the most important opportunities tend to be product and service focused, and are related to traditional sources of revenue, including seed sales, traditional agronomic services, and precision services; 3) dealers see their future sales and profit mix as including more seed, service, and information sales and profit, with less sales and profit coming from fertilizer and crop protection chemicals; and 4) most dealers see current high profile roles for both farmers and manufacturers becoming more important in the future, with an increased role in helping farmers comply with government regulations and providing on-going crop management services for farmers, and an increased role in tracking crop input use for regulatory purposes for manufacturers.

Demand for Certified Meat Products

Consumer demand for process verified products appears to be rising, however it is unknown whether consumer willingness to pay exceeds the costs of certifying compliance with process standards. In addition, it is not clear to what extent markets will expand to increase market access for farmers who see dwindling alternatives in the marketplace. Estimated the willingness to pay for natural pork products and determined the potential for market expansion with the introduction of such a certified product. This was done in the context of an assumption of heterogeneity on the part of consumer demand whereas previous theoretical work assumed that all consumers uniformly preferred the certified product.

Impact: The results of our analysis suggest that there is a large segment of consumers (~43%) who have substantial willingness to pay for antibiotic free, environmentally friendly, and animal welfare certified pork. The results suggest that as much as 62 % of the market could transition to such a product in the long run. Members of the farm community and groups of farmers are beginning to examine the development of standards for similar products. I have been discussing the details of developing standards and the strategies associated with launching such new products with these groups. The analysis was developed into a pilot business plan used by the Agricultural Innovation and Commercialization Center at Purdue as a model for marketing a process as a product attribute.

Agricultural Innovation and Commercialization Center

Two groups of businesses are vital to economic prosperity of Indiana. New business ventures are important sources of economic growth. In addition, small businesses represent a critical component of the economy. However, because entrepreneurs exploring new business ventures get very excited about their new business idea they often do not conduct the appropriate analysis before making the business investment. The result can be poor investments that end as expensive failures. Existing small business owners often don't conduct the necessary analysis for business investments they are making. Easy to use and accessible business planning tools are needed. In addition, education for potential entrepreneurs and small business owners is needed. Educators at Purdue's Agricultural Innovation and Commercialization Center were awarded one of ten $1 million USDA grants to assist entrepreneurs with new business development. To achieve this objective they developed, InVenture, a web-based business planning tool, a set of 22 publications on business planning and statewide and national conferences to promote new business development. InVenture is a practical business planning tool that guides entrepreneurs through the business planning process in stages. In each of the

stages the entrepreneur answers the key questions that guide the business creation process. The entrepreneur's work becomes a business plan that may be taken to potential partners or investors. A series of 22 publications are available to assist entrepreneurs with the different stages of business planning, from setting goals, to determining necessary licensing requirements, to developing a marketing plan, to doing financial projections for potential lenders. Highly successful statewide and national workshops have been delivered. In addition to virtual delivery via the website, www.agecon.purdue.edu/planner, entrepreneurs may access one-on-one assistance through Purdue's New Ventures team of Extension educators.

Impact: Purdue educators looking for ways to assist in economic development have created InVenture, a useful web- based tool for entrepreneurs, along with a set of 22 publications and statewide and national workshops. InVenture has over 1200 registered users from Indiana and around the United States. The statewide and national workshops have been delivered to over 1100 participants and been very well received. Participants noted that they "have not stopped talking bout the enjoyment, satisfaction and usefulness we will get from attendance." They were "very impressed with the amount and quality of resources available to Indiana entrepreneurs" and described the program as "truly refreshing and gratifying." In addition, participants indicated that they had "not been able to find resources like these, so the material was invaluable!"

Crop Management Practices in Indiana Soybean Production Systems: A Grower Survey

To remain economically viable in today's global soybean market, Indiana producers' require instant access to cutting edge innovations, information on new and potential pest problems, and timely, accurate information on common soybean production problems. The goal of this research is to aid Purdue Extension and Research faculty in identifying and developing Extension programs and educational materials that meet current and future clientele needs, and to provide a framework for directing applied soybean research efforts. The specific objectives are: 1) to identify the key production concerns of Indiana soybean producers, 2) to implement research and extension efforts to address these concerns, 3) to develop baseline data to support future grant proposals, 4) to receive feedback from clientele on the best delivery media for research and extension information (web, printed guides, county/regional meetings, press release, etc.), and 5) to disseminate this information via Extension and peer-reviewed research publications. A seven-page direct mail survey was sent to 5000 Indiana soybean growers in August of 2005. Purdue University consulted with the Indiana Agricultural Statistics Service to develop and distribute the survey to growers representing various size farming operations and geographic regions within Indiana. For continuous measures, farm size was the treatment and the experimental design was completely randomized. Analysis of variance was conducted and least-squares means were compared by t-tests where the F test was significant ($P = 0.05$). A total of 1330 growers returned this survey, however only 1310

growers indicated the size of the farm operation. This response rate of 27% was similar to the response rates reported by others. The survey was divided into three sections: crop management, pest management, and marketing. Responses to each question were characterized by farm operation size and crop reporting district. The farm size responses were broken down into the following acreage categories: 0-99 acres, 100-249 acres, 250-499 acres, 500-999 acres, and 1000+ acres, with 206, 320, 263, 262, and 259 respondents, respectively.

Impact: Large acreage growers (= 1000 acres) were more likely to plant soybeans in rows spaced 11 to 20 inches, reduce seeding rates, plant earlier, and have higher yields. Large acreage growers were also more likely to own a yield monitor, conduct on-farm research, use a computer, and routinely use the Internet. Our research also identified different research and educational needs based on farm operation size. By specifically targeting these needs, agricultural researchers and Extension specialists may improve the economic and environmental sustainability of each clientele group.

Time Spent Selecting Forages is Important

Many forage crops are able to be successfully grown in Indiana and surrounding states. Within a specific crop, there are many varieties that are available for purchase. Evaluation of different forages and varieties with subsequent release of the data for review by forage producers will improve the forage producing enterprise.
What you have done Forage performance trials at the Agronomy Center for Research and Education (ACRE), West Lafayette, Indiana, and the Feldun-Purdue Agricultural Center (FPAC), Bedford, Indiana are providing useful information regarding the productivity of different forage crops and varieties within a specific crop.

Impact: Tall fescue varieties established in August 2002 at FPAC outperformed orchardgrass varieties established on the same date in accumulated dry matter yields for 2003 and 2004 by 7 percent. ‘Duo’ festulolium, a hybrid of perennial ryegrass and meadow fescue, was established within the tall fescue field trial. ‘Duo’ festulolium was the most productive variety within the trial in 2003, producing 23 percent more dry matter yield than the average of nine tall fescue varieties in the trial. However, in 2004 the dry matter yield of ‘Duo’ festuloium was arithmetically the poorest and yielded 32 percent less dry matter yield than the average of the tall fescue varieties. Performance of 'Duo' festulolium in 2005 was again the poorest of all entries. Based on results from the tall fescue performance trials at FPAC, several low-endophyte varieties are performing as well as 'Kentucky 31' endophyte-infected tall fescue. 'Kentucky 31' tall fescue was found to have a within-plant (endophyte) fungus approximately 25 years ago. This fungus is responsible for less than optimum animal performance when livestock utilize tall fescue as a feedstuff. Low-endophyte tall fescue varieties have been criticized for being less persistent than endophyte-infected tall fescue. Results from the FPAC trials and past grazing studies conducted at the Southern Indiana Purdue Agricultural Center should

dispel harsh criticism about low-endophyte tall fescue. The 2002 and 2003 seeded alfalfa performance trials at ACRE indicate that statistically superior varieties where the damaging insect pest potato leafhopper was not controlled yielded, on average, only 5.5 percent less dry matter yield in 2004 than statistically superior alfalfa varieties when the potato leafhopper was controlled with the insecticide cyfluthrin. Varieties that had best dry matter yields within the non-chemical treated trial have glandular hairs that are responsible for the reduction of damage caused by the insect pest. The small dry matter yield increase when chemical control was used has less importance when insecticide cost, application cost and costs associated with scouting the field for the presence of the insect are considered. Forage producers should review performance trial data of different crops and cultivars when making decisions regarding which species or varieties have best dry matter yield and persistence. Well-adapted tall fescue varieties produced more dry matter than orchardgrass. Many low-endophyte tall fescue varieties and potato leafhopper resistant alfalfa varieties are performing well in Indiana and should not be discriminated against as being inferior choices.

Drainage, Tillage, and Cover Crop Effects on Soil Properties and Corn Yields

The beneficial effects of cover crops, manure applications, rotations with hay or meadow crops, and conservation tillage practices on soil physical properties have long been recognized. The need for such practices is greater on soils that are poorly structured and low in organic matter than on soils that are naturally well structured and contain higher organic matter levels. If the poorly structured soil is also naturally poorly drained, however, the ability of these practices to improve soil properties and crop yield may be limited by wet or cold conditions. Installing good surface and subsurface drainage systems to mitigate the excess wetness problem may provide the opportunity to improve soil properties and crop growth with cover crops and similar agronomic practices.
The objectives of this study were to evaluate the effects of five agronomic management practices (cover crops, animal manure, rotation with hay crop) and two tillage systems on soil properties and crop growth, under both drained and undrained conditions on a naturally poorly drained, low organic matter Clermont silt loam soil in southeastern Indiana.

Impact: In the tiled subfield, all agronomic treatments produced equal or higher yields than continuous corn on average, whereas on the untiled subfield they produced equal or lower yields than continuous corn. Agricultural soils with seasonally high water tables require drainage systems for efficient crop production. When linked with use of no-till practices, winter cover crops, or rotation with hay crops, soil physical properties and crop growth and yield may be improved significantly. The results underscore the necessity of an adequate drainage system as a first step to improving crop yields, and that agronomic practices alone are not likely to make up for an inadequate drainage system.

Diet Modification to Reduce Nutrient Excretions in Swine Operations

The compatibility of pork production operations with neighbors in rural America is still a major concern. When a pork operation moves into a rural community or expands an existing operation, the public often raises complaints and petitions to prevent the growth of the industry. Reasons for concern are water quality issues, including the threat of nutrient, pathogen, hormone and antibiotic contamination. In addition, air quality issues of dust, odors and gas emissions are major concerns with large concentrated pork operations. Human health concerns are paramount with these water and air quality issues. These water and air quality concerns come predominantly from manure excreted by swine within their housing units, manure storages and manure application to cropland. The pig is the first point source of generation of potential contaminants to the environment; therefore, if we can alter the diet to enhance efficiency of nutrient retention in the pig and reduce nutrient excretion and odors, then the source of water and air contamination can be reduced. An extensive multi-state research project was conducted to develop and implement diet modification technologies to reduce nutrient excretions and enhance air quality in swine operations. The feeding of diets that are formulated with combinations of LPA corn, reduced crude protein content, synthetic amino acid supplementation, phytase, and soy hulls (LNE) can be an effective way to reduce the environmental impact of pork production. With the feeding of these diets, significant reductions in the excretion of nitrogen, ammonium nitrogen, total phosphorus, water soluble phosphorus, and potassium were observed. Thereby, the amount of land required for manure utilization would be greatly reduced. While the potential environmental impact of swine production was reduced, the performance during the overall grow-finish period and carcass characteristics at all harvest points in most studies were maintained. Additionally, the feeding of these diets increased the efficiency of nitrogen and phosphorus over the entire wean-finish period. However, with these different lean genetic lines, it is of importance to further investigate the degree at which amino acid supplementation can occur in reduced crude protein diets without impacting performance. Additionally, there is a need to re-examine the amino acid and phosphorus requirements of today’s high lean gain potential genetic lines. Feeding LNE diets in commercial settings appears to hinder growth performance, especially during the grower phase. These reductions in performance are further increased when the pigs are reared under low health conditions. While performance was reduced, carcass characteristics were maintained in two experiments when the LNE diets were consumed. Barns in which the LNE diets were fed contained 60% lower aerial ammonia concentrations than the control barns. Total manure production and water consumption were reduced with the feeding of these diets. In addition, total nitrogen and phosphorus excretion was reduced when the LNE diet was fed to grow-finish pigs. Further research is needed to better define the nutrient requirements of high lean gain potential swine, not only in research settings but true commercial settings as well. In general, the lean accretion for pigs fed LNE diet formulations peaks earlier in the grow-finish period and does not reach as high of a peak or maximal protein accretion. This may be because of under estimating requirements later in the grow-finish period, over estimating dietary amino acid availability, or may be an

effect of peaking earlier in life than the control pigs. In contrast however, LNE fed pigs have equal or lower lipid accretion and tend to peak at a later time in the grow-finish period. The amino acid levels, ratios, and availability needs to further be evaluated and refined in the LNE formulations to achieve similar protein accretion rates.

Impact: The long-term objectives of this research were to demonstrate the effectiveness of manipulation of swine diets in reducing nutrients and odor production from pork production facilities. This data will be used to provide a model for producers, extension educators, regulators, consultants, and legislators to plan environmentally sound pork production systems throughout the United States. This model will also estimate the reduction in nutrient excretion, reduction in odors and gases, and predict animal performance. This data has had immediate application with pork production farms and reduced nutrient excretions and odors have been observed. Reducing nitrogenous and phosphorus compounds in the manure will allow increased application rates on fewer acres and a more balanced application meeting crop needs. By reducing odor levels leaving swine facilities, there should be less concern from neighbors and more acceptance of the pork industry in communities. Feed, fecal and urinary concentration of minerals coupled with feed intake and body composition measurements has allowed us to calculate mass balance for essential minerals. This tool (mass balance) has allowed us an opportunity to compare diets composed of various ingredients and diet modifiers to producers for nutrient management plans. It is well established that dietary manipulation is a very effective method to reduce the environmental impact of swine production. By using crystalline amino acids and the concept of ideal protein reduced crude protein corn-soybean meal diets greatly reduces nitrogen excretion. By using these concepts in formulation, nitrogen excretion can be reduced 20 to 30% without influencing growth performance, carcass value or cost of production. However, the economic impact of using low nutrient excretion diets was variable due to changes in the cost of ingredients, especially for synthetic amino acids, non-sulfur trace minerals and low phytate corn, and whether land was limited for manure application. If certain feed ingredients were reduced (especially amino acids tryptophan, valine, and isoleucine), then there would be a greater confidence that use of these amino acids would be profitable. Continued research is needed to determine the amino acid requirements and ratios for different lean genetic lines especially in commercial settings so that greater reduction in excretion and greater implementation of these diet manipulation techniques. In typical corn-soybean meal diets, two-thirds of the phosphorus is bound as phytic acid, making it unavailable to pigs and consequently excreted. By using a phytase enzyme or low-phytate corn and formulating diets on an available phosphorus basis phosphorus excretion can be reduced 20 to 30%. The use of both low-phytate cereals and phytate enzyme can reduce phosphorus excretion 40 to 50%. Alternatively, enhanced processing of the corn fraction of the diet to remove the germ and hull will remove 90% of the phytic phosphorus and the fiber from the corn and can decrease P excretion 30% and DM excretion 40%. However, this further processing of the corn can lead to increased death loss due to ulcers and needs further refinement before implementation by the industry. Dietary manipulation using the techniques tested in this project is a very effective method to reduce the environmental

impact of pork production. As a result, operations producing a majority of the pigs are using some of these techniques on their commercial operations.

Impact Title Turkey Nutrient Excretion and Volatilization

Aerial and manure excretion for turkeys is largely unknown and needed for environmental impact and regulatory policy purposes. An experiment was conducted to determine the fate of phosphorus (P) and nitrogen (N) for turkeys fed two diets at three ages via mass balance based on nutrient composition and weight of consumed feed, carcass and litter. Mass of P excreted at 12, 15, and 18 wk of age was 37, 46, and 40 % more for birds fed an industry (I) diet versus birds fed low phosphorus (LP) diets. The N retained averaged 90.7, 136.7, and 184.2 g/bird while N excreted averaged 377.6, 620.7, and 921.8 g/bird at 12, 15, and 18 wk of age, respectively. The calculated N volatilization at 18 wk was 427 and 405 g/bird for birds fed the I and LP diets, respectively (40 and 37 % of excreted N).

Impact: Values obtained in this trial were compared to the latest turkey excretion model developed by the American Society of Agricultural and Biological Engineers. The ASABE standard over-estimated turkey excretion, nitrogen, and phosphorus by 15 and 9%. This study also is a first to estimate nitrogen volatilization for a complete production phase for turkeys.

Biology, Management and Distribution of Glyphosate Resistant Horseweed (Conyza canadensis) and Other Weeds

Production of Roundup Ready soybeans and utilization of no-till practices relies on extensive use of the herbicide glyphosate (Roundup). In 2003 more than 90% of soybean acres in Indiana were planted with Roundup Ready varieties and no-till production practices were utilized on 60% of the soybean acres. However, adoption of no-till practices and increased reliance on glyphosate has resulted in a serious concern for long-term use of this valuable weed management tool. Glyphosate resistant horseweed (a.k.a. marestail) was discovered in 2002 at a few sites in southeast Indiana and southwest Ohio. This weed can germinate in the fall, spring or summer and its seed is easily moved by wind. Tillage temporarily eliminates the threat of horseweed, but must be repeated to prevent reinfestation. Widespread return to intensive tillage would negatively impact crop production efficiency and could reverse productivity and environmental gains.
What you have done We have conducted numerous field and greenhouse studies to investigate the distribution, biology and management of glyphosate-resistant horseweed and other weeds.

Impact: We collected close to 500 horseweed seed samples (out of over 1300 sites visited) in Indiana. This sampling for detection of a herbicide-resistant weed is the most extensive ever conducted in the United States. This unique data set will allow us examine the effects of farming practices on the development and spread of herbicide resistance at a landscape level. We have shown that glyphosate resistant horseweed is present in 29 counties in Indiana. Its prevalence is mostly associated with no-till cropping systems and in fields with wheat or soybean as the previous crop. Resistance ratios of 2 to 39 have been found in selected populations. Cross resistance to glyphosate and ALS inhibitors has been found in about 20% of the populations. We have identified two populations with elevated tolerance to 2,4-D and will conduct more studies on the heritability of this trait. Field studies on the biology and management of this weed have shown that it is relatively easy to control simply by using something other than glyphosate for its control. Seed bank studies have shown horseweed seed is not persistent in the soil and that a resistant population can be exhausted within two years. Other new studies are being conducted to determine if we can use glyphosate resistant horseweed as a sentinel species for other weeds with enhanced glyphosate tolerance. We are specifically investigating common lambsquarter and giant ragweed in several fields in Indiana.