

**PLAN OF WORK**  
**ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS**

**Cooperative Extension Service  
Purdue University**

**Federal Fiscal Year  
2002**

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## TABLE OF CONTENTS

<b>PREFACE</b> .....	1
<b>A. PLANNED PROGRAMS</b> .....	2
<b>Goal 1: An agricultural system that is highly competitive in the global economy</b> .....	2
Overview.....	2
Key Theme – Adding Value to New and Old Agricultural Products .....	3
Feeder Cattle Marketing	
Husklage – Included in Finishing Beef Cattle Rations	
Making Healthier Milk	
Washington County Quality Beef Partnership	
Key Theme – Agricultural Competitiveness.....	5
Taming the Milk Price Roller Coaster	
Corn Rootworm Evaluation	
Key Theme – Agricultural Profitability.....	6
Issues With A Unique Watermelon Storage Facilities	
Executive Institute for Commerical Producers	
Key Theme – Animal Health.....	8
A Good Cow is a Good Cow	
Public Health Pest Management – West Nile Virus	
Key Theme – Animal Production Efficiency .....	10
IQ Plus Beef Certification	
Swine Growth Modeling Extension Project	
Key Theme – Aquaculture.....	11
Pond Care	
Key Theme – Biotechnology .....	11
Generation Gap and Biotechnology	
Bioengineered Foods: Dreams from the Fields	
Course Helps Teachers and Extension Educators Learn About Agricultural Biotechnology	
Key Theme – Diversified/Alternative Agriculture .....	14
Black Beans Give Southeastern Indiana Growers a Profitable Alternative	
Key Theme – Home Lawn and Gardening .....	14
Landscaping for the Homeowner	
Key Theme – Organic Agriculture .....	15
Extension Helps Farmers Develop Alternative Enterprises	
Key Theme – Small Farm Viability.....	15
Specialty Crops	
Key Theme – Urban Gardening.....	16
Garden Clinic Blooming with Ideas	

<b>Goal 2: A safe and secure food and fiber system</b> .....	17
Overview .....	17
Key Theme – Food Safety .....	18
ServSafe	
Food Biotechnology: Dreams from the Fields	
Communicating the Risks and Benefits Associated with Fish Consumption	
Key Theme – Food Handling.....	20
Food Safety Day	
<b>Goal 3: A healthy, well-nourished population</b> .....	21
Overview .....	21
Key Theme – Human Nutrition .....	22
EFNEP Improves Quality of Life for Participants	
Helping Families Save and Be Healthy: The Family Nutrition Program (FNP)	
Feeding Young Children	
Dietary Guidelines	
Overweight America – A Growing Concern	
Key Theme – Birth Weight.....	26
Have a Healthy Baby	
Key Theme – Nutricueticals .....	27
Functional Foods	
<b>Goal 4: Greater harmony between agriculture and the environment</b> .....	28
Overview .....	28
Key Theme – Agricultural Waste Management .....	29
Helping Confined Feeding Operators Comply with New Environmental Rule	
Key Theme – Forest Crops .....	30
Evansville Tree License	
Key Theme – Forest Resource Management .....	30
Purdue Extension Helps Solve Problems	
Indiana Master Naturalist	
Key Theme – Hazardous Materials.....	31
Understanding Anhydrous Ammonia	
Key Theme – Integrated Pest Management.....	32
Crop Management Workshops Improve Indiana’s Pest Managers Pesticide	
Decision Making	
Key Theme – Land Use .....	33
Land Use Planning	
Land Use Programming	
Community Planner Certification Program	
Key Theme – Natural Resources Management .....	35
Henry County Pond Clinic	
Environmental Park	
Key Theme – Nutrient Management.....	37
Laying It On Too Thick	
Diet Manipulation to Reduce Swine Manure Nutrients and Odors	

Key Theme – Pesticide Application .....	38
Commercial Applicators of Aquatic Pesticide	
Purdue Extension Helps Reduce Pesticide Drift Complaints	
Key Theme – Recycling.....	39
Used Oil Collection/Recycling Event	
Key Theme – Soil Erosion.....	40
Corn Growers Implement Alternatives to Tillage	
Key Theme – Water Quality .....	41
Water Quality Education	
Water Resources Publication Informs Citizens	
Key Theme – Wildlife Management.....	42
Indiana Coverts Project	
<b>Goal 5: Enhanced economic opportunity and quality of life for Americans.....</b>	<b>43</b>
Overview.....	43
Key Theme – Children, Youth and Families at Risk.....	45
Crawford County C.A.R.E.S.	
Project LEAD: Legal Education to Arrest Delinquency	
CARE: Communities Against Rape Initiative	
Key Theme – Youth Development 4-H.....	47
4-H Program	
Life Skill Development of Tenured 4-H Members	
4-H Teen Leader Development	
Key Theme – Character Education .....	49
Character Education	
Key Theme – Agricultural Financial Management .....	49
Midwest Women in Agriculture Conference	
Key Theme – Family Resource Management.....	50
Developing the Financial Literacy of Youth	
Money on the Bookshelf	
Focus on Financial Management	
Key Theme – Parenting .....	52
Families in Transition	
Key Theme – Workforce Preparation—Youth and Adult .....	52
Reality Store	
Life After Incarceration	
Key Theme – Workforce Development—Youth and Adult.....	53
Learning Center of Clinton County	
Key Theme –Leadership Training and Development.....	55
Volunteer Board Training	
Changing Face of Indiana	
Key Theme – Community Development.....	56
Hendricks College Network	
<b>B. STAKEHOLDERS’ INPUT PROCESS.....</b>	<b>57</b>

<b>C. PROGRAM REVIEW PROCESS .....</b>	<b>58</b>
<b>D. EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES .....</b>	<b>59</b>
<b>E. MULTISTATE EXTENSION ACTIVITIES .....</b>	<b>62</b>
Form CSREES-REPT – Actual Expenditures .....	62
Brief Summaries .....	63
<b>F. INTEGRATED RESEARCH AND EXTENSION ACTIVITIES .....</b>	<b>70</b>
Form CSREES-REPT – Actual Expenditures (Smith-Lever Act Funds).....	70
Brief Summaries .....	71

## 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 2002. 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; Multistate Extension Activities; and Integrated Research and Extension Activities. This report indicates acceptable progress toward our overall goals.

Impact statements from Purdue's School of Agriculture, School of Consumer and Family Sciences, School of Veterinary Medicine, and Cooperative Extension Service may be viewed at the following website: <http://www2.agriculture.purdue.edu/impact/>.

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# FY 2002 ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

## A. PLANNED PROGRAMS

**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 is committed to providing the education and outreach programs necessary for Indiana producers to adopt emerging technologies and research results that will keep the state's agriculture financially stable and globally competitive. The state is moving into a value-added and diversified agricultural economy, and Purdue Extension is looking at ways to make the state competitive with traditional agricultural commodities of livestock and grain crops. To stay competitive in a global economy, the state's agricultural community must be better prepared to manage the production systems that are viable within Indiana. During the past fiscal year, Purdue Extension reported 4,018 contact days being devoted to this important issue, and resulted in 61,858 direct people contacts. 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.

Purdue Extension focused on several programs related to Goal One. For FY 2002, a total of 9,391 contact days were devoted to primarily three programs: Agricultural Competitiveness, Horticulture and Turf, and Alternative Agricultural Enterprises and Practices. These efforts resulted in a reported 151,912 people being contacted among these three programs. A fourth area of emphasis was in Agricultural Awareness and Understanding, targeting both youth and adults. These four programs will be discussed in greater detail below and in the Key Themes section of this report.

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 2,408 days to programs that exposed 133,028 adults and school aged youth to an awareness and understanding of agricultural issues.

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, pond management, and urban forestry and wildlife preservation.

Purdue Extension works closely with the extension programs in other states on issues of agricultural competitiveness. Many of the campus Extension staff have 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 dairy producers of Indiana through the efforts of Purdue Extension programs.

## **Key Theme: Adding Value to New and Old Agricultural Products**

### **Feeder Cattle Marketing**

Local and area cow/calf operators sell their calf crop to local cattle feeders or to regional feeder cattle markets in small lots. These markets sort and combine cattle to form larger loads for resale to western feedlots. Local cow/calf producers do not realize the potential benefits of economies of scale. The Extension Educator worked with local cattlemen and the Dubois County Cattlemen's Association to convince four local producers to sort and combine their cattle to sell as a semi-load lot via satellite video auction.

**Impact:** Dubois County Extension Educator helped producers sell cattle via satellite video auction to increase the pool of buyers. The cattlemen were paid in full for their cattle before they left the county. A comparison of the price received from sales of like animals at regional markets on or near the date of sale to that of traditional sales showed a price increase ranging from 5 to 15 dollars per hundred-weight. This is a \$2,500 to \$7,500 (6 to 18%) increase in profit per load. Producers also expressed a desire to work toward the ability to combine and market uniform loads of quality cattle.

Source of Funds: Smith-Lever, State

Scope of Impact: SW Indiana

### **Husklage-- Included In Finishing Beef Cattle Rations**



Lower cost ingredients included in beef rations can lower feed costs and increase per animal net profits, if performance is kept above the break even point. Availability of inexpensive rations can provide beef cattle feeders with the opportunity to glean extra income from the feed lot enterprise. The ingredient vendor will also reap a profit for his by-product. A feed lot operator approached Extension with the challenge to construct a ration to increase net profit per calf with raw husklage that could be purchased at a local seed corn processing plant. Husklage is the husk by-product with some kernels of corn that remain from the de-husking process and then ensiled in a silo. Rations were entered into a Purdue University computer program and balanced according to National Research Council beef industry standards. The ration was then fed to the cattle on a uniform 60 day decreasing schedule that started with 90 percent husklage and ended with 50 percent husklage from 600 pound initial weight to market weight of 1,250 pounds.

Impact: County and State Extension staff addressed the net profit per calf issue for a local Greene County beef cattle feedlot owner/operator. After feeding a ration, using a locally available corn by-product that was ensiled to make husklage, the local producer realized an extra \$25.00 net profit per calf fed in his 600 calf feedlot. Of two groups of 600 calves fed for two 150 day cycles, the feedlot realized \$30,000 extra income when compared to past production records. This is the first year's progress report of a three year program designed to lower feed costs for Greene County cattle producers.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Making Healthier Milk**

Docosahexaenoic acid (DHA) is a naturally occurring fatty acid which plays a vital role in maintaining cardiovascular health in adults and in supporting normal neural and retinal development in children. Fish oils are a rich dietary source of DHA. Milk and milk products are usually devoid of DHA therefore milk enriched with DHA during production may provide a natural alternative food source for health conscious consumers. Feeding fish oil to cows has not been effective in increasing the DHA content of milk due to the extensive fermentation process that occurs in the rumen. Studies were undertaken to evaluate the potential for enriching milk with DHA through feeding DHA sources that escape alterations in the rumen and the effects on milk DHA content. Data indicate that the DHA content of milk is increased to 0.64 g DHA per 100 g fatty acids as a consequence of feeding DHA supplements to lactating cows. That the content of conjugated linoleic acid (CLA), another 'heart healthy' fatty acid, is also increased with DHA feeding is an unexpected bonus.

Impact: The research indicates that DHA content of milk can be enriched to contain two 'healthful' fatty acids known as docosahexaenoic acid (DHA) and conjugated linoleic acid (CLA) by feeding practices at the farm level to provide consumers with a dairy food choice that helps meet the daily recommendations for dietary DHA. The enriched milk fat could be used to make ice cream a health food!

Source of Funds: Smith-Lever, State

Scope of Impact: National

### **Washington County Quality Beef Partnership**

Twenty-six beef producers formed a LLC called the Washington County Quality Beef Partnership (QBP) to make purchases of seedstock, animal health products, feed, mineral, tags and to lower costs by coordinating shipping of feeder calves or seedstock. The QBP members have elected a Board of Directors, formed committees for marketing, purchasing, long range planning, and nutrition. Partnerships have been formed with the Pfizer Animal Health Company, several local suppliers of feed and mineral, and several feedlots in Iowa.

Impact: Since the formation of QBP in August of 2000 the members have learned to work together for the benefit of the group. The size of each operation varies considerably, but when considering the savings from group purchasing alone, the members have saved from \$500 to \$700 annually, for an operation with 100 brood cows. This would translate to a range of \$250 to over \$3000 annually for the members from discounts realized through volume purchases of the group. Members have been selling feeder calves to feedlots in Iowa for \$0.07 to \$0.10 per pound above what local markets are offering. These sales have resulted in extremely large increases in the revenue from the sale of their calves. Other members are retaining ownership of their calves and have been earning profits of \$30 to \$150 or more above what they would have received if the calves had been sold at weaning instead of having them custom fed in Iowa. Members have also taken advantage of group purchases of bulls and bred heifers, which have resulted in the savings of thousands of dollars in purchase price and delivery charges. QBP members have gone together to insure many of their herd bulls against death and infertility. This resulted in a 2% savings in the cost of the insurance, or nearly \$2000 in premium costs. QBP members represent nearly 3,300 head of brood cows and are marketing the calves produced by these cows as mentioned above.

Source of Funds: Smith-Lever, State

Scope of Impact: SE Indiana

### **Key Theme: Agricultural Competitiveness**

#### **Taming the Milk Price Roller Coaster**

Dairy farmers have faced volatile milk prices over the past 10 years as government price supports and commodity purchases have given way to market driven milk prices. Recently, the Chicago Mercantile Exchange began to trade Milk Futures and Options, which are cash settled and flexible enough for many dairy producers to use. Hedging milk prices allows dairy producers to manage financial risk associated with variable milk prices. Furthermore, payment programs initiated by the 2002 Farm Bill will require producers to make informed decisions about their milk prices. Individual and group training programs were offered to dairy producers and dairy industry professionals on the basic concepts of milk pricing and utilizing milk futures and options. Producers learned how to calculate production costs and identify futures or options that

can ensure a profit for at least part of their total monthly milk production. Programs such as the USDA Dairy Options Pilot Program were described and provided opportunities for dairy producers to explore the use of dairy options with minimal risk. Materials and Web links to futures market information were made available through links on the Purdue Dairy Web Page. Dairy pricing and industry outlook information were prepared at regular intervals to help dairy producers interpret changes that could influence their future milk prices.

**Impact:** Purdue Extension held programs to help dairy producers understand milk prices so they can use risk management tools like futures, options, and forward contracts. We also helped dairy producers understand how to make marketing decisions and make the Farm Bill dairy program work for them. Training sessions reached dairy producers at county and area meetings which included attendees from Indiana, Michigan, and Ohio. In early summer, dairy producers could have locked in futures prices for September 2001 at about \$2 per hundred pounds more than current forecasts. For a dairy with 500 cows, protecting the price for half of the milk produced using futures contracts can show additional \$12,000 in profit to the producer. Nearly half of the dairy producers who attended the Dairy Options Pilot Program training sessions signed contracts to purchase options.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** IN, OH, MI

### **Corn Rootworm Evaluation**

The decision to treat corn with insecticide to battle western corn rootworm (WCR) involves knowing if you have an economic problem or not. Uncertainty in just how much of a problem WCR may pose for corn growers forces them to apply insecticide as a routine practice. Two Montgomery County producers were trained in a WCR trapping protocol. Sticky traps were placed at six sites within fields and monitored for six weeks at each farm. WCR count data was collected and evaluated.

**Impact:** The two producers learned how to use integrated pest management (IPM) as a decision tool in selecting crop inputs. Both expressed interest in learning more about IPM practices. Both growers found that WCR trap levels were not above levels set by Purdue Entomologists. Instead of relying on generalized recommendations from crop vendors, the two growers have gained confidence in making insecticide application decisions for 2003. The two growers who utilized WCR trapping protocol will not use insecticide in 2003, saving \$15 per acre in input cost. This will amount to over \$15,000 in savings during 2003. Both growers have learned how pest monitoring can provide economic payoff and justify time spent monitoring crops.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** State Specific

**Key Theme:** Agricultural Profitability

## **Issues With A Unique Watermelon Storage Facilities**

A major watermelon producer in Indiana was having a problem with premature breakdown of produce (premature ripening) placed into his new climate controlled storage unit. Purdue Extension Specialists were asked to troubleshoot the new cold storage units and identify the cause of the breakdown. They knew that the watermelon cold storage unit shared its cooling system with the muskmelon cold storage nearby, and also thought that the symptoms of premature fruit breakdown looked like those caused by ethylene gas. Ethylene gas is a natural plant hormone that is released by ripening fruit. Some fruit, like muskmelon, can release significant amounts of ethylene in storage, which might have been the source of the problem.

The Specialists ordered an ethylene gas sniffer unit to check this out. They suggested turning off the cold storage and opening it to let the ethylene out and stop any further gas buildup. Melon produce was moved into and out of the cold storage via forklifts. With the ethylene sniffer, they were able to show that outside the storage units there was no detectable ethylene. However, inside the coolers were significant ethylene levels. Another source of ethylene can be inefficient burning of fossil fuels. The forklifts that move produce into and out of the coolers are propane powered. After placing one of the forklifts into the storage area for a period of time, significant levels of ethylene could be detected.

**Impact:** A large watermelon producer was having trouble with premature breakdown of watermelon in his new and unique climate controlled storage. Purdue Extension specialists were able to identify an increase in ethylene gas due to inefficient combustion of propane from forklifts. This saved the individual grower \$125,000 and provided safety information to other growers in the state.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** State Specific

## **Executive Institute for Commercial Producers**

The current economic environment places significant demands on large commercial producers to position their business for success. With the number of successful commercial farms in the U.S. shrinking, to be one of the successful farms in the future, farm business managers must take on the role of a general manager. They must look at the business as a whole and have a vision of where the business is going. The undirected growth typical of farms in the past will not be acceptable. To do this, managers must have a comprehensive set of finance, marketing, and strategic tools. This first of its kind partnership takes a number of farmers, with the potential to be highly successful, through a series of seminars over the course of a year to teach them needed management practices. Participants are drawn from leading agribusinesses in the four states (Indiana, Ohio, Kentucky and Tennessee) that Farm Credit Services of Mid-America serves. These seminars introduce and apply advanced business management concepts to the problems confronting the larger and more complex commercial farm and its management team. The classes consist of intensive one-on-one strategic consultation, group work, case study analysis, and computer skills development. This multi-state effort will continue for the next year. A set of

teaching materials presented in the program has been developed for educators to use. Included in the materials are complete PowerPoint presentations with presenter's notes, exercise and extensive background readings. Visit our website at [www.agecon.purdue.edu/ext/eicp](http://www.agecon.purdue.edu/ext/eicp)

**Impact:** Since the conception of the project in early 2000, lecturers have seen a marked evolution in how farm managers view the strategic focus of their businesses. While gaining skills in the short-term financial control of their business, participants have developed a long-term view of the profitability of their business essential to success. Participants have also increased their computer skills and developed a network of peers. The first class (of three) of 23 operations believes the material presented to be highly useful in dealing with managing their business. On a scale of five the program has been rated a 4.56. One participant said “As we grow our business, there are a lot of challenges ahead for the future that we need to address. At these seminars, we've learned how to manage our assets, how to manage our resources, and how to manage our employees. Also, we've looked at how to think about growing the business. These are things for the young farmers and nurserymen of the future to be aware of - or we won't be in the business.” Future impact of the program will include packaging of the material for extension educators in the four-state region.

**Source of Funds:** Smith-Lever, State, Private

**Scope of Impact:** IN, KY, OH, TN

## **Key Theme: Animal Health**

### **A Good Cow is a Good Cow**

Grazing as a form of low input dairy production is increasing in popularity. Herds where cows consume mostly grass forage produce, on average, less milk than those in confinement. However, it has also been documented that the lower costs of production associated with grazing are more than enough to offset this decrease. A major concern for graziers is the choice of genetics for optimal performance in pasture based systems. A primary concern is whether a genotype by environment interaction ( $G \times E$ ) exists between the two distinct environments, confinement and grazing. In other words, does one expect those sires, whose daughters are producing in both environments, to rank the same genetically in both environments? Production records were obtained from grazing herds in the eastern U.S. Grazing herds were defined as those that utilized grazing for at least 6 months and were enrolled in Dairy Herd Improvement. Control herds were confinement DHI herds of comparable size in similar regions. The performance of daughters of bulls in grazing herds and control herds was examined by examining the relationship between milk, fat, and protein yield. Predictions were based upon USDA genetic evaluations of Artificial Insemination industry bulls. Estimates of heritability for the traits ranged from 20% to 25%, and differences between grazing and control environments were small. Estimates of the genetic correlations for the traits in both environments were significantly different for unity for milk (0.89), fat (0.88), and protein (0.91). Grazing and control records were also examined for evidence of genotype-by-environment interaction among somatic cell counts and reproductive traits. Little evidence for genotype by environment interaction was found.

Impact: Graziers are convinced that bull's daughters fed mainly grass perform differently than those fed more concentrates indoors. Our work shows that a bull's daughter tends to rank the same compared to other bulls regardless of the environment. Therefore, graziers can select bulls for the specific combination of traits, no matter where most of their daughters were raised. There is some genotype by environment interaction for production traits between confinement and grazing herds in the U.S. However, a young sire sampling scheme solely to identify sires that excel under grazing, does not appear to be economically feasible given that a high level of genetic gain will be achieved by selecting sires based on current evaluations. Graziers can confidently use bulls tested primarily in conventional dairy environments. Indeed use of artificial insemination sires instead of natural service sires from other grazing herds will result in an increased value of at least \$210 per heifer over the course of her life. For a 100 cow grazing herd, this equates to \$10,500 per yearly calf crop.

Source of Funds: Smith-Lever, Hatch, SARE, State

Scope of Impact: State Specific

### **Public Health Pest Management - West Nile Virus**

Public health pests from mosquitoes, ticks, and other pests are a continuous concern in Indiana and surrounding States. Mosquito-borne diseases, especially West Nile Virus and related arboviruses are of major concern. Tick-borne diseases such as Lyme disease and Rocky Mountain spotted fever are also of concern. There has been a critical need to keep the general public aware of current disease concerns and provide recommendations for addressing control and protection from public health pests and potential disease transmission. Updated Extension publications, news releases, and updates on the Extension Entomology website have been used in providing current control recommendations and disease occurrence updates. Purdue Extension Specialists have traveled to problem areas of the state (Davies, Allen, Elkhart, Marshall, and LaGrange Counties) to assess environmental concerns of West Nile Virus activity.

Impact: People in Indiana have become more educated on West Nile Virus and proper mosquito control practices with efforts of Purdue's Extension Entomology program. The general public and horse producers have become more aware of the mosquitoes that can transmit West Nile Virus and what they can do to protect themselves and their animals. Horse owners in the northeastern area of the State have taken steps to reduce mosquito breeding activity on their properties. Also, the general public has become more aware of what is being done for mosquito control; what chemicals are being used; how safe they are; how they are applied; and what people can do to protect themselves from mosquito biting activity and reducing their chance from being exposed to West Nile Virus or other arthropod-borne diseases.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

## **Key Theme: Animal Production Efficiency**

### **IQ Plus Beef Certification**

Beef production in Fayette County, Indiana is the leading livestock enterprise. Many of the area's beef cow operations are not the primary family income source and could become more efficient and profitable. Training and certification in the IQ+BEEF program will enable producers to sell value-added calves to increase profitability. The added weight and prices received for properly managed and preconditioned calves can easily improve net return by \$30-\$50/head. Extension educators organized a beef production workshop to help producers improve profitability. One extension educator was trained and certified as a "trainer" for the new Five State Beef Initiative. Specialists from Purdue University were contacted to assist with the producer training and certification program. Producers from Franklin, Rush, Union, and Fayette Counties were invited to attend the certification workshop held at a Fayette County beef producer's farm. The Fayette County Beef Association was contacted to provide a supper for those attending.

**Impact:** Twenty eight producers attended the beef certification workshop. Ten producers were certified for the IQ+BEEF and 5-State Beef Initiative at the three hour workshop. Certified beef producers sold beef calves at a special IQ+BEEF sale held in Eaton, Ohio. Calves sold at an average premium of ten dollars per hundred-weight. Beef cow producers are investigating the formation of an alliance to group calves to be sold in larger groups from the local counties to capitalize on additional premiums associated with semi-trailer load lots.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** State Specific

### **Swine Growth Modeling Extension Project**

Pork producers are striving to produce quality lean pork as efficiently as possible with minimal environmental impact. Feed represents approximately 60% 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, Paylean™ has been approved to increase the rate and efficiency of lean growth. An in-depth swine growth model has been developed to incorporate the impact of Paylean™ at different concentrations (5 to 20 ppm) and durations. The computer model allows producers who have established on-farm compositional curves to evaluate the impact and to calculate the increased nutrient requirements as a result of feeding Paylean™. The program provides optimal predicted amino-acid levels. The model determines the most profitable series of diets in terms of live weight growth, carcass composition, feed conversion, and nutrient excretion (0 ppm) for Paylean™-fed pigs for different carcass-value-based marketing systems. The model can be used to establish specifications for a series of diets which maximize profitability for pigs fed Paylean™. The model has been refined to include the increased duration and magnitude of response when increasing concentrations of Paylean™ are fed.

Impact: Data from three research trials, (two Purdue trials and one North Carolina State University trial) were used in which either constant or increasing dietary concentrations of Paylean™ were fed. The results indicate that step-up programs such as feeding 5 ppm Paylean™ for 14 days followed by 10 ppm for 14 days will result in increased profits of \$0.90 to \$1.20 per pig, depending on the marketing system. The feeding of Paylean™ can substantially increase the efficiency of swine lean growth, but, diets with increased essential amino-acid levels are needed to achieve the optimal Paylean™ response. Use of these models can result in the optimal nutritional, genetic and management decisions. Pork producers can decrease feed costs and improve pig performance while reducing nitrogen and phosphorus excretion.

Source of Funds: Smith-Lever, State, Private

Scope of Impact: National

## **Key Theme: Aquaculture**

### **Pond Care**

Many private ponds exist in Fayette and three surrounding counties, and landowners said they needed information on proper pond management practices. Numerous calls are received in the Extension offices for information about weeds, algae, fish, and pond construction. The Extension educators in Fayette, Union, and Franklin counties of Indiana, with the Natural Resources staff in the same counties organized pond clinics for the fall of 2001 and 2002. Extension Specialists and Natural Resources staff developed an evening program at a farm pond site to address the most frequent calls made to the offices.

Impact: Many private ponds exist in Fayette and surrounding counties, and surveys by Purdue Extension and Indiana Department of Natural Resources consistently found that landowners wanted more information about pond construction, management, and erosion control. Fifty-seven persons attended the October workshop at Manlove Park in 2001. One hundred and nine attended the September 2002 clinic at John Rathburn's pond site. Formal surveys were conducted with the following results (33 responses):

- 70% plan to utilize practices and/or suggestions from the clinic.
- 88% rated the presentation as good.
- 100% of respondents reported they learned how to determine the balance of fish species in a pond.
- 91% indicated they planned to change a pond management practice.
- 48% reported that they would use algae and weed control.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

## **Key Theme: Biotechnology**

### **Generation Gap and Biotechnology**



Biotechnology is often a misunderstood concept and information about biotechnology is not readily available for some senior citizens. An introductory biotechnology course was taught to a group of senior citizens. An anonymous pre and post test was administered to participants to determine their knowledge gained.

Impact: Seniors increased their knowledge of basic biotechnology between a pre/post test evaluations on biotechnology. (Age range 50 through 83)

What does the abbreviation G.M.O. stand for? (Genetically Modified Organisms)

Responses: pretest vs. post test - 6% vs. 88%

As a consumer which best matches your opinion of genetically enhanced foods (circle one below).

- a. Genetically enhanced foods are unsafe and companies have no business using us as guinea pigs.
- b. Genetically enhanced foods are safe and should be used more often.
- c. No opinion.

Responses: pretest vs. post test –

- a. 6% vs. 6%
- b. 75% vs. 94%
- c. 19% vs. 0%

Biotechnology is another tool for agriculture in the United States to be competitive in the world market.

- a. I agree.
- b. No, I do not agree.
- c. No opinion.

Responses: pretest vs. post test –

- a. 88% vs. 94%
- b. 6% vs. 6%
- c. 6% vs. 0%

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Bioengineered Foods: Dreams from the Fields**

A Purdue Educator adapted a power point presentation on *Bioengineered Foods: Dreams from the Fields* to be used with 7 different audiences in northeastern Indiana. The program was presented in an effort to educate and reassure clientele on the safety and effectiveness of Bioengineered Foods.

Impact: After attending the program on Bioengineered Foods, participants were more knowledgeable and accepting of the bioengineering work being done. The presentations of *Bioengineered Foods: Dreams from the Fields* had a total of over 120 people in attendance. A pre and post survey was used to measure increase in knowledge and perhaps a change in attitude.

The results showed:

- an increase of 23% for the knowledge that GMO's are currently in grocery stores.
- an increase of 18% of persons no longer believing that GMO foods are inferior.
- an increase of 46% of people who now know that GMO foods are properly regulated by FDA and other agencies.
- an increase of 20% of people who would now knowingly serve GMO food to their family.
- an increase of 23% of participants who believe that GMO foods will benefit the population in the next five years.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Course Helps Teachers and Extension Educators Learn About Agricultural Biotechnology**

Advances in biotechnology are rapidly changing the way we work and live. Many advances are met with controversy or raise ethical questions. Educators need the skills to understand the science associated with the technologies, in order to teach biotechnology to our youth. Introduction to Agricultural Biotechnology (HORT 590G) was designed to help high school teachers and Extension Educators understand some of the sciences associated with common biotechnologies. Some of the topics covered include an introduction to biotechnology, how transgenic organisms are produced, and the ethical issues associated with current biotechnologies. Students meet on campus for the first two days of the course to hear several Purdue biotechnology experts in a wide array of fields, including horticulture, agronomy, and food science. A notebook with a large selection of biotechnology information and resources is prepared for the students. Students then return home and work on a series of web-based lessons, quizzes and tests. Students in the course had to write a lesson plan or case study to be used in their classroom or for an Extension educational event. At the end of seven weeks, students returned to campus to present their lessons to the class and to participate in a bioethics activity. A field trip was incorporated with the class traveling to the Indiana Crop Improvement Association and Dow Agro Sciences.

Impact: Introduction to Agricultural Biotechnology (HORT 590G) was designed to help high school teachers and Extension Educators understand some of the sciences associated with common biotechnologies. Educators need the skills to understand the science associated with the technologies, in order to teach biotechnology to our youth. The 2002 summer class had 6 students; one Extension educator, three teachers, and two Ag and Extension Education graduate students. Overall, students rated the class 4.66 out of 5, on a 1-5 scale with 1 indicating very poor and 5 indicating excellent. One student stated "Great course for teachers" and another "loved the

idea of internet based lesson and testing". Following the course, students indicated that they had a better understanding of biotechnology and would be able to better relate to what is happening with their clients or students. Students also gained an improved awareness of resources available for teaching biotechnology.

Source of Funding: Smith-Lever, State

Scope of Impact: State Specific

## **Key Theme: Diversified/Alternative Agriculture**

### **Black Beans Give Southeastern Indiana Growers a Profitable Alternative**

Weather and soil drainage conditions in southeastern Indiana make it tough to profit from growing corn, tobacco and soybeans. The only way area farmers with limited acreage can increase their income is by increasing their profit margins. Growers in Decatur County, Indiana worked with the County Extension Educator to look for an alternative crop that would be profitable in their area. Black beans provided the growers this profitable alternative.

Impact: During the 1997 crop season, Decatur County growers planted 65 acres that produced acceptable yields. In 1998, tours were set up to teach area growers how to build a consistent market for alternative crops. That year growers in Decatur County planted 400 acres of black beans that sold at a price of \$40 per hundred-weight. Thirteen farmers each produced from 15 to 60 acres of black beans as contract growers for Langeland Farms, a seed cleaning and conditioning firm in the county. They earned returns of about four times more per acre than they would have received from soybeans. Yields were comparable to those for soybeans. In 1999, growers in six counties planted a total of 2,400 acres of black beans at a market value of \$2.3 million dollars. The 2000 growing season reflected a down turn in market price, and only 400 acres of black beans were planted and harvested in Decatur County at \$11 per hundred-weight. Yields were again very comparable to soybeans. The 26 growers worked as a group and limited sales for two years. In the fall of 2001, growers sold 960,000 pounds of black beans stored over a period of two years for \$34 per hundred-weight. The 2002 growing season produced 1,000 acres of black beans in Decatur County yielding 30,000 pounds at a market price of \$40 per hundred-weight.

Source of Funds: Smith-Lever, State

Scope of Impact: SE Indiana

## **Key Theme: Home Lawn and Gardening**

### **Landscaping for the Homeowner**

The public desired a basic landscaping class that the homeowner could afford and could participate in at a convenient time. The Pike County Extension Educator offered an affordable basic landscaping class in the evenings to 60 participants. He used experts from the area as well

as Purdue Specialists. Topics covered were: Landscape Planning, Soils, Construction, Woody Ornamentals, Turfs and Lawns, Flowers, Specialty Gardens, and Pests. The cost of the class was \$75, which covered the production cost of the 3-ring notebook, a 50 page 18" x 24" sketch pad, a landscaping template, and colored pencils. The basic landscaping class was something greatly desired in our area. The need was identified by surveying Master Gardeners and publicizing for potential students.

Impact: The 60 participants saved an average \$500 each by learning the techniques of proper landscaping and by doing their own labor. Participants also spent an average of \$1,000 each on trees, annual plants, perennials plants, and lawn materials for the renovation or re-establishment of landscaping around their homes. These dollar figures were determined by the participant's homework assignments. Each participant was to visit a "turn-key" landscaper to determine a price for landscaping and then calculate their own landscaping, with themselves doing all of the labor.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

## **Key Theme: Organic Agriculture**

### **Extension Helps Farmers Develop Alternative Enterprises**

Farmers are looking for alternatives to traditional food production. In a rapidly urbanized area, producers are losing land to development and often must increase profitability on a shrinking land base. A Purdue Extension Educator met with producers individually to assess their situations. He asked key questions to help them formalize ideas into plans, provided resources and contacts with Purdue Specialists, facilitated the development of business plans, and provided support and encouragement.

Impact: Producers are generating additional income from new enterprises. One producer has increased income by \$500 per week. Her customers feel they are living healthier lives because of their food choices. One farmer said, "We've been farming vegetables and chickens organically for 10 years, alone. Finally we have support and encouragement to do it right." As a result of Purdue Extension efforts, farmers are increasing their incomes and pursuing further education.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

## **Key Theme: Small Farm Viability**

### **Specialty Crops**

Small farmers continue to seek opportunities to help with the economic viability of their farms. Several local farmers have begun growing produce and they are selling that produce through a

produce auction, farmers market, or roadside stands. These farmers come to Extension for educational resources to help them learn proper management practices in successfully growing their crops. The Purdue Extension Educator meets periodically with the Clearspring Vegetables Growers of LaGrange County, Indiana and their board to discuss educational needs and to schedule educational resources for some of their meetings. A vegetable grower's newsletter is published and vegetable and fruit growing publications are made available to the growers. Extension provides basic diagnosis for their plant problems.

**Impact:** The Clearspring Produce Auction continues to increase its gross sales. Total gross sales for September 2002 were \$114,524.38. The total sales for the year through September 30, 2002 were \$375,586.31. At the same point in 2001, gross sales were \$281,630.88 which is an increase of \$93,955.43 or a 33% increase. The number of farms producing vegetables and fruit commercially remained stable in 2002; however, the number of acres devoted to vegetable and fruit production increased by approximately 25%. This increase shows an increased commitment as well as comfort level in growing alternative crops in LaGrange County. Purdue Extension has contributed to the success of local farmers in increasing their production of quality vegetables through educational programs which have increased their knowledge and skills in growing and marketing vegetables.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** State Specific

## **Key Theme: Urban Gardening**

### **Garden Clinic Blooming with Ideas**

There are over 285,000 households in Marion County, Indiana that participate in one or more gardening activities. Gardeners need to gain and update their gardening knowledge to help them be successful gardeners, beautify their surroundings and understand food production. Purdue Extension's Urban Garden Program provided a daylong Spring Garden Clinic. The clinic consisted of four sessions with 2-3 concurrent classes per session. Community gardeners and volunteers received free admission and the general public was charged a \$10 registration fee. The 10 speakers included Extension Educators, local garden professionals and Master Gardeners. The 11 topics presented were: "Eat Your Herbs", "Good Bugs, Bad Bugs", "Woody Plants Worthy of Small Spaces", "Introduction to Beekeeping for Gardeners", "Planting Trees in Urban Areas: Why and How", "Landscaping with Edible Plants", "Living it up in the Shade", "Allergy-Free Gardening", "New Plants for 2002", "Unusual Plants for the Garden", and "Disease Control in the Vegetable Garden". Everyone attending received a booklet of handouts for all the sessions. During lunch the Marion County Public Library made a presentation on the gardening resources they have available.

**Impact:** Clinic attendance totaled 135. Post-clinic evaluations indicated that 83 percent of attendees said they would change a gardening practice as a result of the clinic. Practices they would change included: "Be more involved with local gardening projects"; "Do soil samples, select plants that when mature will be the right size!!"; "I'm going to incorporate more edibles

into my flower beds."; "Will choose female trees for landscaping (better for people with allergies), will probably treat with fungicide now that I know causes of yucky looking fruits and plants." Ninety-nine percent of attendees said they would be a better gardener as a result of attending the clinic. All those completing evaluations said they would attend the clinic again. General comments about the clinic included: "A lot of information, great handouts, knowledgeable presenters, terrific price!"; "I am from Fort Wayne and am a Master Gardener in Allen County. I am impressed - organization, packet, food, handouts, speakers!"; "I really like the idea of having handouts for all the classes. That way I don't feel so bad about missing some when choosing others."

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, to all consumers. The emphasis that Purdue Extension puts on this important issue is reflected by the 2,794 days of effort reported on this topic by campus and field staff, and the 50,866 direct contacts made with educational programming. Of those 50,866 contacts, 18,323 were youth.

Specific programmatic focus relates to the food industry and to general consumers. Programs emphasized in the FY 2002 program year focused toward educating the food industry and have been predominantly food service related. Programs include *Food Safety Day* and the National Restaurant Association program *ServSafe*. These programs teach food safety sanitation to food service workers and provide certificates of completion and passage of the course. Eighteen counties reported conducting the *ServSafe* program.

Purdue Extension food safety programs reach general consumers with research-based food safety and sanitation 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 2002 were *Safe Food and You: Food Safety during Pregnancy*, a food safety program targeted to pregnant women, and programs for children, *Professor Popcorn: Hooked on Health* and *The Mystery of the Poisoned Panther Picnic* that teach basic food safety concepts with games, music and videotapes.

Fish is the primary source of nutritionally important omega-3 fatty acids in the diet; however, fish can contain contaminants like mercury and PCBs. To protect anglers and their families, fish consumption advisories are issued. Purdue Extension staff have developed a website to convey fish advisory information. It is called *Angling Indiana* (<http://fn.cfs.purdue.edu/anglingindiana/>). A training program of the same name is currently being delivered to limited-resource families through the Family Nutrition Program and the Expanded Food and Nutrition Education Program. Evaluation data is being collected to determine the impact of training on knowledge, attitudes and behavior related to fish consumption to the participants of these programs.

The food safety program for consumers launched in FY 2001, *Food Biotechnology: Dreams from the Fields*, continues to be a popular and important program for Indiana in FY 2002. This program, taught both directly to consumers and to professionals (high school teachers, dietitians, nurses, physicians, and staff of the departments of health), has been effective in raising awareness and increasing knowledge of this important topic.

Extension staff indicated a need for training in the area of medicinal herbs and their safety. A full-day workshop on the Safety and Quality of Medicinal Herbs was organized and held in January 2002. Four speakers and a panel presented information to an audience of 100 people, including county Extension staff, herb producers and consumers. Three hundred twenty (320) handouts were distributed. Evaluations returned by 44 participants indicated that 80% would use information gained in answering questions from clients, and 70% plan to change the way they evaluate herbs and herbal medicines.

## **Key Theme: Food Safety**

### **ServSafe**

Description: The *ServSafe* program is a 16-hour retail food certification program developed by the Educational Foundation of the National Restaurant Association. Working with the Indiana Restaurant and Hospitality Association, Purdue Extension now offers this two-day program 15 to 20 times/year. In total, 1,740 retail food managers have been certified through this program, with a passage rate of 91%. This program has created a new working relationship between Extension educators and local health departments. A website was created by Purdue Extension that includes program updates and important information related to retail food safety specifically for Indiana, <http://www.foodsci.purdue.edu/outreach/retailfoodsafety/>. Here Extension educators and public health officials can access important retail food safety information. Extension educators and county health department officials are now collaborating on several other retail food safety programs within the state.

Impact: Within Indiana, about 400 food managers are educated and certified through this program each year. In 2002, 783 participants scored an average of 91.8%, with 92.8% receiving certification.

Source of Funds: Smith-Lever, Registration fees

Scope of Impact: State

## **Food Biotechnology: Dreams from the Fields**

Description: An August 2002 survey by the International Food Information Council (IFIC) found that only 35% of American consumers were aware that foods from biotech crops were sold in supermarkets. Current estimates are that 80% of all processed foods contain ingredients from genetically modified plants. The lack of understanding by American consumers about this new technology may lead to the same lack of confidence in food systems that has been expressed by European consumers and grocers. Providing American consumers with science-based information will allow them to make informed decisions regarding the acceptability of these products. Department of Foods and Nutrition Cooperative Extension efforts have developed and delivered a training program to provide science-based information to physicians (3,800), registered dietitians and nutritionists (105), food technologists (323), K-12 science teachers (114), Cooperative Extension educators and specialists (184), producers and producer groups (597), college students (2,493), toxicologists (100), biotech industry personnel (29), miscellaneous professionals (40), food service workers (100), and consumers (1,103). Through a program titled *Food Biotechnology: Dreams from the Fields*, we have provided training to 8,988 in three countries (USA, Philippines, Mexico), with 1,353 participants completing an assessment survey including over 826 that completed pre- and post-training surveys to determine the outcome of training on participants' knowledge and attitudes.

Impact: Following training, 98-99% of participants correctly indicated that fruits and vegetables contain chromosomes and that foods from biotech crops are currently sold in grocery stores. Prior to training, only 31% felt that these crops were properly regulated by federal agencies, and only 25% were confident that bioengineering was unlikely to make an existing food allergenic. Following training, 83% felt that these crops were properly regulated, and 63% believed that biotechnology was unlikely to add new allergens to our food supply. In addition, 90% of those trained would eat or serve genetically modified foods to their family, and 90% believed that they or their family would benefit from genetically modified foods within the next five years. It is apparent from these results that when provided sound, science-based information, participants are more accepting of this technology and the regulatory process.

Source of Funds: Smith-Lever, Private industry

Scope of Impact: State, National, International

## **Communicating the Risks and Benefits Associated with Fish Consumption**

Description: Fish is the primary source of nutritionally important omega-3 fatty acids (like EPA and DHA) in the diet. Fish (sport and commercial fish) is also the primary source for contaminants, like mercury and PCBs, in the diet. The Food and Drug Administration has also issued advice to pregnant and nursing women and children to recommend that they avoid commercial fish that contains high levels of mercury. To protect anglers and their families, as many as 40 states have issued fish consumption advisories to inform about the potential risks associated with consumption of sportfish. The Indiana fish consumption advisory is produced annually as a joint effort between the Indiana Department of Environmental Management



(IDEM), the Indiana State Department of Health (ISDH) and the Indiana Department of Natural Resources (IDNR). Unfortunately, consumers are often not aware that fish consumption advisories exist. Surveys conducted at Purdue University suggest that 26% of anglers do not follow the advisory because they are not aware of its existence. Another 9% are aware of the advisory but choose not to follow the recommendations. This means that over 600,000 residents may be exposed to high levels of contaminants because of noncompliance with the advisory. Using extensive media contacts and press releases, Purdue Extension informed residents of national and state fish consumption advisories. Additionally, a website has been developed (<http://fn.cfs.purdue.edu/anglingindiana/>) and a training program called *AnglingIndiana* which are intended to provide information to consumers about the benefits and hazards of eating fish. *AnglingIndiana* is currently being delivered to limited-resource families through the Family Nutrition Program (FNP) and will soon be delivered through the Expanded Food and Nutrition Education Program (EFNEP). As a component of this training, pre- and post-test outcomes data is being collected to determine the impact of the training on knowledge, attitudes and behavior as related to fish consumption.

Impact: Purdue Extension has effectively developed and delivered information on the existence of fish consumption advisories using print and broadcast media. The message has included information on the nutritional benefits of fish and on the importance for sensitive populations (i.e., pregnant and nursing women and children) to make informed decisions related to their fish consumption. Data that is currently being collected will allow us to assess the impact of our training on the knowledge, attitudes and behavior of limited-resource audiences.

Source of Funds: Smith-Lever

Scope of Impact: State, National

## **Key Theme: Food Handling**

### **Food Safety Day**

Description: The Centers for Disease Control and Prevention estimates that 76 million cases of food-borne illness occur annually in the United States and claim approximately 5,000 lives. With over 450 food service establishments in Johnson County, food sanitation education to prevent the outbreak of a food-borne illness is a priority. State law requires at least one person per shift to be knowledgeable in food sanitation during all operating hours. The Purdue Extension CFS educator and the Johnson County Health Department staff jointly offer monthly Food Safety Day Workshops, which are rotated around the county. Participants may elect to take the Johnson County Health Department's "Food Sanitation Certification Exams" at the completion of the two-hour workshop.

Impact: Ninety-five out of 104 (91%) participants indicated they would be able to identify food handling problems in their food establishment. Eighty-two of 99 (83%) participants passed the Johnson County Food Sanitation Certification Exam with a score of 80% or higher.

Source of Funds: Smith-Lever, Registration fees

Scope of Impact: State

**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 habit. 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 a higher quality of life. Purdue Extension emphasizes nutrition education across the state, devoting 8,595 days to nutrition education programming and making direct contact with 92,136 individuals. Of the 92,136 contacts, 34,986 were youth in FY 2002.

The Dietary Guidelines for Americans continues to be the backbone of nutrition education in Indiana. Coupled with the Food Guide 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. Two main objectives serve to direct the nutrition programming related to the Dietary Guidelines: 1) Citizens will increase knowledge of nutrition-health relationship; and 2) All ages will use the Dietary Guidelines and the Food Guide Pyramid to better their food habits.

Nutrition education for youth audiences focuses on building better food habits and maintaining healthy weight. The *Exploring the Food Pyramid with Professor Popcorn and Hooked on Health* curriculum reaches elementary school children across Indiana in school classrooms and in after-school programs. The newly revised and updated 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 these programs in counties across the state as indicated by need and program budget. Both programs address wise nutrition choices, careful meal planning 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 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 2002, 1,127 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.

## **Key Theme: Human Nutrition**

### **EFNEP Improves Quality of Life for Participants**

Description: Limited-resource families in both rural and urban settings require practical knowledge and skills to start them on the path to self-sufficiency. Changed food-and-nutrition-related skills are often the first step on this path. Collaborations and partnerships with local agencies strengthen this community effort. The Expanded Food and Nutrition Education Program (EFNEP) utilizes Family Nutrition Advisors (trained paraprofessionals known as FNAs) to teach a series of food and nutrition topics that lead to behavior change to limited-resource families in their homes or community sites in 15 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. 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. EFNEP initiatives: Indiana's EFNEP program is conducting follow-up evaluation to determine sustainability of behavior change (to be completed in 2003). 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* includes food safety during pregnancy, especially habits to reduce risk of listeriosis. *Exploring the Food Pyramid with Professor Popcorn*, recently revised, and distributed nationally. Collaboration with March of Dimes to facilitate Indiana Folic Acid Council.

Impact: Two thousand forty-six (2,046) families, including 3,606 children (over 7,084 persons) participated in EFNEP in 2001-2002; over 13,600 lessons taught as part of a series. Eight-nine percent improved their intake of nutritious foods. Eighty-five percent improved other nutrition practices such as reading nutrition labels and planning meals. Seventy-nine percent improved their food resource management skills such as using a shopping list. Fifty-five percent improved their food safety skills. Ninety-five percent maintained or improved handwashing. Ninety-two percent maintained or improved use of thermometers to measure doneness of meat. Five hundred seventy-six (576) youth ages 6-14 participated. Three hundred forty-two (342) volunteers assisted in youth and adult program. Collaborations involved 36 WIC clinics. Three thousand three hundred seventy-five dollars (\$3,375) was contributed to EFNEP efforts by local agencies.

Source of Funds: Smith-Lever 3(d)

Scope of Impact: State

### **Helping Families Save and Be Healthy: The Family Nutrition Program (FNP)**

Description: The purpose of the Food Stamp Program is to end hunger and improve nutrition and health. According to Indiana Family and Social Services Administration, the average monthly number of persons participating in the Food Stamp Program was 331,206 for 2001. Of this number, 86,167 reside in the 52 FNP counties which are primarily rural. Almost 80% of all benefits went to households with children. For the program to be maximally effective as a nutrition program, participants need to make informed choices in how they spend their food dollars and Food Stamps. USDA and Indiana Family and Social Services awarded a grant of \$995,436 to Purdue Cooperative Extension Service. As a result, during 2001-2002, FNP assistants reached 62,564 Food Stamp participants and Food Stamp-eligible individuals in 52 counties that are not served by other nutrition education programs. These persons were provided with nutrition, food safety and money management information and education.

Impact: Reaching 62,000+ individuals in low-income households, the Indiana FNP determined there was a 38.4% increase of participants knowing how to use the Food Guide Pyramid to plan meals; a 25.8% increase in eating five fruit and vegetable servings each day; a 20.1% increase in saving money each month rather than running out of food; and a 20.4% increase in money management skills performance.

Source of Funds: USDA State contract

Scope of Impact: State

### **Feeding Young Children**

Description: If healthy food habits are formed during the preschool years, many of the health problems that develop in adulthood, such as obesity, high blood pressure and diabetes, can be avoided. The types of eating habits a child develops are affected by their physical abilities at different ages and their food likes and dislikes. Often, attempts to establish healthy eating behaviors result in conflict between children and parents. Finding a way to give a child a positive outlook toward eating and nutrition while enjoying a family dining experience can be a challenge. County Extension educators and state specialists developed a curriculum titled *Feeding Young Children*. The three sessions in the curriculum can be used independently or in a series—Feeding the Preschooler; My Child’s Behavior—Solving Those Mealtime Woes; and Health Habits for a Lively Life. The target audience is parents or caregivers of three-to-five-year olds. Objectives of the programs are to identify eating behaviors, understand the Food Guide Pyramid, understand appropriate serving sizes for preschool children, identify both the child’s and parent’s responsibilities for feeding, find alternatives for coping with changes in a child’s eating behavior, and help a child develop positive attitudes toward food and physical activity. Learning is measured by a set of 10 questions given prior to and immediately after the programs.

Impact: Over 200 parents and caregivers from 19 counties have attended programs in 2001-2002. Of the 200 participants, 150 completed both a pre- and post-test and were included in the analysis. Most of the participants were female. Women are more often the teachers of food and health practices for preschoolers, so reaching this population is particularly important. The average score on the pre-test was 7.3 correct out of 10. This indicated that the knowledge level of

the participants was relatively good even prior to coming to the program. It is often the case that the people with the most interest in learning are also the people who have made the most effort to learn. The average score on the post-test was 8.8 correct out of 10. This increase of 1.5 correct answers was a significant change. Even though many participants displayed an understanding of the issues and what needed to be done prior to attending the programs, on average participants gained new knowledge from the programs. The increased understanding of how to help preschool children develop good eating and physical activity habits can have an effect that will remain with the children throughout their lives. It could significantly impact quality of life and help reduce risk of several chronic illnesses, including diabetes, heart disease and osteoporosis. In particular, participants showed a greater improvement in knowledge related to the following: 1. It is not true that fruit juices can always be used in place of water or milk when a child is thirsty. 2. Young children need 5-7 small meals a day to help meet their nutritional needs. 3. It is best to quietly remove food at the end of a meal to help reduce problem eating behaviors when a child does not want to eat. 4. A rule of thumb for the amount of food a preschooler might be able to eat is two tablespoons of food per year of age of the child.

Source of Funds: Smith-Lever

Scope of Impact: State

### **Dietary Guidelines**

Description: There are many Purdue Extension programs dealing with nutrition-related health issues. People are very interested in knowing how to make the best food choices to help lower their chance of developing a chronic disease like diabetes, high blood pressure, heart disease, obesity, or cancer. It is important to be able to measure the impact that these Extension programs have on the knowledge and behavior of people. The problem lies in the diversity of programs. While all programs are built around the Dietary Guidelines for Americans, Food Guide Pyramid and/or the Food Label, the delivery, objectives and focus are not always the same. Many people attend all of the programs, but a smaller number of people may attend any one of the programs. The challenge is to find a common tool to evaluate all of these programs so that their overall impact can be measured. We developed a survey of 15 questions. Six of the questions tested a person's knowledge of nutrition related to the Dietary Guidelines and Food Guide Pyramid. The other nine questions asked about food choices related to the number of times people ate different foods, whether they had breakfast, read food labels, looked at serving size, or read descriptors on labels. Prior to a program, the county Extension educator gave the survey to the audience to complete. The educator then mailed the survey with a list of names and addresses of participants to the state Extension nutrition specialist. Eight weeks after the program, a follow-up survey is sent out to the participants. A comparison is made between the survey before the program and the eight-week follow-up survey to see if there are any knowledge or behavior changes that have been retained for at least two months after the program.

Impact: Sixteen Extension educators gave 71 programs in 28 counties over a two-year period. There were 1,328 participants in attendance, with an average of 19 people per program. Follow-up surveys were sent to 1,127 people, and 560 surveys were returned for a 50% rate of return. For the six knowledge-based questions, the percent of correct answers went from 70% to 77%

from the pre-program survey to the eight-week follow-up survey. Participants indicated on the eight-week follow-up survey that they might be looking at serving sizes on food labels more often and choosing more foods with “free” or “reduced” descriptors on the food label. There also appeared to be a general trend toward increased numbers of servings of milk, fruits and cereals. These results show that Extension programs on nutrition-related health issues are having a positive effect on general knowledge about nutrition and food choices.

Source of Funds: Smith-Lever

Scope of Impact: State

### **Overweight America – A Growing Concern**

Description: In the past decade there has been a steady increase in the average body weight of children and adults in the United States. It is clearly understood that overweight and obesity are risk factors for heart disease, diabetes, high blood pressure, and some cancers. The availability and massive marketing of foods that are concentrated sources of calories has resulted in increasing numbers of people being classified as overweight or obese. Various estimates place the rate of overweight above 60% and obesity (as determined by body mass index or BMI) as high as 25%. Most alarming is the observation that this overweight or obesity is starting at younger ages now than in the past. The result is that diseases such as Type 2 (also known as adult-onset) diabetes are being diagnosed in young people who were never considered to be at risk for such health problems. As the risk of disease increases at earlier ages, the prospect of long-term health problems and the huge burden that places on the economic and structural aspects of the country’s healthcare system places the whole population’s quality of life at risk. To address this issue, a Purdue University Extension specialist created a program to raise awareness of the long-term risks of overweight and obesity. The program provides clear evidence of the problem and provides basic guidelines for making food choices that are lower in fat and calories. The Dietary Guidelines for Americans, the Food Guide Pyramid and the nutrition facts on food labels are the tools given to people to assist them in reducing their risk of becoming overweight or obese. An emphasis is placed on the need for physical activity as a cofactor with nutrition to help reduce the number of calories being stored and to promote heart-healthy habits. A 14-question test evaluates knowledge gains and attitude changes. Ten of the questions test whether knowledge was gained from the program. The other four questions are designed to determine the views of participants on the value of diet and physical activity as they relate to weight control. The participant is asked if they feel diet and physical activity are important and whether they currently are eating a nutritious diet and using physical activity to help with controlling their body weight. The pre-test is given just before the program, and a post-test is given at the conclusion of the program.

Impact: In 2001 and early 2002, four Purdue Extension Consumer and Family Sciences county educators presented the program 11 times in five counties. A total of 140 people, mostly women in Extension Homemaker clubs, attended the programs. Of that number, 118 participants completed both the pre- and post-tests. The average number of correct answers on the 10 knowledge-based questions was  $62. \pm 0.13$  on the pre-test and  $8.3 \pm 0.12$  on the post-test. The increase in knowledge as reflected in the score on the post-test was significant and indicates that

participants learned more about the concerns related to overweight and obesity and ways to reduce the risk of these health concerns. For the four questions related to diet and physical activity, most participants indicated on the pre-test that they felt these two factors were important and they repeated this opinion on the post-test. The same response was seen when the participants were asked if they felt they were currently eating a nutritious diet to help with weight control or maintenance. Most felt they were and continued to feel that way on the post-test. For the question related to the participant's use of physical activity to control weight, there was a significant increase on the post-test indicating stronger agreement that the participant was using physical activity to keep their weight under control. This could mean that respondents better understood how physical activity related to weight control and realized that they were being more physically active. It might also mean that respondents concluded that physical activity was important for weight control and they needed to be more physically active. These results indicate that this final question may need to be reworded to make clear to the participant what is intended. Based on the overall responses, it can be concluded that this program was effective in helping people recognize the scope of the problem of overweight and obesity. This raised awareness and the tools given to participants to help them control their body weight can be a very positive factor in reducing the incidence of overweight and obesity in Indiana.

Source of Funds: Smith-Lever

Scope of Impact: State

## **Key Theme: Birth Weight**

### **Have a Healthy Baby**

Description: Low birth-weight (LBW) is the number one contributor to infant mortality in Indiana. Preterm birth is the number-one contributor to the LBW rate. In Indiana, 7.3% of babies are born at low birth-weight, and 9.7% of infants born to mothers age 10-17 were born LBW. For African-Americans, 12.7% infants were born at LBW. LBW babies are 64% more likely to attend special-education classes than normal birth-weight babies. LBW accounts for 10% of all health care costs for children. Lifetime medical costs of caring for a premature baby are conservatively projected to be \$500,000 per case. More than 60% of private-sector preterm births and LBW cases are preventable. Purdue Extension staff teach the program *Have a Healthy Baby* to pregnant teens and at-risk pregnant teens and adults. The program covers: adequate weight gain and healthy nutritional choices; consequences of smoking, drinking and drugs; importance of early and continuous prenatal care; infant feeding choices – breastfeeding and bottle-feeding; and impact of mother-to-be's decisions on herself and her baby.

Impact: In 2001-2002, *HHB* participants who were also EFNEP participants showed behavior change in four major areas: improved practices leading to decreased chance of contacting *Listeria monocytogenes* such as heating luncheon meats until steaming hot, improved food safety practices such as use of meat thermometer, increased avoidance of secondhand smoke, and increased physical activity. Results for all *HHB* participants: 787 pregnant adolescents and at-risk adults were taught. Forty-five percent of those taught were 17 years old or younger. Data was obtained on 469 live births. Sixty-eight percent of smokers report decreased tobacco use.

Forty-three percent achieved appropriate weight gain. Forty-nine percent of participants were breastfeeding at one month. There was decreased neonatal mortality – only one death reported, decreased days of hospitalization with subsequent savings, decreased long-term care costs due to healthier babies, and significant increase in both nutrition knowledge and improvement in intake of healthy foods.

Source of Funds: Smith-Lever, March of Dimes

Scope of Impact: State

## **Key Theme: Nutricueticals**

### **Functional Foods**

Description: People are very interested in knowing how to make the best food choices to help lower their chance of developing a chronic disease like diabetes, high blood pressure, heart disease, obesity, or cancer. In the last few years a new term, “functional foods,” has appeared in the media and in scientific literature. Functional foods are those that appear to have added health benefits beyond just the better-known vitamins, minerals, protein, fat, fiber, etc. There is no official definition of a functional food and there is no definitive research that proves actual mechanisms of action by chemicals that might be responsible for reported benefits of these foods. The public needs more information to decide whether a food might be a healthy choice for them because of additional substances it contains. Toward this goal, a program was developed to assess the ability of an education intervention to change participants’ knowledge, attitudes and dietary behaviors regarding functional foods. The program was designed by Purdue University Cooperative Extension and based on recommendations of the American Dietetic Association and the USDA Food Guide Pyramid. Included with the program are a pre- and post-test. Six weeks after the program, a follow-up test is mailed to participants. The program provided information on the types of foods that might be called functional foods, what they contained and how they might improve health and/or reduce the risk of some chronic diseases. People also learned how to examine claims made about a food to determine the accuracy of the claims.

Impact: In 2002, the program was given 12 times in seven counties. The program reached 254 people. The majority of the participants were female. Women are more often the teachers of food and health practices for the family, so reaching this population is particularly important. Of this group, 218 took the pre- and post-tests and were mailed the follow-up test. The return rate on the follow-up test was 53%. Results indicated that the program significantly increased correct functional food knowledge as measured by comparing a pre- and post-test. Important gains in knowledge were a better understanding of the definition of a functional food and the fact that the Food and Drug Administration and the Federal Trade Commission were responsible for regulating claims made about functional foods. While some of the knowledge may have been reinforced by information from other sources during the six-week period after the program, the program appears to be effective in educating the participants about functional foods. Questions related to participants’ attitudes regarding functional foods indicated that most of them viewed functional foods in a positive light. This did not change at the post-test or the follow-up test. The results of the attitudinal questions are similar to a study done by the International Food



Information Council. There was no clear-cut change in behavior related to number of servings of functional foods after the six-week follow-up period. There was a positive correlation between those participants who said on the pre-test that they intended to consume more servings of functional foods and the number of servings actually reported on the follow-up test. The participants reported consuming 17 or more servings of nine of the most frequently reported functional foods each week. These results will help to focus future educational programs related to how food choices might affect health.

Source of Funds: Smith-Lever

Scope of Impact: State

#### **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. Farmers, homeowners, public officials, and all citizens need to be aware that many of their decisions and activities affect the quality of the environment and the natural resources they use. 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 state's environment, 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 related to the land and the environment. During FY 2002, Purdue Extension devoted the efforts of field and campus staff to environmental stewardship issues, and recorded 4,536 contact days and 127,550 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 involved training county officials in planning and zoning for residential and industrial growth, but they also involved training them on how this growth impacts the natural resources of the area and region. Planning with POWER (Protecting Our Water and Environmental Resources) is a program that introduces county officials to 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 2002, Purdue Extension spent 1,173 contact days on Land Use issues, making 21,532 direct contacts.

With new rules on the use of animal manure on farmlands being invoked by the state, research on poultry diet manipulation is being conducted to decreasing the amount of phosphorus that poultry are fed in order to decrease the phosphorus levels that accumulate on lands that have poultry manure applied to them.

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 in 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 of this report.

## **Key Theme: Agricultural Waste Management**

### **Helping Confined Feeding Operators Comply with the New Environmental Rule**

Indiana Department of Environmental Management changed the record-keeping requirements for livestock producers in 2001. These changes require producers to keep more detailed records so that environmental practices can be documented as scientifically and economically sound. Indiana has about 2,400 confined animal feeding operations (CFOs) who fall under a newly passed state rule that determines how they store, handle and utilize the manure from their animal feeding operations. The regulatory changes include a need to: a) document a number of manure activities with on-farm records, b) conduct and document monthly inspections of their manure systems, and c) develop an emergency spill plan. Workshops, jointly sponsored by Purdue Extension, the Indiana Farm Bureau, and the Indiana Department of Environmental Management, were conducted throughout the state, averaging over 40 confined feeding operators at each meeting. These workshops reached nearly 800 of Indiana's 2,400 CFO operators.

**Impact:** Written surveys were collected at the end of 15 meetings to determine how the workshops could be improved. Several helpful suggestions were received and incorporated into the remaining workshops. The feedback from producers was overwhelmingly positive. One of our goals was to get producers to realize that the additional records would help them document their good environmental practices and to ease apprehension about what the rule required of them. Over 60% of the workshop participants provided feedback, and over 85% reported that they felt more capable about being able to comply with the new rule after participating in the workshop.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** State Specific

## **Key Theme: Forest Crops**

### **Evansville Tree License**

The City of Evansville adopted a Tree Protection ordinance in 2001. One of the provisions of the ordinance requires all commercial tree care companies to be licensed by the City of Evansville in order to prune trees within city limits. The licensing procedure is free, but tree companies must supply proof of insurance and workman's compensation coverage, and must attend a tree care training program. Once each quarter, the local Extension Educator team-teaches a 4-hour training program with the Evansville City Arborist. They shared training materials, the teaching responsibilities, and developed the curriculum.

**Impact:** To date, 70 tree care companies have taken the training, and 25 companies have completed the requirements and received their licenses. Another 20 licenses are pending at this time. Extension has been proactive in training commercial tree care workers in the proper methods of planting, pruning, and caring for trees. This not only protects Evansville's urban forest, but allows local tree professionals to fulfill their legal obligations.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** State Specific

## **Key Theme: Forest Resource Management**

### **Purdue Extension Helps Solve Problems**

There are many small-acre wood lots in northern Indiana that need to be managed in order to be profitable for the owner. To assist farmers with this management, The Wood Lakes RC&D received two timber stand improvement grants. However, the grants were not being applied for or administered in a timely fashion. A Purdue Extension Educator met with professionals from the Soil and Water Conversation District, State District Foresters, the Wood Lakes staff, and private forester consultants to review the grants and what was to be accomplished. The group discussed why the grant goals were not being accomplished and then developed a plan for achieving these goals. In the process, the group developed several tools to assist in the process. These included a marketing flyer, a tracking time line, a model of how the application was to be processed, and a news release.

**Impact:** Farmers in a six-county area received \$10,000 worth of assistance to manage their woodland lots. As a result, their woods will be of higher value when the wood is harvested. The educational group has continued to work together with a positive attitude and ongoing communications. They are also using the tools they developed to obtain a second grant. These professionals have a renewed sense of working together to accomplish timber management through the Soil Water Conversation District, State District Foresters, Woodland Lakes staff, and the landowners in the years to come.

**Source of Funds:** Smith-Lever, State

Scope of Impact: NE Indiana

### **Indiana Master Naturalist**

The Indiana Master Naturalist program was started by the Natural Resources Conservation Service with the help of Extension Educators. Together they created the program, organized speakers and materials, evaluated the program, and recorded volunteer hours. The Master Naturalist program helps people grow by providing them with intensive training in natural resource principles. Participants, in turn, share their knowledge by providing volunteer leadership and service to their communities.

Impact: Master Naturalists in Indiana have served the community in various ways such as answering wildlife damage questions, giving bird seminars, assisting teachers with school environmental science programs, teaching children about nature, teaching outdoor classroom maintenance, attending tours and workshops, working with others to maintain the wildlife habitats, and serving as a volunteer in natural resource organizations. Indiana Master Naturalist have given back approximately 900 hours (\$14,400 worth of time and services at one volunteer hour at \$16.00 per hour) of volunteer service in natural resource education and community development.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Key Theme: Hazardous Materials**

#### **Understanding Anhydrous Ammonia**

Anhydrous ammonia has been used as an inorganic source of nitrogen in crop production for many years. There has always been a concern for safety of a product that is stored and transported under pressure, escapes as a vapor that has a highly suffocating odor, is extremely cold as a liquid and can cause frostbite or freezing of human tissue, and has an affinity for water that can dry out and injure eyes if contacted. Because of its high affinity for water, leaking anhydrous ammonia is an extreme hazard to human eyes, lungs, and skin because of these organs high moisture content. These concerns have been compounded by the use of anhydrous ammonia in the production of illegal drugs. This usage has increased the potential for injury to those stealing the product yet having no understanding of its danger and possibly leaving a valve open, causing an environmental mishap. In response to the concerns for anhydrous related accidents and escapes, the Delaware County Emergency Management Agency and Delaware County Extension provided training for first responders, primarily fire departments, so that they would better understand the structural containment apparatus and physical hazards of a leak. A special constructed semi trailer and a farm nurse tank were brought to the meeting, which allowed the participants to view the interior baffling and valve system of an anhydrous ammonia unit. Visual examples of anhydrous accidents were discussed by a safety specialist from a major anhydrous dealership. Several examples of how anhydrous ammonia might escape and strategies

for controlling the escaped gas were described. The most important element of the program was the recognition of the dangers anhydrous ammonia by a first responder if they are not cognizant of this common agricultural fertilizer's affinity to water, pressure, cold temperature, and suffocating odor.

Impact: As a result of training, first responders have a better appreciation of the hazards of anhydrous ammonia and have resource materials to use in combating anhydrous ammonia leaks. They also were able to receive required continuing educational credits. One person in attendance suggested that this program should be made mandatory for all firemen.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

## **Key Theme: Integrated Pest Management**

### **Crop Management Workshops Improve Indiana's Pest Managers Pesticide Decision Making**

Agribusiness personnel (fertilizer/chemical dealers, county Extension Educators, seed and company agronomists, crop consultants) need updated pest management and pesticide information throughout the year. These "Pest Managers" must be kept up-to-date on pest populations, outbreaks, and management strategies, as well as pesticide label changes, environmental issues related to pest control, the use and application of pesticides, pesticide safety/principles, etc. Producers rely on these professionals to identify and inform them of existing or potential pest problems on their farms and to assist with appropriate management tactics and issues related to pesticides. The better informed these agribusiness personnel are, the greater their ability to guide producers toward economically and environmentally sound pest management decisions.

What was done: The Purdue Pest Management Program coordinates a series of all day winter meetings, Crop Management Workshops, held at five locations throughout Indiana. The goals of the Crop Management Workshops are to educate Pest Managers on economical and environmental pest (identification, biology, damage, sampling, and thresholds) and pesticide (chemistry, application, regulation, calibration, safety) management. Extension Specialists representing the Departments of Agronomy, Botany and Plant Pathology, and Entomology from Purdue University and the Office of the Indiana State Chemist provide in-depth information on pest management, pesticide regulations, pesticide safety, pesticide application equipment and calibration, etc.

Impact: In 2002, 810 agribusiness personnel attended the Crop Management Workshops. Nearly 100% of the Pest Managers participating in these all day meetings, coordinated by the Purdue Pest Management program, indicated by written evaluation that their pesticide decision making abilities were improved. Participants highly rated the educational value of the meetings as the following evaluation values indicate: 95% of the participants indicated that the Crop

Management Workshop improved their pest management decision making ability and 98% indicated that the Crop Management Workshop was worth their time and expense to attend.

Source of Funds: Smith-Lever 3d, State

Scope of Impact: IN, OH, IL

## **Key Theme: Land Use**

### **Land Use Planning**

Many of Elkhart County Planning Staff, Realtors, Developers, Plan Commission, and Commissioners are searching for improved methods to do land use planning. Different proposals are being considered, but consensus on any one method has not been found.

The Extension Educator in Elkhart County, who serves on the County Plan Commission, learned of a method of using watersheds as a way to do land use planning. He also was aware that this method had been used in the state of Connecticut, and it was popular among those planning groups. The Extension Educator also knew that Purdue had just received a grant from USDA to make planning groups in Indiana aware of this planning tool. Therefore, it seemed obvious to ask the planning groups if they would attend a session on planning by watersheds.

Impact: The Extension Educator was able to bring together local leaders to teach them on a new tool that could be used for planning. There were 21 local community leaders who attended the educational presentation. Of those that attended, 36% felt that their knowledge was greatly improved and 29% felt their knowledge was improved a little. No one in attendance thought it was a waste of time. Of those attending, 41% said they plan to use this information in their planning decisions, 18% said they will try to get others to use this information in planning, and 41% said they think we should adopt land use planning by watersheds for our community.

Source of Funds: Smith-Lever, State

Scope of Impact: Elkhart County, IN

### **Land Use Programming**

Due to the proximity of DeKalb County to the city of Fort Wayne, the county is quickly suburbanizing. The county's Master Plan was written in 1964. Circumstances have changed significantly since the drafting of this plan, but the overall county development strategies have not changed, leading to potential rural/urban conflicts. A meeting was called to address this issue, and more than 100 people attended. In an effort to seek out quantitative feedback on the issues of land use in DeKalb County, small group meetings were organized and facilitated by the County Extension Educator. These meetings were held over late February and early March 2001, and were geographically organized to represent a variety of producers under a wide number of population pressures. Thirteen producers, representing 15,000 acres were interviewed for their thoughts. Three questions were asked of producers at these meetings: what did they see as

problems with land use in DeKalb County, what possible solutions they might have to these problems, and if they were the county planners, how would they like to see the county develop over the next twenty years. These questions provided a basis for discussion only and often other topics were covered. A series of six newspaper articles were written on topics of community involvement in land use. These articles covered property taxes, urban and suburban sprawl, not in my backyard, and agricultural zoning. The articles ran weekly through January and February 2001. Using the annual statistics in DeKalb County, a Game of Planning and Zoning was created as an educational tool. The game simulated the growth of DeKalb County over the last 10 years and asked the participants to play the role of Plan Commission in placement of new residential, industrial and commercial development. Each zoning classification was defined according to the DeKalb County Master Plan and the players were familiarized with how the county planning and zoning process worked.

**Impact:** A nominal level of feedback from area citizenry was generated from the land use newspaper articles. The Game of Planning and Zoning was presented at the DeKalb County SWCD Annual Meeting to 45 participants. A true or false pretest and post-test administered to participants showed they increased their knowledge of planning and zoning issues from 73% to 78%. Money was appropriated in 2002 to reevaluate and update the Comprehensive Plan. Preliminarily, \$50,000 has been earmarked for the updating process with an additional \$50,000 to follow. Though Extension cannot claim credit for the actions of the commissioners, our educational efforts were instrumental in fostering the discussion leading to the changes in attitude.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** DeKalb County, IN

### **Community Planner Certification Program**

Purdue Extension plays a defining role in Indiana planning and zoning decisions. Extension Educators (ANR), by law, serve on the 63 county plan commissions in jurisdictions that have adopted planning and zoning laws. Indiana's expanding population and changing economy have placed an unprecedented pressure on its land. To enable citizen members of planning boards to increase their decision making skills, learn about changing environmental impact, implement new methods for local planning and zoning, and understand the power of informed decisions, the Community Planner Certification program was created. The Community Planner Certification program was developed in collaboration with Purdue Extension, Indiana Farm Bureau, Inc., Indiana Land Resources Council, and Ball State University. An innovative delivery system, utilizing seven receiver sites, was used for a simulcast program via the Extension Asynchronous Transmission Machine Network. There were on-site facilitators in the combination of video-conferencing and seminar delivery. Nineteen presentations from twelve agencies/departments comprised the program. Thirteen and one half hours of instruction were completed in the three evenings. Fourteen educators hosted the seven sites which ranged across the state from Columbia City to Evansville. A pre-test and post-test were developed and approved for this use.

Impact: There were 79 paid participants. One hundred percent (100%) indicated they would recommend the program to others. Participants rated the educational content as 38.9% excellent, 57.63% good, 3.38% fair, 0% poor. Pre-test responses indicated 8.88% could name two Purdue Land Use Team products. Post-test responses indicated 68.33% could name two Land Use Team products. Pre-test responses indicated 33.33% could name three Indiana laws affecting planning or zoning. Post-tests indicated 90.00% could name three Indiana laws affecting planning and zoning. When asked what they learned to apply to their community:

- 6 indicated better communication
- 5 indicated increased public involvement
- 4 indicated updating their comprehensive plan.
- 3 indicated increased community involvement
- 3 indicated updated septic/sewage regulations.
- 25 indicated a specific application.

Therefore, 46 of the 60 respondents intended to apply their knowledge, or 76.66% of the returned evaluations found application in what they learned. Pre-tests indicated that 46.66% of respondents could name one area of Purdue affiliated with land use. Post-test results increased to 76.67%. Pre-tests showed that 77.77 % of the participants could name two factors which affected the cost of development. Post-tests increased by 5.56% to 83.33% total. The goals set during the planning process were met for this program. The five goals were to:

1. Deliver affordable educational programs to plan commission members, elected officials, organizations, and local citizens.
  - The program consisted of 13 1/2 hours of instruction from 12 agencies for a fee of \$125.00 per person.
2. Bring current information to citizen board members and community leaders.
  - Current planning and zoning laws, environmental impact through Protecting Our Water and Natural Resources, new septic field creation, and transportation resources for communities were among the topics presented.
3. Provide a basis for members to understand the power of informed decisions.
  - On-site activities enabled the participants to identify and prioritize challenges in their communities and to seek methods to find solutions.
4. Present land use education and research based information to support members and boards in decision making.
  - When asked about knowledge of planning and zoning laws, the number of participants who could name three Indiana planning and zoning laws nearly tripled
5. Implement a certificate program for participants who completed the program.
  - 100% of the 79 participants completed the program.

Source of Funds: Smith-Lever, State

Scope of Impact: Whitley County, IN

**Key Theme: Natural Resources Management**

**Henry County Pond Clinic**



More and more homeowners are constructing ponds for recreational use, or purchasing property that has an existing pond. The owners of these ponds usually have dreams of fun-filled days spent fishing or swimming in their pond, but the reality often turns out to be a nightmare of weed-choked water and fish populations that consist primarily of two-inch bluegill. Many pond owners attempt to manage their ponds using ill-advised techniques. They often waste time and money on improper or unwarranted chemicals, or stock their ponds with the wrong kinds of fish. Each year local Extension offices receive calls from frustrated pond owners looking for help with their ponds. In June of 2002, the Henry County Extension Office conducted a pond clinic for area pond owners and those who were thinking about building a pond. A Purdue aquatic plant specialist began the program with a presentation on weed identification and management, during which participants were able to have actual samples of weeds from their ponds identified and control options discussed. Pond construction considerations were addressed by a staff member from the local Natural Resources Conservation Service. An assistant fisheries biologist with the Indiana Department of Natural Resources discussed pond stocking and management, then using an electro-shocking boat, demonstrated fish sampling techniques.

Impact: Fifty participants from Henry and surrounding counties attended the pond clinic. One hundred percent of respondents indicated they learned how to identify and manage weeds in their pond, learned how to improve the fish balance in their pond, and also discovered some new resources available to help them manage their pond. In addition, 93% of the respondents indicated they planned to change the way they managed their pond as a result of the program, and 92% thought they would actually enjoy their pond more after attending the pond clinic.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Environmental Park**

Ohio County has deficient recreational resources of parks and recreation facilities throughout the county. According to the 1999 master plan, there is only 61 acres available to the public in Ohio County, while the National Recreation and Park Administration minimum recommendation is about 260 acres. A local landowner donated 67 acres of land to the Ohio County Extension Service to be used as a recreation facility for Ohio County youth. It was named The Denver Siekman 4-H Environmental Park, and it provides additional outdoor educational and recreational facilities for the residents of Ohio and surrounding counties.

Impact: The environmental park has increased available recreational space in Ohio County by 110%. As a direct result of Extension's commitment to not only expand recreational space but also create quality enhancements to that space, the Environmental Park will provide a unique hands-on learning environment to teach conservation, natural science and other academic subjects. The project is geared toward providing a location for youth, community groups and the school systems to implement their own projects. Teachers will be able to develop lesson plans that include regular on-site visits to the facilities. Boy Scouts and Girl Scouts are constructing bird houses, planting trees and identifying flora and fauna, all parts of the Boy Scout educational curricula. They will have further access to other opportunities for outdoor

skills as the park continues to expand. Trails are being blazed for general use as hiking and bird watching trails, and the local cross-country track team coach is developing a cross-country trail. Artists are using vantages from around the park that overlook the Ohio River Valley. Senior citizens are planning to use the park for walking, fishing, and other activities. The development and usage of this environmental park will create a strong identification with Extension Services in many facets: education, research, teaching, recreation, community development and youth development.

Source of Funds: Smith-Lever, State, Private

Scope of Impact: Ohio County, IN

## **Key Theme: Nutrient Management**

### **Laying It On Too Thick**

Despite tremendous advances in agricultural production, a significant number of producers still do not consider the contribution of manure and organic matter residues to the overall fertility in crop production. A significant obstacle to optimizing nitrogen is the variable breakdown of manure and other residue in soil over time. The best way to optimize nitrogen levels at critical periods in corn growth and development is through soil testing at those critical periods. An inexpensive and effective soil testing method is the pre-sidedress soil nitrate test (PSNT). Through a combination of public meetings, newspaper articles and newsletter features, area producers have been informed about the benefits of the PSNT, and have been offered a free trial of the PSNT on a corn field that had manure applied to it. Extension personnel have monitored participants' corn fields and sampled the soil at the appropriate growth stage. Results were then conveyed to the producers for use in sidedress application decision-making.

Impact: As a result of this program, unnecessary fertilizer applied to area fields has been reduced by more than 21 tons. After receiving the PSNT results, one producer realized he had been greatly underestimating the nitrogen contribution of manure on all his fields. In a meeting with his field agronomist, chemical representative and the Extension Educator, he reevaluated his fertility recommendations. This producer will save more than \$7,000 by reducing his nitrogen applications with no significant decrease in yield.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

## **Diet Manipulation to Reduce Swine Manure Nutrients and Odors**

A major threat to the growth and sustainability of the pork industry in Indiana and throughout the nation is the public concern about potential water quality problems and manure odors caused by confined feeding of swine. In addition, the health and well being of swine and humans working in swine facilities are at stake. Stricter laws in many surrounding states and the recent adoption of stricter water quality rules for confined feeding operations in Indiana has put considerable

pressure on the pork industry. In addition, there is a concerted effort to develop air quality standards and rules in Indiana that will affect livestock and poultry operations. The objectives of our research and extension activities were to determine the effects of diet manipulation on manure excretion nutrients, odors, and to develop management techniques to significantly reduce nutrient excretions and odors from swine operations.

**Impact:** In group feeding research studies with growing-finishing pigs, reducing the crude protein of diets and supplementing with synthetic amino acids, the addition of 5% soybean hulls and elimination of mineral sulfate ingredients in the diet reduced the excretion of total nitrogen in fresh manure by 27 to 30%. However, aerial ammonia concentrations in the housing room and exhaust air were reduced by 49 to 60% by feeding the low crude protein-synthetic amino acids diets. In addition, hydrogen sulfide and the odor detection threshold were reduced by 43% and 39%, respectively with the low crude protein diets. By using high available phosphorus corn and phytase in the diet, phosphorus excretion was reduced 52%. With sufficient amino acid levels in the diets, pig performance and carcass characteristics were similar to those from pigs fed a typical commercial diet. We demonstrated that low carbon/phosphorus diets with synthetic amino acid additions and a low level of fiber were effective at reducing aerial ammonia concentrations, hydrogen sulfide, and odor detection threshold and manure nitrate excretion. Replacing normal corn in the diet with high available phosphorus corn and adding phytase reduced phosphorus excretion. Diet manipulation is a practical and economical management practice that can sustain pork productivity and profitability while sustaining or improving water and air quality.

Source of Funds: Smith-Lever, State, IFAFS

Scope of Impact: National

## **Key Theme: Pesticide Application**

### **Commercial Applicators of Aquatic Pesticide**

Purdue Extension Educators and commercial aquatic pesticide applicators make recommendations on controlling weeds in ponds, lakes and water gardens. In order to keep their license up to date, the Office of the Indiana State Chemist requires clients with aquatic licenses to earn 12 educational credits in five years. Purdue Extension facilitated a one day workshop that offered 6 educational credits. This workshop covered topics of fish kill, aquatic weed control, mosquito control and West Nile Virus, calculations of bodies of water, pesticide record keeping, and proper application of pesticide with the correct equipment.

**Impact:** The 53 participants who attended the workshop increased their knowledge by 20%, their decision making abilities by 16%, and made changes in practices to produce more environmental sound treatments by 20.2%. The overall result yielded improved environmental practices in 32% of lake or ponds in Indiana.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Purdue Extension Helps Reduce Pesticide Drift Complaints**

In the mid 1990s, the Office of the Indiana State Chemist (OISC) began to receive an increasing number of complaints about pesticide drift. Pesticide drift can damage neighboring gardens, ornamental plants and susceptible crops. When pesticides drift off target, producers lose money because of reduced yield from inadequate pest control and from possible fines and damage payments from the drift. Pesticide drift also hurts agriculture's image in the eye of the public. Purdue Extension specialists and educators featured pesticide drift in private applicator recertification programs offered to 2,730 pesticide applicators in 2001. The pesticide applicators learned how to reduce pesticide drift, meet pesticide recordkeeping requirements, identify pests, select appropriate pesticides and deal with pesticide emergencies.

Impact: In a statewide follow-up survey, with response from 88 Indiana counties, 9 out of 10 pesticide applicators indicated that the information presented had helped them limit drift damage and reduce complaints. Of more than 900 private applicators who did their own pesticide spraying, 87% made at least one change in their practices as a result of the training. The most frequently mentioned practices were choosing not to spray because of weather conditions, checking for sensitive areas in the path of wind direction, and keeping better records. Of the private applicators who received a pesticide drift complaint, 73% responded personally to the complainant, which helped to keep communication between farmers and neighboring homeowners more positive. From a peak of 33 complaints reaching the Office of the Indiana State Chemist in 2000, drift complaints dropped to 21 in 2001, then to 14 in 2002.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **Key Theme: Recycling**

#### **Used Oil Collection/Recycling Event**

Nearly all used oils (motor, gear, hydraulic, transmission, etc.) is regulated as a hazardous waste under the Resource Conservation and Recovery Act (RCRA). Under RCRA regulations, a farmer (or other person) who generates used oils is obligated to see that the oil is either disposed of properly or is recycled. In most situations, the farmer's (or homeowner's) best option for dealing with used oil is to recycle the material through a recovery company that re-processes and reuses the oil. This used oil is excluded as a hazardous waste. While recovery companies can be directly contacted by the waste generator to arrange for on-farm collections, most of these companies require a minimum of 250 gallons before a "no-charge" pick-up will be made. This can force producers to retain oil for a long period of time before the minimum quantity is obtained. With long-term storage comes the potential for spills or leaks, and thus, site contaminations. Also, special storage containers must be obtained for this extended storage. Realizing the burden and responsibility that the RCRA placed on farmers for the proper disposal of used oil, the Clark County Extension Educator contacted an oil recovery company and a local sponsor (the county

Farm Bureau, Inc.) and set-up the first annual oil recycling and collection day in the fall of 1993, and the event was held annually through the fall of 2002.

**Impact:** In the ten years of this event, a total of 38,870 gallons of used oil have been collected from 1,020 people. Because of a heightened awareness of the importance of resource recycling and good environmental stewardship, several of the larger producers have made a direct arrangement with the recovery company for bi-monthly or semi-annual pick-ups on their farms. The largest impact of this CES initiative is that after 10 years of providing this annual one-day recovery event, the local Solid Waste Management District (SWMD) has recognized that used oils are a serious threat to our county's environment and as of 2003, has installed a year-round used oil collection container at the facility.

**Source of Funds:** Smith-Lever, State, Private

**Scope of Impact:** Clark County, IN

## **Key Theme: Soil Erosion**

### **Corn Growers Implement Alternatives to Tillage**

More than one half of Indiana's 23 million-acre land area is comprised of annually planted cropland. Based on the 2002 Indiana Transect data survey, approximately 37% of Indiana's 5.8 million acres of corn acreage is eroding at a rate faster than natural processes can replace soil loss. Excessive soil erosion on cropland is a result of practices that leave soil unprotected, either by tillage that buries protective crop residues or excessive land clearing that removes vegetative cover. The long-term costs of erosion to Indiana include deteriorated water quality, loss of soil productivity, reduced reservoir and water channel capacities, and reduced property values. More than 11 million acres of Indiana cropland is in a corn-soybean rotation. No-till or other minimal tillage practices had been adopted for the majority of soybean acreage, but the issue of minimizing tillage practices on corn acres remained. Utilizing EPA 319 grant funds, a series of clinics were conducted during all or part of the years of 2000-2002. Formal winter meetings emphasized alternative seeding systems that achieved most of the soil and water conservation benefits accomplished by pure no-till. Although the specific systems were not direct seeding, as is the case with pure no-till, these systems included but were not limited to strip-till (both fall and spring) and various rotary harrow systems. The clinics placed emphasis on planter set-up and maintenance for high soil residue environments.

**Impact:** Corn acres planted to no-till systems grew to 20 percent of all corn acres in 2002 compared to 16 percent in 1998, while reaching a high of 22 percent of all corn acreage in 2001. Corn planted to conservation tillage (30% or more crop residue cover after planting) grew five percent from 1998 to 28 percent in 2002. The highest recorded year for corn acres planted into conservation tillage occurred in 2001 when 31 percent of the corn acres were planted using conservation tillage. Although other factors like weather can alter conservation tillage and no-till numbers, this project had a positive impact toward reducing soil erosion on cropland. The months of April and May 2002 were the fourth wettest in Indiana's recorded weather history. The wettest April and May occurred in 1996 when no-till declined sharply. The fact that the spring

planting months of 2002 was fourth wettest and no-till remained steady compared to 2001 is encouraging. Conservation tillage with its minimum of 30 percent soil cover reduces soil erosion by one-half or more. Returning to peak levels of conservation tillage for corn has been significant for water quality, especially in light of the record wet spring of 2002. Through demonstrating economics and techniques, conservation tillage levels in corn can and will continue to trend upward.

Source of Funds: State, EPA 319

Scope of Impact: State Specific

## **Key Theme: Water Quality**

### **Water Quality Education**

Water municipalities were required to submit a plan of action for water quality control by March 1, 2002. Included in the plan was required water quality education for the public. A grant for \$1,988 was received to conduct water quality education. The grant money was used to purchase an Enviroscape education model and several other educational materials. In addition, a one week water quality educational program was conducted in the county for youth. The “Wild About Water” summer day workshop was held June 17-21, 2002 with eight students completing the program. There was cooperation among many agencies and individuals including Soil and Water Conservation District, Water Works, Department of Natural Resources, Health Department, Master Gardener volunteers, 4-H and local business owners. Evaluations, as well as pre- and post-tests were conducted at the workshop.

Impact: Students commented that they enjoyed the workshop and learned to use water more carefully. One participant indicated that he would shut off the water while brushing his teeth and another indicated that she enjoyed learning about water erosion and how it can be prevented. Pre- and post- tests indicated that there was a 10% increase in the scores after the completion of the workshop. In addition, three workshop participants continued the program by completing the Soil and Water 4-H project at the county fair. All three projects went on to State Fair competition receiving one blue and two red ribbons. The mother of one of the participants indicated that her son had enjoyed the project and plans on taking it again next year. This was the first time in several years there has been a soil and water project entered at the county fair. In addition to being used at the workshop, the Enviroscape model was also utilized at the county fair (estimated attendance 10,000). It also will be used at an upcoming 4th grade conservation day (attendance 200) and at other events as they become available. These resources can be used for many more years to educate the citizens of Blackford County on the importance of water quality in their community.

Source of Funds: Smith-Lever, State

Scope of Impact: Blackford County, IN

### **Water Resources Publication Informs Citizens**

Water Quality is an important concern in Allen County. Over 200,000 citizens depend on the water from the St. Joseph River for their daily water needs. Drainage and flood control impact nearly everyone living in this county. Addressing the need to improve citizen understanding of all the water resources in the community, a Water Quality Extension Specialist developed a template on Allen County Water Resources. The Extension Educator coordinated local water specialists to edit the Water Resources of Allen County to assure accuracy of the publication. Gifts totaling \$1,500 were solicited to publish 10,000 copies to be distributed to residents and decision makers in Allen County.

**Impact:** Over 800 copies of the water quality resources publication were distributed in Allen County during 2002. A flood event in June 2002 prompted one neighborhood resident, who found the publication helpful, to request 100 copies to distribute to others affected by the flooding. Allen County citizens now have a concise summary of water resource information that otherwise was scattered such that it would have required considerable research to gather. The publication provides understanding of the many sources of water issues and the different agencies that can respond to water concerns. It is now posted on the Purdue web site and linked to the Allen County Web site.

**Source of Funds:** Smith-Lever, State

**Scope of Impact:** Allen County, IN

## **Key Theme: Wildlife Management**

### **Indiana Coverts Project**

Forests are important to many wildlife species, but are also economically vital to Indiana's economy. In order to effectively manage our forests for wildlife, timber, and other natural resources, Extension must engage private landowners in the state to protect this natural resource. As a group they own 76% of the forestland in Indiana. Research has shown that 9 out of 10 timber harvests on these properties are conducted without any long-term management goals in mind. Purdue Extension initiated the Indiana Coverts Project in 2001. Up to now, 51 forest landowners, educators, and other environmentally interested people have attended the 3.5-day training seminar. They learned important wildlife and forest management concepts and practices, were shown successful examples in the field, and given the tools and knowledge to practice what they have learned on their own property.

**Impact:** The Indiana Coverts Project is a long-term program that teaches citizens of Indiana about our forests and the wildlife. A direct result of this program is improved management of our forest resources, which ultimately will add to our economy and quality of life. Fifty-one participants attend one of two annual training seminars. As a group, they owned and/or managed over 10,700 acres of forestland in the state. As a result of the Indiana Coverts Program, 8 participants have established or plan to establish a forest management plan, and 14 have contacted or plan to contact a natural resources professional for the first time to help manage their land. In addition, 500 acres have been established using various forest and wildlife

management practices including timber stand improvement and planting warm-season grass stands.

Source of Funds: Smith-Lever, State

Scope of Impact: State Specific

### **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**

##### Youth Development

Purdue University 4-H Youth Development programs reached 300,876 youth in Indiana during FY 2002. Through youth development programming, Purdue University purposefully seeks to meet youth needs and build youth competencies relevant to enabling them to become successful adults. Positive youth development practices help to recognize the contributions of youth to community and build assets in youth to help them meet challenges. Through *The Four-fold Model of Youth Development*, 47 skills have been identified that have been combined into sets of skills to help youth develop as confident, capable, caring, and responsible citizens. The model combines four existing models into one comprehensive model focusing on all four aspects of the individual: head, heart, health, and hands. This model enables faculty and staff to design curriculum and programming to encompass these 47 skills.

Examples of the success of 4-H Youth programs will be provided in the Key Theme section of Goal 5 accomplishments. Briefly, youth programming is delivered by three different methods, which are club programming, school enrichment programming and community programming usually in collaboration with other community groups and organizations. School enrichment programs continue to be our fastest growing. In Marion County in central Indiana, 11,043 youth in 363 classrooms participated in *4-H in the Classroom* during the 2001-2002 academic year. To enhance the acceptance of this effort, all 4-H curricula utilized in these programs have been aligned with the state-mandated teaching standards. The teachers in the participating classrooms reported that students gained life skills in the areas of thinking, caring, relationships, managing, and working.

Youth programming continues to be an important outreach effort of our Extension efforts. We continue to focus on new audience development to reach many youth beyond the club program. Much of the success is due to the outreach being done county by county in collaboration with other organizations – helping to find the 4-H Youth niche in the programming arena. Extension staff in Indiana have reported 10,537 days of activity, with 340,063 direct contacts addressing issues related to youth development.

##### Agricultural Leadership Development

Indiana's communities are engaged in a continuing struggle to retain human capital. A cadre of well-informed and trained citizens who have the desire and the ability to make life better in their



community are vital to positive community change. Through the educational programs offered through Purdue Extension, individuals gain the confidence, skills, knowledge, and ability to make a difference in organizations and the community. After completing leadership training, people move into leadership positions in the community and the state and become involved in important community efforts. During FY 2002, Purdue Extension devoted 3,908 contact days to leadership development issues and reached 71,274 people with these efforts.

### Parenting

Families are at the very heart of the strength and competitiveness of our nation. Indiana county-based needs assessments conducted in 1998 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 group offers a diversity of programming 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 111,203 direct contacts have been made with programming focused to strengthen families in FY 2002. These contacts represent 2,574 contact days of programming effort. The media has been used to reach an additional 322,502 individuals with information. The number of parents who report they use more positive parenting techniques is 8,721. The *It's My Child Too* program continues to reach non-custodial fathers with critical information on parenting. The website developed to respond to events of 9/11/01 has been maintained and related materials have been launched to address children and how to communicate with them about terrorism, violence and war. As a group, grandparents raising their own grandchildren is a growing number of people in our country. Programming specifically for grandparents serving as the sole parents of grandchildren has been developed.

### Financial Management

#### Agricultural Financial Management

To stay competitive in today's global markets, agricultural producers and business personnel must stay abreast of financial management skills such as banking, tax laws, record keeping, and market strategies. In FY 2002, Purdue Extension dedicated 626 contact days to agricultural financial management and contacted 7,053 people.

#### Family Resource Management

Financial management programming in Indiana encompasses many different aspects of both personal and business financial management. Specialists and educators reached 26,595 individuals with financial management programming. These contacts represented 1,564 programming days. Of these 26,595 individual contacts made, 15,262 were youth. How important it is to teach youth important aspects of personal finance at an early age! Programming efforts in family resource development range from the *High School Financial Planning* program to help develop financial literacy in youth, to *Focus on Financial Management*, a Purdue University-developed program in five parts to encourage participants to establish financial practices to enhance financial security and reduce risk of financial problems. Continued use of the web-based educational tool *Planning for a Secure Retirement* has been high. The instructional effort combined the expertise of an Extension specialist and research/teaching

faculty. A team of Purdue Extension staff who attended the national conference on Planning for a Secure Retirement are planning a statewide rollout of the programming effort for Indiana.

#### Workforce Preparation – Youth and Adult

Purdue Extension plays a role in the development of a stronger, well-qualified workforce for both our state and the nation. Programming in the area of Work Readiness and Career Development Skills has reached 9,798 in FY 2002. Purdue Extension staff report 656 days of work in this area. Programs include career description and modeling for high school students in 4-H workshops, basic life skills instruction of time management, employer expectations and job interviewing strategies, conflict management, and job skill development through continuing education.

### **Key Theme: Children, Youth and Families at Risk**

#### **Crawford County C.A.R.E.S.**

Description: Many of the youth in Crawford County are placed at risk for academic failure due to social and economic issues. Crawford County Community Schools have over an 8% grade retention and close to a 50% cumulative dropout rate per 1,000 students in grades 7-12. Twenty-three percent of youth ages 16-19 are not enrolled in any type of educational program, exceeding the state rate of 11.4%. Approximately 21% of youth under age 18 live below the federal poverty rate in this county. In addition, numerous children are unsupervised between 5 and 8 a.m. and 3 and 6 p.m. because 64% of working adults must travel an hour or more each way for their jobs.

Impact: Education is a critical element in the long-term alleviation of poverty. Extension staff brought together parents, social service agencies and community leaders to work with students and their families in the five local elementary schools and junior high school to provide after-school programs and tutoring to increase students' academic awareness. Each school has 90-98% of its students who participate in the program, with 45-60% of them attending regularly.

Source of Funds: Smith-Lever

Scope of Impact: Crawford County

#### **Project LEAD: Legal Education to Arrest Delinquency**

Description: Many Indiana counties participant in the 4-H *Project LEAD* program in school settings in order to help students develop an understanding of the legal systems and to develop skills that help them communicate, handle conflict and make sound decisions so that they can avoid situations that may lead to undesirable behavior. Sessions are conducted in fifth-grade classrooms in partnerships with schools. This prevention program teaches about laws, law enforcement, the judicial system, decision-making, and consequences of actions. Many local professionals and elected officials volunteer their time to teach different portions of the program and host tours of the county facilities, including courtrooms and jails.

Impact: On the *Scale of Juvenile Legal Attitudes*, administered as a pre- and post-test for *LEAD* sessions, results showed that *Project LEAD* effectively changed the attitudes of fifth graders. Last year we reached 10,335 youth through this program. At the conclusion of *Project LEAD*, the average student score on the scale increased by over 20 points in schools where *LEAD* is taught. Teachers in the classroom also report a positive change in attitude after completion of the program. In some counties, due to the success of the program, grants have been obtained to fund a program assistant who works solely on this effort.

Source of Funds: Smith-Lever

Scope of Impact: State specific

### **CARe: Communities Against Rape Initiative**

Description: Every year, approximately 2,000 rapes and 4,000 cases of child sexual abuse are reported to Hoosier authorities. However, up to 80% of incidents are not reported, according to the National Crime Victims Research Center. Young women, adolescent girls and children are the largest group of rape victims. Seventy-three percent of victims are under age 24, 55% are under 18 and 29% are 11 or younger. Sexual violence can lead to depression, post-traumatic stress disorder, alcohol and drug abuse, riskier sexual practices, teenage pregnancies, sexually transmitted diseases, and eating disorders.

Impact: The CARe Initiative employs a multifaceted approach to violence prevention. Over 40 local communities and 27 colleges and universities have joined Purdue University in a statewide violence prevention initiative which includes data collection, policy analysis, community coordination, and prevention education programs. Over 1,000 incidents were reported to the SADI system in 2001.

One hundred fifty-four (154) teachers and 60 community representatives were trained to facilitate the CARe In-school Curriculum Module and Project Equality. Results of pre- and post-tests from students who participated in curriculum activities indicate that there is significant reduction in their beliefs in rape myths and in learning how to protect themselves and help their friends.

Over 47,000 Indiana youth and adults received sexual violence prevention messages through the community programs. Pre- and post-test results from these programs reflect that participants learned important information. One county was able to show that students learned rape happens most frequently between people who know each other. Another showed that students learned rape is a crime, regardless of how the victim is dressed. A third demonstrated that students learned they should trust their gut feeling about a potentially dangerous situation. One student said, "I think this is a good program and well worth the effort. It will help young people to open their eyes and be more conscious of the things going on around them."

In Porter and Washington counties, youth/adult partnership teams have formed to create plans for rape and sexual violence prevention based on the needs of their community. The statewide Teen

Theater Troupe has performed 11 different shows over the last year to over 450 youth and adults. Thirty-eight youth and adults attended the Youth Summit, which provided a safe place for young people to dialogue about their experiences with sexual violence and to generate possible solutions to the problem.

Participant feedback surveys from both the summit and teen theater training indicated that youth were more knowledgeable about the realities of rape, were more aware of how their actions affected others and were convinced they could make a difference in preventing sexual violence. A youth summit participant said, “I learned more leadership skills and learned to voice my opinion because it may help someone else.”

Source of Funds: Indiana State Department of Health, Centers for Disease Control and Prevention, Rape Prevention and Education Grant

Scope of Impact: State specific

## **Key Theme: Youth Development 4-H**

### **4-H Program**

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

Impact: In 2002, 300,876 young people in Indiana – 34% of the state’s youth ages 10-18 – were involved in some way with 4-H: 66,052 in 2,482 clubs; 133,838 in school enrichment programming; and 100,986 in after-school and community programming. An additional 338,829 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 18,978 volunteers, who contribute an estimated \$59,360,250 annually in time, mileage and out-of-pocket expenses.

Source of Funds: Smith-Lever

Scope of Impact: State specific

### **Life Skill Development of Tenured 4-H Members**

Description: Concerns about youth are at the center of many policy debates. The future well-being of the country depends on raising a generation of skilled, competent and responsible adults, yet at least 25% of youth in the U.S. are at serious risk of not achieving productive adulthood. 4-H is one youth organization that is helping youth build character, be connected to the world around them and develop into confident, competent, caring, and contributing adults.

Impact: In 2002, a study was conducted to determine the impact of the Indiana 4-H program on the development of life skills in tenured 4-H’ers in Indiana. Surveys were sent to 1,956 youth in

77 of the 92 Indiana counties. Of the 881 youth, ages 17-20 years old, who returned surveys (45.1% response rate), over 97.1% had participated in the 4-H program for seven or more years. Those responding indicated that 4-H contributed to the development of the following five life skills: completing a project or task; having a positive view of the future; communicating with others; setting and achieving goals; and interacting socially. One young person reported, "I think organizational skills are the most important thing I learned in 4-H. I learned to manage and organize my time and how to spend money wisely. Organizing my research skills helped me in school and now in the Army. Lastly, I have learned self-expression skills, overcoming shyness and stammering."

Source of Funds: Smith-Lever

Scope of Impact: State specific

### **4-H Teen Leader Development**

Description: To live happy and contributing lives in our society, people need to be able to help themselves (and often others) to achieve their goals. The skills needed to take responsibility for personal action and to work with other people in achieving goals are embodied in leadership life skills. There is not a "one size fits all" approach to what works with each individual. Youth need a variety of programs and activities to assist them in developing leadership skills. Each of Indiana's 92 counties offers the opportunity for teen in the 4-H program to participate in the county Jr. Leader program. Teens meet in a group setting where they focus on specific topics and programs designed to encourage leadership skills, teamwork and community service. The teens also work within their local 4-H club units to hone their leadership skills and mentor younger members. Teens who participate in the Jr. Leader program in local communities develop leadership skills that they utilize at home, in public, in their 4-H clubs, at school, and in the workplace. Additionally, through service learning activities, they learn to give back to their local communities.

Impact: Approximately 4,500 teens were involved in the Jr. Leader program statewide. These youth participated in meetings, workshops, clinics, and seminars where they learned skills that they will utilize at home, in public, in their 4-H clubs, at school, and in the workplace. They learned to plan and conduct activities, lead other youth and serve as role models to younger youth and their peers. Many of them have also worked with Extension staff to apply for continuing education scholarships affording them the opportunity to complete resumés and cover letters and participate in interviews. These youth have also given back to their communities by participating in a variety of service activities such as collections for food pantries, Relay for Life, book drive for St. Jude's Hospital, Indiana roadside cleanup, community tree plantings, and nursing home visits.

Source of Funds: Smith-Lever

Scope of Impact: State specific

## **Key Theme: Character Education**

### **Character Education**

Description: Character education is at the core of the 4-H Youth Development program. Several counties have identified the issue as a priority issue with parents, schools, law enforcement, and the judicial system. Schools are faced with growing discipline problems; the number of youth who need alternative school; number of students who are not responsible in areas of library book returns and homework assignments; and lack of respect for the property of others. Unacceptable high numbers of young people steal, lie and cheat – on the job, in school and in personal relationships. They also demonstrate a disturbing willingness to resolve conflict with physical force. Several Indiana counties have developed community coalitions that focus on character education. The Extension Service has provided the human resources to provide classroom instruction in character education.

Impact: In Marion County, the following impact was reported from the Indianapolis Public Schools: 367 middle school students completed all sessions with the following results – 35% decrease in inappropriate behavior; 93% increase in school attendance; 45% increase in academics; 100% can identify the importance of making positive choices.

Teachers and administrators in Carroll County evaluated the effectiveness of the program at the end of six months and reported the following: 85% felt the students were more responsible and remembered their homework; 85% felt the students offered to help other students; 81% felt the students argued and fought less; 81% felt the students were more respectful of school property and had better manners; 78% felt the students cooperated better with each other on the playground; 76% felt the students were more likely to consider the consequences of their actions.

Source of Funds: Smith-Lever, Youth Resources of Southwestern Indiana, Step Ahead, Extension Homemakers, Kiwanis, local school corporations

Scope of Impact: Carroll, Floyd, Fountain, Henry, Marion, Ripley, Vanderburgh counties

## **Key Theme: Agricultural Financial Management**

### **Midwest Women in Agriculture Conference**

Description: The United States Department of Agriculture reported in the 1997 Census of Agriculture that the number of female-operated farms was up 14% from a previous 1992 survey. Today, women operate 9% of American farms. The USDA report said the number of U.S. farms is decreasing but the percentage of farms operated by females is increasing. A 1997 Rockwood Research Report stated that 66% of the women considered themselves a manager or assistant manager in the farm operation. Women have a role in decision-making on the farm, and they influence decisions concerning purchasing, whether for farm or family. For women to continue to make vital farm decisions, they need educational resources. Purdue Extension held the first Midwest Women in Agriculture Conference on March 21, 2002, in Plymouth, Indiana. The mission of the conference was meeting the needs of women in agriculture by addressing the

personal, family and farm issues that affect their lives, their families and their farm businesses. A total of 230 farm women from four states attended the conference. This group represented women from 43 counties in Indiana and the surrounding states of Illinois, Michigan and Ohio.

Impact: Sixty percent, or 155 women, returned evaluations. Seventy percent of the women said the conference helped them to define their role in making the farm profitable. Eighty-five percent felt the conference strengthened their role in dealing with the emotional well-being of the family. Sixty-six percent believed by attending the conference they were able to build a network of support. Attendees indicated they learned answers to their questions, new ideas they could try immediately and gained new resource materials and contacts. They also reported gaining greater confidence, increased morale and increased motivation as a result of attending the conference.

Source of Funds: Smith-Lever, State

Scope of Impact: Indiana, Ohio, Michigan, Illinois

## **Key Theme: Family Resource Management**

### **Developing the Financial Literacy of Youth**

Description: Purdue Cooperative Extension's involvement with the *High School Financial Planning Program*, sponsored by the National Endowment for Financial Education, continues. Also, Purdue Cooperative Extension continues to be represented in the newly formed Indiana Jump\$tart Coalition and its Executive Committee. Finally, a professional development opportunity for Purdue Cooperative Extension staff was again offered.

Impact: Through displays and presentations, 150 educators and financial services representatives were introduced to the *High School Financial Planning Program*. Twenty-five Purdue Cooperative Extension staff members attended a one-and-a-half-day training symposium in March 2002. The number of students exposed to the *High School Financial Planning Program* in Indiana increased by 25% from the 1999-2000 school year to the 2001-2002 school year. The number of schools accessing the materials also increased by 25%.

Source of Funds: Smith-Lever, *High School Financial Management Program Grant*

Scope of Impact: State

### **Money on the Bookshelf**

Description: In Marion County, over 44,000 females are heads of single-parent households. In many cases the parents, particularly the non-custodial ones, lack basic life skills to work through the everyday tasks of managing a job, family, the money they earn, and their own individual needs. A positive approach for working with limited resources is for low-to-moderate income parents and children to learn and develop skills together for stretching scarce resources. When parents teach their children, they also learn and practice the concepts. When parents are involved with helping their children learn wise use of financial resources, the parents report increased

ability in managing their own financial resources. Purdue Extension provided three workshops for parents at three different sites – Wellspring, a transitional housing facility for Dayspring residents; Even Start School 14; and Even Start George Washington Middle School. At School 14 and George Washington Middle School, there were Hispanic students in the Even Start program; therefore, we obtained three sets of three titles available in Spanish. School 14 provided an interpreter to translate the lesson into Spanish. The students at George Washington Middle School did not require a translator. These students gave indication of being very motivated to learn and obtain materials that could be shared with their children. Thirty-seven families with 71 children were served at the sites.

Impact: After the workshop series, 1) 29% of participants sometimes or always talk with their children about things that relate to money; 2) one out of three (32%) participants sometimes/always include the child in talks about how family money is used; 3) one out of four participants sometimes use everyday events as a chance to talk to their child about money. In addition, all parents that attended reported they and their children looked at or read magazines or books two or more times in the previous week, suggesting that family reading time also increased.

Source of Funds: Smith-Lever

Scope of Impact: Statewide/Marion County

### **Focus on Financial Management**

Description: According to recent statistics, approximately one in five unmarried elderly women are poor. The 2002 Retirement Confidence Survey found that only 17% of females were very confident of having enough money to live comfortably throughout retirement, and only 27% of females have done a retirement savings need calculation. Thirty-seven percent of the women surveyed said they were way behind schedule in retirement planning and saving. A team of Purdue Extension specialists and educators developed a five-part educational series, *Focus on Financial Management*, to encourage participants to establish financial practices to enhance financial security and reduce risk of financial problems. Workshops focused on getting organized, money management, net worth, risk management, and savings and investment. To meet the needs of specific audiences, three optional workshops were developed on credit cards, retirement and dealing with life's challenges. Nine pilot programs reaching 66 participants were conducted in 2002.

Impact: Participants described their feelings about finances before and after the workshops. Before participating, 44% said they knew where to seek financial assistance. After the workshops, 92% said they knew where to seek financial assistance. Before the workshops, 45% said they had knowledge, skills and ability to affect their financial position positively. After the workshops, 92% said they had knowledge, skills and ability to affect their financial position positively. As a result of participating in *Focus on Financial Management*, 45% said they were working on determining retirement income, and 32% said they planned to do that in the future. Sixty-two percent reported they were currently working on establishing financial goals, and 18% planned to do it in the future. As a result of participating, 42% of participants said they were



currently working on developing a spending plan, and 29% planned to do it in the future. Fifty-one percent said they planned to work on an estate plan in the future, and 45% said they planned to draft a will or trust.

Source of Funds: Smith-Lever

Scope of Impact: State

## **Key Theme: Parenting**

### **Families in Transition**

Description: Changes in the marital relationship of parents and the rearing of children born out of wedlock are often stressful episodes, especially for dependent children. It is in the best interest of the children of separating or divorcing parents and children born out of wedlock to encourage appropriate cooperation between parents concerning child-related issues. Two Warrick County Superior Court judges met with local Extension educators to ascertain what local programs would be available to divorcing parents and unmarried parents of children. As of June 1, 2002, all actions for dissolution of marriage or separation filed in which there is one or more dependent children, both parents shall attend the two-part parenting education program.

Impact: The *Families in Transition* program began in July 2002 and continues bi-monthly year around. The programs aid children of divorcing parents and parents of children born out of wedlock; aid the parents in post-separation parenting and in rearing children where the parents have never been married; aid the court in maximizing the use of the court's time; aid in reducing or eliminating instances of maltreatment of children; increase positive parenting practices; create an environment that facilitates the development of caring, competent and healthy children; focus parents on their respective parental roles, the child's health and behavior, responsible decision-making, and co-parenting relationships; and encourage agreements between the parents concerning child-related matters.

Source of Funds: Smith-Lever

Scope of Impact: Warrick County, State

## **Key Theme: Workforce Preparation—Youth and Adult**

### **Reality Store**

Description: Many students in K-12 in the United States get little direct exposure to the work world. High school graduates often are ill prepared to choose a career or to manage their own money. Extension educators in Posey County, Indiana, worked with the Metropolitan School District of Mt. Vernon and the New Harmony School Corporation to operate a *Reality Store* that helped students understand career options and learn money management skills. After a quick lesson in check writing, students chose a career based on their interest, personality and abilities. As the game began, they earned a salary based on their new-found career. After providing for

their imaginary offspring, students followed a simulated life journey (from booth to booth) that forced them to make financial decisions. They wrote checks and kept a checkbook to track their purchases. During 2002, 169 eighth-grade students visited the *Reality Store*.

Impact: Of the 169 eighth-grade students who went through the *Reality Store*, 68% said they learned a lot about what it cost to maintain a household, 85% learned how job choice affects income and 84% said they learned how the amount of money you make can affect your lifestyle. After visiting the store, nearly three-quarters of students talked to a parent or guardian about career plans.

Source of Funds: Smith-Lever, Local school system

Scope of Impact: Posey County, State

### **Life After Incarceration**

Description: Two percent of children under the age of 17 have a parent incarcerated in a federal or state prison, an increase of 500,000 children since 1991. The majority of those incarcerated return to their families and communities without adequate rehabilitative efforts, hindering successful post-release reintegration. Criminal offenders face multiple challenges limiting successful post-release family and community reintegration. The integrated cognitive behavior *Life After Incarceration (LAI)* program teaches offenders cognitive awareness, problem solving and life skills.

Impact: Partnership with Indiana University Purdue University Indianapolis AIM (Aftercare by IUPUI through Mentoring) moved *LAI* into every Indiana state-operated juvenile facility. Pre/post program evaluations of 148 participants show significant gains in coping and decision-making skills, enhanced social abilities and increased educational and vocational knowledge and skills. Participants who complete the program report, “She taught me how to think before I act – I never thought about that before.” Another participant released six months earlier says, “I learned I have choices, but I have to decide what I want, make a plan and stick to it. She taught me that there is life after incarceration.”

Source of Funds: Smith-Lever

Scope of Impact: State

### **Key Theme: Workforce Development—Youth and Adult**

#### **Learning Center of Clinton County**

Description: Clinton County Workforce Development Committee identified changing educational needs for workforce development, lifelong education and higher education. Educational needs identified included computer literacy, skills for coping with rapidly increasing diversity and opportunities for higher education at a time and place convenient for the non-traditional student. New technology, student services and expansion of educational opportunities

is making it possible for our county to compete in the new economy with a highly educated and skilled workforce, as opposed to a low-wage workforce. The Learning Network has built an infrastructure for a system that will enable participants to work toward progressive professional and personal development. This system allows adults to access a variety of educational and training opportunities at multiple levels, including personal development, certificates of technical achievement, continuing education units, associate degree programs, or a bachelor/master degree. This initiative includes providing both staff and technology to not only teach and train workers for a more technically sound workforce, but also to make available educational opportunities for our teachers, volunteers, social service workers, and community members through the use of technology and related innovations.

Impact: Under the supervision of the Extension educator as the acting coordinator, a planning group was convened to develop the idea, conduct needs assessments, give presentations to widely attended meetings, and sponsor a large community event, the Job and Education Fest. Through these efforts and a well-informed media, the Learning Network of Clinton County was presented to the community. A Learning Network board was then established that has a broad-based community representation. This board has continued to assess the community's assets and needs. They have developed a strategic plan and vision for the Learning Network. They have worked together to gain a common understanding about what is wanted, needed and possible for Clinton County.

A 21<sup>st</sup> Century grant from Purdue University Extension provided the Learning Network with 16 laptop computers that outfitted a mobile computer lab which will facilitate a "teach anywhere, anytime" concept. Also provided in the grant was a t-1 line, an Indiana Higher Education Telecommunication System (IHETS) receiver and an audio-video two-way unit, all of which enables the Learning Network to deliver distance education available from colleges and universities all over the state.

Since the first class in September 2000, 1,700 students have taken classes at the Learning Network, 448 students have participated in a series of computer trainings and 110 have taken classes for college credit. Professionals in law enforcement and medical fields were among the 320 people who took a course in Conversational Spanish. Participants reported a 33% improvement in their comfort level when communicating with Spanish-speaking people. The Learning Network has been described by the president of the Clinton County Chamber of Commerce as "the most exciting thing happening in Clinton County today."

The Learning Network is attracting attention outside Clinton County as well. Seven new learning centers have developed in partnership with county Extension Services in Indiana. Staff of the Learning Network has shared their story with 25 presentations to other county groups and seven national conferences. The Learning Network has brought lifelong learning, higher education and workforce development opportunities to the local community. It has caused excitement and is encouraging the development potential of individuals and increasing possibilities for the community at large. The Learning Network is an example of a community coming together, with Extension as the catalyst, to share assets and resources and follow their dream to create something unique that benefits the entire community.

Source of Funds: Smith-Lever, Purdue University, Clinton County

Scope of Impact: Clinton County, State

## **Key Theme: Leadership Training and Development**

### **Volunteer Board Training**

Description: Board activity is one of many ways by which people spend their life energies. It is more than an outlet; it is a generator of ideas and actions as well. Vitality in boards comes from the planning that helps to channel human efforts into meaningful activity, where untapped resources of strength are released by the challenge of a larger than personal goal, and from the sense of accomplishment that rewards well-directed power. To achieve these results, a local Extension educator conducted three workshops on volunteer board training. Content of the workshops consisted of: Characteristics of Effective Boards and Committees, Roles and Responsibilities of Staff vs. Board Members and Delegation, Liability for Board Members, Budgeting and Fundraising, Dealing with Difficult Board Members, How to Develop a Mission Statement, Communication Skills, and Organizational Success.

Impact: Many board members did not know how to conduct or even organize a meeting, delegate responsibility, build a budget, or how to develop a vision for an organization. The *Volunteer Board Training* seminars provided the basic skills and knowledge to perform these meeting tasks. Participants were given the task to analyze the impact of each seminar on themselves and their roles on their board(s). All participants now feel better prepared to serve on volunteer county boards.

Source of Funds: Smith-Lever, State

Scope of Impact: State specific

### **Changing Face of Indiana**

Description: Hispanic/Latinos comprised the largest group of immigrants moving into the state of Indiana. The latest census data shows that the number of immigrants of Hispanic origin has augmented more than 117% across Indiana. Some areas in the state have seen an even larger growth, such as Elkhart, which increased 764%, and Indianapolis increased by 294%. Immigration is a healthy sign of economic growth and potential for prosperity. These new neighbors bring their skills and knowledge, work ethic and culture. But, at the same time, large immigration in a short period of time creates challenges for the communities where immigrants are relocating. Purdue Extension provided education and distributed reliable information to new immigrants and long-time residents to help both groups. For two consecutive years, Purdue Cooperative Extension Service in collaboration with the Indiana Economic Development Society, have organized a Statewide Latino Summit. This summit offered information and education on the following subjects: cultural competency, strategies to help communities address issues of large immigration, education, health, economic development, the role of elected officials, fair housing; homeownership, employment, and methodology to create cultural centers.

Impact: The 2002 Summit brought information to 220 individuals from across Indiana. Ninety-eight percent of participants rated the overall summit between excellent and good. The following comments written on the summit's evaluations reflect the opinion of participants: "Thank you for holding this event – very timely. It was a wonderful venue for people to learn and to network." "Great job! Excellent! I am inspired. This summit was a great community building experience for all participants."

Source of Funds: Smith-Lever, State, Private

Scope of Impact: State specific

## **Key Theme: Community Development**

### **Hendricks College Network**

Description: The Hendricks College Network (HCN), formerly the Post-Secondary Education Task Force, was established in 1998 by the Hendricks County Commissioners as part of the development of a comprehensive plan relating to all aspects of the county's needs. The issues to be addressed included affordable, accessible higher-education programs; developing a more educated and skilled workforce; enlarge and sustain Hendricks County's learning environment; and enhance the quality of life in Hendricks County. The Hendricks College Network has built an infrastructure for a system that will enable individuals and businesses to work toward progressive professional and personal development. This system allows adults and companies to access a variety of multiple-leveled educational and training opportunities at multiple levels, including personal development, certificates of technical achievement, continuing education units, associate degree programs, or a bachelor/master degree. The network provides both staff and technology to teach and train workers for a more technically sound workforce, and makes educational opportunities available for our teachers, volunteers, business leaders, and community members through the use of technology and related innovations.

Impact: The Hendricks College Network formally began operation in January 2002 with the hiring of the first coordinator. From January to September, nearly 30 course offerings have been provided to over 200 individuals along with 26 presentations to over 560 people sharing information about the network. In surveys conducted by HCN, 93% of the participants found that the courses were relevant, provided a specific personal need and advanced their career potential. A HCN board member recently stated, "My expectations were extremely high for this project; I continue to be amazed at the quality, participation and variety of course offerings. My expectations have been met and exceeded in these few short months." The director of a local company stated: "The Hendricks County Network not only addressed our staff training needs but also brought in experts to address our inventory control problems. HCN has made a positive impact in our service delivery."

Source of Funds: Smith-Lever, State

Scope of Impact: Hendricks County, Indiana

## **B. STAKEHOLDERS' INPUT PROCESS**

The initial development of the 1999-2004 Plan of Work had extensive input by a cross-section of the citizens of Indiana. Over 5,000 citizens representing the diversity of the Indiana community participated in a series of two meetings hosted by each county extension staff. The purpose of the first meeting was to discover what citizens believed were the important issues in their community. During the second meeting, the listing of issues was reaffirmed with the group establishing a priority ordering of those issues. The county extension staff then prepared county Plans of Work as well as reports that transmitted the findings of each county to the state Program Leaders. From the 92 reports, the Program Leaders classified the many issues into 16 priority issues that form the Indiana Plan of Work.

However, it is critical for stakeholders and all citizens to have a continued opportunity to provide input on identification of issues in their communities. Each of Indiana's 92 County Extension Boards is a broad representation of local citizens who provide identification and prioritization of the issues to be addressed by county extension programs.

In addition, local citizens in each county are selected to represent the connection to the statewide Council on Agricultural Research, Extension, and Teaching (CARET). CARET members represent the Extension Boards, elected officials, community leaders, staff from K-12 education, and business. The key criteria in their selection to CARET are their interest and their willingness to improve the quality of life in their communities through the programmatic functions of Purdue Extension.

Through their county connection, these citizens participate in twice-a-year multi-county meetings attended by County, District, and State Extension administrators as well as others such as the Dean of Agriculture and the Directors of Ag Research, Academic Programs and International Ag Programs. Most of the discussions during these Area CARET meetings focus on issues of concern to these local citizens.

Once each year, typically in November or early December, a State Conference is provided for the members of CARET and County Extension Directors. The format of the Conference is to provide an opportunity for obtaining input from the participants in a facilitated and structured manner. The Conference also provides an awareness of what Extension is providing to the citizens of Indiana and seeking their reaction to future educational needs and issues. The following educational presentations were presented in November at the 2002 State Conference: Discovery Park: Purdue's New Interdisciplinary Research Venture; Bringing Knowledge Home to You through Distance Learning; Extension Teaches the "Road to Financial Security"; Purdue's International Dimension: Research and Study Abroad; Natural Resource-based Land Use Planning; Introducing the Central Indiana Life Sciences Initiative; Helping Students Learn through Service; Purdue's New Ventures Team; and, Not Just for Sports: Accomplish More by Building a Team.

## **C. PROGRAM REVIEW PROCESS**

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

## **D. EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES**

Purdue Extension is proud of its achievement in effectively and efficiently responding to the needs and concerns articulated by Indiana citizens through various means of harvesting their input. To deliver relevant educational information to a spectrum of audiences, Purdue Extension is obligated to continually focus on three major tasks: 1) actively seek citizen input, 2) integrate research and extension outcomes into program planning, and 3) intensely scrutinize programs through effective reporting and evaluation systems. As evidenced by the reports provided for each Goal, Purdue Extension has accomplished these steps.

In the past four years, Purdue Extension has aggressively addressed the responsibility of delivering information to new audiences and new information to traditional audiences. Engaged audiences vary from traditional family, youth, community and agricultural groups to new populations such as Hispanic communities, and from targeted groups such as participants in funded nutrition education programs to under-served audiences such as families with small farms. They also vary from traditional families planning retirement to single fathers, and from youth in 4-H projects to after-school children involved in enrichment programs. In the past four years, Purdue Extension has become much less tradition bound and more capable of reaching audience in a variety of high touch and high technology manners.

The process of program evaluation is being improved through the on-going adoption of the LOGIC evaluation model. Extension staff associated with the 16 Plan of Work Oversight Issue teams completed several days of staff development regarding the utilization of this tool. All Extension (and research and teaching) staff participated in training in the past two years to prepare them to effectively evaluate their educational programs using the LOGIC model.

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 ag enterprises and value-added production and marketing has increased so that farm families may evaluate more alternatives to increase their net farm income.

With the rapid growth of the state's non-farm population, Extension has 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

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 industry associated with forest crops and products manufactured from timber is 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.

As a part of the National 4-H Centennial Conversation Program Initiative, Purdue Extension supported the 4-H Youth State Conversation and the delegation to the National Conversation as a part of the 4-H's gift back to America in celebration of the Centennial of 4-H. The Conversation at the state level helped in setting a youth agenda for the state of Indiana. Data was shared with stakeholders, funders, supporters, and policy makers that summarized what had taken place with hundreds of youth and youth serving adults in the state.

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

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

Institute Purdue University  
 State Indiana  
 Check One:  **Multistate Extension Activities**  
                    **Integrated Activities (Hatch Act Funds)**  
                    **Integrated Activities (Smith-Lever Act Funds)**

Title of Planned Program/Activity	Actual Expenditures			FY2003
	FY2000	FY2001	FY2002	
Executive Institute for Commercial Producers			4,451.22	
Indiana/Illinois Areawide Rootworm Pest Management Program			142,937.51	
Diet Manipulation to Reduce Swine Manure Nutrients and Odors			3,283.32	
Five State Beef Initiative Producer Training and Certification			8,875.01	
Purdue, Ohio State Tackle Delayed Planting Problem			46,984.86	
Stored Grain Pest Management			39,425.98	
Developing Cowpea Markets in West Africa			37,673.73	
Improving Alfalfa Winter Hardiness			9,782.52	
Wingspread Tristate Regional Accord			12,471.27	
Genetics of Pork Quality and Swine Lean Growth			35,855.26	
Vegetable Growers' School Plants Seeds of Knowledge			37,269.31	
Polymer Seed Coatings for Early Planting in Corn			34,001.08	
<b>Total</b>			413,011.07	

David C. Petritz  
 Director  
 Form CSREES-REPT (2/00)

March 1, 2003

## **MULTISTATE EXTENSION ACTIVITIES BRIEF SUMMARIES**

### **Executive Institute for Commercial Producers**

With the number of successful commercial farms in the U.S. shrinking, to be one of the successful farms in the future, farm business managers must take on the role of a general manager, look at the business as a whole and have a vision of where the business is going. To do this, managers must have a comprehensive set of finance, marketing and strategic tools. This first of its kind partnership takes a number of farmers, with the potential to be highly successful, through a series of seminars over the course of a year to teach them needed management practices. Participants are drawn from leading agribusinesses in the four states (Indiana, Ohio, Kentucky and Tennessee) that Farm Credit Services of Mid-America serves. These seminars introduce and apply advanced business management concepts to the problems confronting the larger and more complex commercial farm and its management team. The classes consist of intensive one-on-one strategic consultation, group work, case study analysis, and computer skill development. A set of teaching materials presented in the program has been developed for Extension educators to use. Included in the materials are complete PowerPoint presentations with presenter's notes, exercise and extensive background readings. Visit our website at [www.agecon.purdue.edu/ext/eicp](http://www.agecon.purdue.edu/ext/eicp)

Since the conception of the project in early 2000, participants have gained skills in the short-term financial control of their business, and have developed a long-term view of the profitability of their business essential to success. Participants have also increased their computer skills and developed a network of peers. The first class (of three) of 23 operations believes the material presented to be highly useful in dealing with managing their business. On a scale of five the program has been rated a 4.56. One participant said "As we grow our business, there are a lot of challenges ahead for the future that we need to address. At these seminars, we've learned how to manage our assets, how to manage our resources, and how to manage our employees. Also, we've looked at how to think about growing the business. These are things for the young farmers and nurserymen of the future to be aware of - or we won't be in the business." Future impact of the program will include packaging of the material for extension educators in the four-state region.

### **Indiana/Illinois Areawide Rootworm Pest Management Program**

It is expected that the U.S. Environmental Protection Agency will ultimately remove or limit the use of many agricultural pesticides. It is essential that suitable replacement products and/or technologies be developed and evaluated before the loss of the more traditional products is felt in the farming community. One example where new control options will be essential is managing the economically important WCR. A variant form of this pest, sometimes referred to as "rotation adapted" rootworm, was first noted in northern Indiana about 10 years ago. This variant has adapted to the corn/soybean rotational system. This development virtually eliminates crop rotation as an effective tool for managing WCR. In a 2001 farmer survey, one-third to one-half the respondents in the most heavily infested northern Indiana counties indicated that crop rotation was less effective now than in the early 1990s as a means for controlling corn rootworms. Prior to the discovery of this variant, farmers in the 1980s had decreased soil

insecticide used for WCR control by about 60% through crop rotation. In 2000, it was estimated that 2.1 million acres of Indiana's 5.7 million total acres of corn (37%) were treated with insecticides, primarily for rootworms. Of these acres, about 90% were in rotation. This was up from the 1.5 million acres of 6.1 million acres of corn (24%) treated in 1994. The 2000 percentage, however, does not show the full impact of this variant since the above totals represent the statewide average. The variant is presently primarily concentrated in northwestern Indiana. In the most heavily infested 10-county region in northwestern Indiana, farmers report treating 77% of the corn acreage with soil insecticides, while in southern Indiana, where there are few corn rootworm problems in most years, less than one-third of the corn acres are treated. This increase in soil insecticide use is both environmentally and economically significant. By reducing beetle numbers throughout the areawide site in 2001, with the semiochemical insecticide bait Invite, lower numbers of eggs should have been laid in soil where corn was planted in 2002. Therefore, we expected a reduction in damage to corn root systems within the managed area in 2002. To determine the effectiveness of Invite in 2001, corn roots were evaluated for rootworm larval damage in 2002. The average of means for rootworm larval damage (based on the Hills & Peters 1-6 root-rating scale) within the managed area was 1.84 in treated strips and 2.27 in untreated strips (no soil insecticides). Outside of the managed area, the average root rating was 2.16 in treated strips and 3.51 in untreated strips. A significant difference between check strips within the managed area versus the control area was detected.

When the AWPM program was initiated, approximately 5,300 acres of corn within the managed site were treated with a soil insecticide, or 90% of the corn associated with the program. Currently, 76% of the corn is treated with a soil insecticide. Therefore, as a result of this program, growers have cut back on soil insecticide use by 14% even before all the research data have been analyzed. In 2002, with the reduction of soil insecticide use, this translates into a savings for the growers in the 16-square mile site of about \$15,000. The use of alternative pest control tools, as validated in the Indiana/Illinois area-wide corn rootworm management program, will save producers millions of dollars if fully implemented statewide over the next 10 years and will satisfy Food Quality Protection Act requirements.

Illinois, Indiana

## **Diet Manipulation to Reduce Swine Manure Nutrients and Odors**

A major threat to the growth and sustainability of the pork industry in Indiana and throughout the nation is the public concern about potential water quality problems and manure odors caused by confined feeding of swine. In addition, the health and well being of swine and humans working in swine facilities are at stake. Stricter laws in many surrounding states and the recent adoption of stricter water quality rules for confined feeding operations in Indiana has put considerable pressure on the pork industry. In addition, there is a concerted effort to develop air quality standards and rules in Indiana that will affect livestock and poultry operations. The objectives of our research and extension activities were to determine the effects of diet manipulation on manure excretion nutrients, odors, and to develop management techniques to significantly reduce nutrient excretions and odors from swine operations.

In group feeding research studies with growing-finishing pigs, reducing the crude protein of diets and supplementing with synthetic amino acids, the addition of 5% soybean hulls and elimination of mineral sulfate ingredients in the diet reduced the excretion of total nitrogen in fresh manure by 27 to 30%. However, aerial ammonia concentrations in the housing room and exhaust air were reduced by 49 to 60% by feeding the low crude protein-synthetic amino acids diets. In addition, hydrogen sulfide and the odor detection threshold were reduced by 43% and 39%, respectively with the low crude protein diets. By using high available phosphorus corn and phytase in the diet, phosphorus excretion was reduced 52%. With sufficient amino acid levels in the diets, pig performance and carcass characteristics were similar to those from pigs fed a typical commercial diet. We demonstrated that low carbon/phosphorus diets with synthetic amino acid additions and a low level of fiber were effective at reducing aerial ammonia concentrations, hydrogen sulfide, and odor detection threshold and manure nitrate excretion. Replacing normal corn in the diet with high available phosphorus corn and adding phytase reduced phosphorus excretion. Diet manipulation is a practical and economical management practice that can sustain pork productivity and profitability while sustaining or improving water and air quality.

## **Five State Beef Initiative Producer Training and Certification**

Consumers are becoming more concerned about where their food comes from, and how it is produced. At the same time, beef producers are looking for ways to increase profitability by adding value to the products they produce.

The Five State Beef Initiative (FSBI) has developed training materials for beef producers in five areas: 1) beef quality assurance (BQA) and health, 2) animal handling and well-being, 3) genetics, 4) data management, and 5) environmental stewardship. Eleven face-to-face meetings across Indiana, and one state-wide televised program were conducted to train and certify producers in these five areas. Each producer completed a pre-test prior to training to assess base knowledge. A post-test was administered following training for certification.

The Five State Beef Initiative has trained and certified 107 producers in Indiana since January 1, 2002. An additional 358 producers had been similarly trained and certified under the old IQ+BEEF program and were grandfathered into the Five State Beef Initiative program. The IQ+ producers were mailed updated materials to complete the training, certification, and grandfathering process. These producers have been trained and certified in the areas of beef quality assurance (BQA) and health, animal handling and well-being, genetics, data management, and environmental stewardship. These certified producers are eligible to participate in the Five State Beef Initiative (a vertically coordinated production, marketing, and information sharing system) designed to increase producer profitability by meeting consumer demands and expectations.

Illinois, Kentucky, Michigan, Ohio

## **Purdue, Ohio State Tackle Delayed Planting Problem**

Frequent and/or excessive rainfall can delay the planting of field corn in the eastern U.S. Corn Belt beyond the optimum late April to early May. When planting is delayed, one of the obvious decisions producers need to consider is when to switch from normal hybrid maturities to earlier maturities in response to the ever-shortening growing season. Not switching to earlier maturities can result in yield loss and poor grain quality if killing fall frosts occur before the grain of the later maturity hybrid safely matures in the fall. Choosing to switch to an earlier maturity hybrid without justifiable cause can result in lost yield potential. Traditional hybrid maturity rating systems were not designed for such hybrid maturity decision-making in delayed planting situations. Farmers and their consultants were asking for assistance in making this critical crop management decision.

We conducted a field research project over a four-year period at four locations, two each in Indiana and Ohio. The purpose of the project was to measure the response of hybrids with different GDD ratings to delayed planting in terms of whether they matured safely prior to a killing fall frost. That research indicated that delayed planting decreases hybrid GDD requirements from planting to maturity, meaning that adapted “fuller season” maturities can be planted much later than previously thought and still mature safely prior to the average date of a fall frost. Hybrid maturities most commonly grown throughout Indiana and Ohio will mature safely when planted throughout most of the month of May. The results of this research were presented to members of the seed corn industry and made available to farmers and their consultants through Extension meeting in Indiana and Ohio, as a joint OSU/PU Extension publication (Purdue AY-312-W), and newsletter published online at Ohio State University and Purdue University.

As planting is delayed into late May or early June, farmers can use our response data to confidently determine which hybrid maturities can continue to be safely planted with minimal risk of fall frost damage prior to grain maturity. The benefits are most evident in planting seasons like 2002, wherein only 67 and 75 percent of the Ohio and Indiana corn crops were planted by the end of May. As one representative from a major seed company told us this past spring, “[Our company] utilizes internal and external sources for answers to questions that help keep our customers profitable. When the industry and public recommendations match, growers realize that they can trust both sources and we all win.” Information we have access to will often be passed on within the company and reach growers along the way.

Ohio

## **Stored Grain Pest Management**

Continued depressed grain prices have encouraged increases in both the amount and the duration of grain storage, making active stored grain management increasingly important. Additionally, Federal Grain Inspection Service (FGIS) standards limit or prohibit certain insects within stored grain, making insect identification and control critical to successful marketing. The only way for producers to get updated information and keep their licenses current is to attend a limited number of workshops. To reduce the need for traveling long distances to obtain this information, the University of Illinois and Purdue University created a Stored Grain Management CD. This CD allows Illinois and Indiana grain producers and professional grain handlers to improve their

knowledge about safe and effective methods for managing stored grain pests and prepares them for the Grain Fumigation and Grain Facility pesticide applicator certification exams.

This CD will allow producers throughout both states to get the grain storage management information they need at their convenience without having to travel long distances to attend a workshop in person.

Illinois

## **Developing Cowpea Markets in West Africa**

In the last 20 years, the Bean/Cowpea CRSP and other agencies have developed technology for increasing production of cowpea in West Africa, but very little is known about the markets in which that cowpea will be sold and the preferences of consumers for cowpea characteristics. We have described cowpea markets in West Africa and collected data in some 30 markets on consumer preferences.

**Impact:** Government agencies and Non-governmental organizations have better information on cowpea markets. This allows them to improve infrastructure planning and farmer extension information. Cowpea breeding programs in Senegal and other countries are focusing efforts on the cowpea characteristics that consumers are willing to pay a premium for. In the long run this will result in greater consumer satisfaction and allow for an improved diet.

Michigan

## **Improving Alfalfa Winter Hardiness**

In recent years, winterkill of alfalfa has cost U.S. farmers in the upper Midwest approximately \$1 billion annually. Purdue researchers are investigating the physiological basis for genetic differences in winter survival. Analyses are focusing on roots and crowns; organs that must successfully survive winter in order for the alfalfa plant to persist. The researchers have identified and cloned several genes whose expression is correlated with improved winter survival. The researchers hope to learn the function of these genes and their protein products in alfalfa winter hardiness and to understand how their synthesis is regulated at the molecular level.

**Impact:** Understanding the physiological basis of alfalfa winter hardiness is a key to improving productivity of forage-livestock systems in the upper Midwest. Purdue researchers have identified and cloned several genes associated with winter hardiness, and that research may lead to improved winter hardiness in alfalfa and other perennial forage legumes. These genes may serve as markers for identifying winter-hardy alfalfa plants in the seedling year. This would increase efficiency of selection for improved winter hardiness. Understanding the molecular basis for high winter hardiness also may allow us to directly improve winter survival without altering fall dormancy responses. This would avoid the reduced forage yield that is associated with traditional breeding approaches, which increase fall dormancy as they increase winter hardiness.



Iowa

## **Wingspread Tristate Regional Accord**

Extension worked with the Northeastern Illinois Regional Planning Commission under the new tristate accord to provide Sea Grant funding for a second gathering of the regional planning leaders in SE Wisconsin, NE Illinois and NW Indiana.

A formal regional accord has been signed by the directors of the 4 regional planning authorities. Committees have now been formed to work on Economic development issues, transportation planning, Natural resources (including water supply and protection of critical coastal resources) A Grant was received by the group to pursue natural resource goals with communities in southern Lake Michigan. The tristate region, along southern Lake Michigan, is now working as a collective unit as they plan for their future. Regional planning no longer stops at state lines. Coastal resources and water supplies are now being considered as this tristate region plans for its future.

Illinois, Indiana, Wisconsin

## **Genetics of Pork Quality and Swine Lean Growth**

Overall lean pigs have inferior fat quality compared to genetically fatter pigs. Ractopamine, a feed additive, increases carcass lean gain and carcass lean percentage. The impact of ractopamine on fat quality has not been evaluated. However, conjugated linoleic acid (CLA) is known to improve fat quality. A research trial has been conducted to evaluate the impact of CLA, ractopamine and dietary fat on swine carcass composition and quality. When pigs were evaluated at a consistent age, ractopamine increased carcass weight 9 lbs. Five percent added dietary fat increased carcass weight by 5 lbs. However, the fat quality based on fatty acid profiles and visual scores was decreased by the dietary ractopamine and added fat treatments. Dietary CLA improved fat quality, improved marbling scores, and increased belly firmness. The combined use of high-energy diets with added fat, CLA and ractopamine resulted in the best combination of increased growth and pork quality.

The combined feeding of ractopamine and added dietary fat can increase carcass weight by 14 lbs at the same age. Conjugated linoleic acid can substantially improve the fat quality and belly firmness of lean pigs. These research findings will be shared with swine producers as a means for them to position their future production strategy.

Kansas

## **Vegetable Growers' School Plants Seeds of Knowledge**

Northwest Indiana and northeastern Illinois have long been home to vegetable farms serving the urban and suburban population of the greater Chicago area. To remain competitive and adapt their operations to current market conditions, regulatory environments and labor issues, vegetable farmers need additional training and information. The Illiana Vegetable Growers'

School has been held annually for many years. The school brings together educational programming featuring speakers from Purdue University, the University of Illinois, the agricultural community, trades people serving the local vegetable industry and vegetable producers. Topics addressed in the program include risk management, pest management, fertility management, irrigation, variety selection, season extension techniques, and marketing strategies.

Impact: Over the past six years, attendance has averaged 67 people representing 49 farms and 7 to 8 businesses supplying the vegetable industry. Growers attending the meeting report that they learn how to manage pests more effectively or efficiently, become better informed about new crop varieties, and learn more effective marketing techniques. Many plan to put what they learn into practice during the next growing season. One grower planned to change the timing of his insecticide application to get better control. Another planned to try a new crop - carrots - after hearing a report about carrot varieties. These kinds of adjustments help growers to increase marketable yield, improve quality, reduce the cost of production and improve profitability. Producers comment that the meeting is "profitable" and "organized and informative." Both producers and tradesmen value the chance to talk to others in the vegetable business. A salesman reported that a conversation at the meeting generated enough interest in one product that the product was labeled for use in Indiana the following season.

Illinois

### **Polymer Seed Coatings for Early Planting in Corn**

Landec Ag (based in Monticello, IN) has developed temperature-sensitive seed coatings that permit planting corn from 2 weeks to 6 weeks earlier than the conventionally accepted optimum planting period. The feasibility of these new seed coatings for early planting of hybrid corn seed had not been determined for Indiana corn growers prior to the research we initiated in 2000. We initiated field research trials in 2 locations and with multiple hybrids to investigate whether these coatings sufficiently reduced the risks (low final populations, variable stands, and low vigor plants) commonly associated with planting well before the optimum period. Similar research was initiated at Ohio State University. We determined daily plant emergence, and monitored the progress of corn seeded on 3 planting dates for the past 3 years.

Impact: Our work supports the feasibility of early planting with the polymer, since polymer coatings reduced the risk of poor plant establishment. We observed that the system was particularly beneficial in no-till corn planting systems (since these producers typically have fewer planting days available in the optimum planting period in wet springs), or for producers who were limited in their equipment or planting resources. However, since we noted that corn yields were not consistently higher with ultra-early planting with all hybrids or in all environments, we strongly advised Indiana and Midwestern Farmers to adopt this system only with hybrids capable of tolerating early season stresses like cool, wet soils for prolonged periods.

Ohio

## F. INTEGRATED RESEARCH AND EXTENSION ACTIVITIES

**U.S. Department of Agriculture**  
**Cooperative State Research, Education, and Extension Service**  
**Supplement to the Annual Report of Accomplishments and Results**  
**Integrated Activities**  
**(Brief Summaries Follow the Completed Form)**

**Institute**     Purdue University  
**State**         Indiana

**Check One:**      **Multistate Extension Activities**  
                       **Integrated Activities (Hatch Act Funds)**  
                       **Integrated Activities (Smith-Lever Act Funds)**

Title of Planned Program/Activity	Actual Expenditures		FY2002	FY2003
	FY2000	FY2001		
Sampling Frequency Requirements for Tile Drain Outflow Measurements			699.25	
Five State Beef Initiative Producer Training and Certification			8,875.01	
A Good Cow is a Good Cow			32,720.92	
Diet Manipulation to Reduce Swine Manure Nutrients and Odors			3,283.32	
CystX(R) is On Track			5,148.48	
Indiana/Illinois Areawide Rootworm Pest Management Program			142,937.51	
Enhancing Alfalfa Performance			9,782.52	
Environmentally Friendly Fumigant Can Improve Food Safety			39,425.98	
Conservation Tillage			34,001.08	
Measuring Competitiveness of U.S. Pork Market			18,952.47	
Tax Professionals Learn About Tax Changes From Purdue Income Tax School Program			57,582.13	
Improving Food Safety in Apple Production			57,537.28	
<b>Total</b>			410,945.95	

**David C. Petritz**  
**Director**  
**Form CSREES-REPT (2/00)**

**March 1, 2003**

## **INTEGRATED RESEARCH AND EXTENSION ACTIVITIES BRIEF SUMMARIES**

### **Sampling Frequency Requirements for Tile Drain Outflow Measurements**

Researchers, government agencies, watershed groups, and farmers often want to sample tile drains for nitrate to determine the contributions of agricultural management practices to nitrate loadings in ditches or streams. The frequency of sampling needed to obtain an accurate estimate of annual nitrate loadings is not known, and most groups want to analyze as few samples as possible. Three years of data from a long-term tile drainage research site was collected at the Southeast Purdue Research Center to test the relative accuracy of weekly, monthly, or quarterly nitrate analyses for estimating annual nitrate loadings. The calculated estimates were compared to the "true" loadings calculated from all available chemical samples. Probabilities of estimating the annual nitrate-N losses within 15% of the "true" loss were 92% for weekly sampling, 68% for monthly sampling, and 51% for quarterly sampling.

The frequency of drain-flow sampling required to obtain estimates of nitrate-N losses from tile drains depends on the accuracy requirement of the intended use of the data. Water sampling and analysis is a costly undertaking. Data from long-term field experiments can help determine cost-effective sampling strategies for future water quality sampling sites, and will provide producers with the information they need to stay within the limits of nutrient regulations. These results have been shared with growers, fertilizer suppliers, and other interested stakeholders during field days at the research farm.

### **Five State Beef Initiative Producer Training and Certification**

Consumers are becoming more concerned about where their food comes from, and how it is produced. At the same time, beef producers are looking for ways to increase profitability by adding value to the products they produce. The Five State Beef Initiative has developed training materials for beef producers in five areas: 1) beef quality assurance and health, 2) animal handling and well-being, 3) genetics, 4) data management, and 5) environmental stewardship. Eleven face-to-face meetings across Indiana, and one state-wide televised program were conducted to train and certify producers in these five areas. Each producer completed a pre-test prior to training to assess base knowledge. A post-test was administered following training for certification.

The Five State Beef Initiative has trained and certified 107 producers in Indiana since January 1, 2002. An additional 358 producers had been similarly trained and certified under the old IQ+BEEF program and were grandfathered into the Five State Beef Initiative program. The IQ+ producers were mailed updated materials to complete the training, certification, and grandfathering process. These producers have been trained and certified in the areas of beef quality assurance and health, animal handling and well-being, genetics, data management, and environmental stewardship. These certified producers are eligible to participate in the Five State Beef Initiative (a vertically coordinated production, marketing, and information sharing system) designed to increase producer profitability by meeting consumer demands and expectations.

## **A Good Cow is a Good Cow**

Grazing as a form of low input dairy production is increasing in popularity. Herds where cows consume mostly grass forage produce, on average, less milk than those in confinement. However, it has also been documented that the lower costs of production associated with grazing are more than enough to offset this decreased production. A major concern for grazers is the choice of genetics for optimal performance in pasture based systems. A primary concern is whether a genotype by environment interaction exists between the two distinct environments, confinement and grazing. In other words, does one expect those sires, whose daughters are producing in both environments, to rank the same genetically in both environments? Production records were obtained from grazing herds in the Eastern United States. Grazing herds were defined as those that utilized grazing for at least 6 months and were enrolled in Dairy Herd Improvement Association. Control herds were confinement Dairy Herd Improvement Association herds of comparable size in similar regions. The performance of daughters of bulls in grazing herds and control herds was compared by examining the relationship between milk, fat, and protein yield. Predictions were based upon USDA genetic evaluations of artificial insemination industry bulls. Estimates of heritability for the traits ranged from 20% to 25%, and differences between grazing and control environments were small. Estimates of the genetic correlations for the traits in both environments were significantly different for unity for milk (0.89), fat (0.88), and protein (0.91). Grazing and control records were also examined for evidence of genotype-by-environment interaction among somatic cell counts and reproductive traits. Little evidence for genotype by environment interaction was found.

Grazers are convinced that bull's daughters fed mainly grass perform differently than those fed more concentrates indoors. Our work shows that a bull's daughters tend to rank the same compared to other bulls regardless of the environment. Therefore, grazers can select bulls for the specific combination of traits, no matter where most of their daughters were raised. There is some genotype by environment interaction for production traits between confinement and grazing herds in the United States. However, a young sire sampling scheme solely to identify sires that excel under grazing, does not appear to be economically feasible given that a high level of genetic gain will be achieved by selecting sires based on current evaluations. Grazers can confidently use bulls tested primarily in conventional dairy environments. Indeed use of artificial insemination sires instead of natural service sires from other grazing herds will result in an increased value of at least \$210 per heifer over the course of her life. For a 100 cow grazing herd, this equates to \$10,500 per yearly calf crop.

## **Diet Manipulation to Reduce Swine Manure Nutrients and Odors**

A major threat to the growth and sustainability of the pork industry in Indiana and throughout the nation is the public concern about potential water quality problems and manure odors caused by confined feeding of swine. In addition, the health and well being of swine and humans working in swine facilities are at stake. Stricter laws in many surrounding states and the recent adoption of stricter water quality rules for confined feeding operations in Indiana has put considerable pressure on the pork industry. In addition, there is a concerted effort to develop air quality standards and rules in Indiana that will affect livestock and poultry operations. The objectives of these research and extension activities were to determine the effects of diet manipulation on

manure excretion nutrients, odors, and to develop management techniques to significantly reduce nutrient excretions and odors from swine operations.

In group feeding research studies with growing-finishing pigs, reducing the crude protein of diets and supplementing with synthetic amino acids, the addition of 5% soybean hulls and elimination of mineral sulfate ingredients in the diet reduced the excretion of total nitrogen in fresh manure by 27 to 30%. However, aerial ammonia concentrations in the housing room and exhaust air were reduced by 49 to 60% by feeding the low crude protein-synthetic amino acids diets. In addition, hydrogen sulfide and the odor detection threshold were reduced by 43% and 39%, respectively with the low crude protein diets. By using high available phosphorus corn and phytase in the diet, phosphorus excretion was reduced 52%. With sufficient amino acid levels in the diets, pig performance and carcass characteristics were similar to those from pigs fed a typical commercial diet. Low carbon/phosphorus diets with synthetic amino acid additions and a low level of fiber were effective at reducing aerial ammonia concentrations, hydrogen sulfide, and odor detection threshold and manure nitrate excretion. Replacing normal corn in the diet with high available phosphorus corn and adding phytase reduced phosphorus excretion. Diet manipulation is a practical and economical management practice that can sustain pork productivity and profitability while sustaining or improving water and air quality. Faculty in the departments of agricultural engineering and animal science have worked closely with the Indiana Pork Producers Association and technical staff with the Indiana Department of Environmental Management to consider these diet management practices as environmental regulatory guidelines are being written.

## **CystX(R) is On Track**

The U.S. losses to soybean cyst nematode, the most destructive pest of soybeans, are estimated at \$1.4 billion annually. The main tool for managing soybean cyst nematode is plant resistance, but most resistant varieties allow some soybean cyst nematode development, depending on the virulence of the particular field population. This may reduce yield, but also may result in soil buildup of soybean cyst nematode. A completely resistant variety (Hartwig) prevents soybean cyst nematode soil buildup, but exhibits yield drag and is difficult to incorporate into high yielding varieties.

Researchers at Purdue University and the Indiana Crop Improvement Association discovered and developed soybean germ plasm with broad-based and complete resistance to soybean cyst nematode, no yield drag, and that can be easily crossed with high yielding soybean lines. The new technology has been licensed to breeders and seed companies by Access Plant Technology under their trademarked logo CystX®.

CystX® technology is working well, and each year new lines are reaching the marketplace. During the 2002 growing season, new CystX® lines were tested in replicated yield trials by Purdue Extension Specialists and a number of seed companies are developing new CystX® lines. Many of these were resistant to soybean cyst nematode and competitive in yields with top soybean varieties. Two of the new lines will be ready for commercial sale in 2003. A backcross of the original germ plasm developed by the Purdue University/Indiana Crop Improvement Association researchers was marketed for planting in 2001 as a branded variety. Soybean farmer

Jim Murray of Pulaski County, IN, said that his CystX® plants yielded more in 2001 than the best soybean cyst nematode resistant Roundup Ready varieties, and in some areas gave him his best yields since 1986.

## **Indiana/Illinois Areawide Rootworm Pest Management Program**

It is expected that the U.S. Environmental Protection Agency will ultimately remove or limit the use of many agricultural pesticides. It is essential that suitable replacement products and/or technologies be developed and evaluated before the loss of the more traditional products is felt in the farming community. One example where new control options will be essential is managing the economically important Western corn rootworm. A variant form of this pest, sometimes referred to as “rotation adapted” rootworm, was first noted in northern Indiana about 10 years ago. This variant has adapted to the corn/soybean rotational system. This development virtually eliminates crop rotation as an effective tool for managing Western corn rootworm. In a 2001 farmer survey, one-third to one-half the respondents in the most heavily infested northern Indiana counties indicated that crop rotation was less effective now than in the early 1990s as a means for controlling corn rootworms. Prior to the discovery of this variant, farmers in the 1980s had decreased soil insecticide used for Western corn rootworm control by about 60% through crop rotation. In 2000, it was estimated that 2.1 million acres of Indiana’s 5.7 million total acres of corn (37%) were treated with insecticides, primarily for rootworms. Of these acres, about 90% were in rotation. This was up from the 1.5 million acres of 6.1 million acres of corn (24%) treated in 1994. The 2000 percentage, however, does not show the full impact of this variant since the above totals represent the statewide average. The variant is presently primarily concentrated in northwestern Indiana. In the most heavily infested 10-county region in northwestern Indiana, farmers report treating 77% of the corn acreage with soil insecticides, while in southern Indiana, where there are few corn rootworm problems in most years, less than one-third of the corn acres are treated. This increase in soil insecticide use is both environmentally and economically significant. By reducing beetle numbers throughout the areawide site in 2001, with the semiochemical insecticide bait Invite, lower numbers of eggs should have been laid in soil where corn was planted in 2002. To determine the effectiveness of Invite in 2001, corn roots were evaluated for rootworm larval damage in 2002. The average of means for rootworm larval damage (based on the Hills & Peters 1-6 root-rating scale) within the managed area was 1.84 in treated strips and 2.27 in untreated strips (no soil insecticides). Outside of the managed area, the average root rating was 2.16 in treated strips and 3.51 in untreated strips. A significant difference between check strips within the managed area versus the control area was detected.

When the Areawide Pest Management program was initiated in 1997, approximately 5,300 acres of corn within the managed site were treated with a soil insecticide, or 90% of the corn associated with the program. Currently, 76% of the corn is treated with a soil insecticide. Therefore, as a result of this program, growers have cut back on soil insecticide use by 14% even before all the research data have been analyzed. In 2002, with the reduction of soil insecticide use, this translates into a savings for the growers in the 16-square mile site of about \$15,000. The use of alternative pest control tools, as validated in the Indiana/Illinois areawide corn rootworm management program, will save producers millions of dollars if fully implemented statewide over the next 10 years and will satisfy Food Quality Protection Act requirements. Results of this

work have been shared with USDA-ARS and Midwestern Land Grant University scientists, at grower and professional meetings, and via websites and extension publications.

## **Enhancing Alfalfa Performance**

Alfalfa is often grown on marginal lands that have low fertility because better lands are reserved for corn and soybean production. Low yield and poor plant persistence often results from the poor fertility. The relationship between potassium and phosphorus fertility and alfalfa productivity was re-examined. Plots established in 1997 have received one of 20 fertility combinations, and yield, components of yield, and root physiology have been compared. Soil test phosphorus and potassium levels are being examined by soil depth increment in order to understand the impact of phosphorus and potassium stratification on alfalfa performance. Poorest alfalfa performance is being obtained on plots receiving high phosphorus rates with no potassium fertilizer (worse than the 0 potassium-0 phosphorus plots). Good forage yield and acceptable persistence are obtained when at least 200 pounds of potassium and 50 pounds of phosphorus are provided per acre.

Balanced phosphorus and potassium nutrition are essential for successful alfalfa production. Purdue Extension now recommends that soil testing is best done in autumn, since spring derived values overestimate potassium availability. Research also has established that providing at least 200 pounds of potassium per acre and 50 pounds of phosphorus per acre are necessary for high forage yield, but this potassium rate is inadequate for building soil test potassium levels. These results have been shared with growers and county Extension educators during June Hay Days at the various Purdue Agricultural Centers.

## **Environmentally Friendly Fumigant Can Improve Food Safety**

Insects and molds invading food can create health risks for both people and animals when they feed and defecate on it. In addition to the direct effects, this damage can promote mold formation, primarily, *Aspergillus* and *Fusarium*. These molds release dangerous toxins linked to sometimes-fatal diseases in most livestock species. *Fusarium* has been linked to cancer-causing mycotoxins in humans. Few methods currently are available to prevent insect and mold damage to stored grains. Development of an environmentally safe fumigant for agricultural products became a priority with the 1987 Montreal Protocol, an international agreement to ban substances deemed dangerous to the Earth's ozone layer. The treaty banned methyl bromide, commonly used against crop pests in the soil and in storage facilities. Purdue University researchers and extension specialists studied the use of ozone as a fumigant on rice, soybeans, wheat, corn and popcorn stored in grain bins. Ozone, a powerful oxidizer, reduced damage by insects such as beetles and moths and the fungi *Aspergillus* and *Fusarium*. The researchers studied how much contamination was reduced through ozone fumigation and how quality was affected. Ozone fumigation of stored grain killed insects and prevented fungus development without altering production quality of the treated raw grains.

More grain can be kept safe from insects and molds by using environmentally safe ozone as a fumigant. This fumigation method also protects the production quality of the raw grains. This method currently has only been tested on stored raw grain. However, Purdue University



researchers believe that it eventually can be used for processed food. Ozone as a fumigant has the potential to reduce the number of food-borne illnesses, which the Center for Disease Control estimate are approximately 76 million cases annually in the United States. Using ozone as a fumigant increases food safety by lowering health risk to people and animals. The authors of this study have conducted several workshops and training session in the Midwest to encourage farmers and other grain handlers to adopt the use of ozone for stored grain management.

## **Conservation Tillage**

Conservation tillage adoption for corn has lagged behind that of soybean in Indiana. Almost 60% of Indiana's soybean crop is no-till planted while no-till corn represented less than 20% of the total corn acreage from 1995 to 1998. Full width tillage systems for corn after soybean leave the soil surface with less than 30 % residue cover (the minimum to be considered as conservation tillage), and thus leaves soil very vulnerable to erosion. No-till adoption for corn was promoted through extension activities, and fall strip tillage research was conducted on university farms. The latter practice preserves two-thirds of the surface residue of no-till, and enables earlier corn planting in spring. In early spring, soils were both warmer and drier on the "berms" left by strip tillage implements. Corn yields after strip tillage have been at least as good as those after full-width tillage systems that eliminate most residue cover after soybean. Strip tillage permits most of the erosion benefits of no-till with less risk of delayed planting or poor corn plant establishment (particularly on fine-textured or poorly drained soils).

Fall strip tillage was estimated to be adopted on 150,000 corn acres in 2002. It represents between 5 and 15 % of the so-called "no-till acres" determined annually by a transect survey in each county in Indiana.

## **Measuring Competitiveness of U.S. Pork Market**

The pork slaughter industry has become extremely concentrated leading to worries about imperfect competition on the part of hog packers. Dr. Jason Henderson at the Kansas City Federal Reserve Bank, along with a Purdue University economist, estimated the aggregate degree of market power for the hog slaughter sector in the United States in both the live hog market and the wholesale pork market. They found that substantial market power exists in the wholesale pork market, but did not find evidence of direct market power in the live hog market. Market power in the wholesale pork market does, however, tend to depress the demand for live hogs and lower prices.

On average, they reported that wholesale pork prices are inflated by as much as 49 percent due to imperfect competition. This measure of imperfection has implications for farmers who are interested in downstream investment because it means that existing packers may have a lot of room to undercut producers who make such investments. Consequently, it may be difficult for such producer action to succeed.

## **Tax Professionals Learn About Tax Changes from Purdue Income Tax School Program**

Major income tax legislation affecting individuals was enacted in 2001. Some provisions were effective for 2001, others in 2002 and still others in later years. This recent legislation adds greater complexity to the income and self-employment tax laws and regulations making it more difficult for individuals and small businesses to comply with the law. Purdue Extension, in cooperation with the Internal Revenue Service and the Indiana Department of Revenue, developed educational materials and presented programs to update tax professionals on the new law, regulations and procedures. In addition to information enabling taxpayers to comply with the law, educational materials designed to help individuals understand and evaluate their management alternatives were developed. Two-day programs were held in 11 locations in Indiana and three, four-hour programs focused on agricultural tax issues. A two-hour program for farmers was presented on the Indiana Higher Education Television System network.

Purdue Extension, together with the Internal Revenue Service and Indiana Department of Revenue taught nearly 1,250 tax professionals about tax law changes at 11 two-day programs. These tax professionals filed over 39,000 farm returns, about two-thirds of all the farm returns filed in Indiana, and over 305,000 non-farm federal returns. Over 70 percent of the individuals responding rated the program as "excellent" or "very good". The three, four-hour programs were attended by 130 tax professionals filing about 100 farm returns each. Clearly, the research-based tax education materials have a profound impact on the filing of farm and non-farm tax returns in Indiana.

## **Improving Food Safety in Apple Production**

The Food Quality Protection Act, passed in 1995, mandated that the EPA review potential harmful effects of pesticides used on food crops. Apples, because of their high consumption by children, were targeted as the number one potential source of harmful effects of pesticides on children's health. Indiana apple growers have relied on organophosphate insecticides to manage many serious pests that attack their crop. The EPA targeted organophosphate insecticides as the group most likely to cause problems for children's health. As a result of their review, the EPA eliminated several organophosphate insecticides and limited the use of others that apple growers relied upon. There are no readily apparent alternative methods available for insect control on apples. In 1995, Purdue University scientists conducted a pesticide use survey of Indiana apple growers to establish a baseline against which to compare use patterns. Numerous studies have been conducted since then to evaluate possible replacement strategies for organophosphate insecticides. Research results have been shared with apple growers around the country, via extension workshops and meetings, newsletters, and in one on one consultations.

Indiana apple growers have reduced their reliance on dangerous insecticides, which were targeted by the EPA as a leading source of potential risk to children's health. Purdue researchers conducted studies that tested less dangerous alternatives and have provided the results of those studies to apple growers through Extension programs. Several growers indicated they have changed their insecticide use for apple production. One large grower has switched from using organophosphate insecticides to using a much safer fermentation product. Another grower has adopted mating disruption for control of codling moth, eliminating the need for several organophosphate insecticide applications each season.