

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Global Food Security and Hunger

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
133	Pollution Prevention and Mitigation	17%		15%	
601	Economics of Agricultural Production and Farm Management	17%		15%	
606	International Trade and Development	16%		25%	
611	Foreign Policy and Programs	17%		15%	
722	Zoonotic Diseases and Parasites Affecting Humans	16%		15%	
723	Hazards to Human Health and Safety	17%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	10.0	0.0
Actual Paid Professional	2.7	0.0	11.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
25361	0	111217	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
138193	0	782156	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
159844	0	574152	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research in global food security and hunger for this reporting period focused on studying the effectiveness of economic incentives to reduce pesticide use and related environmental effects, and on linking investment spikes and productivity growth in the U.S. food industry, among other topics.

There were no extension projects in this emphasis area for this reporting period.

2. Brief description of the target audience

Policy makers; agricultural, environmental, and rural development economists; students; general public; scientific community

3. How was eXtension used?

Penn State Cooperative Extension supports faculty and staff use of eXtension and promotes communities of practice as a way of broadening sources of information and outreach. Penn State Cooperative Extension supports the professional development offered through eXtension.org. Pennsylvania is represented by 152 eXtension members in 47 of the 73 approved CoPs.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	63

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of invention disclosures submitted.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of people enrolled and/or registered in programs.
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of people enrolled and/or registered in all programs related to Global Food Security and Hunger

Year	Actual
2012	311

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants who were evaluated and demonstrated increased knowledge and skills.
2	Number of participants who were evaluated in a follow-up and who implemented/adopted practices.
3	Number of volunteers that helped with program leadership or delivery.
4	Study of effectiveness of economic incentives to reduce pesticide use and related environmental effects
5	Linking investment spikes and productivity growth in the U.S. food industry

Outcome #1

1. Outcome Measures

Number of participants who were evaluated and demonstrated increased knowledge and skills.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of participants who were evaluated in a follow-up and who implemented/adopted practices.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of volunteers that helped with program leadership or delivery.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Study of effectiveness of economic incentives to reduce pesticide use and related environmental effects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Chemical pesticides constitute an important input in crop production. But their indiscriminate use can negatively affect agricultural productivity, human health, and the environment. Recently, attention has been focused on the use of economic incentives to reduce pesticide use and its related indirect effects.

What has been done

This work assessed the effectiveness of various economic instruments such as taxes and levies in encouraging farmers to decrease pesticide use and their environmental effects. A policy simulation model was employed using data from Dutch cash crop producers, including two pesticide categories differing in terms of toxicity and pesticides' environmental effects. Four different instruments were selected for evaluation: pesticide taxes, price penalties on pesticides' environmental spillovers, subsidies, and quotas.

Results

The results of the study indicate that even high taxes and penalties would result in a small decrease in pesticide use and environmental spillovers. Taxes that differentiate according to toxicity do not lead to substitution of high- with low-toxicity pesticides. Subsidies on low-toxicity products are not able to affect the use of high-toxicity products. Pesticide quotas are more effective in reducing pesticide use and environmental spillovers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
723	Hazards to Human Health and Safety

Outcome #5

1. Outcome Measures

Linking investment spikes and productivity growth in the U.S. food industry

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

When U.S. food companies invest in new or improved factories and facilities, their leaders need to understand how productivity is likely to grow. There are differences in productivity growth and investment spike patterns across different subindustries and the food manufacturing industry in general.

What has been done

This study examined empirically the widely assumed relationship between productivity and investment spikes by means of a rich U.S. Census Bureau plant-level (factory-level) data set. This link was investigated without imposing any causal relationship between productivity growth and investment for the U.S. food manufacturing industry.

Results

There was significant variation in productivity growth among plants in the same industry. Productivity growth at the industry level differed from growth measurement based on a quartile group of plants.

There was strong evidence of a link between productivity growth and investment age in existing plants. Results showed that productivity growth increases after investment spikes over time and then trails off, even after controlling for plant fixed effects in most of the plants, suggesting a plant-level efficiency gain or learning effect.

Efficiency and the learning period associated with investment spikes differed across industries. The meat and dairy industry plants saw the positive effects right away once the new technology was adopted. This suggests that these plants experience an immediate increase in efficiency, or the new technology learning period is relatively short. However, for all food industry plants in general, the impact of investment spike on productivity growth was positive but gradually declined after an investment spike, suggesting that the learning period is longer and productivity benefits from these investments are realized more slowly.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Competing Programmatic Challenges
- Other (Extramural Funding)

Brief Explanation

Reduced State funding impacted both the research and extension functions of the College of Agricultural Sciences and resulted in retirements and layoffs of key faculty and staff across all areas of the College.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

There are no extension projects in this emphasis area for this reporting period, so we are not reporting on evaluation.

Key Items of Evaluation

See highlights of state-defined outcomes in this planned program.