

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
606	International Trade and Development	35%		36%	
611	Foreign Policy and Programs	25%		46%	
722	Zoonotic Diseases and Parasites Affecting Humans	40%		18%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	1.9	0.0	10.1	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
126227	0	184016	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
309869	0	1093480	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
399148	0	1009792	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

US food security depends upon global food security. A variety of AES projects address global food security head on, and many of our extension programs focus on food security and hunger issues, albeit

primarily in the US as one component of the world situation. We have initiated a program called Ag2Africa (<http://agsci.psu.edu/international/programs/ag2africa>), which not only complements a Penn State-wide effort in Africa but also reinforces the objectives of the US government's Feed the Future initiative. We have continued work on stress tolerance in corn and beans in southern Africa, with a focus on work in South Africa, Mozambique, and Malawi (<http://roots.psu.edu/ukulima>). Tools for high-throughput phenotypic screening are being combined with participatory breeding in local communities. Biological sciences and plant breeding are coupled with social sciences and adoption of new technology. Our scientists were engaged with mapping of the cacao genome; this knowledge is being put to use in identifying improved tree varieties, particularly trees with disease resistance traits that will minimize pesticide requirements. Cocoa production is generally a cash crop, but a reliable income source clearly reduces food insecurity in those communities. Furthermore, we have continued to collaborate on cropping system diversity within cacao plantations, which addresses food security issues for the families and communities involved. We hosted the first International Conference on Pollinator Biology, Health and Policy, which attracted experts in pollination from 14 countries. Pollinator preservation and pollinator biodiversity are key issues for sustainability of food supplies in developing economies just as they are in developed countries. Research results led to changes in the OECD/FAO AGLINK-COSIMO economic model of global agricultural markets, which is used by OECD and FAO to estimate the impacts of agricultural policy reforms and to make projections for global agricultural markets. At a more local level, CES educational programs on Hunger Gardens, community food systems, Harvest 4-Health, economical nutrition, and food security focused programs will contribute to this federal initiative. We will continue to focus resources on CES programs that complement the global initiatives of our research agenda.

2. Brief description of the target audience

The food and agriculture sector audience is very diverse and complex and includes a wide range from producers to consumers. Targeted audiences include farmers who raise small fruit, tree fruit, vegetables, or agronomic crops used for human food, agronomic crops used for animal feed, dairy producers, livestock producers, poultry producers, aquaculture producers, and other specialty crop and unique food product producers; commodity organizations that represent the various crop and animal food products and the distribution of these products; companies that process and manufacture food from the raw materials; and local, state, and federal agencies who have interest or responsibility for the safety and security of food products. Within the food service area, restaurant, institutional food preparation, grocery stores, and food serving entities are a targeted audience specifically for safe food handling and preparation education from Extension. The consuming public, every person, is also a target audience; including resource limited individuals and families. Educational programs teach individuals about diet, nutrition, healthy eating, food budgeting, and food safety. Global populations, developing and stressed nations, and the agriculture commodity producers and consumers world-wide represent a new audience that is benefiting from our research and outreach. We also work with plant breeders in the public and private sectors to drive traits deriving from our research into the marketplace. Multinational agricultural organizations take advantage of our work in refining their modeling capabilities for policy and market implications.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA}	{NO DATA}	{NO DATA}	{NO DATA}
Actual	3727	12468	9	0

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

Patent Applications Submitted

Year: 2010
 Plan:
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	0	0	45

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of invention disclosures

Year	Target	Actual
2010	{No Data Entered}	0

Output #2

Output Measure

- Number of people enrolled and/or registered in programs

Year	Target	Actual
2010	{No Data Entered}	4761

Output #3

Output Measure

- Number of research projects completed

Year	Target	Actual
2010	{No Data Entered}	0

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 implement/adopt practices
3	Number of volunteers that helped with program leadership or program delivery

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	1655

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is no one who is not affected by the availability of food. For developed countries, the issue is the cost of food relative to spendable income. In developing countries, food availability may mean the difference between life and death. Hunger is present in many nations, in many geographic locations, and as the result of many factors. Research and Extension provide information to help individuals feed their families. Varietal modification and selections based on local environmental conditions including moisture, nutrients, and pests can be modified through research. Everyone should have access, at all times, to enough food to ensure a healthy population.

What has been done

A variety of research projects in plant and animal production minimizes the effects of pests, moisture, and nutrients on sustainable yields. Preparedness education assures the short-term health and sustainability of individuals affected by disastrous events.

Results

Emergency preparedness training, utilizing more than 300 local human service providers, delivered training to over 1,200 special populations in rural PA.

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development
611	Foreign Policy and Programs

Outcome #2

1. Outcome Measures

Number of participants who were evaluated in a follow up and who implement/adopt practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local Human Service Providers support the training of special populations to become better prepared for adverse events.

What has been done

Train-the-trainer by extension to over 200 Human Service providers. These agency representatives, in turn, present the training to their clientele.

Results

Participant Evaluations -- n = 948 99% indicated that the information presented will help them become better prepared for an emergency; 26% of the participants indicated that they would implement all six actions as the result of this program; 66% of the participants indicated that they would implement 3 or more actions as the result of this program. Agency Evaluations -- n = 300. 314 representatives from 111 agencies participated in one of the 26 different agency training presentations; 94% of the agency representatives indicated the importance of the ability of special populations in their community to be better prepared for disaster or a pandemic as moderately (17%) or very important (77%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development
611	Foreign Policy and Programs

Outcome #3

1. Outcome Measures

Number of volunteers that helped with program leadership or program delivery

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	350

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

227 agencies have stepped forward and agreed to have their staff trained by Extension Educators and then present this preparedness information directly to their clientele or invite Extension Educators to present the material to their clientele.

What has been done

Over 2,500 special population clientele have received this training.

Results

94% of the agency representatives indicated the importance of the ability of special populations in their community to be better prepared for disaster or a pandemic as moderately (17%) or very important (77%). 93% of the agency representatives (279) indicated that they believe that their agency can help special populations in their community become better prepared for disasters or a pandemic event. Only 3% (9) representatives did not believe that their agency can help special populations in their community become better prepared for disasters or a pandemic event.

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development
611	Foreign Policy and Programs

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Extramural Funding)

Brief Explanation

Resources allocated to support research and extension are stressed in a changing economy. Genetic and biometric advances in breeding and varieties have a direct correlation to yield and sustainability. Climate change and changing weather patterns, which results in local to national environmental variations, result in immediate changes in yield and longer term challenges for sustainability. Weather anomalies such as extreme drought, severe cold, ice, hurricanes, tornadoes, hail, early and late frost, flooding, earthquakes, etc., will all have a local to regional impact on productivity and yield. Political conditions affect local to national populations negatively as food shortages lead to hunger. Invasive and new pests and diseases typically have a negative effect on production and sustainability. The world economy, national economies, and the vitality of local communities can have a negative effect on the ability of individuals and families to afford adequate, safe, and nutritious food. Increased emphasis on environmental impact may affect current and future production practices. The economy and availability of energy sources will have a direct effect on productivity, processing, distribution, and availability of food for everyone. Economically challenged populations will be more dramatically affected and may need to be addressed uniquely.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

Participant Evaluations -- n = 948 . 99% indicated that the information presented will help them become better prepared for an emergency. 26% of the participants indicated that they would implement all six actions as the result of this program. 66% of the participants indicated that they would implement 3 or more actions as the result of this program. 46% said they would Create a Support Network. 46% said they would Make a List of Personal Limitations. 58% said they would Create a Communication Plan. 76% said they would Build a Disaster Kit. 59% said they would Complete a Medical Information Form. 69%

said they would Encourage Someone Else to Become Better Prepared. Agency Evaluations -- n = 300. 314 representatives from 111 agencies participated in one of the 26 different agency training presentations. 94% of the agency representatives indicated the importance of the ability of special populations in their community to be better prepared for disaster or a pandemic as moderately (17%) or very important (77%). 93% of the agency representatives (279) indicated that they believe that their agency can help special populations in their community become better prepared for disasters or a pandemic event. Only 3% (9) representatives did not believe that their agency can help special populations in their community become better prepared for disasters or a pandemic event. The level of awareness about what to do about preparing for a disaster or pandemic increased from 46% of those who knew what to do or already had a kit and a plan, to 88% after the agency presentation. 92% of the agency representative indicated that the PowerPoint presentation made sense or was clearly presented and explained. 90% of the agency representative indicated that the training material was appropriate for their clientele. 85% of the agency representative indicated that they felt comfortable or very comfortable using this material to present to their clientele. 68% of the agency representatives indicated that they will probably (31%) or will (37%) present the material in the very near future. 83% indicated that they will work with Cooperative Extension again in the future, probably (32%) or will definitely look for opportunities (51%).

Key Items of Evaluation

Implementation of the US Government Feed the Future initiative should be a key goal in the coming year. US Land-Grant and agricultural universities possess extraordinary capacity that must be incorporated into a successful program.