

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Plant Health and Pest Management

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
102	Soil, Plant, Water, Nutrient Relationships	5%			
205	Plant Management Systems	10%			
211	Insects, Mites, and Other Arthropods Affecting Plants	10%			
212	Pathogens and Nematodes Affecting Plants	15%			
213	Weeds Affecting Plants	5%			
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%			
215	Biological Control of Pests Affecting Plants	10%			
216	Integrated Pest Management Systems	40%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	2.5	0.0	0.0	0.0
Actual Paid Professional	3.8	0.0	0.0	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
274358	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
71429	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
78807	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The University of Guam Cooperative Extension Service's Plant Health and Pest Management (PHPM) group performed educational outreach to the public sector (local farmers, homeowners, and students), private sector (crews and managers of plant nurseries, landscape companies, and golf courses), and government agencies (Department of Agriculture, EPA, and Parks and Recreation) by providing space, equipment, and expertise for publications, courses and workshops. The group gave advice and instruction through publications, trainings, workshops, brochures, fact sheets, focus groups, television, radio, and one-on-one interventions on various subjects: pesticide application, Integrated Pest Management (IPM) strategies, plant propagation, insect identification, weed identification, plant disease identification, soil nutrition and fertilizers, invasive species, and grafting. The group also provided plant disease diagnostics and insect identification for the island through the Cooperative Extension Service's Plant Health Clinic (plant disease and entomology laboratories).

The PHPM group continued its research and outreach education on Guam's declining (dying) Ironwood trees (*Casuarina equisetifolia*). This endeavor has been accomplished through a grant from the Western Sustainable Agriculture Research and Education (WSARE) program. A comprehensive three-day workshop was conducted on tree care. Individuals attending this workshop were from forestry, landscaping companies, golf courses, hotels, and various local government agencies. Each participant received a 77 page manual authored by our group titled "Plant Health Care: Guam's Ironwood and other Trees of the Marianas." A fourth workshop (Plant a Tree: Save an Island) was held for the general public on that Saturday. Participants learn the basics of how to plant and care for trees. At the University of Guam Charter Day in March 2012, over 500 students, teachers, farmers, and the general public were educated on ironwood tree decline (IWTD) and Ironwood tree care using interactive displays.

Members of the PHPM group are working with UOG biologists and government agencies such as the Invasive Species Council and the Guam Biosecurity Council to minimize damage to Guam's agriculture and natural ecosystems caused by invasive species. Recent invasive species include the little red fire ant, which delivers painful stings to humans and other animals and a new tomato virus. In support of the Environmental Impact Statement addressing the relocation of marines to Guam and the CNMI, the U.S. Department of Defense (DOD) has provided funding to the PHPM group through the Micronesia Biosecurity Plan (MBP) to proactively address terrestrial and marine invasive species risks to Micronesia. This unprecedented effort will help address both invasive species threats to the Military mission and invasive species concerns raised by the Micronesian Chief Executives and federal and regional partners. Our group have partnered with the UOG Center for Island Sustainability to help perform a peer review and write an implementation plan for the MBP.

2. Brief description of the target audience

The target audience for this program includes local farmers, homeowners, nurseries, landscapers and golf course superintendents and their crews, teachers, school children, and government agencies

3. How was eXtension used?

eXtension was used to supplement information for workshops.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3470	20330	718	3050

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

Patent Applications Submitted

Year: 2012

Actual: 1

Patents listed

Devices and methods for detecting and trapping pests

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	4	5	9

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of research papers

Year	Actual
2012	7

Output #2

Output Measure

- # of research citations

Year	Actual
2012	26

Output #3

Output Measure

- # of extension fact sheets or articles

Year	Actual
2012	9

Output #4

Output Measure

- # of workshops/trainings/classes

Year	Actual
2012	30

Output #5

Output Measure

- # of brochures

Year	Actual
2012	11

Output #6

Output Measure

- # of research or new technology reports

Year	Actual
2012	6

Output #7

Output Measure

- # of one-on-one interventions

Year	Actual
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2012 2870

Output #8

Output Measure

- # of surveys

Year	Actual
2012	3

Output #9

Output Measure

- # of focus groups

Year	Actual
2012	1

Output #10

Output Measure

- # of news media activities (TV and radio)

Year	Actual
2012	18

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	% of participants gaining skills in identification of insects and related pests
2	% of participants gaining skills in identification of plant diseases
3	% of participants gaining skills in identification of weeds
4	% of participants gaining knowledge about pesticides and their application
5	% of participants reducing indiscriminate use of chemical pesticides
6	% of participants adopting some established IPM practices

Outcome #1

1. Outcome Measures

% of participants gaining skills in identification of insects and related pests

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local farmers, homeowners, nurseries, landscapers and golf course superintendents and their crews, students, teachers, government agencies and the general public. Identification is essential in determining the difference between beneficial insects and insect pests, and to insure that proper management practices for IPM and pesticide application are employed. These practices lead to improved plant health and crop yield, and reduce negative impacts on human and wildlife health and the environment.

What has been done

Pesticide Safety Education Program (PSEP) Basic Core pesticide training workshops were conducted by the CES Plant Health group two times during the year. Identification of insects and related pests were major components of these trainings.

Results

Sixty five percent of participants passed EPA licensing tests for the Basic Core.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

% of participants gaining skills in identification of plant diseases

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local farmers, homeowners, nurseries, landscapers and golf course superintendents and their crews, teachers, students, government agencies and the general public. Plant disease identification of biotic and abiotic caused diseases are essential to insure that proper management practices for IPM and pesticide application are employed. These practices lead to improved plant health and crop yield, and reduce negative impacts on human and wildlife health and the environment.

What has been done

Pesticide Safety Education Program (PSEP) Basic Core pesticide training workshops were conducted by the CES Plant Health group two times during the year. Identification of plant diseases were major components of these trainings.

Results

Sixty five percent of participants passed EPA licensing tests for the Basic Core.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #3

1. Outcome Measures

% of participants gaining skills in identification of weeds

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local farmers, homeowners, nurseries, landscapers and golf course superintendents and their crews, teachers, students, government agencies and the general public. Identification of specific weeds are essential to insure that proper management practices for IPM and pesticide application are employed. These practices lead to improved plant health and crop yield, and reduce negative impacts on human and wildlife health and the environment.

What has been done

Pesticide Safety Education Program (PSEP) Basic Core pesticide training workshops were conducted by the CES Plant Health group two times during the year. Identification of weed pests were major components of these trainings.

Results

Sixty five percent of participants passed EPA licensing tests for the Basic Core.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

% of participants gaining knowledge about pesticides and their application

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Local farmers, homeowners, nurseries, landscapers and golf course superintendents and their crews, teachers, students, government agencies and the general public. Knowledge of pesticides and their application is crucial for the health and safety of the applicator, consumers of produce, the health of humans and wildlife, and the environment.

What has been done

Pesticide Safety Education Program (PSEP) Basic Core pesticide training workshops were conducted by the CES Plant Health group two times during the year. Pesticides and pesticide application were major components of these trainings.

Results

Sixty five percent of participants passed EPA licensing tests for the Basic Core.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #5

1. Outcome Measures

% of participants reducing indiscriminate use of chemical pesticides

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

% of participants adopting some established IPM practices

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes

Brief Explanation

Indirectly, outcomes five and six were not measured due to appropriations to EPA being cut for the Pesticide Safety Education Program (PSEP). Previously, EPA subcontracted the training and testing to the University of Guam Cooperative Extension Services. While the training (education) for PSEP is still performed by Cooperative Extension as a community service, the testing is now performed and under the purview of EPA. These two outcomes (survey questions) were on Cooperative Extension tests but are not included in the current EPA tests. Next year, these survey questions will be asked during training.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}