

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Global Food Security and Hunger - Sustainability of Small Scale Swine and Poultry Farms on Guam

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
302	Nutrient Utilization in Animals	20%			
307	Animal Management Systems	80%			
	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	1.2	0.0	0.0	0.0
Actual Paid Professional	1.2	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
94413	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
40786	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Activities conducted for this program in 2012 include the following: 1. In partnership with UOG-CES

(education and outreach) and the Department of Agriculture (service support) feeding trials were conducted on high protein forages and local feeds on goats; 2) conducted workshops and training sessions to local and regional producers at the facility; 3) delivered services and products (Department of Agriculture) and educational and technical support (Guam Cooperative Extension Service) to local and regional producers; and 4) conducted applied research and field experiments at the facility and on farmers farms. Forage demonstration plots were conducted at the university campus, Guam Department of Agriculture Station and a private farm.

2. Brief description of the target audience

Primary target audiences are local clients, including former, existing and potential new animal producers (swine, goats and layer) both small-scale and subsistence level. On Guam over the past decade, 1,000+ new agriculture land leases have been signed by the Chamorro Land Trust with many of the producers possessing limited resource in desperate need of education and technical support programs to support their agricultural efforts.

Second target groups are the local and regional agricultural professionals. Regional workshops related to animal production were conducted at the demonstration farm. Extension agents and local and regional professionals from the different Land Grant Institutions from Micronesia and Northern Mariana Islands participated in activities at the site. Guam continues to be the source of swine breeders and replacement chicks for these two areas.

A third audience are University agricultural students. The demonstration farm was utilized as laboratory classroom for students enrolled in agriculture courses (Introduction to Agriculture and Introduction to Animal Science) at the University of Guam.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	100	200	500	200

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	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of workshops

Year	Actual
2012	4

Output #2

Output Measure

- # of extension publications

Year	Actual
2012	2

Output #3

Output Measure

- # of field trips

Year	Actual
2012	2

Output #4

Output Measure

- # of applied research conducted in demonstration site

Year	Actual
2012	1

Output #5

Output Measure

- # of visitors

Year	Actual
2012	130

Output #6

Output Measure

- # of one to one contacts

Year	Actual
2012	125

Output #7

Output Measure

- # of request for animal displays

Year	Actual
2012	6

Output #8

Output Measure

- # of 4-H / Military Kids programs conducted at site

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of producers increasing in knowledge and husbandry skills on an integrated to approach to animal and plant farm operations (short term)
2	# of producers adopting demonstrated practices
3	# of producers practicing regular replacements of broodstocks (medium term)
4	# of producers decreasing in feeding imported commercial feeds (medium term)
5	% increase in sustainable small-scale farms (long term)

Outcome #1

1. Outcome Measures

of producers increasing in knowledge and husbandry skills on an integrated to approach to animal and plant farm operations (short term)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Goat production was included in this year's program. The market price of goats have become attractive but the supply is becoming less. One of the reasons of low production is poor nutrition. The feeding systems of grazing and tethering goats on low quality pasture results in poor growth rate and low kidding rate.

What has been done

Varieties of high protein containing forages such as pigeon pea, mulberry, Moringa sp. and Leucaena sp. were utilized in a feeding trial to demonstrate the effects of these high quality forages to goat performance. Local plant materials such as breadfruit, coconut and taro were processed to goat feed to substitute for commercial goat feed.

Results

Goats fed with these forages showed much improved health, better physical appearance (shiny haircoat) and no digestion problems such as bloat, diarrhea. Goat producers saw first-hand results and were impressed by what they saw and observed. One farmer started to propagate forages in his farm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #2

1. Outcome Measures

of producers adopting demonstrated practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Goat producers have this notion and concept that as long as there is green vegetation in the pasture area, the goats will survive and be productive. Regardless if their body conditions show emaciation, untriftness and low production. There is no strong motivation to have their pasture area be improved by planting quality grasses or legumes.

What has been done

Survey was made on what high protein forages and legumes are already on Guam to avoid introducing new specie. These forages were propagated and grown for demonstration purposes and observe for biomass, palatability and effects on health and digestive disorders. Seedlings and cuttings were given to producers to have them try planting in their farm.

Results

One farmer actually planted pigeon pea in his farm out of the 20 farmers that were given forage materials to plant. Different reasons were given why they did not plant. In spite of the fact that some of these farmers saw the positive effects of feeding these forages to the goats.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #3

1. Outcome Measures

of producers practicing regular replacements of broodstocks (medium term)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Getting replacement broodstocks will always be a big problem on Guam. The most recent is getting import permits to bring in frozen bull and boar semen. It is most practical to bring the genetic materials compared to bringing in live bulls or boars. It is less risky in terms of introducing new diseases to the island and most cost effective.

What has been done

Livestock producers, animal health professionals, animal scientists and Government of Guam officials held several meetings to change the existing regulations and laws of semen imports. Changes that won't endanger the current animal health status but doable import requirements as being practiced by the cattle and swine industry in the US mainland. Orders of both bull and boar semen are ready to be shipped to Guam

Results

After the final draft of the changes were made, we are all awaiting for the amended regulation to be signed and approved by attorney general and other higher authorities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #4

1. Outcome Measures

of producers decreasing in feeding imported commercial feeds (medium term)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Prices of imported feeds continue to increase and will go higher as shipping costs continue to rise. With the prices going up, the quality of the feeds also decreases because the sales are not that fast that re-order of new" feeds" by commercial feedstores gets delayed. Thus, it becomes a double misery for the producers.

What has been done

Studies to analyze potential feeds for livestock continued and expanded to include goats. More plant materials and local forages were analyzed for nutrient contents.

Results

Feed formulation from local ingredients is now possible with all the information gathered from analysis of nutrient contents of these plant resources. Mixing local feeds and commercial feeds showed promising results in terms of savings in feed costs without sacrificing animal performance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #5

1. Outcome Measures

% increase in sustainable small-scale farms (long term)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Production and management problems still are the main issues of the livestock industry on Guam. Although marketing also contributes to the slow development of the industry. Producers get along by what resources they have and information they can get. They tend to do things their own ways.

What has been done

Constant demonstration of what can be done with local resources available have been the main focus of this program, especially with feed problems. From the basic processing of drying, grinding and mixing to actual feeding trials. These are all doable and results were positive.

Results

Based on the observations made on local feed processing and production, a cooperative effort of producers or individuals may work better than individual producers processing their own feed. Similar to the industry setting that companies make feeds to sell to farmers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Government Regulations
- Competing Programmatic Challenges
- Other (Change in government leaders, farmer adoption of BMP)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Producers who came to see the demonstration sites were convinced and impressed by the results of the applied research on goat nutrition. They saw first hand the benefits and effects of feeding high protein forage to goats. Goats used before the feeding trials were emaciated and nutritionally challenged but the goats greatly improved in health and appearance after months of feeding legumes and supplements of local feeds.

Producers learned the significance of feeding good quality roughage to goats and not just rely on whatever vegetations are in the pasture / tethering area. They are aware of the locally available legumes in the region besides the *Leucaena* sp.

Key Items of Evaluation

Hands-on experiences and first hand information given and provided to producers seem to work best in terms of learning and retaining information to them.