

2008 University of the Virgin Islands Research Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The work conducted by AES scientists is production oriented. The small size of AES and limited physical and fiscal resources limit our ability to expand into new research areas. One area that we acknowledge being insufficient in is economic analysis of our research results which would aid scientists in determining the impact of their work. All research faculty are encouraged to include an economic analysis, where appropriate, in their projects to help determine the potential benefits the work would have for local producers. In some cases this is not possible due to the nature of the project or the area of research. In other cases it is due to a lack of expertise in this area within AES. The second issue has been addressed by developing collaborations with outside resources (VI Dept of Agriculture, UVI Small Business Development Center, professionals at other institutions) for economic and marketing analysis.

The AES Animal Science Program initiated two new Hatch projects. One will evaluate the effect of late weaning on lamb and ewe productivity in an accelerated lambing system. The other project will evaluate cow and calf production traits in beef cattle managed in defined breeding seasons in the USVI. The Animal Science Faculty began collaboration with a CES colleague at the University of Hawaii to conduct small ruminant workshops in Guam and the Northern Marianas Islands as part of a USDA CSREES grant from the Disadvantaged Farmer/Rancher Program. Using information generated at UVI, training and workshops will be provided to livestock producers in the Pacific Islands. Livestock production/management workshops were conducted in partnership with CES and the VI Dept of Agriculture. Information was presented on sheep management to local farmers. The AES cow herd was used as part of a demonstration on low impact animal handling put on by Dr. Ben Bartlett from Michigan State University in cooperation with the VI Dept. of Agriculture Veterinary services office. The Animal Science Program hosted Mr. Ben Forsyth, a Nuffield Scholar, from Australia for several days. Mr. Forsyth was traveling around the globe to visit livestock producers and see how they were working to make their operations sustainable and dealing with a variety of environmental and climate issues. He visited the cattle and sheep research facilities as well as local livestock operations to get an understanding of the issues/problems/limitations/successes associated with livestock production the USVI. Three undergraduate students were mentored in the Animal Science research lab. Two students were supported by funds from the Insular Grants program and another was supported by the VI Dept of Labor. One of the students conducted a research project using thermal imaging as a method to measure of cow body temperature. This project contributed to the data collection for the S-1023 multistate project on heat stress in dairy cattle. The student also presented the results of her research at the UVI Student Research Symposium on the St. Thomas campus in the fall semester of 2008. The vacant staff position in the program was filled and the new person is being trained in the sheep flock management and assisting with data collection. The program joined a multistate project to take over where the Dairy Heat stress project terminated. The research to be conducted will evaluate stress in livestock and how it relates to production traits (W-1173). Hurricane Omar which hit St. Croix in October 2008 had a large impact on the operation of the program. There was a lot of damage to the sheep and cattle research facilities in the form of downed trees, damaged buildings and pens, and broken fences. Some of these repairs have not been completed yet due to slow release of emergency funds and just the magnitude of the damage. It is having some impact on functionality of the programs by limiting pen space in the sheep facility and pastures use in the cattle herd.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	23.0	0.0
Actual	0.0	0.0	17.0	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

Combined External and Internal University External Non-University Panel

2. Brief Explanation

There has been no change made to the process as described in the initial Plan of Work submitted. A scientific peer review process is followed. Scientists submit three copies of their proposals to the Director, who attaches evaluation forms and sends them to three people who are qualified to judge the proposal. At least one of the reviewers is selected from CES. The reviewers are asked to rate the proposals on a scale of 1 to 5, 5 being the highest score, as to relevance and merit of the proposed project to the agricultural sector (justification). The evaluated proposals are then returned to the Director who gives the reviews to the scientist for any needed revisions. The revised proposal is then returned to the Director who verifies the improvements in writing and gives final approval. Scientists are required to publish their results but sometimes the project is completed before the PI has time to publish the results in a peer reviewed journal, so there is a lag between the project and publications. Because of the small staff size and amount of non research related work each faculty an staff end up doing, finding time for writing is difficult for some faculty but we are looking at methods to remedy this, such as collaborating with other institutions to train graduate students and put more emphasis on outputs such as publication in the Faculty Annual Evaluation process.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public

Brief Explanation

The AES Advisory Council meets to discuss issues of concern to the agriculture community and AES scientists continued to work in close contact with farmers as part of several research projects. The Advisory Council is composed of individuals involved in several aspects of agriculture (horticulture, livestock, and farmer's co ops) from both St. Croix and St. Thomas. When needed, new members are recruited by the AES Director based on suggestions of the research faculty and existing members of the council. Research faculty present information on current projects and members of the Advisory Council express their concerns and opinions about what they see as the needs of the agriculture community. Issues are prioritized within discipline based on the input of the Advisory Council members in their role as representatives of the agriculture community. One of the high priority issues that has come up is assistance with marketing programs and educational programs for farmers. The VI Department of Agriculture has a marketing program that is supposed to be assisting farmers and this was mentioned to the Advisory Council. Local farmers groups are trying to work with the VI Dept. of Agriculture to keep this program going. The council was told that the Cooperative Extension service has offered short courses in both plant and animal production to local farmers, with the assistance of AES faculty. Other specific issues within a field of study brought up by the Advisory Council were discussed with the appropriate research faculty. Research faculty use the feedback from the council when developing future grants and research projects. Priority is given to those ideas that are researchable within the capabilities of the research programs at AES and funding sources. Because of the small staff size and limited scope of our programs not all areas can be addressed. In cases where the topic is outside of the AES faculty area of expertise efforts are made to get information for the stakeholders from other sources and put the stakeholders in contact with other people, either within UVI or outside, who can provide assistance. The small community and high level of contact with farmers help to provide continuous input and feedback from the community regarding the work being done by AES as well as providing a means for identifying the concerns of the agricultural community. The demographics of the USVI are such that all of our stakeholders would qualify as under served or under represented populations based on factors such as race, gender, economic status and farm size.

Workshops and seminars on various topics (horticulture, animal science, aquaculture and agronomy) were conducted and feedback was received from individuals, cooperatives and agribusinesses. Question and answer sessions at each event are used to allow the community to bring up issues that they feel are important to the agriculture community and this allows the AES scientists to get input on their research as well. Because of the small size of the agriculture community in the USVI, anyone who contacts AES regarding information on agriculture is considered a stakeholder. In most cases, input from stakeholders is directed at a specific program and the program leader is charged with deciding how to consider the input and what action to take. The response may be just a simple matter of providing information to the stakeholder in the form of verbal communication or technical bulletins. In other instances it may involve a visit to the farm to provide technical assistance with a crop (plant or livestock) in conjunction with the appropriate CES personnel.

The newly formed Virgin Islands Farmers Cooperative is taking a different approach to promoting agriculture in the USVI. They are developing plans for small scale crop production and are working with the Horticulture program on this. They are also working with the Agronomy and Animal Science Programs to develop hay production for small livestock production using some of the new, higher quality forages being evaluated.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

Use Advisory Committees

Other (Informal contacts with producers)

Brief Explanation

AES is available to any individual or group who approaches AES with a question or a proposed research idea. Some of these ideas come through the Advisory Council, whose members are on other community groups or co ops and bring them forward at the meetings. In some cases AES faculty have to mention that we are here for research and we direct people with questions or concerns about outreach activities to the appropriate Cooperative Extension Service staff.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Other (Clients contact AES with specific requests)

Brief Explanation

Stakeholder input is collected by the pertinent program, depending on the source and area of interest. In many cases stakeholders come to AES faculty and staff with questions or concerns and we can provide an answer in short order. In other cases we are able to get them the information after doing a bit of searching. We are also able to direct them to outside resources such as the VI dept of Agriculture or other federal agencies or NGOs that may have the information they are seeking.

3. A statement of how the input was considered

- To Identify Emerging Issues
- Redirect Research Programs
- To Set Priorities

Brief Explanation

Input is used when developing future research projects. In some cases an idea is not really researchable but we make an effort to provide some feedback to the stakeholder on these topics. In other cases where there is a researchable idea brought to us we can incorporate it into current projects or into new projects. Sometimes the lag time between getting an idea and being able to implement the research project to come up with an answer is frustrating to the stakeholders, but when the information is finally generated they are glad to have it.

Brief Explanation of what you learned from your Stakeholders

We learned that there is still a good bit of confusion about the roles of AES and CES in the eyes of the stakeholders, both internal and external. The local community as well as the central administration of the University are still not clear on the separate functions of AES and CES as part of the land grant system. In many cases stakeholders approach AES about outreach activities and we have to direct them to the CES offices. In addition, there is some pressure from the central administration for AES faculty and staff to conduct outreach activities in spite of there being no joint appointments between AES and CES that would allow us to do these activities.

We also learned that our stakeholders have very specific ideas of what they would like to see AES doing. They provide valuable input on crop varieties that they would like to see evaluated for local production as well as issues relating to minimizing water usage for crop production.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	868497	0

2. Totaled Actual dollars from Planned Programs Inputs

Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	0	742674	0
Actual Matching	0	0	462353	0
Actual All Other	0	0	0	0
Total Actual Expended	0	0	1205027	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years

Carryover	0	0	0	0
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V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Animal Science - Small Ruminants
2	Animal Science - Dairy Cattle
3	Animal Science - Beef Cattle
4	Plant Biotechnology
5	Plant Germplasm Conservation and Enhancement
6	Agronomy - Tropical Hay Production
7	Horticulture
8	Irrigation
9	Aquaculture - Biofloc Systems
10	Aquaculture - Aquaponic Systems
11	Whole Farm Systems Research

Program #1**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Animal Science - Small Ruminants

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals			40%	
303	Genetic Improvement of Animals			10%	
307	Animal Management Systems			50%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual	0.0	0.0	3.0	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
0	0	1037	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	629	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Sell breeding stock to local farmers and lambs for meat market
- Present data at conferences and seminars

2. Brief description of the target audience

The target audience of this research is sheep producers in the US Virgin Islands and the greater Caribbean area, as well as producers in all tropical areas of the world.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Abstracts presented at conferences

Year	Target	Actual
2008	0	1

Output #2**Output Measure**

Journal articles

Year	Target	Actual
2008	0	0

Output #3**Output Measure**

Livestock Production Workshops

Year	Target	Actual
2008	{No Data Entered}	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of local farmers using crossbred sheep
2	Number of sheep producers managing their flocks with an accelerated lambing system

Outcome #1**1. Outcome Measures***Not reporting on this Outcome for this Annual Report***2. Associated Institution Types****3a. Outcome Type:****3b. Quantitative Outcome**

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)**External factors which affected outcomes**

Economy

Brief Explanation

Budgets have been flat, which amounts to a decrease with increases in operating expenses (utilities, feeds, fuel, repairs and maintenance of facilities). Sales of sheep to local producers has been slowed by the economy and revenue generation is lower than other years.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

Other (Informal discussions and feedback at workshops)

Evaluation Results

Local sheep producers are interested in expanding their operations and see the use of the accelerated lambing and crossbreeding as an acceptable method. They still realize that there is some value of the local sheep breeds and are aware of the fact that they can't crossbreed all of their sheep.

Key Items of Evaluation

More and more farmers are getting into small ruminant production and they continue to come to AES for advice and input, as well as buying breeding stock from us.

Program #2**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Animal Science - Dairy Cattle

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
305	Animal Physiological Processes			20%	
306	Environmental Stress in Animals			80%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.5	0.0
Actual	0.0	0.0	0.5	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
0	0	53835	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	37411	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

•Conduct research project •Mentor student •Participate with collaborators •Present results at a conference

2. Brief description of the target audience

Target audiences included cattle producers in the tropics and southern U.S. and other researchers studying heat stress

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Abstracts presented

Year	Target	Actual
2008	1	1

Output #2**Output Measure**

Students mentored

Year	Target	Actual
2008	{No Data Entered}	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of collaboratrs on the project using coat color in their study design
2	Mentoring students

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Economy

Appropriations changes

Other (No dairy cattle the VI.)

Brief Explanation

The dairy industry on St. Croix declined and is now out of existence. The multistate project for this research was terminated at the end of FY 08 due to dwindling participation by members of the group.

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

1. Evaluation Studies Planned

Retrospective (post program)

Evaluation Results

The student benefited from this research because she was able to present her data at a Student Research Symposium. The data was also incorporated into a larger data to be presented at a scientific conference in FY 09.

Key Items of Evaluation

Program #3**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Animal Science - Beef Cattle

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
305	Animal Physiological Processes			10%	
306	Environmental Stress in Animals			70%	
307	Animal Management Systems			20%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	1.0	0.0
Actual	0.0	0.0	1.0	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
0	0	12229	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	8497	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct experiments
- Present results at conferences
- Partner with collaborators

2. Brief description of the target audience

Target audiences would include beef cattle producers in the tropics and southern US.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Abstracts

Year	Target	Actual
2008	0	1

Output #2**Output Measure**

Journal articles

Year	Target	Actual
2008	0	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of farmers using temperament to select cattle
2	# of farmers using managed breeding for their cattle operations in the VI

Outcome #1**1. Outcome Measures***Not reporting on this Outcome for this Annual Report***2. Associated Institution Types****3a. Outcome Type:****3b. Quantitative Outcome**

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)**External factors which affected outcomes**

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

Because of seasonal rainfall and limited forage at the ranch location, cattle are grazing forage that is limited in quantity during much of the year. The herd was donated to UVI and central administration expects it to be self supporting so costs are monitored closely. Priorities are evaluated when it comes to expenses and decisions are made to get the most benefit from the limited funds available.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

Other (informal discussion with local cattle producers)

Evaluation Results

Local producers are interested in using managed breeding but in most cases they don't have the required level of management or resources.

Key Items of Evaluation

Program #4**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Plant Biotechnology

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms			20%	
204	Plant Product Quality and Utility (Preharvest)			40%	
206	Basic Plant Biology			40%	
Total				100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	1.5	0.0
Actual	0.0	0.0	1.0	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
0	0	20369	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	13021	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Develop genetically enhanced plants
- Develop efficient micropropagation systems
- Present data at conferences
- Develop fact sheets for the local population
- Publish results in scientific journals

2. Brief description of the target audience

The target audiences are the local crop farmers and back yard growers. These producers normally have less than two acres under production. The Virgin Islands has only three producers with total production acreage over two acres.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Number of publications

Year	Target	Actual
2008	1	2

Output #2**Output Measure**

Number of journal articles

Year	Target	Actual
2008	{No Data Entered}	2

Output #3**Output Measure**

Workshop/Seminars

Year	Target	Actual
2008	{No Data Entered}	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of local farmers growing micropropagated pineapple
2	Number of local farmers and back yard growers applying the developed techniques to their production systems.

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area

V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Other (Fed certification of transgenics)

Brief Explanation

Hurricane Omar was an unexpected factor but turned out to be a benefit in being able to select hurricane wind tolerant papaya lines.

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

1. Evaluation Studies Planned

Retrospective (post program)

Other (Informal discussions)

Evaluation Results

Key Items of Evaluation

Program #5**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Plant Germplasm Conservation and Enhancement

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources			80%	
205	Plant Management Systems			20%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	1.5	0.0
Actual	0.0	0.0	1.0	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
0	0	69176	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	62777	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Sell papaya seeds to local framers
- Present data at conferences
- Develop fact sheets for local growers
- Publish results in scientific journals

2. Brief description of the target audience

The target audiences are the local crop farmers and back yard growers. These producers normally have less than two acres under production. The Virgin Islands has only three producers with total production acreage over three acres.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Number of publications

Year	Target	Actual
2008	1	0

Output #2**Output Measure**

Abstracts presented at conferences

Year	Target	Actual
2008	{No Data Entered}	1

Output #3**Output Measure**

Workshops/seminars

Year	Target	Actual
2008	{No Data Entered}	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of local farmers growing selected plant varieties

Outcome #1**1. Outcome Measures***Not reporting on this Outcome for this Annual Report***2. Associated Institution Types****3a. Outcome Type:****3b. Quantitative Outcome**

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)**External factors which affected outcomes**

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

Hurricane Omar in October completely destroyed the replicated trial being grown at the time.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

During (during program)

Evaluation Results**Key Items of Evaluation**

Program #6**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Agronomy - Tropical Hay Production

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)			40%	
205	Plant Management Systems			60%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	4.0	0.0
Actual	0.0	0.0	3.0	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
0	0	142569	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	69422	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Sell hay to local framers
- Present data at conferences
- Publish results in scientific journals
- Conduct local and regional seminars

2. Brief description of the target audience

The target audience of this research is local and regional crop and livestock farmers in the U.S. Virgin Islands and the greater Caribbean area as well as producers in all tropical areas of the world.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Abstracts presented at conferences

Year	Target	Actual
2008	0	1

Output #2**Output Measure**

Journal articles

Year	Target	Actual
2008	0	0

Output #3**Output Measure**

Workshops

Year	Target	Actual
2008	{No Data Entered}	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of local farmers utilizing legume hay and adoption of legume hay production techniques by local area farmers and the USVI Department of Agriculture.
2	Number of farmers who utilize cover crop technologies in mixed crop-livestock production systems and the number of farmers who use the tested cover crops for soil improvement

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

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

1. Evaluation Studies Planned

Retrospective (post program)

Evaluation Results

Key Items of Evaluation

Program #7**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Horticulture

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			30%	
133	Pollution Prevention and Mitigation			10%	
202	Plant Genetic Resources			20%	
205	Plant Management Systems			30%	
216	Integrated Pest Management Systems			10%	
Total				100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual	0.0	0.0	0.5	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
0	0	82046	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	49764	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research •
- Present data at conferences •
- Publish results in scientific journals

2. Brief description of the target audience

The target audiences are the local crop farmers and back yard growers. These producers normally have less than two acres under production. The Virgin Islands has only three producers with total production acreage over two acres.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)**Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	{No Data Entered}	{No Data Entered}	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Research publications

Year	Target	Actual
2008	1	0

Output #2**Output Measure**

Abstracts presented at conferences

Year	Target	Actual
2008	1	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Selection of pest and disease resistant cultivars and effect of cover crops on soil characteristics
2	# of farmers using selected cultivars
3	# farmers adopting sustainable production systems

Outcome #1**1. Outcome Measures***Not reporting on this Outcome for this Annual Report***2. Associated Institution Types****3a. Outcome Type:****3b. Quantitative Outcome**

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)**External factors which affected outcomes**

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

This program is being overseen by an acting program leader due to a vacancy in the horticulture faculty position.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

Retrospective (post program)

During (during program)

Evaluation Results**Key Items of Evaluation**

Program #8**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Irrigation

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			30%	
111	Conservation and Efficient Use of Water			30%	
132	Weather and Climate			10%	
205	Plant Management Systems			10%	
405	Drainage and Irrigation Systems and Facilities			20%	
Total				100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual	0.0	0.0	0.5	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
0	0	2137	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	1704	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

-
- Conduct research projects
- Present data at conferences
- Publish results in scientific journals

2. Brief description of the target audience

The target audiences are the local crop farmers and back yard growers. These producers normally have less than two acres under production. The Virgin Islands has only three producers with total production acreage over two acres.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Abstract presented at conference

Year	Target	Actual
2008	1	0

Output #2**Output Measure**

Research publications

Year	Target	Actual
2008	1	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Knowledge of evapo-transpiration crop coefficients and water use efficiency in crop production
2	Knowledge of water requirements in shade crops production
3	# of farmers growing shade crops
4	# farmers adopting irrigation strategies based on soil moisture

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

The program leader vacancy (Assistant Professor - Horticulture) affected progress in this planned program.

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

1. Evaluation Studies Planned

Retrospective (post program)

During (during program)

Evaluation Results

Key Items of Evaluation

Program #9**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Aquaculture - Biofloc Systems

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
307	Animal Management Systems			80%	
403	Waste Disposal, Recycling, and Reuse			20%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.5	0.0
Actual	0.0	0.0	1.5	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
0	0	179638	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	109564	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Conduct training
- Present data at conferences
- Publish results in scientific journals

2. Brief description of the target audience

The target audience is researchers, farmers, entrepreneurs, teachers, development workers and hobbyists. These are categories of people who have accessed our results. The audience is local, national and international.

V(E). Planned Program (Outputs)**1. Standard output measures**

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year Target

Plan: 0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

Abstracts presented at conferences

Year	Target	Actual
2008	1	1

Output #2

Output Measure

Journal articles

Year	Target	Actual
2008	1	1

Output #3

Output Measure

Short course

Year	Target	Actual
2008	{No Data Entered}	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of new farmers anywhere adopting aquaponic technology

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

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

1. Evaluation Studies Planned

During (during program)

Evaluation Results

Key Items of Evaluation

Program #10**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Aquaculture - Aquaponic Systems

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems			40%	
307	Animal Management Systems			30%	
403	Waste Disposal, Recycling, and Reuse			30%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual	0.0	0.0	2.0	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
0	0	179638	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	109564	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Provide training
- Present data at conferences
- Publish results in scientific journals

2. Brief description of the target audience

The target audience is researchers, farmers, entrepreneurs, teachers, development workers and hobbyists. These are the categories of people who have accessed our results. The audience is local, national and international.

V(E). Planned Program (Outputs)**1. Standard output measures**

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Year	Target
Plan:	0
2008 :	0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

Abstracts presented at conferences

Year	Target	Actual
2008	1	3

Output #2

Output Measure

Journal articles

Year	Target	Actual
2008	1	0

Output #3

Output Measure

Short Courses

Year	Target	Actual
2008	{No Data Entered}	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of new farmers anywhere adopting aquaponic technology

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

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

1. Evaluation Studies Planned

During (during program)

Evaluation Results

Key Items of Evaluation

Program #11**V(A). Planned Program (Summary)****1. Name of the Planned Program**

Whole Farm Systems Research

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems			40%	
307	Animal Management Systems			10%	
403	Waste Disposal, Recycling, and Reuse			20%	
601	Economics of Agricultural Production and Farm Management			30%	
	Total			100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	4.0	0.0
Actual	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

- Conduct research project
- Present data at conferences
- Publish results in scientific journals, farmers bulletins and fact sheets

2. Brief description of the target audience

Project terminated

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted****Year Target****Plan:** 0

2008 : 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Abstracts presented at conferences

Year	Target	Actual
2008	1	0

Output #2**Output Measure**

Journal articles, farmers bulletins, fact sheets

Year	Target	Actual
2008	1	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of local farmers who adopt some portion of model farm

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Brief Explanation

This project has been terminated.

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

1. Evaluation Studies Planned

Retrospective (post program)

Evaluation Results

Key Items of Evaluation