

**V(A). Planned Program (Summary)**

**Program # 4**

**1. Name of the Planned Program**

Soil and Water Quality 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	60%		0%	
111	Conservation and Efficient Use of Water	30%		0%	
403	Waste Disposal, Recycling, and Reuse	10%		0%	
	<b>Total</b>	100%		0%	

**V(C). Planned Program (Inputs)**

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.0	0.0
Actual	1.0	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
40816	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

Development and promotion of alternative waste managements systems, mainly The Dry Litter

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Waste Management system for hogs, was invigorated in 2010, increasing the body of knowledge that exists for these technologies. Through a variety of delivery methods, the network of advocates and supporters of agriculture technology transfer and continued education of producers and change agents was facilitated through demonstrations, communication, and collaboration. As approval and interest in Dry Technologies increases, outreach efforts have served to meet the demand for information and guidance, which has served to reduce the opportunities for mistakes, particularly with designs and standard operating procedures. In essence, our team has become a regional source for information and guidance. This year's activities with workshops, working meetings, and consultation comprised much of this year's activities.

The soil and water program has also continued to work with federal and local partners on soils and water testing, recommending BEST management practices, and documenting these findings in order to provide producers and advisers information, especially for critical areas of concern where erosion or pollution are likely.

**2. Brief description of the target audience**

Environmental Protection Agency, Natural Resources Conservation Service, Farm Service Agency, United States Geological Service, University of Hawaii CRE, Palau Community College, University of Guam, Department of Environmental Quality, Department of Land and Natural Resources, Coastal Resources Management.

All farm producers and farm helpers in the (CNMI Business operators that promote or sell farm produce)

Grade school, High School and College students

Adult Volunteer Leaders (4-H Clubs)

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	100	500	100	500
<b>Actual</b>	95	400	60	400

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

**Patent Applications Submitted**

Year: 2010

Plan: 0

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	1	1	
<b>Actual</b>	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of research projects completed on Soil and Water Quality Issues

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	1	0

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of households recycling aluminum cans or other recyclable commodities such as paper and plastic
2	Number of households learning to safely use Rain-catchments systems
3	Number of farmers using Dry Litter Waste Management Systems for Hogs
4	Number of farmers or members of the community learning to compost animal wastes, yard scraps, etc.
5	Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc...

**Outcome #1**

**1. Outcome Measures**

Number of households recycling aluminum cans or other recyclable commodities such as paper and plastic

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	20	85

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There is a deep desire across the community to change the culture of throwing trash everywhere. The ecosystems, and water resources in particular are sensitive and threatened. Pollution of water resources and coral reefs can be avoided with better cultural practices, such as recycling.

**What has been done**

Continued promotion and education on watershed processes and recycling education, especially among the youth.

**Results**

Many people in the CNMI continue or have begun recycling. Recycling Businesses are continuing to pop up in order to meet the demand for processing and marketing of these commodities.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

## **Outcome #2**

### **1. Outcome Measures**

Number of households learning to safely use Rain-catchments systems

Not Reporting on this Outcome Measure

## **Outcome #3**

### **1. Outcome Measures**

Number of farmers using Dry Litter Waste Management Systems for Hogs

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	8	29

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Leptosporosis, which thrives in Hog Urine and feces, continues to create a threat to public health in the Pacific Islands where hog production is most important and culturally significant. Identifying technologies that allow for sustainable hog production has become critical for keeping producers in business, while protecting and enhancing these small island environments.

#### **What has been done**

Continued documentation and dissemination of information regarding design parameters, challenges, and safety of Dry Litter Technologies has continued.

#### **Results**

Quality designs for Dry Piggeries has gotten the attention and efforts of Engineers involved into program, improving the level of acceptance of the system among farmers and farm advocates(funding agencies). These designs have set a new standard and allowed producers to renovate or build their piggeries correctly on the first shop, improving the chance of operational success and contentment with this technology. Meeting and discussing the progress in terms of the transfer of Dry Technology among producers and change agents in the region has gotten us one step further towards convincing NRCS that standards need to be adopted by their agency to

demand for the number of producers wanted to change over to Dry Systems.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse

#### Outcome #4

##### 1. Outcome Measures

Number of farmers or members of the community learning to compost animal wastes, yard scraps, etc.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	30	95

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Commercial Fertilizers are simply too expensive or not even available, on many pacific islands. Furthermore, the risk of continued use commercial fertilizers and tilling are a threat to the sensitive ecosystems in the islands. Although, local production of food is critical to public health and security.

###### **What has been done**

Continued outreach and education on composting practices was facilitated.

###### **Results**

A number of producers and citizens are composting yard scraps or animal waste and applying compost to crops and soils.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

403 Waste Disposal, Recycling, and Reuse

**Outcome #5**

**1. Outcome Measures**

Number of farmers using Sustainable Agriculture techniques (best management practices) such as cover cropping, mulching, rotational grazing, no-till farming, composting, etc...

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	10	25

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Food Security is a major issue for Pacific Islands. Although, the threat of unsustainable farming practices is considerable. It is really important for all islanders that farmers, landscapers, and members of the general community adopt BEST management practices in order to protect water resources and coral reefs from pollution.

**What has been done**

Workshops, demonstrations, and one-on-one consultation

**Results**

More producers are beginning to compost animal and yard scraps. The use of compost has become more popular amongs growers.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities

### **Brief Explanation**

We have had some pretty extreme droughts recently. Furthermore, producers are increasingly plagued by the rising costs of production and competition for land and other resources.

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

### **1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

### **Evaluation Results**

### **Key Items of Evaluation**