

## CONSERVATION INNOVATION GRANTS Progress Report

<b>Grantee Name:</b> University of Guam	
<b>Project Title:</b> Carbon to Soil, Not to Landfill: Building the Island's Soils Through a Sustainable Organic Matter Capture and Distribution System (69-9251-10-888)	
<b>Project Director:</b> L. Robert Barber, Jr.	
<b>Contact Information:</b>	<b>Phone Number:</b> 671.735.2087 or 671.787.7391 <b>E-Mail:</b> bbarber@uguam.uog.edu
<b>Period Covered by Report:</b> April 2012 to September 2012	
<b>Project End Date:</b> September 30, 2013 received a no cost extension.	

**Summarize the work performed during the project period covered by this report:**

The site permitting paperwork was submitted to EPA last report period and we have not been notified of any problems or issues.

The paper work and bidding process for the shredding of the year and a half accumulated green waste was completed. The contractor was selected and the site's accumulation of green waste and telephone books was completed. Rhino Beetle is an area problem so the mulch will all be treated with a pesticide and then a public distribution dates will be announced through local media. Prior to this public distribution the participating mayors will be provided with mulch for their community gardening efforts. The first public distribution of the mulch was held Saturday September 8<sup>th</sup>. We had 17 pickup truck loads picked up and \$20 paid for each. While this is a start we were disappointed but also not that our dependence on PSA's was not adequate to get the message out. This coming quarter we will work on the media message and public outreach to gain wider participation.

The site sheet mulch demonstration and establishment of the fruit tree orchard has been initiated and more than 225 cubic yards of the mulch have been spread to replace the sites topsoil that was removed decades ago. A core skeleton of fruit trees have been planted in this area during the current rain season shorter term crops (banana and papaya) will be planted in the sheet mulched area between the fruit trees. Work was done on removing dead limbs from the sites windbreaks and on clearing the perimeter road on the site. This is all in preparation for holding field workshops at this demonstration site in the next reporting period on mulching, composting, sheet mulching and windbreaks. Part of the partnership agreement with the Chamorro Land Trust Commission was to utilize mulch to improve the sites soil and to establish and agroforestry demonstration at the site. Significant headway was done on this objective during this reporting period, the site now has the largest sheet mulch demonstration that we know of on island.

The project partners continue to be very active in green waste collection, implementing site cleanup activities for the project, and utilizing site access and use protocols. These protocols with the mayors are working very well and we are receiving a high quality

green waste product free from trash. We have continued to expand the sheet mulched area at the site. We also had a site visit by the project contact Colleen Simpson and obtained positive feedback and encouragement.

Mulch from the shredded green waste was provided to the NOAA funded “Fouha Watershed Restoration Project” at the level of about 15 cubic yards. We estimate that we have shredded in excess of 2,100 cubic yards of mulch during this period. We still plan to distribute it to the public at a charge of \$10 a pickup truck load to Chamorro Land Trust Agriculture Lease holders with a certification document and at \$20 a pickup truck load to the general public. Once the demand for mulch by the pickup truck load is met we plan to open it to dump truck load distributions to commercial farmers (all though price is an issue as farmers only want to Pay \$100 a load and this is below cost unless a tipping fee is charged). Initial estimates that the pickup truck prices may be sustainable more will be known on this after we complete the distribution of this initial supply of shredded mulch.

**Describe significant results, accomplishments, and lessons learned. Compare actual accomplishments to the project goals in your proposal:**

*Goal 1 Document the permitting requirements and process.*

The site permitting forms and other paperwork for EPA was obtained, prepared, signed by all parties, and submitted to EPA in the previous reporting period. This paperwork is still currently under review. Once approved meetings with EPA will be held to determine any differences needed for permitting commercial operations duplicating these efforts and then this process will be documented. We will follow up with EPA in the next reporting period and try to arrange for a site visit.

*Goal 3 Document the necessary management and processing protocols to ensure success and to guide replication efforts on other parts of the island.*

Site management and access protocols are working well for the collection of green waste. Protocols for the on-site handling of mulch and public distribution are currently being developed. Guam Public Works Department is interested in being included in the project to provide additional green waste protocols for this will be explored in the next reporting period (with the possibility of including a tipping fee). A preliminary economic assessment of the cost of processing this first round of greenwaste is needed to give a realistic assessment of the sustainable costs and fees. With the mulch now shredded and undergoing treatment for Rhino beetle we should be able to complete the first round of distribution in the next reporting period and conduct a preliminary economic analysis.

The northern Guam mayors continue to be very active in collecting green waste for the project. A new stockpile of green waste is started in the upcoming reporting period we hope to broaden the participants (include Public Works) for green waste delivery with the inclusion of a tipping fee.

The mayors and UOG have continued to provide mowing and other maintenance of the site as part of their partnership with the project. The protocols we have set up with the

mayors for exclusion of all non-greenwaste materials are effective. Only one infraction (a truck load of trash was dumped in back) was recorded over the past 6 months.

*Goal 4 Conduct farmer workshops on building soil organic matter to include mulching, use of compost, but also to cover crop rotations, green manures, and use of nitrogen fixing trees.*

One short workshop was held during this period on the UOG campus sheet mulch demonstration and agroforestry establishment site set up by UOG Cooperative Extension Associate trainees that used mulch from the site. This demonstration will be utilized in public workshops in future project periods. We plan is to hold workshops during the next reporting period as well as media articles on the benefits of mulch. We have been requested to hold a sheet mulching for home and school gardens workshop using this mulch at the ST. Francis School that will be open to the public in November, we will strongly promote this sites efforts and use this opportunity to develop a contact/call list to use in increasing participation at future distribution days.

Many of the fruit trees propagated for the project site (Kato Farm) demonstration on sheet mulched windbreaks, barrier plantings and agroforestry establishment have been planted in sheet mulched areas and will continue to be planted through the next reporting period. PO's have been prepared with the Guam Department of Agriculture for tissue culture bananas and papaya seedlings for interplanting in the agroforestry sheet mulching demonstration on site.

#### *Lessons Learned.*

Due to geographic isolation Guam is limited in the type and variety of large scale machinery that can shred greenwaste. The abundance of palm and other highly fibrous common green waste products limit the type of machinery that can be used, and this equipment cannot handle waterlogged products. So we are exploring a system to protect the collection piles from rain during the next rain season. This will involve covering the piles with 20\*100 foot sheets of 6 mil plastic prior to shredding. Initial efforts were effective where the covers stayed on the piles but we have learned that we need to increase the tires we use as weights to hold down the covering.

An invasive pest, Coconut Rhinoceros Beetle (CRB) has been identified in the pilot site. Thus we must manage this and future island greenwaste under the Guam CRB eradication program guidelines. This will add an extra set of protocols to be incorporated into project guidelines beyond those we initially anticipated. The current treatment protocol involves turning the pile of mulch with a backhoe and spraying the material with an insecticide "Cytermethrin" then covering the pile with plastic sheeting. The green waste will be distributed to prevent re-infestation. We learned from this first effort that to get the desired number of people to pick up mulch we need to dramatically increase the level of the media message and education on the benefits and availability of the mulch. Courtesy PSA's are not adequate. Also we have received some feedback that people would be willing to pay even more if the material was screened to provide only fines. Development of a compost or screened media will be investigated. But, the primary

drive will be to show the benefits of a mulch aggregate and the benefits gained by the larger material.

In terms of where we wanted to be on the project timeline we are on track with the curriculum effort and site protocols, and slightly behind in terms of the mulch shredding operation, we are ahead of schedule with green waste collection. We are now on track in preparing documentation of project paperwork and protocols.

**Describe the work that you anticipate completing in the next six-month period:**

During the next six months the following project's farmer and community engagement activities will be shifted from campus to project site.

1. Distribute mulch and conduct initial cost assessment of effort on a per truck load of mulch basis, in particular examine the potential for a tipping fee to partially cover processing costs.
2. Expand the sheet mulch for agroforestry establishment demonstration on site.
3. Conduct public workshops on mulch use at site (Kato Farm) using same curriculum developed for on-campus workshops.
4. Draft manual that documents steps and protocols needed to replicate this demonstration.
5. Aggressively expand the media message on the benefits of mulch and the availability of mulch from Kato Farm CIG project.
6. Develop a list of interested people to call prior to the distribution day so that participants are not just limited to those who happen to see the announcements since distribution is on an irregular schedule.

**In the space below, provide the following in accordance with the Environmental Quality Incentives Program (EQIP) and CIG grant agreement provisions:**

- a. A listing of EQIP-eligible producers involved in the project, identified by name and social security number or taxpayer identification number;**
- b. The dollar amount of any direct or indirect payment made to each individual producer or entity for any structural, vegetative, or management practices. Both biennial and cumulative payment amounts must be submitted.**
- c. A self-certification statement indicating that each individual or entity receiving a direct or indirect payment for any structural, vegetative, or management practice through this grant is in compliance with the adjusted gross income (AGI) and highly-erodible lands and wetlands conservation (HEL/WC) compliance provisions of the Farm Bill.**

During this period no EQIP-eligible producers were involved in the project in terms of resource sharing other than obtaining mulch on the distribution days. A list of those paying \$20 a truck load is available on request. Currently farmers' groups, in particular the Northern and the Southern Soil and Water Conservation Districts, Guam Farmers Cooperative Association and key farm innovators are serving on an advisory/steering

committee. We anticipate farmer involvement with the project to begin during the next six month period.

The focus was shredding the greenwaste into mulch, treating the mulch for rhino beetle and initiate the establishment of the sheet mulch and agroforestry demonstration and piloting a distribution day. No payments direct or indirect were made to agriculture producers during this period.