



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003GU23B

Title: Rainwater And Dry Litter Waste Management: An Alternative Water Conservation System In Swine Operations

Project Type: Information Transfer

Focus Categories: Agriculture, Water Supply, Management and Planning

Keywords: RainWater Catchment System, water conservation management, Dry litter waste management, sustainable agriculture, swine

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Matching Funds: \$0.00

Congressional District: N/A

Principal Investigators: Sabaldica, Alan (Northern Marianas College); Duponcheel, Lawrence

Abstract: Raising swine is a traditional and cultural activity for the majority of Commonwealth of the Northern Mariana Island (CNMI) farmers and most of the livestock produced is for personal family consumption. Island farmers are less likely to engage in the swine business, because of 1)low productivity of swine raised on limited quality feeds and limited supply of water,2) animal health problems associated with a lack of available resources, and 3)a lack of technical support . Nutrition plays an important role in swine production. Water is of supreme importance in pork production. An inadequate supply of water will result in poor swine performance. Symptoms associated with water intake below the pig's daily requirement include reduced feed intake, poor daily gain, poor feed conversion, an increase in scour problems, loss of milk production, lower weaning weights and overall lower digestibility of feed. In general, all classes of pigs should have unlimited access to water to satisfy normal physiological aspects of animal growth and welfare.The CNMI continues to suffer from water supply deficiencies especially in many agricultural homesteads where water supply is limited or non-existent due to the inflated cost of piping and a high utility cost of commercial water. Fortunately, the Northern Marianas has a high average annual rainfall of 42.5inches (IPM Trap Monitoring, NMC-

CREES,2001)which would imply that rain catching systems are a potential catalyst in dealing with the water supply issue. In addition, there is a limited understanding of the potential impact of animal waste seepage into the water aquifer since the carbonate island Karst features that control the input, transport, and discharge of fresh water from these islands is still being investigated.Given the conditions noted above, the need for water conservation management becomes evident. “Rainwater and Dry Litter Waste Management: An Alternative Water Conservation System In Swine Operations” aims to become self-sufficient in it’s water supply, or at least to alleviate water shortage impacts, and simultaneously reduce the risks of water aquifer contamination inherent in Animal husbandry.The first phase of the study hopes (1) to produce usable baseline data of water management/ conservation of swine operations using RWCS. It aims to adopt University of Guam Water Environment Research Institute (WERI,Dr.L.Heitz) Roof rain spreadsheet, to design storage tank needed, gutter system, and roofing size in relation to animal size for the entire swine operation; (2) incorporate carbon materials such as wood chips and coconut husks as beddings for dry litter waste management system as a way to conserve water and reduced the seepage of waste components into the groundwater acquifer .The final phase of the project aims to develop (1) publication in the form of brochures on application of RWCS as a water conservation strategy for CNMI (2) with implementation of the WERI Roof rain spreadsheet to farmers who wish to duplicate the system, (3) undertake targeted public education on water resources and (3) conduct workshops and trainings.

[U.S. Department of the Interior, U.S. Geological Survey](#)

Maintain: Schefter@usgs.gov

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