

Alternative Waste Management System to Swine Operations in the American Pacific

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PROBLEM?

"The impact of animal waste on the environment is a growing problem, not only in atoll countries but also in other Pacific Island countries."

- The 14th meeting of the Permanent Heads of Agriculture and Livestock Services In the Pacific (PHALPS) in May 2001

Conventional Spray out systems require copious amounts of Water and pose a threat to underground and surface water resources



Current Waste Management System in the Pacific



Current Waste Management System in the Pacific



Directly contaminating the streams (American Samoa)

Current Waste Management System in the Pacific



Uncontrolled flow of manure around the perimeter of the piggery (Tinian)

Current Waste Management System in the Pacific



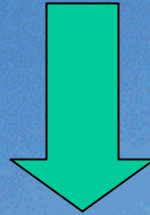
Waste effluents directly leading to a cesspool



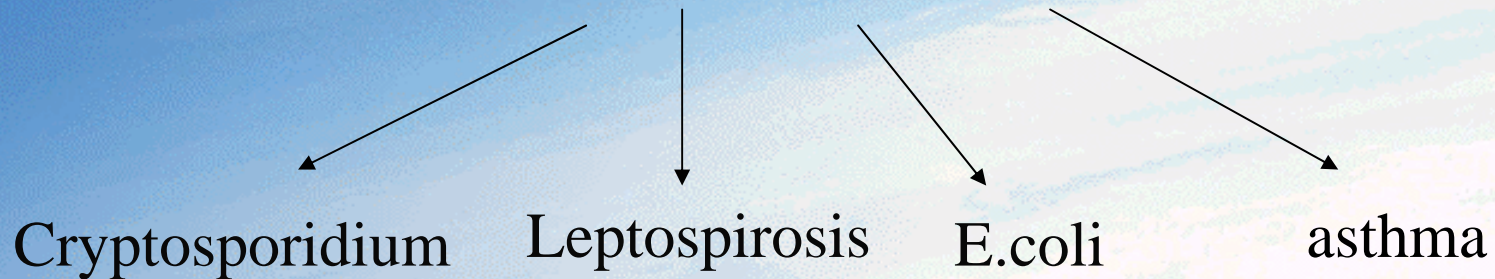
Impact on the Animal

- **Animal Health**
- **Production**
- **Life and Meat quality**
- **Animal Behavior**

Animal Waste contaminants



poses public health risk



Impact on Public Health

REASONS?

Lack of effective animal waste regulations to follow within the area for small scale operation

Existing waste management system are applicable to commercial operation and not to small-scale subsistence farmers

Lack or limited education on the benefits and effects of manure to the environment, animal and the community



Marianas Dry Litter Waste Management System















The Dry Litter system requires no water.
Pigs are comfortable in their bedding

Pigs can't wait for their chips.
A soft bedding improves the pigs environment which
Helps to keep them happy and healthy



Pig activity turns and aerates the chips promoting the Decomposition of waste materials while greatly reducing odor as well



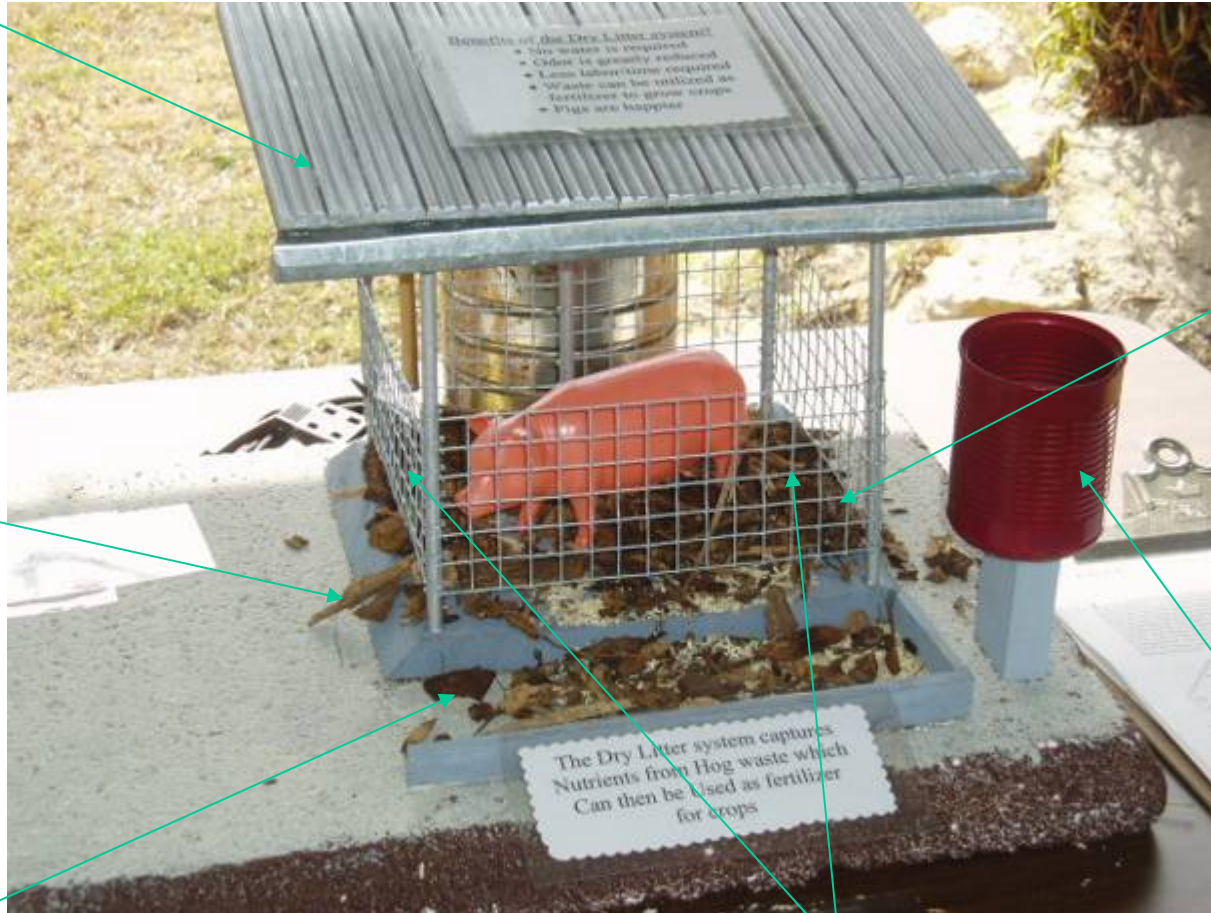


Key Features of the Marianas Dry Litter System

Roof
overhang

Slope
Flooring

Waste
Alley



Nipple
Waterer

Rain
Catchment

Hog panels



Chipped organic materials are now readily available
On Saipan at the Transfer Station.





Composted waste materials along with the chipped wood and coconut
Make for a wonderful soil amendment-improving soil quality
And fertility







Less moisture, therefore less odor, less pests (flies) – healthier pigs, better productivity











Benefits of the Marianas Dry Litter System



Benefits to the Farmers

Reduced labor and time invested

Reduced water bills

A valuable by-product compost

Compost improves plant productivity recovering cost of feeds

Benefits to Pigs

Pigs are happier and healthier

Pigs stay in clean and grow well

Pigs are able to perform natural activities like rooting reducing stress





Benefits to the Community

Reduced demand for water

Reduced exposure of pathogens from animal manure to ground and surface water resources

Reduced odor, pest and fly problems

Small Scale Livestock Waste Management Practices for Pacific Islands

Alan F. Williams, Dan E. Anderson, Lawrence Chapman, Alan S. Williams, and Linda Chen
University of Hawaii, Hilo, Hawaii, USA

CURRENT CONDITIONS Livestock waste management in the Pacific Islands is often limited to open-air composting or direct application to fields. This can lead to environmental issues such as odor, fly infestation, and nutrient runoff. The current conditions are often characterized by a lack of formalized waste management practices and limited access to resources for improved waste management.	PORTABLE TOILET A portable toilet system is a practical solution for managing human waste in remote areas. It consists of a container that collects waste, which can be safely disposed of or used as fertilizer. This system is easy to use and requires minimal infrastructure.	EFFICIENT WASTE Efficient waste management practices can significantly reduce the environmental impact of livestock waste. This includes proper storage, composting, and the use of waste as a resource. Efficient waste management can also help to reduce the risk of disease and improve the overall health of the livestock.
PROBLEMS The main problems associated with current livestock waste management practices are odor, fly infestation, and nutrient runoff. These problems can be exacerbated by the lack of formalized waste management practices and limited access to resources for improved waste management.	COMPOSTING Composting is a natural process that can be used to manage livestock waste. It involves the decomposition of organic matter into a nutrient-rich soil amendment. Composting can be done in a variety of ways, including in a compost bin or a compost pile.	REGULATION/IMPACT Regulation and impact are key factors in the development of effective waste management practices. Regulation can help to ensure that waste management practices are safe and effective, while impact assessment can help to identify the potential environmental and social impacts of different waste management practices.







Profitable & Sustainable Livestock Manure Management Workshop

Protection of Water Resources / Environmental Regulations



Carl Evensen
Environmental Quality Specialist

U.S. Marine Tropical Agriculture & Human Resources





Titan Experiment Station
Titan Demonstration Site
Marine Biological Laboratory
University of Massachusetts Lowell
Campus includes: 1,000,000 sq ft Forest, 100,000 sq ft Greenhouse, 100,000 sq ft Lab, 100,000 sq ft Office, 100,000 sq ft Storage, 100,000 sq ft

DEQ

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Presentations

- Health Research Center, Cooperative Research Center for Education Service
- CHED, Department of Career & Technical Education

College of Health, Behavior and Human Resources, University of the Philippines at Manila

CMH
SANTINE



FUTURE ACTIVITY

Preparation for the Regional Workshop and Project Demonstration with the University of Hawaii in the

- Commonwealth of the Northern Mariana Islands
- Republic of Palau
- FSM (Yap, Pohnpei, Chuuk and Kosrae)
- Republic of Marshall Islands
- American Samoa

Thank You very Much!!!

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United State Geological Survey/ WERI University of Guam

Division of Environmental Quality

Natural Resource Conservation Service

Agricultural Development in the American Pacific

Marianas Resource Conservation and Development Council



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