

# 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



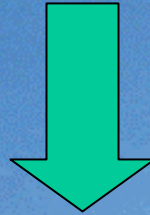


## **Impact on the Animal**

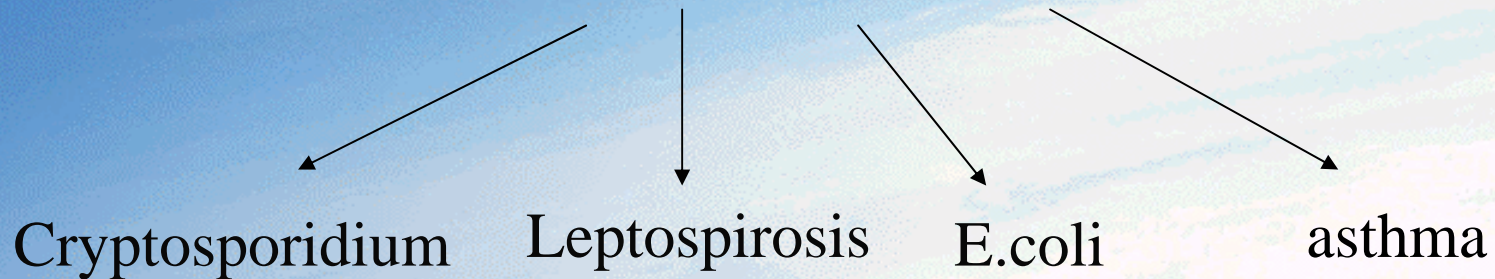
- **Animal Health**
- **Production**
- **Life and Meat quality**
- **Animal Behavior**



# 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







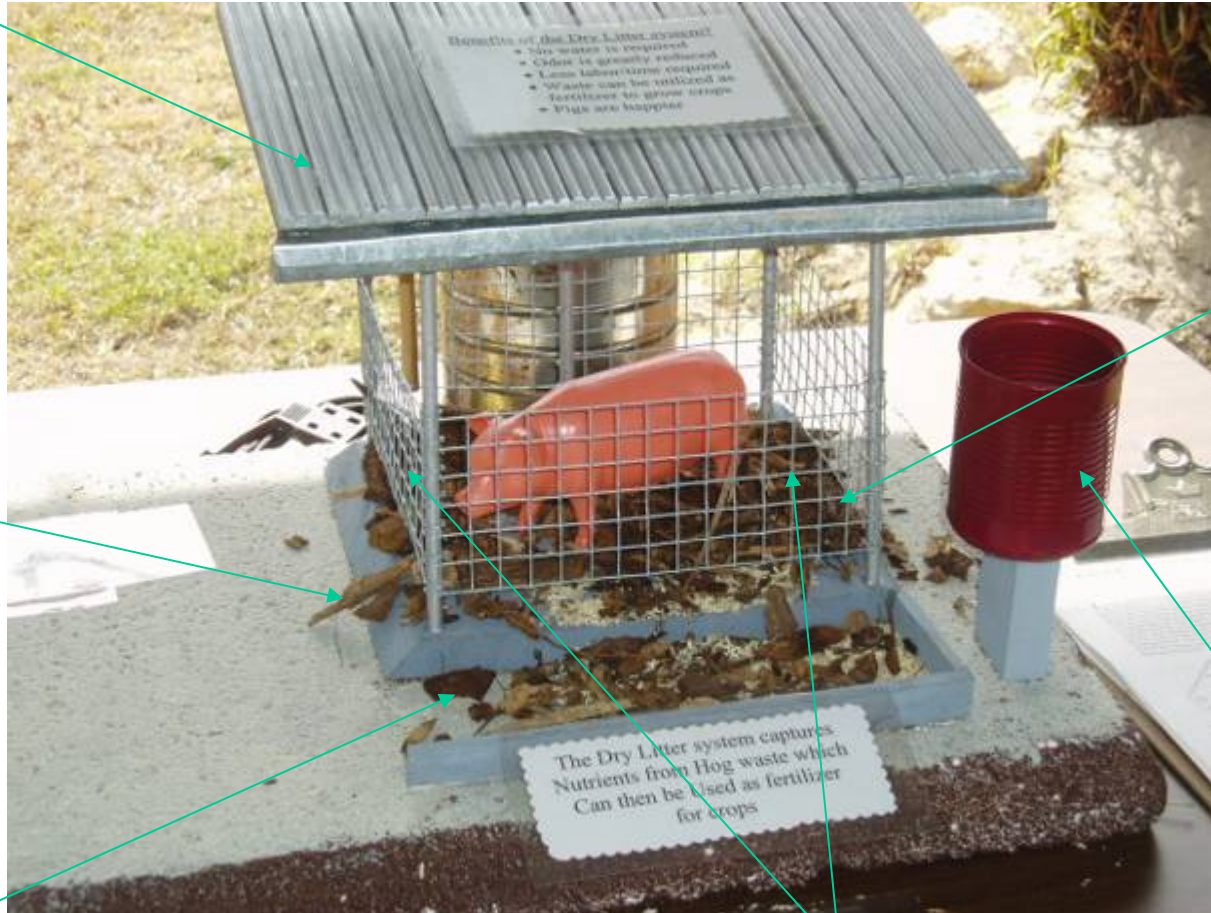


# Key Features of the Marianas Dry Litter System

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 Schemmel, and Linda Chen  
University of Hawaii, Pacific Basin College

<b>CURRENT CONDITIONS</b> Livestock waste management in the Pacific Islands is often limited by a lack of resources, knowledge, and infrastructure. This section discusses the current state of waste management in various island nations.	<b>PORTABLE TOILET</b> A portable toilet is a self-contained unit that can be used in areas without a sewer system. It is a simple and effective way to manage human waste.	<b>REPLANTING</b> Replanting is a technique used to restore soil fertility and prevent erosion. It involves planting native plants and trees that can help improve the soil and prevent erosion.
<b>PROBLEMS</b> Livestock waste management in the Pacific Islands faces several challenges, including a lack of resources, knowledge, and infrastructure. This section discusses the problems associated with waste management in these areas.	<b>COMPOSTING</b> Composting is a process of breaking down organic matter into a nutrient-rich soil amendment. It is a sustainable and effective way to manage waste and improve soil health.	<b>REGULATION/ENFORCEMENT</b> Regulation and enforcement are essential for ensuring that waste management practices are followed. This section discusses the challenges of regulation and enforcement in the Pacific Islands.













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  
- Santa Fe College  
- Santa Fe College  
- Santa Fe College  
- Santa Fe College

DEQ

Cebu and Iloilo Regional Water District  
20  
Cebu / Iloilo / Rota / Iloilo





**Presenters:**

- Health, Education, and Social Services Research Center of the Education Service
- CHED, Department of Science & Technology

College of Health, Science and Human Resources, University of Mindanao

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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Agricultural Development in the American Pacific

Marianas Resource Conservation and Development Council





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