



## WATER RESOURCES RESEARCH GRANT PROPOSAL

A Prototype Swine Waste Treatment and Utilization Plant for the Tropic Hawaii Environment

Duration August 1, 1996 to July 31, 1997

FY 1996 Federal Funds: \$ 24,500

FY 1996 Non-Federal Funds: \$ 49,903

Principal Investigator's Name and University

P.Y. Yang

University of Hawaii at Manoa

Congressional District of University where the research is to be conducted

Statement of critical regional of state water problems

Currently, the State of Hawaii is generating about  $4.5 \times 10^6$  lbs. ( $2 \times 10^6$  Kgs) of animal waste (including both confined and unconfined animals) per day. This includes 88% of daily and beef and 12% of hog and poultry manures. These manures are approximately equal to two times the organic waste generated by the population in the state of Hawaii. The pollution hazard to Hawaii's environment by animal waste is certainly very high. If animal waste is not properly treated/managed, it would pose a serious threat to the water quality for drinking and public use. The state and federal agencies are establishing and enforcing more stringent regulations on the disposal of animal wastes. In realizing the associated problems (such as odor generation, scheduled removal of sludge and effluent, risk of contamination of groundwater due to seepage and run-off of nutrient due to stormwater) of operating the anaerobic lagoon for the swine wastes management system in Hawaii, the Dept. of Biosystems Engineering of the University of Hawaii has conducted various animal management researches in the past decade. Cost effective and environmentally sound treatment alternatives for highly concentrated animal wastes (including swine and poultry wastes) have successfully developed in laboratory scale (see relaxed research list). Although all of these highly effective treatments and utilization systems have been proven in laboratory scale, it is absolutely necessary to fabricate and operate a prototype to test as effectiveness as a system. This prototype will be cost effective, and easy to assemble at the production site. Most of all, the system will be allowed to make it possible for not only hogs, but dairy and poultry operations and responsibility without bearing regulatory and economic burden.

**Statement of results of benefit:**

After pertinent data is collected and evaluated, the livestock producers will be able to determine what animal waste management system is the most appropriate and economical for their specific farming operation, location and future planning. Also, it may be possible to explore the potential for a joint animal production/ processing municipal cooperation and treatment system.