



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004VI28B

Title: Development of a Water Budget for a Model, Integrated Farm in the U.S. Virgin Islands

Project Type: Research

Focus Categories: Agriculture, Water Quantity, Water Use

Keywords: Rainwater Harvesting, Aquaculture Effluent, Water Reuse, Wastewater Irrigation, Water Budget

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$12,000

Non-Federal Matching Funds: \$0

Congressional District: N/A

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Abstract

The major constraint to agriculture in the U.S. Virgin Islands is the availability of water for crop irrigation. Plants are under water stress for an average of 10 months per year. The only two practical sources of irrigation water (watershed ponds and well water) are very limited or not available at all to many farmers. The University of the Virgin Islands has established a 2-ha model, integrated farm to demonstrate an innovative method for collecting and utilizing rainwater and recycling nutrients. Water is harvested from a 0.4-ha rainwater membrane (HPDE) catchment, stored in a lined pond, and used to raise fish in seven greenwater tanks. Aquaculture effluent, which contains organic matter and nutrients, is removed from the fish tanks daily, treated in a lined pond, and then used to irrigate and fertilize field crops. The proposed project will develop a water budget for the farm to quantify the relationships between water collection and utilization, to develop design criteria, and to evaluate costs. The data obtained from this study will be used for the optimal design of future integrated farms. If the water component of this system

proves to be economically feasible, farmers in the Virgin Islands can remove the major limitation to crop production and become self-sufficient in supplying water to their farming operations.