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RESEARCH REPORTS

SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

Title: Concurrent design of hillside ponds for tilapia production

Authors: Brahm Verma, E.W. Tollner, and Jay Renew
University of Georgia
Driftmier Engineering Center
Athens, GA 30602-4435 USA

Tom Popma and J.L. Molnar
Auburn University, AL 36849-5406 USA

Daniel Meyer
Zamorano University
Tegucigalpa, Honduras

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Abstract: Farming on hillsides in Latin America has resulted in progressive deterioration of natural resources due to a combination of overgrazing, poor farming practices, deforestation, and poor water management. The introduction of tilapia production could improve the nutrition of farm families and local communities and provide a means of additional earning for improving economic status. An important aspect of designing and successfully introducing tilapia in Honduras and the adjoining regions is to have all stakeholders identify needs that include technical requirements as well as social and environmental issues important in the design of ponds and the production of tilapia. The fundamental method of pond design used here was based on the principles of concurrent engineering design methodology. In this method all stakeholders, hereafter referred to as "customers" (a person or entity that can impact the building, maintenance, and use of ponds for tilapia production), are identified. Our customer list included Honduras farmers, extension agents, government agencies, nongovernmental organizations, builders, and design engineers. Customer needs were identified and prioritized based on information from literature and input from experts representing perspectives of the identified customers. Design concepts were then tested using a US National Resource Conservation Service runoff model and spatial data pieced into a Geographical Information System. Concurrently considering needs of all customers in

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the design and selection of construction method provides a powerful method to have the user educated and invested in the design. This approach presents an increased possibility of introducing acceptable pond design and tilapia production as an economic enterprise in Honduras and Central America.

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