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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: **Development of Appropriate Pond Management Techniques for Use by Rural Rwandan Farmers**

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Abstract: With fishponds at elevations of 1,300-2,500 m, Rwanda has a unique environment for tropical fish culture. Average pond temperatures are 21°C in the afternoon. Introductory efforts at promoting aquaculture met with farmer support but their approach failed to compensate for cooler temperatures. Results were minimal with production of only 200-500 kg/ha/year, albeit, thousands of small hand-dug ponds were built.

With an ever-increasing population, competition developed for land and agricultural inputs. Pressure to increase farm outputs, especially those with high nutritional and cash value, focused attention upon increasing yields from existing fishponds.

With no commercial animal feeds, few agricultural byproducts, and little chemical fertil-

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izer, fish production must depend upon limited quantities of organic fertilizer. Within this scheme, tilapia were viewed as the appropriate fish, although *Clarias* and carps had been cultured. Of tilapias cultured, *Oreochromis niloticus* proved most suited to management inputs.

Initial work centered upon maximizing pond temperatures through water management. With appropriate pond depths and water regulation, morning pond temperatures can be 2-5°C warmer than surrounding natural waters. Subsequent efforts focused upon comparing nutrient inputs and stocking densities. A mixture of grasses and manure was applied at high and low rates with two stocking densities in ponds with and without stocking density, produced 854 kg/ha/year, with management techniques well within the scope of rural farmers. Average production of 1,382 kg/ha/year was obtained from fed ponds with similar management, but with inputs that were not appropriate for most farmers.

This abstract was excerpted from the original paper, which was published in The Second International Symposium on Tilapia in Aquaculture pp.561-568, 1988.

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