NOTICE OF PUBLICATION

RESEARCH REPORTS
TITLE XII POND DYNAMICS/AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM

Title: Estimating *Oreochromis nilotica* production function for small-scall fish culture in Rwanda

Author(s): Nathaniel Hishamunda
Department of Agricultural Economics and Rural Sociology
Alabama Experiment Station
Auburn University
Auburn, AL 36849-5406

Curtis M. Jolly
Department of Agricultural Economics and Rural Sociology
Alabama Experiment Station
Auburn University
Auburn, AL 36849-5406

Carole R. Engle
Aquaculture/Fisheries Center
University of Arkansas at Pine Bluff
Pine Bluff, AR 71601

Date: 18 January 1997 **Publication Number:** CRSP Research Report 97-100

Price: The CRSP will not be distributing this publication. Copies may be obtained by writing to the authors.

Abstract: Consistent low yields are a major problem of many small-scale fish farmers in developing economies. The problem plagues Rwandan fish farmers and is embedded in production factors that act, directly or indirectly, in combination with management practices to influence yields. Little is known, however about the causes and to what extent each factor contributes to the problem. Ordinary least squares (OLS) technique was applied to data collected through a survey of 267 small-scale Rwandan fish farmers, to determine which production and management factors affect yields in Rwanda. Selected variables such as pond ownership, elevation, pond size, stocking density, quantity of compost applied, length of production cycle, ability to pay labour, off-farm income, owner's age, educational level, and marital status were regressed on *Oreochromis nilotica* yields. At the 5% level, pond size, stocking density, and length of the production cycle had significant effects on yields. Increased pond sizes and long production cycles impeded fish production in Rwanda. Higher stocking densities resulted in increased fish yields. The model that best describes the O. nilotica production function in Rwanda is linear. Yield-maximizing composting rates are yet to be applied to fish ponds in Rwanda. The study indicates that farmers have gone beyond cost-minimizing pond sizes and production cycles, which are yet to be researched. Under the perfectly competitive fish and input markets and ceteris paribus assumptions, the optimal stocking density was found to be approximately 34,000 fingerlings/ha.

This abstract was excerpted from the original paper, which was published in *J. Aqua. Trop.*, 11(1996):49-57.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Pond Dynamics/Aquaculture Collaborative Research Support Program, Oregon State University, Snell Hall 400, Corvallis, Oregon 97331-1641 USA. The Pond Dynamics/Aquaculture CRSP is supported by the U.S. Agency for International Development under CRSP Grant No.: LAG–4023–G–00–6015–00.