



AQUACULTURE CRSP 22ND ANNUAL TECHNICAL REPORT

DEVELOPMENT OF AN AQUACULTURE HANDBOOK FOR EXTENSION WORKERS AND TRAINERS OF EXTENSION WORKERS AND SUB-SAHARAN AFRICA

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ABSTRACT

Between 2000 and 2003, a series of twelve short courses focusing on pond construction, pond management, and the economics of fish farming were offered to Fisheries Officers (FOs) and Fisheries Assistants (FAs) of the Kenya Fisheries Department as part of the research and training efforts of the Aquaculture Collaborative Research Support Program (ACRSP). The training materials used in these courses were developed by the collaborating principal investigators to meet the specific needs of these two groups of trainees, drawing on past experience in Kenya (CRSP-sponsored research at Sagana Fish Farm and in On-Farm Trials), information from CRSP research sites in other countries, and published aquaculture literature, and recognizing that most of the intended audience (FOs and FAs) had never previously received any kind of training in aquaculture. Insofar as possible, training materials were organized into PowerPoint® "modules" for use in the classroom setting and supplemented with a large amount of practical work in the field.

Following completion of the twelfth training session it was deemed desirable to organize the PowerPoint® module material into a handbook that could be used not only for future short courses but also as a reference manual for workers involved in aquacultural extension activities in Kenya. This report describes the development of the draft of that manual and a companion document, an "Instructor's Guide" containing supplemental material for instructors in future training sessions.

INTRODUCTION

Aquaculture development planners in Sub-Saharan Africa have repeatedly recognized that fish farmers and extension workers in the region have suffered from a lack of information about good pond management practices and technology alternatives, and that this lack of information has contributed to low production in many areas (Wangila 1996, Aquaculture CRSP 1997, CTA 2001). Training for personnel who are supposed to be engaged in aquaculture extension activities has therefore been targeted to relieve this constraint to the development of aquaculture (CRSP Planning Workshop 1997, Aquacul-

ture CRSP 1997, Aquaculture CRSP 1999, Aquaculture CRSP 2001).

In its Africa Project, centered in Kenya, the Aquaculture CRSP has therefore spent considerable effort during its Ninth and Tenth Work Plans working with the Kenya Fisheries Department (FD) and the Moi University Department of Fisheries (MU) to train FD Fisheries Officers and Fisheries Assistants. Between 1998 and 2003, approximately 248 FD personnel have received practical instruction in either two- or three-week short courses in pond construction, pond management, and economic and business aspects of pond and farm operation (Aqua-

culture CRSP 2003, Aquaculture CRSP in press).

Trainers involved in these efforts have felt handicapped by a lack of aquaculture training materials suitable for use in this region, and have therefore felt the need to develop individual subject-matter teaching modules for use in these short courses. This effort began with a specific Ninth Work Plan Aquaculture CRSP training module development activity, *Development of Training Modules of Aquaculture Extension Workers and University Students in Kenya* (Ngugi et al., 2002), and additional modules have been developed by various instructors during the course of Ninth, Tenth, and Eleventh Work Plan training sessions. As the series of short courses conducted under CRSP sponsorship is concluded, and with the return of trainees to their posts around Kenya, it is desirable to compile the teaching materials and modules that have been developed into a handbook to be made available as an extension reference in Provincial and District Offices in Kenya as well as in other Kenyan institutions—e.g., Moi University—who provide extension services to farmers. This compilation will also serve as a manual for use by trainers involved in future short courses, and can be available to workers in other countries in the region.

Objective:

To provide a draft aquaculture handbook/teaching manual for use by aquaculture extension workers and trainers of extension workers in Kenya. Draft to be submitted to the Aquaculture CRSP Program Management Office (IMNC) for final editing and production.

METHODS AND MATERIALS

PowerPoint® modules and other instructional materials developed for and used during training sessions previously held for FD Fisheries Officers and Fisheries Assistants (Ngugi et al., 2002, Veverica et al., 2003, Ngugi et al., 2003, Ngugi et al., in press) were used as the basis for this handbook/ training manual. PIs working on this project began discussions on how to approach the effort and agreed on a division of tasks during the final Eleventh Work Plan training session in August 2003. Each PI worked on his assigned sections from then through August 2004. The PIs also held a work session at the Kenya Wildlife Service Training Institute (KWSTI), from 27-30 April 2004, to discuss progress and work together on the project.

It was agreed at the outset that the handbook would not consist simply of a collection of the already developed PowerPoint® modules themselves, but that these modules would form the basis for individual sections or chapters in the final product, which would be in the form of a printed handbook. As a final product, the PIs now envision a small "Fish Farming Guide" that can easily be carried to the field by farmers or extension work-

ers. Our model for this guide is an earlier guide, entitled *An Elementary Guide to Fish Farming in Kenya*, produced in 1988 by the Kenya Fisheries Department (Fisheries Department, Ministry of Regional Development, 1988). That guide was a 52-page, soft-cover booklet measuring approximately 15 by 21 cm and less than 0.5 cm thick.

RESULTS

The draft "Fish Farming Handbook" will be completed and submitted to the CRSP IMNC separately from this report. We envision producing the handbook in a format similar to that of the FD's 1988 guide, but including more detail and having perhaps 100 to 150 pages. The tentative title and outline for the "Fish Farming Handbook" is as follows:

A Fish Farming Handbook for Kenya

1. Pond Construction
 - Aquaculture planning
 - Pond Design
 - Pond Construction
 - Soils Suitable for Pond Construction
2. Water Quality
 - Important Water Quality Parameters
 - Managing Pond Water Quality
3. Species Suitable for Culture
 - Tilapia
 - Catfish
 - Trout
4. Pond Management
 - Carrying Capacities/Systems
 - Stocking and Harvesting
 - Liming and Fertilizing
 - Nutrition and Feeding
 - Hatchery Management
 - Record Keeping
 - Fish Diseases
5. Economics of Aquaculture
 - Enterprise Budgets
 - Cash Flow Analyses
 - Marketing

In addition to the handbook, we have developed supplemental materials in the form of an "Instructor's Guide" ("Instructors Guide for A Fish Farming Handbook for Kenya") to be used with the handbook during training sessions. The instructor's guide provides supplemental information that will allow trainers to use the Fish Farming Handbook as a textbook for training courses. This guide includes expanded, more in-depth coverage of key topics, some additional topics, teaching and demonstration ideas for instructors, and a full set of "transparency masters" for use in making transparencies for overhead projection. Transparency masters could also be made available on disk for direct printing to transparencies. We envision the "Instructor's Guide" as a loose-leaf

bound product of either "letter" or "A-4" size. This size will allow the inclusion of full-size transparency masters and the loose-leaf option will allow additions and changes to be made over time.

ANTICIPATED BENEFITS

This activity will make a practical handbook available to farmers and extension workers in the region. The material included in the Fish Farming Handbook will serve as a resource for extension workers who have completed short courses as well as help those who have not attended such courses to better understand proper pond construction techniques and aquaculture principles, leading ultimately to improved pond construction and management and increased productivity by fish farmers. The complementary Instructor's Guide will help trainers deliver consistent and comprehensive information to extension workers or farmers attending training courses.

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