

# AQUANEWS

THE NEWSLETTER OF THE POND DYNAMICS/AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM

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## EGYPTIAN RESEARCHERS JOIN CRSP

By Brigitte Goetze

The Pond Dynamics/Aquaculture CRSP welcomes a new project: USAID Cairo has sponsored research in Egyptian aquaculture since October 1992. The Egypt Project shares with the PD/A CRSP the overall goal of trying to increase the availability of animal protein through pond aquaculture. Specifically, the Egypt Project focuses on developing a polyculture system unique to Egypt which will be more productive than contemporary pond systems. The studies proposed under the Egypt grant will take major steps towards this goal by investigating three areas: (1) bioconversion, (2) biotechnology, and (3) species combinations. The bioconversion studies seek to increase production efficiency through the utilization of aquatic plants and snails, which currently do not play a role in Egyptian fish production. Control of unwanted tilapia reproduction and improved fish production through the safe application of sex hormones is the aspiration of the biotechnology investigations. Finally, the effectiveness of different species compositions and stocking rates will be evaluated with regard towards the development of a true polyculture system which is characterized by synergistic species interactions. Egypt also participates in the Global Experiment. The data will be especially valuable since Egypt represents the CRSP's only arid site. The Central Laboratory for Fish Research in Abbassa is the location for the bioconversion and polyculture studies as well as for the Global Experiment, while the biotechnology studies are being conducted at different US universities including Oregon State University, the University of Hawaii, and Auburn University.



Aquaculture trainers work on their seine during the CRSP Rwanda workshop. Every participant in the one-day workshop held at Rwasave station left with a working seine.

## "GIVE ME A FISH, AND I EAT FOR A DAY. . .

Teach me to fish, and I eat for a lifetime." This proverb has special significance in Rwanda, a tiny land-locked country in east central Africa, a few degrees south of the equator. Seven million people live here, in an area about the size of Maryland, where aquaculture promises to help farmers use their limited resources wisely and well. Although growing fish is what usually springs to mind with thoughts of this CRSP, harvesting is certainly an important, not to mention rewarding, part of the aquaculture cycle.

### WORKSHOP

CRSP researcher Karen Veverica responded to Rwandans' need for technical assistance in seining ponds. She and the staff at the Rwasave research station conducted a seine-making workshop to train aquaculture trainers.

The Peace Corp volunteers in attendance got experience in guiding trainees, as well as learning how to make and maintain a

seine. In addition to local farmers and Peace Corps volunteers, representatives of various nongovernmental organizations—including the Red Cross, the Boy Scouts, German and Austrian international assistance associations, and a local Catholic convent—attended the workshop.

### MAKING A SEINE

Veverica purchased a large amount of seine material with her own funds, and resold it at cost to the trainees. Wherever possible, local or recycled materials were used—wood from local trees was used for floats, pieces of motorcycle chain or iron piping were used for leads.

All participants left the one-day workshop with a working seine, and more importantly, the working knowledge of how to construct a seine in the future. Veverica has already received requests for another workshop. It seems that the ancient adage to teach people to fish is a long-term, sustainable approach to fighting hunger.



The long-awaited interactive computer program, PONDCLASS, has recently been released for distribution by the CRSP Program Management Office. PONDCLASS, which was created by Oregon State University scientists using the CRSP global data base, presents an expert system for teachers, pond managers, and researchers.

A draft of PONDCLASS was favorably reviewed by extension agents, farmers, aquaculture scientists, and professors in spring of 1992, and their suggestions helped to further refine the software and documentation. Reviewers suggested making the software and documentation more user friendly, adding help screens, and improving hardware interfaces. Comments were positive:

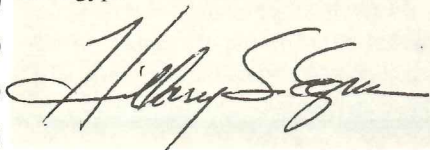
"I'm a PONDCLASS enthusiast. I think there is a great future for this way of disseminating the knowledge and understanding gained from research."

"PONDCLASS is a good method for communicating and manipulating information related to water quality parameters and expected fish production levels."

Another user found "PONDCLASS outputs to be believable...PONDCLASS has stimulated us to accelerate the implementation of water quality analyses in order to better manage our ponds."

Perhaps this last point best illustrates that interactive computer programs can help us change the way we manage pond inputs, and the way we collect information for monitoring pond productivity.

Reviewers and others who have used the early version of PONDCLASS for instructional purposes are reporting success. Word of mouth has acted as a powerful publicity agent in eastern Africa, after the acclaim PONDCLASS received when it was exposed during CRSP researcher Karen Veverica's workshop in Rwanda (see story p. 1). Dr. James Lannan, principal developer of PONDCLASS, also notes that the program will be updated once testing is completed at CRSP sites in the Philippines, Thailand, Rwanda, Honduras, and Egypt.



## PROJECT REPORTS

Project Reports summarizes research activities for January through March 1993. Greater detail about the studies undertaken can be found in the *PD/A CRSP Quarterly Report* which can be ordered from the Management Office.



Luis Lopez, Research Assistant for the PD/A CRSP Honduras project, consults with one of the CRSP's younger trainees—the son of Efraín Ferrera, a participant in the Honduras CRSP outreach effort. Sr. Ferrera has made aquaculture, including sex-reversal of fry, a part of his integrated small farm, which also produces chickens, fruits and vegetables.

## HONDURAS

Interaction between shrimp farming and estuarine ecology are important issues for the nascent shrimp industry in Central America. Experience in southeast Asia has demonstrated that shrimp farming can become untenable if farm discharge exceeds the carrying capacity of the estuaries. Recognizing this, shrimp farmers in southern Honduras have asked the CRSP to establish baseline information on the interactions between shrimp farms and estuaries. Therefore, in addition to conducting the Global Experiment and other studies at the El Carao station, the Honduras CRSP is investigating the brackishwater environment in Choluteca, off the Gulf of Fonseca.

The laboratory at La Lujosa, Choluteca, was dedicated in May. Analytical methodologies for use in brackish water are being ironed out, and sampling of estuaries began this spring. On-farm experiments have begun in Choluteca. Stocking density and protein content of various diets are being studied during two growing seasons—the

usually good growing season and the less optimal season. Data collected so far indicate that responses to density and protein combinations will be similar during both seasons, although as expected, yields in the off-season will be lower.

## RWANDA

The invasion of Rwanda's northern prefectures and the delay in posting the U.S. Research Associate to Butare have certainly slowed progress. However, the high level of professional dedication on the part of the staff at Rwasave has permitted some experiments to proceed in country, and Joyce Newman began laboratory experiments at Auburn while awaiting clearance to travel. It is a measure of the success of the CRSP that the research program is sufficiently institutionalized to allow on-going progress in the face of great difficulties.

Some studies currently underway will indicate if locally available feedstuffs can be used to improve utilization. The results will help researchers design properly



balanced feeds that increase system productivity for tilapia while lowering operating costs and increasing the efficient recycling of scarce local materials.

A comparison of the economics of resource utilization in aquaculture to that of other agricultural crops continues, despite some delays because of travel restrictions. The results will help researchers develop enterprise budgets for aquaculture production technologies to be used in mathematical modeling.

Farmer-generated data from over 1000 production cycles are being used to analyze the relationships between fish production, stocking rate, fish population structure, fish species composition, elevation, nutrient inputs, culture period, producer characteristics, and other pertinent variables.

## THAILAND

The Thailand project and the Asian Institute of Technology are collaborating on an outreach project to field test least-intensive aquaculture techniques on small-scale integrated farms. At the research site, a study to determine the relationships of pond size to fish yield, management practices, and system efficiency was completed this spring. A new study has begun to determine the appropriate stocking density, so that extra fertility from supplemental feeding can be effectively used. By balancing food supply and water quality, farmers can achieve optimal economic production while maintaining environmental quality.

## DAST

The first version of *PONDCLASS*, an expert system for pond management, is ready for distribution. The Oregon State University researchers involved in developing *PONDCLASS* are working to add important economic criteria, feeding data, and other biophysical variables to the model. The second version of *PONDCLASS* is expected to be released in 1994 for internal review by CRSP researchers, and then in 1995 for general distribution.

A limited number of copies of the *PONDCLASS* program and *User's Guide*

to *PONDCLASS* are available and can be ordered from the Management Office in either DOS or Macintosh format. Translation of the *Users' Guide to PONDCLASS* into French is currently underway, and plans for a Spanish translation are being made.

Work continues on the mathematical models at UC Davis. The results from simulations using PD/A CRSP database inputs from Thailand, Rwanda, and Honduras will be reported in the next DAST Newsletter, which may be ordered from the UCD/DAST, Dept. of Agricultural Engineering, Univ. of Calif. at Davis, Davis, CA 95616.

## SOCIAL SCIENCES ON CRSP AGENDA

The 11th Annual Meeting of the PD/A CRSP was held in Portland, Oregon last spring. The Technical Committee (TC) developed the Seventh Work Plan, which has since been printed and distributed by the Management Office. Work plan development and preliminary impressions reported by the External Evaluation Panel focused the attention of the TC on the need to expand the research agenda to examine social, as well as economic and biological, variables that affect the productivity of the farm pond. As a result, the Management Office issued an RFP for social sciences research.

Three proposals were received and reviewed by external and internal reviewers. A proposal submitted by Joseph Molnar and others at Auburn University, to compare financial returns, adoption barriers, and impacts of tilapia production regimes across four sites (Honduras, Rwanda, Thailand, and the Philippines) was chosen.

Results of this and other PD/A CRSP projects will be reported at the 12th Annual Meeting, scheduled to be held in Hilo, Hawaii, 20-22 March 1994. Further information about the Annual Meeting will be sent to CRSP participants in late summer.



Drs. El Gamal and Deyab discuss a fish disease problem with Joel Watkins of the Salmon River Hatchery in Oregon. The two Egyptian scientists attended the CRSP Annual Meeting in Portland, and afterwards visited several Oregon hatcheries and research facilities.

## MEETINGS

American Fisheries Society, 26 Aug-4 Sep, Portland, OR USA. Contact AFS, Tel: 301 897-8616.

International Symposium on Aquatic Animal Health, 4-8 Sep 1993, Seattle, WA USA. Contact: Lorna McAdam, Conference Secretary, Dept. of Medicine, School of Veterinary Medicine, University of California, Davis, CA 95616.

International Conference on Diseases of Fish and Shellfish, 5-9 Sep 1993, Brest, France. Contact: Eva-Maria Bernoth, European Assn. of Fish Pathologists Meetings Secretary, Institute for Veterinary Medicine, Alt-Marienfelde 17-21, W-1000 Berlin 48, Germany. Tel: 49-30-70764958; Fax: 49-30-70763514.

International Symposium on Shrimp Culture in Asia-Pacific Region, 16-20 Sep 1993, Beijing, China. Contact: Mr. Cui He, Symposium Secretariat, 31 Minfeng Lane, Xidan, Beijing, PR China. Tel: 861 6020749; Fax: 861 6012808.

*Continued on next page*



# M I L E S T O N E S

**Richard Neal** and **Roger Pullin** began their appointments on the External Evaluation Panel last year, and with returning member **Homer Buck**, have been engaged in an intensive and extensive review of the CRSP since then. **Brigitte Goetze** joined the Management Office as CRSP Deputy Director and coordinator of the Egypt project. **Nancy Astin** left the Management Office in June, when **Naomi Weidner** returned from her educational leave. **Hilary Berkman** left the CRSP in May after effecting a smooth transfer of the CRSP Central Data Base to **Kevin Hopkins**, new Data Base Manager at University of Hawaii. Berkman left to pursue her career in law.

**Ricardo Gomez**, former Principal Investigator for Honduras, is pursuing graduate studies in Spain.

**JJ Newman** joins the CRSP as U.S. Research Associate in Rwanda, the post formerly held by **Karen Veverica**. Veverica is at Auburn University working with the Egypt, Rwanda and Honduras projects. **Jean-Damascene Bucyanayandi** replaced **Evariste Karangwa**, as PI on the CRSP Rwanda project. Karangwa accepted a position with the African Development Bank.

**Jim Szyper** is now U.S. Research Associate in Thailand, replacing **Chris Knud-Hansen**, who left to attend law school in Colorado. Knud-Hansen is continuing his

work with the CRSP by returning to Thailand this summer to teach at AIT. **Kwei Lin** is now Head of the Division of Agricultural and Food Engineering. **Kitjar Jaiyen** is Deputy Director of Fisheries in Thailand. **Chaninthorn Sritongsuk** is the new Host Country Principal Investigator, and **Wattana Leelapatera** is the new Host Country Research Associate. Both Sritongsuk and Leelapatera are from the Royal Thai Department of Fisheries.

**Jim Lannan**, one of the founders of the PD/A CRSP, retired from Oregon State University. Although he reports being busier than ever, he maintains close contact with the DAST.

**Shree Nath** completed his Masters degree in Fisheries at OSU, and is continuing his studies for a PhD. **Jim Bowman** completed his PhD at OSU. **John Bolte** and **Doug Ernst** are new members of the OSU/DAST. **Raul Piedrahita** is on sabbatical leave at the Norwegian Hydrotechnical Laboratory in Trondheim, Norway until August 1993. **Steve Culberson** received his Master's degree in International Agricultural Development from UC Davis.

**Bart Green** is U.S. PI on the Egypt Project. New researchers joining the Egypt project are **Abdel Rahman Abdel El Gamal** (NARP), **Bill Shelton** (Univ. of Oklahoma), **Gordon Grau** (Univ. of Hawaii), **Marty Fitzpatrick** and **Carl Schreck** (Oregon State Univ.).

## Meetings, continued from page 3

International Symposium on Fish Nutrition and Feeding, 4-7 Oct 1993, Hobart, Tasmania, Australia. Contact: Mures Convention Management, Victoria Dock, Hobart Tasmania, Australia 7000. Tel: 002 312-121; Fax: 002 344-466.

Fisheries & the Environment Beyond 2000, 6-9 Dec 1993, Serdang, Malaysia. Contact: The Conference Secretariat, Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia, 43400 UPM Serdang, Selangor Darul Ehsan, Malaysia. Tel: 6 03 948 6101 ext. 2520; Fax: 6 03 948 8246, 2697.

International Symposium on Socio-economics of Aquaculture, 14-17 Dec 1993, Taiwan, Republic of China. Contact: Dr. Y.C. Shang, Dept. of Agricultural & Resource Economics, University of Hawaii, 3050 Maile Way, Honolulu, HI USA 96822. Fax: 808 956-2811.

Aquaculture and Water Resource Management, 21-25 June 1994, Stirling, Scotland. Contact: Dr. Liam Kelly, Institute of Aquaculture, University of Stirling, Stirling FK9 4LA Scotland.

## AQUANEWS

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