

V. Public Service

The Pond Dynamics/Aquaculture CRSP relies on its on-site researchers to recognize opportunities to support training activities at local research institutions and to find efficient ways to extend CRSP research results to farmers. CRSP researchers in all countries have capitalized on these opportunities, enabling the CRSP to increase its impact at little or no additional cost. Although ancillary to the Global Experiment and site-specific studies, these activities contribute to institution building and to increased food production, thus assisting the program to achieve a strategic goal. Such activities also help promote international scientific linkages through the exchange of technical information. As a result, research capabilities have been substantially strengthened in every developing country where the CRSP has been active. Notable among these contributions is the CRSP's debut on the WWW. The CRSP is taking full advantage of the Internet to make information and new technologies as broadly accessible as possible. For example, program information, including a complete listing of all CRSP publications, and text that can be downloaded to users' own computers, is available at the PMOs homepage located at: <http://www.orst.edu/dept/crsp/homepage.html>. From February 1996 to the end of the reporting period, the CRSP PMO homepage had been visited more than 2,000 times for an average of 20 times per day. As Internet technology becomes available to more people and as the CRSP website is picked up by more search engines over time, the number of visits, information shared, and contacts developed is expected to increase dramatically.

In addition a WWW homepage has also been established by the Biosystems Analysis Group at Oregon State University for disseminating information relevant to the POND[®] project and regional-scale analysis of aquaculture potential. The URL for the site is: <http://biosys.bre.orst.edu/aquacult/aquacult.htm>. The POND[®] software, Users Guide, and tutorial are available from this site, as well as from an FTP site. To date approximately 60 copies of the software have been downloaded (both from within the U.S. and over ten other countries) from this website.

Institution Building

The research activity of the CRSP has resulted in major improvements to the research infrastructure of collaborating host country institutions, both directly and by helping to attract other funding opportunities. In addition, CRSP scientists serve as advisors in the research programs of students at host country universities and contribute to curriculum development.

In Honduras, a CRSP-led public-private joint venture continues to produce economic benefits while increasing the understanding of water quality issues associated with the shrimp industry in southern Honduras. The CRSP works with the Ministry of Natural Resources, the National Association of Honduran Aquaculturists (ANDAH), the Panamerican Agriculture School (EAP), and the Federation of Producers and Exporters of Honduras (FPX) to study water quality issues affecting shrimp production and the estuarine environment surrounding the farms. The refurbishment of the laboratory in La Lujosa, near

Choluteca, was made possible by the active participation of all the partners in this joint venture. The Ministry of Natural Resources provides the laboratory and office space at La Lujosa. ANDAH provides equipment and supplies for the laboratory, funded by a self-imposed assessment on shrimp exports. ANDAH members also provide ponds and materials such as fertilizer and feed needed for CRSP experiments. FPX extensionists assist in collecting data from their members and in disseminating research information. Students under the direction of EAP conduct research in shrimp culture and water quality analysis.

The CRSP continues to be an active partner in the establishment of research ponds at the Chaiyaphum Fisheries Station in northeast Thailand and at Phayao Station in northern Thailand. The CRSP has also been instrumental in providing outreach assistance in northeast Thailand.

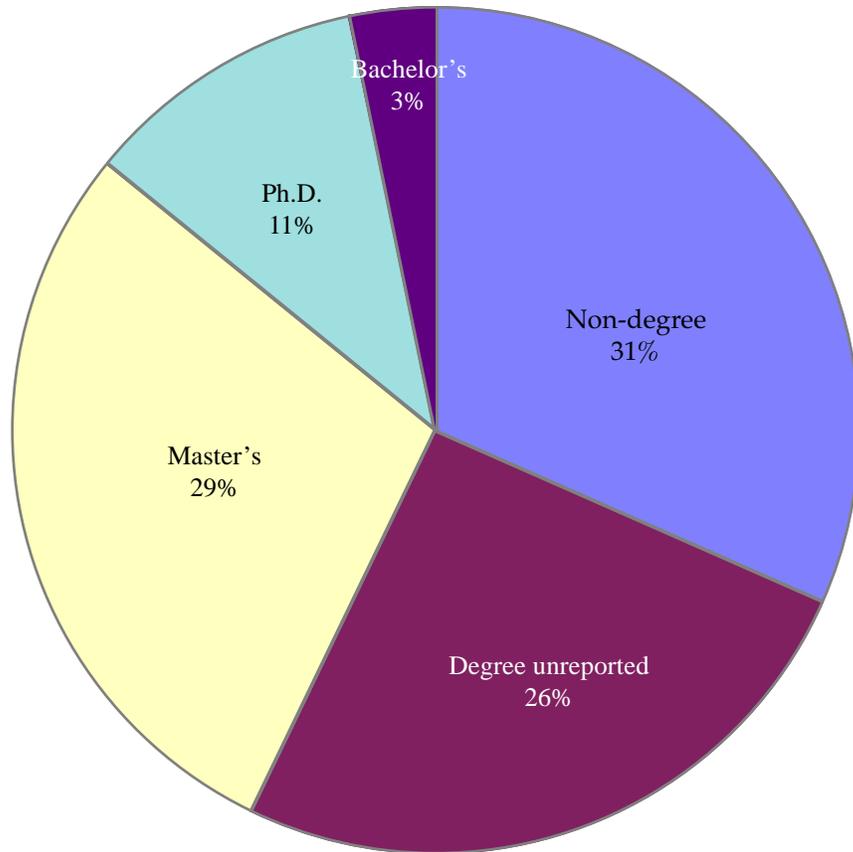
Education and Professional Development

CRSP researchers recognize that education and training, whether through degree or non-degree programs, help address the constraints to sustainable aquaculture development. Although formal education and training programs have rarely been funded by this CRSP, CRSP researchers have been active in conducting informal activities whenever the opportunity presents itself. They conduct short courses and workshops, teach courses at host country institutions, and advise and mentor graduate students. With the initiation of the new CRSP grant, education and training will become a formal part of the CRSP, under a new Research Support component—Education Development. However, even without formal support, past accomplishments in the area of education and training have been significant.

Informal education and training activities

Although the CRSP maintains a record of participants in education and training activities, not all those who attend CRSP-related workshops appear in the CRSP training inventory. For example, when Shree Nath, OSU/DAST researcher, visited FAO headquarters in Rome, he conducted a seminar for 12 FAO personnel on “Decision Support for Pond Aquaculture Planning and Management.” C.K. Lin, CRSP researcher at AIT, conducts seminars for biologists and extensionists at the Royal Thai Department of Fisheries which have been broadcasted by a radio station in northeast Thailand. Sometimes, outreach occurs because of the CRSPs university connections. For example, a participant in Auburn’s Aquaculture Training Program heard researcher Karen Veverica present a seminar on composting, based on the CRSP research in Rwanda. Upon his return to San Cristobal, Venezuela, he incorporated this information into a training manual for family fish pond owners. Since the CRSP began, an estimated 400 individuals have participated in some form of CRSP education and training activities. Of these, 278 have been officially “registered” as participants. Figure 1 shows the distribution of degree and non-degree training among those officially registered as CRSP participants.

FIGURE 1. DEGREES EARNED BY PARTICIPANTS



The range of informal education and training activities is impressive. In addition to conducting the workshop for FAO, Shree Nath conducted workshops for extension agents at UAPB and Mississippi State University, and with John Bolte, conducted a workshop prior to the World Aquaculture Society Meeting in Bangkok in January 1996. Those who attended represented producers and educators from ten countries.

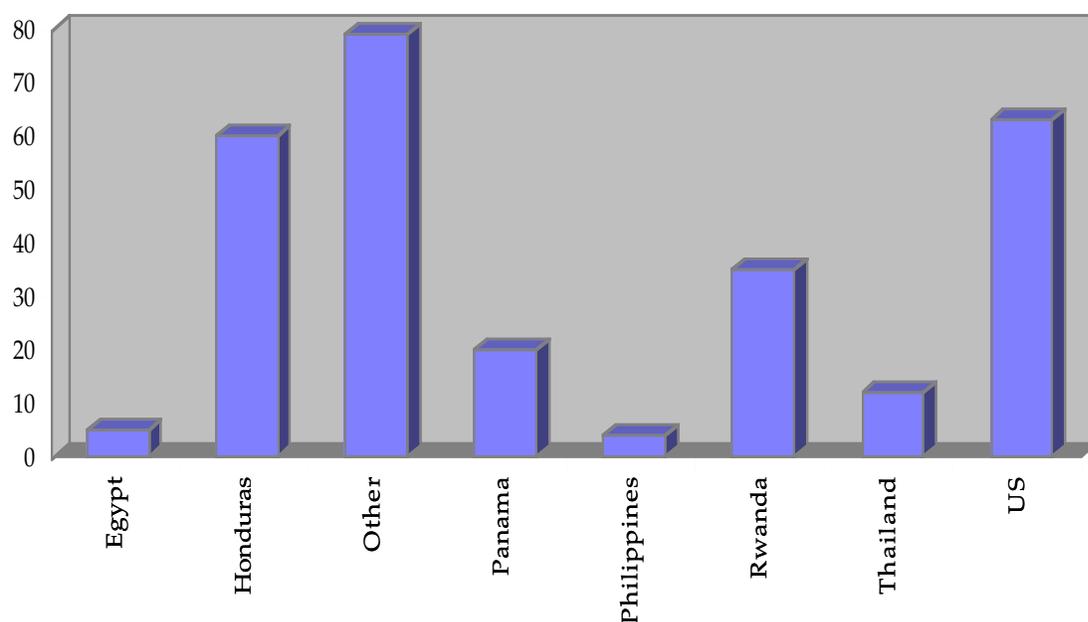
Marion McNamara, Doug Ernst, and Martin Fitzpatrick designed and implemented a summer internship program for an elementary science teacher, which enabled him to introduce aquaculture as a focus for teaching science, math, and social studies in an Oregon elementary school. Ernst has spent countless hours consulting with high school teachers throughout Oregon to help them set up aquaculture systems in area high schools.

Degree programs

Prior to this reporting period, over 140 degrees (B.S., M.S., and Ph.D.) had been awarded. During this reporting period, 14 formal degree programs were completed, and 37 were in progress. Support ranged from the CRSP providing graduate research assistantships for Ph.D. students to wages for undergraduate work-study students.

Most participants in CRSP education and training activities are CRSP host countries—Egypt, Honduras, Indonesia, Panama, the Philippines, Rwanda, Thailand, and the U.S. (Figure 2); however, the benefits of these activities extend well beyond the borders of these countries. Participants have been drawn from at least 27 countries over the course of the program. Furthermore, the interdisciplinary nature of aquacultural research attracts participants from a wide range of academic disciplines. Many participants are able to apply their CRSP education or training directly to their work, such as Luis Lopez, a former CRSP Research Assistant, who is currently working as a manager for Grupo Granjas Marinas in southern Honduras. Other participants return to positions in schools, agricultural research institutes, development projects, and agricultural extension services, where they are able to increase public awareness of aquaculture’s importance in the food system.

FIGURE 2. TRAINING PARTICIPANTS’ COUNTRIES OF ORIGIN



Linkages

Program linkages in Honduras have been strengthened and broadened with the inauguration of the brackish water site in Choluteca in 1992. The CRSP was able to add this site largely because of the enthusiastic collaboration of private organizations and government institutions. Among the collaborators are the Ministry of Natural Resources, ANDAH, EAP, and FPX, which each make substantial contributions to the on-going operation of the project. In addition, CRSP researchers serve as consultants for Peace Corps volunteers, who in turn have assisted with logistical arrangements for CRSP researchers involved with the social sciences project.

The CRSP continues to strengthen its ties with institutions in southeast Asia. In Thailand, CRSP researchers hold long- and short-term faculty appointments at AIT and teach a variety of courses and seminars. AIT serves as a regional resource for technology development and dissemination in Southeast Asia, so CRSP researchers are able to form linkages with students and faculty from many countries. They also serve as advisors to the Thai government on aquaculture and fisheries projects. CRSP researchers working on outside projects in Vietnam and Laos have added to the regional network of potential CRSP collaborators.

In addition to the CRSPs numerous formal connections with host country institutions through Memoranda of Understanding, the CRSP maintains ties with other organizations, including commercial fish producers in the U.S. and in host countries. A partial list of informal CRSP linkages is shown on the facing page.



Harvest at a CRSP pond in Thailand

INFORMAL PD/A CRSP LINKAGES

American Association for the Advancement of Science (AAAS), Washington, D.C.	Institut Pertanian Bogor (IPB), Indonesia
Al Azhar University, Egypt	InterCRSP Council
American Tilapia Association, Arizona	International Development Research Centre (IDRC) of Canada
American Fisheries Society, Maryland	International Center for Aquaculture (ICA), Auburn University, Alabama
Aquaculture for Local Community Development Programme (ALCOM), FAO, Rome, Italy	International Center for Living Aquatic Resources Management (ICLARM), Philippines
Board for International Food and Agricultural Development (BIFAD) Washington, D.C.	J.F.K. Agricultural School, Honduras
Cairo University, Egypt	Ministry of Agriculture, Agricultural Research Center, Abbassa, Egypt
CARE, Honduras	National Agricultural Library, Washington, D.C.
Catholic University of Leuven (CUL), Belgium	National Association of Honduran Aquaculturists (ANDAH), Honduras
Central Luzon State University, Freshwater Aquaculture Center, Philippines (FAC/CLSU)	National Inland Fisheries Institute (NIFI), Thailand
Consortium for International Earth Science Information Network (CIESIN), Washington, D.C.	National Marine Fisheries Service (NMFS), California
Consultative Group on International Agricultural Research (CGIAR), Washington, D.C.	National Technical Information Services, (NTIS), Virginia
Department of Fisheries, Udorn Thani, Thailand	Network of Aquaculture Centers in Asia Pacific (NACA)
Department of Renewable Natural Resources (DIGEPESCA), Honduras	North Central Regional Aquaculture Center (NCRAC), Michigan
Eastern Fish Cultural Laboratory, Alabama	Northwest Fisheries Sciences Center, Washington
Escuela Agrícola Panamericana (EAP), Honduras	Programa Regional de Apoyo al Desarrollo de la Pesca en el Istmo Centroamericano (PRADEPESCA), Honduras
European Economic Community	Peace Corps, Honduras
European Inland Fisheries Advisory Commission (EIFAC)	Soil Management CRSP, Honduras
Fish Breeding Centre, Israel	South East Asian Fisheries Development (SEAFDEC), Philippines
Food and Agriculture Organization of the United Nations (FAO), Rome, Italy	Southern African Development Community (SADC)
Honduran Federation of Agricultural and Agroindustrial Producers and Exporters (FPX)	Sustainable Agriculture and Natural Resources Management (SANREM) CRSP Special Program for African Agricultural Research (SPAAR), Washington, D.C.
Inland Water Resources and Aquaculture Service, FAO, Rome, Italy	The University of the Philippines in the Visayas
International Development Bank (IDB)	United States Department of Agriculture (USDA), Washington, D.C.
International Sorghum and Millet (INTSORMIL) CRSP	United States Fish and Wildlife Service, Washington, D.C.
	World Aquaculture Society (WAS), Louisiana
	Western Regional Aquaculture Consortium (WRAC), Seattle, Washington