The PD/A CRSP Training Plan: Perspective, Experiences, and Directions

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Abstract

The purpose of this paper is to review the constraints and possibilities that shape formal and informal training conducted by PD/A CRSP researchers at Host Country and U.S. Institutions. We first review some of the background and context for the conduct of training by USAID and the PD/A CRSP. A number of sections discuss some of the specific concerns and possibilities that present themselves to researchers as they seek to develop research proposals and budgets, recruit students, and otherwise enhance training as one outcome or impact of the PD/A CRSP.
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Introduction
Title XII of the Foreign Assistance Act of 1961, as amended in 1975, seeks to strengthen the capacities of US land-grant institutions to participate in the US government’s international efforts. The objective is to apply agricultural sciences more effectively to goals of increasing world food production, and, in general, providing increased and longer term support to the application of science to solving food and nutrition problems of developing countries.

Training is one of the primary interventions for improving the performance of agricultural systems (Benor, Harrison, and Baxter 1984). What do we know about effective training? We know that training is part of most efforts to strengthen agricultural systems and improve the quality of services (Albrecht 1990a, 1990b). We know that training comes in many sizes and shapes, including classroom-based learning, distance learning, self-directed learning, technology-assisted learning, and on-the-job training. We know that training is applied across a broad range of content areas including management, quality assurance, logistics, community education, client-provider interaction, and clinical skills (Van Den Ban and Hawkins 1990). But how do we know effective training when we see it? What practices, processes, and approaches work best in international settings?

The Pond Dynamics/Aquaculture Collaborative Research Support Program (PD/A CRSP) recognizes that mutually beneficial development strategies have the best chance of being sustainable over time. The organizational structure of the PD/A CRSP encourages collaboration among researchers, institutions, and countries. Training is an integral byproduct of the PD/A CRSP research program. Researchers rely on students to accomplish research tasks; students rely on research projects for stipends, scholarships, and data for theses.

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Training Objectives of USAID
USAID policy documents suggest that training has a central role in the mission of the agency and the overall CRSP program. The following goal statement reflects this interest:

Strategic Goal 3: Build Human Capacity Through Education and Training

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Objective 3.1 Access to quality basic education for underserved populations, especially for girls and women.
Objective 3.2 Increase contribution of host-country institutions of higher education to sustainable development.

Degree Training is a Means and an End
The PD/A CRSP proposes research that will contribute significantly to removing major constraints to aquaculture development as they impact economic growth and food security. The goal of the program is to provide a basis for enhancing the development and sustainability of aquaculture production systems in order to improve food supplies and human nutrition on a long-term basis. Degree training is an integral part of this process.

Support for a wide range of partnerships between HC and US institutions of higher education is aimed at achieving development results. A narrower set of efforts aim specifically at strengthening the overall performance and capabilities of HC institutions.

USAID works with HC colleges and universities to help increase their contribution to the development of their own societies. Colleges and universities produce the educated leaders, skilled professionals, and trained workforces essential to the development of politically and economically sustainable societies. These institutions produce the teachers who provide quality basic education to the decision makers and practitioners essential to sustained growth and progress in all sectors (Binswanger and Ruttan 1978). Institutions of higher education in developing and transitional countries hold the potential to contribute more fully to the resolution of national and local problems through teaching, research, and technical support to industry (Rasmussen 1989).

To help develop human capacity, USAID works to expand access to quality basic education for underserved populations, especially girls and women. Its programs aim to enhance the contribution of HC colleges and universities to the process of development. To achieve the first objective, USAID strives to improve HC policies and institutions that affect basic education, support the adoption of improved educational practices, and increase community participation in educational decision-making. To realize the second objective, USAID encourages the formation of effective partnerships between US and HC institutions of higher education. The PD/A CRSP is part of this process. In certain countries, USAID also supports improvements in the overall capacity and performance of colleges and universities. In turn, these institutions provide technical education and farmer training.

For example, Bonzon and Gréboval (1996) point out that Africa has considerable training requirements in fisheries and aquaculture. However, it is difficult to address training needs. Geographically, potential trainees are often too few to justify developing permanent national training capacities. Past efforts to address this issue by setting up regional training centers have generally failed. As a result, training institutions are few and generally limited to a few countries. High-level training is done in a number of local universities and quite often abroad. Some technical institutes provide specialized training in general fisheries, aquaculture, or related professional specialties. Generally, the industry relies heavily on on-the-job training and on personnel from developed countries usually supplied by technical missions.
Bonzon and Gréboval (1996) note that one way of addressing training needs, when only a limited number of people are concerned, is to develop short-term programs that can be offered on a sequential basis and in direct relation to demand from end users. Some countries are experimenting with such an approach or have benefited from previous efforts to build human and organizational capacity to support aquacultural development. It could be promoted and facilitated in the context of sub-regional projects, with emphasis on developing sustainable national capacities to organize short-term training programs in fish culture (Bonzon and Gréboval 1996).

Relationship Between Training and Research
Global demand for fish has soared in the past decade. In many developing countries, fish is the single most important source of animal protein. In the 21st century, aquaculture promises to be the primary means of increasing fish production. The PD/A CRSP has brought together the resources of developing countries and US institutions to increase the efficiency of aquaculture systems, develop successful and sustainable aquaculture production strategies, and extend results to stakeholders.

Research without training may advance scientific understanding, solve critical problems constraining an aquaculture industry, and generate professional publications. The lasting impact of applied research activities in HC institutions, however, is at least equally found in the capacities, understandings, and outlooks engendered in subsequent generations of researchers and technical personnel through the training experiences fostered by the PD/A CRSP.

Degree training without research does not advance the objectives of the CRSP scientific program (FAO 1985). More fundamentally it does not engender the skills and capacities necessary for HC institutions to solve problems and develop applied knowledge that will advance aquacultural development. There is a synergistic relationship between training and research (Rivera and Schram 1987); that is, both activities are improved by the combination.

Farmer training is also an important aspect of PD/A CRSP activities, but for several practical and programmatic reasons must remain a secondary part of its activities and impacts (Chambers and Thrupp 1989). The need is great, but the capacity to deliver farmer training is not extensively resourced by the PD/A CRSP and generally is not within the scope of the HC institution where most PD/A CRSP projects are lodged. The focus of the program is research, not outreach. Occasional project-sponsored farmer training programs or researcher participation in training programs organized by third parties are useful ways to disseminate the results of applied research (Kaimowitz 1991). They also put researchers in contact with the actual problems and experiences of farmers from diverse locales who may travel to attend such meetings (Oakley and Garforth 1985).

Technician and advanced farmer training may be the most productive nondegree training activities undertaken by PD/A CRSP researchers (Cross 1981). Training-the-trainers, those who will undertake regular programs of farm visits as sponsored by nongovernmental organizations (NGOs) or government agencies, is a central means for disseminating PD/A CRSP research results and general principles of good practice in
aquaculture. Seed stock production is often a vital topic for this type of training activity. Leading farmers with higher levels of education often become fingerling producers and enhance the possibilities for small producers in surrounding communities (Chin and Benne 1976). Dispersed seed stock production is a signal aspect of aquacultural sustainability for small and medium-scale producers (Swift 1996, Edwards 2002).

The PD/A CRSP Training Plan
The goal of the PD/A CRSP training plan is to empower host country researchers, administrators, students, technicians, suppliers, and producers to acquire new skills, knowledge and new technology (Rogers 1986). These individuals will then be better prepared to make decisions that positively impact the quality of their lives within the context of a new, rapidly changing, knowledge-based global economy. The knowledge gained will also better position beneficiaries to contribute to the development of aquacultural industries by participation in managerial-technical roles or as entrepreneurs of their own firms (Roling and Engle 1991).

Objectives of the Training Plan
Objective 1. Promote networking among participants to energize the learning process and make adult learning a sustainable motor for aquaculture development.

Objective 2. Promote and support the training in host countries for farmers, NGO technicians, government extension agents, secondary school teachers, groups of women, and other stakeholders, through short courses, seminars, and field days.

Objective 3. Strengthen the capacity of host country institutions to function as service providers through formal training of host country researchers/technicians in aquaculture and related sciences through degree training, focused coursework, or research visits in the United States or at capable regional institutions.

Objective 4. Promote the sharing of foundational technical information through various media—manuals for farmers, radio broadcasts, newspaper articles, newsletters, educational posters, information sheets, etc.—to reach more stakeholders.

Some of the constraints identified in relation to training needs, include:

- Lack of organized fish culture educational materials for extension programs
- Lack of focused efforts to reach elementary and high school teachers for training in aquaculture
- Lack of training materials in native language
- Lack of follow-up training program
- Lack of evaluation of training methods
- Limited on-farm research and demonstration and research verification
- Poor access to information (electronic and paper), including information in native language and from international sources
- Lack of training modules

To address these constraints and advance the broader objectives of the PD/A CRSP the following steps are proposed for each type of training activity.

Degree Training
Graduate students are an integral part of the PD/A CRSP. The next cycle of PD/A CRSP activities should increase attention, awareness, and guidance to the process of recruiting, guiding, and integrating graduate students into the PD/A CRSP process.

Student recruitment should be done by the HC institution in collaboration with the US University or alternative HC’s neighboring university, giving preference to citizens of the HC. PD/A CRSP support to formal training for HC students usually includes tuition, travel and living support for M.S. and Ph.D. programs at universities in the US or in an alternate country. It sometimes supports undergraduate students where students are required to do a thesis in their HC university.

English language assessment (TOEFL) and the Graduate Record Exam (GRE) are two of the requirements for admission to most US universities. Both the TOEFL and GRE exams represent significant barriers for attracting international students to PD/A CRSP-funded formal training programs. The program should consider ways to reach otherwise strong candidates whose native language is not English. The training plan should procure adequate means to assist with English training, focusing on the TOEFL exam for prescreened candidates who have good GRE scores or other indicators of academic potential and research success. The individuals will be identified by the HC scientists as potentially good candidates.

The biennial proposal evaluation process should credit proposals that expend effort and resources on graduate students and debit those that do not. However, the nature of graduate student involvement should be recognized as highly variable across sites and regions. In some parts of the world, it would be clearly more cost-effective to educate four graduate students at a regional institution for what it might cost for three at a US institution. In other cases, training at a US institution is the most productive path for the student.

The question of whether to support M.S. degrees or Ph.D. degrees is also not readily answered by general principle. The project cycle of the PD/A CRSP provides for two-year work plans that readily coincide with M.S. programs. The research activity of the M.S. degree readily lends itself to the unit of task associated with the project, i.e., the student’s thesis becomes the foundation for the project final report. In the latter case, the research is conducted at the US institution or it requires return travel for the student to conduct the experiments and collect the data in the HC.

In some cases, the student may be able to complete coursework requirements at a US institution, then return home to conduct research under the guidance of the HC researcher. Thesis development and writing are conducted in the HC, with consultations with the US major professor during periodic visits and email correspondence. The major professor travels to the HC for the final oral examination, having secured temporary graduate faculty appointments for sufficient HC scientists to comprise an examining committee. A certain amount of administration then falls on the US major professor to oversee that graduate school paperwork and thesis submission requirements are met, perhaps ensuring that the student has recruited a second to act on his or her behalf for these matters.

It is important that project leaders make advance efforts to recruit students for degree
training, ensuring that individuals with appropriate GRE and TOEFL scores are identified in research proposals. To the extent possible, the PD/A CRSP Management Entity (ME) should provide information and guidance to researchers and prospective students in support of this often complex and murky process.

It should not be forgotten that members of another important CRSP beneficiary group are US students. The exposure of US students to the CRSP provides them with the opportunity to learn about international research and development.

Nondegree Training
Some host country staff may benefit from US visits that feature farm tours, specialized training programs, or a focused term or two of formal coursework. Such visits may expand the horizons and capabilities of HC researchers and technical staff. Similarly, where strong regional institutions exist, PD/A CRSP may support similar experiences that augment the capabilities of researchers and key technical staff.

Technician Training
Training government extension personnel, NGO technicians, and key farmers is a vital contribution of the PD/A CRSP to the advancement of aquacultural development in each HC. Most sites have a long tradition of sponsoring, organizing, and participating in these activities. Some locales will require encouragement and support to ensure that the cadre of personnel working with farmers are technically abreast of aquacultural practice as appropriate to the resources, markets, and regulatory context of the nation.

Farmer Training
The PD/A CRSP is committed to fostering farmer training conducted by HC institutions and NGOs. It alone cannot shoulder the responsibility to become a regular source of field days, workshops, or group demonstrations. Researchers must endeavor to develop relationships with HC institutions that do provide these services, encouraging them to participate in technician training, providing guidance, support, and participation as appropriate. Gender, ethnic group, and regional balance are perhaps more important considerations in farmer training than in other types of training (Balakrishnan 1993).

Strategies
Strengthen Host Countries Institutions
If a partner institution does not have the capacity to yield the desired results, training activities must be part of the assistance package for the institution. A human resource analysis of the institution will uncover the nature and extent of the deficits in terms of number of people required to undergo formal training and the field of expertise. The activities supported will depend on the results envisioned and the constraints faced in achieving them. Analyzing partner institutions' performance will reveal those key constraints. Few standardized means exist for making those determinations.

PD/A CRSP sponsored training for aquaculture development will ideally be jointly planned by partner institutions to achieve PD/A CRSP objectives. This collaboration should enhance and improve the partners' abilities to provide services for targeted beneficiaries. Supporting the efforts of partner institutions requires a combination of technical assistance, infrastructure development, dialogue, and training.
Training, wherever it takes place, can improve the institution's performance required to achieve the development goals by directly addressing specific technical or managerial problems, or by providing an opportunity to shape attitudes and understandings. Training is a contributor to the results and sustainability of other investments such as infrastructure development (Bonzon and Gréboval 1996).

Opportunities for overseas training often exist in the context of other projects or bilateral assistance programs. To better direct these opportunities to reach aquaculture development, training needs should be more systematically assessed (Engle and Stone 1989).

Support Researchers Who Provide Training
PD/A CRSP researchers also participate in outreach activities to disseminate information and promote the adoption of better management practices among farmers and the fish culture industry. Many PD/A CRSP researchers could use helpful guidance to better implement outreach efforts with farmers, NGOs, government officials, members of local communities, students, and corporations, in the design and implementation of aquaculture training courses (Molnar, Hanson, and Lovshin 1996). Thus, training for researchers may be recommended in some situations.

Most training efforts should be directed toward “training of trainers” as an efficient way to multiply the effect of the effort. NGO technical staff and government extension agents are good candidates for this training due to their outreach activities in remote areas of the host countries and the diversity of the groups that they assist. The organization of seminars, workshops, and stakeholders meetings in the host country are important ways to disseminate new technologies and share information about markets, inputs, and management (Lionberger and Gwin 1983).

Facilitate Access to Training Materials
There must be an emphasis on developing and producing technical materials in a variety of languages, including that of the HCs or of the final users of the information (Rogers and Shoemaker 1971). HC investigators must lead the effort to produce relevant extension materials. The most common practical resource for farmers and technicians is production manuals, but the use of radio broadcasts, newsletters, information by digital format, Web sites, videos, and other means also may be appropriate communication channels to various target audiences (Jarvis 1987).

Budget and Finance Issues
Training needs must be anticipated and met through project budgets. That is, travel, subsistence, tuition, and research costs are to be specified in proposal budgets. The PD/A CRSP training objectives and training plan are centrally implemented through the array of projects that are supported.

Monitoring and Evaluation
Training is an explicit objective of the PD/A CRSP. The MEs Information Management and Networking Component manages data collection systems that accumulate reports of number and kind of participants. Continued attention and recognition of training achievements by CRSP researchers would facilitate and enhance the visibility of this
Monitoring and evaluation are essential elements of a good training program. The ME currently keeps a focused commitment to training outcomes by tracking and reporting score of training accomplishments, quantified by gender, national origin, and subsequent employment (where this is known). The number and kind of degree recipients, short-term experiences, and host-country meeting days of training that have been provided are quantified. The PD/A CRSP commitment to providing training and promoting diversity is quantified and expressed on a regular basis to demonstrate achievements. By using these reports and data, identification of areas where progress is needed can be readily accomplished by HC and US researchers (Ravillion 2002).

Recommendations for Focused Effort
Some training activities show the most promise of being successful because they are known and well understood. With recognition of effort and accomplishment training goals and diversity objectives can be reached. The annual publication of tables showing regional training accomplishments by gender and national minority standing helps promote progress, as participants know that their efforts on this front are being specifically noted. Similarly, the proposal review process should continue to specifically include training contributions as a dimension of assessment.

Although the need for targeting girls and women (and other historically underrepresented groups) may differ among countries, it is clearly a global concern. At least one generally desirable condition is some level of gender equity in training involvement. Projects that have a cumulative record of under involving women should be given incentives or otherwise induced to improve their performance. Unless there are published and comparable indicators of achievement on the level and diversity of training impacts, we will not be able to monitor progress nor evaluate the extent to which training goals have been met.

Conclusion
One of the best and most effective forms of collaboration is to develop human resources through training of young scientists. The HCs’ capacity for instruction and research rests on continuous renewal and enhancement of the supply of trained personnel to conduct research, teaching, and technical assistance to the public and private sector alike.

Many host country institutions have resource and organizational problems that directly or indirectly limit the impact of PD/A CRSP activities. Some problems may lie in the host educational institution, but more often they reflect limits in the national agricultural research system. Weak or under-resourced extension systems, fragmented responsibilities for aquacultural development, high levels of personnel turnover, and other conditions often limit the quality and availability of service to producers (Moris 1991, Harrison 1991).

There are limits to the amount and kind of training CRSP researchers can be expected to do. Clearly degree training is a priority for CRSP projects. Farmer training is a central means for ensuring that research results lead to changed practices and progress in each country’s fish culture industry. Degree training ensures that there is sufficient scientific
capacity to push aquacultural development forward. We need to be clear and confident about the worthiness of these objectives. We can realize our commitment to training objectives in the way we assess the worthiness of proposals for funding, in the way we measure the progress and impacts of what the projects accomplish, and in the way we recognize the quality and quantity of impacts of what we do.

Training will not solve all institutional performance problems, or even all the human resource problems. However, training is a fundamental ingredient in enhancing and expanding impacts of the PD/A CRSP.

References


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