

# VII. Program Management and Technical Guidance

The CRSP is organized to facilitate multidisciplinary research and collaboration among institutions and countries around the world. This structure is based on the premise that mutually beneficial development strategies have the best chance of being sustainable over time. Primary management responsibilities for the PD/A CRSP are vested in OSU as the Management Entity (ME). The ME is the institution with the legal status of a juridical body that administers the grant from USAID and manages the total research program. Accountability for the CRSP rests with the ME. Therefore, the ME is the decision-making body on fiscal and programmatic matters and is advised in this function by a Board of Directors (BOD), a Technical Committee (TC), and an External Evaluation Panel (EEP). The ME appoints a Program Director to administer the CRSP. The Program Director serves as an ex-officio member of the BOD and TC and serves on the steering committee of the CRSP Council.

ME functions at OSU are carried out through a Program Management Office (PMO), which is the operational component of the ME. The PMO is the link between USAID and the CRSP projects. During the reporting period subcontracts were issued to Auburn University, University of California at Davis, Oregon State University, University of Arkansas at Pine Bluff, University of Hawaii, and The University of Michigan.

The PMO, currently housed at the Office of International Research and Development (OIRD) at OSU, is an integral component of, and derives benefits from, the international programs at OSU. The CRSP presently is also linked to the Department of Fisheries and Wildlife and the Department of Bioresource Engineering through faculty appointments and professional and academic interests. OIRD provides accounting, purchasing, personnel, and travel support. The CRSP reports directly to the Vice Provost for Research and International Programs through the Director of the OIRD. At present, the structure of OSUs international programs is undergoing reorganization. The new reporting procedure in 1997 will be to the Provost, through the Dean of International Programs.

During this reporting period, members of the PMO included:

Hillary Egna, Director  
 Brigitte Goetze, Deputy Director  
 Marion McNamara, Assistant Director (to 31 May 1996)  
 Danielle Clair, Program Assistant (from 1 January 1996)  
 Brad Herbison, Temporary Clerical Support (to 5 July 1996)

Through BIFAD, the ME has responsibility to:

- Receive funds committed by USAID to the CRSP and assume accountability for their use;
- Provide funds to participating institutions and ensure compliance with the terms of the grant;
- Hold participating institutions responsible for programs and accountable for use of funds;

- Manage the program and control and account for funds, including matching resources contributed by participating institutions;
- Implement the program;
- Coordinate and lead the development of annual budgets and work plans;
- Spearhead program development efforts;
- Facilitate internal and external communications;
- Maintain contact with overseas and domestic participants;
- Represent the CRSP in dealings with USAID/Washington and USAID Missions;
- Produce and distribute CRSP publications; and
- Provide a focal point for members of the TC, BOD, EEP, and USAID to interact.

During the reporting period the PMO managed an ambitious and heavy workload and was actively engaged in a broad array of activities, highlighted below:

- Edited, printed, and submitted to USAID the first draft of *Continuation Plan 1996-2001*;
- Commissioned WID review of the draft *Continuation Plan 1996-2001*;
- Responded to USAID Administrative Management Review of the PD/A CRSP;
- Responded to USAID comments on first draft of *Continuation Plan 1996-2001* and incorporated suggested draft changes;
- Defended the *Continuation Plan 1996-2001* before USAID Review Panel together with Raul Piedrahita and Bryan Duncan, Technical Committee Co-Chairs;
- Responded to Review Panel recommendations and incorporated revisions into the *Continuation Plan 1996-2001*;
- Prepared and submitted to USAID the final draft of the *Continuation Plan 1996-2001*;
- Developed work plan review materials and conducted a confidential peer review of the 1996/98 Work Plan;
- Assisted in the production and distribution of the Interim Work Plan;
- Commissioned EEP to evaluate the work plan review process;
- Developed a Scope of Work for annual EEP review;
- Commissioned EEP to conduct a review of Philippines site;
- Designed, produced, and distributed the Annual EEP Report;
- Sought candidates and presented names of prospective new EEP and BOD members to USAID;
- Organized and participated in meeting with Technical Committee Co-Chairs in Corvallis, Oregon, in December 1995;
- Provided support to Technical Committee in development of new bylaws and their adoption;
- Reviewed and approved Technical Committee bylaws;
- Provided support in collecting nominations for elections of the Technical Committee Co-Chairs and subcommittee chairs;
- Assisted a Board member and Technical Committee Co-Chair in organizing a slide presentation for use at a proposal presentation;
- Submitted a request to the Technical Committee for development of a policy on the conduct of the Global Experiment at new sites;

- Issued a Request for Proposals for PD/A CRSP Central Database Management project and organized review process for proposals;
- Awarded Central Database Management subcontract and assisted with transfer of Database from University of Hawaii to OSU;
- Facilitated collaboration between PD/A CRSP and CIESIN for increased interactivity and accessibility of Central Database;
- Participated in the Africa Site Selection Team and assisted in development of Kenya MOU;
- Collected and edited submissions for the “Lessons Learned” report;
- Evaluated and granted small awards as part of the New Research Initiatives;
- Visited Honduras site and evaluated project progress and need for refurbishment of the El Carao station;
- Organized fourteenth PD/A CRSP Annual Meeting at AIT, Bangkok, Thailand, held 26-28 January 1996;
- Presided over Annual Meeting, including Board of Directors’ and Technical Committee Meetings;
- Assisted OSU/DAST with promotion and logistics for a workshop held in conjunction with the World Aquaculture Society (WAS) meeting in Bangkok;
- Processed travel clearances for program personnel, including all Annual Meeting attendees, and requests for purchases of restricted goods for country projects;
- Negotiated three-month no-cost extension for the PD/A CRSP, 5/1/96-8/31/96;
- Prepared CRSP budgets and subcontract modifications for the no-cost extension;
- Negotiated the fourth grant of the PD/A CRSP (1996-2001);
- Closed-out the third CRSP grant (1990-96);
- Developed new subcontract formats and initiated subcontract negotiations;
- Collected NICRA statements, certifications, and assurances for new subcontracts and reviewed subcontractor budgets;
- Developed impact indicators for PD/A CRSP research effort under the Continuation Plan 1996-2001;
- Co-wrote two chapters and co-edited chapter contributions of new multi-author book entitled, “Dynamics of Pond Aquaculture” (Hillary S. Eгна and Claude Boyd, Eds.);
- Processed “Dynamics of Pond Aquaculture” chapter submissions for full manuscript submission to publishing house;
- Coordinated and participated in the recruitment, evaluation, and selection process for hiring new staff, including Education Development Coordinator, Systems Administrator, Graduate Research Assistants, Office Specialist, and student workers;
- Initiated negotiations for a web server agreement with OSUs Office of International Research and Development;
- Participated in OSUs “University Days,” to increase campus awareness of PD/A CRSP and offer program information to event attendees;
- Launched PD/A CRSP World Wide Web site to disseminate program information on study sites, software, and publications (available in both html and Acrobat formats); created web page which allows users to electronically order publications or request other information; developed web page dedicated to aquaculture-related research and

- employment opportunities; sought links with major web search engines and existing aquaculture sites to increase program visibility and the availability of publications; set up FTP site for intra-CRSP file transfer;
- Developed submission process and author guidelines for subcontract reporting of annual project progress;
  - Edited, wrote and produced 13th Annual Administrative and Technical Reports, responded to USAID comments, published, and disseminated final report versions;
  - Commissioned translations into Spanish and French of the abstracts of PD/A CRSP Research Report published to date;
  - Commissioned an update of and provided data, feedback, and publishing support for PD/A CRSP Site Descriptions, Volume 1, 2nd Edition;
  - Commissioned an update of program brochure text;
  - Prepared/edited, published, and distributed: List of Publications; Staff Directory (contains contact information on all program participants); technical results in the CRSP Research Report Series; Notices of Publication for articles published by CRSP participants in aquaculture journals and in the CRSP Research Report Series; three issues of "Aquanews," the PD/A CRSP newsletter; quarterly report summarizing technical and administrative progress;
  - Maintained CRSP mailing database (now numbers more than 700 people in 50 countries);
  - Organized a Program-wide PD/A CRSP slogan selection process;
  - Served on the planning committee for the Fourth International Symposium on Tilapia in Aquaculture, which the CRSP is co-sponsoring, in November 1997;
  - Designed and implemented summer internship activities for an elementary science teacher;
  - Conducted inventory of training activities undertaken by CRSP participants;
  - Interacted with members of BIFAD, ALCOM, and FAO, and other research, aquaculture, and international development groups;
  - Attended World Aquaculture Society 1996 meeting in Bangkok, Thailand;
  - Attended Aquaculture America '96 and represented the PD/A CRSP during the American Tilapia Association Annual Meeting;
  - Attended CGIAR International Centers Week, USAID International Centers Day, and USAID Conference on Hunger, Agriculture, and Trade in Washington, D.C.;
  - Attended Washington, D.C., meetings of ICLARM, CIESIN, and GREAN;
  - Attended meeting of the International Congress on the Biology of Fishes, San Francisco, California;
  - Participated in InterCRSP activities related to proposed new site in West Africa (director serves on Proposal Selection Committee and Africa Natural Resources management Program Committees) and attended two InterCRSP meetings held in Washington D.C, and in St. Louis, Missouri.

Maintaining programmatic linkages with all the CRSPs increases the visibility of the PD/A CRSP and of aquaculture in general. The cost of participation in CRSP Council activities is disproportionately high for the PD/A CRSP, which is funded at a much lower level than other CRSPs and is thus more financially strained by participation. In the reporting period,

Director Egna attended two CRSP Council meetings held in Washington, D.C. In addition, the PMO participated in CRSP Council Conference calls on:

7 September 1995

7 December 1995

4 January 1996

1 February 1996

11 March 1996

11 June 1996

## Advisory Groups

Three advisory groups—the Board of Directors, Technical Committee, and External Evaluation Panel—support the management of the CRSP. These groups work closely with the Director to assist the ME through policy decisions, budget allocations, research strategy, review, and evaluation.

### Board of Directors

The Board consists of representatives from participating institutions and operates under a defined charter to deal with policy issues, to review and approve plans and proposed budgets, to assess progress, and to advise the PMO on these and other matters. The Project Officer from USAID and the CRSP Director serve as ex-officio Board members. All Board members function in the objective interest of the CRSP regardless of their institutional affiliation.

Board members during the reporting period were Dr. Philip Helfrich, Chair, University of Hawaii (from January 1996), Dr. Robert Fridley, University of California at Davis, and Dr. R. Oneal Smitherman, Auburn University, who chaired the committee until his resignation in December 1995.

The composition of the Board of Directors has evolved since inception of the CRSP. Originally Board members represented each U.S. CRSP institution (Auburn University, the University of California, and CIFAD). With the dissolution of CIFAD, Board members represented three of the CRSP participating institutions. Board operations have again been modified in response to recommendations made by three recent reviews. As a result, the CRSP Board will more closely follow the BIFAD Guidelines.

Under the new PD/A CRSP grant, the Board consists of a minimum of four members. The ME will have a permanent member on the Board, but that member will not serve as chair. The three other Board members will come from participating U.S. CRSP institutions on a rotating basis from the pool of institutional representatives. Outside

members may be appointed to the Board based on availability of funding and need. Board members are selected by their participating institutions from their higher administrative management level, based on their responsibilities and relevant experience. The term length on the Board will be three years, typically with service as chair in the third year. Active Board members receive compensation related only to invitational travel. Such travel will be financed jointly by the CRSP and the Board members institution.

The BOD convened once during this reporting period during the PD/A CRSP Annual Meeting (26-28 January 1996) in Bangkok, Thailand. Informal discussions are held regularly with the Board, and advice for some decisions is provided through correspondence.

### Technical Committee

Technical guidance for the program is provided by the TC, whose purpose is to monitor the technical research of the PD/A CRSP, propose modifications to the program, and recommend allocations of funds for research activities. At present, the organization of the TC is based on institutional representation. The TC includes voting and non-voting members. Voting members are Principal Investigators from each funded project at U.S. institutions based on the issuance of subcontracts and from each host country institution with an MOU/MOA (Memorandum of Agreement). Institutions holding a vote on the TC are listed in Table 1 by project.

**TABLE 1. INSTITUTIONAL VOTING PRIVILEGES ON TECHNICAL COMMITTEE**

|   |                                     |
|---|-------------------------------------|
| Data Analysis & Synthesis Team .....    | Oregon State University             |
| .....                                   | University of California at Davis   |
| Database Management .....               | University of Hawaii (to 5/96);     |
| .....                                   | Oregon State University (from 5/96) |
| Honduras .....                          | DIGEPESCA                           |
| .....                                   | Auburn University                   |
| Africa Site .....                       | Oregon State University             |
| .....                                   | Auburn University                   |
| .....                                   | University of Arkansas, Pine Bluff  |
| Thailand .....                          | Asian Institute of Technology       |
| .....                                   | Royal Thai Department of Fisheries  |
| .....                                   | University of Michigan              |
| .....                                   | University of Hawaii                |
| Special Projects: Social Sciences ..... | Auburn University                   |

The membership of the TC as of August 1996 is listed in Table 2 in alphabetic order, with institutional affiliations, subcommittee assignments, and voting status also indicated. Other U.S. and host country scientists participate in the TC meetings as non-voting members. Members volunteer to serve on one of four subcommittees: budget, materials and methods, work plan, and technical progress. In the future, the budget and work plan subcommittees will be merged.

**TABLE 2. MEMBERSHIP OF THE TECHNICAL COMMITTEE**

| <b>Name</b>               | <b>Institution</b>  | <b>Subcommittee</b>                              | <b>Voting members</b> |
|---------------------------|---------------------|--|-----------------------|
| John Bolte                | OSU                 |  | ✓                     |
| Claude Boyd               | AU                  | Chair, Materials & Methods                       | shared vote           |
| Jim Diana                 | UM                  | Chair, Technical Progress;<br>Executive Panel    | shared vote           |
| Brian Duncan              | AU                  |  | shared vote           |
| Peter Edwards             | AIT                 |  | ✓                     |
| Carol Engle               | UAPB                |  | ✓                     |
| Martin Fitzpatrick        | OSU                 |  | shared vote           |
| Bart Green                | AU                  | Chair, Work Plans;<br>Materials & Methods        | ✓                     |
| Kevin Hopkins             | AU                  |  | ✓                     |
| Watana Leelapatara        | DOF, Thailand       |  | ✓                     |
| C. Kwei Lin               | AIT                 |  | shared vote           |
| Eduardo Lopez             | CLSU, Philippines   |  | ✓                     |
| M. P. Micheletti-Bain     | DIGEPESCA, Honduras |  | ✓                     |
| Joseph Molnar             | AU                  | Work Plans                                       | ✓                     |
| Raul H. Piedrahita        | UCD                 | Materials & Methods;<br>Budgets; Executive Panel | ✓                     |
| Tom Popma                 | AU                  | Chair, Budgets                                   | ✓                     |
| Carl B. Schreck           | OSU                 |  | shared vote           |
| Wayne Seim                | OSU                 |  | ✓                     |
| C. Sritongsuk             | DOF, Thailand       |  | shared vote           |
| Jim Szyper                | UH                  | Materials & Methods;<br>Budgets                  | ✓                     |
| <b>At-Large Member</b>    |                     |  |                       |
| Ted Batterson             | Mich State Univ     |  |                       |
| <b>Ex-officio Members</b> |                     |  |                       |
| Hillary Egna              | OSU                 |  |                       |
| Brigitte Goetze           | OSU                 |  |                       |
| Harry Rea                 | USAID/G/EG/AFS      |  |                       |

The TC will be substantially restructured under the new grant. This new organization will be centered around the three strategic research areas: production optimization, environmental effects, and social and economic aspects. TC members will be selected based on their expertise in these areas and once selected will represent their respective disciplines. Host country members will be included in the selection process. To ensure diversity of representation, in terms of institutions, expertise, and gender, there will be at least three members representing each of the three strategic research areas. TC members will serve for three-year terms. Each member, with the exception of the Chair or Co-Chairs, will be an active member of one of three standing subcommittees: Work Plan and Budget (newly merged under the new grant), Technical Progress, or Materials and Methods.

In this reporting period TC Co-Chairs Raul Piedrahita and Bryan Duncan drafted TC bylaws, with input from the PMO, and these were adopted by the TC members and approved by the Director. The bylaws specify election procedures for the TC, TC composition, and tasks of the various TC subcommittees. The PMO may appoint additional members to the TC to provide expertise in unrepresented areas. The USAID Project Officer, CRSP Director, and Deputy Director will continue to serve as ex-officio members on the TC. Currently, at-large members are appointed by the BOD. Dr. Ted Batterson continued to serve as the at-large TC member during this reporting period.

## External Evaluation Panel

The prime function of the EEP is to provide counsel to USAID and critical feedback to the ME, BOD, and TC. It does so by evaluating the status, funding, progress, plans, and prospects of the research program. The EEP also periodically evaluates the accomplishments of CRSP research activities and of the program as a whole. This panel of external aquaculture specialists is drawn from the international aquatic resources community to evaluate the accomplishments of the individual research projects and the overall program. The members are selected so that collectively they will cover the substance of the CRSP, including socioeconomic factors that can influence research and adoption of technology generated from research. The EEP is specifically charged by BIFAD to help maintain programmatic focus and effective scientific balance of research. Its chief objectives are to:

- Maintain programmatic focus and effective scientific balance of research toward achievement of objectives;
- Identify inadequate performances;
- Identify activities that are irrelevant or marginal to CRSP objectives;
- Consider effective balance between research and training for the development of institutional research capability;
- Assess the balance of domestic versus overseas research in terms of effectiveness of solving constraints in developing countries;
- Evaluate the cost-effectiveness of the CRSP overall by comparing the actual cost of business to alternatives that may be less costly and more efficient and effective;



- Examine how research results are disseminated, evaluate the effectiveness of use of the results, and provide a measure of the appropriateness of the research; and
- Report findings and recommendations annually to the ME, BOD, USAID, and JCARD/BIFAD.

The PMO recommends EEP candidates to USAID, considering the advice of the Board, TC, participating institutions, and other sources. After USAID receives concurrence from BIFAD, the PMO appoints the new EEP member. While in the past the EEP was comprised of three members, a full EEP under the new grant will consist of four scientists who represent the major disciplines of the CRSP; new members will rotate in as members resign or are replaced. During this reporting period, Dr. Gary Jensen, USDA and Richard Neal, NMFS, served on the EEP. (Mr Neal stepped down in March 1996.) The PMO has been working with USAID to bring on new members and hopes to have a full panel on board as soon as possible.

One member of the EEP attends each annual meeting to evaluate the progress of the CRSP on a year-to-year basis. The PMO provides the EEP with copies of significant CRSP documents to keep the panel advised of CRSP activities. The EEP reviews the CRSP annually and provides an in-depth review every five years. During the year of the quinquennial review at least two EEP members visit each of the overseas research sites. Also during that year, the EEP may visit the PMO and attend significant CRSP meetings. The EEP interacts with the TC and Board during the quinquennial review year. At the conclusion of the review, the EEP report is submitted to the PMO and Board (the PMO in turn distributes report copies to BIFAD and USAID). To promote objectivity, membership on the EEP is limited to one three-year term or participation in one quinquennial review.

The last comprehensive review of the CRSP by the EEP took place in 1992-93. The final report, which includes program responses to the findings and recommendations of the EEP, is available from the PMO. The PMO makes full use of the EEP and considers its recommendations. Where there is disagreement with an EEP recommendation, a record is made of the reason for the disagreement. Any decision contrary to the EEP recommendations is justified in writing and reported by the PMO to USAID.

The EEP serves without compensation but receives reimbursement for all travel expenses during the quinquennial review. Other travel may be jointly financed. Members may receive honoraria during the year of the quinquennial review.

## CRSP Administrative and Technical Reports

CRSP publications are an important part of the CRSP's technology dissemination. A broad domestic and international audience of more than 700 people in 50 countries receive CRSP technical and program reports. Technical reports are issued through two series, Collaborative Research Data Reports and CRSP Research Reports.

The Collaborative Research Data Reports Series contains the results and data from the Global Experiment, along with interpretations of site-specific results. The first volume of Collaborative Research Data Reports contains descriptions of sites and experimental protocols for the Global Experiment. During this reporting period the PMO commissioned and published a second edition of Volume I of the Collaborative Research Data Reports, which is an update of PD/A CRSP research site descriptions and promises to be a useful reference for continued CRSP research at existing sites.

Subsequent volumes focus on each research site separately by experimental cycle. Data from cycles I through III are available in book format from the PMO; data from later cycles can be accessed through the CRSP Central Database. The goal of CRSP Research Reports is to publish all other research produced by CRSP activities.

Other reports published by the CRSP PMO include Annual Administrative and Technical Reports, Program Grant Proposals, Work Plans, Notices of Publication for articles published by CRSP participants in aquaculture journals and in the CRSP Research Report Series, List of Publications, and CRSP Directories. Past publications include a ten year summary of activities in Honduras, compiled by the Auburn/Honduras team of researchers, the Handbook of Analytical Methods, compiled by the Materials and Methods Committee of the TC, and the PONDCLASS Users' Guide, which was developed by the OSU/DAST researchers.

"Principles and Practices of Pond Aquaculture" was one of the programs founding documents. At the time of its production, this state-of-the-art volume filled a neglected niche in the field of aquaculture. Since its publication in 1983, it has been one of the most requested of CRSP publications. Advances in pond aquaculture research by the CRSP and others, prompted an update of this publication.

In this reporting period the PMO completed the task of editing and coordinating chapter submissions from CRSP researchers who are contributors to a new multi-authored book entitled, "Dynamics of Pond Aquaculture." This new collection, which approaches aquaculture production as part of the larger agroecosystem, is edited by CRSP Director Hillary Egna and CRSP Principal Investigator Claude Boyd; Director Egna also wrote two of the book's 16 chapters. CRC Press/Lewis Publishers anticipates publication in later in 1997.

In addition to CRSP-produced publications, the PMO contributes to USAID's program reviews, publications, and presentations. Administrative and technical reports prepared and disseminated during this reporting period are briefly described in the next section and may be ordered from the PMO or via the CRSP's website at <http://www.orst.edu/dept/crsp/homepage.html>. Technical reports that were not processed by the PMO appear in the List of CRSP Publications (at rear of this report).

## Administrative Reports

### Annual Reports

Egna, H., M. McNamara, B. Goetze, B. Herbison, and D. Clair, eds. 1995. Thirteenth Annual Administrative Report, Pond Dynamics/Aquaculture Collaborative Research Support Program. Office of International Research and Development, Oregon State University, Corvallis, Oregon. 96 pp.

Egna, H., B. Goetze, D. Burke, M. McNamara, and D. Clair, eds. 1995. Thirteenth Annual Technical Report 1995, Pond Dynamics/Aquaculture Collaborative Research Support Program. Office of International Research and Development, Oregon State University, Corvallis, Oregon. 177 pp.

### Quarterly Reports

Pond Dynamics/Aquaculture CRSP, Program Management Office. January 1996. Quarterly Report. October-December 1995. Office of International Research and Development, Oregon State University, Corvallis, Oregon. 13 pp.

### Directory

The CRSP directory contains an organizational chart and the addresses of current CRSP members from USAID, BIFAD, USAID Missions, the CRSP Council, the EEP, the TC, the ME, the Board, and the Collaborative Research Projects. The chart is updated annually or semi-annually, as needed.

CRSP Directory. June 1996. Pond Dynamics/Aquaculture CRSP, Program Management Office. Office of International Research and Development, Oregon State University, Corvallis, Oregon.

### List of Publications

The CRSP List of Publications includes an order form and contains a complete listing of research reports, data reports, annual administrative, and technical reports, other reports, work plans and Aquanews newsletters.

CRSP List of Publications. April 1996. Pond Dynamics/Aquaculture CRSP, Program Management Office. Office of International Research and Development, Oregon State University, Corvallis, Oregon.

## Newsletter

**A**quanews, The Newsletter of the Pond Dynamics / Aquaculture Collaborative Research Support Program, serves to inform CRSP participants and others of program activities that are not technical in nature. It contains information on project activities, meetings, travel of CRSP participants, and site visits. Aquanews is generally published quarterly; however, reductions in personnel over the past year resulted in a reduction in the number of issues published. In this reporting period the PMO published:

Aquanews, Winter 1996, Volume 11, Number 1. McNamara, M., ed. ISSN 1062-4996. PD / A CRSP Program Management Office, Office of International Research & Development, Snell Hall 400, Oregon State University, Corvallis, Oregon.

Aquanews, Spring 1996, Volume 11, Number 2. Clair D., ed. ISSN 1062-4996. PD / A CRSP Program Management Office, Office of International Research & Development, Snell Hall 400, Oregon State University, Corvallis, Oregon.

Aquanews, Summer 1996, Volume 11, Number 3. Clair D., ed. ISSN 1062-4996. PD / A CRSP Program Management Office, Office of International Research & Development, Snell Hall 400, Oregon State University, Corvallis, Oregon.

Technical Reports published during the reporting period are listed on the facing page.



*A view of some of the facilities at the CRSPs new collaborating site in Sagana, Kenya.*

## CRSP RESEARCH REPORTS/NOTICES OF PUBLICATIONS

- Abdalla, A., and C. McNabb. 1996. Ammonia Dynamics in Fertilized Fish Ponds Stocked with Nile Tilapia. CRSP Research Report 96-95, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in The Progressive Fish-Culturist 58, 1996:177-123.]
- Boyd, C., and B. Green. 1995. Water budgets for fish ponds in the dry tropics. CRSP Research Report 96-87, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in Aquacultural Engineering, 14(4)1995:347-356.]
- Boyd, C., and B. Green. 1995. Chemical budgets for organically fertilized fish ponds in the dry tropics. CRSP Research Report 96-88, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in Journal of the World Aquaculture Society 26(3)1995:284-296.]
- Boyd, C., and P. Munsiri. 1996. Phosphorus adsorption capacity and availability of added phosphorus in soils from aquaculture areas in Thailand. CRSP Research Report 96-96, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in Journal of the World Aquaculture Society 27(2)1996:160-167.]
- Boyd, C., and D. Teichert-Coddington. 1995. Dry matter, ash, and elemental composition of pond-cultured *Penaeus vannamei* and *P. stylirostris*. CRSP Research Report 96-90, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in Journal of the World Aquaculture Society 26(1)1995:88-91.]
- Green, B., Z. El Nagdy, H. Hebicha, I. Shaker, D. Kenawy, and A. El Gamal. 1995. Evaluation of Nile Tilapia Production Systems in Egypt. CRSP Research Report 95-91. Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, 12 pp.
- Egna, H. 1994. Monitoring water quality for tropical freshwater fisheries and aquaculture: a review of aircraft and satellite imagery applications. CRSP Research Report 96-92, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in Fisheries Management and Ecology 1, 1994:165-178.]
- Lin, C. 1995. Co-culture of catfish (*Clarias macrocephalus* x *C. gariepinus*) and tilapia (*Oreochromis niloticus*) in ponds. CRSP Research Report 96-93, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in Aquat. Living Resour., 8(4)1995:449-454.]
- Lin, C., 1996. Clarias and Tilapia Interaction in Polyculture. CRSP Research Report 96-94. Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, 14 pp.
- Rodriguez, R., and D. Teichert-Coddington. 1995. Semi-intensive commercial grow-out of *Penaeus vannamei* feed diets containing differing levels of crude protein during wet seasons in Honduras. CRSP Research Report 96-89, Pond Dynamics / Aquaculture CRSP, Office of International Research & Development, Oregon State University, Corvallis, Oregon, USA. [Originally published in the Journal of the World Aquaculture Society 26(1)1995:72-79.]