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**Acknowledgments**
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1 Codes identify each investigation with a unique number associated with the Work Plan and scientific theme under which the investigation was conducted. Code assignments follow a uniform format. Using the code 8ADR1 as an example: "8" refers the 8th Work Plan, "ADR" is the acronym for the "Adoption & Diffusion Research" scientific theme, and "1" is the sequential investigation number assigned within the scientific theme block. See Appendix 3 for a listing of scientific themes and their acronyms and Volume I (Introduction) for definitions. Missing numbers in the coding sequence are for investigations that were assigned a code prior to proposal review and were unsuccessful in receiving funding. In some cases, investigations were added or modified after publication of the Work Plan. For these investigations, work plan details are available in the subcontract or MoU.

2 The Lead US PI may or may not have been listed as the first author on the reports submitted for the investigation.

3 1 = Successfully Completed; 2 = Successfully Completed in Part or with Modification; 3 = Suspended

4 Addenda are cited when an investigation work plan was revised or a new investigation was introduced. Subcontracts or MoUs are noted when either revised or new investigation work plans were developed after publication of the Work Plan or its addenda.

AAR = Annual Administrative Report covering administrative reporting on the projects; ATR = Annual Technical Report presenting detailed summaries of investigation goals, methodologies, findings, and benefits. The ten-year report series covering volumes 16 to 25 includes a separate AAR and ATR for each year, e.g., 16AAR and 16ATR for the period 1 August 1997 to 31 July 1998. For volume 20, only an AAR was published.
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<td>Phelps</td>
<td>Auburn University</td>
<td>2</td>
<td>2nd Addendum to the 8th Work Plan.</td>
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<tr>
<td>8TR1</td>
<td>Effects of Mud Turbidity on Fertilization, and an Analysis of Techniques to Mitigate Turbidity Problems</td>
<td>Diana</td>
<td>University of Michigan</td>
<td>2</td>
<td>1st Addendum to the 8th Work Plan</td>
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### APPENDIX 1. INVESTIGATION SUMMARY & ASSESSMENT

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<tr>
<th>Code</th>
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<tr>
<td>8TR2</td>
<td>Management of Organic Matter and Nutrient Regeneration in Pond Bottoms Thailand</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>8TR3</td>
<td>Management to Minimize the Environmental Impacts of Pond Draining</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>Technical Transfer from On-Station Research to Producers</td>
<td>Diana</td>
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#### 9th Work Plan

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<td>9ADR3</td>
<td>Aquaculture Training for Kenyan Fisheries officers and University Students</td>
<td>Veverica</td>
<td>Auburn University</td>
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<td>Addendum to the 9th Work Plan. Errorneously listed as 10ADR1 in the Table of Contents for 21 ATR.</td>
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<td>9ADR4</td>
<td>Establishment of Companion Sites in the Africa Region</td>
<td>Langdon</td>
<td>Oregon State University</td>
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<td>MoU added supplementary investigations.</td>
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<td>9ADR5</td>
<td>Regional Outreach in Africa</td>
<td>Veverica</td>
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<td>9ADR6</td>
<td>Workshops and Production of Improved Extension Materials</td>
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<td>Florida International University</td>
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<td>9ADR7</td>
<td>Decision Support for Policy Development: Planning Conferences for Collaborating Researchers, Public Agencies, and Nongovernmental Organizations Working in Aquaculture</td>
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<td>University of Georgia</td>
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<td>Production Strategies Characterizing Small- and Medium-Scale Tilapia Farms: Approaches, Barriers, and Needs</td>
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<td>9ADR9</td>
<td>Technical Assistance for Fingerling Production Serving Small- and Medium-Scale Tilapia Producers</td>
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<td>Auburn University</td>
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<td>9ASMR2</td>
<td>Model for Determining Aquaculture Pond Water Quality and Effluent Characteristics</td>
<td>Piedrahita</td>
<td>University of California, Davis</td>
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<td>Addendum to the 9th Work Plan; the Principal Investigator declined funding during final subcontract negotiations. Cancelled.</td>
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<td>9ATR1</td>
<td>On-Farm Trials: Evaluation of Alternative Aquaculture Technologies by Local Farmers in Kenya</td>
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<td>Linkages of Aquaculture within Watersheds and Concurrent Design of Hillside Ponds</td>
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<td>9DM2</td>
<td>PD/A CRSP Central Database: Development and Management</td>
<td>Bolte</td>
<td>Oregon State University</td>
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<td>Addendum to the 9th Work Plan. Final Report in 19AAR.</td>
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<td>9DSSR2</td>
<td>Decision Support Systems for Fish Population Management and Scheduling in Commercial Pond Aquaculture Operations</td>
<td>Bolte</td>
<td>Oregon State University</td>
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<td>9DSSR3</td>
<td>Enhancing the POND© Decision Support System for Economics, Education, and Extension</td>
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<td>Use of Pond Effluents for Irrigation in an Integrated Crop/Aquaculture System</td>
<td>Boyd</td>
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<td>Fate of Methyltestosterone in the Pond Environment</td>
<td>Schreck</td>
<td>Oregon State University</td>
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<td>Split into 3 investigations.</td>
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<td>9ER2A</td>
<td>Fate of Methyltestosterone in the Pond Environment: Detection of MT in Soil after Treatment with MT Food</td>
<td>Schreck</td>
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<td>9ER2B</td>
<td>Fate of Methyltestosterone in the Pond Environment: Detection of MT in Pond Soil from a CRSP Site</td>
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<td>9ER2C</td>
<td>Fate of Methyltestosterone in the Pond Environment: Impact of MT-Contaminated Soil on Tilapia Sex Differentiation</td>
<td>Schreck</td>
<td>Oregon State University</td>
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<td>9ER2D</td>
<td>Fate of Methyltestosterone in the Pond Environment: Use of MT in Earthen Ponds with No Record of Hormone Usage</td>
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<td>Integrated Recycle Systems for Catfish and Tilapia Culture</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>9ER4</td>
<td>Effects of Water Recycling on Water Quality and Bottom Soils in Shrimp Ponds</td>
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<td>9FFR2A</td>
<td>Fish Yields and Economic Benefits of Tilapia/Clarias Polyculture in Fertilized Ponds Receiving Commercial Feeds or Pelleted Agricultural By-Products</td>
<td>Engle</td>
<td>University of Arkansas at Pine Bluff</td>
<td>1</td>
<td>Addendum to the 9th Work Plan. Final Technical Report for Objective 2 of original 9FFR2 with original title.</td>
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<td>9FFR3</td>
<td>Reduction of Rations below Satiation Levels</td>
<td>Brown</td>
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<td>9FFR4</td>
<td>Timing of the Onset of Supplemental Feeding</td>
<td>Brown</td>
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<td>9FFR6</td>
<td>Development of Training Modules for Aquaculture Extension Workers and University Students in Kenya</td>
<td>Bowman</td>
<td>Oregon State University</td>
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<td>Building Research Capacity in CRSP Host Countries</td>
<td>McNamara</td>
<td>Oregon State University</td>
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<td>Institutionalizing EDC Activities in CRSP Countries</td>
<td>McNamara</td>
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<td>Addendum to the 9th Work Plan. The Principal Investigator declined funding. Cancelled.</td>
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<td>9IMNC2</td>
<td>Report: annual Activities of the Information Management and Networking Component</td>
<td>Clair</td>
<td>Oregon State University</td>
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<td>Work plan in MoU. Reported in 17AAR and 18AAR.</td>
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<td>Report: annual Activities of the Information Management and Networking Component</td>
<td>Clair</td>
<td>Oregon State University</td>
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<td>Work plan in MoU. Reported in 19AAR.</td>
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<td>9MEAR3</td>
<td>Development of Central American Markets for Tilapia Produced in the Region</td>
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<td>University of Arkansas at Pine Bluff</td>
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<td>Economic and Social Returns to Technology and Investment in Thailand</td>
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<td>University of Arkansas at Pine Bluff</td>
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<td>9MEAR5</td>
<td>Rapid Economic Evaluation Tools</td>
<td>Popma</td>
<td>Auburn University</td>
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<td>9NS1</td>
<td>Lotus-Fish Culture in Ponds: Recycling of Pond Mud Nutrients</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>Addendum to the 9th Work Plan; Work Plan and title replaced.</td>
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<td>Culture of Mixed-Sex Nile Tilapia with Predatory Snakehead</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>Addendum to the 9th Work Plan</td>
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<td>9NS3A</td>
<td>Spawning and Grow-Out of <em>Colossoma macropomum</em> and/or <em>Piaractus brachypomus</em></td>
<td>Kohler</td>
<td>Southern Illinois University at Carbondale</td>
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<td>9NS4</td>
<td>Semi-Intensive Culture of Red Tilapia in Brackishwater Ponds</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>9PDR2</td>
<td>Pond Soil Characteristics and Dynamics of Soil Organic Matter and Nutrients</td>
<td>Boyd</td>
<td>Auburn University</td>
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<td>9RA1</td>
<td>Establishment of New Collaboration in Bangladesh</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>9RCR5</td>
<td>Masculinization of Tilapia by Immersion in Trenbolone Acetate</td>
<td>Schreck</td>
<td>Oregon State University</td>
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<td>9RCR5A</td>
<td>Masculinization of Tilapia by Immersion in Trenbolone Acetate: Effect of treatment timing and dose on masculinization with trenbolone acetate</td>
<td>Schreck</td>
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<td>Masculinization of Tilapia by Immersion in Trenbolone Acetate: Growth performance of trenbolone acetate-immersed tilapia</td>
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<td>Addendum to the 9th Work Plan.</td>
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<td>9RCR5C</td>
<td>Masculinization of Tilapia by Immersion in Trenbolone Acetate: Detection of trenbolone acetate in water after treatment</td>
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<td>Addendum to the 9th Work Plan.</td>
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<td>9RCR5D</td>
<td>Masculinization of Nile Tilapia Fry by Immersion in Trenbolone Acetate: Use of Hormone Solution and Effects of Temperature</td>
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<td>Oregon State University</td>
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<td>Selection of Individuals for Sex Inheritance Characteristics for Use in Monosex Production</td>
<td>Phelps</td>
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<td>9RCR6A</td>
<td>Monosex Tilapia Production through Androgenesis: Selection of Individuals for Sex Inheritance Characteristics for Use in Monosex Production</td>
<td>Phelps</td>
<td>Auburn University</td>
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<td>Monosex Tilapia Production through Androgenesis: Verification of Androgenically Produced Males, Their Viability, and the Influence of the Female on Progeny Sex Ratios</td>
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<td>Auburn University</td>
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<td>9RCR6C</td>
<td>Monosex Tilapia Production through Androgenesis: Growth of Genetically Derived Males in Production Settings</td>
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<td>Auburn University</td>
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<td>Shelton</td>
<td>University of Oklahoma</td>
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### Appendix 1. Investigation Summary & Assessment

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<td>9RCR8</td>
<td>The Application of Ultrasound to Produce All-Male Tilapia Using Immersion Protocol</td>
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<td>University of Michigan</td>
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<td>10ADR1</td>
<td>Institutionalizing Techniques for Building Hillside and Levee Fonds for Water Supply and Aquacultural Development in Latin America</td>
<td>Tollner</td>
<td>University of Georgia</td>
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<td>10ASMR1</td>
<td>Development of a Trophic Box Model to Assess Potential of Ecologically Sound Management for Cove Aquaculture Systems in Tri An Reservoir, Vietnam</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>10ATR3</td>
<td>Diversification of Aquacultural Practices by Incorporation of Native Species and Implementation of Alternative Sex Inversion Techniques</td>
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<td>On-Station and On-Farm Trials of Different Fertilization Regimes Used in Bangladesh</td>
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<td>University of Michigan</td>
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<td>On-Station and On-Farm Trials of Different Fertilization Regimes Used in Bangladesh</td>
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<td>On-Farm Trials of Different Fertilization Regimes Used in Bangladesh</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>10ATR5</td>
<td>Use of Clinoptilolite Zeolites for Ammonia-N Transfer and Retention in Integrated Aquaculture Systems and for Improving Pond Water Quality before Discharge</td>
<td>Batterson</td>
<td>Michigan State University</td>
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<td>10DSSR1</td>
<td>Aquaculture CRSP Database: Finalization, Management, and Distribution</td>
<td>Diana</td>
<td>University of Michigan</td>
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<td>10ER1</td>
<td>Reaction of Liming Materials in Pond Bottom Soils</td>
<td>Boyd</td>
<td>Auburn University</td>
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<td>Elimination of Methyltestosterone (MT) from Intensive Masculinization Systems: Use of Activated Charcoal in Concrete Tanks</td>
<td>Schreck</td>
<td>Oregon State University</td>
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<td>Nutrition of <em>Colossoma macropomum</em> and <em>Piaractus brachypomus</em></td>
<td>Kohler</td>
<td>Southern Illinois University at Carbondale</td>
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<td>10FFR2</td>
<td>Broodstock Diets and Spawning of <em>Colossoma macropomum</em> and/or <em>Piaractus brachypomus</em></td>
<td>Dabrowski</td>
<td>Ohio State University</td>
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<td>10FFR2A</td>
<td>Broodstock Diets and Spawning of <em>Colossoma macropomum</em> and/or <em>Piaractus brachypomus</em></td>
<td>Dabrowski</td>
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<td>10FFR3</td>
<td>Polyculture of Grass Carp and Nile Tilapia with Napier Grass as the Sole Nutrient Input in the Subtropical Climate of Nepal</td>
<td>Diana</td>
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<td>10FFR4</td>
<td>Development of Economically Feasible Feeds for Semi-Intensive Culture of Tilapia, <em>Oreochromis niloticus</em>, Using Locally Available Agricultural By-Products</td>
<td>Lim &amp; Phelps</td>
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<td>Investigation split into two studies with revised titles.</td>
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<td>10FFR4A</td>
<td>Development and Evaluation of the Nutritive and Economic Potential of Formulated Fish Feeds and Comparison with Locally Available Feeds for Semi-Intensive Production of Nile Tilapia (<em>Oreochromis niloticus</em>)</td>
<td>Lim &amp; Phelps</td>
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<td>10FFR4B</td>
<td>Effect of Feeding Duration of Sodium Chloride Containing Diets on Growth Performance and Some Osmoregulatory Parameters of Nile Tilapia (<em>Oreochromis niloticus</em>) After Transfer to Water of Different Salinities</td>
<td>Lim &amp; Phelps</td>
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<td>Income, Food Security, and Poverty Reduction: Case Studies of Functioning Clusters of Successful Small-Scale Aquaculture Producers</td>
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<td>Assessing Watershed Ponds for Aquaculture Development in Thai Nguyen, Vietnam</td>
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<td>10MEAR1</td>
<td>Optimal (Profit-Maximizing) Target Markets for Small and Medium-Scale Tilapia Farmers in Honduras and Nicaragua</td>
<td>Engle</td>
<td>University of Arkansas at Pine Bluff</td>
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<td>A Mixed-Integer Transshipment Model for Tilapia (Oreochromis sp.) Marketing in Honduras</td>
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<td>10MEAR2</td>
<td>Development and Evaluation of a Simple Market Feasibility Assessment Methodology</td>
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<td>Regional Enterprise Budget and Business Plan Development</td>
<td>Engle</td>
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<td>The ACRSP publication <em>Tilapia Farm Business Management and Economics Manual</em> was accepted in lieu of the Final Technical Report.</td>
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<td>Economic and Risk Analysis of Tilapia Production in Kenya</td>
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<td>10NSR3C</td>
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<td>10NSR3E</td>
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<td>10NSR4</td>
<td>Evaluation of Growth and Reproductive Performance of Three Strains of Nile Tilapia <em>Oreochromis niloticus</em> Found in Kenya for Use in Aquaculture</td>
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<td>10PDVR1</td>
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<td>Cost Containment Options for Tilapia Production in Central Luzon, Republic of the Philippines</td>
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<td>10PDVR3</td>
<td>Transfer of Production Technology to Nepal for Nile Tilapia, <em>Oreochromis niloticus</em></td>
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<td>10RCR1</td>
<td>Studies on Fate of Methyltestosterone and Its Metabolites in Tilapia and on the Use of Phytochemicals as an Alternative Method to Produce a Monosex Population of Tilapia</td>
<td>Dabrowski</td>
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<td>Analysis of Critical Points in Aquaculture Production Affecting Participation and Level of Benefits to Women, Youth, and Disadvantaged Stakeholders</td>
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<td>Training Local Farmers on Safe Handling of Steroids and Masculinization Techniques in Central America</td>
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<td>Aquaculture CRSP Sponsorship of the Sixth International Symposium on Tilapia in Aquaculture</td>
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<td>Aquaculture CRSP—Global Contributions to Sustainable Aquaculture: A Special Session at the 2004 World Aquaculture Conference</td>
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<td>11ATER5</td>
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<td>Co-Culture of Lotus and Hybrid Catfish to Recycle Wastes from Intensive Feeding Environmental</td>
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<td>11ERAR1</td>
<td>Preliminary Work on Site Description, Evaluation and Development Planning: Tanzania, Ghana, and Kenya</td>
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<td>An Economic Assessment of Aquaculture in Rural Africa: The Case of Tanzania, Kenya and Ghana</td>
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<td>Nutrition and Nutrient Utilization in Native Peruvian Fishes</td>
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<td>Evaluation of Tilapia Aquaculture Best Practices in Central Luzon, the Philippines</td>
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<td>Broodstock Development and Larval Feeding of Amazonian Fishes</td>
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<td>Controlled Reproduction of an Important Indigenous Species, <em>Spinibarbus denticulatus</em>, in Southeast Asia</td>
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<td>Development of Aquaculture Techniques for the Indigenous Species of Southern Mexico, <em>Centropomus undecimalis</em>: Sex Determination and Differentiation and Effects of Temperature</td>
<td>Patiño</td>
<td>Texas Tech University</td>
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<td>11PSDR1</td>
<td>Diversification Into Sustainable Tilapia-Shrimp Polyculture and Small-Scale Tilapia Cage Culture in Mexico</td>
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<td>New Paradigm in Farming of Freshwater Prawn (<em>Macrobrachium rosenbergii</em>) With Closed and Recycle Systems</td>
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<td>Integrated Cage-Cum-Pond Culture Systems with High-Valued Fish Species in Cages and Low-Valued Species in Open Ponds</td>
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<td>Integrated Cage-Cum-Pond Culture Systems With High-Valued Stinging Catfish (<em>Heteropneustes fossilis</em>) in Cages and Low-Valued Carps in Open Ponds</td>
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<td>11PSDR3B</td>
<td>Integrated Cage-Cum-Pond Culture Systems With High-Valued Sahar (<em>Tor putitora</em>) in Cages Suspended in Carp Polyculture Ponds</td>
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<td>Continuation of a Selective Breeding Program for Nile Tilapia to Provide Quality Broodstock for Central America</td>
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<td><strong>Integrated Cage-Cum-Pond Culture Systems</strong></td>
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<td>Site Visits and Information Exchange on Cichlid Culture and the Adoption of Aquaculture CRSP Technologies in ACRSP Host Countries</td>
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<td>12ERA3</td>
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<td>Quagrainie</td>
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### APPENDIX 1. INVESTIGATION SUMMARY & ASSESSMENT

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<td>12ERA5</td>
<td>Ex Ante Assessment of Coastal and Marine Aquaculture Development: Charting Comparative Strengths and Weaknesses of Low Trophic Species for offshore Aquaculture in Developed and Developing Countries</td>
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<td>Institute for Agriculture &amp; Trade Policy</td>
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<td>Effects of Native Peruvian Feedstuffs on Growth and Health of Colossoma and Piaractus</td>
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<td>Use of Phytochemicals as a New Method to Sex-Reverse Nile Tilapia and Tropical Garfish. Part II: Initiation of Feeding and Gonad Differentiation in Longnose Garfish</td>
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<td>Reproduction of Pacu (Piaractus mesopotamicus) and Surubim (Pseudoplatystoma tigrinum) and a New Paradigm in Nutrition of Tropical Fishes</td>
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<td>Controlled Reproduction of an Important Indigenous Species, Spinibarbus denticulatus, in Southeast Asia</td>
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<td>Incorporation of the Native Cichlid <em>Petenia splendida</em> into Sustainable Aquaculture: Reproduction Systems, Nutrient Requirements and Feeding Strategies</td>
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<td>Influence Of Dietary Fatty Acid Composition On Reproductive Performance Of <em>Colossoma macropomum</em></td>
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<td>New Paradigm in Farming of Freshwater Prawn <em>(Macrobrachium rosenbergii)</em> With Closed And Recycle Systems</td>
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<td>Optimization of Fertilization Regimes in Fertilized Nile Tilapia Ponds with Supplemental Feed</td>
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<td>Use of Rice Straw as a Resource for Freshwater Pond Culture</td>
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<td>Evaluation and Improvement of Tilapia Fingerling Production and Availability in Honduras</td>
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<td>Studies on Strategies for Increasing the Growth and Survival of African Catfish (Clarias gariepinus) Juveniles Reared for Stocking or for Use as Bait</td>
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<td>Development of Aquaculture Techniques for the Indigenous Species of Southern Mexico, <em>Centropomus undecimalis</em>: Sex Determination and Differentiation and Effects of Temperature</td>
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<td>Ecological Assessment of Selected Sub-Watersheds of the Nzoia River Basin</td>
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<td>12WQA5</td>
<td>Determination of Hydrologic Baselines for the Nzoia Basin</td>
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<td>12WQA6</td>
<td>Student Research to Assess Environmental Impacts of Cage Aquaculture in Tong An Bay in Fujian Province of China</td>
<td>Diana</td>
<td>University of Michigan</td>
<td>2</td>
<td>1st Addendum to 12th Work Plan. Revised title, deleting &quot;the Tong An Bay&quot;.</td>
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<td>12WQA7</td>
<td>Pelagic (Fish) and Benthic Ecology of Selected Sub-Watersheds of the Nzoia River Basin</td>
<td>Tollner</td>
<td>University of Georgia</td>
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<td>12WQA8</td>
<td>Hydrologic Modeling in the Nzoia River Basin</td>
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<td>University of Georgia</td>
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### APPENDIX 2. WORK PLANS & ANNUAL ADMINISTRATIVE REPORTS: 1979 TO 2008

<table>
<thead>
<tr>
<th>Grant Years</th>
<th>Grant No.</th>
<th>Annual Administrative Reports</th>
<th>Work Plan</th>
<th>Title</th>
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<td>1979-1982</td>
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<td>1982-1987</td>
<td>DAN-4023-G-SS-2074-00</td>
<td>First</td>
<td>1st Work Plan</td>
<td>July 1983</td>
<td>1983 to 1984</td>
<td>likely 9/1 to 8/31</td>
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<td>Second</td>
<td>2nd Work Plan</td>
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<td>1984 to 1985</td>
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<td>Third</td>
<td>3rd Work Plan</td>
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<td>Eighth</td>
<td>5th Work Plan</td>
<td>Developed May 1989, no printing date</td>
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<td>1990-1996</td>
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<td>6th Work Plan</td>
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<td>9/1/91 to 8/31/93</td>
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<td></td>
<td>Thirteenth</td>
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</tr>
</tbody>
</table>

5 All Annual Reports cover the reporting period 1 September through 31 August of the following year. Beginning with the Eleventh Annual Administrative Report, a companion Annual Technical Report was also published. For the Twentieth, only an Annual Administrative Report was published.

6 The Aquaculture CRSP Egypt project (USAID Grant No. 263-0152-G-00-2231-00) was also reported during the period covered by the Eleventh and Twelfth Annual Reports.
<table>
<thead>
<tr>
<th>Grant Years</th>
<th>Grant No.</th>
<th>Annual Administrative Reports</th>
<th>Work Plan</th>
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<tr>
<td></td>
<td></td>
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<td>Fourteenth</td>
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<td>1996-2006</td>
<td>LAG-G-00-96-90015-00</td>
<td>Fifteenth</td>
<td>8th Work Plan</td>
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<td>1st Addendum</td>
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<td>Interim Work Plan</td>
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<td>1996-2006</td>
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<td>10th Work Plan</td>
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<td>Nineteenth</td>
<td>11th Work Plan</td>
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<td>Addendum</td>
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<td>Twenty-first</td>
<td>11th Work Plan</td>
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<td>Part II</td>
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<td>Twenty-second</td>
<td>12th Work Plan</td>
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<td>2006-2008</td>
<td>LAG-G-00-96-90015-00</td>
<td>Twenty-fourth</td>
<td>12th Work Plan</td>
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<td>Addendum II</td>
</tr>
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</table>

7 Investigations in the 11th Work Plan, Part II were transferred to the 12th Work Plan with no change to the scientific theme or investigation codes.
### APPENDIX 3. RESEARCH & OUTREACH THEMES:
#### 8TH to 12TH WORK PLANS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Scientific Themes</th>
<th>Work Plan</th>
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<tr>
<td>ADR</td>
<td>Adoption/Diffusion Research or Adoption &amp; Diffusion Research</td>
<td>8th, 9th, 10th</td>
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<tr>
<td>AHH</td>
<td>Aquaculture &amp; Human Health Impacts</td>
<td>12th</td>
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<tr>
<td>AHHR</td>
<td>Aquaculture &amp; Human Health Impacts Research</td>
<td>11th</td>
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<tr>
<td>ASMR</td>
<td>Aquaculture Systems Modeling Research</td>
<td>8th, 9th, 10th</td>
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<tr>
<td>ATE</td>
<td>Applied Technology &amp; Extension Methodologies</td>
<td>12th</td>
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<td>ATER</td>
<td>Applied Technology &amp; Extension Methodologies Research</td>
<td>11th</td>
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<td>ATR</td>
<td>Appropriate Technology Research</td>
<td>9th, 10th</td>
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<td>Database Management</td>
<td>8th, 9th</td>
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<td>DPPR</td>
<td>Disease Predation, Prevention, and Food Safety</td>
<td>11th</td>
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<tr>
<td>DSSR</td>
<td>Decision Support Systems Research</td>
<td>8th, 9th, 10th</td>
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<td>EIA</td>
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<td>ER</td>
<td>Effluents &amp; Pollution Research</td>
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<td>Economic/Risk Assessment &amp; Social Analysis</td>
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<td>Feeds &amp; Fertilizers Research</td>
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<td>Food Security Research</td>
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<td>GISR</td>
<td>GIS: Planning, Policy, &amp; Global Data Analysis Research</td>
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<td>HCD</td>
<td>Human Capacity Development</td>
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<td>HR</td>
<td>Honduras Research</td>
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<td>IMNC</td>
<td>Information Management &amp; Networking Component</td>
<td>8th, 9th</td>
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<td>ISD</td>
<td>Indigenous Species Development</td>
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<td>ISDR*</td>
<td>Indigenous Species Development Research</td>
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<td>KR</td>
<td>Kenya Research</td>
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<td>MEAR</td>
<td>Marketing &amp; Economic Analysis Research</td>
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<tr>
<td>NS</td>
<td>New Aquaculture Systems/New Species</td>
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</table>
### APPENDIX 3. RESEARCH & OUTREACH THEMES

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Scientific Themes</th>
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<td>NSR*</td>
<td>New Aquaculture Systems/New Species Research</td>
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<td>PDR</td>
<td>Pond Dynamics Research</td>
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<td>Product Diversification Research</td>
<td>10th</td>
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<td>PHR</td>
<td>Philippines Research</td>
<td>8th</td>
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<td>Production System Design &amp; Integration</td>
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<td>11th</td>
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<td>Regional Analysis: Human-Environment Interactions</td>
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<td>RCR</td>
<td>Reproduction Control Research</td>
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<td>SDA</td>
<td>Seedstock Development &amp; Availability</td>
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<td>WQAR*</td>
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* Scientific theme codes introduced in the 11th Work Plan and transferred to the 12th Work Plan without the terminal "R" (Research) in the acronym.
APPENDIX 4. COMPENDIUM OF PUBLICATIONS:
1982 through 2008

I. REGIONAL RESEARCH: CENTRAL AMERICA AND THE AMAZON BASIN

A. HONDURAS PROJECTS

1. ASIAN INSTITUTE OF TECHNOLOGY

Publications

2. AUBURN UNIVERSITY

Theses

Publications
APPENDIX 4. COMPLENDEUM OF PUBLICATIONS


Presentations


Trejos-Castillo, E. Fish culture as a sustainable rural livelihood: Case study of the functioning clusters of successful small-scale tilapia producers in Santa Barbara, Honduras. Presented to the Agricultural Workers Conference, Tuskegee University, Alabama, December 2002.


3. ESCUELA AGRÍCOLA PANAMERICANA EL ZAMORANO

Theses


Publications

Presentations


4. UNIVERSIDAD NACIONAL AUTÓNOMA DE HONDURAS

Theses


Garces, C., 1986. Quantitative analysis of zooplankton in fish ponds fertilized with triple superphosphate during the rainy season. B.S. thesis, Department of Biology, Universidad Nacional Autonoma de Honduras, Tegucigalpa, Honduras. (in Spanish)


Sherman, C., 1992. All female culture of *Tilapia nilotica* in ponds fertilized with chicken litter. B.S. thesis, Department of Biology, Universidad Nacional Autonoma de Honduras, Tegucigalpa, Honduras. (in Spanish)

5. UNIVERSITY OF ARKANSAS AT PINE BLUFF

**Theses**


**Publications**


**Presentations**


6. UNIVERSITY OF GEORGIA
Publications

7. UNIVERSITY OF TEXAS, AUSTIN
Publications

B. MEXICO

1. THE OHIO STATE UNIVERSITY, COLUMBUS
Publications

Presentations


2. UNIVERSITY OF ARIZONA

**Publications**


**Presentations**


3. UNIVERSIDAD JUAREZ AUTONOMA DE TABASCO

Theses
Ramon-Zapata, F. Frecuencia de alimentación y su efecto sobre el desarrollo, crecimiento y supervivencia de las larvas de pejelagarto, Atractosteus tropicus, en condiciones de laboratorio. B.S. thesis, Universidad Juárez Autónoma de Tabasco, Mexico.

Publications


Vidal-López, J.M. Masculinización de crías de la mojarra tenhuayaca Petenia splendida, mediante bioencapsulado del esteroide 17a-metiltestosterona en nauplios de Artemia salina.

Presentations


Contreras-Sánchez, W. Use of clean technologies for aquaculture to eliminate MT from intensive masculinization systems. Presented at Villahermosa, Tabasco, Mexico, 8 August 2003.


Martinez-Garcia, Rafael, November, 2007. Polyculture of tilapia and shrimp. WAS – Latin America Chapter San Juan, Puerto Rico
4. UNIVERSITY OF HAWAI‘I, Hilo

Publications
Haws, M.C. and J. Supan. 2007. Edible bivalve culture in Hawai‘i, bridging the past, present and future: a white paper. Pacific Aquaculture and Coastal Resources Center, University of Hawai‘i Hilo.

5. UNIVERSIDAD AUTÓNOMA DE SINALOA, MAZATLAN

Thesis

Presentations

C. NICARAGUA

1. UNIVERSITY OF ARKANSAS AT PINE BLUFF

Theses
Publications

D. PANAMA ~ AGUADULCE

1. AUBURN UNIVERSITY

Theses

Publications
diets and stocking density on production of *Penaeus vannamei* cultured in earth ponds).

Revista Latinoamericana de Acuicultura, 35:29–33.

Presentations


Torres, A. Produccion de *Penaeus stylirostris* bajo la influencia del *Penaeus vannamei*, en estanques experimentales de agua salobre con y sin alimentacion durante la epoca seca. Presented to the First National Scientific Congress, at University of Panama, Panama, December 1984.
2. UNIVERSITY OF PANAMA

**Theses**

**E. PANAMA ~ GUALACA**

1. AUBURN UNIVERSITY

**Theses**

**Publications**

**Presentations**

2. UNIVERSITY OF PANAMA

**Theses**
Serrano, A., 1987. Economics of tilapia production in monoculture or in polyculture with prawns, and utilizing manure or a commercial pellet as the nutrient input in Gualaca, Panama. B.S. thesis, University of Panama, Panama.

**F. PERU**

1. **AUBURN UNIVERSITY**

   **Presentations**

2. **INSTITUTO DE INVESTIGACIONES DE LA AMAZONIA PERUANA**

   **Publications**

   **Presentations**
   Alcántara, F. Performance of *Piaractus brachypomus* and *Colossoma macropomum* stocked in ponds at different densities in Iquitos, Peru. Presented to Development of Aquaculture in the Amazon, at Instituto de Investigaciones de la Amazonia Peruana, Iquitos, Peru, 30 November–4 December 1999.
   Alcántara, F. Status of aquaculture in the Peruvian Amazon. Presented to Development of Aquaculture in the Amazon, at Instituto de Investigaciones de la Amazonia Peruana, Iquitos, Peru, 30 November–4 December 1999.
   Alcántara, F., C. Chávez, L. Rodríguez, C. Kohler, T. Kohler, and W. Camargo (presenter). Gamitana (*Colossoma macropomum*) and Paco (*Piaractus brachypomus*) culture in floating...

3. SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE

Publications
Video: Acuacultura en la Amazonia Peruana, experiencia en la carretera Iquitos-Nauta. SWA TV, July 2003. 7 min. Audience consists of general public, over 1,000. (In Spanish)

Presentations
Chu-Koo, F. Evidence of the seed dispersal role of Colossoma macropomum reared in aquaculture in the Peruvian Amazon. Presented to the International Congress of Ichthyology, at Manaus, Brazil, August 2003.


4. THE OHIO STATE UNIVERSITY

Theses

Publications

Dabrowski, Konrad, 2006. Perspectivas para o desenvolvimento de dietas artificiais adequadas para a alimentação de larvas e juvenis de pixes [Perspectives for the development of adjusted artificial diets for the feeding of juvenile larval fish]. Workshop: Larvicultura de Peixes Neotropicaís. Center of the Sao Paulo State University in Jaboticabal, Brazil. 12 August 2006.


Presentations

Dabrowski, K. New developments in diet formulations for larval fish: peptides and growth enhancers. Attended by approximately 60 people from the Institute of Aquaculture, Ministry of Natural Resources (CEPTA, IBAMA), and staff and students from the University of Sao Paolo, Pirassununga, 29 October 2002.


Dabrowski, K., K. Ware, and M. Tesser. Larval and juvenile rearing of pacu *Piaractus mesopotamicus* using live food and formulated diets (Poster presentation).


Dabrowski, Konrad, 2006. Perspectivas para o desenvolvimento de dietas artificiais adequadas para a alimentação de larvas e juvenis de pixes [Perspectives for the development of adjusted artificial diets for the feeding of juvenile larval fish]. Workshop: Larvicultura de Peixes Neotropicais. Center of the Sao Paulo State University in Jaboticabal, Brazil. 12 August 2006.


5. UNIVERSIDAD NACIONAL DE LA AMAZONIA PERUANA

**Theses**

6. UNIVERSIDAD NACIONAL MAYOR DE SAN MARCOS

**Publications**

7. UNIVERSITY OF ARKANSAS AT PINE BLUFF

**Publications**

**Presentations**

**II. REGIONAL RESEARCH: AFRICA**

A. **EGYPT**

1. AUBURN UNIVERSITY

**Publications**
Presentations

2. CENTRAL LABORATORY FOR AQUACULTURE RESEARCH, ABBASSA, EGYPT
Publications

Presentations

3. MICHIGAN STATE UNIVERSITY
Publications

4. OREGON STATE UNIVERSITY
Theses

Publications
Gale, W.L., M.S. Fitzpatrick, and C.B. Schreck, 1995. Immersion of Nile tilapia (Oreochromis niloticus) in 17α-methyltestosterone and mestanolone for the production of all-male populations. In: F.W. Goetz and P. Thomas (Editors), Proceedings of the Fifth International Symposium on Reproductive Physiology of Fish, at Austin, Texas, p. 117.

Presentations

B. Kenya

1. Auburn University

Theses

Presentations


Publications

2. MOI UNIVERSITY

Theses


Publications


Presentations


Ngugi, C. On Farm Trials; the Kenyan experience. Presentation given to farmers in Kampala, Uganda, 14 July 2003.


Ngugi, C. Working with fish farmers to develop aquaculture. Presentation given to farmers in Kampala, Uganda, 14 July 2003.


3. UNIVERSITY OF NAIROBI

Theses


Presentations


4. UNIVERSITY OF GEORGIA

Theses

Publications


Presentations


Ssegane, H. and Tollner, E. W.. 2007. Tools for remote watershed assessment. Presented at the ASEE annual meeting, Manhattan, KS., USA


Tollner, E. W. and H. Ssegane. 2007. Tools for remote watershed assessment. Presented at the ASABE meeting, Minneapolis, MN., USA


C. RWANDA

1. AUBURN UNIVERSITY

Theses

**Publications**


**Presentations**


2. UNIVERSITÉ NATIONALE DU RWANDA

Theses


Hatangimbabazi, J.D., 1989. Description des communautés planktoniques des différentes habitats de quelques étangs piscicoles de Rwasave (Butare). (Description of plankton communities in different habitats of fish ponds at Rwasave (Butare).) Mémoire présenté en vue de l’obtention du grade de Licencié en Biologie Animale, Université Nationale du Rwanda, Butare, Rwanda.


Murangira, J., 1992. Contribution à l’étude de la productivité de quelques graminées fourragères vis à vis trois fréquences de coupe. (Comparative productivity of eight forage grasses at three cutting frequencies.) Rapport de stage, Ecole Agricole et Vétérinaire de Kabutare, Butare, Rwanda.


Publications
APPENDIX 4. COMPENDIUM OF PUBLICATIONS


Presentations

3. OREGON STATE UNIVERSITY
Theses

Publications

Presentations


Tubb, R. The reduction of estradiol by liver enzymes in carp and rainbow trout. Presented to Toxicology Meetings, at New Orleans, Louisiana, March 1986.

### 4. UNIVERSITY OF ARKANSAS AT PINE BLUFF

**Publications**


**Presentations**


### D. TANZANIA

**1. PURDUE UNIVERSITY**

**Presentations**


**2. KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**Presentations**

3. UNIVERSITY OF ARKANSAS AT PINE BLUFF

Publications

REGIONAL RESEARCH: SOUTHEAST ASIA

A. INDONESIA

1. INSTITUT PERTANIAN BOGOR

Theses
Harahat, I.S., 1987. Changes of nitrogen concentration of the Nile tilapia ponds which were fertilized with chicken manure. B.S. thesis, Faculty of Fisheries, Institut Pertanian Bogor, Indonesia.
2. MICHIGAN STATE UNIVERSITY

Theses


Publications


Presentations


APPENDIX 4. COMPENDIUM OF PUBLICATIONS


McNabb, C.D. Limnology of fish ponds in Java. Presented as part of the Visiting Scientists Seminar Series, to the College of Fisheries and Marine Science, Agricultural University of Malaysia, at Serdang, Malaysia, February 1986.


Other


National Educational Television and Television of the Republic of Indonesia (TVRI). Improvement of pond culture technology and production. Collaborative aquaculture research: Institut Pertanian Bogor and Michigan State University, Jakarta, Indonesia, 1986. (Videotape, 33 minutes)

B. THE PHILIPPINES

1. CENTRAL LUZON STATE UNIVERSITY

Theses


Publications


**Presentations**


Bolivar, R.B., 2005. Fisheries Information and Learning Center, a facility established through the ACRSP. Presented to the orientation program for Central Luzon State University fisheries students in the first semester, 21 June 2005.

Bolivar, RB. Comparison on the Use of Cast Net and Seine Net in Fish Samplings in Ponds. Presented at 7th International Symposium on Tilapia in Aquaculture 6-8 September, 2006.


Bolivar, Remedios B., 2005. Tilapia feeding strategies to optimize production in semi-intensive pond culture & CRSP at CLSU. Training information exchange on Cichlid culture and the
adoption of ACRSP technologies in ACRSP Host Countries. Panamerican Agricultural School (Zamorano), Honduras, 8-13 October 2005.


2. UNIVERSITY OF ARIZONA

Publications


Fitzsimmons, K. 2006. ACRSP Helps to rebuild aquaculture in wake of tsunami. Aquanews.


3. UNIVERSITY OF HAWAII

Theses

Publications


Presentations

4. UNIVERSITY OF THE PHILIPPINES IN THE VISAYAS

Theses

Publications

C. THAILAND

1. ASIAN INSTITUTE OF TECHNOLOGY

Theses


Luong, N.T. Stocking Ratios of Hybrid Catfish (Clarias macrocephalus x C. Gariepinus) and Nile Tilapia (Oreochromis niloticus) in Intensive Polyculture System. M.S. thesis, AIT.


**Publications**


Presentations


Bart, A. Research paper writing for publication in international journals in aquaculture and fisheries. 7 day workshop, at Rajandrapur, Bangladesh, Audience included aquaculture and fisheries university faculty from 5 universities, 1–7 February 2003.

Bart, A. Research proposal writing for external funding in aquaculture and fisheries. 7 day workshop, at Rajandrapur, Bangladesh, audience included aquaculture and fisheries university faculty from 5 universities, 25–31 January 2003.


Cao Ling. 2007. Effects of microbial phytase on the pre-treatment of all-plant feedstuff and replacement of inorganic phosphorous in Nile tilapia (Oreochromis niloticus) feed. WAS 2007, San Antonio, USA, February/March 2007


Yang Yi. 2006. Integrated Aquaculture and Sustainability. The East Asian Sea Congress, Haikou, China, December 2006


Yi, Y. Brief introduction of PD/A CRSP activities in the past two decades. Seminar, audience consisted of government workers, at the BRAC center, Dhaka, Bangladesh, 26 June 2003.
APPENDIX 4. COMPENDIUM OF PUBLICATIONS

Yi, Y. Fertilization strategies for tilapia culture developed by PD/A CRSP. Seminar, audience consisted of government workers, at the BRAC center, Dhaka, Bangladesh, 26 June 2003.
Yi, Y. Minimizing environmental impacts of aquaculture. Presented to Bangladesh Agricultural University, at Mymensingh, Bangladesh, 23 March 2003.
Yi, Y. Pond dynamics. Lecture, presented to the Third Country Training Program on Freshwater Aquaculture, Audience consisted of trainees from ten South and Southeast Asian countries, at Thailand Department of Fisheries and Japan International Cooperation Agency, 1 July 2003.

2. AUBURN UNIVERSITY
Publications

Presentations

3. CENTRAL LUZON STATE UNIVERSITY
Presentations

4. MICHIGAN STATE UNIVERSITY
Publications


**Presentations**


**Other**


**4. UNIVERSITY OF HAWAII**

**Publications**


**Presentation**


**5. THE UNIVERSITY OF MICHIGAN**

**Theses**


**Publications**


**Presentations**


Diana, James. 2007. Use of cages in pond aquaculture to reclaim wastes from intensive feeding of fish. Workshop on Cage Aquaculture in Egypt, Cairo, Egypt, May 2007


Other


6. INSTITUTE OF AGRICULTURE AND ANIMAL SCIENCE

Publications

Presentations


III. GLOBAL ACTIVITIES

1. AUBURN UNIVERSITY

Theses


Publications


Presentations


Lovshin, L. Integrated fish culture systems: Do they work? Presented to faculty and students of the Aquaculture Research Unit, at University of the North, Pietersburg, South Africa, 20 April 1999.


Other

Boyd, C.E. Aquaculture and the environment workshop. Conducted for the Western Australia Fisheries Department, Perth, Australia, 6 May 1999.

Boyd, C.E. Aquaculture pond soils with emphasis on shrimp culture. Soil Science Graduate Seminar, Texas A&M University, Texas, 1997.


Boyd, C.E. Workshop on shrimp pond water quality (2 hr–73 participants), Chantaburi and Surat Thani, Thailand, May 1998.

Boyd, C.E. Workshop on soil management in shrimp ponds (4 days–32 participants), Guayaquil, Ecuador, August 1997.

Boyd, C.E. Workshop on water and soil quality in shrimp farming (2 days-41 participants), Mazatlan, Mexico, January 1998.
Boyd, C.E. Workshop on water quality (1/2 day–25 participants), Pietersburg, South Africa, March 1998.

Boyd, C.E. Workshop on water quality and pond bottom soils (1/2 day–385 participants), four locations, China, August 1997.

Boyd, C.E. Workshop on water quality in shrimp ponds (3 days–22 participants), Guayaquil, Ecuador, November 1997.

2. MICHIGAN STATE UNIVERSITY

Publications


3. OREGON STATE UNIVERSITY

Theses


Publications


Ockeye, S. A fish, oh my, With not one but two eye, Who just ate that fly, Rarely tasty on rye, But basically a good guy.

Presentations

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4. SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE

Publications


5. UNIVERSITY OF ARIZONA

Publications


Presentations

6. UNIVERSITY OF ARKANSAS AT PINE BLUFF
Publications
**Presentations**

**7. UNIVERSITY OF CALIFORNIA, DAVIS**

**Theses**


**Publications**


Presentations


Other
Piedrahita, R.H. Aquacultural engineering. Five-day course, at the Universidad Autonoma de Baja California, Ensenada, Baja California, 23–28 November 1997.

8. UNIVERSITY OF GEORGIA

Presentations


9. UNIVERSITY OF HAWAII

Presentations

10. UNIVERSITY OF MICHIGAN

Publications


11. UNIVERSITY OF OKLAHOMA

Publications

Presentations

12. UNIVERSITY OF TEXAS

Publications

13. OTHER

Theses
Moreno, Ana GT. 2007. Aplicación de un sistema de calidad para el aprovechamiento del recurso hídrico en una granja de producción acuícola. MS thesis, Centro de Transferencia Tecnológica para la Acuicultura (CETRA), Villahermosa, Mexico

Publications


IV. AQUACULTURE CRSP PUBLICATIONS

A. Notices of Publication & Research Reports

87-1 Hopkins, K.D., J.E. Lannan, and J.R. Bowman. A data base management system for research in pond dynamics.


87-3 Tavarutmaneegul, P. and C.K. Lin. Breeding and rearing of sand goby (Oxyeleotris marmoratus, Blk.) fry.

87-A1 Teichert-Coddington, T. Efectos de Dietas de Proteínas y Densidades de Siembra sobre la Producción de Penaeus vannamei en Estanques de Tierra.
APPENDIX 4. COMPENDIUM OF PUBLICATIONS

88-4 Lin, C.K. Acidification and reclamation of acid sulfate soil fishponds in Thailand.
88-10 Sikoki, F.D., R.A. Tubb, and L.R. Curtis. Elevation of sex steroids and inhibition of UDP-glucuronyltransferase are out of phase during gonadal maturation in the common carp.
88-12 Fortes, R.D., V.L. Corre, Jr., and E. Pudadera. Effects of fertilizers and feeds as nutrient sources on Oreochromis niloticus production in Philippine brackish water ponds.
88-A20 Lin, S.K and M. Boonyaratpalin. An Analysis of Biological Characteristics of Macrobrachium rosenbergii (de Man) in Relation to Pond Production and Marketing in Thailand
89-13 Fast, A.W., K.E. Carpenter, V.J. Estilo, and H.J. Gonzales. Effects of water depth and artificial mixing on dynamics of Philippines brackish water shrimp ponds.
89-16 Lin, C.K. and M. Boonyaratpalin. An analysis of biological characteristics of Macrobrachium rosenbergii (de Man) in relation to pond production and marketing in Thailand.
89-17 Chang, W.Y.B. Estimates of hypolimnetic oxygen deficits in ponds.
89-18 Diana, J.S. and A.W. Fast. The effects of water exchange rate and density on yield of the walking catfish, Clarias fuscus.
89-A1 Alvarenga, H.R and B. W. Green. Produccion y Aspectos Economicos del Cultivo de Tilapia en Estanques Fertilizados con Gallinza
89-A2 Michael J. A. Young, Arlo W. Fast, and Paul G. Olin. Induced Maturation and Spawning of the Chinese Catfish Clarias fuscus
90-24 Hopkins, K.D. Reporting fishpond yields to farmers.
90-27 Green, B.W. and L.A. Lopez. Implementing the large-scale production of young males of Tilapia nilotica using hormonal sex inversion in Honduras.
90-A1 Lannan, J.E. Farming and Ranching in Aquatic Systems
90-A2 Piedrahita, R.H. Detritus-Based Aquaculture Systems
91-30 Green, B.W., D.R. Teichert-Coddington, and R.P. Phelps. Response of tilapia yield and economics to varying rates of organic fertilization and season in two Central American countries.
91-33 Piedrahita, R.H. Calibration and validation of TAP, an aquaculture pond water quality model.
91-34 Piedrahita, R.H. Modeling water quality in aquaculture ecosystems.
91-35 Piedrahita, R.H. Engineering aspects of warmwater hatchery design.
91-36 Piedrahita, R.H. and P. Giovannini. Fertilized non-fed pond systems.
91-38 Green, B.W. and H.R. Alvarenga. The effect of different application rates of chicken litter on tilapia production.
91-A1 Green, B.W. and David R. Teichert-Coddington. Comparison of Two Samplers Used with an Automated Data Acquisition System in Whole-Pond, Community Metabolism Studies
APPENDIX 4. COMPELLIUM OF PUBLICATIONS

91-A5 Piedrahita, R.H. Simulation of Short-Term Management Actions to Prevent Oxygen Depletion in Ponds.
92-40 Szyper, J.P., K.D. Hopkins, and C.K. Lin. Production of Oreochromis niloticus (L.) and ecosystem dynamics in manured ponds of three depths.
92-41 Piedrahita, R.H. Simulation of short-term management actions to prevent oxygen depletion in ponds.
92-46 Green, B.W. Substitution of organic manure for pelleted feed in tilapia production.
92-47 Green, B.W., and D.R. Teichert-Coddington. Comparison of two samplers used with an automated data acquisition system in whole-pond, community metabolism studies.
92-A3 Same as 92-48.
93-49 Teichert-Coddington, D.R., B.W. Green, and R.P. Phelps. Influence of site and season on water quality and tilapia production in Panama and Honduras.
93-50 Suresh, A.V. and C.K. Lin. Tilapia culture in saline waters: a review.
93-51 Knud-Hansen, C.F. Analyzing standard curves in the chemistry of waters used for aquaculture.
93-52 Szyper, J.P., J.Z. Rosenfeld, R.H. Piedrahita, and P. Giovannini. Diel cycles of planktonic respiration rates in briefly incubated water samples from a fertile earthen pond.
93-53 Same as 92-48.
93-54 Lin, C.K., K. Jaiyen, and W. Muthuwana. Integration of intensive and semi-intensive aquaculture: Concept and example.
93-55 Szyper, J.P. and J.M. Ebeling. Photosynthesis and community respiration at three depths during a period of stable phytoplankton stock in a eutrophic brackish water culture pond.

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94-62 Hopkins, K.D. and D. Pauly. Instantaneous mortalities and multivariate models: applications to tilapia culture in saline water.
94-63 Green, B.W. and D.R. Teichert-Coddington. Production of Oreochromis niloticus fry for hormonal sex reversal in relation to water temperature.
94-68 Diana, J.S., D.J. Dettweiler, and C.K. Lin. Effect of Nile tilapia (Oreochromis niloticus) on the ecosystem of aquaculture ponds, and its significance to the trophic cascade hypothesis.
94-71 Hopkins, K.D. Reporting fish growth: a review of the basics.
94-72 Hopkins, K.D. and J.D. Bowman. A research methodology for integrated agriculture-aquaculture farming systems.
94-74 Knud-Hansen, C.F. Pond history as a source of error in fish culture experiments: a quantitative assessment using covariate analysis.
94-75 Green, B.W. and D. Teichert-Coddington. Growth of control and androgen-treated Nile tilapia, Oreochromis niloticus (L.), during treatment, nursery and growout phases in tropical fish ponds.
94-77 Teichert-Coddington, D.R. and B.W. Green. Tilapia yield improvement through maintenance of minimal oxygen concentrations in experimental growout ponds in Honduras.
94-A2 Green, B.W. and D.R. Teichert-Coddington. Growth of Control and Androgen-Treated Nile tilapia, Oreochromis niloticus (L.), During Treatment, Nursery and Grow-Out Phases in Tropical Fish Ponds.
94-A6 No NOP issued for this number.
94-A7 Grace, G.R. and R.H. Piedrahita. Carbon Dioxide Control
<table>
<thead>
<tr>
<th>Publication</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-81</td>
<td>Culberson, S.D. and R.H. Piedrahita. Modification of stratified temperature model to accommodate reduced data inputs: identifying critical requirements.</td>
</tr>
<tr>
<td>95-82</td>
<td>Teichert-Coddington, D.R. Development of production technologies for semi-intensive fish farming during the past decade in Central America.</td>
</tr>
<tr>
<td>95-83</td>
<td>Teichert-Coddington, D.R. Effects of protein diet and sowing density on the production of Penaeus vannamei in land tanks.</td>
</tr>
<tr>
<td>95-85</td>
<td>Egna, H.S. Psychological distress as a factor in environmental impact assessment: some methods and ideas for quantifying this intangible intangible.</td>
</tr>
<tr>
<td>95-A3</td>
<td>Strategies for Stocking Nile Tilapia (Oreochromis niloticus) in fertilized Ponds.</td>
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<td>95-A3</td>
<td>Effects of Pond Depth and Mechanical Mixing on Production of Oreochromis niloticus in Manured Earthen Ponds.</td>
</tr>
<tr>
<td>95-87</td>
<td>Green, B.W. and C.E. Boyd. Water budgets for fish ponds in the dry tropics.</td>
</tr>
<tr>
<td>95-88</td>
<td>Green, B.W. and C.E. Boyd. Chemicals for organically fertilized fish ponds in the dry tropics.</td>
</tr>
<tr>
<td>95-93</td>
<td>Lin, C.K. and J.S. Diana. Co-culture of catfish (Clarias macrocephalus x C. gariepinus) and tilapia (Oreochromis niloticus) in ponds.</td>
</tr>
<tr>
<td>95-94</td>
<td>Lin, C.K. Clarias and tilapia interaction in polyculture.</td>
</tr>
<tr>
<td>95-97</td>
<td>Teichert-Coddington, D.R. Effect of stocking ratio on semi-intensive polyculture of Colossoma macropomum and Oreochromis niloticus in Honduras, Central America.</td>
</tr>
<tr>
<td>97-100</td>
<td>Shrestha, M.K. and C.K Lin. Phosphorus fertilization strategy in fish ponds based on sediment phosphorus saturation level.</td>
</tr>
<tr>
<td>Paper Number</td>
<td>Title</td>
</tr>
<tr>
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<tr>
<td>97-102</td>
<td>Green, B.W. Polyculture of tilapia with marine shrimp.</td>
</tr>
<tr>
<td>97-104</td>
<td>Engle, C.R. Optimal resource allocation by fish farmers in Rwanda.</td>
</tr>
<tr>
<td>97-105</td>
<td>Szyper, J.P. Observations and model predictions of daily areal primary production in a eutrophic brackish water culture pond.</td>
</tr>
<tr>
<td>97-106</td>
<td>Szyper, J.P. Comparison of three mixing devices in earthen culture ponds of four different surface areas.</td>
</tr>
<tr>
<td>97-107</td>
<td>Green, B.W. Inclusion of tilapia as a diversification strategy for penaeid shrimp culture.</td>
</tr>
<tr>
<td>97-111</td>
<td>Teichert-Coddington, D. and D. Martinez de Pinel. Solubility of selected inorganic fertilizers in brackish water.</td>
</tr>
<tr>
<td>97-112</td>
<td>Boyd, C.E. Water quality in laboratory soil-water microcosms with soils from different areas of Thailand.</td>
</tr>
<tr>
<td>97-114</td>
<td>Same as 97-101</td>
</tr>
<tr>
<td>97-115</td>
<td>Yi, Y., C.K. Lin, and J.S. Diana. Influence of Nile tilapia (Oreochromis niloticus) stocking density in cages on their growth and yield in cages and in ponds containing the cages.</td>
</tr>
<tr>
<td>97-117</td>
<td>Ward, G.H. Water effluent and quality, with special emphasis on finfish and shrimp aquaculture.</td>
</tr>
<tr>
<td>97-118</td>
<td>Green, B.W., M.P. Micheletti, and C.A. Lara. A collaborative project to monitor the water quality of estuaries in the shrimp producing regions of Honduras.</td>
</tr>
<tr>
<td>97-A2</td>
<td>Egna, H.S. History Of The Pond Dynamics/Aquaculture Collaborative Research Support Program.</td>
</tr>
<tr>
<td>97-A8</td>
<td>Green, B.W., K.L. Veverica, and M.S. Fitzpatrick Fry and Fingerling Production.</td>
</tr>
<tr>
<td>98-121</td>
<td>Contreras-Sánchez, W., M.S. Fitzpatrick, R.H. Milston, and C.B. Schreck. Masculinization of Nile tilapia (Oreochromis niloticus) by single immersion in 17a-methylldihydrotestosterone and trenbolone acetate.</td>
</tr>
</tbody>
</table>
98-128 Yi, Y. A bioenergetics growth model for Nile tilapia (Oreochromis niloticus) based on limiting nutrients and fish standing crop in fertilized ponds.
98-A1 Diana, J.S. and C.K. Lin. The Effects of Fertilization and Water Management on Growth and Production of Nile Tilapia in Deep Ponds During the Dry Season.
99-134 Boyd, C.E. and L. Massaut. Risks associated with the use of chemicals in pond aquaculture.
99-136 Boyd, C.E. and M.C. Haws. Good management practices (GMPs) to reduce environmental impacts and improve efficiency of shrimp aquaculture in Latin America.
99-141 Fitzpatrick, M., W.M. Contreras-Sánchez, R.H. Milston, and C.B. Schreck. Fate of the masculinizing agent methyltestosterone in the pond environment.
99-142 Green, B.W. Sistemas de produccíon de tilapia en Honduras (Tilapia production systems in Honduras).
99-143 Lovshin, L.L. and N.B. Schwartz. Evaluation of integrated tilapia culture by resource limited farmers in Panama and Guatemala.
99-145 Yi, Y. Modeling growth of Nile tilapia (Oreochromis niloticus) in a cage-cum-pond integrated culture system.

00-146 Perschbacher, P. and R. Lochmann. Effects of feeding pelleted versus non-pelleted defatted rice bran on Nile tilapia Oreochromis niloticus production and water quality in ponds.

00-147 Molnar, J.J. Sound policies for food security: the role of culture and social organization.


00-150 Ward, Jr., G.H. Effects of shrimp farming on the hydrography and water quality of El Pedregal and San Bernardo estuaries, Gulf of Fonseca, Honduras.

00-151 Sonnenholzner, S. and C.E. Boyd. Chemical and physical properties of shrimp pond bottom soils in Ecuador.

00-152 Sonnenholzner, S. and C.E. Boyd. Vertical gradients of organic matter concentration and respiration rate in pond bottom soils.


00-154 Ernst, D.H., J.P. Bolte, and S. Nath. AquaFarm: simulation and decision support for aquaculture facility design and management planning.

00-155 Nath, S.S., J.P. Bolte, L.G. Ross, and J. Aguilar-Manjarrez. Applications of geographical information systems (GIS) for spatial decision support in aquaculture.

00-156 Bolivar, R.B. and G.F. Newkirk. Response to selection for body weight on Nile tilapia (Oreochromis niloticus) in different culture environments.

00-157 Lovshin, L.L. Criteria for selecting Nile tilapia and red tilapia for culture.


00-159 Yi, Y. and C.K. Lin. Analysis of various inputs for pond culture of Nile tilapia (Oreochromis niloticus): profitability and potential environmental impacts.


00-161 McKeon, C., E. Glenn, C.P. Gerba, and K. Fitzsimmons. Microbiological hazards of tilapia culture systems.


00-163 Jamu, D. A pilot study on the spatial and temporal soil moisture and distribution in integrated crop-fish-wetland and crop-wetland agroecosystems in Zomba-East, Malawi.

00-164 Lovshin, L.L. Evaluation of tilapia culture by resource limited farmers in Panama and Guatemala.

00-A1 Same as 00-155.

00-A2 Same as 00-154.


00-A4 Phelps, R.P. and T.J. Popma. Sex Reversal of Tilapia


01-165 Contreras-Sánchez, W.M., M.S. Fitzpatrick, R.H. Milston, and C.B. Schreck. Masculinización of Nile tilapia with steroids: alternate treatments and environmental effects.

01-166 Sonnenholzner, S. and C.E. Boyd. Managing the accumulation of organic matter deposited on the bottom of shrimp ponds... Do chemical and biological probiotics really work?

01-167 Egna, H. Environment, aquaculture, and food policy nexus: case study of two USAID aquaculture projects in Rwanda.
01-168 Yi, Y. and C.K. Lin. Effects of biomass of caged Nile tilapia (Oreochromis niloticus) and aeration on the growth and yields in an integrated cage-cum-pond system.


01-170 Same as 00-A3.


01-174 Phelps, R.P. Sex reversal: the directed control of gonadal development in tilapia.


01-A1 Bart, A.N. The Use of Ultrasound to Enhance Transport of Compounds into Fish and Fish Embryos: A Review.

01-A2 Valderrama, D. and C.R. Engle. Efectos en la rentabilidad y las estrategias de manejo de las fincas en Honduras, por las tasas de sobrevivencia del Camarón blanco.

01-A3 Same as 01-168.

01-A4 Same as 01-172.

01-A5 Yang, Y. and C.K. Lin. Low-Cost Fertilization in Inland Pond Aquaculture.


01-A7 Yang, Y. and A. Yakupitiyage. Feeds in Small-Scale Aquaculture.


02-176 Fitzsimmons, K. Tilapia markets in the Americas, 2001 and beyond.


02-181 Tollner, E.W. Levee pond design model.

02-182 Popma, T.J., and D.E. Meyer. Training and technical assistance in warm-water fish culture.


02-A2 Same as 02-185.


03-186 Green, B.W., Z.E. Nagdy, and H. Hebicha. Evaluation of Nile tilapia pond management strategies in Egypt.

03-188 Yi, Y., and C.K. Lin. Hybrid catfish (Clarias macrocephalus x C. gariepinus) and Nile tilapia (Oreochromis niloticus) culture in an integrated pen-cum-pond system: growth performance and nutrient budgets.

03-189 Fúnez, O., I. Neira, and C. Engle. Potential for supermarket outlets for tilapia in Honduras.


03-193 Fúnez, O., I. Neira, and C. Engle. Potential for open-air fish market outlets for tilapia in Honduras.


03-196 Yi, Y. and C. K. Lin. Minimizing environmental impacts and reuse of pond effluents and mud.

03-197 Knud-Hansen, C. and H. Guttman. A comparative analysis of the fixed-input, computer modeling, and algal bioassay approaches for identifying pond fertilization requirements for semi-intensive aquaculture.


03-A1 McIntosh, D. and K. Fitzsimmons. Characterization of Effluent From an Inland, Low-Salinity Shrimp Farm: What Contribution Could This Water Make if Used for Irrigation.


03-A3 Same as 03-196.

03-A4 Same as 03-197.


03-A6 Same as 03-197.


03-A8 Neira, I., C.R. Engle and K. Quagrainie. Potential restaurant markets for farm-raised tilapia in Nicaragua.


04-201 Yi, Y., C.K. Lin, and J.S. Diana. Waste recycling in fish pond culture through integrated culture systems.


04-203 Egna, H.S. and C.E. Boyd. Dynamics of pond aquaculture.

04-A9 Javier de Jesús, M., and C.C. Kohler. The Commercial Fishery of the Peruvian Amazon.
04-A17 Long, N.T. and Y. Yang. Stocking Ratios of Hybrid Catfish (Clarias macrocephalus x C. gariepinus) and Nile Tilapia (Oreochromis Niloticus) in an Intensive Polyculture.
04-A18 Yang, Y. and K. Fitzsimmons. Tilapia-Shrimp Polyculture in Thailand.
05-205 Luong, V.C., Y. Yi, and C.K. Lin. Cove culture of marble goby (Oxyeleotris marmorata Bleeker) and carps in Tri An Reservoir in Vietnam.
05-206 Giap, D.H., Y. Yi, and C.K. Lin. Effects of different fertilization and feeding regimes on the production of integrated farming of rice and prawn Macrobrachium rosenbergii (De Man).
05-A1 Ostaszewska, M., M. Olejniczak, M. Wieczorek, K. Dabrowski, and M.E. Palacios. Growth and morphological changes in the digestive tract of rainbow trout (Oncorhynchus mykiss) and pacu (Piaractus mesopotamicus) due to casein replacement with soybean proteins.

05-A2 Same as 05-205.


05-A4 Boyd, C.E. Water use in aquaculture.


05-A6 Liti, D., L. Cherop, J. Munguti and L. Chhorn. Growth and economic performance of Nile Tilapia (Oreochromis niloticus L.) fed on two formulated diets and two locally available feeds in fertilized ponds.


06-210 Fitzsimmons, K. Prospect and Potential for Global Production.


06-212 Boyd, C.E. Management of Bottom Soil condition and Pond Water and Effluent Quality.

06-213 Fitzsimmons, K. Harvest, Handling, and Processing.

06-214 Engle, C.R. Marketing and Economics.


APPENDIX 4. COMPENDIUM OF PUBLICATIONS


06-A6 Wudtisin, I. and C.E. Boyd. Physical and chemical characteristics of sediments in catfish, freshwater prawn and carp ponds in Thailand

07-220 Cao, L., W. Wang, C. Yang, Y. Yang, J. Diana, A. Yakupitiyage, and D. Li. Application of microbial phytase in fish feed.


07-227 Cao, L., Y. Chengtai, W. Wang, Y. Yang, K. Abbas, B. Yan, H. Wang, L. Su, Y. Sun, and H. Wang. Comparative and evolutionary analysis in natural diploid and tetraploid weather loach Misgurnus anguillicaudatus based on cytochrome b sequence data in central China.

07-228 Cao, L., W. Wang, Y. Yang, C. Yang, S. Xiong, and J.S. Diana. Environmental impact of aquaculture and countermeasures to aquaculture pollution in China.


07-A1 Brown C.L. Microbrewing Science: A Primer on Yeast Culture for Classic Brewing.


07-A4 Tsadik, G.G., and A. N. Bart. Effects of feeding, stocking density and water-flow rate on fecundity, spawning frequency and egg quality of Nile tilapia, Oreochromis niloticus (L.).


Wilfrido M. Contreras-Sanchez and Kevin Fitzsimmons (eds.), Proceedings for the 7th International Symposium on Tilapia in Aquaculture (ISTA7), Vera Cruz, Mexico, 6-8 September 2006, p. 123.


08-231 Dabrowski, K., M. Arslan, J. Rinchard, and M.E. Palacios.  Growth, maturation, induced spawning, and production of the first generation of South American Catfish (Pseudoplatystoma sp.) in the North America.


08-233 Rai, S., Y. Yang, M.A Wahab, A. Bart, and J.S. Diana.  Comparison of rice straw and bamboo stick substrates in periphyton-based carp polyculture systems.


08-238 Arslan, M. Effects of different dietary lipid sources on the survival, growth and fatty acid composition of South American catfish (Pseudoplatystoma fasciatum), surubim, juveniles.


08-A4 Fitzsimmons, K.  Food Safety, Quality Control in Tilapia.
APPENDIX 4. COMPREHENDIUM OF PUBLICATIONS


B. DATA REPORTS BY PD/A CRSP RESEARCHERS


PD/A CRSP, Oregon State University, Corvallis, Oregon, 47 pp.

PD/A CRSP, Oregon State University, Corvallis, Oregon, 94 pp.

Pêcheur des Saumons, M. 2007. Into the agua / to hide in dark silent depths / no dinner tonight.


C. CRSP WORK PLANS


APPENDIX 4. COMPENDIUM OF PUBLICATIONS


D. CRSP ADMINISTRATIVE REPORTS


E. CRSP PROGRAM MANUALS AND PUBLICATIONS


V. OTHER WORK BY CRSP RESEARCHERS

Publications


Niloticus, O. 2007. Were it not for the fact that my daily ablutions require so much energy, my frivolity would be unsurpassed by each of my chums in the sea.


**Presentations**


APPENDIX 5. LINKAGES

Developing and maintaining links—local, regional, and international—among collaborating universities, government ministries, departments, and agencies, and the private sector forms a significant ancillary contribution to the CRSP research effort and to the goal of meeting food security needs in the developing world. The following list includes informal linkages and connections made by Aquaculture CRSP researchers in the field as well as those maintained by the Program Management Office.

- Acuarios Leticia, Colombia
- Alabama Catfish Producers Association, Montgomery, Alabama
- Alaska State University
- Alpha Aquaculture, Kenya
- American Association for the Advancement of Science (AAAS), Washington, DC
- American Association of State Colleges & Universities
- American Fisheries Society, Bethesda, Maryland
- American Red Cross
- American Tilapia Association, Arlington, Virginia
- Aqua Technics, Carlsborg, Washington
- Aquacorporacion, International, Honduras
- Aquaculture for Local Community Development Programme (ALCOM), Harare, Zimbabwe
- Aquaculture Network for Africa (ANAF)
- Aquaculture Research Unit, University of the North, Peitersburg, South Africa
- Aquaculture without Frontiers
- Asian Development Bank, Tarahara, Nepal
- Asian Institute of Technology, Thailand
- Asociación Nacional de Acuicultores de Honduras (ANDAH), Tegucigalpa, Honduras
- Association for International Agriculture & Rural Development (AIARD), Washington, DC
- Auburn University, Alabama
- Australian Center for International Agricultural Research (ACIAR), Nelson Bay, Australia
- Bangladesh Agricultural University (BAU), Mymensingh, Bangladesh
- Bangladesh Rural Advancement Committee (BRAC), Bangladesh
- Bean/Cowpea CRSP, East Lansing, Michigan
- Bemidji State University, Minnesota
- Board for International Food & Agricultural Development (BIFAD) Washington, DC
- Brackish Water Shrimp Culture Station, Thiland
- Broadening Access & Strengthening Input Market Systems (BASIS) CRSP, Madison, Wisconsin
- Brooklyn College, New York
- Brunell Engineering Works, Kenya
- Bunda College of Agriculture, University of Malawi, Lilongwe, Malawi
- Bureau of Fisheries & Aquatic Resources (BFAR), Manila, Philippines
- Can Tho University, Vietnam
- Canadian International Development Agency (CIDA), Hull, Quebec, Canada
- Caritas, Bangladesh & Iquitos, Peru
- Central Laboratory for Aquaculture Research (CLAR), Abbassa, Egypt
- Centro de Adiestramiento de la Agricultura Sostenible (CEASO), Honduras
- Centro de Investigación en Alimentación y Desarrollo (CIAD)
- Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia
- Chiang Mai Rehabilitation Center, Thailand
- Chulalongkorn University, Bangkok, Thailand
- Clackamas County Extension Office, Oregon City, Oregon
- Clemson University, Clemson, South Carolina
- Coastal Resources Center, University of Rhode Island
- Comité para la Defensa y Desarrollo de la Flora y Fauna del Golfo de Fonseca (CODDEFFAGOLFA) Tegucigalpa, Honduras
- Commonwealth Agricultural Bureau (CABI International), Wageningen, Netherlands
- Comunidad Indígena Sarayaku, Ecuador
- Consejo Nacional de Ciencia y Tecnología (CONACYT), Mexico
- Consejo Nacional del Ambiente (CONAM), Lima, Peru
• Consortium for International Earth Science Information Network (CIESIN), Washington, DC
• Consultative Group on International Agricultural Research (CGIAR), Washington, DC
• Cooperative for Relief & Assistance Everywhere (CARE), Bangladesh, Honduras, Peru, & Atlanta, Georgia
• Cornell University, Ithaca, New York
• CP Group, Thailand
• Cruz Aquaculture Corporation, Philippines
• CSIRO Livestock Industries, Chiswick Pastoral Research Laboratory, Armidale, Australia
• Danish International Development Agency (DANIDA), Copenhagen, Denmark
• Dar es Saalam University, Dar es Saalam, Tanzania
• David & Lucile Packard Foundation
• Department for International Development (DFID) Fish Genetics Research Programme, Swansea University, Wales, UK
• Department of Agriculture, Yunnan Province, China
• Department of Aquaculture, Nepal
• Department of Environmental Management, County of Hawai’i
• Department of Environmental Studies, Kenya
• Department of Fisheries, Ministry of Livestock & Fisheries Development, Kenya
• Department of Fisheries, Phnom Penh, Cambodia
• Department of Fisheries, Udorn Thani, Thailand
• Department of Livestock & Fisheries, Savannakhet, Laos
• Department of Soil Science, University of Nairobi, Kenya
• Derby Holding Company, Kenya
• Development for the Municipality of Centro, Tabasco, Mexico
• Dominion Fish Farm, Kenya
• EcoCostas, Ecuador
• Ecuador USAID-Arcoiris
• Egerton University, Njoro, Kenya
• Ejido Rio Playa, Comalcalco, Tabasco, Mexico
• El Carao National Fish Culture Research Center, Honduras
• EMBRAPA Environment, Brazil
• Empresa Brasileira de Pesquisa Agropecuária e Extensão Rural de Santa Catarina (EPAGRI), Brazil
• Empresa Nacional de Energia Electrica, Tegucigalpa, Honduras
• Escuela Agrícola Panamericana Zamorano, Honduras
• Escuela de Agricultura de la Region Tropical Humeda (EARTH), San José, Costa Rica
• Escuela Superior Politécnica del Litoral (ESPOL)/Centro Nacional de Acuicultura e Investigaciones Marinas (CENAIM), Guayaquil, Ecuador
• European Foundation for the Improvement of Living & Working Conditions, Dublin, Ireland
• European Inland Fisheries Advisory Commission (EIFAC), Rome, Italy
• Extensión Rural de Santa Catarina (Epagri), Brazil
• Farm-Level Applied Research Methods for East & Southern Africa (FARMESA)/ Swedish International Development Cooperation Agency (SIDA)/, Stockholm, Sweden
• Fe y Alegría, Lima, Peru
• Federación de Agroexportadores de Honduras (FPX), San Pedro Sula, Honduras
• Fideicomisos Institutos en Relación con la Agricultura (FIRA), Morelia, Michoacán, Mexico
• Fisheries Department, Ministry of Food & Agriculture, Ghana
• Fisheries Department, Kenya
• Fisheries Industry Technology Center/University of Alaska Kodiak & University of Alaska Fairbanks Sea Grant Marine Advisory Program
• Fisheries Society of Africa (FISA), Nairobi, Kenya
• Florida International University, USA
• Fondo Nacional de Desarrollo Pesquero (FONDEPES), Lima, Peru
• Food & Agriculture Organization of the United Nations (FAO), Italy
• Foreign Agricultural Service, Research & Scientific Exchange Division
• Forum for Organic Resource Management (FORMAT), Nairobi, Kenya
• French Red Cross, France
• Fundación Ecológica Arcoiris, Ecuador
• FYD International, Philippines
• General Directorate of Fisheries & Aquaculture (DIGEPESCA), Tegucigalpa and San Pedro Sula, Honduras
• Genetically Improved Farmed Tilapia Program (GIFT), Muñoz, Nueva Ecija, Philippines
• German Development Service, Kenya
• Global Aquaculture Alliance, St. Louis, Missouri
• Global Livestock CRSP, Davis, California
• Global Village, Honduras
• Global Water Sustainability, Florida
• Growel Formulations Pvt. Ltd, India
• Hainan University, China
• Heifer International, Arkansas
• Henry Spira/GRACE Project on Industrial Production, School of Hygiene & Public Health, Johns Hopkins University
• Hofstra University, USA
• Huazhong Agricultural University, Wuhan, China
• Inland Water Resources & Aquaculture Service (FIRI), Rome, Italy
• Institut Pertanian Bogor (IPB), Bogor, Indonesia
• Institute for Agriculture & Trade Policy, USA
• Institute for Research & Food Development, Mexico
• Institute for the Regional Ecodevelopment of the Amazon, Ecuador
• Institute of Agricultural & Food Information, Prague, Czech Republic
• Institute of Agriculture & Animal Science (IAAS), Tribhuvan University, Rampur Campus, Chitwan, Nepal
• Institution for Research in Food & Development, Hermosillo, Sonora, Mexico
• Instituto Amazónico de Investigaciones Científicas SINCHI, Colombia
• Instituto Colombiano de Desarrollo Rural INCODER, Bogota, Colombia
• Instituto Nacional de Investigaciones Agrícolas, Amazonas, Venezuela
• Instituto de Investigaciones de la Amazonía, Peruana (IIAP), Peru
• Instituto de Investigaciones IMANI, Colombia
• Instituto del Mar del Perú (IMARPE), Peru
• Instituto Nacional de Pesquisas da Amazônia (INPA), Brazil
• Instituto Politécnico Nacional, Mexico
• Instituto Technológico Saleciano, Ecuador
• Instituto Tecnológico de Honduras
• Instituto Tecnológico del Mar, Mexico
• Integrated Pest Management CRSP, USA
• Inter-African Committee on Oceanography, Sea & Inland Fisheries
• International Center for Research in Agroforestry (ICRAF), Nairobi, Kenya
• International Development Research Centre (IDRC), Ottawa, Canada
• International Higher Education Linkages Project (IHELP), Washington, DC
• International Institute for Fisheries Economics & Trade (IIFET), USA
• International Service for National Agricultural Research (ISNAR), Honduras
• International Sorghum & Millet (INTSORMIL) CRSP, Lincoln, Nebraska
• International Symposium on Tilapia in Aquaculture (ISTA)
• Japan International Cooperation Agency (JICA), Japan
• Jomo Kenyatta University, Nairobi, Kenya
• Kasetsart University, Thailand
• Katholieke Universiteit Leuven (KUL), Belgium
• Kellogg Foundation, Dominican Republic
• Kenya Fisheries Department, Kenya
• Kenya Marine & Fisheries Research Institute
• Kenya Medical Research Institute (KEMRI), Nairobi, Kenya
• Kenyatta University, Nairobi, Kenya
• Kibos Fish Farm, Kenya
• Kingolwira National Fish Farming Centre, Tanzania
• Kwame Nkrumah University of Science & Technology, Kumasi, Ghana
• La Fundación Chile, Santiago, Chile
• Ladong Fisheries College, Indonesia
• Lake Basin Development Authority, Kenya
• Lake Victoria Environmental Management Programme, Kenya
• Land Tenure Center, Madison, Wisconsin
• Louisiana State University, Baton Rouge, Louisiana
• Magarini Aquafarmers, Malindi, Kenya
• Malawi National Aquaculture Center, Malawi
• Marine Farms ASA, Norway
• Mekong River Commission, Phnom Penh, Cambodia
• Mercy Corps, Portland, Oregon, USA
• Mesta de Bombon Maca Producers Association, Peru
• Michigan State University
• Microcredit Summit Campaign, Washington, DC
• Ministry of Agricultural Development, Panama
• Ministry of Agriculture, Animal Husbandry, & Fisheries, Entebbe, Uganda
• Ministry of Education, Dominican Republic
• Ministry of Environment & Natural Resources, Tegucigalpa, Honduras
• Ministry of Fisheries, Iquitos, Peru
• Ministry of Tourism, Natural Resources, & Environment, Fisheries & Aquaculture Development Division, Dar es Salaam, Tanzania
• Moi University, Kenya
• Mount Kenya Fish Farmers Association, Central Province, Kenya
• Naivasha Wildlife & Fisheries Training Institute, Kenya
• National Agricultural Library, Washington, DC
• National Agricultural Research Council, Nepal
• National Aquaculture Centre, Zomba, Malawi
• National Center for Genetic Engineering & Biotechnology (BIOTEC), Thailand
• National Council for Science & Technology, Mexico
• National Freshwater Fisheries Technology Center, Philippines
• National Inland Fisheries Institute (NIFI), Bangkok, Thailand
• National Museums of Kenya, Nairobi, Kenya
• National Research Initiative, Thailand
• National Sea Grant College Program
• National Shrimp Culture Advisory Group, Tegucigalpa, Honduras
• National Technical Information Services (NTIS), Springfield, Virginia
• National University of Colombia
• Nature Conservancy’s Indo-Pacific Resource Center in Australia
• Nepal Agricultural Research Council, Lalitpur, Nepal
• Network of Aquaculture Centres in Asia-Pacific (NACA), Bangkok, Thailand
• New York Sea Grant
• Nong Nam University, Vietnam
• Noorul Islam College of Engineering, Tamil Nadu, India
• North Carolina State University, Raleigh, North Carolina
• North Central Regional Aquaculture Center (NCRAC), East Lansing, Michigan
• Nuestros Pequeños Hermanos (NPH), Honduras
• Oceanic Institute, Waimanalo, Hawaii
• Oceanol, Centro, Tabasco, Mexico
• Ohio State University Research Foundation (OSURF), Columbus, Ohio
• Oklahoma State University, USA
• Oregon Aquaculture Association – Pond School, USA
• Oregon Sea Grant, Corvallis, Oregon
• Oregon State University, Oregon
• Organization of African Unity, Addis Ababa, Ethiopia
• Patani Fisheries College, Patani, Thailand
• Peace Corps, Ecuador
• Peanut CRSP, Griffin, Georgia
• Population & Fish Genetics Group
• Programa Cooperativo de Investigacion y Transferencia de Tecnologia Agropecuaria para los Tropicos (PROCITROPICS), Peru
• Programa Regional de Apoyo al Desarrollo de la Pesca en el Istmo Centroamericano (PRADEPESCA), Panama
• Project Globale, Honduras
• Project Rural Reconstruction, Santa Barbara, Honduras
• PROMIPAC, Nicaragua and El Salvador
• PROSEAL, Iquitos, Peru
• PROSHIKA, Dhaka, Bangladesh
• Puerto Rico Sea Grant
• Quisqueya University, Haiti
• Red de Desarrollo Sostenible Honduras (RDS-HN), Honduras
• Regional Center of Education & Quality for Sustainable Development (CREDES), Mazatlan, Mexico
• Research Institute for Aquaculture No. 1, Vietnam
• Roche Aquaculture Research Centre Asia Pacific, Bangkok, Thailand
• Royal Institute of Technology, Stockholm, Sweden
• Royal University of Agriculture, Nepal
• Rural Reconstruction Program (PRR), Honduras
• Sagana Fish Farm, Kenya
• Sagana Women’s Group, Sagana, Kenya
• Sarasawathi Foundation, Thailand
• Science & Math Investigative Learning Experiences Program (SMILE), Oregon State University, USA
• Secretaría de Agricultura e Abastecimiento do Estado de São Paulo, Brazil
• Secretaría de Agricultura y Ganadería, Honduras
• Secretaría Especial de Acuicultura e Pesca, Brazil
• Sichuan Provincial Fisheries Association, Ziyang, Sichuan Province, China
• Sinaloa State Committee for Aquaculture Sanitation (CESASIN)
• Sisaket College of Agriculture & Technology, Thailand
• Socio-Economic Development Centre (SEDEC), Binh Thuan Province, Vietnam
• Soil Management CRSP, Honolulu, Hawaii
• Sokone University of Agriculture, Tanzania
• Southeast Asian Fisheries Development Center (SEAFDEC), Iloilo, Philippines
• Southeast Asian Outreach (SAO)/Cambodia Aquaculture at Low Expenditure (SCALE) Project, Cambodia
• Southern African Development Community (SADC), Harare, Zimbabwe
• Southern Illinois University at Carbondale
• Southwest University, Chongqing, China
• Special Program for African Agricultural Research (SPAAR), Washington, DC
• Stellenbosch University, South Africa
• Sustainable Agricultural Centre for Research & Development in Africa (SACRED-Africa), Bungoma, Kenya
• Sustainable Agriculture & Natural Resources Management (SANREM) CRSP, Watkinsville, Georgia
• Taiwanese Mission, Honduras
• Technical Integration Asia Network, Yangon, Myanmar
• Terra Nuova, Lima, Peru
• Texas A&M University, College Station, Texas
• Texas Sea Grant, Houston, Texas
• Texas Tech University, Lubbock, Texas
• Thai Lux, Thailand
• Thailand Department of Fisheries
• The Ohio State University, Ohio
• The University of Michigan, Michigan
• Training & Occupation for Disabled Association, Poi Pet, Cambodia
• Uganda Wetlands & Resource Conservation Association (UWRCA), Uganda
• Ujong Batee Aquaculture Research & Extension Center, Indonesia
• United Aqua Farms, Bangladesh
• United States Department of Agriculture (USDA), Washington, DC
• United States Fish & Wildlife Service (USFWS), Washington, DC
• United States Food & Drug Administration (FDA), Washington, DC
• Universidad Autónoma del Beni, Bolivia
• Universidad Autónoma de Sinaloa, Mexico
• Universidad Autónoma Metropolitana, Mexico City, Mexico
• Universidad Centroamericana, Nicaragua
• Universidad de Santiago de Compostela, Santiago, Spain
• Universidad Juárez Autónoma de Tabasco, Mexico
• Universidad Mayor de San Simón, Bolivia
• Universidad Nacional Agraria La Molina, Lima, Peru
• Universidad Nacional de Colombia
• Universidad Nacional de la Amazonia Peruana, Peru
• Universidad Nacional Federico Villareal, Lima, Peru
• Universidad Nacional Mayor de San Marcos, Lima, Peru
• Universidad Técnica de Machala, Machala, Ecuador
• Universidade de São Paulo, Brazil
• Universidade Estadual Paulista, Brazil
• Universidade Federal de Minas Gerais, Brazil
• Universidade Federal do Amazonas, Brazil
• Universität Hohenheim, Stuttgart, Germany
• Université Nationale du Rwanda, Butare, Rwanda
• University of Agriculture & Forestry, Vietnam
• University of Alaska, USA
• University of Arizona, USA
• University of Arkansas at Pine Bluff, USA
• University of California–Davis, USA
• University of Delaware, USA
• University of Fisheries, Nhatrang, Vietnam
• University of Georgia, USA
• University of Hawai‘i at Hilo, USA
• University of Nairobi, Kenya
• University of Oklahoma, USA
• University of Puerto Rico, Mayaguez, Puerto Rico
• University of Rhode Island, USA
• University of San Carlos, Guatemala
• University of Stirling, UK
• University of Texas at Austin, USA
• University of the North, Pietersburg, South Africa
• University of the Philippines in the Visayas, Iloilo, Philippines
• University of the Virgin Islands, USVI
• University of Wales, Swansea, UK
• University of Washington, USA
• University of Wisconsin-Madison, USA
• Veracruz World Trade Center
• Vincent Foundation, Haiti
• Virginia Polytechnic Institute & State University, USA
• Wageningen University, Netherlands
• West African Rice Development Association (WARDA), Bouaké, Côte d’Ivoire
• Western Regional Aquaculture Consortium (WRAC), Seattle, Washington
• Wetlands Conservation Program, Mazatlán, Mexico
• Winrock International, Lima, Peru
• World Aquaculture Society (WAS), Baton Rouge, Louisiana
• World Aquaculture Society Tsunami Relief Fund (WAS-TRF)
• World Bank, Washington, DC
• World Conservation Union (IUCN), Nairobi, Kenya
• World Neighbors, Honduras
• World Wildlife Fund, Washington, DC
• WorldFish Center (formerly ICLARM), Penang, Malaysia
• Wuhan University, China
• Xiamen University, China
• YSI, Inc.
• Zamorano Alumni Association, Dominican Republic
• Zhejiang University, China
APPENDIX 6. PROGRAM PARTICIPANTS

MANAGEMENT ENTITY OFFICE STAFF
Oregon State University, Corvallis, Oregon USA
Hillary Egna Director

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, DC USA
Harry Rea Cognizant Technical Officer

ADVISORY BODIES
External Program Advisory Council (membership as of 2008)
Christine Crawford Chair, University of Tasmania, Hobart, Australia
Jason Clay World Wildlife Fund, Washington, DC
Nathanael Hishamunda FAO, Rome, Italy
Marcia Macomber CGIAR Challenge Program on Water & Food, Colombo, Sri Lanka

Ex-Officio Members
Harry Rea USAID
Hillary Egna Oregon State University

Institutional Representatives
Patricia R. Alvarez Florida International University
Roy Arnold Oregon State University
Linda L. Brainard Cornell University
Lawrence A. Davis University of Arkansas at Pine Bluff
Peter J. Gerard University of Michigan
Barbara A. Goswick University of Arkansas at Pine Bluff
Colin Kaltenbach University of Arizona
Ricki McMillan Institute for Agriculture and Trade Policy
Anne J.M. Moffat Ohio State University
C. Michael Moriarty Auburn University
Gordhan L. Patel University of Georgia
Lee Anne T. Peters University of Arizona
Prudence M. Rice Southern Illinois University at Carbondale
Rose Tseng University of Hawaii at Hilo

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8 For participant listings within each program year during the 1996–2008 reporting period, see the corresponding Annual Administrative Reports. Listings here cover the period 2007–2008.
2006–2007 Technical Committee Member Co-Chairs (illustrative of the TC roster for one year)
Jim Diana          University of Michigan
Claude Boyd        Auburn University

Material and Methods Subcommittee Research Area of Expertise
Suyapa Meyer    Zamorano            Social and economic aspects
Yang Yi         Asian Institute of Technology Environmental effects
Kevin Fitzsimmons University of Arizona    Production optimization

Technical Progress Subcommittee
Kwamena Quagrainie University of Arkansas Social and economic aspects
Bill Tollner     University of Georgia Environmental effects
Maria Haws      University of Hawaii Production optimization

Work Plan and Budget Subcommittee
Nancy Gitonga    Kenya Department of Fisheries Social and economic aspects
Wilfrido Contreras-Sánchez UJAT Environmental effects
Remedios Bolivar Central Luzon State University Production optimization

Ex-Officio Members
Harry Rea        USAID
Hillary Egna     Oregon State University
Developing and maintaining linkages among collaborating universities, government, NGOs, and the private sector around the world forms a significant ancillary contribution to the CRSP’s research effort and to the goal of meeting food security needs in the developing world. The following list includes informal linkages and connections made by ACRSP researchers in the field as well as those maintained by the Program Management Office.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAS</td>
<td>American Association for the Advancement of Science</td>
</tr>
<tr>
<td>ACIAR</td>
<td>Australian Center for International Agricultural Research</td>
</tr>
<tr>
<td>ACRSP</td>
<td>Aquaculture Collaborative Research Support Program</td>
</tr>
<tr>
<td>ADR</td>
<td>Adoption/Diffusion Research</td>
</tr>
<tr>
<td>AFCRSP</td>
<td>Aquaculture &amp; Fisheries Collaborative Research Support Program</td>
</tr>
<tr>
<td>AIARD</td>
<td>Association for International Agriculture &amp; Rural Development</td>
</tr>
<tr>
<td>AIT</td>
<td>Asian Institute of Technology</td>
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<tr>
<td>ALCOM</td>
<td>Aquaculture for Local Community Development Programme</td>
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<tr>
<td>AMR</td>
<td>Administrative Management Review</td>
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<td>ANDAH</td>
<td>Asociación Nacional de Acuicultores de Honduras</td>
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<td>AO</td>
<td>Agreement Officer (USAID)</td>
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<td>ASAL</td>
<td>Arid and Semi-Arid Lands Project</td>
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<tr>
<td>ASF</td>
<td>Animal Source Foods</td>
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<td>ASMR</td>
<td>Aquaculture Systems Modeling Research</td>
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<td>ATA</td>
<td>American Tilapia Association</td>
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<td>ATR</td>
<td>Appropriate Technology Research</td>
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<td>AU</td>
<td>Auburn University</td>
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<td>BASIS</td>
<td>Broadening Access &amp; Strengthening Input Market Systems CRSP</td>
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<td>BAU</td>
<td>Bangladesh Agricultural University</td>
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<tr>
<td>BIFAD</td>
<td>Board for International Food &amp; Agriculture Development</td>
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<tr>
<td>BIOTEC</td>
<td>National Center for Genetic Engineering &amp; Biotechnology</td>
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<tr>
<td>BOD</td>
<td>Biochemical oxygen demand</td>
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<td>BOD</td>
<td>Board of Directors</td>
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<td>BRAC</td>
<td>Bangladesh Rural Advancement Committee</td>
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<td>CARE</td>
<td>Cooperative for Relief &amp; Assistance Everywhere</td>
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<td>CAS</td>
<td>College of Agricultural Sciences, OSU</td>
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<td>CEASO</td>
<td>Centro de Adiestamiento de la Agricultura Sostenible</td>
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<td>CENAIM</td>
<td>Centro Nacional de Acuicultura e Investigaciones Marina</td>
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<td>CESASIN</td>
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<td>CF</td>
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<td>CFS</td>
<td>China Society of Fisheries</td>
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<td>CGIAR</td>
<td>Consultative Group on International Agricultural Research</td>
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<td>CIAT</td>
<td>Centro Internacional de Agricultura Tropical</td>
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<td>CIDA</td>
<td>Canadian International Development Agency</td>
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<td>CIESIN</td>
<td>Consortium for International Earth Science Information Network</td>
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<td>CIFAD</td>
<td>Consortium for International Fisheries &amp; Aquaculture Development</td>
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<tr>
<td>CIO</td>
<td>Conflict of Interest</td>
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<tr>
<td>CLAR</td>
<td>Central Laboratory for Aquaculture Research</td>
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<td>CLSU</td>
<td>Central Luzon State University</td>
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<tr>
<td>CODDEFFAGOLF</td>
<td>Committee for the Defense &amp; Development of the Flora &amp; Fauna of the Gulf of Fonseca</td>
</tr>
<tr>
<td>CONACYT</td>
<td>Consejo Nacional de Ciencia y Tecnología</td>
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<tr>
<td>CONAM</td>
<td>Consejo Nacional del Ambiente</td>
</tr>
<tr>
<td>CREDES</td>
<td>Regional Center of Education &amp; Qualification for Sustainable Development</td>
</tr>
</tbody>
</table>
CRSP  Collaborative Research Support Program
CSIRO  Commonwealth Scientific & Industrial Research Organisation
CTO  Cognizant Technical Officer
DANIDA  Danish International Development Agency
DBT  Database Task Force
DFID  Department for International Development, Fish Genetics Research Programme, Swansea University
DIGEPESCA  General Directorate of Fisheries & Aquaculture
DO  Dissolved oxygen
DOF  Department of Fisheries
DTAP  Development Themes Advisory Panel(s)
E2  Estradiol
EARTH  Escuela de Agricultura de la Region Tropical Humeda
EEP  External Evaluation Panel
EGAT  Bureau for Economic Growth, Agriculture, & Trade (USAID)
EIFAC  European Inland Fisheries Advisory Commission
EIP  Emerging Issues Panel
EMBRAPA  Empresa Brasileira de Pesquisa Agropecuária
EPAC  External Program Advisory Council
ER  Effluents & Pollution Research
ESPOL  Escuela Superior Politécnica del Litoral
FAO  Food & Agriculture Organization, United Nations
FARMESA  Farm-Level Applied Research Methods for East & Southern Africa
FDA  United States Food & Drug Administration
FFR  Feeds & Fertilizers Research
FIRI  Inland Water Resources & Aquaculture Service
FISA  Fisheries Society of Africa
FIU  Florida International University
FONDEPES  Fondo Nacional de Desarrollo Pesquero
FORMAT  Forum for Organic Resource Management
FPX  Federación de Agroexportadores de Honduras
FSR  Food Security Research
FTE  Full-Time Equivalent
GAFY  Gross annualized fish yield
GIFT  Genetically Improved Farmed Tilapia
GIS  Geographic Information System
GISR GIS: Planning, Policy, & Global Data Analysis Research
HACCP  Hazard Analysis & Critical Point Control
HC  Host Country
HSI  Hepatosomatic index
HTML  Hypertext Markup Language
IAAS  Institute of Agriculture & Animal Science
IARC  International Agricultural Research Center(s)
IATP  Institute for Agriculture & Trade Policy
IARC  International Agricultural Research Center(s)
ICLARM  International Center for Living Aquatic Resources Management (now WorldFish Center)
ICRAF  International Center for Research in Agroforestry
IDRC  International Development Research Centre
IEE  Initial Environmental Examination
IEHA  Initiative to End Hunger in Africa
IHELP  International Higher Education Linkages Project
IIAP  Instituto de Investigaciones de la Amazonia Peruana
IIIFET  International Institute for Fisheries Economics & Trade
IGF-1  Insulin-like growth factor 1
IMANI  Instituto de Investigaciones, Colombia
IMARPE  Instituto del Mar del Perú
APPENDIX 7. ACRONYMS

IMNC  Information Management & Networking Component
INCODER  Instituto Colombiano de Desarrollo Rural
INPA  Instituto Nacional de Pesquisas da Amazonia
INTSORMIL  Sorghum, Millet & Other Grains CRSP
IP  Institut Pertanian Bogor, Indonesia
IPM  Integrated Pest Management
ISTA  International Symposium on Tilapia in Aquaculture
IR  Institutional Representative(s)
IUCN  World Conservation Union
IWMI  International Water Management Institute (an IARC)
JCARD  Joint Committee on Agricultural Research & Development
JICA  Japan International Cooperation Agency
LHRHa  Luteinizing hormone-releasing hormone analog
LIFD  Low-income food-deficit
LOE  Level of Effort
ME  Management Entity
MEAR  Marketing & Economic Analysis Research
MOU  Memorandum of Understanding
MRC  Mekong River Commission
MSU  Michigan State University
MSY  Maximum Sustainable Yield
MT  17α-methyltestosterone
NACA  Network of Aquaculture Centres in Asia-Pacific
NAR  Net annualized revenue
NARS  National Agricultural Research System (of Host Countries)
NASULGC  National Association of State Universities & Land-Grant Colleges
NAU  National Agriculture University
NB  Nota Bene
NCRAC  North Central Regional Aquaculture Center
NGO  Nongovernmental organization
NIFI  National Inland Fisheries Institute
NOAA  National Oceanographic & Atmospheric Administration (US)
NPH  Nuestros Pequeños Hermanos
NSR  New Aquaculture Systems/New Species Research
OhSU  The Ohio State University
OSU  Oregon State University
OSURF  Ohio State University Research Foundation
ACRSP  Aquaculture CRSP
PDF  Portable Document Format
PDR  Pond Dynamics Research
PDVR  Product Diversification Research
PI  Principal Investigator
PMO  Program Management Office
PPEC  Proposal Planning Executive Committee
PRADEPESCA  Programa Regional de Apoyo al Desarrollo de la Pesca en el Istmo Centroamericano
PROCITROPICS  Programa Cooperativo de Investigación y Transferencia de Tecnología Agropecuaria para los Trópicos
PRR  Rural Reconstruction Program
PU  Purdue University
RCE  Regional Center(s) of Excellence
RCR  Reproduction Control Research
RDSHN  Red de Desarrollo Sostenible Honduras
RFA  Request for Assistance
RFP  Request for Proposals
ROI  Return on investment
SANREM  Sustainable Agriculture & Natural Resource Management CRSP
SACRED  Sustainable Agricultural Centre for Research & Development in Africa
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
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<tr>
<td>SAO</td>
<td>Southeast Asian Outreach</td>
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<td>SINCHI</td>
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<tr>
<td>SMILE</td>
<td>Science &amp; Math Investigative Learning Experiences Program</td>
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<tr>
<td>SPARE</td>
<td>Strategic Partnership for Agricultural Research &amp; Education</td>
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<tr>
<td>SRP</td>
<td>Soluble reactive phosphorus</td>
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<td>TA</td>
<td>Technical Application</td>
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<td>TA</td>
<td>Trenbolone acetate</td>
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<td>Triple superphosphate</td>
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