NOTICE OF PUBLICATION

AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM

RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Computer Application in Pond Aquaculture- Modeling and Decision Support Systems

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Date: **20 November 2017** Publication Number: CRSP Research Report **97-A16**

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Abstract: Modeling and the development of decision support systems for pond aquaculture have received considerable effort and support under the Pond Dynamics/ Aquaculture CRSP (PD/A CRSP). Models have been used as means for analyzing and organizing information and knowledge about aquaculture ponds. The models have served to test hypotheses of "how pond work," and to design field experiments to test those assumptions. As the information base has improved, decision support systems have been designed for management purposes.

The current state of the art of pond modeling is very difficult from what it was at the initiation of the PD/A CRSP. At that time, Marjanovic and Orlob (1986) and Bernard (1986) conducted literature reviews of various aspects of pond modeling, especially as it referred to the types of ponds that were to be studied under the PD/A CRSP. In their reviews, they found that a great deal of related information existed but that there had been virtually no modeling of tropical aquaculture ponds. Related information found by Marjanovic and Orlob (1986) and by Bernard (1986) included models developed for lakes and reservoirs intemperate areas, as well as information about processes that are important in determining water quality in ponds.

General reviews of modeling of aquaculture systems have been conducted recently (Cuenco, 1989); Piedrahita, 1991), and their work will not be repeated here. The objective of this chapter is to review and highlight the contributions of the PD/A CRSP to the status of aquaculture pond modeling and to the development of decision support systems for pond

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aquaculture. The review will include examples of different types of models and of decision support systems developed under the PD/A CRSP. The examples will be preceded by a brief description of the data base established under the PD/A CRSP and of its significance to the development of aquaculture science.

This abstract is excerpted from the book chapter, which was published in H.S. Egna and C.E. Boyd (Editors), Dynamics of Pond Aquaculture. CRC Press, Boca Raton, FL, pp. 289- 323

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