



RAC

# Results

Cooperative State Research,  
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Southern  
Regional Aquaculture Center  
(SRAC)

## Characterization and Management of Effluents from Aquaculture Ponds in the Southeastern United States

Craig S. Tucker, Mississippi State University

### Challenge

Pond fertilization and supplemental feeding are two ways to encourage the rapid growth of pond-raised finfish or shellfish. However, less than half of the nitrogen and phosphorus added to aquaculture ponds in feeds or fertilizer is recovered in the harvested animals. The rest of the nutrient load is lost to the pond ecosystem and may be discharged from ponds in rainfall overflow or when ponds are drained between crops. Under the Clean Water Act of 1972, the discharge of pollutants from



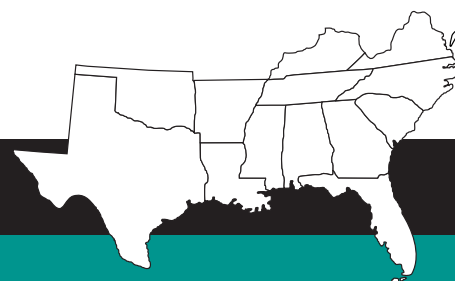
Pond effluents can be discharged through constructed wetlands where natural processes remove nutrients and organic matter.

“point sources” is prohibited unless the discharge is authorized by permit. The U.S. Environmental Protection Agency originally showed little interest in regulating discharges from aquaculture facilities, although some state environmental agencies have developed regulatory procedures. However, the development of rational regulations was hampered by a lack of information about the nature of aquaculture effluents or their possible effect on natural waters.



Selective harvest of fish without draining the pond can reduce the volume of effluent discharged.

Developing environmentally responsible production practices for aquaculture.



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Discharge volume is the most important factor affecting the impact of pond effluents on the environment.

### Response

Sixteen scientists cooperated in a 3-year study of the quality of aquaculture effluents, ways to reduce the harmful effects of effluents on the environment, and the costs of treating effluents. Ten universities and research institutions participated:

- University of Arkansas at Pine Bluff
- Auburn University
- Clemson University
- University of Florida
- University of Georgia
- Louisiana State University
- Mississippi State University
- North Carolina State University
- Texas A&M University
- Waddell Mariculture Center

### Impact

This study revealed that effluents can be treated after discharge, using constructed wetlands or grass filter strips. However, the best approach to effluent management is to 1) reduce the amount of waste produced in the pond by using high quality feed and efficient feeding practices, and 2) decrease the volume of water discharged. Discharge volume can be reduced by minimizing water exchange, reusing water for several production cycles, and maintaining enough storage volume in ponds to prevent rainfall overflow.



Maintaining the pond water level below the level of the overflow device will allow rainfall to be captured rather than discharged as overflow.



In addition to reducing effluent volume, conservative water management practices also reduce the amount of water needed for aquaculture.

For more information contact: SRAC, P.O. Box 197, Stoneville, MS 38776; Phone (601) 686-3285; FAX (601) 686-3569; E-mail [srac@drec.msstate.edu](mailto:srac@drec.msstate.edu); <http://www.msstate.edu/dept/srac>. A complete summary of this project can be found in SRAC 600, "Characterization and Management of Effluents from Aquaculture Ponds in the Southeastern United States."

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