

NOTICE OF PUBLICATION

AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM



RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Determination of the Phosphorus Fertilization Rate for Bluegill Ponds Using Regression Analysis

Author(s): Wararat Wudtisin and Claude E. Boyd
Department of Fisheries and Allied Aquacultures
Auburn University
Auburn, AL, USA

Date: 16 February 2006 Publication Number: CRSP Research Report 05-A3

The CRSP will not be distributing this publication. Copies may be obtained by writing to the authors.

Abstract: Pond fertilization studies usually are restricted by availability of ponds forcing researchers to limit treatments to maintain adequate replicates for statistical analysis. Data from a wide range of fertilizer rates applied over a single season in un-replicated ponds were treated using regression analysis to establish the optimum phosphorus application rate for bluegill (*Lepomis macrochirus*) ponds. The response to phosphorus fertilization conformed to a saturation model ($R^2=0.92$). Bluegill production increased with greater fertilization rate up to 3 kg P₂O₅ ha⁻¹, but production was similar (501–558 kg ha⁻¹) at rates of 3–7 kg P₂O₅ ha⁻¹. The observation that 3 kg P₂O₅ ha⁻¹ per application was adequate phosphorus fertilization for bluegill ponds with sufficient nitrogen agrees closely with the usual recommendation of 4 kg P₂O₅ ha⁻¹ per application. Results of this research also revealed that nutrient assessment in bluegill ponds can be based on total nitrogen and total phosphorus analyses, and Secchi disk visibility may be used as an index of plankton abundance.

This abstract is excerpted from the original paper, which was in *Aquaculture Research*, 36(6):593–599.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00. See the website at <pdacrsp.orest.edu>.