NOTICE OF PUBLICATION

AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM



RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title:	Nitrate and Ammonia Depletion in Indonesian Aquaculture Ponds Fertilize with Chicken Manure	
Author(s):	C. F. Knud-Hansen and T. R. Batterson Department of Fisheries and Wildlife Michigan State University East Lansing, MI 48823 USA	
	I. S. Harahat Institute Pertanian Bogor Fakultas Perikanan Jalan Raya Pajajaran Bogor, West Java Indonesia	
Date:	21 February 2006	Publication Number: CRSP Research Report 88-A1
	The CRSP will not be distributing this publication. Copies may be obtained by writing to he authors.	
Abstract:	Twelve 0.2 ha aquaculture ponds for Nile Tilapia production in West Java were fertilized weekly with 4 levels of chicken manure: 12.5, 25, 50, and 100g m ⁻² . During a 150 day grow out period, weekly ammonia-N and nitrate-N concentrations often exceeded 0.05 mg L ⁻¹ in ponds fertilized with 12.5 and 25 g m ⁻² wk ⁻¹ , but were usually less than 0.05 mg L ⁻¹ in ponds fertilized with 50 and 100g m ⁻² wk ⁻¹ . These differences between treatments in dissolved inorganic nitrogen (DIN), and apparent nitrogen limitation of algal productivity at higher loading rates, were examined through daily and diurnal measurements of ammonia-N and nitrate-N. Data suggest that algal production was limited by a shortage of DIN at higher fertilization rates. At higher fertilization rates, CO ₂ at lower fertilization rates and by a shortage of DIN at higher fertilization rates. At higher fertilization rates, CO ₂ for algae was additionally supplied through microbial respiration of organic carbon in chicken manure. Laboratory experiments measuring the release of ammonia-N and nitrate-N for chicken manure and urea were conducted to evaluate nitrogen transfer rates from these materials. An economic analysis is presented which relates appropriate application rates to fish yields and the cost of fertilizers in West Java.	

This abstract is excerpted from the original paper, which was in *Journal of the World Aquaculture Society*, 19:42A.

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 cpdacrsp.orest.edu>.