

NOTICE OF PUBLICATION



Title: Response of tilapia yield and economics to varying rates of organic fertilization and season in two Central American countries

Author(s): Bartholomew W. Green, David R. Teichert-Coddington, and Ronald P. Phelps
Department of Fisheries and Allied Aquacultures, and
Alabama Agricultural Experiment Station,
Auburn University, Auburn, AL 36849-5419, USA

Date: 24 January 1991 **Publication Number:** CRSP Research Reports 91-30

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

Abstract: The response of Nile tilapia (*Oreochromis niloticus*) yield to weekly applications of chicken litter at 125, 250, 500, or 1000 kg total solids (T.S.)/ha was determined in Honduras and Panama using a completely randomized design. Tilapia were stocked at 10 000/ha into 0.1-ha (Honduras) and 0.087-ha (Panama) earthen ponds. Each experiment, which lasted approximately 150 days, was performed during the rainy and dry season. Enterprise budgets were developed for each fertilization rate in each country.

Gross yield of tilapia (y) increased significantly with chicken litter applications (x) in both countries, and was described by the model $y=797.3 + 2.945x - 0.001x^2$ ($r^2=0.775$; $n=48$). Gross yields ranged from 827-2729 kg/ha in 147 days during the rainy season, and from 1145-2984 kg/ha in 150 days during the dry season. Maximum tilapia gross yields were achieved at 1000 kg T.S./ha week⁻¹ chicken litter in both countries. In Honduras, rainy (1761 kg/ha in 152 days) and dry (1705 kg/ha in 150 days) season mean tilapia gross yields were similar ($P=0.05$). Dry season (2071 kg/ha in 149 days) mean tilapia gross yield in Panama was significantly greater ($P<0.05$) than rainy season mean gross yield (1683 kg/ha in 141 days). Rainy season climatic conditions in Panama probably contributed to the lower fish yields. Mean fish gross yield at the cooler, drier Honduras site (1733 kg/ha in 151 days), an upland valley located 580 m above sea level, and at the Panama site (1855 kg/ha in 145 days), a coastal plateau 100 m above sea level, was similar ($P=0.05$). Mean gross yields were similar in both countries for all but the highest fertilization rate, where the Panama mean yield was significantly greater. This difference was caused by site-specific factors other than nutrient input.

The use of chicken litter as an organic fertilizer was profitable in both Honduras and Panama. Net returns to land, labor and management during the 5.5-month production cycle ranged from \$ 642 to \$ 1724/ha (Honduras) or from -\$ 237 to \$ 313/ha (Panama) for the low to high fertilization rates, respectively. Application of 1000 kg T.S./ha week⁻¹ chicken litter yielded the greatest estimated profit in both countries.

This abstract was reprinted from the original, which was published in *Aquaculture*, 90 (1990) 279-290, Elsevier Science Publishers B.V., Amsterdam

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Pond Dynamics/Aquaculture Collaborative Research Support Program, Office of International Research and Development, Oregon State University, Snell Hall 400, Corvallis, Oregon 97331-1641 USA. The Pond Dynamics/Aquaculture CRSP is supported by the U.S. Agency for International Development under CRSP Grant No.: DAN-4023-G-00-0031-00.

