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Title: Effects of Seepage on Water Quality and Productivity of Inorganically Fertilized Tropical Ponds

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Abstract: Twelve earthen ponds (870 m^2 by 0.9 m) located on permeable, acidic soils in Gualaca, Panama, were limed and stocked with *Oreochromis niloticus* at a rate of 1/m^2. Ponds were fertilized every two weeks with triple superphosphate (42% P_2O_5) at a rate of 4 kg/ha P_2O_5. Seasonal means of primary production, chlorophyll *a*, filterable orthophosphates, total phosphorus, total alkalinity, total hardness, and fish production were correlated with mean seepage for each pond. The same experiment was accomplished during both the dry and wet seasons of 1985.

Mean seepage for all ponds ranged from 19 to 58 mm/day. Of the chemical variables, only total alkalinity and total hardness consistently decreased with increasing seepage rates. Primary production and chlorophyll *a* were not correlated with seepage. Fish production was unrelated to seepage during the dry season when total alkalinities were high, ranging from 37 to 60 mg/L $CaCO_3$, but significantly decreased with high seepage during the wet season when total alkalinity became lower than 10 mg/L $CaCO_3$. The study indicates that ponds located on acidic soils with high seepage rates will require significantly greater additions of lime to maintain alkalinity and hardness levels suitable for fish production.

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