

Environmental Conditions and Channel Catfish *Ictalurus punctatus* Production under Similar Pond Management Regimes in Alabama and Mississippi

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Abstract

This study was conducted to compare water quality and channel catfish production in earthen ponds located in two dissimilar physiographic regions of the southeastern United States and supplied with water of disparate quality. Ponds at Auburn, Alabama are on acidic Piedmont soils and filled with poorly mineralized runoff water; ponds at Stoneville, Mississippi are on slightly alkaline alluvial clays and filled with groundwater of high total alkalinity and hardness. Channel catfish were stocked at 8,750 fish/ha, fed daily, and provided nightly aeration in 0.04-ha ponds at both sites. Ponds were managed as similarly as possible. Minimum daily water temperatures and pH were higher at Stoneville than at Auburn, and there were greater concentrations of suspended clay turbidity, dissolved inorganic phosphorus, total ammonia-nitrogen, and nitrite-nitrogen at Auburn than at Stoneville. The taxonomic composition of the phytoplankton community was broadly different between the two sites. Taste tests revealed off-flavor in fish at both sites, but there were no significant differences ($P > 0.05$) in flavor scores between sites. The quality of flavor was somewhat different between sites, and these differences in quality were thought to result from observed differences in the taxonomic composition of phytoplankton communities. All differences in water quality seemed to be directly or indirectly related to the dissimilarity in the quality of the water supply and soils at the two locations. Although some water quality variables differed between sites and changed over time at both sites, environmental conditions never deteriorated enough at either site to cause serious stress or mortality in fish. There were no significant differences ($P > 0.05$) in average net fish production, survival, weight of individual fish at harvest, or feed conversion ratios. Average net fish production and feed conversion ratios, respectively, were 4,905 kg/ha and 1.27 at Auburn and 5,286 kg/ha and 1.27 at Stoneville. The results of this study demonstrate the need for site-specific investigations when conducting certain types of aquaculture research.