

NOTICE OF PUBLICATION

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Title: Estimates of Hypolimnetic Oxygen Deficits in Ponds

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Abstract: Shallow tropical integrated culture ponds in the Pearl River Delta, China, have been found to stratify almost daily, with high organic loadings and dense algal growth. The dissolved oxygen (DO) concentration is super-saturated in the epilimnion and is under 2 mg/l in the hypolimnion (>1 m). The compensation depth corresponds to twice the Secchi disk depth ranging from 50 to 80 cm. As a result, little or no net oxygen is produced in the hypolimnion (>1 m). The low DO concentration in the hypolimnion causes organic materials, such as unused organic wastes and senescent algae cells, to be incompletely oxidized, since the rate of oxygen consumption by oxidable matter in water is dependent on the dissolved oxygen concentration in water. This material becomes the source of hypolimnetic oxygen deficits (HOD) which can drive whole pond DO to a dangerously low level, should sudden destratification occur. An improved estimate of hypolimnetic oxygen deficits is introduced in this article, and the advantages of this method are discussed.

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