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**AN EXPERIMENTAL STUDY ON THE CULTURE OF FRY OF
Oreochromis mossambicus (PETERS) IN A PEATY SWAMP IN
SRI LANKA USING COWDUNG AND POULTRY MANURE AS
FERTILIZER***

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ABSTRACT

Growth rates of fry of *Oreochromis mossambicus* were studied in a dug-out pond in Muthurajawela swamp, which had been fertilized with cowdung and poultry waste. This swamp is characterized by waters with very low pH, low dissolved oxygen and low values of primary productivity. The addition of fertilizer increased the gross primary production from 0.18 g C/m²-day to 1.08 g C/m²-day in about 40 days, with pH and dissolved oxygen values becoming favourable for growth of fry. The average growth rate of 0.04 g/day was comparable to the growth rates attained in favourable habitats in Sri Lanka.

INTRODUCTION

Fish products account for about 70% of Sri Lanka's protein consumption. However, at present only about 10% of Sri Lanka's fish production comes from fresh and brackish waters. These consist of 1300 km² of ponds and reservoirs and about 1200 km² of coastal lagoons and estuaries [1]. The purely freshwater fisheries are more highly developed than lagoon and estuarine fisheries and the present estimated production from freshwater habitats is around 35,000 Mg per annum [2]; of the fish species caught nearly 95% is *Oreochromis mossambicus*. Farming with the use of net cages or directly in ponds is as yet underdeveloped, although the government of Sri Lanka has now recognized that the most suitable method to develop inland fisheries is through aquaculture.

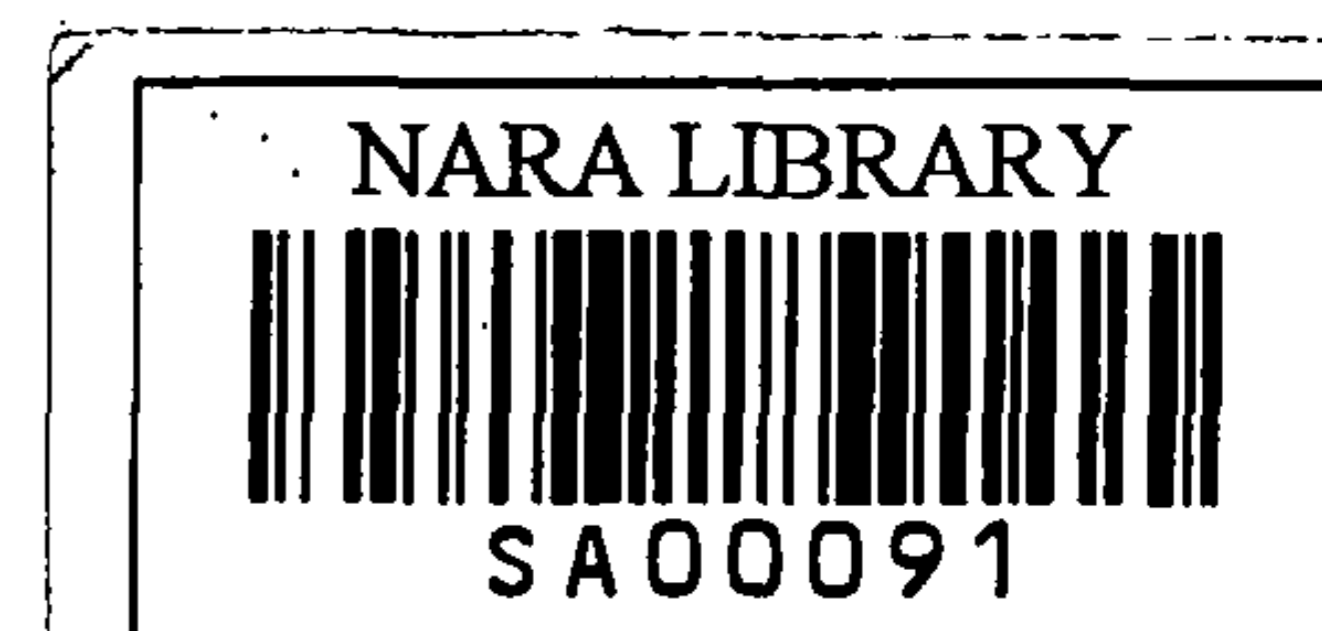
Oreochromis mossambicus possesses some important characteristics which have contributed to its successful establishment in freshwaters and also in brackish waters. It can tolerate a wide range of salinities from about 0 to 1.7‰ and temperatures from 12 to 38°C. Although it is mainly herbi-

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vorous, it displays omnivorous food habits and can digest cellulose-containing food. It can occupy widely different habitats and can tolerate water of varying turbidity and low dissolved oxygen. In Sri Lanka its major food source has been shown to be blue-green algae [3], the dominant algal group in native fresh waters. Due to the importance of tilapia in aquaculture, a number of workers have carried out several investigations which have been summarized in Ref. [4].

Muturajawela swamp is an unutilized, extensive area in the Western province of Sri Lanka (Fig. 1), stretching for about 12 km along the coastal margin immediately north of Colombo; it occupies about 3000 ha. Canals constructed during the Dutch colonial times bring sea water to this area. The soil is peaty, acidic and slightly saline. Attempts have been made to cultivate paddy and other crops in these formerly arable lands, but these ventures have failed, which has been attributed to the acidity and the saline nature of the soils. So far, not more than 50 ha have been cultivated since the 18th century. Attempts were also made by the Ministry of Fisheries to grow *Tilapia* spp. in these swamps in the late 1960s, but they too failed, attributed to the low primary productivity of the water [5].

The present study was carried out to investigate whether *O. mossam-*

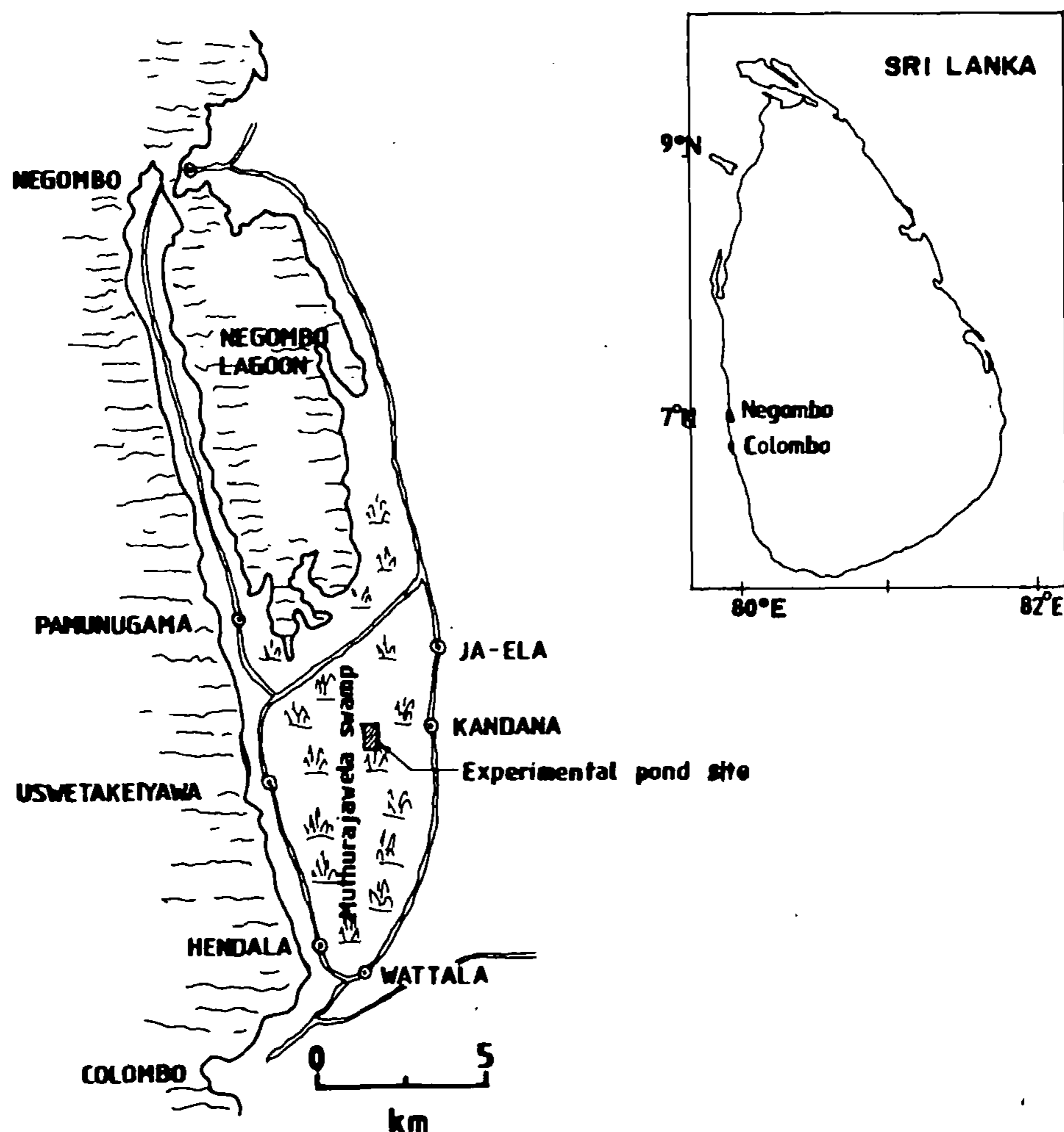


Fig. 1. Muthurajawela swamp, showing the site of the experimental ponds.