

SOME ASPECTS OF BREEDING GOLDFISH (CARASSIUS AURATUS)
AND LARVICULTURE OF GOLDFISH AND GUPPY (POECILIA RETICULATA)

By

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Thesis

Submitted in partial fulfilment of the requirements

for the degree of

MASTER OF PHILOSOPHY

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

SRI LANKA

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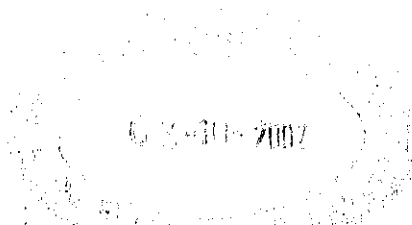
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ABSTRACT

Ornamental fish culture in Sri Lanka is a rapidly developing industry with a promising future and will significantly contribute to the country's economy. However there is a paucity of research data on this sector, particularly related to fish culture. Production and culture of fish larvae play a central role in the success of any aquaculture venture. Therefore, the present study was conducted to evaluate certain materials of plant origin for their suitability for collecting goldfish eggs and to study the effects of live and formulated feeds on the growth and survival of two freshwater fish species of great ornamental value, goldfish and guppy.

Plant materials tested for suitability of goldfish egg collection were coir fibre, fern (*Nephrrolepis sp.*) leaves (fresh and dry) and guinea A grass (*Panicum maximum*) leaves (fresh and dry). Two "kakabans" made of different materials were placed in goldfish spawning tanks. The number of eggs deposited per cm², fertility % and hatchability % of eggs deposited on "kakabans" were recorded. The number of eggs deposited in coir fibre was significantly ($p < 0.05$) higher than those deposited in other materials. There was no significant difference ($p > 0.05$) in egg deposition between fern leaves and guinea A grass leaves. Dryness (or freshness) of the leaves did not have any significant ($p > 0.05$) effect on egg deposition. Fertility and hatchability of eggs were not affected by the materials, on which eggs were deposited.

Different culture media and the effect of exposed surface area on microworm propagation were studied. These experiments were done in petri dishes and each



treatment had three replicates. Different methods for separation of microworms from the culture media particles were also evaluated. Combination of bread powder and soybean powder on a 9:1 ratio was found to be the most suitable medium. The extent of exposed surface area did not have any significant ($p>0.05$) effect on the propagation of microworms in a given quantity of the medium. However, since microworms are aerobic providing larger exposed surface area is advantageous because more worms can be collected. A successful filtration method was developed from this study for the complete separation of microworms from the culture medium.

The live feeds selected for this study were the brine shrimp (*Artemia sp.*) nauplii and the microworm (*Anguillula siliusae*). Six different formulated feeds were tested in this study. The diets were of two different protein levels and each protein level had three different lipid sources, - cod-liver oil, soybean oil or coconut oil. Each diet was tested in triplicate for a period of twenty days from the start feeding. A duplicate group of unfed fishes acted as the negative control. Apart from these diets the microworm culture medium was also tested for larval growth and survival. Water quality was maintained by daily exchanges and important parameters were measured periodically.

The larval feed *Artemia* nauplii resulted in significantly higher ($p<0.05$) growth in both guppy and goldfish larvae than the other feeds tested. However, *Artemia* nauplii resulted in increased size variation when compared to microworms. Inclusion of cod-liver oil, soybean oil or coconut oil in the formulated feeds for larvae did not have any significant ($p>0.05$) effect on the growth of both guppy and goldfish.

Goldfish larvae fed with microworms cultured in media supplemented with cod-liver oil or soybean oil showed significantly ($p < 0.05$) higher growth. This indicates the possibility of nutritive enrichment of microworms.