B-56: Rice-fish integration: effect of poultry manure and shading on the growth, survival and recruitment of platy (*Xiphophorus masulatus*) in a rice-fish system

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Sri Lanka is a small, mainly agricultural country, where cultivable land is one of the chief limiting factors in providing food for her population. Therefore yield per unit needs to be increased.

Rice is the staple food in Sri Lanka. It needs large amounts of water for cultivation, and during its growing period fields need to be kept under water logged conditions.

Objectives of this study were to explore the possibilities of raising ornamental fish in paddy fields which received poultry manure as the only fertilizer.

Experimental site was located at the Dept of Animal Science, University of Peradeniya, near Mahaweli river. Experiment was conducted during Maha season, 1994. Culture ponds (pond refuges) were approximately 1 m and were constructed in the middle of the paddy fields which were 49 m^2 each. Two weeks before the introduction of fish, poultry manure was applied at 1000 kg/ha to each plot and paddy was transplanted.

Two different organic fertilizer levels (poultry-manure) i.e: 400 and 200 kg/ha/week with 4 replicates per treatment was used. Paddy fields were in 2 rows and 1 row was covered with a net to prevent predation. Randomized complete block design was used as the statistical design. Fifteen platy fish including 5 males and 10 females with weight of approximately 40 g were introduced to each fish refuge. Each refuge was covered with a net to prevent predation.

Number of recruits (11.3 ± 2.3). weight of recruits (8.09 ± 2.3 g) and survival percentage (34 ± 5) obtained for higher fertilizer level were not significantly different ($p < 0.05$) from that of low fertilizer levels. However, in the shaded treatment, number of recruits (54.3 ± 10.2) was found to be significantly higher ($p < 0.05$).

Some predatory fish types such as *Channa punctata*, tilapia were observed in some pond refuges which registered a low survival rate. In addition, siltation of the pond refuge also affected the survival and recruitment of platy.

Neither fertilizer nor shade has a direct effect on the % survival, weight gain or on the number of recruits of sward tail. However the above parameters depend on factors such as siltation of he refuges, presence of predatory fish (e.g. tilapia and channa).

Results reveal that platy could be grown and bred under a rice-fish system having a pond refuge. However, in order to increase the growth rate and survival of recruits necessary precautions need to be taken to prevent entering of other fish types, and siltation of pond refuges. Introduction of aquatic plants into the pond refuge to hide sword tail fry from predatory fish and from their parents, may be a solution.

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