Rice fish integration: the effect of protective techniques of ornamental fish farming on performance of goldfish fry (*Carassius auratus*)

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The experiment was conducted in four rice plots of 49 m^2 each with a pond refuge of 1 m^3. Sides of two plots were covered with polythene and the top with fish nets while the other two plots had a fish net cover only over the pond refuge. Four plots were stocked with 4 weeks old Goldfish *(Carassius auratus)* fries after 2 weeks of transplanting. Mean length of fry was 1.4 cm (±0.11) and the stocking density was 100 fry per plot. Two aerated indoor glass tanks of size 0.5 m X 1.5 m X 0.5 m were used as controls. Selected glass tanks were stocked with 25 of fry at 4 weeks of age. Fish in glass tanks were daily fed with a formulated ornamental fish feed. Lengths of fish were measured at weekly intervals; fish total count and survival rate were calculated. Fish were ranked according to the order of brightness of the body colour.

Survival rate of fish in indoor tanks and in rice plots covered from all the sides were 74% and 55% respectively. Rice plots with a net cover only over the pond refuge had a record of 100% death rate. The growth rate of fry in indoor tanks and rice plots up to fifth week was not significant. At the end of eight weeks fry in indoor tanks had achieved 3.38 cm Standard Length while fry in rice plots had reached 3.18 cm. There was a significant difference of the standard length of fry in two environments at the sixth and seventh weeks. A significant difference was observed in percentage of fish that developed bright colour which was 66.8% in rice plots over the 27.4% in the fish stocked in indoor tanks. Average paddy yield which was 3540 (± 113) kg/ha in the plots with complete cover was significantly different from the paddy yield that was 2878 (±143) kg/ha of the plot without complete cover.

Results of this experiment indicate that there is a potential for ornamental fish production in paddy fields under low input integrated system.

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