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Polyculture of milkfish (*Chanos chanos*) and tiger prawn (*Penaeus monodon* Fab.) with and without supplemental feeding

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Twelve 1,000 m^2 earthen ponds were used in the study to compare the growth rates, survival and production of milkfish and *Penaeus monodon* in monoculture and polyculture systems in shallow brackishwater ponds with and without supplemental feeding. The ponds were totally drained and cleared of twigs, tree stumps and other debris. Repair of secondary gates was also undertaken to check seepages and lessen the problem of drying pond bottoms. Heavy infestation of snails necessitated mechanical collection. Tobacco dust was later applied at 400 kg/ha to further eradicate the snails and other unwanted species. Lime, in the form of CaO, was broadcasted at the rate of two tons/ha along the dikes and pond bottom for prophylaxis.

Lab-lab method of pond preparation was followed which consisted of levelling, drying, fertilization and water management. Each pond was fertilized with chicken manure at the rate of 2 tons/ha, 50 kg/ha of 16-20-0 and 15 kg/ha of urea, Subsequent fertilizer applications of 16-20-0 were made every two weeks thereafter until two weeks before harvest.

The ponds were stocked with milkfish fingerlings and prawn juveniles at the rate of 2,500 and 3,000 per hectare, respectively. Initial mean weights were 5.9 g and 1.2 g for milkfish and *P. monodon*, respectively. The experiment consisted of four treatments with three replicates arranged in a randomized complete block design. The different treatments are:

Treatment	Pond Nos.	Description
I	1, 6, 10	milkfish without supplemental feeding
II	2, 5, 6	prawn without supplemental feeding
III	3, 8, 12	milkfish and prawn without supplemental feeding
IV	4, 7, 9	milkfish and prawn with supplemental feeding

Supplemental feeding with commercial Robina pellets intended for prawns were given daily after one month of culture period at the rate of 5% body weight.

Lab-lab did not grow well in the ponds even after proper pond preparation and subsequent fertilization. Survival and mean net production of milkfish and *P. monodon* in monoculture and polyculture ponds after 85 days of culture are presented in Table 1. Mean production of ponds with milkfish alone was higher than the total mean production of the polyculture of milkfish and *P. monodon* with and without supplemental feeding. Similarly, mean production of milkfish in polyculture ponds was lower than that in the monoculture ponds. The difference in production, however, was not significant. The contribution of *P. monodon* to the total production in polyculture ponds was negligible due to the low survival (5.1 kg/ha and 4.1 kg/ha for treatments with and without supplemental feeding, respectively).

Table 1. Mean survival and net production of milkfish and *P. monodon* in monoculture and polyculture ponds with and without supplemental feeding after 85 days of culture period.

Treatment		% Survival	Mean Net Production kg/pond	Mean Net Production kg/ha
I. Monoculture without feeding	Milkfish	93.07	33.57	335.7
II. Monoculture without feeding	*P. monodon*	16.77	0.81	8.1
III. Polyculture without supplemental feeding	Milkfish	92.93	30.51	305.1
	P. monodon	21.56	0.51	5.1
	Total		31.02	310.2
IV. Polyculture with supplementary feeding	Milkfish	59.07	30.06	300.6
	P. monodon	10.67	0.41	4.1
	Total		30.47	304.7

Mean survival of milkfish in monoculture pond was higher than in polyculture ponds. *P. monodon* survival rates were low ranging from 10.67% to 21.56%. This low survival rate obtained for *P. monodon* is attributed to high salinity during the first month of culture period (May-June) in all ponds ranging from 30 ppt to 46 ppt, a condition not favorable for prawn culture.

The low production and survival rates obtained in this study is attributed to lack of natural

food, and high salinity (30-46 ppt) during the first month of culture could be one of the causes of high mortality of prawn in both monoculture and polyculture ponds. It is also suspected that the experimental ponds are affected by acid sulfate conditions as shown by the reddish-orange coloration of the pond bottom.

Milkfish attained marketable size (136-148 g) in both monoculture and polyculture ponds. *P. monodon* attained sizes between 11 to 16 g in monoculture and polyculture ponds (Table 2).

Table 2. Mean gain in weight and length of milkfish and *P. monodon* in monoculture and polyculture with and without supplementary feeding after 85 days of culture period.

Treatment	Weight (g)		Length (mm)	
	Milkfish	*P. monodon*	Milkfish	*P. monodon*
I. Monoculture (Bangus only)	140.47	–	179.32	–
II. Monoculture without supplemental feeding *(P. monodon* only*)*	–	16.10	–	73.84
III. Polyculture without supplementary feeding	147.69	11.77	186.15	60.82
IV. Polyculture with supplemental feeding	135.68	11.52	169.89	60.98

The results of this trial are not very encouraging. However, yields and survival rates obtained for milkfish in monoculture and polyculture with prawn indicate that high yield may be obtained from the combination of the two species given enough natural food and favorable water conditions.