



# PD/A CRSP SEVENTEENTH ANNUAL TECHNICAL REPORT

## TIMING OF THE ONSET OF SUPPLEMENTAL FEEDING OF TILAPIA IN PONDS

*Ninth Work Plan, Feeds and Fertilizers Research 4 (9FFR4)  
Progress Report*

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### ABSTRACT

Supplemental feeding has been a common practice among tilapia farmers in the Philippines. However, the timing of the start of supplemental feeding is variable. This study aims to demonstrate efficient supplemental feeding strategies for tilapia production in fertilized ponds through on-farm trials. Seven farmer cooperators were enlisted for this experiment. Two ponds of nearly the same size were stocked with all-male Nile tilapia fingerlings of the Genetically Improved Farmed Tilapia (GIFT) strain at a stocking rate of 4 fish m<sup>-2</sup>. The ponds were fertilized weekly with urea and 16-20-0 fertilizer at a rate of 4 kg N ha<sup>-1</sup> d<sup>-1</sup> and a N:P ratio by weight of 5:1. Supplemental feeding commenced 45 days after stocking in one pond while in the other pond, supplemental feeding started 75 days post-stocking. Preliminary results show a trend of better growth of fish in ponds fed early during the culture period.

### INTRODUCTION

Earlier PD/A CRSP studies showed that initiation of feeding *Oreochromis niloticus* after 80 days in the pond produced the same yield as initiation of feeding at 38 days. Later feeding also increased growth rates and yields to the target levels, but with some delay over earlier feeding (Diana et al., 1996). This means that fish do not need to be fed immediately after stocking, but can be supported by the pond ecosystem. The objective of this study is to demonstrate efficient supplemental feeding strategies for tilapia production in fertilized ponds through on-farm trials.

### METHODS AND MATERIALS

Seven farmers from the province of Nueva Ecija were enlisted for this trial; pond systems of farmers ranged from extensive to semi-intensive. Two ponds from each farm were assigned each of the two treatments—supplemental feeding beginning at 45 and 75 days after stocking.

The pond size ranged from 416 to 3,500 m<sup>2</sup> with water depth maintained at 1 m. The ponds were stocked with sex-reversed Nile tilapia (*Oreochromis niloticus*) of GIFT strain. The prevalent size commercially available was size 24 (less than 0.2 g in average weight). This size was used at a stocking rate of 4 fish m<sup>-2</sup>. All ponds were fertilized weekly with urea and 16-20-0 fertilizer at a rate of 4 kg N ha<sup>-1</sup> d<sup>-1</sup> and a N:P ratio by weight of 5:1.

All ponds are analyzed monthly for water quality. Water samples are obtained for the analysis of dissolved oxygen, pH, total alkalinity, total ammonia, and soluble reactive phosphorus. Analyses are done at the Freshwater Aquaculture Center

(FAC) laboratory according to standard methods (Boyd, 1979; APHA, 1980).

The fish are fed with prepared feeds consisting of 50% rice bran and 50% fish meal at 5% fish body weight per day (BWD) during the first 15 days of feeding and 4% BWD thereafter up to 30 days. For the remaining period prior to harvest, the fish will be fed at the rate of 3% BWD. Random samples of 50 fish are obtained in each pond every two weeks to measure average weights of the fish.

The ponds will be harvested by seining or complete draining at 150 days in pond. Total number of fish will be counted and bulk weighed. A sample of 100 fish per pond will be individually measured for length and weight. Total yield, feed conversion rates, and survival rates will be obtained at the end of this study.

### RESULTS

The mean weights of tilapia taken at different sampling days are shown in Table 1. As can be gleaned from the table, in four out of the seven farms, the preliminary results showed that there was better growth of fish in ponds which received supplemental feeds at 45 days after stocking. The ranges of water quality data taken on a monthly interval are summarized in Table 2.

### ANTICIPATED BENEFITS

Feeding practices have been variable among tilapia farmers in the Philippines. This study will provide technical guidance to farmers on efficient feeding practices that will optimize tilapia production.

Table 1. Mean weights (g) of tilapia fed at 45 and 75 days after stocking in ponds, Philippines.

Farm	Treatment Pond	Mean Weight (g)							
		Day 0	Day 30	Day 45	Day 60	Day 75	Day 90	Day 105	Day 120
1	A	0.06	9.17	13.44	21.05	33.47	44.15	61.78	68.62
	B	0.06	9.29		33.20	44.18	51.01	54.79	60.63
2	A	0.05	10.52	18.84	35.60	67.52	86.35	104.46	
	B	0.05	15.91		46.76	73.97	107.23	146.30	
3	A	0.07	17.13	21.44	37.16	56.97	75.25	113.78	
	B	0.06	15.50		50.68	52.39	77.88	106.56	
4	A	0.15	16.24	34.00	64.60	97.25	113.71		
	B	0.15	10.67		53.47	61.49	90.65		
5	A	0.15	16.46	28.86	52.20	72.85	96.37		
	B	0.15	14.15		50.69	70.13	90.62		
6	A	0.19	18.72	39.80	59.52	94.77			
	B	0.19	11.55		36.90	48.08			
7	A	0.12	14.14	24.85	51.49				
	B	0.12	11.19		56.32				

Note: Pond A – early feeding  
Pond B – delayed feeding

Table 2. Ranges of water quality parameters in feeding trial ponds in Philippines.

Farm	Treatment Pond	Parameter						
		Secchi Disk Visibility (cm)	D.O. (mg l <sup>-1</sup> )	Temperature (°C)	pH	Alkalinity (mg l <sup>-1</sup> )	Ammonia (mg l <sup>-1</sup> )	Phosphorus (mg l <sup>-1</sup> )
1	A	23–7	4–10	28–31	7.8–8.9	36–95	0.080–0.172	0.185–0.805
	B	28–8	3–9	28–31	7.6–9.9	42–87	0.030–0.33	0.295–0.560
2	A	58–9	9–15	30–35	8.6–9.1	112–156	0.117–0.359	0.060–0.850
	B	60–14	11–16	31–38	8.4–9.6	92–220	0.102–0.300	0.060–0.615
3	A	30–15	11–12	30–31	8.4–10.3	49–81	0.022–0.261	0.075–0.125
	B	54–15	8–13	29–31	8.0–10.3	56–93	0.048–0.320	0.065–0.445
4	A	32–12	9–12	30–32	7.9–9.7	150–162	0.102–0.348	0.265–0.365
	B	22–10	9–11	29–31	8.0–10.4	115–140	0.030–0.374	0.025–0.295
5	A	65–9	6–16	29–32	8.0–9.9	127–175	0.048–0.248	0.140–0.675
	B	65–11	5–14	29–32	8.0–9.5	119–230	0.026–0.352	0.105–0.345
6	A	50–8	14–20	31–32	7.7–9.6	112–210	0.113–0.280	0.175–0.765
	B	46–12	15–20	31–33	7.7–9.5	86–207	0.048–0.235	0.085–0.630
7	A	40–8	4–15	29–33	8.4–9.7	239–302	0.063–0.215	0.040–0.510
	B	28–9	5–12	29–33	8.4–9.7	271–345	0.093–0.102	0.095–0.565

Note: Pond A – early feeding  
Pond B – delayed feeding

## LITERATURE CITED

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