Pangasius Catfish Production in Ponds with Soy-Based Feeds

Results of ASA/China 2002 Feeding Trial 35-02-116

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ABSTRACT

A feeding trial was conducted near Haikou, Hainan Province, to demonstrate fingerling to market growth performance of pangasius catfish using the ASA 80:20 pond production model and the ASA soymeal-based, all-plant protein growout feed. Fish were stocked in two, 2.5-mu ponds and one 2.0-mu pond at a density of 735 catfish and 100 silver carp per mu. Pangasius catfish grew from 150 g to an average weight of 659 g per fish in 74 days of feeding. Gross production of pangasius averaged 485 kg/mu. Survival of pangasius was 100%. FCR for pangasius with the soy-based feed averaged 1.17:1. Average net economic return was RMB 5,013 per mu at a market price of RMB 25/kg for pangasius catfish. Average return on investment (ROI) was 71%. Pangasius catfish demonstrated excellent growth performance and feed conversion efficiency with the ASA soymeal-based feed and 80:20 production technology in this trial. Pangasius produced in the trial were uniform in size with good body color and conformation.

INTRODUCTION

The American Soybean Association (ASA), in cooperation with Beijing Municipal Fishery Extension Center and its Hainan Fish Breeding Center in Haikou, Hainan, and the China National Fisheries Extension Center (NEC) in Beijing, conducted a three-month pond feeding trial with pangasius catfish. The objective of the trial was to demonstrate pangasius growth and economic performance from fingerling to market stages with the ASA 32/6 soymeal-based growout feed and the ASA 80:20 pond production model.

MATERIALS AND METHODS

Two ponds of average size 2.5-mu and one pond of size 2.0-mu at the Hainan Fish Breeding Center in Haikou, Hainan, were used for the feeding trial. Pond water depth averaged approximately 1.5 m. All ponds were equipped with water exchange and stand-by aeration. All ponds were cleaned of organic bottom mud prior to commencement of the trial.

Fish were 150-g pangasius catfish *Pangasius sutchi* produced by Hainan Fish Breeding Center. Pangasius catfish stock was originally obtained by the Hainan Fish Breeding Center from Malaysia. Pangasius were stocked in the three trial ponds in June at a density of 735 fish per mu, together with 100 silver carp fry per mu. Fish in all three trial ponds were of uniform size and age at stocking. Target market size for pangasius catfish was 600 g per fish.

Pangasius catfish were fed the ASA 32/6 soymeal-based, all-plant protein growout feed in extruded, floating pellet form (Table 1). The feed was formulated by ASA and produced by Cargill in Jiangsu Province. Fish were fed to satiation twice daily, with fish in all three ponds fed identically at each feeding.

Trial management was based on the ASA 80:20 pond production model. Fish in all ponds were sampled once per month on approximately the same date each month. At the conclusion of the trial, all ponds were drained and the pangasius and silver carp in each pond counted and weighed to determine average fish weight, gross and net production, feed conversion ratio (FCR) and survival. Production input costs were recorded throughout the trial and net income and ROI were calculated at the end of the trial.

RESULTS

Pangasius were fed an average of 74 days between 11 June and 28 August 2002. Pangasius grew from 150 g to an average weight of 659 g during this feeding period (Figure 1; Table 2). Gross production averaged 485 kg/mu (7,275 kg/ha) for pangasius and 9.5 kg/mu (142.5 kg/ha) for silver carp (Table 2). Average pangasius and silver carp survival rates were 100% and 97%, respectively. Average FCR for pangasius with the 32/6 soymeal-based feed was 1.17:1. Feed cost per kilogram of fish growth was RMB 3.45. Pangasius were uniform in size and had good body coloration and conformation at harvest.

Net economic return averaged RMB 5,013 per mu at a market price of RMB 25/kg for pangasius (Table 2). ROI averaged 71% for the three trial ponds (Table 2).

SUMMARY AND CONCLUSIONS

Pangasius catfish exhibited excellent growth and feed conversion efficiency using the ASA 80:20 pond production model and the soy-based 32/6 growout feed. Pangasius growth to market size was rapid, with fish growing from 150 g to 659 g in just 74 days. The pangasius reached market size approximately two months quicker than it was initially estimated it would take, and demonstrated the excellent production potential of this species with soy feed.

Pangasius were aggressive feeders with the soy-based feed. The catfish grew uniformly in size and had good body color and conformation at harvest. No disease problems were encountered during the trial. No drugs or chemicals were used, providing a healthy, “green” market product.

Other observed advantages to the soy-based extruded feed included easier observation of fish feeding performance and health, improved water quality and reduced energy use, and reduced labor costs and increased farm efficiency.

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Chinese Currency and Production Unit Conversions:

RMB 8.26 = US$1.00
15 mu = 1.0 hectare (ha)
kg/mu x 15 = kg/ha
1.0 kg = 2.2 lb
6 mu = 1.0 acre (ac)
kg/mu x 13.2 = lb/ac

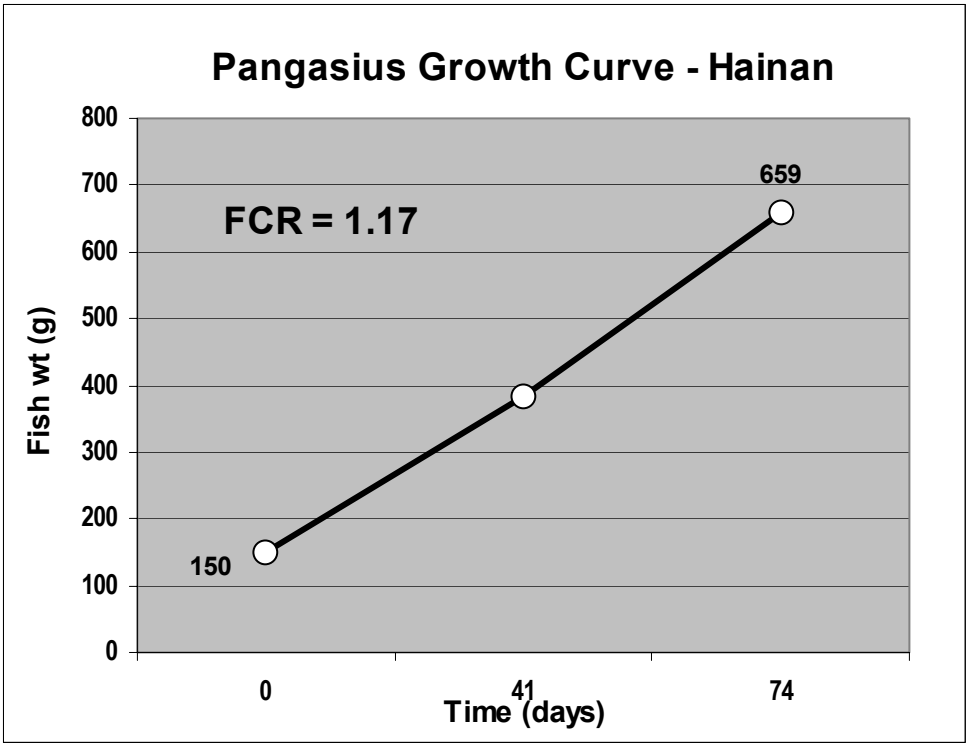

FIGURE 1. Growth curve for pangasius catfish produced in ponds with a soymeal-based, extruded aquafeed. Pangasius grew from 150 g to 659 g in 74 days with an average feed conversion ratio of 1.17:1. Feed cost per kilogram of fish growth with the soy-based feed was RMB 3.45.

Table 1. Formula for the ASA 32/6, soymeal-based growout feed used in the 2002 pangasius catfish demonstration feeding trial in Haikou, Hainan Province, China. Cargill feed mill produced the feed in extruded, floating pellet form.

Ingredient	32/6 Growout Feed[1]
Soybean meal 47.5	52.8
Wheat, SWW	23.6
Wheat middlings	10.0
Corn gluten meal 60%	6.0
Fish oil	3.53
Soy lecithin	1.00
Ca phosphate mono	2.70
Vit PMX Roche 2118	0.10
Min PMX F-1	0.25
Ethoxyquin	0.02
Total	100.00

[1]The numerical component of the feed description refers to the percentage of protein and lipid, respectively, in the ration, i.e. 32/6 indicates 32% crude protein and 6% crude lipid.

Table 2. Results of the 2002 ASA aquaculture trial in Haikou that demonstrated fingerling to market pond growth performance of pangasius catfish using the ASA 80:20 production model and soymeal-based growout feed.

Pond No.	PnG[1] stocking size (g)	Stocking rate (fish/mu)	No. days fed	Harvest wt. (g)		P_G[3] (kg/mu)		Survival (%)		FCR	Net (RMB/mu)	ROI (%)
				PnG	SiC[2]	PnG	SiC	PnG	SiC			
1	150	735	74	618	100	454.0	9.8	100	100	1.26	3,952	53.4
2	150	735	74	675	95	496.4	9.3	100	95	1.13	5,454	78.4
3	150	735	74	685	98	503.6	9.4	100	99	1.11	5,634	81.0
Mean	150	735	74	659	98	484.7	9.5	100	97	1.17	5,013	70.9

[1]PnG = Pangasius Catfish

[2]SiC = Silver Carp

[3]P_G = Gross Production