

**Channel Catfish Production in Ponds with
Soy-Based Feed and 80:20 Pond Technology: Jiangxi Province
Results of ASA/China 2003 Feeding Trial 35-03-115**

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ABSTRACT

A feeding demonstration was conducted in Anjie City, Jiangxi Province, to demonstrate fingerling to market growth performance of channel catfish using the ASA 80:20 pond production model and ASA soymeal-based growout feed. Catfish were stocked in three, 2.0-mu ponds at a density of 600 channel catfish and 100 silver carp per mu. Channel catfish grew from 52 g to an average weight of 710 g per fish in 187 days of feeding. Gross production averaged 415 kg/mu for channel catfish and 72 kg/mu for silver carp. Average survival rates for channel catfish and silver carp were 97.6% and 100%, respectively. Channel catfish FCR with the all-plant protein, soymeal-based feed averaged 1.31:1. Average net economic return was RMB 1,154 per mu, for an average return on investment (ROI) of 41.2%. Channel catfish exhibited good growth, feeding behavior and FCR with the ASA soymeal-based feed and 80:20 production technology.

INTRODUCTION

The American Soybean Association (ASA), in cooperation with the Xiajiang County Fish Farm in Anjie City, Jiangxi, the Jiangxi Provincial Fisheries Extension Center, and the China National Fisheries Extension Center (NEC), conducted a six-month pond feeding demonstration with channel catfish. The objective was to demonstrate channel catfish growth and economic performance from fingerling to market stages with the ASA soy-based growout feed and the ASA 80:20 pond production model.

MATERIALS AND METHODS

Three earthen ponds of size 2.0-mu each at the Xiajiang County Fish Farm in Anjie City, Jiangxi Province, were used for the feeding demonstration. Pond water depth averaged approximately 1.5 m. All ponds were equipped with water exchange and stand-by aeration.

Fish were 52-g channel produced at the Xiajiang County Fish Farm. Channel catfish were stocked in the three trial ponds at a density of 600 fish per mu (9,000/ha), together with 100 silver carp per mu (1,500/ha). Fish in all three trial ponds were of uniform size and age at stocking. Target market size for the channel catfish was 700 g per fish.

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Channel catfish were fed the ASA all-plant protein, soymeal-based growout feed containing 32% crude protein and 6% crude lipid (Table 1). The feed was fed in extruded, floating pellet form. Feed pellet size was increased as the fish grew, with pellet size maintained at approximately one-half the full open mouth size of the fish. Fish were fed to satiation twice daily, with fish in the three replicate ponds receiving an identical amount of feed at each feeding. The feeds were formulated by ASA and produced by Cargill at their aquafeed mill in Jiangsu Province.

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 channel catfish and silver carp in each pond were 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

Channel catfish were fed a total of 187 days between 12 April and 20 October 2003. Channel catfish grew from 52 g to an average weight of 710 g during this feeding period (Table 2). Gross production averaged 415.6 kg/mu (6,234 kg/ha) for channel catfish and 71.6 kg/mu (1,074 kg/ha) for silver carp (Table 2). Average channel catfish and silver carp survival rates were 97.6% and 99.7%, respectively. Average FCR for channel catfish with the ASA 32% crude protein, soymeal-based feed was 1.31:1 (Table 2).

Net economic return averaged RMB 1,154 per mu (\$2,095/ha) at a market price of RMB 9.0/kg (\$1.09/kg) for channel catfish and RMB 3.0/kg (\$0.36/kg) for silver carp (Table 2). ROI averaged 41.2% for the three trial ponds (Table 2).

SUMMARY AND CONCLUSIONS

The demonstration farm area experienced drought weather and water shortages throughout the production season. Water temperatures in July and August exceeded 33°C. Despite adverse weather conditions, channel catfish grew to the target market size of 700 g on the ASA 32% all-plant protein, soymeal-based feed with low feed conversion and good health. The soy-based extruded feed yielded good water quality, no disease incidence, and good economic return in this feeding demonstration

ACKNOWLEDGEMENTS

ASA gratefully acknowledges the Xiajiang County Fish Farm, the Jiangxi Provincial Fisheries Extension Center, and the China National Fisheries Extension Center (NEC) for their assistance and support for this aquaculture trial.

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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

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Table 1. Formula for the ASA 32/6¹, all-plant protein, soymeal-based feed used in the 2003 channel catfish pond feeding demonstration conducted in Anjie City, Jiangxi Province, China. The feed was fed in extruded, floating pellet form.

Ingredient	Percent of total
Soybean meal 47.5	52.8
Wheat, SWW	23.2
Wheat middlings	10.0
Corn gluten meal 60%	6.0
Fish oil	3.5
Soy lecithin	1.00
Ca phosphate mono	2.70
Vit PMX F-2	0.50
Min PMX F-1	0.25
Stay C-35%	0.03
Ethoxyquin	0.02
Total	100.00

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

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Table 2. Results of the 2003 ASA aquaculture feeding demonstration in Jiangxi Province that demonstrated fingerling to market pond growth performance of channel catfish using the ASA 80:20 production model and soymeal-based, extruded feed.

Pond No.	ChC ¹ stocking size (g)	Stocking rate (fish/mu)	No. days fed	Harvest wt. (g)		P _G ³ (kg/mu)		Survival (%)		FCR	Net income (RMB/mu)	ROI (%)
				ChC	SiC ²	ChC	SiC	ChC	SiC			
1	52	600	187	727	970	432.5	96.1	99.2	99	1.26	1,379	49.2
2	52	600	187	711	621	421.9	62.0	98.9	100	1.29	1,182	42.2
3	52	600	187	691	567	392.5	56.7	94.6	100	1.39	901	32.2
Mean	52	600	187	710	719	415.6	71.6	97.6	99.7	1.31	1,154	41.2

¹ChC = Channel Catfish

²SiC = Silver Carp

³P_G = Gross Production