

# **Growth Performance of Pompano on Extruded Feed in Coastal Cages at Hainan, China**

## **Results of ASA/China Feeding Trials 35-01-138**

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### **ABSTRACT**

Pompano (*Trachinotus ovatus*) growth performance in coastal cages was evaluated from fingerling to sub-market size using the ASA LVHD cage production model and ASA extruded, marine fish feeds. The cage trial was conducted at Ling Shui, Hainan, China. Pompano were stocked in three, 8.0-m<sup>3</sup> cages at a density of 1,000 fish per cage. Pompano were fed to satiation daily with a 47% crude protein and 15% crude fat feed (47/15) to fish size 50 g, and with a 43% crude protein and 12% crude fat feed (43/12) from fish size >50 g. The 43/12 feed was formulated with 35% soybean meal. Both feeds were fed in extruded, floating pellet form. Fish in all trial cages were fed to satiation, three times daily for the first month, and twice daily thereafter. Pompano grew from 7 g to 349 g in 136 days. Average FCR with the combination of 47/15 and 43/12 feeds was 2.1:1. Average fish survival was 92.5%. Net economic return and return on investment were RMB 5,511/cage (RMB 689/m<sup>3</sup>) and 90.1%, respectively. Results of the trial indicate that pompano perform well on extruded feed and yield high economic gain. The trial pompano fed extruded feed were reported to have grown faster than pompano fed trash fish, and with a significantly lower feed cost. Feed cost with the ASA extruded feeds was RMB 10.08 per kilogram of fish growth. Cost of trash fish was reported to be in excess of RMB 20 per kilogram of fish growth. Other reported benefits of producing pompano with extruded feed were simplified production management, reduced water pollution, and production of pompano with a better flavor than those cultured with trash fish.

### **INTRODUCTION**

The American Soybean Association (ASA), in cooperation with Mr. Liang Xing Xui of Cage Farm No. 0601, Ling Shui, Hainan and the Hainan Provincial Fisheries Extension Station, conducted a cage feeding trial with pompano (*Trachinotus ovatus*). The objective of the trial was to evaluate pompano growth performance and economic return from the advanced fry to sub-market stages using the ASA LVHD cage production model and ASA extruded, marine fish feeds.

### **MATERIALS AND METHODS**

Three, 8.0-m<sup>3</sup> cages at Cage Farm No. 0601 in the bay at Ling Shui, Hainan Province, were used for the trial. Cages were constructed of nylon mesh netting with a rigid top frame, opaque covers and a feed enclosure to contain floating, extruded feed pellets. The cages were stocked in early June with pompano at a density of 200 fish per m<sup>3</sup> and the trial commenced on June 12. Strong tidal current caused significant fish mortality in the first three days, and the trial was stopped.

The cages were moved to the central area of the cage farm to reduce water current impact and the fish pooled and restocked in the three trial cages at a density of 125 fish/m<sup>3</sup> (1,000 fish per cage). The cages were left in the center of the cage farm until July 30, at which time they were moved back to the edge of the farm for improved water exchange.

Fish in all cages were fed the ASA 47/15 (47% crude protein and 15% crude fat) marine fingerling feed in extruded, floating pellet form from fish size 7 g to fish size 50 g (Table 1). When fish reached size 50 g, they were weaned to the ASA 43/12 (43% crude protein and 12% crude fat) marine growout feed (Table 2). The 43/12 growout feed is formulated with 35% soybean meal. Both feeds were formulated by ASA and produced by the Shanghai DaJiang aquafeed mill. Pompano were fed to satiation three times daily for the first month, and twice daily thereafter. Fish in all cages were fed identically at each feeding.

Trial management was based on the ASA LVHD cage production model. Fish in all cages were sampled once per month on the same date each month. All cages were harvested at the conclusion of the trial to determine average fish weight, gross and net production, feed conversion ratio (FCR) and survival.

## **RESULTS**

Pompano were fed for 136 days between 19 June and 2 November 2001. Pompano grew from 7 g to an average weight of 349.2 g in the 136-day feeding period (Table 3). Average FCR with the combination of 47/15 and 43/12 feeds was 2.1:1 for pompano in the three replicate cages. Average fish survival was 92.5%. Carrying capacity at harvest averaged 40.4 kg of pompano per m<sup>3</sup> (323 kg/cage) for the three cages (Table 3).

Net income and return on investment (ROI) averaged RMB 688.9/m<sup>3</sup> (RMB 5,511/cage) and 90.1%, respectively, for the three cages, at a market price of RMB 36/kg for pompano (Table 3). Average feed cost with the ASA extruded feeds was RMB 10.08 per kilogram of fish growth, at a feed cost for the 43/12 feed of RMB 4.8/kg. Soybean meal is used as a partial replacement for fishmeal in the 43/12 feed to reduce feed cost.

## **SUMMARY AND CONCLUSIONS**

Results of the trial indicate that pompano grow well on the high soymeal inclusion feed and yield high economic gain. The trial fish fed on soy-inclusion extruded feed were reported to have grown faster than pompano fed trash fish, and with a significantly lower feed cost. Average feed cost with the ASA extruded feed was RMB 10.08 per kilogram of fish growth. Cost of trash fish was reported to be in excess of RMB 20 per kilogram of fish growth. Other reported benefits of producing pompano with extruded feed were simplified production management, reduced water pollution, and production of pompano with a better flavor than those cultured with trash fish.

## **ACKNOWLEDGEMENTS**

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### Chinese Currency and Production Unit Conversions:

RMB 8.26 = US\$1.00

1.0 kg = 2.2 lb

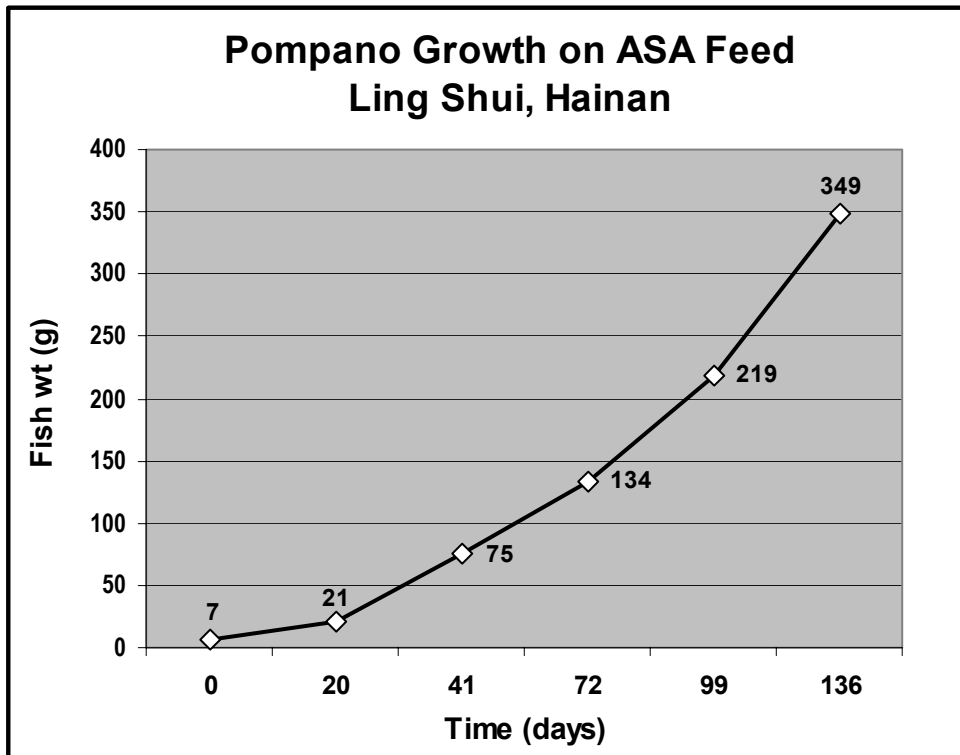


FIGURE 1. Growth curve for pompano fed ASA extruded feeds in a cage production trial conducted at Ling Shui, Hainan, China. Pompano exhibited good growth performance and FCR and yielded a high economic return when fed extruded aquafeeds. Feed cost per kilogram of fish growth with extruded feed was less than half the reported cost of equivalent production with trash fish. Soybean meal is used as a partial replacement for fishmeal in the ASA feeds to reduce feed cost. Soybean meal is included at 35% of the total ration.

Table 1. Formula for the ASA 47/15 marine fingerling feed used in the 2001 pompano trial conducted at Ling Shui, Hainan Province, China.<sup>1</sup>

Ingredient	Percentage of feed
Fishmeal, anchovy 67/7-8	48.70
Wheat flour 10	20.00
Soybean Meal 43	10.00
Wheat gluten 68	10.00
Fish Oil, Unspecified PV=10<20	10.50
Min PMX T&S 1	0.25
Vit PMX F2	0.50
Stable Vit C35	0.03
Ethoxyquin 66	0.02
TOTAL	100.00

<sup>1</sup>The numerical component of the feed description refers to the percentage of protein and fat, respectively, in the ration, i.e. 47/15 indicates 47% crude protein and 15% crude fat.

Table 2. Formula for the ASA 43/12 marine fish growout feed used in the 2001 pompano trial conducted at Ling Shui, Hainan Province, China.<sup>1</sup>

Ingredient	Percentage of feed
Soybean Meal 43	35.00
Fishmeal, anchovy 63/6.5	37.00
Wheat Flour 10	14.20
Wheat Gluten	4.60
Fish Oil, Unspec.	8.40
Vit PMX	0.50
Min PMX	0.25
Stable Vitamin C35	0.03
Ethoxyquin	0.02
TOTAL	100.00

<sup>1</sup>The numerical component of the feed description refers to the percentage of protein and fat, respectively, in the ration, i.e. 43/12 indicates 43% crude protein and 12% crude fat.

Table 3. Results of the 2001 ASA aquaculture trial that evaluated pompano growth performance in 8.0-m<sup>3</sup> cages with 47/15 and 43/12 extruded aquafeeds at Ling Shui, Hainan Province, China.

Cage No.	Feeds <sup>1</sup>	Stocking rate (fish/m <sup>3</sup> )	Initial fish weight (g)	No. days fed	Fish harvest weight (g)	Survival (%)	P <sub>G</sub> <sup>2</sup> (kg/m <sup>3</sup> )	FCR	Net income (RMB/m <sup>3</sup> )	ROI (%)
1	ASA	125	7	136	347.6	93.5	40.6	2.09:1	698.4	91.4
2	ASA	125	7	136	328.2	93.1	38.2	2.22:1	610.5	79.9
3	ASA	125	7	136	371.7	91.0	42.3	2.00:1	757.8	99.2
Mean	ASA	125	7	136	349.2	92.5	40.4	2.10:1	688.9	90.1

<sup>1</sup> Pompano were fed a combination of the ASA 47/15 marine fingerling and 43/12 marine growout feeds in extruded, floating pellet form

<sup>2</sup> P<sub>G</sub> = Gross Production, expressed as fish weight per cubic meter of cage