
**Performance of Pompano Fed Soy-Optimized, Extruded Feed Using
ASA-IM Low Volume High Density Cages in Vung Tau Province,
Vietnam**

Results of ASA-IM/Soy-in-Aquaculture 2007 Feeding Demonstration Project

Lukas Manomaitis and Michael C. Cremer
American Soybean Association International Marketing (ASA-IM)
12125 Woodcrest Executive Drive, Suite 140
St. Louis, MO 63141 USA

ABSTRACT

A feeding demonstration was conducted in Vung Tau Province in southern Vietnam to demonstrate the growth of pompano (*Trachinotus blochii*) using the ASA-IM culture methodology in 8-m³ cages. Pompano fingerlings of size 28 g were stocked into three 8-m³ cages at 570 fish per cage and cultured according to the ASA-IM low volume, high density (LVHD) cage methodology. Fish in the three cages were fed a soybean meal optimized, extruded 43% protein, 12% fat (43/12) feed that was produced in China. After 67 days of culture, fish grown using the ASA-IM LVHD methodology and fed the soy-optimized feed grew to an average of 201 g, with an average gross production of 113 kg/cage (14 kg/m³), an average FCR of 1.84 and an average survival of 99%.

INTRODUCTION

The American Soybean Association International Marketing (ASA-IM), under the Soy-in-Aquaculture (SIA) Project and in cooperation with Manh Ha Trading and Seafood Company, Vietnam, conducted a 67-day comparison feeding demonstration with pompano in marine cages. The objective of the project was to demonstrate the feasibility of culturing pompano in low volume, high density (LVHD) cages with a soy-optimized feed.

Originally, this project was envisioned to be a growout project using sea bass (*Lates calcarifer*) with a domestically produced feed, but due to difficulties with an outbreak of an unidentified disease for sea bass in the area, the project was changed to a time trial using pompano as the fish species and imported Chinese aquafeed.

MATERIALS AND METHODS

Three, 8-m³ (2 m x 2 m x 2 m) cages at the Manh Ha Company cage farm site in Vung Tau Province, Vietnam, were used for the demonstration. The cages were constructed with a floating wooden platform from which a rectangular nylon mesh (mesh size varied according to fish size) cage net was suspended and weighed down to maintain the cage shape against water currents.

All of the cages were outfitted with an internal feed enclosure and a light blocking cover as specified in the ASA-IM LVHD Manual “Principles and Practices of High Density Fish Culture in Low Volume Cages”. The three ASA-IM LVHD demonstration cages were attached to a floating platform frame at the outside edge of the cage farm and spaced to provide at least 2 m of open water on all sides of each cage to facilitate water exchange. Cage nets were replaced on a 15-day cycle to combat bio-fouling.

Pompano (*Trachinotus blochii*) fingerlings of size 28 g were obtained on site from existing holding cages from stocks purchased from a hatchery in Taiwan. Pompano were stocked in the three ASA-IM methodology cages at a density of 570 fish per cage. Fish in all three cages were obtained from the same group and were of uniform age and size at stocking.

There was no specific production target for this project as it was a time trial using 43/12 feed remaining from an earlier sea bass study. The cages were stocked as if a target of 50kg/m³ was anticipated, with an average fish size of 750 g.

Pompano were fed twice daily with an extruded, floating feed formulated to contain 43% crude protein and 12% crude lipid (43/12). The 43/12 feed was formulated by ASA-IM to optimize soybean meal use, and contained 32% dehulled soybean meal. The 43/12 feed was produced at a Chinese feedmill and imported to Vietnam by the ASA-IM (Tables 1-2). The three trial cages were treated as replicates of a single feed treatment, with fish in all cages fed identically at each feeding using the ASA-IM satiation feeding technique. Cage management was based on the ASA-IM LVHD cage production model.

ASA-IM SIA FY07 VIETNAM LVHD POMPANO DEMONSTRATION PROJECT

Fish in all cages were sampled twice, once at 36 days of culture and once at the conclusion of the trial. At the conclusion of the project, all cages were completely harvested and all fish weighed. All of the harvested fish were enumerated when weighed to obtain an average fish size and to determine fish survival. Results were used to determine fish survival, average fish weight, gross fish production and feed conversion ratio (FCR).

RESULTS

Pompano were fed a total of 67 days between 06 October and 12 December 2007. Pompano fed the formulated, 43/12 feed grew from an average of 28 g to 201 g during this period (Table 1). Gross production averaged 113 kg (14 kg/m³) per cages, with an average fish survival rate of 99%. Average FCR for pompano fed the formulated feed was 1.84:1 (Table 1).

SUMMARY AND CONCLUSIONS

This feeding demonstration was originally planned with sea bass. However, disease complications caused the sea bass trial to be canceled. The owner of Manh Ha Trading and Seafood Company requested that the ASA-IM continue the demonstration using pompano instead of sea bass. Manh Ha Company was only using trash fish in their marine fish cage operations at the time, and was interested in testing manufactured feed as a means to eliminate availability, spoilage, diseases transmission and other issues associated with the use of trash fish. The owner was also interested in moving to a feed-based system so that feed purchases and feeding regimes could be better planned and managed.

At the time of the cancellation of the sea bass project, approximately 600 kg of 43/12 ASA-IM marine aquafeed remained. It was decided since the LVHD cages were already prepared, the pompano fingerlings were available and there was remaining 43/12 feed, that a time trial using the remaining feed would be attempted. The objective was to grow the pompano until the feed ran out.

This two month demonstration convincingly showed the owner and his staff that formulated feeds could be successfully used with marine fish and that trash fish did not have to be used. Perhaps the most telling indication of this was during the harvest of the pompano, when trucks were seen delivering bulk formulated feeds to Manh Ha from a local feed mill.

ASA-IM plans to continue work at this site with producers and local feed mills. ASA-IM also plans to hold disease prevention and management workshops at this site.

ACKNOWLEDGEMENTS

The ASA-SIA Program gratefully acknowledges the ASA-IM Vietnam office, the ASA-IM SEA Regional Office and Mr. Dinh Van Trung, the Local SIA Coordinator for their help and support

ASA-IM SIA FY07 VIETNAM LVHD POMPANO DEMONSTRATION PROJECT

of this demonstration project. The ASA-IM SIA project would also like to thank Bayer Vietnam LTD for the production of the premixes required for this project.

ASA-IM SIA FY07 VIETNAM LVHD POMPANO DEMONSTRATION PROJECT

TABLE 1: Growth and FCR table for pompano over a 67-day culture period in the 2007 ASA-IM SIA pompano demonstration trial in Vung Tau Province, Vietnam. Pompano grew from 28 g to an average of 201 g in 67 days on the 43/12 formulated feed.

Date	Average sampled size (kg)	Periodic Growth (kg)	Days	FCR	Notes
October 6	0.028	0	0	0	Stocking
November 11	0.132	0.104	36	0.99	Sampling
December 12	0.201	0.069	31	1.84	Harvest

ASA-IM SIA FY07 VIETNAM LVHD POMPANO DEMONSTRATION PROJECT

TABLE 2. Feed formula used by the Baiyang Feed Mill in China to produce the 43/12¹, soymeal-based feed used in the 2007 ASA-IM SIA pompano demonstration trial in Vung Tau Province, Vietnam. The feed was fed in a 4 mm pellet size. The feed was least-cost formulated using ingredients available at the time of production.

Ingredient	% Inclusion Rate
Soybean Meal - 46%	32.00
Fish, Anchovy 67/8	30.00
Wheat Flour - 11.2%	18.30
Fish Oil, Anchovy	6.00
Corn Gluten Meal 60.5/5	5.20
Blood Meal 85/1	3.00
Soy Lecithin / Corn Blend	2.00
Soy Oil	2.00
Calcium phos. mono - 21%	0.65
Vitamin Premix-F2	0.50
Mineral Premix F-1	0.25
Stay C - 35%	0.05
Ethoxyquin 30%	0.05
Total	100.00

¹The 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.

ASA-IM SIA FY07 VIETNAM LVHD POMPANO DEMONSTRATION PROJECT

TABLE 3. Vitamin and mineral premix formulas used in the ASA-IM 43/12 soymeal-based feed used in the 2007 ASA-IM SIA pompano demonstration trial in Vung Tau Province, Vietnam.

Vitamin Premix PMX-F2¹

Nutrient	Unit	As fed
Vitamin A	IU/kg	1200000
Vitamin D3	IU/kg	200000
Vitamin E	IU/kg	20000
Biotin	mg/kg	40
Folic acid	mg/kg	1800
Niacin	mg/kg	40000
Pantothenate	mg/kg	20000
Pyridoxine (B6)	mg/kg	5000
Riboflavin (B2)	mg/kg	8000
Thiamin (B1)	mg/kg	8000
Vitamin B12	mcg/kg	2000
Ethoxyquin	mg/kg	500

Mineral Premix PMX-F1¹

Nutrient	Unit	As fed
Iron	ppm	40000
Manganese	ppm	10000
Copper	ppm	4000
Zinc	ppm	40000
Iodine	ppm	1800
Cobalt	ppm	20
Selenium	ppm	200

¹Premix ingredient quantities are per kg of premix.