

Costs and Returns

COSTS and RETURNS of

JULY 2007



Department of Agriculture
BUREAU OF AGRICULTURAL STATISTICS

FOREWORD

This report presents the results of the Survey on the Costs and Returns of Milkfish Production conducted by the Bureau of Agricultural Statistics (BAS) in November 2006. The survey was designed to generate information on costs and returns of producing milkfish in the major producing provinces of Pangasinan, Bulacan, Capiz and Iloilo, respectively.

In addition to the data on production costs and returns, this report presents the other socio-economic variables related to milkfish production. The reference period of the survey is the last completed production cycle in 2006.

This Costs and Returns Survey was conducted by the BAS to fulfill its commitments to provide information on farm profitability and farm income diversification. This was also intended to support the objectives of the Diversified Farm Income and Market Development Project (DFIMDP) of the Department of Agriculture (DA).

As in other BAS publications, we welcome comments and suggestions from data users and researchers for the improvement of our statistical products.

ROMEO S. RECIDE
Director

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EXPLANATORY NOTES

1. Focus pond refers to the area where the last completed production cycle took place. It may comprise the nursery area of stocking materials, transition area and rearing pond. It may equal to, or lesser than the total area of fishponds managed by the sample farmer.
2. Costs and returns of milkfish production represented the data for the last completed production cycle in 2006. Averages were computed and presented on per hectare of pond operation, per farm or average for all sample fishpond operators and per kilogram of production. These measures were computed as follows:

$$\text{Per hectare} = \frac{\text{Total value of input (output)}}{\text{Total harvest area}}$$

$$\text{Per farm} = \frac{\text{Total value of input (output)}}{\text{Total number of fishponds}}$$

$$\text{Per kilogram} = \frac{\text{Total value of input (output)}}{\text{Total production}}$$

3. Data may not add up due to rounding off.
4. Blank cells in the statistical tables indicate that there was no report for a particular data item.

SUMMARY OF FINDINGS

- ❑ Fishpond operators in the four (4) provinces (Pangasinan, Bulacan, Capiz and Iloilo) had an average age of 55 years with 14 years experience in milkfish production.
- ❑ Most fishpond operators had formal schooling. Only 1.45 percent of operators in Bulacan and 4.26 percent of operators in Capiz had no schooling at all.
- ❑ Farming/Fishing was the main occupation of the 50.99 percent of the operators. Professionals accounted for 26.05 percent of all operators.
- ❑ Physical area of fishponds in four provinces averaged 8.72 hectares while area harvested averaged 4.53 hectares.
- ❑ Most fishponds in Pangasinan, Capiz and Iloilo were privately owned while 59.42 percent of fishponds in Bulacan were leased.
- ❑ About 56.70 percent of fishpond operators practiced two croppings per year.
- ❑ Most operators in Pangasinan, Bulacan and Capiz practiced straight culture method while 66.32 percent of operators in Iloilo practiced modular culture method.
- ❑ Peak months of stocking were June and July while peak month of harvesting was October.
- ❑ Fingerling comprised the bulk of stocking materials used in Pangasinan, Bulacan and Capiz while fry was the major stocking material used in Iloilo.
- ❑ On per hectare basis, the average application of chicken manure in fishponds was 333.27 kilograms. In the case of inorganic fertilizers, average rates of application were 29.13 kilograms for urea (45-0-0), 26.94 kilograms for urea (46-0-0), and 22.69 kilograms for ammonium phosphate (16-20-20). Application of other types of fertilizers averaged less than 4 kilograms.
- ❑ Except for Pangasinan, the use of agricultural lime was common. Application rates ranged from 13.25 kilograms per hectare in Bulacan to 82.19 kilograms per hectare in Iloilo.
- ❑ The most common pesticides used in milkfish production were tobacco dust at 58.74 kilograms per hectare and teaseed at 2.02 kilograms per hectare.

- Average labor requirement in milkfish production was 15.48 mandays per hectare. Hired workers were the major source of labor and the range of utilization was 12.33 mandays in Capiz to 16.17 mandays in Bulacan.

Costs and Returns of Milkfish Production

- ❖ Production of milkfish in Pangasinan averaged 1,029 kilograms per hectare. Average cost of production was estimated at P42,285 per hectare. Operators grossed P71,339 per hectare and netted P29,054 per hectare. Operators received P0.69 for every peso of investment.
- ❖ In Bulacan, milkfish production averaged 1,210 kilograms per hectare. It entailed an average cost of P38,859 or P31.51 per kilogram. Gross returns amounted to P72,825 per hectare and net returns averaged P33,966 per hectare. Net profit stood at P0.87 for every peso of investment.
- ❖ Average production of milkfish in Capiz was estimated at 503 kilograms per hectare and the gross returns was P24,252. Average cost of production amounted to P14,156 per hectare. Net returns averaged P10,097 per hectare and net profit-cost ratio was recorded at 0.71.
- ❖ Average cost of producing milkfish in Iloilo was estimated at P19,529 per hectare. With an average yield of 699 kilograms per hectare, fishpond operators grossed P41,942 and netted P22,412 per hectare. This translated to a net profit of P1.15 for every peso of investment.
- About 99 percent of the total milkfish production were sold. The rest were disposed of as laborers' share, administrators' share, payment for the use of land, home consumption and given away.
- Bad weather conditions and natural calamities, high cost of fertilizers, and pollution/siltation were the major problems cited by operators in milkfish production.
- The buyers of milkfish produce were mostly wholesalers and agents/fish brokers.
- Low price and unstable price of the product were the major marketing problems cited by operators.
- Fishpond operators who availed of loans for milkfish production comprised 4.47 percent only. Private individuals, banks, and cooperatives were the sources of loans.

- The number of milkfish operators who accessed the services of private extension agents was relatively higher compared to the number of milkfish operators who accessed the services of government extension agents.
- Operators who will maintain their current operation in milkfish production constituted 78.21 percent. Some 19.27 percent will expand their fishpond operation.
- The major recommendations of milkfish operators to further improve milkfish production were the provision of technical and financial assistance, input subsidy or lower the price of inputs and properly address the pollutants and siltation in the rivers.

COSTS AND RETURNS OF MILKFISH PRODUCTION

Introduction

Milkfish, scientifically known as *Chanos chanos* and locally known *Bangus* in the Philippines, is a plankton eater with metallic silvery eyes basic coloring and blue-green marking on top and under its body. It is a powerful swam-fish and is not cannibalistic. That is why it could be reared in higher density in cages or ponds.

In the Philippines, milkfish remains to be the dominant aquaculture species. Its contribution to total aquaculture and total fishery production in the country has been continuously growing. The volume of milkfish production from 2001 to 2006 grew at the rate of 6.94 percent annually. In 2006, the volume of milkfish production in the country at 315,133 metric tons contributed 15.06 percent to the total volume of aquaculture production and 7.15 percent to total fishery production.

The profitability of producing milkfish is one of the primary concerns among planners and policy makers in setting up goals and strategies for the development of fisheries. Likewise, this is the concern of agribusiness players who are interested to venture in milkfish farming. To address these concerns, the Bureau of Agricultural Statistics (BAS), has proposed to conduct this survey. This can generate updated information on the costs and returns of producing milkfish.

Objectives

The survey is intended to generate updated data on the levels and structure of costs and returns of milkfish production. Specifically, it aims to generate data on:

- production cost structures;
- indicators of profitability such as gross and net returns, returns above cash costs, net profit - cost ratio, etc.;
- average use of materials and labor inputs; and
- other related socio-economic variables.

Survey Methodology

The survey covered fishpond operators in the top four (4) milkfish producing provinces in the country namely: Pangasinan, Bulacan, Iloilo and Capiz. The domain of the study is the province, with the last completed production cycle in 2006 as the reference period.

The lists of milkfish producing barangays by province prepared by the concerned BAS Provincial Operation Centers (POCs) were used as the sampling frames for this study. The lists contain data on the area devoted to milkfish production and number of milkfish farm operators by barangay as of 2006. These data were obtained from BAS-BFAR lists of aquafarms, updated Barangay Screening Survey (BSS) data, existing POC lists and the local government units.

A two-stage sampling design was employed with the barangay as the primary sampling unit and the fishpond operator as the secondary and ultimate sampling unit. The barangays were drawn using systematic sampling from an ordered list of barangays with at least five milkfish farm operators. Systematic sampling was used so that both large and small farm operators in the province in terms of milkfish production would be represented in the sample. On the other hand, sample operators were identified using snowball approach during data collection. During the search for sample operators, a set of screening questions was applied to see to it that the samples satisfy the following criteria:

1. must be engaged in milkfish culture in fishpond, and
2. must have harvested milkfish in 2006

The total sample size was 100 fishpond operators per province, equally allocated to 20 sample barangays. Following was the distribution of sample fishpond operators by province.

PROVINCE	FARM CULTURE SYSTEM		TOTAL
	MONOCULTURE	POLYCULTURE	
Pangasinan	100	-	100
Bulacan	69	31	100
Capiz	94	5	99
Iloilo	95	5	100
TOTAL	358	41	399

In Capiz, one sample did not satisfy the second survey criterion, i.e. there was no reported production.

SURVEY RESULTS

Characteristics of Fishpond Operators (Tables 1 - 5)

Sex, age, educational attainment and farming experience

- Across provinces, more than 81 percent of fishpond operators were males. The highest proportion of female operators at 18 percent was recorded in Iloilo.
- Ages of fishpond operators averaged 53 years in Pangasinan, 54 years in Bulacan, 56 years in Iloilo and 57 years in Capiz.
- All fishpond operators in Pangasinan and Iloilo had formal schooling while 4.26 percent and 1.45 percent of operators in Capiz and Bulacan, respectively, had no formal schooling at all.
- About 72.34 percent of fishpond operators in Iloilo finished college. In Pangasinan, 45.00 percent were college graduates and in Capiz, 42.56 percent. In Bulacan, there were 26.09 percent who finished college but there were 24.64 percent who had reached college level.
- Fishpond operators in Bulacan and Capiz had the longest average farming experience at 16 years. Those in Iloilo had the least at 12 years.
- Majority of fishpond operators in Pangasinan, Bulacan and Iloilo were engaged in milkfish production for less than 11 years. In Capiz, 46.81 percent of operators had less than 11 years experience.

Main occupation

- Farming/Fishing was the main occupation of the majority or 67.02 percent of fishpond operators in Capiz and 54 percent in Pangasinan. In comparison, 43.48 percent of fishpond operators in Bulacan and 37.23 percent in Iloilo cited farming/fishing as their main occupation.
- In Bulacan, 44.92 percent of fishpond operators said that their main occupation was in the service sector. In Iloilo, 39.36 percent of fishpond operators were professionals.

Farm Characteristics (Tables 6 - 8)

Physical and harvested area of fishponds

- Physical area of fishponds across provinces averaged 8.72 hectares per farm. Average physical area was biggest in Bulacan at 14.58 hectares and smallest in Pangasinan at 2.72 hectares.
- For the last completed cropping, the biggest harvested area per farm was reported in Bulacan at 9.60 hectares and the smallest in Pangasinan at 1.45 hectares.

Tenure status

- Majority of fishponds in Pangasinan (53 percent), Capiz (67.02 percent) and Iloilo (65.26 percent) were privately owned.
- In Bulacan, 59.42 percent of the fishponds were leased, 39.13 percent were privately owned, and 1.45 percent were government owned.

Farm investments

- In Pangasinan, the major investments in farm structures were water gates and caretaker's houses. These were reported by 95.00 percent and 84.00 percent of fishpond operators, respectively. Farm office and warehouse were reported by operators at 1.00 percent each.
- Majority or 59.42 percent of operators in Bulacan had caretaker's house. There were 47.83 percent who invested in water gates, 24.64 percent in bodega/warehouse, and only 1.45 percent in farm office.
- Most operators in Capiz had caretaker's house and water gates. These were reported by 80.85 percent and 72.34 percent, respectively. There were 4.26 percent who have bodega/warehouse and 3.19 percent with farm office.
- Similarly, 96.84 percent of operators in Iloilo have water gates and 75.79 percent have caretaker's house. Some 23.16 percent of operators owned bodega/warehouse and 2.11 percent have farm office.

- The common investments in farm machinery and equipment across provinces were fish nets, generators, water pump, feed dispenser, transport vehicle, fish containers and rafts.

Farm Practices and Input Usage (Tables 9 - 19)

Number of cropping and culture method

- Across provinces, most operators had two croppings per year. This was practiced by 74.46 percent of operators in Capiz, 53 percent of operators in Pangasinan, 50.72 percent in Bulacan, and 47.37 percent in Iloilo.
- In Bulacan, a significant number of operators or 40.58 percent of them practiced three croppings per year. In other provinces, operators who practiced three croppings per year ranged from 21 percent in Pangasinan to 27.37 percent in Iloilo.
- In Iloilo, 66.32 percent of operators practiced modular culture method. In Pangasinan, Bulacan and Capiz, majority of operators practiced straight culture method as reported by 59.00 percent, 65.22 percent, and 68.09 percent of operators, respectively.

Month of stocking

- In the four (4) provinces, 19.55 percent of operators placed their stocking materials in June and 26.80 percent in July. Some 12.29 percent stocked in May and less than 10 percent of the operators did this in January to April and August to September.
- By province, 22.35 percent (Capiz) to 29.48 percent (Iloilo) placed stocking materials in July.

Month of harvesting

- In Pangasinan, harvesting was taking place every month. No harvesting was reported for the months of January, February, April and December in Bulacan, January and March in Capiz, and January to April and December in Iloilo.
- September and October were noted to be the more active months of harvesting in Pangasinan as reported by 21.00 percent of operators. About 26.08 percent

of operators in Bulacan harvested their milkfish in October and some 18.84 percent in November.

- Harvesting in October was reported by 31.91 percent of operators in Capiz and 34.73 percent in Iloilo.

Input Usage

Stocking materials

- Some fishpond operators prefer fingerlings as stocking materials. Others choose fry while some go for juvenile. Across provinces, the average stocking rate using fingerlings was 2,617 pieces. It was 999 pieces for fry and 34 pieces for juvenile.
- In Pangasinan, the average stocking rates were 3,900 pieces using fingerlings and 414 pieces using fry.
- The average stocking rates in Bulacan were 3,611 pieces using fingerlings, 399 pieces using fry, and 71 pieces using juvenile.
- In Capiz, stocking rates averaged 1,515 pieces using fingerlings, 915 pieces using fry, and 18 pieces using juvenile.
- Operators in Iloilo preferred fry at the rate of 2,281 pieces per hectare. The use of fingerlings as stocking materials averaged 1,645 pieces per hectare.

Feeds

- The survey noted the use of commercial feeds such as fry mash, starter mash, grower, and finisher mash. The supplemental foods for the fish were bread and bread crumbs, crisp pop, fish meal, gelatin residue, noodles, and rice bran.
- Fishpond operators who practiced intensive management system used only commercial feeds. Other operators used commercial feeds and supplemental foods when natural foods in the fishponds were not enough.
- There were also operators who practiced extensive management system where milkfish was solely dependent on natural foods in the fishponds like algae (“lumot”) or “lablab”.

- The use of grower mash was highest in Bulacan at 201.58 kilograms per hectare. It was followed by Pangasinan where 103.69 kilograms per hectare were utilized. The use of grower mash in Iloilo and Capiz was comparatively lower at 11.91 kilograms and 11.98 kilograms per hectare, respectively.
- The use of finisher mash, on the other hand, averaged 344.70 kilograms per hectare in Pangasinan, 182.77 kilograms in Bulacan, 53.21 kilograms in Iloilo and 1.52 kilograms per hectare in Capiz.
- Supplemental feeds such as bread and bread crumbs were fed in large amount in Bulacan at 348.05 kilograms per hectare. Crisp pop was also used at an average of 255.17 kilograms per hectare in Bulacan.

Fertilizers

- Fertilizers were applied to propagate natural foods like “lumot” and “lablab”. The average application of chicken manure was 333.27 kilograms per hectare. For inorganic fertilizers, average rates of usage were 29.13 kilograms for urea (45-0-0), 26.94 kilograms for urea (46-0-0), and 22.69 kilograms for ammonium phosphate (16-20-20). Application of other types of fertilizers averaged less than 4 kilograms per hectare.
- By province, application of chicken manure was highest in Iloilo at 681.89 kilograms per hectare and lowest in Capiz at 81.59 kilograms per hectare. Application of urea (46-0-0) was nearly the same in Iloilo and Pangasinan at 44.68 kilograms and 41.23 kilograms per hectare, respectively.
- Application of ammonium phosphate ranged from 18.29 kilograms per hectare in Pangasinan to 53.92 kilograms per hectare in Iloilo. However, no fishpond operator in Bulacan applied ammonium phosphate. Application of urea (45-0-0) was highest in Bulacan at 45.97 kilograms per hectare and lowest in Capiz at 9.65 kilograms per hectare.

Lime

- Fishpond operators except in Pangasinan used lime as soil conditioner to correct acidity, promote the release of nutrients and to some extent, reduce the occurrence of diseases. These include agricultural lime, quick lime, slake lime, hydrated lime, carbonated rice hull and stone lime.
- Operators in Iloilo were the biggest users of agricultural lime at 82.19 kilograms per hectare supplemented with slake lime at 4.96 kilograms per hectare.

- Operators in Bulacan applied agricultural lime at an average of 13.25 kilograms per hectare.
- Those in Capiz used agricultural lime, quick lime and other limes at 57.08 kilograms, 18.98 kilograms, and 12.40 kilograms per hectare, respectively.

Pesticides and other chemicals

- Pesticides and other chemicals were used by fishpond operators to protect the yield. These included tobacco dust, teaseed, brestan, thiodan, gusathion, zeolite, sodium cyanide, aquatin, hercules, and sevin 85.
- Across provinces (excluding Iloilo), average use of tobacco dust was 58.74 kilograms per hectare. This ranged from 0.24 kilogram per hectare in Capiz to 375.06 kilograms per hectare in Pangasinan.
- Use of teaseed in four provinces averaged 2.02 kilograms per hectare. It was highest in Pangasinan at 10.44 kilograms per hectare and lowest in Bulacan at 0.07 kilogram per hectare.
- Liquid pesticides were used in smaller amounts at 0.001 liter of Hercules to 0.003 liter of Gusathion per hectare across provinces.
- Operators in Bulacan used zeolite at 0.11 kilogram per hectare to manage the turbidity of water.

Labor

- Milkfish production in the four (4) provinces required an average labor input of 15.48 mandays per hectare. Labor utilization was highest in Pangasinan at 19.92 mandays per hectare and lowest in Capiz at 13.20 mandays per hectare.
- In Pangasinan, hired labor contributed 15.42 mandays per hectare while operator and family labor provided 3.58 mandays and 0.92 mandays per hectare, respectively.
- Hired labor at 16.17 mandays per hectare provided 95.17 percent of the labor inputs in Bulacan.
- In Capiz and Iloilo, hired workers provided the bulk of labor inputs at 12.33 mandays and 12.72 mandays per hectare, respectively.

- Feeding and harvesting of milkfish in Pangasinan required bigger amounts of labor inputs relative to other activities at 6.51 mandays and 4.92 mandays per hectare, respectively. Similarly in Bulacan, feeding of milkfish required 5.69 mandays per hectare and harvesting entailed 4.94 mandays per hectare.
- In Capiz and Iloilo, maintenance of the fishponds including repair of dikes required the biggest amounts of labor at 3.47 mandays and 4.79 mandays per hectare, respectively.

Average Production Costs and Returns Per Cropping (Tables 20 - 30)

All four provinces

- Average cost of producing milkfish was P28,096 per hectare per cropping. Cash expenses accounted for 75.75 percent of all costs while non-cash and imputed costs shared 1.53 percent and 22.72 percent, respectively.
- Average milkfish production was 888 kilograms per hectare worth P52,025. Including other species harvested in the fishponds, the gross returns to pond operators amounted to P52,698 per hectare. Returns above cash costs averaged P31,416 while returns above cash and non-cash costs were computed at P30,987. Net returns averaged P24,602 per hectare. Operators netted P0.88 for every peso invested in milkfish production.
- On per kilogram basis, cost of milkfish production averaged P31.17. With an average gross value at P58.46, operators netted P27.29.
- The variable cost of production at P18,538 represented 65.98 percent of all costs. Fixed costs of production amounted to P9,557 per hectare.

Pangasinan

- The average cost of producing milkfish in Pangasinan was P42,285 per hectare. Cash outlays accounted for 74.30 percent of all costs, of which, costs of fingerlings and commercial feeds comprised the bulk. Non-cash payments shared 0.76 percent while imputed costs contributed 24.94 percent.
- Operators grossed P71,339. Returns above cash costs averaged P39,921 per hectare while returns above cash and non-cash costs settled at P39,602 per hectare. Considering all production costs, operators netted P29,054 per hectare.

- Per kilogram of milkfish, average cost of production was P40.91 while gross returns amounted to P69.01. Net returns stood at P28.11 per kilogram. Operators netted P0.69 for every peso invested in milkfish production.
- Average variable costs of production amounted to P29,378 per hectare or 69.48 percent of the total production expenses. Fixed costs figured to P 12,907.
- Yield of milkfish production averaged 1,029 kilograms per hectare.

Bulacan

- Production of milkfish in Bulacan averaged 1,210 kilograms per hectare and 23 kilograms of other species. Operators grossed P72,825 per hectare.
- On a per hectare basis, cost of production averaged P38,859. Cash costs were computed at P30,617. Major cash cost items were commercial feeds, land rentals, and stocking materials. Non-cash expenses amounted to P186 while imputed costs were P8,056.
- Returns above cash and non-cash costs averaged P42,021. Net returns settled at P33,966 per hectare. Fishpond operators gained P0.87 for every peso of investment.
- On per kilogram basis, cost of production amounted to P31.51 and operators grossed P59.05. Net of all costs, operators got P27.54.
- Average variable costs of production amounted to P24,781 per hectare or 63.77 percent of all costs. Fixed costs averaged P14,078 per hectare.

Capiz

- Production cost averaged P14,156 per hectare. Of this amount, P10,287 were cash expenses, P268 were non-cash costs and P3,601 were imputed costs.
- With an average production of 503 kilograms per hectare and 4 kilograms of other species, operators grossed P24,252. Returns above cash costs were estimated at P13,966 per hectare while returns above cash and non-cash costs averaged P13,698. Net returns stood at P10,097 per hectare. Net profit-cost ratio was 0.71.
- Operators spent P27.90 for every kilogram of milkfish produced. With gross returns of P47.80 per kilogram, returns above cash and non-cash costs amounted to P27.00. Operators netted P19.90 per kilogram.

- Average variable cost of production was estimated at P9,572 per hectare and accounted for 67.62 percent of all costs. Average fixed costs figured to P4,584 per hectare.

Iloilo

- Milkfish production in Iloilo entailed an average cost of P19,529 per hectare. Of this amount, 69.21 percent were cash costs, 5.27 percent were non-cash expenses, and 25.52 percent were imputed costs.
- Yield averaged 699 kilograms of milkfish per hectare and 12 kilograms of other species. Operators grossed P41,942 per hectare. Returns above cash costs averaged P28,426 per hectare. Returns above cash and non-cash expenses were estimated at P27,396 per hectare. Considering all costs, operators netted P22,412 per hectare. Net profit-cost ratio was 1.15.
- The average cost of production was P27.47 per kilogram while the average gross returns amounted to P58.98, thus the net returns of P31.52 per kilogram.
- Average variable costs of production amounted to P13,531 per hectare or 69.29 percent of all costs. Fixed costs averaged P5,999 per hectare.

Inter-provincial comparison

- Among the four (4) provinces, average cost of production was highest in Pangasinan at P42,285 per hectare. It averaged P38,859 in Bulacan, P19,529 in Iloilo and P14,156 in Capiz.
- Bulacan grossed the highest at P72,825 per hectare. Milkfish operators in Pangasinan grossed P71,339 per hectare while those in Iloilo grossed P41,942. Operators in Capiz grossed the lowest at P24,252 per hectare.
- Bulacan recorded the highest net returns of P33,966 per hectare. Net returns in Pangasinan and Iloilo were P29,054 and P22,412 per hectare, respectively. Capiz has the lowest net returns of P10,097 per hectare.
- Highest net profit-cost ratio was registered in Iloilo at 1.15. Net profit-cost ratios in Bulacan and Capiz were 0.87 and 0.71, respectively. The lowest was recorded in Pangasinan at 0.69.

Other Information (Tables 31 - 39)

Disposition of produce

- Across provinces, about 99 percent of the total milkfish production were sold. The rest were disposed of as payment to fishpond workers and for the use of land, for home consumption, and given away.
- The proportion of quantity sold to total quantity produced was highest in Bulacan at 99.56 percent and was lowest in Iloilo at 97.20 percent.

Production related problems

- Across provinces, the production-related problems cited by 50.56 percent of fishpond operators were bad weather conditions and natural calamities. The high cost of fertilizer was reported by 49.16 percent while 36.03 percent cited pollutants and siltations.
- Bad weather conditions and natural calamities were the problems cited by 81.16 percent of fishpond operators in Bulacan and by 71.28 percent in Capiz.
- High cost of fertilizer was the problem of 65.26 percent of fishpond operators in Iloilo and 60.64 percent of those in Capiz.

Major buyers of produce

- About 48.88 percent of operators sold their produce to wholesalers and 26.26 percent dealt with agents. Those who transacted with wholesaler-retailers constituted 18.16 percent.
- In Pangasinan, 91 percent of operators sold milkfish to wholesalers.
- Agents or fish brokers were the market outlet of the 84.06 percent of operators in Bulacan.
- In Capiz, 51.06 percent of operators sold their produce to wholesalers.
- In Iloilo, 44.21 percent of the operators had wholesalers-retailers as their market outlet while 37.89 percent sold to wholesalers.

Marketing related problems

- About 51.68 percent of fishpond operators across the four (4) provinces reported the low price of milkfish as the problem in the marketing of produce. Unstable price of the produce was also cited by another 46.09 percent of the operators.
- Rough roads and high transport costs constrained the marketing operation of 12.29 percent of operators while lack of marketing information was mentioned by 6.70 percent.

Access to credit

- On the average, only 4.47 percent of operators in the four (4) provinces availed of loans for milkfish production. Specifically, this was reported by 7.45 percent of operators in Capi, 4.35 percent in Bulacan, 3.16 percent in Iloilo, and only 3 percent in Pangasinan.
- Of those who availed of loans, 100 percent in Iloilo sourced their loans from private individuals.
- In Capi, 42.86 percent borrowed from private individuals and 28.57 percent each obtained their loans from cooperatives and banks.
- Operator-borrowers in Pangasinan comprising 66.67 percent sourced their loans from private individuals and the remaining 33.33 percent from banks.
- In Bulacan, feed manufacturers were the source of loans by 66.67 percent of borrowers while the remainder borrowed from banks.

Access to extension services

- Across provinces, 8.94 percent of milkfish operators accessed the services of private extension agents and only 3.63 percent accessed the services of government extension agents.
- About 20.29 percent of fishpond operators in Bulacan consulted/used the advice of private extension agents. In Iloilo, Pangasinan, and Capi, 8.42 percent, 7.00 percent, and 3.19 percent of operators, respectively, consulted/used the advice of private extension agents.
- Milkfish operators who consulted/used advice of government extension agents comprised 2.00 percent in Pangasinan to 5.32 percent in Capi.

Plans of milkfish pond operators

- In the four (4) provinces surveyed, 78.21 percent of the operators would maintain their current operations in milkfish production while 19.27 percent would expand.
- A small percentage (0.56%) would stop milkfish production if capital is not available, (0.84%) would venture with the production of other fish species, and (1.12%) would sell the fishponds.

Recommendations for the improvement of milkfish production

- Across provinces, 13.41 percent recommended that they be given assistance on technical aspects and 11.45 percent recommended financial assistance.
- There were 29.79 percent of operators in Capiz who were looking for technical assistance while 18.95 percent in Iloilo were asking for financial support.
- Lowering the price of agricultural inputs was suggested by 1.05 percent in Iloilo and 21.28 percent in Capiz.
- There were 26.09 percent of operators in Bulacan and 20.21 percent of those in Capiz recommended that pollutants and siltation in the river be addressed properly.

STATISTICAL TABLES

Table 1. Percentage distribution of fishpond operators by sex,
selected provinces, Philippines, 2006

PROVINCE	MALE	FEMALE
All 4 Provinces	84.59	15.41
Pangasinan	89.00	11.00
Bulacan	82.61	17.39
Capiz	84.04	15.96
Iloilo	81.91	18.09

Table 2. Average age of fishpond operators and percentage distribution by age group, selected provinces, Philippines, 2006

PROVINCE	AVERAGE AGE (year)	AGE GROUP					
		< 31	31-40	41-50	51-60	61-70	> 70
All 4 Provinces	55	2.24	12.32	22.41	29.97	24.93	8.12
Pangasinan	53	2.00	14.00	24.00	32.00	24.00	4.00
Bulacan	54	2.90	15.94	20.29	34.78	23.19	2.90
Capiz	57	3.19	11.70	18.09	22.34	28.72	15.96
Iloilo	56	1.06	8.51	26.60	31.91	23.40	8.51

Table 3. Percentage distribution of fishpond operators by educational attainment, selected provinces, Philippines, 2006

EDUCATIONAL ATTAINMENT	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Elementary Level	7.56	4.00	8.70	14.89	3.19
Elementary Graduate	8.40	4.00	13.04	6.38	11.70
High School Level	5.04	3.00	11.59	7.45	
High School Graduate	17.09	34.00	10.14	10.64	10.64
College Level	10.36	9.00	24.64	9.57	2.13
College Graduate	47.91	45.00	26.09	42.56	72.34
Vocational	1.68	1.00	2.90	3.19	
Post Graduate	0.56		1.45	1.06	
No Schooling	1.40		1.45	4.26	

Table 4. Average farming experience of fishpond operators and percentage distribution by number of years engaged in fishpond operations, selected provinces, Philippines, 2006

PROVINCE	AVERAGE FARMING EXPERIENCE (year)	YEARS ENGAGED IN FISHPOND OPERATIONS			
		< 11	11 - 20	21 - 30	> 30
All 4 Provinces	14	54.62	20.73	15.41	9.24
Pangasinan	14	60.00	18.00	11.00	11.00
Bulacan	16	50.78	15.38	18.46	15.38
Capiz	16	46.81	24.47	19.15	9.57
Iloilo	12	58.52	23.40	14.89	3.19

Table 5. Percentage distribution of fishpond operators by main occupation,
selected provinces, Philippines, 2006

MAIN OCCUPATION	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Officials of Government	2.52	4.00	1.45	2.13	2.13
Professional	26.05	29.00	5.80	24.47	39.36
Technician and Associate Professionals	1.96	3.00	2.90	1.06	1.06
Service Workers and Shop and Market Sales Workers	11.20	1.00	44.92	1.06	7.45
Farmers, Forestry Workers and Fishermen	50.99	54.00	43.48	67.02	37.23
Trades and Related Workers	0.56	1.00			1.06
Plant and Machine Operators and Assemblers	1.12	2.00			2.13
Laborers and Unskilled Workers	0.84	1.00			2.13
Special Occupations	4.76	5.00	1.45	4.26	7.45

Table 6. Average physical area, area of focus pond and area harvested per farm, selected provinces, Philippines, 2006

(hectare)

PROVINCE	PHYSICAL AREA	AREA OF FOCUS POND	AREA HARVESTED
All 4 Provinces	8.72	5.87	4.53
Pangasinan	2.72	1.49	1.45
Bulacan	14.58	9.60	9.60
Capiz	8.41	5.17	4.37
Iloilo	11.09	8.47	4.24

Table 7. Percentage distribution of fishponds by tenure status,
selected provinces, Philippines, 2006

PROVINCE	PRIVATELY OWNED	GOVERNMENT OWNED		LEASED
		WITH FLA	WITHOUT FLA	
All 4 Provinces	57.26	4.19	0.84	37.71
Pangasinan	53.00			47.00
Bulacan	39.13	1.45		59.42
Capiz	67.02	4.26		28.72
Iloilo	65.26	10.53	3.16	21.05

FLA - Fishpond Lease Agreement

Table 8. Percentage of operators by type of farm investment, selected provinces,
Philippines, 2006

FARM INVESTMENT	PANGASINAN	BULACAN	CAPIZ	ILOILO
Farm structures				
Farm office	1.00	1.45	3.19	2.11
Bodega / Warehouse	1.00	24.64	4.26	23.16
Caretaker's house	84.00	59.42	80.85	75.79
Water gates (prinza)	95.00	47.83	72.34	96.84
Others a/	9.00	4.35	1.06	30.53
Farm machinery and equipment				
Fish net	85.00	85.51	94.68	100.00
Generator	3.00	30.43		2.11
Water pumps	12.00	28.99	3.19	11.58
Feed mill			1.06	1.05
Feed dispenser	11.00	1.45	1.06	
Fish / Feed transporter				
Tricycle	3.00	8.70	3.19	10.53
Pick-up	1.00	7.25	2.13	25.26
Van		1.45	1.06	4.21
Motorized boat	16.00	42.03	19.15	3.16
Others b/	9.00	11.59	11.70	18.95
Fish containers				
Styropor	5.00	5.80	28.72	14.74
Banyera	29.00	28.99	1.06	8.42
Others c/	30.00	33.33	30.85	54.74
Feed grinder	1.00		1.06	
Rafts	9.00	15.94	13.83	50.53
Oxygen tank	2.00	4.35		1.05
Reservoirs				8.42
Others d/	3.00		1.06	44.21

a/ Include bamboo matting, bamboo poles, feeder bridge and net fence

b/ Include non-motorized boat, elf, trailer, truck, motorcycle, FX, jeep and multicab

c/ Include chilling container, cooler, drum, fiber glass container, kaing/tiklis, pail, strainer and tray

d/ Include digging blade, digging tool, feeding tray, kerosene lamp, spade and sikop (harvesting equipment made of bamboo stick)

Table 9. Percentage distribution of fishpond operators reporting on the number of cropping per year, selected provinces, Philippines, 2006

PROVINCE	ONE CROPPING	TWO CROPPINGS	THREE CROPPINGS
All 4 Provinces	16.76	56.70	26.54
Pangasinan	26.00	53.00	21.00
Bulacan	8.70	50.72	40.58
Capiz	4.26	74.46	21.28
Iloilo	25.26	47.37	27.37

Table 10. Percentage distribution of fishpond operators by culture method,
selected provinces, Philippines, 2006

PROVINCE	MODULAR METHOD	STRAIGHT METHOD
All 4 Provinces	44.13	55.87
Pangasinan	41.00	59.00
Bulacan	34.78	65.22
Capiz	31.91	68.09
Iloilo	66.32	33.68

Table 11. Percentage distribution of fishpond operators by month of stocking, selected provinces, Philippines, October 2005 - September 2006

MONTH	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
2005					
October	1.12	3.00		1.06	
November	1.12	3.00		1.06	
December	0.56	1.00	1.45		
2006					
January	7.54	18.00	7.25	3.19	1.05
February	6.15	7.00	5.80	7.45	4.21
March	5.87	6.00	5.80	10.64	1.05
April	8.66	6.00	7.25	10.64	10.53
May	12.29	8.00	11.59	13.83	15.79
June	19.55	14.00	24.64	17.02	24.21
July	26.80	29.00	26.07	22.35	29.48
August	8.66	3.00	7.25	11.70	12.63
September	1.68	2.00	2.90	1.06	1.05

Table 12. Percentage distribution of fishpond operators by month of harvesting,
selected provinces, Philippines, 2006

MONTH	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
January	0.56	2.00			
February	0.84	1.00		2.13	
March	2.51	8.00	1.45		
April	3.07	9.00		2.13	
May	4.75	9.00	7.25	1.06	2.11
June	6.42	5.00	8.70	8.51	4.21
July	7.54	8.00	8.70	10.64	3.16
August	12.01	4.00	13.04	15.96	15.79
September	15.92	21.00	15.94	8.51	17.89
October	28.50	21.00	26.08	31.91	34.73
November	17.60	12.00	18.84	18.09	22.11
December	0.28			1.06	

Table 13. Average quantity of stocking materials per hectare,
selected provinces, Philippines, 2006

(piece)			
PROVINCE	FRY	FINGERLING	JUVENILE
All 4 Provinces	999	2,617	34
Pangasinan	414	3,900	
Bulacan	399	3,611	71
Capiz	915	1,515	18
Iloilo	2,281	1,645	

Table 14. Average quantity of feeds used per hectare by type, selected provinces, Philippines, 2006

(kilogram)								
PROVINCE	COMMERCIAL FEEDS				NATURAL FOOD a/	SUPPLEMENTAL FEEDS		
	FRY MASH	STARTER	GROWER	FINISHER		BREAD/ BREAD CRUMBS	CRISP POP	OTHERS b/
All 4 Provinces	6.09	41.74	97.60	119.07	30.58	145.87	104.23	9.90
Pangasinan	31.38	49.00	103.69	344.70	244.78	38.15		
Bulacan	4.29	61.29	201.58	182.77	21.32	348.05	255.17	18.49
Capiz	0.11	36.77	11.98	1.52		1.16		5.84
Iloilo	6.04	12.09	11.91	53.21				3.47

a/ Includes algae/lumot

b/ Include fish meal, gelatin residue, noodles, rice bran and whole corn

Table 15. Average quantity of fertilizers used per hectare by grade, selected provinces,
Philippines, 2006

(kilogram)					
FERTILIZER	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Chicken manure	333.27	86.26	331.37	81.59	681.89
Inorganic Fertilizer					
Urea (45-0-0)	29.13	45.55	45.97	9.65	15.44
Urea (46-0-0)	26.94	41.23	11.89	28.77	44.68
Ammonium Sulfate (21-0-0)	0.47	0.83	0.15	0.12	1.24
Di-Ammonium Phosphate (18-46-0)	2.86		0.75	1.82	8.38
Ammonium Phosphate (16-20-20)	22.69	18.29		30.17	53.92
Complete (14-14-14)	3.68	27.95		2.43	2.28
Complete (12-12-12)	0.09	0.69		0.12	
Solophos (0-18-0)	0.62			2.43	

Table 16. Average quantity of lime applied per hectare by type,
selected provinces, Philippines, 2006

(kilogram)				
PROVINCE	AGRICULTURAL LIME	QUICK LIME	SLAKE LIME	OTHERS a/
All 4 Provinces	40.32	4.81	1.23	3.14
Pangasinan				
Bulacan	13.25			
Capiz	57.08	18.98		12.40
Iloilo	82.19		4.96	

a/ Include carbonated rice hull, hydrated lime & stone lime

Table 17. Average quantity of pesticides and other chemicals applied per hectare by type, selected provinces, Philippines, 2006

ITEM	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Solid Pesticides (kg)					
Tobacco dust	58.737	375.060	61.594	0.243	
Teaseed	2.023	10.441	0.068	3.298	0.908
Brestan	0.016	0.021		0.052	0.004
Sodium cyanide	0.078		0.192		
Others a/	0.001				0.006
Liquid Pesticides (l)					
Thiodan	0.002	0.001		0.003	0.005
Gusathion	0.003	0.001			0.012
Hercules	0.001				0.005
Other Chemical (kg)					
Zeolite	0.046		0.113		

a/ Include aquatin and sevin 85

Table 18. Average labor utilization per hectare by source and sex, selected provinces,
Philippines, 2006

(manday)					
SOURCE OF LABOR	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Operator					
Both Sexes	0.70	3.58	0.52	0.30	0.37
Male	0.70	3.58	0.52	0.29	0.37
Female	a/			0.01	a/
Family					
Both Sexes	0.49	0.92	0.29	0.52	0.65
Male	0.47	0.92	0.29	0.49	0.60
Female	0.02			0.03	0.05
Exchange					
Both Sexes	0.02		0.01	0.05	0.03
Male	0.02		0.01	0.04	0.03
Female	a/			0.01	
Hired					
Both Sexes	14.27	15.42	16.17	12.33	12.72
Male	14.23	15.38	16.17	12.30	12.60
Female	0.04	0.04	a/	0.03	0.12
All Sources					
Both Sexes	15.48	19.92	16.99	13.20	13.77
Male	15.42	19.88	16.99	13.12	13.60
Female	0.06	0.04	a/	0.08	0.17

a/ Less than 0.01

Table 19. Average labor utilization per hectare by farm activity and sex, selected provinces, Philippines, 2006

(manday)															
FARM ACTIVITY	ALL 4 PROVINCES			PANGASINAN			BULACAN			CAPIZ			ILOILO		
	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE
Excavation	1.06	1.06		0.46	0.46		0.81	0.81		1.66	1.66		1.09	1.09	
Pond preparation	2.77	2.77	a/	2.95	2.93	0.02	1.67	1.67		4.01	4.01		3.28	3.27	0.01
Draining / Drying	0.64	0.64	a/	0.86	0.86		0.47	0.47		1.05	1.05		0.41	0.41	a/
Lime application	0.16	0.16					0.10	0.10		0.27	0.27		0.22	0.22	
Pesticides application	0.15	0.15		0.71	0.71		0.11	0.11		0.12	0.12		0.04	0.04	
Fertilizer application	0.76	0.76	a/	0.73	0.73		0.74	0.74		0.49	0.49		1.10	1.09	0.01
Filling in of water	1.06	1.06	a/	0.65	0.63	0.02	0.25	0.25		2.08	2.08		1.51	1.51	
Transfer of stocks	1.00	1.00	a/	1.76	1.75	0.01	1.19	1.19		0.56	0.55	0.01	0.86	0.86	a/
Feeding	3.24	3.23	0.01	6.51	6.51		5.69	5.69		0.55	0.55		0.75	0.73	0.02
Harvesting	3.95	3.90	0.05	4.92	4.91	0.01	4.94	4.94	a/	2.95	2.89	0.06	3.00	2.86	0.14
Maintenance / repair of dikes	3.46	3.46	a/	3.32	3.32		2.69	2.69		3.47	3.46	0.01	4.79	4.79	
All activities	15.48	15.42	0.06	19.92	19.88	0.04	16.99	16.99	a/	13.20	13.12	0.08	13.77	13.60	0.17

a/ Less than 0.01

Table 20. Average costs and returns of milkfish production, **All Four Provinces**, 2006

ITEM	PER HECTARE			PER FARM (P)	PER KILOGRAM (P)
	QUANTITY	UNIT	VALUE (P)		
Production					
All Species	902	kg	52,698	238,708	58.46
Milkfish	888	kg	52,025	235,657	58.61
Other Species	14	kg	673	3,051	48.54
Area Harvested = 4.53 ha					
Number of farms = 358					
CASH COSTS			21,282	96,403	23.61
Stocking materials					
Fry	999	pc	356	1,611	0.39
Fingerling	2,617	pc	4,181	18,940	4.64
Juvenile	34	pc	162	736	0.18
Commercial feeds	264.51	kg	4,679	21,195	5.19
Natural food	30.58	kg	95	430	0.11
Supplemental feeds	260.00	kg	619	2,802	0.69
Fertilizers					
Organic	333.27	kg	462	2,095	0.51
Inorganic	86.48	kg	1,363	6,172	1.51
Pesticides and other chemicals					
Solid	60.90	kg	274	1,239	0.30
Liquid	0.01	l	4	16	b/
Lime	49.51	kg	174	788	0.19
Hired Labor	14.27	manday	2,737	12,400	3.04
Land tax			369	1,670	0.41
Rentals:					
Land			2,961	13,414	3.28
Machine			71	320	0.08
Tools and equipment			75	341	0.08
Boat/Motorized boat and vehicle			55	250	0.06
Salaries of permanent employees and overseer			1,755	7,949	1.95
Fuel and oil			237	1,075	0.26
Transport cost of inputs			125	566	0.14
License/permit			6	28	0.01
Electricity			136	616	0.15
Interest payment on loan			25	112	0.03
Food expense			139	629	0.15
Repairs			188	849	0.21
Others a/			35	160	0.04
NON-CASH COSTS			429	1,941	0.48
Harvesters' share	2.84	kg	151	686	0.17
Caretakers' share	2.05	kg	108	488	0.12
Other laborers' share	0.86	kg	48	217	0.05
Administrator's share	0.40	kg	28	127	0.03
Lease rental	0.09	kg	5	22	0.01
Rice allowance of overseer	4.77	kg	89	401	0.10
IMPUTED COSTS			6,385	28,923	7.08
Operator labor	0.70	manday	112	509	0.12
Family labor	0.49	manday	72	326	0.08
Exchange labor	0.02	manday	3	12	b/
Depreciation			674	3,054	0.75
Interest on operating capital			2,417	10,948	2.68
Rental value of owned pond			3,107	14,074	3.45
TOTAL COSTS			28,096	127,267	31.17
GROSS RETURNS			52,698	238,708	58.46
RETURNS ABOVE CASH COSTS			31,416	142,305	34.85
RETURNS ABOVE CASH AND NON-CASH COSTS			30,987	140,363	34.37
NET RETURNS			24,602	111,441	27.29
NET PROFIT-COST RATIO			0.88	0.88	0.88

a/ Include cooler, ice, kerosene, sacks, styropor and water

b/ Less than 0.01

Table 21. Average variable and fixed costs of milkfish production, **All Four Provinces**, 2006

(peso)

ITEM	PER HECTARE	PER FARM	PER KILOGRAM
VARIABLE COSTS	18,538	83,974	20.56
Stocking materials			
Fry	356	1,611	0.39
Fingerling	4,181	18,940	4.64
Juvenile	162	736	0.18
Commercial feeds	4,679	21,195	5.19
Natural food	95	430	0.11
Supplemental feeds	619	2,802	0.69
Fertilizers			
Organic	462	2,095	0.51
Inorganic			
Solid	1,363	6,172	1.51
Pesticides and other chemicals			
Solid	274	1,239	0.30
Liquid	4	16	a/
Lime			
Solid	174	788	0.19
Labor			
Hired Labor	2,737	12,400	3.04
Operator labor	112	509	0.12
Family labor	72	326	0.08
Exchange labor	3	12	a/
Salaries of permanent employees and overseer	1,755	7,949	1.95
Rentals:			
Machine	71	320	0.08
Tools and equipment	75	341	0.08
Boat/Motorized boat and vehicle	55	250	0.06
Fuel and oil	237	1,075	0.26
Transport cost of inputs	125	566	0.14
License/permit	6	28	0.01
Electricity	136	616	0.15
Food expense	139	629	0.15
Repairs	188	849	0.21
Harvesters' share	151	686	0.17
Caretakers' share	108	488	0.12
Other laborers' share	48	217	0.05
Administrator's share	28	127	0.03
Rice allowance of overseer	89	401	0.10
Others	35	160	0.04
FIXED COSTS	9,557	43,293	10.60
Land tax	369	1,670	0.41
Lease rental	2,966	13,436	3.29
Interest payment on loan	25	112	0.03
Depreciation	674	3,054	0.75
Interest on operating capital	2,417	10,948	2.68
Rental value of owned pond	3,107	14,074	3.45
TOTAL COSTS	28,096	127,267	31.17

a/ Less than 0.01

Table 22. Average costs and returns of milkfish production, **Pangasinan**, 2006

ITEM	PER HECTARE			PER FARM (P)	PER KILOGRAM (P)
	QUANTITY	UNIT	VALUE (P)		
Production					
All Species	1,034	kg	71,339	103,378	69.01
Milkfish	1,029	kg	71,082	103,004	69.08
Other Species	5	kg	258	373	53.89
Area Harvested = 1.45 ha					
Number of farms = 100					
CASH COSTS			31,418	45,528	30.39
Stocking materials					
Fry	414	pc	186	270	0.18
Fingerling	3,900	pc	7,723	11,192	7.47
Commercial feeds	528.76	kg	9,217	13,357	8.92
Natural food	244.78	kg	807	1,169	0.78
Supplemental feeds	38.15	kg	310	449	0.30
Fertilizers					
Organic	86.26	kg	138	200	0.13
Inorganic	134.53	kg	2,182	3,161	2.11
Pesticides					
Solid	385.52	kg	855	1,239	0.83
Liquid	a/	l	3	5	a/
Hired Labor	15.42	manday	2,998	4,344	2.90
Land tax			993	1,439	0.96
Rentals:					
Land			2,074	3,006	2.01
Machine			115	166	0.11
Tools and equipment			364	528	0.35
Vehicle			130	189	0.13
Salaries of permanent employees and overseer			1,710	2,478	1.65
Fuel and oil			492	713	0.48
Transport cost of inputs			225	326	0.22
Electricity			238	345	0.23
Interest payment on loan			7	10	0.01
Food expense			447	648	0.43
Repairs			204	296	0.20
NON-CASH COSTS			320	463	0.31
Harvesters' share	3.49	kg	212	307	0.20
Caretakers' share	0.94	kg	56	81	0.05
Other laborers' share	0.48	kg	30	43	0.03
Lease rental	0.36	kg	22	32	0.02
IMPUTED COSTS			10,548	15,285	10.20
Operator labor	3.58	manday	587	851	0.57
Family labor	0.92	manday	150	217	0.14
Depreciation			1,547	2,242	1.50
Interest on operating capital			3,907	5,662	3.78
Rental value of owned pond			4,356	6,313	4.21
TOTAL COSTS			42,285	61,276	40.91
GROSS RETURNS			71,339	103,378	69.01
RETURNS ABOVE CASH COSTS			39,921	57,850	38.62
RETURNS ABOVE CASH AND NON-CASH COSTS			39,602	57,387	38.31
NET RETURNS			29,054	42,102	28.11
NET PROFIT-COST RATIO			0.69	0.69	0.69

a/ Less than 0.01

Table 23. Average variable and fixed costs of milkfish production, **Pangasinan**, 2006

(peso)			
ITEM	PER HECTARE	PER FARM	PER KILOGRAM
VARIABLE COSTS	29,378	42,572	28.42
Stocking materials			
Fry	186	270	0.18
Fingerling	7,723	11,192	7.47
Commercial feeds	9,217	13,357	8.92
Natural food	807	1,169	0.78
Supplemental feeds	310	449	0.30
Fertilizers			
Organic	138	200	0.13
Inorganic			
Solid	2,182	3,161	2.11
Pesticides			
Solid	855	1,239	0.83
Liquid	3	5	a/
Labor			
Hired Labor	2,998	4,344	2.90
Operator labor	587	851	0.57
Family labor	150	217	0.14
Salaries of permanent employees and overseer	1,710	2,478	1.65
Rentals:			
Machine	115	166	0.11
Tools and equipment	364	528	0.35
Vehicle	130	189	0.13
Fuel and oil	492	713	0.48
Transport cost of inputs	225	326	0.22
Electricity	238	345	0.23
Food expense	447	648	0.43
Repairs	204	296	0.20
Harvesters' share	212	307	0.20
Caretakers' share	56	81	0.05
Other laborers' share	30	43	0.03
FIXED COSTS	12,907	18,704	12.49
Land tax	993	1,439	0.96
Lease rental	2,097	3,038	2.03
Interest payment on loan	7	10	0.01
Depreciation	1,547	2,242	1.50
Interest on operating capital	3,907	5,662	3.78
Rental value of owned pond	4,356	6,313	4.21
TOTAL COSTS	42,285	61,276	40.91

a/ Less than 0.01

Table 24. Average costs and returns of milkfish production, **Bulacan**, 2006

ITEM	PER HECTARE			PER FARM (P)	PER KILOGRAM (P)
	QUANTITY	UNIT	VALUE (P)		
Production					
All Species	1,233	kg	72,825	699,116	59.05
Milkfish	1,210	kg	71,804	689,315	59.35
Other Species	23	kg	1,021	9,801	43.80
Area Harvested = 9.60 ha					
Number of farms = 69					
CASH COSTS			30,617	293,928	24.83
Stocking materials					
Fry	399	pc	200	1,921	0.16
Fingerling	3,611	pc	5,845	56,114	4.74
Juvenile	71	pc	355	3,406	0.29
Commercial feeds	449.93	kg	8,282	79,504	6.72
Natural food	21.32	kg	56	538	0.05
Supplemental feeds	621.72	kg	1,375	13,196	1.11
Fertilizers					
Organic	331.37	kg	402	3,857	0.33
Inorganic	58.76	kg	816	7,833	0.66
Pesticides and other chemicals	61.97	kg	152	1,460	0.12
Lime	13.25	kg	183	1,758	0.15
Hired Labor	16.17	manday	3,655	35,090	2.96
Land tax			166	1,590	0.13
Rentals:					
Land			6,014	57,737	4.88
Machine			138	1,329	0.11
Tools and equipment			26	251	0.02
Boat/Motorized boat and vehicle			71	684	0.06
Salaries of permanent employees and overseer			2,261	21,704	1.83
Fuel and oil			179	1,720	0.15
Transport cost of inputs			36	345	0.03
Electricity			101	970	0.08
Food expense			121	1,159	0.10
Repairs			147	1,410	0.12
Others a/			37	351	0.03
NON-CASH COSTS			186	1,785	0.15
Harvesters' share	1.97	kg	94	906	0.08
Caretakers' share	1.58	kg	50	481	0.04
Other laborers' share	0.29	kg	13	125	0.01
Lease rental	0.10	kg	5	47	b/
Rice allowance of overseer	1.21	kg	24	226	0.02
IMPUTED COSTS			8,056	77,333	6.53
Operator labor	0.52	manday	101	967	0.08
Family labor	0.29	manday	60	577	0.05
Exchange labor	0.01	manday	2	15	b/
Depreciation			519	4,982	0.42
Interest on operating capital			3,411	32,748	2.77
Rental value of owned pond			3,963	38,043	3.21
TOTAL COSTS			38,859	373,046	31.51
GROSS RETURNS			72,825	699,116	59.05
RETURNS ABOVE CASH COSTS			42,207	405,189	34.23
RETURNS ABOVE CASH AND NON-CASH COSTS			42,021	403,404	34.08
NET RETURNS			33,966	326,071	27.54
NET PROFIT-COST RATIO			0.87	0.87	0.87

a/ Include cooler, sacks, ice and water

b/ Less than 0.01

Table 25. Average variable and fixed costs of milkfish production, **Bulacan**, 2006

(peso)			
ITEM	PER HECTARE	PER FARM	PER KILOGRAM
VARIABLE COSTS	24,781	237,898	20.10
Stocking materials			
Fry	200	1,921	0.16
Fingerling	5,845	56,114	4.74
Juvenile	355	3,406	0.29
Commercial feeds	8,282	79,504	6.72
Natural food	56	538	0.05
Supplemental feeds	1,375	13,196	1.11
Fertilizers			
Organic	402	3,857	0.33
Inorganic			
Solid	816	7,833	0.66
Pesticides and other chemicals			
Solid	152	1,460	0.12
Lime			
Solid	183	1,758	0.15
Labor			
Hired Labor	3,655	35,090	2.96
Operator labor	101	967	0.08
Family labor	60	577	0.05
Exchange labor	2	15	a/
Salaries of permanent employees and overseer	2,261	21,704	1.83
Rentals:			
Machine	138	1,329	0.11
Tools and equipment	26	251	0.02
Boat/Motorized boat and vehicle	71	684	0.06
Fuel and oil	179	1,720	0.15
Transport cost of inputs	36	345	0.03
Electricity	101	970	0.08
Food expense	121	1,159	0.10
Repairs	147	1,410	0.12
Harvesters' share	94	906	0.08
Caretakers' share	50	481	0.04
Other laborers' share	13	125	0.01
Rice allowance of overseer	24	226	0.02
Others	37	351	0.03
FIXED COSTS	14,078	135,147	11.42
Land tax	166	1,590	0.13
Lease rental	6,019	57,783	4.88
Depreciation	519	4,982	0.42
Interest on operating capital	3,411	32,748	2.77
Rental value of owned pond	3,963	38,043	3.21
TOTAL COSTS	38,859	373,046	31.51

a/ Less than 0.01

Table 26. Average costs and returns of milkfish production, **Capiz**, 2006

ITEM	PER HECTARE			PER FARM (P)	PER KILOGRAM (P)
	QUANTITY	UNIT	VALUE (P)		
Production					
All Species	507	kg	24,252	106,091	47.80
Milkfish	503	kg	23,844	104,305	47.36
Other Species	4	kg	408	1,787	103.98
Area Harvested = 4.37 ha					
Number of farms = 94					
CASH COSTS			10,287	44,999	20.27
Stocking materials					
Fry	915	pc	575	2,516	1.13
Fingerling	1,515	pc	1,784	7,803	3.52
Juvenile	18	pc	69	303	0.14
Commercial feeds	50.38	kg	753	3,295	1.48
Supplemental feeds	6.99	kg	82	360	0.16
Fertilizers					
Organic	81.59	kg	168	734	0.33
Inorganic	75.52	kg	1,262	5,519	2.49
Pesticides					
Solid	3.59	kg	475	2,079	0.94
Liquid	b/	l	4	17	0.01
Lime	88.46	kg	165	724	0.33
Hired Labor	12.33	manday	1,859	8,133	3.66
Land tax			285	1,246	0.56
Rentals:					
Land			708	3,098	1.40
Machine			13	56	0.03
Tools and equipment			108	471	0.21
Motorized boat and vehicle			29	126	0.06
Salaries of permanent employees and overseer			1,157	5,063	2.28
Fuel and oil			194	847	0.38
Transport cost of inputs			161	704	0.32
License/permit			2	11	b/
Electricity			65	284	0.13
Interest payment on loan			95	415	0.19
Food expense			120	523	0.24
Repairs			149	652	0.29
Others a/			5	21	0.01
NON-CASH COSTS			268	1,172	0.53
Harvesters' share	1.75	kg	86	377	0.17
Caretakers' share	0.85	kg	39	170	0.08
Other laborers' share	0.36	kg	16	72	0.03
Rice allowance of overseer	6.63	kg	126	553	0.25
IMPUTED COSTS			3,601	15,753	7.10
Operator labor	0.30	manday	34	149	0.07
Family labor	0.52	manday	66	289	0.13
Exchange labor	0.05	manday	5	22	0.01
Depreciation			418	1,830	0.82
Interest on operating capital			1,151	5,037	2.27
Rental value of owned pond			1,926	8,426	3.80
TOTAL COSTS			14,156	61,924	27.90
GROSS RETURNS			24,252	106,091	47.80
RETURNS ABOVE CASH COSTS			13,966	61,093	27.53
RETURNS ABOVE CASH AND NON-CASH COSTS			13,698	59,920	27.00
NET RETURNS			10,097	44,167	19.90
NET PROFIT-COST RATIO			0.71	0.71	0.71

a/ Include styropor and water

b/ Less than 0.01

Table 27. Average variable and fixed costs of milkfish production, **Capiz**, 2006

(peso)			
ITEM	PER HECTARE	PER FARM	PER KILOGRAM
VARIABLE COSTS	9,572	41,872	18.87
Stocking materials			
Fry	575	2,516	1.13
Fingerling	1,784	7,803	3.52
Juvenile	69	303	0.14
Commercial feeds	753	3,295	1.48
Supplemental feeds	82	360	0.16
Fertilizers			
Organic	168	734	0.33
Inorganic			
Solid	1,262	5,519	2.49
Pesticides			
Solid	475	2,079	0.94
Liquid	4	17	0.01
Lime			
Solid	165	724	0.33
Labor			
Hired Labor	1,859	8,133	3.66
Operator labor	34	149	0.07
Family labor	66	289	0.13
Exchange labor	5	22	0.01
Salaries of permanent employees and overseer	1,157	5,063	2.28
Rentals:			
Machine	13	56	0.03
Tools and equipment	108	471	0.21
Motorized boat and vehicle	29	126	0.06
Fuel and oil	194	847	0.38
Transport cost of inputs	161	704	0.32
License/permit	2	11	a/
Electricity	65	284	0.13
Food expense	120	523	0.24
Repairs	149	652	0.29
Harvesters' share	86	377	0.17
Caretakers' share	39	170	0.08
Other laborers' share	16	72	0.03
Rice allowance of overseer	126	553	0.25
Others	5	21	0.01
FIXED COSTS	4,584	20,052	9.03
Land tax	285	1,246	0.56
Lease rental	708	3,098	1.40
Interest payment on loan	95	415	0.19
Depreciation	418	1,830	0.82
Interest on operating capital	1,151	5,037	2.27
Rental value of owned pond	1,926	8,426	3.80
TOTAL COSTS	14,156	61,924	27.90

a/ Less than 0.01

Table 28. Average costs and returns of milkfish production, Iloilo, 2006

ITEM	PER HECTARE			PER FARM (P)	PER KILOGRAM (P)
	QUANTITY	UNIT	VALUE (P)		
Production					
All Species	711	kg	41,942	177,979	58.98
Milkfish	699	kg	41,420	175,763	59.23
Other Species	12	kg	522	2,216	44.30
Area Harvested = 4.24 ha					
Number of farms = 95					
CASH COSTS			13,516	57,354	19.01
Stocking materials					
Fry	2,281	pc	449	1,903	0.63
Fingerling	1,645	pc	2,620	11,117	3.68
Commercial feeds	83.25	kg	1,133	4,808	1.59
Supplemental feeds	3.47	kg	34	145	0.05
Fertilizers					
Organic	681.89	kg	979	4,154	1.38
Inorganic	125.94	kg	2,070	8,782	2.91
Pesticides					
Solid	0.92	kg	59	249	0.08
Liquid	0.02	l	9	39	0.01
Lime	87.15	kg	230	977	0.32
Hired Labor	12.72	manday	2,032	8,622	2.86
Land tax			563	2,391	0.79
Rentals:					
Land			562	2,383	0.79
Machine			2	11	b/
Tools and equipment			19	80	0.03
Motorized boat and vehicle			29	124	0.04
Salaries of permanent employees and overseer			1,549	6,573	2.18
Fuel and oil			286	1,212	0.40
Transport cost of inputs			199	844	0.28
License/permit			22	93	0.03
Electricity			229	973	0.32
Food expense			77	328	0.11
Repairs			287	1,219	0.40
Others a/			77	326	0.11
NON-CASH COSTS			1,030	4,371	1.45
Harvesters' share	5.14	kg	290	1,231	0.41
Caretakers' share	4.42	kg	291	1,237	0.41
Other laborers' share	2.44	kg	144	612	0.20
Administrator's share	1.61	kg	112	477	0.16
Lease rental	0.07	kg	4	15	0.01
Rice allowance of overseer	10.43	kg	189	800	0.27
IMPUTED COSTS			4,983	21,147	7.01
Operator labor	0.37	manday	41	173	0.06
Family labor	0.65	manday	70	295	0.10
Exchange labor	0.03	manday	3	13	b/
Depreciation			876	3,718	1.23
Interest on operating capital			1,538	6,528	2.16
Rental value of owned pond			2,456	10,421	3.45
TOTAL COSTS			19,529	82,873	27.47
GROSS RETURNS			41,942	177,979	58.98
RETURNS ABOVE CASH COSTS			28,426	120,625	39.98
RETURNS ABOVE CASH AND NON-CASH COSTS			27,396	116,253	38.53
NET RETURNS			22,412	95,106	31.52
NET PROFIT-COST RATIO			1.15	1.15	1.15

a/ Include ice and kerosene

b/ Less than 0.01

Table 29. Average variable and fixed costs of milkfish production, Iloilo, 2006

(peso)			
ITEM	PER HECTARE	PER FARM	PER KILOGRAM
VARIABLE COSTS	13,531	57,416	19.03
Stocking materials			
Fry	449	1,903	0.63
Fingerling	2,620	11,117	3.68
Commercial feeds	1,133	4,808	1.59
Supplemental feeds	34	145	0.05
Fertilizers			
Organic	979	4,154	1.38
Inorganic			
Solid	2,070	8,782	2.91
Pesticides			
Solid	59	249	0.08
Liquid	9	39	0.01
Lime			
Solid	230	977	0.32
Labor			
Hired Labor	2,032	8,622	2.86
Operator labor	41	173	0.06
Family labor	70	295	0.10
Exchange labor	3	13	a/
Salaries of permanent employees and overseer	1,549	6,573	2.18
Rentals:			
Machine	2	11	a/
Tools and equipment	19	80	0.03
Motorized boat and vehicle	29	124	0.04
Fuel and oil	286	1,212	0.40
Transport cost of inputs	199	844	0.28
License/permit	22	93	0.03
Electricity	229	973	0.32
Food expense	77	328	0.11
Repairs	287	1,219	0.40
Harvesters' share	290	1,231	0.41
Caretakers' share	291	1,237	0.41
Other laborers' share	144	612	0.20
Administrator's share	112	477	0.16
Rice allowance of overseer	189	800	0.27
Others	77	326	0.11
FIXED COSTS	5,999	25,456	8.44
Land tax	563	2,391	0.79
Lease rental	565	2,399	0.79
Depreciation	876	3,718	1.23
Interest on operating capital	1,538	6,528	2.16
Rental value of owned pond	2,456	10,421	3.45
TOTAL COSTS	19,529	82,873	27.47

a/ Less than 0.01

Table 30. Average costs and returns of milkfish production per hectare by major cost item, selected provinces, Philippines, 2006

(peso)				
ITEM	PANGASINAN	BULACAN	CAPIZ	ILOILO
Cash costs	31,418	30,617	10,287	13,516
Non-cash costs	320	186	268	1,030
Imputed Costs	10,548	8,056	3,601	4,983
Total costs	42,285	38,859	14,156	19,529
Gross returns	71,339	72,825	24,252	41,942
Returns above cash costs	39,921	42,207	13,966	28,426
Returns above cash and non-cash costs	39,602	42,021	13,698	27,396
Net returns	29,054	33,966	10,097	22,412
Net profit-cost ratio	0.69	0.87	0.71	1.15
Cost per kilogram	40.91	31.51	27.90	27.47

Table 31. Percentage distribution of milkfish produce by disposition item,
selected provinces, Philippines, 2006

DISPOSITION ITEM	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Sold	98.87	98.56	99.56	98.70	97.20
Harvesters' share	0.28	0.29	0.15	0.29	0.66
Caretakers' share	0.15	0.07	0.03	0.12	0.54
Other laborers' share	0.08	0.04	0.02	0.05	0.29
Administrator's share	0.04				0.22
Lease rental	0.01	0.03	0.01		0.01
For home consumption	0.24	0.35	0.05	0.51	0.51
Given away	0.33	0.65	0.18	0.32	0.57

Table 32. Percentage of fishpond operators reporting problems on production,
selected provinces, Philippines, 2006

PRODUCTION PROBLEM	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Pests and diseases	15.92	3.00	5.80	44.68	8.42
High cost of stocking materials	30.73	28.00	13.04	53.19	24.21
High cost of fertilizers	49.16	48.00	13.04	60.64	65.26
High cost of other inputs a/	5.59	8.00	4.35	8.51	1.05
Bad weather conditions / Natural calamities	50.56	30.00	81.16	71.28	29.47
Lack of capital	15.64	10.00	10.14	26.60	14.74
Pollutants / Siltation	36.03	31.00	71.01	46.81	5.26
Unavailability of stocking materials	4.19	4.00	1.45	5.32	5.26
Peace and order situation	1.40		4.35		2.11
Poor quality of stocking materials	1.96		4.35	2.13	2.11
Poor drainage / canal	0.84	1.00	1.45		1.05

a/ Include chemicals, feeds, pesticides, labor and land rentals

Table 33. Percentage of fishpond operators reporting on major buyer of produce,
selected provinces, Philippines, 2006

PROVINCE	AGENT	WHOLESALE	RETAILER	WHOLESALE - RETAILER	CONSUMER	CONSIGNMENT
All 4 Provinces	26.26	48.88	7.26	18.16	1.68	3.63
Pangasinan		91.00		8.00		3.00
Bulacan	84.06				2.90	14.49
Capiz	25.53	51.06	12.77	15.96	2.13	
Iloilo	12.63	37.89	14.74	44.21	2.11	

Table 34. Percentage of fishpond operators reporting problems on marketing of produce, selected provinces, Philippines, 2006

PROVINCE	UNSTABLE PRICE	ROUGH ROADS/ HIGH TRANSPORT COST	LOW PRICE OF PRODUCE	NO BUYER/ MARKET OUTLET	LACK OF MARKETING INFORMATION	FISH CARTEL
All 4 Provinces	46.09	12.29	51.68	0.56	6.70	0.84
Pangasinan	57.00	20.00	43.00	1.00	10.00	
Bulacan	31.88		55.07		1.45	4.35
Capiz	53.19	15.96	50.00	1.06	11.70	
Iloilo	37.89	9.47	60.00		2.11	

Table 35. Percentage of fishpond operators who availed loans for milkfish production, selected provinces, Philippines, 2006

PROVINCE	PERCENT WHO AVAILED LOANS
All 4 Provinces	4.47
Pangasinan	3.00
Bulacan	4.35
Capiz	7.45
Iloilo	3.16

Table 36. Percentage distribution of fishpond operators who availed loans by source, selected provinces, Philippines, 2006

PROVINCE	COOPERATIVE	BANK	PRIVATE INDIVIDUAL	FEEDS MANUFACTURER
All 4 Provinces	12.50	25.00	50.00	12.50
Pangasinan		33.33	66.67	
Bulacan		33.33		66.67
Capiz	28.57	28.57	42.86	
Iloilo			100.00	

Table 37. Percentage of fishpond operators who consulted / used
advice of government and private extension agents,
selected provinces, Philippines, 2006

PROVINCE	GOVERNMENT EXTENSION AGENTS	PRIVATE EXTENSION AGENTS
All 4 Provinces	3.63	8.94
Pangasinan	2.00	7.00
Bulacan	4.35	20.29
Capiz	5.32	3.19
Iloilo	3.16	8.42

Table 38. Percentage distribution of fishpond operators reporting on the plan of operation, selected provinces, Philippines, 2006

PROVINCE	MAINTAIN CURRENT OPERATION	EXPAND OPERATION	STOP MILKFISH OPERATION		
			SELL THE FISHPOND	VENTURE WITH OTHER SPECIES	NO AVAILABLE CAPITAL
All 4 Provinces	78.21	19.27	1.12	0.84	0.56
Pangasinan	77.00	21.00	2.00		
Bulacan	72.46	18.84	2.90	4.35	1.45
Capiz	81.91	18.09			
Iloilo	80.00	18.95			1.05

Table 39. Percentage of fishpond operators reporting on the recommendations for further improvement of milkfish industry, selected provinces, Philippines, 2006

RECOMMENDATION	ALL 4 PROVINCES	PANGASINAN	BULACAN	CAPIZ	ILOILO
Technical assistance	13.41	9.00	1.45	29.79	10.53
Financial assistance	11.45	5.00	8.70	12.77	18.95
Lower price of inputs	12.57	15.00	13.04	21.28	1.05
Control pollutants / siltation	10.34		26.09	20.21	
Improve canal / drainage	5.59	13.00	7.25		2.11
Input subsidy	5.03	12.00	4.35	3.19	
Price support for milkfish	5.03		1.45	10.64	7.37
Regulate fishpen operation	4.75	17.00			
Market support	3.63	4.00		6.38	3.16
Improve quality of stocking materials	4.19			3.19	12.63
Others a/	2.51			7.45	2.11

a/ Include lower tax & rental for the use of land, and improvement of farm to market road



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