

COST OF AND RETURNS FROM BANGOS
PRODUCTION BY SIZE OF FARM AND TYPE OF CLIMATE

by

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Introduction

In general bangos farming requires large amounts of capital for the development of swamps into ponds and for the actual operation of ponds. For this reason, it is important to consider costs and returns for alternative sizes of fish-farming operations in order to select the size that will yield the best returns. Also, an important factor in successful fish farming is climate because the productivity of ponds depends largely on the abundance of algae, the natural food of bangos. Climate influences the amount of sunlight and rainfall which in turn influences the growth of algae in the ponds.

This is a discussion of the production costs, yields, and profitability of different sizes of fish farming operations, and of fish farms operating under different types of Philippine climate.

Source of Data

The data used in this paper come from studies conducted by the Special Studies Division, Department of Agriculture, that deal with bangos production costs with different climatic conditions. In a study of 93 fish-pond operators, Carandang and Darrah^{1/} reported that the costs and returns in producing bangos varies by size of farm and that fish farming on a large scale tends to be more profitable than on small scale. Then in another study, Guerrero and Darrah^{2/} reported that fishponds under Type I climate (two pronounced seasons--dry December through April, wet during the rest of the year) showed the best results in bangos production compared to the other types of Philippine climate. This study used data from 100 fishpond operators.

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^{1/}Carandang, F.L., and L. B. Darrah. "Bangos Production Costs", DANR-NFAC 73-10, May 1973.

^{2/}Guerrero, C.V., and L. B. Darrah, "Bangos Production Costs by Type of Climate", DANR-NFAC 74-21, August 1974.

Production Expenses, Yield, and Net Income According to Size of Farms

The expenses, per hectare of rearing ponds, incurred in bangos production was ₱2,481.00 for fish farms of less than 10 hectares compared to only ₱1,567.00 and ₱1,418.00 per hectare for farms of 10-39 hectares and 40 and over hectares, respectively (Table 1). The yield, in terms of bangos sales, was 638 kilos for fishponds of less than 10 hectares and 678 kilos for those with 10-39 hectares. The yield of fish farms 40 hectares and over was also 678 kilos per hectare.

The yield per hectare of rearing ponds was essentially the same for all sizes of fish farms, while the expenses incurred were much larger for small farms than the larger farms.

The production cost averaged ₱3.89 per kilo for fishponds below 10 hectares compared to ₱2.31 and ₱2.09 for farms of 10-39 hectares and 40 and over hectares, respectively (Table 1). As indicated earlier, this was due to the higher costs of operation of small farms.

Table 2 shows the profitability of fish farming per hectare of rearing ponds according to size of operations. Fishponds of less than 100 hectares incurred a net loss of ₱2 compared with gains of ₱300 and ₱404 per hectare for those that had 10-39 hectares and 40 and over hectares, respectively.

Based on kilos of bangos sold per hectare, fishponds of less than 10 hectares showed no profit (prior to marketing cost), gains of ₱0.44 per kilo (prior to marketing cost) and ₱0.75 per kilo (prior to marketing cost) were recorded for those farms with 10-39 hectares and 40 and over hectares, respectively (Table 4).

Table 1. Production Expenses and Quantity of Bangos Sold by Size of Farms, 93 Fish Farms, Philippines, 1973.

Item	Hectares of rearing ponds			All Farms
	Less than 10	10-39	40 and over	
<u>Pesos per hectare of rearing ponds</u>				
Expenses:				
Interest on capital, repairs, depreciation, taxes	721	742	547	621
Labor	1,114	468	432	480
Fry and fingerling, of bangos and other species	339	164	135	155
Fertilizer, chicken manure, chemicals, supplementary feeds	147	141	213	186
Fuel, oil, and miscellaneous supplies	3	7	31	22
Rental of fishpond site	157	45	60	60
Total: Per hectare of rearing ponds	2,481	1,567	1,418	1,524
Per kilo of bangos sold	3.89	2.31	2.09	2.25
Bangos sold per ha. of rearing ponds (kilos)	638	678	678	677

Table 2. Gross Income, Expenses, and Net Income by Size of Farm, 93 Fish Farms, Philippines, 1972

Item	Hectares of rearing ponds			All Farms
	Less than 10	10-39	40 and over	
<u>Pesos per hectare of rearing ponds</u>				
Gross income	2,479	1,867	1,923	1,936
Gross expenses	2,481	1,567	1,418	1,524
Net income	2	300	505	412
<u>Pesos per kilo of bangos sold</u>				
Gross income	3.89	2.75	2.84	2.86
Gross expenses	3.89	2.31	1.09	2.25
Net income	0	0.44	0.75	0.61

Production Expenses, Yield and Net Income by Type of Climate

The Philippines has four rather distinct types of climate, namely:

Type I : Two pronounced seasons. Dry December through April, wet during the rest of the years;

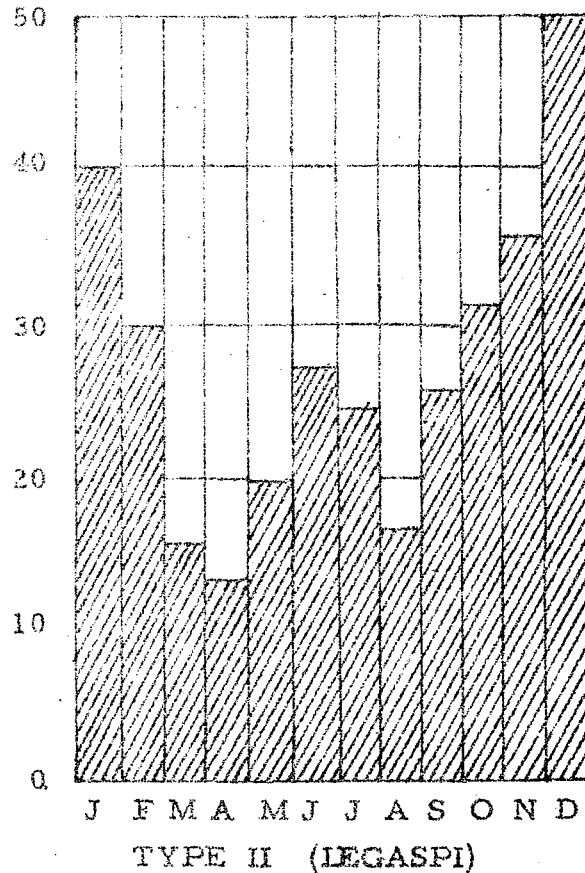
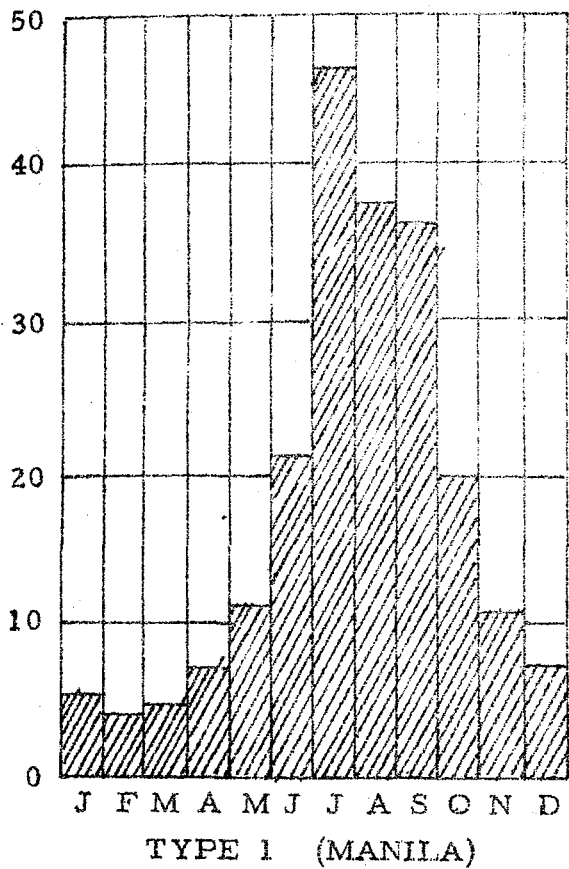
Type II : No dry season. Very pronounced rainfall November through January.

Type III : Seasons not very pronounced. Relatively dry January through April and wet during the rest of the year; and

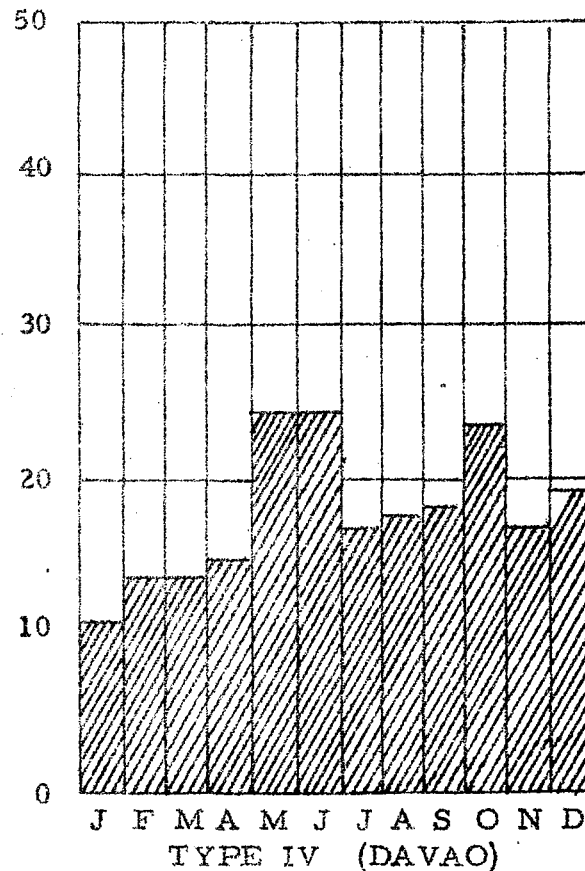
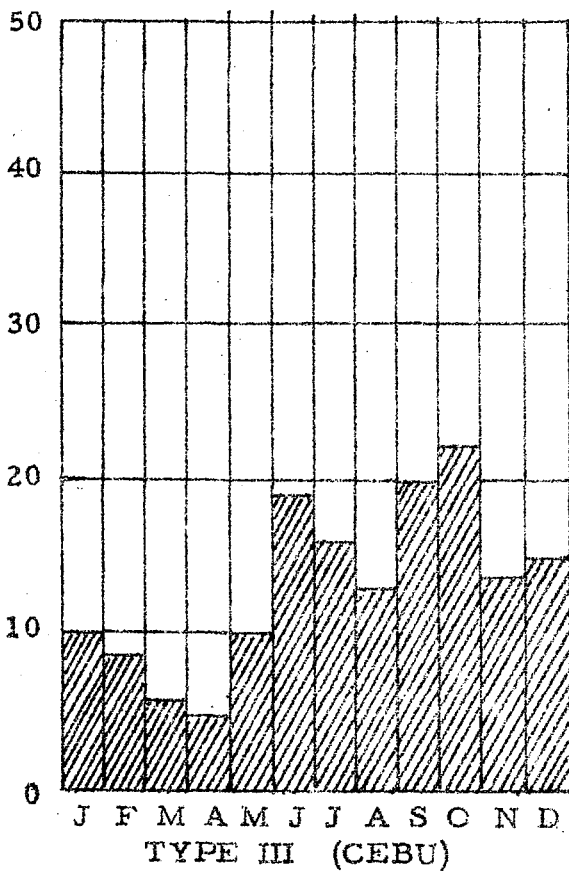
Type IV : Rainfall more or less evenly distributed throughout the year (Fig. 1).

Table 3 compares the production expenses per hectare of rearing ponds for farms under the four types of climate. For Type I, total expenses per hectare were ₱3,262.00, for Type II expenses were ₱1,499.00 and for Types III and IV, expenses were ₱1,161.00 and ₱902.00, respectively.

Yield in terms of bangos sold averaged 1,169 kilos for Type I. For the other types of climate, the yield did not vary much, being 422 kilos, 312 kilos and 329 kilos for Types II, III and IV, respectively.



RAINFALL (cm.)



RAINFALL (cm.)

FIG. 1. MONTHLY DISTRIBUTION OF RAINFALL
(Average observations for 52 years)

Table 3. Production Expenses and Quantity of Bangos Sold by Type of Climate, 100 Fish Farms, Philippines, 1973

	Type of Climate			
	Type I Two pro- nounced seasons	Type II No dry season	Type III Seasons not very pronounced	Type IV Rainfall more or less evenly distributed
<u>Pesos per hectare of rearing ponds</u>				
<u>Expenses:</u>				
Interest on capital, depreciation and taxes	1,448	700	554	424
Labor	630	474	382	263
Fry and fingerlings of bangos and other species	486	191	87	72
Fertilizer, chicken manure, chemicals and supplementary feeds	313	57	73	61
Fuel, oil and mis- cellaneous and supplies	35	23	17	16
Rental of fishpond site	350	54	48	66
Total: Per hectare of rearing ponds	3,262	1,499	1,161	902
Per kilo of bangos sold	2.79	3.55	3.71	2.74
Bangos sold per ha. of rearing ponds (kilos)	1,169	422	312	329

The cost of producing bangos averaged ₱2.79 per kilo for Type I climate, ₱3.55 for Type II and ₱3.71 for Type III. The cost averaged ₱2.74 for Type IV, or almost the same as for Type I (Table 3). Although production costs per kilo were essentially the same for Types I and IV, fishponds under Type I had the advantage of having much higher yields per hectare, 1,169 kilos compared to only 329 for Type IV.

Table 4 shows the net income for fishpond operations under the four different types of Philippine climate. For those under Type I, a net income of ₱1,249 was recorded; for Type II, ₱182; for Type III, ₱59; and for Type IV, ₱258 per hectare of rearing ponds. (Net income prior to marketing costs).

Table 4. Gross Income, Expenses and Net Income by Type of Climate, 100 Fish Farms, Philippines, 1973

Item	Type of Climate				All Farms
	Type I Two pronounced seasons	Type II No dry season	Type III Seasons not very pronounced	Type IV Rainfall more or less evenly distributed	
	<u>Pesos per hectare of rearing ponds</u>				
Gross income	4,511	1,681	1,220	1,160	
Total expenses	3,262	1,499	1,161	902	
Net income	1,249	182	59	258	
	<u>Pesos per kilo of bangos sold</u>				
Gross income	3.86	3.98	3.90	3.53	3.82
Total expenses	2.79	3.55	3.71	2.74	2.95
Net income	1.07	0.43	0.19	0.79	0.87

Profitability per kilo of bangos sold under different climates is also illustrated in Table 4. Net income averaged ₱1.07 for Type I, ₱0.43 for Type II, ₱0.19 for Type III and ₱0.79 for Type IV.

Type III fishponds had the smallest profit because of low yields and the relatively higher expenses incurred per hectare.

CONCLUSION

Fishponds of less than 10 hectares of rearing ponds essentially broke even. Operators under this category benefited mainly in terms of employment of the operator and his family on the fish farm.

The type I climate appeared to be the best for bangos production. However, management and market factors are also involved in bangos production. The true impact of climate on production can best be determined by controlled experiments in the different climatic areas.