

Economics of Pompano Production in RAS



Amy Zwemer

Pompano RAS = Profits?

Every situation is different...

Today's Example:

Boutique sized farm (small – niche market)

Market – Direct to Restaurants and Consumers

Parameters – HB Commercial RAS Demonstration results

Reminder:

We are providing the results of the studies conducted at Harbor Branch. While we feel the assumptions made in assessing the financial viability are reasonable. Each case is different and you must do your own due diligence to determine if an investment in commercial RAS Pompano farming will be profitable for you.

Study Methods

System:	Low-Head RAS
Water Temperature:	27-30c
Dissolved Oxygen:	110 +/- 10%
Alkalinity:	200-250 mg/l
Light / Dark:	18h:6h
Salinity - egg to 5.5g:	> 28.0 ppt
Salinity - 5.5g to 75g:	12.0 +/- .05 ppt
Salinity - 75g to 680g:	8.0 +/- .05 ppt

Production Stages

1	Larval	Egg to 0.1g
2	Juvenile	0.1g to 5.5g
3	Initial Growout	5.5g to 75g
4	Final Growout	75g to 680g (1 ½ lbs)

Lets do the numbers...

Study Results – Completed Stages

	Unit	Stage 1	Stage 2	Stage 3	Total
Initial Weight	g	0	0.10	5.50	
Harvest Weight	g	0.10	5.50	75	
Production Cycle	Days	23	30	86	139
Stocking Density	kg/m ³	1	10	45	
FCR		2.90	1.42	2.14	
Survival Rate		28%	59%	95%	15.7%
Salinity	ppt	> 28	> 28	12	

Stage 4 - Incomplete

Final Growout – Results from prior USDA study

	Unit	Stage 4	Total
Initial Weight	g	75	
Harvest Weight	g	680	
Production Cycle	Days	240	379
Stocking Density	kg/m ³	45	
FCR		3.74	
Survival Rate		63%	9.9%
Salinity	ppt	8	

Feed Types

Stage 1 – Otohime™ (A – B2)

Stage 2 – Otohime™ (C1 – S2)
and Feed - 45% Protein

Stage 3 & 4 – Feed - 45% Protein

Baseline Assumptions:

Use Harbor Branch demonstration tank systems

Monthly Production – 8,000 lbs whole fish
(one 25 ft tank at 45 kg/M³ density)

11 HP consumed each hour

1.5 % System water loss per day

Cost Assumptions

Feed Cost – \$32 for 50 lb bag for 45% protein
(actual price, not bought in bulk)

Egg Cost - \$350 per 10,000

Manager Annual Salary - \$60,000

Transfer / Harvest labor	60 hours at \$8 an Hour
Full time farm staff	2 at \$10 an Hour

Direct Variable Cost per lb

	Stage 1	Stage 2	Stage 3	Stage 4	Total
Eggs	629.667	-	-	-	0.236
Feed	35.000	3.009	1.264	1.975	2.250
Oxygen	-	0.065	0.089	0.139	0.156
Water	0.333	0.009	0.001	0.002	0.002
Electric	181.333	6.574	1.452	0.709	1.120
Harvest Labor			0.114	0.040	0.060
Total Variable					3.824

Overhead Assumptions

Overhead items included in the economic analysis

Manager's Salary

Hourly staff (non harvest)

System Maintenance

(estimated at 1% of equipment costs)

Overhead costs NOT included

Chemicals

Computers / Printers

Phone System

Copier

Office Furniture

Marketing expenses

Website / Social Media

Legal / Accounting

Insurance

Vehicles

Revenue Assumptions

Price per lb whole fish – \$7.00

This is not a reasonable wholesale price, this assumes that a premium price is obtained by direct marketing

Boutique Financial Results without Capital Costs

Annual

Sales		<u>672,000</u>
Less: Variable Costs		
	Eggs	22,668
	Feed	215,976
	Oxygen	14,964
	Water	180
	Electric	107,520
	Harvest Labor	<u>5,760</u>
		<u>367,068</u>
	Gross Margin	<u><u>304,932</u></u>
Overhead		
	Manager	60,000
	Staff	41,600
	System Maintenance (1% Equip)	12,425
	Total Overhead	<u>114,025</u>
	Operating Income	<u><u>190,907</u></u>

Annual Production in lbs

96,000

Tanks and System Equipment Costs

Stage 1:	2	4'8" x 2'	2,500
Stage 2:	5	4'10" x 3'	9,000
Stage 3:	6	10' x 3'6"	444,600
Stage 4:	8	25' x 6'	<u>786,400</u>
Approximate Cost			\$1,242,500

Can Produce – 96,000 lbs per year (whole fish)

Approximate Square Feet Needed - 20,200

Equipment Capital Costs are Added...

Loan Assumptions:

% Financing		75%
Interest Rate		6%
Equipment Term	Years	10

Loan

Principle	931,875
1 st Year Interest	54,004
Annual P&I Pymts	124,149

Boutique Financial Results **with** Equipment Costs

Annual P&L

Sales 672,000

Less:

Total Variable Costs 367,068

Gross Margin 304,932

Overhead Total Overhead 114,025

Operating Income 190,907

Non-Operating Expenses

Interest Expense-Equip 54,004

Depreciation-Equip 124,250

Total Non-Operating Expenses 178,254

Net Income 12,653

Annual Production in lbs 96,000

Location, Location, Location...

Assumption – an existing warehouse will be purchased for our Boutique Farm

Pricing based on properties available in this area (older property on the low end of the price scale)

21,000 sf Warehouse on .7 Acres

Purchase price: \$368,000

Real Estate Costs are Added...

Loan Assumptions:

% Financing

75%

Interest Rate

5%

Real Estate Term Years

20

Loan

Principle

275,943

1st Year Interest

13,610

Annual P&I Pymt

21,853

Boutique Financial Results

Annual P&L

Sales		672,000
Less:		
	Total Variable Costs	367,068
		<hr/>
	Gross Margin	304,932
		<hr/>
Overhead	Total Overhead	114,025
		<hr/>
	Operating Income	190,907
		<hr/>
Non-Operating Expenses		
	Interest Expense-Equip	54,004
	Depreciation-Equip	124,250
	Interest Expense-Bldg	13,610
	Depreciation-Bldg	18,151
		<hr/>
	Total Non-Operating Expenses	210,015
		<hr/>
	Net Income	(19,108)
		<hr/>
Annual Production in lbs		96,000

But CASH is King...

Cash Flow - Annual from first Harvest

Operating Income/Loss	190,907
Less:	
Principle and Interest - Equip	124,149
Remaining Cash	<hr/> 66,758
Principle and Interest - Bldg	21,853
Remaining Cash	<hr/> 44,905

Start up Cash...

Down Payment

Equipment	310,625
Real Property	<u>91,981</u>
	402,606

Working Capital

13 Months	<u>315,000</u>
Total	717,606

Conclusions – Small Scale

Producing Pompano Commercially in RAS has potential in a niche market if the sales price can be kept at \$7 or above

Could broaden offerings to customers, if you currently have a direct market customer base for other species

Conclusions – Large Scale

Profitability on a large scale with wholesale prices at \$5.25 would be difficult without significant savings in feed and equipment costs as well as improvements in survival rates and FCRs

We will look at some models which will demonstrate the challenges that remain for a large commercial venture using the results presented today

Data Modeling Using Excel