

Preliminary Financial Feasibility Analysis for a Two-Acre Hard Clam Culture Farm in the Southwest Florida Area*

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* Prepared for presentation at workshops held in Collier County for new growers. This serves as an update to the UF Food and Resource Economics Department Staff Paper (SP95-8) authored by Chuck Adams and P.J. van Blokland in October 1995 entitled "Economic and Financial Considerations regarding Small-scale Commercial Culture of Hard Clams in the Cedar Key Area of Florida."

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PRODUCTION ASSUMPTIONS

- **Two-acre shellfish aquaculture lease in southwest Florida area**
- **Maximum 2-year grow-out period, which combines both nursery and grow-out phases**
- **Nursery phase is ~ 3 months**
- **Grow-out phase is ~ 10-14 months**
- **Harvest period is extended over several months as dictated by demand, environmental conditions, growth, etc.**
- **Production on total lease area is staggered:**
 - **One acre is planted in Year 1**
 - **One acre is planted in Year 2**
- **Nursery bags are stocked at a density of 10,000 clams per bag**
- **Grow-out bags are stocked at about 60 clams per square foot, or ~ 1000 per bag**
- **Planting 1,070,000 seed clams per acre**
- **Survival rates are:**
 - **Nursery: 70%**
 - **Grow-out: 80%**
 - **Overall: 56%**
- **Size distribution of clams harvested per grow-out bag is assumed to be:**
 - **1" littlenecks: 80%**
 - **7/8" pastas: 20%**

FINANCIAL ASSUMPTIONS

- **Seed clams are purchased at 4-6 mm at a price of \$0.008 each, or \$8 per thousand**
- **Market price of clams:**
 - **1” clams: \$0.09 each**
 - **7/8” clams: \$0.07 each**
- **All initial capital costs, asset replacement costs, and operating costs are owner financed. No borrowed capital.**
- **Capital assets depreciation is computed using straight-line method with zero salvage value**
- **Annual cost for repair and maintenance on boat, motor, trailer, and truck is assessed at 10% of initial investment**
- **Hired labor is required each year during the harvest period**
- **Laborers are self-employed and paid a daily rate of ~ \$100 per day (\$12/hr)**
 - **10 days planting**
 - **66 days harvesting**
- **Most variable costs, overhead expenses, and capital asset purchases are inflated at a 3% annual rate**
- **Income and self-employment taxes are NOT included**
- **Withdrawals from the business income for owner “salary” or family living expenses are NOT included**
- **Owner / family labor cost is NOT included**
- **All net returns are pre-tax to the owner/operator’s capital, management labor, and risk**

Initial Investment and Capital Asset Replacement Requirements for Two-Acre Hard Clam Culture Operation in Southwest Florida									
Capital Item	Unit Cost	Years of Life	Number Bought	Annual Deprec.	Year 1	Year 2	Year 3	Year 4	Year 5
Bags¹									
Nursery	\$5.00	4	107	\$134	\$535				\$602
Grow-out	\$5.00	4	750	\$938	\$3,750	\$3,863			\$4,221
Wet Suit	\$250	3	2	\$167	\$500			\$546	
Hookah Rig (2-man)	\$2,000	5	1	\$400	\$2,000				
Boat									
19.5' Carolina Skiff w/double axle trailer	\$7,500	7	1	\$1,071	\$7,500				
Motor									
90 HP Yamaha w/controls and linkages	\$7,000	3	1	\$2,333	\$7,000			\$7,650	
Winch/davit/boom/pulley	\$1,000	3	1	\$333	\$1,000			\$1,093	
Misc. equipment	\$700	5	1	\$140	\$700				
Total Investment				\$5,516	\$22,985	\$3,863	\$0	\$9,289	\$4,823
¹ Bag price includes only the bag, and does NOT include the cover netting, stake, cable ties, etc. which are estimated to be approximately \$1.50 per bag and is replaced every year.									

Annual Production Costs for Two-Acre Hard Clam Culture Operation in Southwest Florida					
Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5
<u>Variable Costs</u>					
Seed	\$8,560	\$8,560	\$8,560	\$8,560	\$8,560
Supplies	\$200	\$206	\$212	\$219	\$225
Fuel/oil					
Boat	\$1,200	\$1,236	\$1,273	\$1,311	\$1,351
Truck	\$500	\$515	\$530	\$546	\$563
Maintenance					
Equipment	\$1,450	\$1,494	\$1,538	\$1,584	\$1,632
Bags	\$1,285	\$1,324	\$1,363	\$1,404	\$1,446
Wages	\$1,000	\$7,630	\$7,859	\$8,095	\$8,338
<u>Overhead Expenses</u>					
Insurance	\$500	\$515	\$530	\$546	\$563
Survey Fee	\$2,000				
Bookkeeping	\$500	\$515	\$530	\$546	\$563
Licenses					
Aqua. Cert.	\$50	\$50	\$50	\$50	\$50
Lease Fee	<u>\$60</u>	<u>\$60</u>	<u>\$60</u>	<u>\$60</u>	<u>\$60</u>
Total Costs	\$17,305	\$22,105	\$22,505	\$22,921	\$23,351
Most costs are subject to an annual 3% inflation adjustment.					

Annual Cash Flow for Two-Acre Hard Clam Culture Operation in Southwest Florida					
	Year 1	Year 2	Year 3	Year 4	Year 5
Beginning Cash	\$0	(\$40,290)	(\$14,658)	\$14,437	\$33,827
Cash Receipts	\$0	\$51,600	\$51,600	\$51,600	\$51,600
Cash Outflow					
Production costs	\$17,305	\$22,105	\$22,505	\$22,921	\$23,351
New capital	\$22,985	\$3,863	\$0	\$9,289	\$4,823
Total Outflow	\$40,290	\$25,968	\$22,505	\$32,210	\$28,174
Annual Cash Position	(\$40,290)	\$25,632	\$29,095	\$19,390	\$23,426
Ending Cash Position	(\$40,290)	(\$14,658)	\$14,437	\$33,827	\$57,253
Most costs are subject to an annual 3% inflation adjustment.					

Average Per Acre Annual Budget for a Two-Acre Hard Clam Culture Operation in Southwest Florida

	Units	Price / Unit	Total Value / Cost
<u>Revenues</u>			
1" clams	480,000	\$0.09	\$43,200
7/8" clams	120,000	\$0.07	<u>\$8,400</u>
Total Revenues			\$51,600
<u>Variable Costs (1)</u>			
Seed clams	1,070,000	\$0.008	\$8,560
Supplies	\$		\$216
Fuel / oil			
Boat	\$		\$1,293
Truck	\$		\$539
Maintenance			
Boat/motor/trailer/truck	\$		\$1,562
Bags	\$		\$1,384
Labor	76 days	\$100 / day	<u>\$7,981</u>
Total Variable Costs			\$21,535
<u>Fixed Costs (2)</u>			
Overhead Expenses			
Insurance	\$		\$539
Bookkeeping	\$		\$539
Licenses	\$		\$110
Capital Replacement	\$		\$4,493
Depreciation	\$		<u>\$5,516</u>
Total Fixed Costs			\$11,197
<u>Total Expenditures (1+2)</u>			\$32,732
Net Returns (to owner/operator capital, management labor, risk)			\$18,868
Cost Per Clam			\$0.055
Break-even survival rate			35.6%

Sensitivity Analysis on Several Key Production and Management Variables for a Two-Acre Hard Clam Culture Operation in Southwest Florida

Variable	# Clams Harvested	Total Costs	Net Returns	Cost per Clam	Break-even Survival
Seed Price (ea.)					
\$0.007	600,000	\$30,181	\$21,419	\$0.050	33%
<u>\$0.008</u>	<u>600,000</u>	<u>\$32,732</u>	<u>\$18,868</u>	<u>\$0.055</u>	<u>36%</u>
\$0.010	600,000	\$34,872	\$16,728	\$0.058	38%
Market Price (1" / 7/8")					
\$0.07/0.05	600,000	\$32,732	\$6,868	\$0.055	46%
\$0.08/0.06	600,000	\$32,732	\$12,868	\$0.055	40%
<u>\$0.09/0.07</u>	<u>600,000</u>	<u>\$32,732</u>	<u>\$18,868</u>	<u>\$0.055</u>	<u>36%</u>
\$0.10/0.08	600,000	\$32,732	\$24,868	\$0.055	32%
\$0.12/0.10	600,000	\$32,732	\$36,868	\$0.055	26%
Survival Rate					
42%	449,000	\$32,732	\$5,882	\$0.073	36%
49%	524,300	\$32,732	\$12,358	\$0.062	36%
<u>56%</u>	<u>600,000</u>	<u>\$32,732</u>	<u>\$18,868</u>	<u>\$0.055</u>	<u>36%</u>
63%	674,100	\$32,732	\$25,241	\$0.049	36%
Size Distribution (1" / 7/8")					
90/10	540,000/60,000	\$32,732	\$20,068	\$0.055	35%
<u>80/20</u>	<u>480,000/120,000</u>	<u>\$32,732</u>	<u>\$18,868</u>	<u>\$0.055</u>	<u>36%</u>
70/30	420,000/180,000	\$32,732	\$17,668	\$0.055	37%

Values underlined are the baseline assumptions held throughout the analysis.