



An Economic and Operational Model for the Grow-out of Florida Pompano in Recirculating Aquaculture Systems.

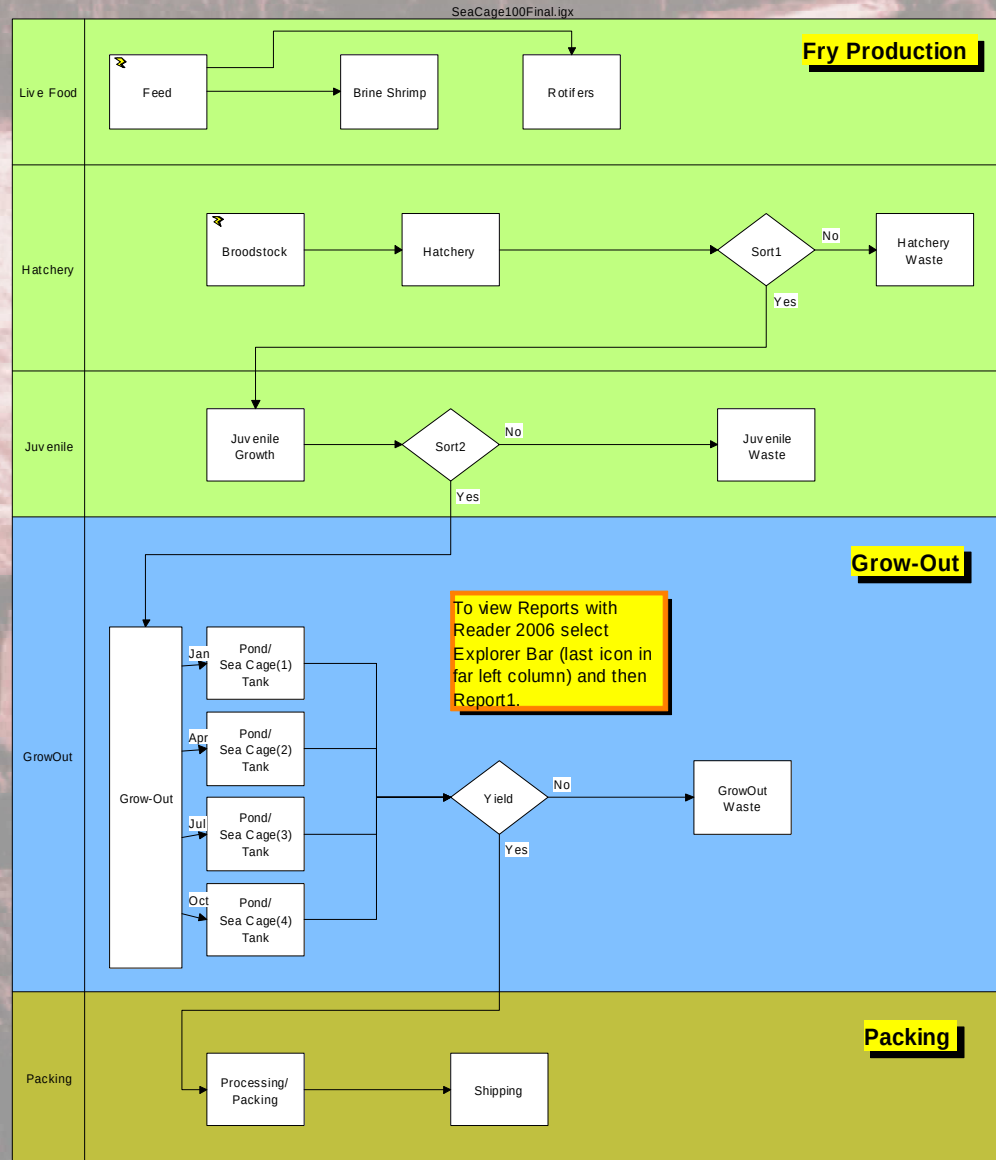
**3rd International Sustainable Marine Fish Culture Conference
October 15-17, 2007**

Harbor Branch Oceanographic Institution

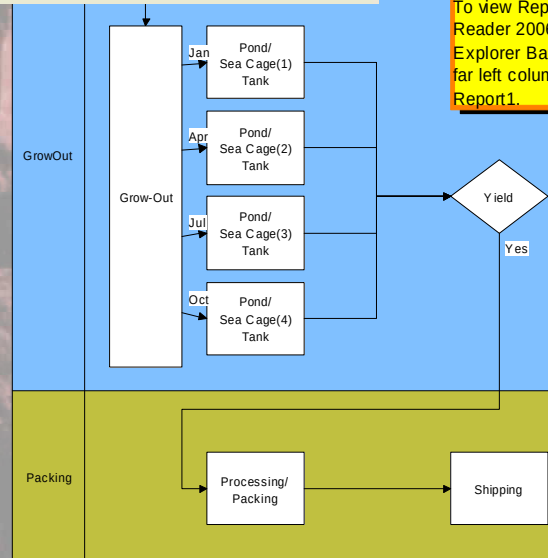
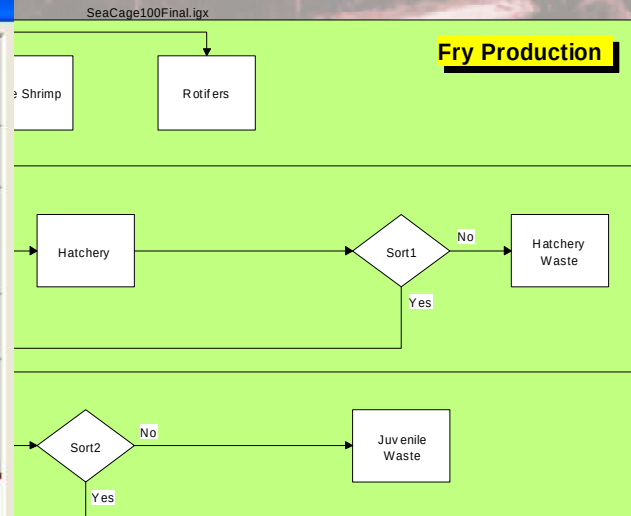
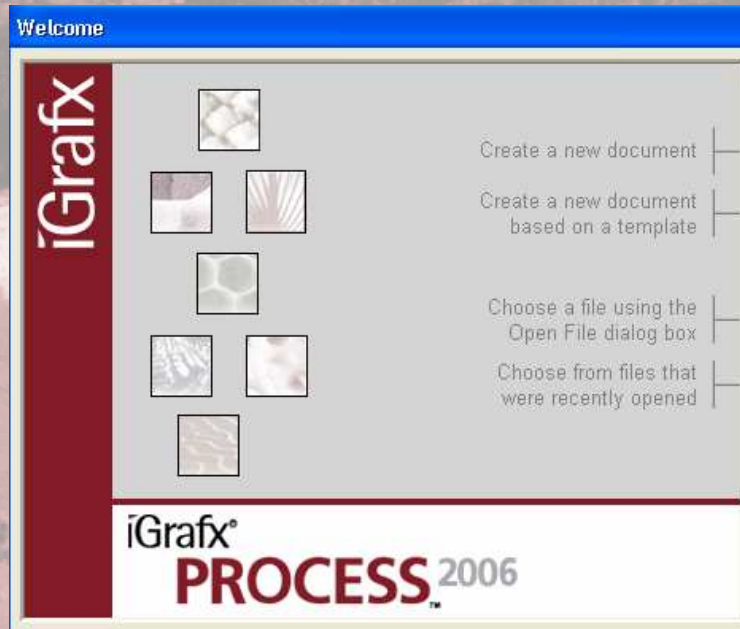
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www.PompanoFarms.com

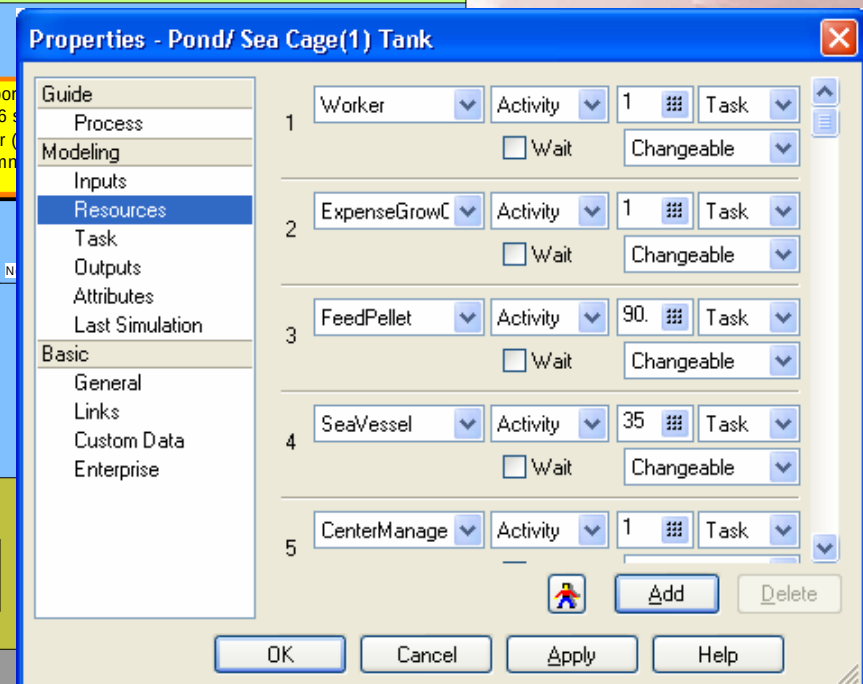
Process Diagram for a Pompano Plant



Set Properties for Each Activity



To view Report
Reader 2006 :
Explorer Bar (far left column)
Report1.



Properties - Pond/ Sea Cage(1) Tank

Guide

- Process
- Modeling
- Inputs
- Resources
- Task
- Outputs
- Attributes
- Last Simulation

Basic

- General
- Links
- Custom Data
- Enterprise

1 Worker Activity 1 Task ☐ Wait Changeable

2 ExpenseGrowC Activity 1 Task ☐ Wait Changeable

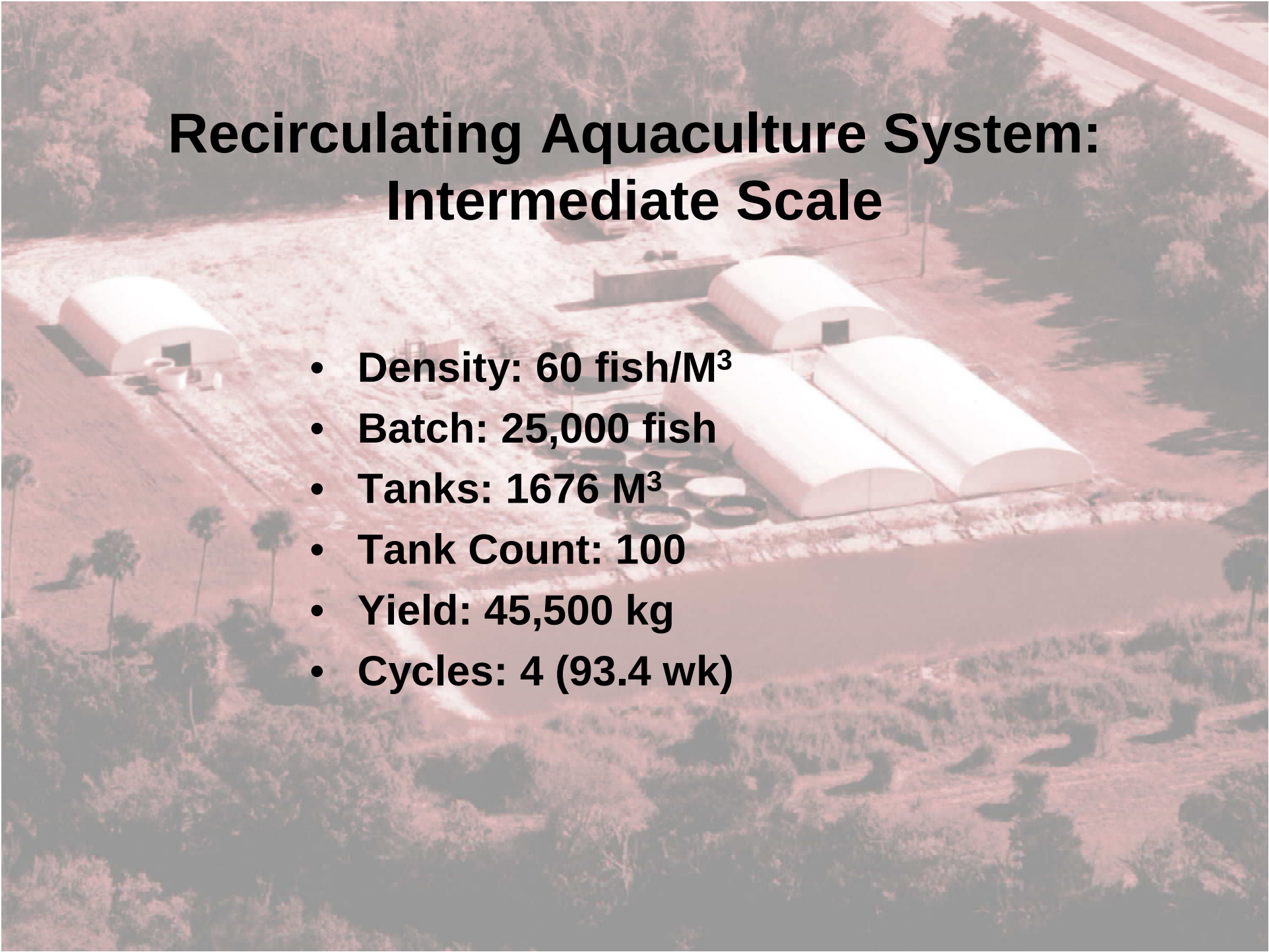
3 FeedPellet Activity 90. Task ☐ Wait Changeable

4 SeaVessel Activity 35 Task ☐ Wait Changeable

5 CenterManage Activity 1 Task ☐ Wait Changeable

Add Delete

OK Cancel Apply Help



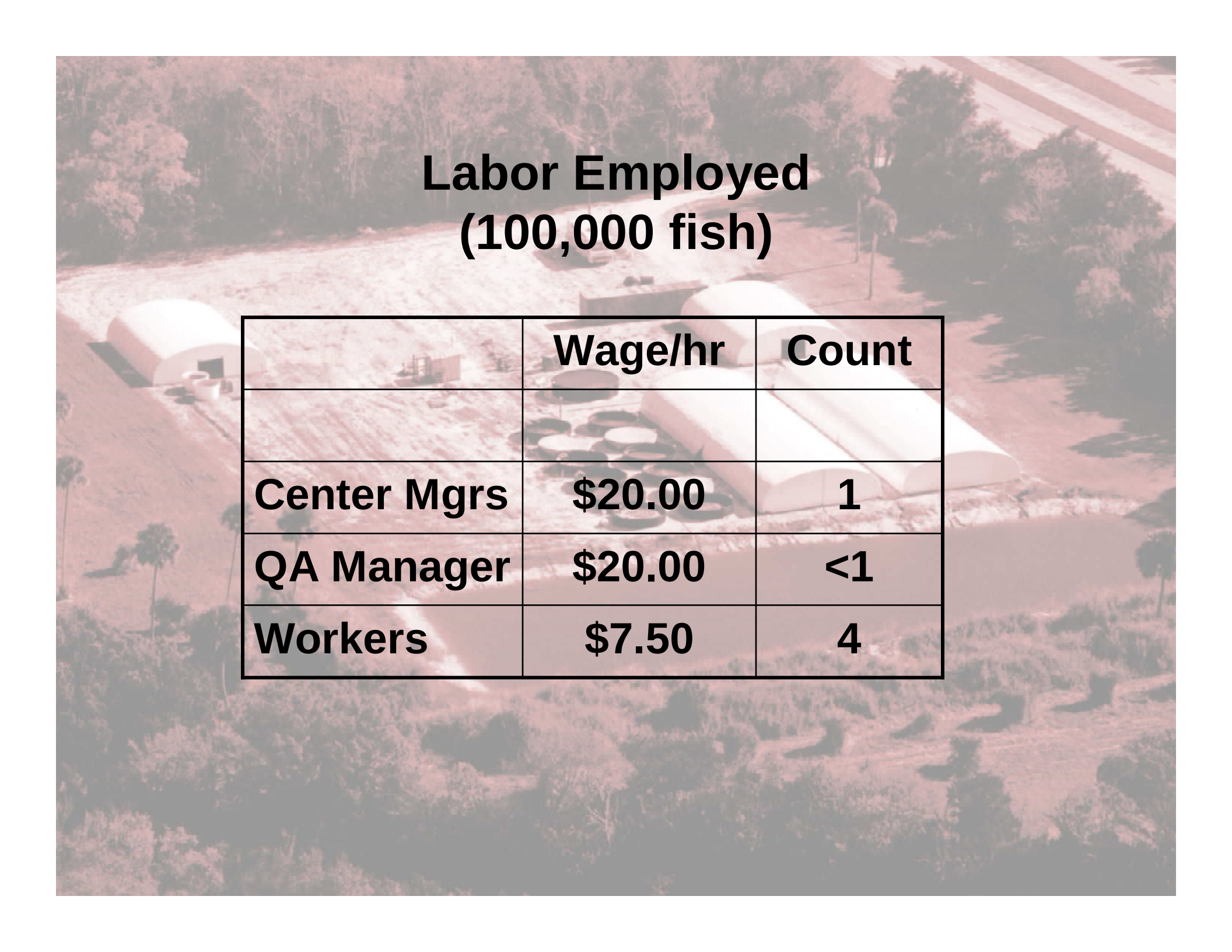
Recirculating Aquaculture System: Intermediate Scale

- **Density: 60 fish/M³**
- **Batch: 25,000 fish**
- **Tanks: 1676 M³**
- **Tank Count: 100**
- **Yield: 45,500 kg**
- **Cycles: 4 (93.4 wk)**

Equipment Employed (100,000 fish)

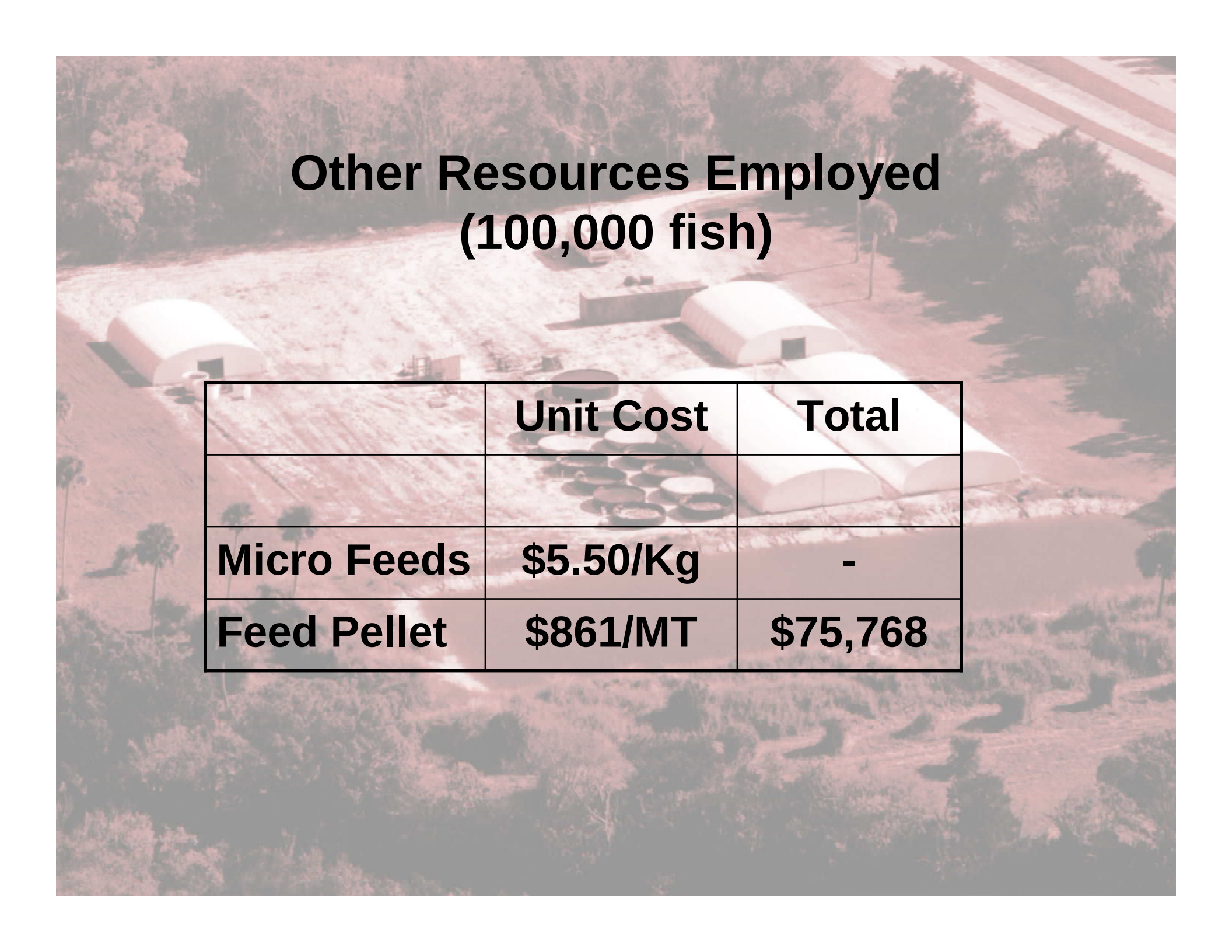
	Annual Expense
Fry Production	\$ 150,000 (Buy)
QA/Admin	\$ 10,800
RAS*	\$ 164,680
Pack/Ship	\$ 25,400
Transport	\$ 46,900

- Base System: Copeland, Watanabe & Dumas, JWAS,2005
Knockdown 18ft Tanks substituted for rigid
Tent building substituted for covers
Heat Pumps omitted.

An aerial photograph of a fish farm. In the center, there are several large, white, circular tanks arranged in a row. To the left of the tanks is a small, white, rectangular building. The surrounding area is a mix of dirt, grass, and trees. The image has a reddish tint.

Labor Employed (100,000 fish)

	Wage/hr	Count
Center Mgrs	\$20.00	1
QA Manager	\$20.00	<1
Workers	\$7.50	4



Other Resources Employed (100,000 fish)

	Unit Cost	Total
Micro Feeds	\$5.50/Kg	-
Feed Pellet	\$861/MT	\$75,768

Alternate Grow-out (\$ per 0.5kg Pompano)

				Sea Cage Low Density
				33 fish/M ³ 400,000 fish
Feed (FCR 2.0)				\$ 0.82 (31%)
Pompano Fry				
Labor				\$ 0.87 (32%)
Equipment				\$ 0.82 (31%)
Electricity				\$ 0.16 (6%)
Total				\$ 2.67

Alternate Grow-out (\$ per 0.5kg Pompano)

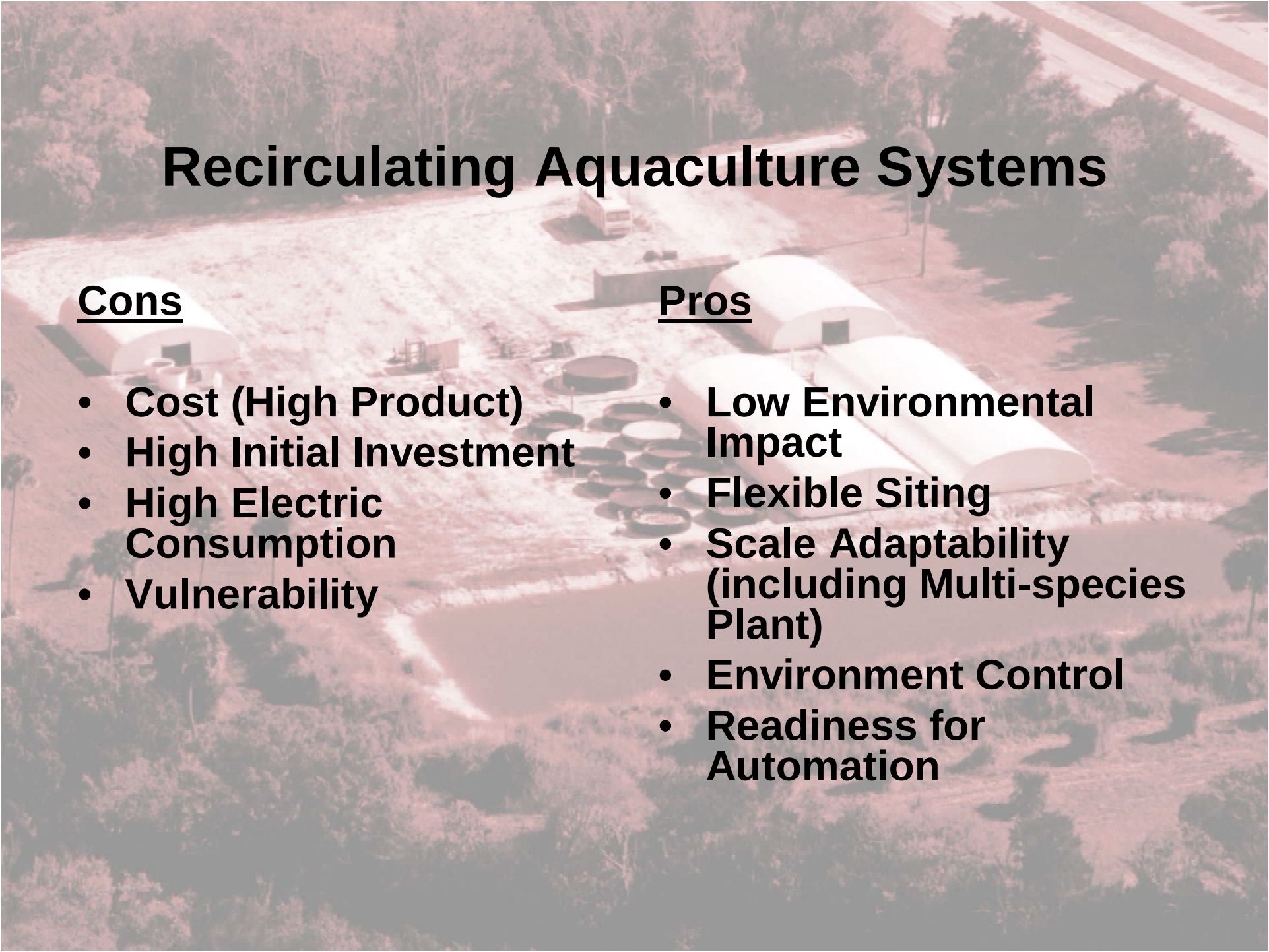
			Pond Low Density	Sea Cage Low Density
			1.5 fish/M³ 400,000 fish	33 fish/M³ 400,000 fish
Feed (FCR 2.0)			\$ 0.82 (29%)	\$ 0.82 (31%)
Pompano Fry				
Labor			\$ 0.87 (31%)	\$ 0.87 (32%)
Equipment			\$ 0.51 (18%)	\$ 0.82 (31%)
Electricity			\$ 0.60 (22%)	\$ 0.16 (6%)
Total			\$ 2.80	\$ 2.67

Alternate Grow-out (\$ per 0.5kg Pompano)

		Pond Low Density	Pond Low Density	Sea Cage Low Density
		1.5 fish/M³ 100,000 fish	1.5 fish/M³ 400,000 fish	33 fish/M³ 400,000 fish
Feed (FCR 2.0)		\$ 0.77 (20%)	\$ 0.82 (29%)	\$ 0.82 (31%)
Pompano Fry		\$ 1.50 (39%)		
Labor		\$ 0.79 (21%)	\$ 0.87 (31%)	\$ 0.87 (32%)
Equipment		\$ 0.36 (9%)	\$ 0.51 (18%)	\$ 0.82 (31%)
Electricity		\$ 0.43 (11%)	\$ 0.60 (22%)	\$ 0.16 (6%)
Total		\$ 3.85	\$ 2.80	\$ 2.67

Alternate Grow-out (\$ per 0.5kg Pompano)

	RAS High Density	Pond Low Density	Pond Low Density	Sea Cage Low Density
	60 fish/M³ 100,000 fish	1.5 fish/M³ 100,000 fish	1.5 fish/M³ 400,000 fish	33 fish/M³ 400,000 fish
Feed (FCR 2.0)	\$ 0.77 (12%)	\$ 0.77 (20%)	\$ 0.82 (29%)	\$ 0.82 (31%)
Pompano Fry	\$ 1.50 (23%)	\$ 1.50 (39%)		
Labor	\$ 0.79 (12%)	\$ 0.79 (21%)	\$ 0.87 (31%)	\$ 0.87 (32%)
Equipment	\$ 1.67 (26%)	\$ 0.36 (9%)	\$ 0.51 (18%)	\$ 0.82 (31%)
Electricity	\$ 1.79 (27%)	\$ 0.43 (11%)	\$ 0.60 (22%)	\$ 0.16 (6%)
Total	\$ 6.52	\$ 3.85	\$ 2.80	\$ 2.67



Recirculating Aquaculture Systems

Cons

- **Cost (High Product)**
- **High Initial Investment**
- **High Electric Consumption**
- **Vulnerability**

Pros

- **Low Environmental Impact**
- **Flexible Siting**
- **Scale Adaptability (including Multi-species Plant)**
- **Environment Control**
- **Readiness for Automation**

Future Studies

- **Updates to Track Technologies**
- **Impacts on Investment Decisions**
 - **Valuation of Risks**
 - **Non-traditional Investment Criteria**
- **Effluent/Waste Treatment**