“The Hard Realities of Farming Shrimp in America”
NCRAC Aquaculture Conference
Toledo, Ohio
February 23, 2014
Presented By: Russell A. Allen
Shrimp Farming History in the Western Hemisphere

- United States
- Honduras
- Panama
- Ecuador
- Belize
United States

- Texas – late 60’s early 70’s (Bil More) Texas Fish & Wildlife
- Galveston Lab – NOAA Corny Mock
- Ralston Purina – Crystal River, FL, Harvey Persyn
- Coca Cola – Mexico, Don Lightner
- Harlingen Shrimp Farm, Fritz Jaenike
- The Oceanic Institute, Gary Pruder, Jim Wyban
- Lowe Farms, Art Lowe, Joe Tabrah, Jeff Peterson
- Aquatic Farms, Ed Scura, Andy Kulgis
**Latin America**

- Honduras – Sea Farms, Jim Norris, Ralph Parkman
- Panama – Agromarina, Bill McGrath, Yoshi Hirono, Dave Drennan
- Ecuador – Empacadora Shayne, Peter Shayne, the “French”
- Belize – Belize Aquaculture, Barry Bowen
What’s it Take to Farm Shrimp?

- Broostock
- Hatchery
- Nursery
- Grow-out
- Processing
- Marketing
Broodstock

Species? SPF?
Feeds – live & Commercial Diets
Eyestalk Ablation?
Environmental Parameters
  Salinity
  Temperature
  Photoperiod & Light intensity
Good Water Quality
Hatchery

Spawning & Hatching
Larval Rearing

- Nauplii
- Zoea – Algae & Formulated feeds
- Mysis – Algae, Artemia, & Formulated Feeds
- Postlarvae – Artemia & Formulated Feeds

Total time about 3 weeks
Nursery

- PL 8-12 to Start
- Feed Artemia and Formulated Feeds
- Grow to about 1.5 Grams
- Time – About 30 Days
Grow-out

- Extensive, Semi-intensive, Intensive, Super Intensive
- Formulated Feeds
- What Harvest Size?
  - Growth Rates
  - Survival
  - Feed Conversion
Processing

- Receiving & Icing
- De-heading (by hand or Machine?)
- Classification (then packing or)
  - Peeling & De-veining
  - Cooking

Freezing – Block Frozen, IQF
Marketing

By Container Loads
Sell to Existing Importers
Sell to Value added Processors
Sell to Regional Distributors
Sell Direct to Restaurants / Retailers
So, How do you do all this?

Let’s look at the competition.
Capital Costs – Latin America

- $3 - $5 capital cost per pound of shrimp produced per year. Typical with extensive and semi-intensive farms.

- Example: To build a typical farm in the rest of the World that will produce 1,000,000 lbs/year, it will cost $3 million to $5 million to build & get into operation.
Operating Costs – Latin America

- During the years of low prices, the shrimp World learned to produce very cheaply.
- Extensive = +/- $1.00 / lb (head-on)
- Semi-Intensive = +/- $1.50 / lb (head-on)
- Intensive = +/- $2.00 / lb. (head-on)
For Commodity Production in the US

- Need Economies of Scale
- >5,000,000 lbs per year
- Need Lots of Land or Lots of Technology
- Allows for Efficient & Competitive Processing
- Wholesale Prices for the USA are based upon New York Green Sheet Prices.
Commodity Production in a RAS system in the USA

- Competitive Capital Costs
- Competitive Operating Costs
- New Markets – Fresh is New
- Available Capital on Reasonable Terms
- Friendly Governmental Regulations
Competitive Capital Costs

- Need to Plan for Total Construction costs of Less than $5.00/lb produced per year.

- It can be done, we have:
  - Available Technology
  - Low Cost Construction & Materials
  - Quality, Inexpensive Equipment
Competitive Operating Costs

- Cheapest Commodity Feed Ingredients
- Ability to Produce Quality Post Larvae
- Cheaper Energy & Energy Efficiency
- Good Labor & Ability to Automate
- Cheap Shipping Costs
- Takes Mother Nature out of the Equation
- Need to be @ $1.00/lb or less
Processing Costs

- Economies of Scale
- Automation
- Flexibility to Locate Plant in a High Unemployment area with inexpensive Unskilled Labor
- Need to get Tail Yields of 67% - 70%
- Processing Costs need to be <$0.50/lb
Technical Feasibility

- Indoor Production
- 150 - 300 animals / sq m
- SPF animals
- Use Commercial Feeds
- Use Artificial Salt Water
- Complete water reuse system
- “KISS” Principal
100 Ha Semi-intensive Shrimp Farm

- Capital Cost 100 Hectares: $1,500,000
- Farm Production per Year: 400,000 lbs
- Capital Cost Per Pound of Shrimp Produced per Year: $3.75 / lb
Indoor Shrimp Production System

- Capital Cost - 1 Acre Production Unit: $4,725,000
- Production - 1 Acre/yr: 1,500,000 Lbs.
- Capital Cost per Lb. Of Shrimp Produced per Year: $3.15 / Lb.
Capital Cost - 1 Acre Unit

- Design & Engineering: $100,000
- Land: $25,000
- Site Work: $150,000
- Building: $450,000
- Tanks: $2,500,000
- Equipment: $1,500,000

**TOTAL**: $4,725,000
Production Cost – 1 Acre

- Pl’s @ $6/1000
- Feed @$1.00/lb
- Chemicals
- Energy
- Maintenance
- Labor
- Administration
- Processing @ .50/lb

- Total
- Total / lb

- $250,000
- $1,500,000
- $50,000
- $85,000
- $50,000
- $96,000
- $60,000
- $750,000

- $2,841,000
- $1.90 / lb
## Profit & Loss

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>26-30’s, NY, Feb 12</strong></td>
<td></td>
</tr>
<tr>
<td>Wholesale Price</td>
<td>$7.75 / lb.</td>
</tr>
<tr>
<td>Lbs Sold</td>
<td>1,020,000 lbs</td>
</tr>
<tr>
<td>Total Sales</td>
<td>$7,905,000</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$2,841,000</td>
</tr>
<tr>
<td><strong>Gross Margin</strong></td>
<td></td>
</tr>
<tr>
<td>Without Depreciation, Interest, &amp; Taxes</td>
<td>$ 5,064,000 = 64%</td>
</tr>
</tbody>
</table>
In Summary

- The Shrimp Farming Industry has been around a long time & is very big.
- To create an industry in the US, it has to be vertically integrated
- We can be competitive on Capital Costs
- We can be competitive on Operating Costs
- What we don’t have is the Capital and Political will to make it happen
Thank You!

❓Questions?