



# Production of Freshwater Prawn in the Midwest

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Bringing Knowledge to Life



# What are they?

- Giant Malaysian Prawns
  - *Macrobrachium rosenbergii*
- Life Cycle in the US
  - Hatchery (National)
    - February - March
    - Texas, Mississippi, Kentucky
  - Nursery (Regional)
    - April - May
    - Calala's Water Haven, Ohio
    - Thoroughbred Shrimp Co, KY
  - Growout (Your farm)
    - June - September
    - Nursed juveniles (30-60 days old)



# History



- 1980's
  - Research at Mississippi State University

- 1990's
  - Research at Kentucky State University



- 2001-13
  - Culture and research in Ohio



# Lots of Research



- **2002 – On farm experiment**
  - Stocked 9 ponds, 2 densities, w-w/o substrate
  - 22 – 1022 lbs/acre; 6 – 95% survival
- **2003 – Northern vs Southern Ohio**
  - 50% less growth and survival in North
- **2004 – Fishmeal free diet**
  - 15% less production with FMF diet
- **2005 – High density, high input**
  - One acre pond stocked at 24,000 shrimp/ac
  - Harvested 1300 pounds of shrimp
- **2006 – Low density, low input**
  - One acre pond stocked at 16,000 shrimp/ac
  - Harvested 300 pounds of shrimp
- **2008 – Polyculture with baitfish**
  - Worked, but not high enough density of baitfish
- **2009-10 – Quality Assurance improves product**
- **2012-13 – Black Soldier Fly based diet performs**

# Variable Results

- Yields from OSU research
  - 22 lbs/acre to 1300 lbs/acre
  - Average 538 lbs/acre
- Survivals from OSU research
  - 6-95%
  - Average 48%
- Growers in Ohio
  - Around 20



# 2009 variable production costs



- 10,000 shrimp (.08 ea) 800 dollars
- 1750 lbs catfish feed (.29) 507
- 1750 lbs range cube (.21) 367
- Aeration: 24/7, \$1.67/day 167
- Harvest supplies 250
  - Ice, gloves, masks, bags
- Total production cost \$2091
- Total cost/lb of shrimp \$3.49/lb
- Sales \$10.00/lb @ 600 lbs \$6000
- Profit \$3909
- This does not include cost of fertilizer, pond, aerator, water quality kit, supplies, labor, advertising, transportation, or what you EAT.



# What you need to know

- Spend a year researching
- Business planning
- Permit
  - Check with your state
- Pond Construction
  - A properly built pond will save you time and money!
- Production
- Marketing



## What to expect (Short Version)



- Build pond/get permit/arrange seed/feed
- Lime/fertilize
- Stock Shrimp (1<sup>st</sup> week of June)
- Feed daily/test water weekly
- Aerate 24/7
- Worry daily, because you can't see them
- Develop marketing plan
- Harvest in September



# Pre-Season (January-February)

- **Determine Stocking Density**
  - 16,000 – 24,000/acre
  - 20,000-30,000/acre w/substrate
- **Order Shrimp**
  - You pick up or delivered
  - Are they graded?
  - How old are they?
- **Order/Arrange Feed**
  - Sinking catfish feed
  - We have new BSFL feed in Ohio
- **Plan Aeration**
- **Get Permit**
  - Ohio Department of Natural Resources
  - \$50.00/year



# Water Quality (April-May)

- **Prawns need great water quality**
  - Learn what and how to monitor
  - Sensitive to temperature
  - Sensitive to low and high pH
    - Test water and soil
    - Add agricultural limestone before filling
  - Sensitive to copper sulfate
  - Sensitive to chemicals
  - Invest in water quality measuring equipment



\$300.00



\$50.00

# Fertilization (2 weeks before stocking)

- Pros
  - ✓ Stimulates natural foods
  - ✓ Faster growth of juveniles
- Cons
  - ✓ May increase predators
  - ✓ Creates oxygen demand
  - ✓ Can speed growth of filamentous algae
  - ✓ May contain antibiotics (manure)
  - ✓ May raise pH
- Organic fertilization: plant or animal products
  - ✓ Animal manure, alfalfa meal, soybean meal, DDGS
- Inorganic fertilization: liquid fertilizer
  - ✓ spray it evenly on the pond with a backpack sprayer





# Stocking Shrimp (June 1-15)

- Fill pond
- Monitor pH
  - No more that 0.5 pH units difference
- Acclimate shrimp to temperature, pH
- Count shrimp
  - Shrimp numbers often underestimated
  - Best: Count them all
  - Easiest: Count three samples and extrapolate
  - Graded shrimp will be uniform
  - Ungraded shrimp will not be uniform



# Pond Maintenance (June-Sept)

- Aerate 24/7
- Control predators (screen water)
  - Insects
  - Bullfrogs
  - Turtles
  - Birds
- Monitor water quality
- Feed
- Keep records
- Develop a marketing plan



## Feeding (June-Sept)

- Feed once or twice a day
  - If once, before sunset
- Distribute feed all around pond
  - Especially edges
- Store feed in cool dry place
- Do not feed moldy feed
- Hold back feed if it's building up in pond





# Sampling (June-Sept)

- Can sample with a cast net
- Can see red eyes at night with flashlight
- Sometimes you will find molts



# Harvest Time

- Pick a date in September
  - Harvested from Aug. 15–Oct. 15
- Watch the weather closely
- Don't let water temperatures get below 65 F
- Prawns handle best with water temperatures 70-72 F
- Use aeration
- Have baskets ready
- Monitor draw-down time
- Move to purge tanks
- Series of 4-8 tanks for washing
- Can be very labor intensive
  - Get lots of help



# Harvesting

- Time how long it takes pond to drain
  - Write this down!
- Shrimp will follow water
- Have baskets and clean aerated water
- Have ice
- Have scale
- Keep notes (pounds, times, etc.)
- Get help





# What are you selling?

- Live, Fresh
- Locally grown
- Entertainment
- Contaminant Free
- Niche Market
  - Niches can be filled
  - Constantly look for new markets
- Marketing Co-op
  - Virginia North Carolina Shrimp Growers Coop



# Conclusion

- We are not there yet.
- Prawn farming is not for the faint-hearted.
- People love prawns in Ohio!





