

Aquaculture in the Midwest; Economic Opportunity for Missouri Farmers?



U.S. Catfish Production/Importation

U.S. catfish production (in ponds); **470-366 million lbs** from 2009 to 2020

Imported catfish; **60-400 million lbs** from 2009 to 2020

Range of U.S. catfish farm-gate price = \$0.85-\$1.25/lb whole

Imported catfish prices = 40-80% of U.S. price

Aquaculture Markets Highly Competitive, Heavily Influenced by Imports



Mississippi
Catfish Ponds

U.S. Seafood/Shrimp Production, Importation and Consumption

US wild caught seafood (80% finfish); **9.5 billion lbs** worth \$5.4 billion dockside, \$10 billion processed (\$3.28/lb fish-fillet)

Imported frozen shrimp tails (2018) = **1.54 billion lbs/yr** worth \$6.5 billion (\$4.06/lb)

U.S. seafood consumption = 16 lbs/person-yr, 4 lbs shrimp/person-yr, vs 55 lb beef and 90 lb of chicken

2021 imported shrimp prices up to = \$6.00/lb frozen tails



Intensive
Shrimp
Ponds

U.S. Aquaculture Production

Total U.S. aquaculture = **626 million lbs/yr** (6.6% of wild caught), valued at \$1.5 billion = \$2.40/lb (oyster, mussels and clams = 25%).

Texas largest U.S. marine shrimp pond production at **3.6 million lbs/yr** (0.2% of imported) at farm-gate price of ~\$3.00/lb.

Small-scale recirculating U.S. marine shrimp production (<50,000 lbs/yr) selling at \$13.00-18.00/lb heads on (\$22-30/lb tails)



University of Missouri
Zero-Discharge
Shrimp Production

Estimated Costs/Prices* (\$/lb) for Whole/Processed Pond and RAS Products

<u>TYPE/YIELD</u>	<u>Break-Even (whole)</u>	<u>Farm-gate (whole)</u>	<u>Wholesale (processed)</u>	<u>Retail (processed)</u>
POND				
Catfish (0.32 lb fillet)	0.80-1.00/lb	0.85-1.25/lb	5.00-6.00/lb	8.00-11.00/lb
Shrimp (0.6 lb tails)	1.50-1.90/lb	2.00-3.00/lb	5.00-6.00/lb	5.00-12.00/lb
RAS				
Shrimp (0.6 lb tails)	4.00-8.25/lb			13.00-18.00/lb whole
Bass (0.32 lb fillet)	4.00-6.00/lb	5.00-6.00/lb	15.00-18.00/lb	20.00-28.00/lb

Recirculating Systems Production Costs; Marine shrimp = \$4.00-8.25/lb, Freshwater large-mouth bass = \$4.00-6.00/lb

Typical Commodity Farm-Gate Prices; Catfish = \$1.00/lb, Largemouth Bass = \$6.00/lb, Shrimp = \$3.00/lb

Small Volume Niche Market Shrimp Prices; Shrimp =\$13-18/lb

Recirculating System Costs = 1-6X commodity price, 45-65% of niche market price

* Break-even costs dependent on scale, species, and system productivity. RAS cost/sales highly variable based on small sample size

Summary

Missouri lacks warm climate (degree-days) needed to compete with pond aquaculture prices
Indoor recirculating aquaculture costs cannot compete directly with commodity seafood prices

Recommendations

Opportunity exists for Missouri farms, however, growers are advised to seek niche markets consisting of direct sales to end consumers, capturing profit margin of wholesale/retail chain.

Grower must bear holding, processing, advertising, transportation, packaging, time/labor costs needed to market/sell product.

If fish-fillets are sold, food handling/processing license may be needed.

Begin small, consider markets before addressing technology and investment issues. Address the following;

Which marketable species?

What product to provide (whole or processed)?

How much to charge?

How to promote?

Where to sell?

Presentations/Resources

MU Extension Aquaculture Website

<https://extension.missouri.edu/programs/aquaculture-extension>

Short Video Presentations

- 1) Importance of Aquaculture; Impact on US Seafood Supply and Economy
- 2) Aquaculture in the Midwest; Economic Opportunity for Missouri Farmers?
- 3) Recirculating Aquaculture Technology; Intensive to Super-Intensive Systems

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