

Opportunities to Increase Profitability from Aquaculture in Ohio

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Input required to increase profitability varies and there are always tradeoffs...

- Full-time?
- Part-time?
- Hobby?
- Investor?
- Combination?

Time is money; contribute accordingly



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What are your goals?



Opportunities

- Ohio's location needs to be considered first...
- Is it worth it to attempt to ship out of state? Added costs when crossing state lines...
- **“Columbus is within 500 miles of 75% of the population”**, but we have large markets within the state we can supply

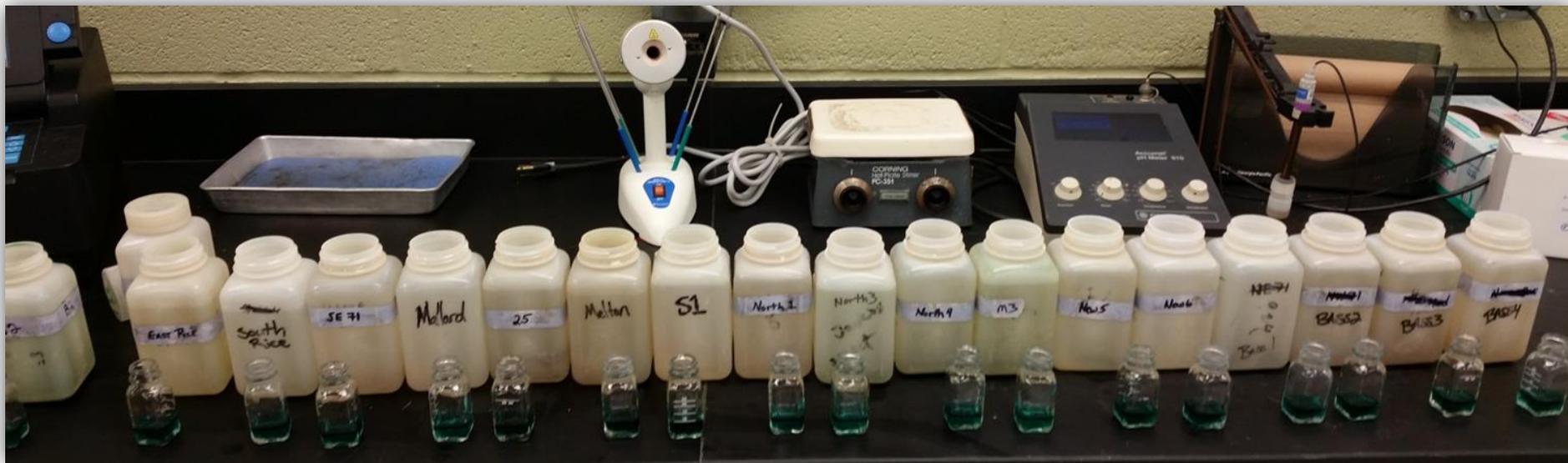


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Opportunities: water quality management

- It can be overwhelming but will more than pay for itself. I'm available to go through common parameters and work with you to develop hard copies or Excel records.
- Makes predicting the future of the systems easier...
- Lets you sleep a little better...



Opportunities: agritourism

- Prime locations for urban ag and agritourism will be much more expensive on a per/acre basis
- What type of attractions can you utilize to bring people in the doors?
 - linking up with a brewery,
 - festivals,
 - tours,
 - hands-on training,
 - fishing opportunities,
 - souvenirs,
 - etc.



Opportunities: formal or informal cooperatives

- Example of 3 farmers located close to each other:
- Mr. Bob Lunch knows he will use about 30 bags of feed in his system over the next several months | Local Feed and Seed sells 44 pounds for \$0.60/lb
- Ms. Jane Blackwell usually buys a little more than ½ pallet for her system
- Mr. Paula Dean usually buys over 15 pallets every year
- Purchasing an entire truck load together would drastically lower the \$/lb
- Several \$ a bag cheaper would be save thousands (30-45%)



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Direct to local restaurants



➤ From the ORA (via the ODH)

➤ “Restaurants can purchase and process live fish without a HACCP plan/certification. There is no requirement for restaurants in Ohio to have a seafood HACCP plan/certification. They are obligated to follow the food safety requirements in the general food code when processing fish.”

➤ A potential avenue are the breweries or restaurants located in affluent or up-and-coming areas, including food trucks



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Competing is difficult but necessary

- Pond and Lake Management companies have already told the OAA they want more Ohio raised bait/sportfish
- Gaining trust with a company by having a steady (accurate count) and healthy product is necessary!
- Get more bang per fish!



Baitfish | new business or product diversification

- Something that had a lot of interest in the past in Ohio...
- Major crops in the U.S. are golden shiners, fathead minnows, and goldfish (bait, feeder, ornamental)
- Emerald and Spotfin Shiners popular in Lake Erie...



Spotfin Shiner



Emerald Shiner

Baitfish | new business or product diversification

2016

- Emerald and Spotfin Shiners popular in Lake Erie...

From cleveland.com by D'Arcy Egan

“Lake Erie yellow perch are finally making an appearance along the Ohio shoreline, but where are the emerald shiner minnows? The most popular bait for catching yellow perch has been noticeable absent from bait shops for months.”

Culturing wouldn't be easy and you may not be selling year round, but it's an opportunity for someone to explore

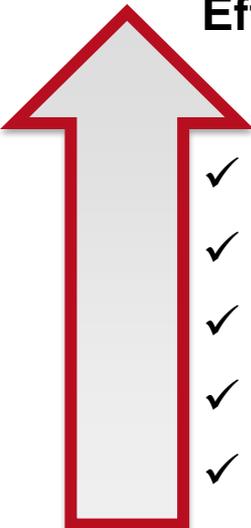


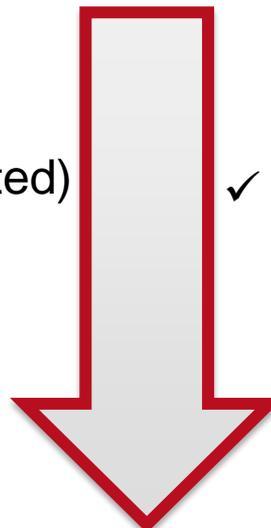
Emerald Shiner

Protocols can help increase profitability



Efficiency when
there are protocols for...

- 
- ✓ financial records (expected/unexpected)
 - ✓ stocking/sampling/harvesting
 - ✓ water quality monitoring
 - ✓ marketing your products
 - ✓ sales
 - ✓ transporting your products
 - ✓ storing your products
 - ✓ cleanliness of the facility
(OSHA and time)



✓ Lowers costs in the
long run

**Spending your time (money) developing
protocols is an expense.**

**With improved efficiency we hope that the
business runs smoother and leads to lower
costs in the long run.**

Example of protocols from USDA-ARS pub research

- Pond hybrid catfish study investigating min. oxygen concentrations
- Investigation into production characteristics between ponds that were allowed to reach low oxygen levels versus those kept at high levels
- Min **4.9 mg/l** or **1.4 mg/l** average



Stocking catfish



Feeding catfish: Luke Roy, Auburn Uni.



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Example from USDA-ARS pub research

- Dissolved oxygen affects on fish growth; Torrains et al. 2015

Variable	2009		2010	
	High DO	Low DO	High DO	Low DO
Replicate ponds (<i>N</i>)	3	2	3	3
Mean fish weight stocked (lb/fish)	0.11	0.11	0.16	0.16
Number stocked (fish/acre)	8,030 ± 12	8,010 ± 18	11,980 ± 0	11,980 ± 15
Gross production (lb/acre)	10,948 ± 170 z	8,409 ± 526 y	20,535 ± 1,061 z	14,530 ± 199 y
Mean fish weight harvested (lb)	1.37 ± 0.09 z	0.99 ± 0.04 y	1.89 ± 0.07 z	1.35 ± 0.05 y
Number harvested (fish/acre)	8,030 ± 451	8,530 ± 144	10,890 ± 374	10,750 ± 289
Net gain (lb/fish)	1.26 ± 0.09 z	0.87 ± 0.04 y	1.73 ± 0.07 z	1.20 ± 0.05 y
Net production (lb/acre)	10,054 ± 159 z	7,515 ± 528 y	18,671 ± 1,061 z	12,666 ± 200 y
Survival (%)	100.0 ± 5.5	106.5 ± 2.0	90.8 ± 3.1	89.7 ± 2.5
Total feed (lb/acre)	18,150 ± 516 z	13,260 ± 1,210 y	34,354 ± 1,615 z	24,309 ± 600 y
Food conversion ratio	1.81 ± 0.07	1.70 ± 0.04	1.84 ± 0.03	1.92 ± 0.02
Minimum DO Jun–Sep (ppm); equivalent air saturation (%)	4.63 ± 0.01 (58) z	1.64 ± 0.19 (24) y	3.76 ± 0.26 (47) z	1.27 ± 0.08 (17) y
Total aeration (hp-h/acre)	2,003 ± 153 z	276 ± 54 y	4,366 ± 390 z	941 ± 205 y



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- > **Feed fed means**
- > **aeration required**

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Example from USDA-ARS pub research

- Heard several times

“My fish are eating well and not dying. I must have enough oxygen for them so I don’t test.”

- Survival was the same (and never saw fish piping!)
- Similar responses not uncommon
- Test frequently
- Don’t waste energy



Example from USDA-ARS pub research

- Trade-off
 - Severe economic impacts (potentially bad)
 - More aeration and feed = more money
 - More pounds at harvest = more pounds to move (which takes more money)
 - More everything = more management required
 - Not good if not trying to get the product to market quickly



Example from USDA-ARS pub research

- In contrast
 - ✓ More pounds = more money
 - ✓ if you can move the product for the same price
 - ✓ More pounds p/acre or p/gallon = less space required to produce same poundage
 - ✓ Happier fish are hardier fish (which is good for all fish markets)



Partnering

- Hopefully someone who complements your strengths!
- Just because two people are interested in aquaponics doesn't mean they need to partner together!
- Is one a fish person and one a plant person?
- Not the only consideration but it is a positive!



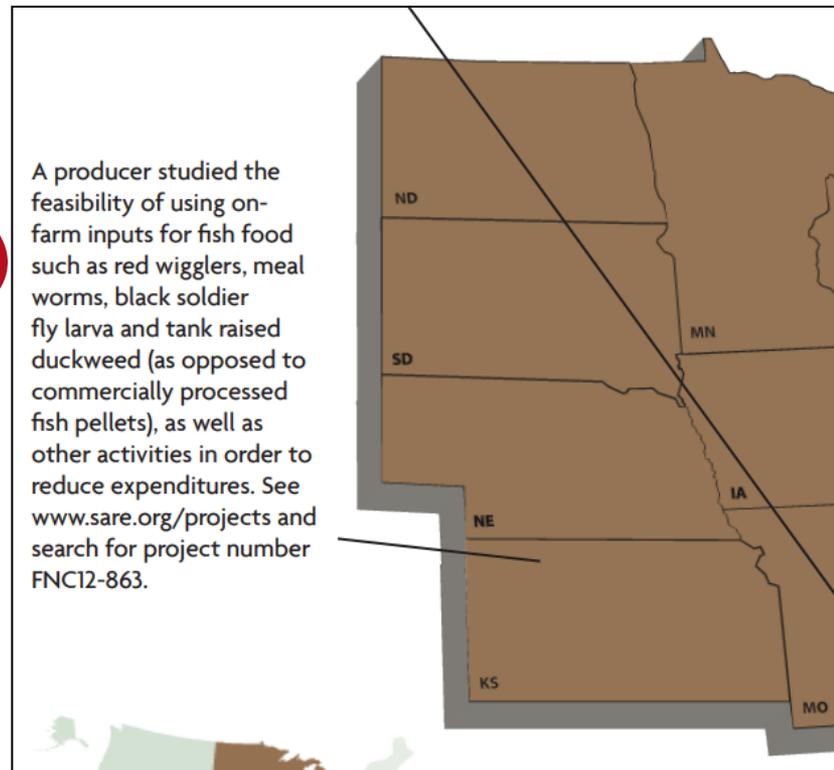
Millions of goldfish or a dozen bluegill?

- I often hear “this is going to be my retirement plan”
- If you’re going to run a for-profit then you will want to work like it’s a for-profit
- Long hours necessary, especially when doing most of the work yourself!



Have a novel production system or sustainable answer to a common problem?

- ✓ Utilize Sustainable Agriculture Research and Education (SARE) grants
- ✓ Ohio is in their North Central Region
- ✓ Can utilize to improve efficiency on farm
- ✓ and hopefully improve your profitability!



Interested in large scale to start?

- Best to “get your feet wet”
- Regardless, hiring a consultant (and having a retainer consultant) to design the system may be something to consider
- Do the additional costs of consultants outweigh the chances of something being constructed that’s highly inefficient? (limiting chances to ever be profitable)



Which steps to take?

- While no agriculture venture is easy, there are options to improve profitability on your farms!
- All related to your goals and what you want to invest!
- OSU has a host of folks willing to work with you!
- Have other ideas you want to explore?
- Come see me, e-mail me, or give me a call!



Questions?



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