Options for Private Oyster Seed Production

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As a grower, you will get seed

- You will make decisions about:
  - Seed source (hatchery)
  - Seed size (longest measure or mesh retained on)
  - Seed quantity (bought by 1,000’s)
  - Seed variety/line/ploidy/etc. (e.g., OBOYs)

- Timing will vary to some extent
- Need to follow local regulations about source of seed
How will you get those seed to a size that can be readily handled?
Nursery Stage

- Can get seed as small as retained on 0.75 mm mesh
- Can raise them at fairly high densities
- Very vulnerable to predators or loss due to sloppy handling
- For sake of discussion, nursery stage ends when seed are retained on 12 mm mesh (R12) and begin grow-out
  - (‘pepper flakes’ to ‘quarters’)

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Nursery Options for Oyster Seed

- **Upwellers**
  - Very high densities of seed
  - Rely on forced high flow of seawater usually by a pump
  - Can get seed as small as 1 mm (retained on 0.75 m)

- **Field containers/bags/baskets**
  - Lower densities
  - Rely on passive flow of seawater
  - Can get seed as small as R2

OR purchase larger seed from a nursery operation
**Upwellers**

- Either above the water line (usually land-based) or in the water (floating upwellers)
- Floating are often called FLUPSYs
Production in Upwellers

* With grading throughout season, can produce ~1 million seed retained on 12 mm mesh (R12)
* Cleaning seed and silos regularly
* Runs on axial flow pump so relatively low electric costs
  * High flow is key
  * Ideally 100 gpm per silo
* Purchased turn key $9,000
Upwellers above the water line

- Upweller silos can be built relatively inexpensively
- Still require regular maintenance of seed and silos
Upwellers above the water line

- Upwellers can also be put indoors/shelter
- Can be built out of fiberglass
- Note that silo shape varies
All upwellers have water (and food and oxygen) come up and go past the seed

Require frequent tending since seed are at such high density

Personally, I washed my silos & seed at least every other day
Upweller Videos

* Construction of ‘Supan Power Silos’ - https://www.youtube.com/watch?v=wcd6m6c51Gg

* Paddlewheel floating upweller - https://www.youtube.com/watch?v=z5oDgQG2l74
Field nursery

- Can opt to raise seed in the field in fine mesh bags
- Caveats!
  - Small seed are easy to lose out of even small holes
  - Fouling is much faster on fine mesh
For field nursery, routinely grading and moving to new mesh

- For a May 1 spawn, we typically have seed that retain on 2 mm mesh by June 15th or so (6 wks)
- These go into a 1.5 mm mesh ‘sleeve’ @ 10,000 seed/sleeve using a floating flippable cage (e.g., OysterGro)
- Works with any container system though (e.g., ALS)
Those seed get deployed at your field site.
Two weeks later ...

* After about two weeks (July 1), the seed will mostly retain on a 4.5 mm mesh and go in a 2 ml bag @ 5,000 seed/bag
Two more weeks later …

- After about two weeks (July 15), the seed will mostly retain on a 6 mm mesh and go in a 4.5 ml bag @ 2,500 seed/bag
- Up to this point, zero maintenance between gradings and re-baggings
Splitting and Desiccation

* After about 2 more weeks (August 1), seed will have gotten larger, and can split the densities in half, so there are only 1,250 seed/bag
* At this point, we begin weekly desiccation of the seed
To grow-out

- By August 15-30, seed will retain on a 12 mm mesh, so these are put into 9.5 ml bags which can be used through grow-out if properly maintained.
- Have decision if want to get the R12 seed at final grow-out density (150/bag) or keep them at higher densities (no more than 1,250 and can’t be kept there long).
For every 100,000 oyster seed

* June 15th – Need 10 1.5 ml bags, and 3 OysterGro minis
* July 1 – Need 20 2 ml bags and 2 more OysterGro minis (5 total)
* July 15 – Need 40 4.5 ml bags and 5 more OysterGro minis (10 total)
* Aug. 1 – Need 40 more 4.5 ml bags (80 total) and 10 more OysterGro minis (20 total)
* [~$500-$600 worth of bags, or $5,000-$6,000 of bags for 1 million seed]
By Aug. 15th – If going to final grow-out density (and assuming 96% survival/retention), need 640 9.5 ml bags and 160 OysterGro minis to get these seed to 150/bag (or 600/cage)

(As an aside, with our current permitting in Alabama, that is about 1 acre of cages.)
Additional considerations for field nursery

- Total time tending seed is approximately 2-2.5 months
- Minimal maintenance between gradings
- Does require power washing bags after use
Comparing growth and survival

- Highly variable
  - Personally, I have seen sites where field nurseries outperform upwellers and other sites where upwellers outperform field nurseries
    - Differences in handling?
    - Differences in food in water?

- In my opinion, either method can give you very high growth and survival
Which option is better?

* **Upwellers**
  + Convenient
  + Can control flow even in low flow environment
    - Power bill
    - Need to get upweller moved for storms
    - Can be expensive to build

* **Field nursery**
  + No power bill
  + Keeping an eye on your site
  + Only periodic maintenance
  - Multiple bag sizes needed
Questions?