

OYSTER FARMING GEAR SELECTION AND INSTALLATION

Bill Walton

Auburn University Shellfish Lab





GEAR SELECTION
CONSIDERATIONS

- Site
- Ability to survive storms
- Cost
- Availability of parts, interchangeability among systems
- Ease of use, labor
- Ability to air dry crop and gear
- Can small seed be raised in the system?
- Space efficiency if space limited
- Ability to permit, regulatory requirements/challenges
- Vulnerability to theft
- Visual perception by neighbors



GEAR SELECTION CONSIDERATIONS: SITE

- Know what gear can work at your site BEFORE choosing gear
- Consider wave action, storm exposure
- Water depth
- Bottom type
- Travel time
- Bio-fouling intensity



**GEAR SELECTION CONSIDERATIONS:
ABILITY TO SURVIVE STORMS**

Do not choose a gear type that does not have a realistic strategy to survive storms

Scale of farm needs to take this storm strategy into account

Of course, storm plan needs to be carried out

See 'Storm and Hurricane Preparedness' series by Sea Grant

<https://shellfish.ifas.ufl.edu/hurricane-resources/>

GEAR SELECTION CONSIDERATIONS: COST

- Consider durability, life of gear
 - May be more economical to spend more on more durable equipment
- Consider installation costs, but be sure to overbuild structure
- Be aware that stocking densities may differ from manufacturer's recommendations
- Be aware of deals too good to be true
- Value field tested gear with history of success

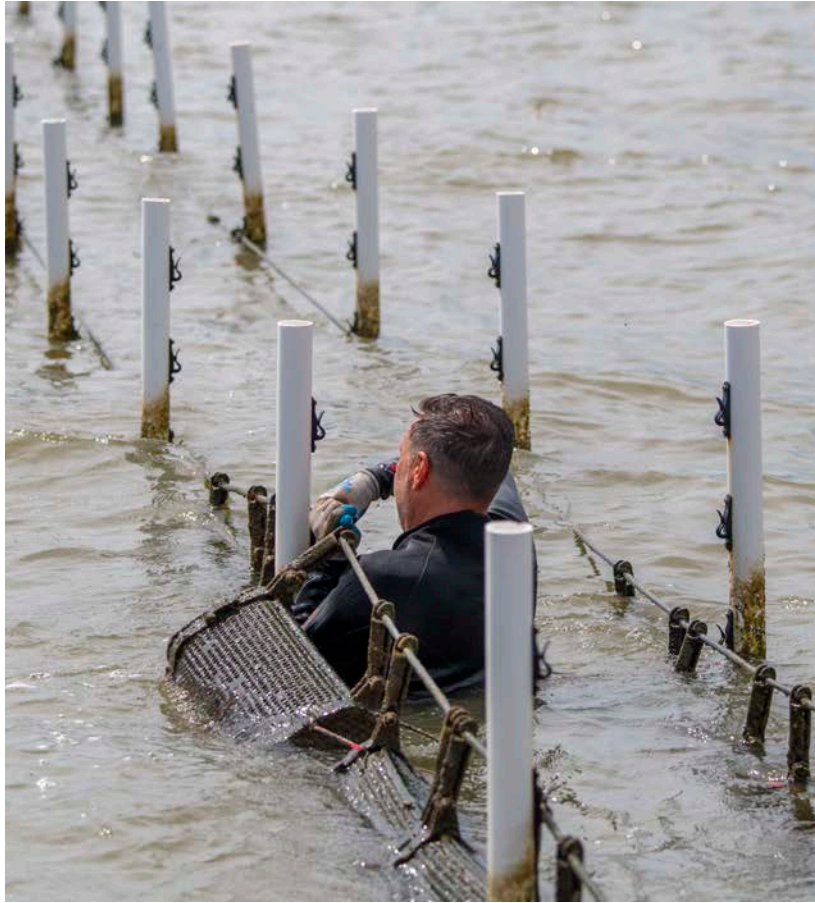




**GEAR SELECTION CONSIDERATIONS:
AVAILABILITY OF PARTS,
INTERCHANGEABILITY AMONG SYSTEMS**

In some cases, suppliers are shipping from overseas and this can cause delays and shortages

Does system allow different gear types if you want to try different brands?



GEAR SELECTION CONSIDERATIONS: EASE OF USE, LABOR

Physical ability required to work the gear

What size are the units for handling?

What labor is involved to maintain crop
and produce a quality product?

Does the gear take advantage of the natural
environment?



GEAR SELECTION CONSIDERATIONS:
ABILITY TO AIR DRY CROP AND GEAR

If using air drying to control bio-fouling, does the gear allow both the crop and the gear to be effectively air dried?

Is this mechanized or manual?

How much labor is required to air dry?

If not using air drying, how will bio-fouling be controlled



GEAR SELECTION
CONSIDERATIONS: CAN SMALL
SEED BE RAISED IN THE SYSTEM?

- Does the system allow you to effectively raise seed from size received through harvest?
- If not, consider costs and trade offs with a nursery system

GEAR SELECTION CONSIDERATIONS: SPACE EFFICIENCY

- Different gear types can make more efficient use of space than others



GEAR SELECTION CONSIDERATIONS: ADDITIONAL CONSIDERATIONS

- Permits and regulations may restrict gear type and/or affect how used
 - E.g., required resubmersion may differ after air drying
- Vulnerability to theft may differ
- Visual perception may differ





CULTURE GEAR OPTIONS

On-Bottom Culture

No gear

Off-Bottom Culture

Bottom containers

Suspended gear

Floating gear

Other Gear to Consider

Boat/work barge

Nursery equipment

Truck/trailer

Sorter/Grader

Etc.

ON-BOTTOM CULTURE

The background image shows two fishermen on a boat. One fisherman on the left is wearing a white t-shirt and a dark cap, looking towards the right. The other fisherman on the right is wearing a light blue t-shirt, a green cap, and a dark apron, working with oysters. They are on a wooden pier with a metal railing. In the foreground, there are several large metal baskets filled with oysters. The overall scene is dimly lit, suggesting dusk or dawn.

ON-BOTTOM CONSIDERATIONS

- Site – Need hard bottom, good flow, predator community, etc.
- Ability to survive storms – No gear in water
- Cost – Relatively low (but consider cost of cultch)
- Availability of parts, interchangeability among systems – N/A
- Ease of use, labor – Mechanized, from boat
- Ability to air dry crop and gear - None
- Can small seed be raised in the system? – May rely on wild set
- Space efficiency if space limited -Varies
- Ability to permit, regulatory requirements/challenges –
- Vulnerability to theft–Typically only to individuals with fishing equipment
- Visual perception by neighbors –Very few issues

OFF-BOTTOM CULTURE

Bottom Cages – Cages that rest on the bottom but keep the oysters contained



BOTTOM CAGES CONSIDERATIONS

Site – Need hard bottom so cages won't get buried

Ability to survive storms – Out of winds & waves; may need some type of anchor line

Cost –Varies

Availability of parts, interchangeability among systems –Varies

Ease of use, labor – Mechanized, from boat

Ability to air dry crop and gear - None

Can small seed be raised in the system?
–Yes

Space efficiency if space limited -Varies

Ability to permit, regulatory requirements/challenges – Generally easy to permit

Vulnerability to theft–Typically only to individuals with fishing equipment

Visual perception by neighbors –Very few issues

OFF-BOTTOM CULTURE

Suspended Culture – Bags/baskets suspended on a line at set heights above seafloor (which may be adjustable)

- Site – If working from in the water, need firm bottom to walk. Also need very specific tidal range in our region.
- Ability to survive storms – Have generally performed well to date
- Cost – Relatively high (includes piling installation)
- Availability of parts, interchangeability among systems – Generally good
- Ease of use, labor – High labor. Can be reduced if suspended at tidal height that allows daily air drying (but use caution!)
- Ability to air dry crop and gear - Yes
- Can small seed be raised in the system? – With modifications.
- Space efficiency if space limited - High
- Ability to permit, regulatory requirements/challenges – Varies
- Vulnerability to theft– Can occur
- Visual perception by neighbors – Some resistance in some areas



SUSPENDED CULTURE CONSIDERATIONS



GEAR OPTIONS: SUSPENDED

- NOT USED CURRENTLY IN REGION (TO BEST OF MY KNOWLEDGE)
- SEE WWW.EKONEOYSTER.COM
- “...USE AN OFF BOTTOM METHOD CALLED LONG LINING, WHERE THE OYSTERS GROW SUSPENDED ON ROPES THAT ARE RAISED OFF THE GROUND BY PIPES. THERE IS A NOTCH IN THE TOP OF THE PIPE FOR THE ROPE TO SLOT INTO, AND THE OYSTERS GROW IN CLUSTERS SUSPENDED BY THE ROPE.”

OFF-BOTTOM CULTURE

Floating Culture – Oysters held in containers that are floated at the water's surface



VARIETY OF FLOATING GEAR TYPES

- Baskets, bags, cages, platforms
- Some of these systems can be sunk



FLOATING CULTURE CONSIDERATIONS

Site – Works across range of depths and bottom type, consider wave exposure

Ability to survive storms – Varies by type, but most require preparation

Cost – Relatively high

Availability of parts, interchangeability among systems – Generally low

Ease of use, labor – Varies by type, with some with increased automation. Often get some tumbling in the gear naturally

Ability to air dry crop and gear - Yes

Can small seed be raised in the system? – Typically yes

Space efficiency if space limited - Less space efficient

Ability to permit, regulatory requirements/challenges – Varies

Vulnerability to theft– Can occur

Visual perception by neighbors – Some resistance in some areas

OTHER THINGS TO CONSIDER

- Survival, growth and quality can vary significantly across gear types and brands
 - See what others are producing
 - All gear can be used badly and have low survival, poor growth and inferior quality
- Customer service and tech support
- Many brands are regularly adding improvements to their gear
- Benefits of tagging gear



GEAR INSTALLATION: SOME TIPS

- Specific recommendations from supplier
- Check with local growers to see what modifications they have made and what has survived storms
- Do not skimp on the farm infrastructure
- Reduce all points of chafing
- Sink metal anchors below surface of seafloor to reduce oxidation



ANCHOR POINTS

- Pilings
 - At least as much piling in sediment as out
 - Vibrating hammer
 - Ensure enough piling is above high water mark so obvious at extreme high tide
- Helix anchors
 - Bury deeply
 - Large disc
- Arrow head anchors
 - Ensure that installed correctly





QUESTIONS OR COMMENTS?

@doctor_oyster
walton@vims.edu