Division of Aquaculture

600 South Calhoun Street, Suite 217
Tallahassee, Florida 32399-1300
Main Office: (850) 617-7600
Aquaculture_Web@FDACS.gov
www.FDACS.gov

Information and Regulations for Clam Aquaculture

NET COATINGS

FDACS-P-00069 - Technical Bulletin #03 - Updated April 2024

Overview:

Safeguarding the public and supporting Florida's agricultural economy.

Best Management Practices

Shellfish farmers must abide by provisions of their lease agreement and Aquaculture Best Management Practices (BMPs) that are established by state law.

- The **use of petroleum or tar derived coatings on clam bags**, cover nets, markers and any other associated aquaculture equipment placed in state waters **is prohibited**.
- The **discharge of pollutants** (including oil of any kind or in any form, gasoline, pesticides, ammonia, chlorine and derivatives thereof) into or upon any coastal waters, estuaries, tidal flats, beaches, and lands adjoining the seacoast of the state **is prohibited**.
- All **leaseholders are responsible for collection and proper disposal of all bags, cover netting or other materials** used in the culture of shellfish on submerged lands or when such materials are removed during maintenance or harvesting or become dislodged during storm events or cancellation/termination of the lease.

Net Coating Uses for Clam Aquaculture

Farm-raised hard clams are typically stocked in polyester mesh bags that are secured to the bottom, allowing clams to dig down into the sediment for protection. To feed, clams push their siphon up through the mesh to filter phytoplankton, dissolved organic matter and organic particles from the water column.

Clams may be predated upon by a wide variety of fish (cow-nose or eagle rays, black drum and sheepshead) or crustaceans (horseshoe, blue and stone crabs).

To enhance predator protection and reduce wear and tear on clam bags, some farmers treat nursery and grow out bags with various coatings to stiffen the fabric. **Clam aquaculturists must ensure that all production gear is free of adulterants or pollutants that may harm the marine environment.**

Net coatings stiffen the bag mesh, and reduce the ability of fish or crabs to access and consume valuable clam crops. Coated polyester bags may be protected from damaging ultraviolet sunlight and retain their strength longer, resulting in decreased gear costs. Coated bags may also replace the need for cover netting, eliminating the cost of those materials and the labor required to handle, install and dispose of cover netting. Properly applied coatings maintain an open mesh to facilitate current flow that carries the food and oxygen necessary for healthy clam growth. However, the coatings may also offer an improved attachment site for bio-fouling organisms and impede current flow. Farmers report that dark colored coated bags may not be noticed by visually oriented predators and they are also not as visible by passing boaters.

Low tide briefly exposes an array of planted clam bags.

Development of Clam Gear

Florida clam farming began in the 1970s with experimentation by Dr. Winston Menzel of Florida State University. Dr. Menzel planted his clams in wire cages or surrounded his clam crop with six foot high, plastic coated wire fencing. Current state law and cost prohibit such equipment today.

Early clam farmers during the 1980s in the Indian River used plywood trays. The cumbersome and very heavy wooden trays were quickly replaced with polyester mesh bags. A common sight at Florida clam operations was newly cleaned and drying clam bags. As the number of clam farmers grew in the mid-1990s, so did encounters with clam eating fish and crabs. Clam farmers noticed that fish and crabs could cut through or gather and crush growing clams when planted in the soft, polyester mesh bags. To deter predators, polyester mesh netting, chicken wire, or plastic "bird" netting was rolled out over the clam bags as cover netting to increase protection. Purchasing, handling, installing and removing cover netting increased production costs. To reduce cost and effort, farmers attached grow out bags to chicken wire and rolled out cover netting and grow out bags in one step.

Farmer recognition that the soft mesh may be the problem led to experimentation with coatings to stiffen the mesh. In some applications, these coatings were successful in deterring predators and eliminating the need for cover netting. However, hardening the mesh increased biofouling by oysters, sea squirts, and seaweeds at some lease locations and the stiffer nets may not be suitable over certain bottom types like hard sand or shell hash. Today a mix of predator deterrence equipment and methods are available for use depending upon location, season and sediment type. Only hard won experience will prove what works.

Article By: Leslie Sturmer, UF-IFAS

Requesting Approval for a New Net Coating Product

All coating products to be sold in Florida for application on any shellfish aquaculture equipment must be evaluated and approved for use by the Division prior to sale or utilization. To receive approval for a new net coating product, **a written request must be submitted to the Division** that describes or includes:

1. The intended use;
2. The functional intent of the product;
3. Product label(s), trade name(s) and/or product identification number(s);
4. A copy of the appropriate **Material Safety Data Sheet;**
5. Handling, application and curing instructions;
6. Technical sales literature;
7. Manufacturer's statement that properly applied and cured coatings will not release pollutants into waters of the state.

Following an evaluation of the information provided, the Division will approve or deny the use of a specific net coating product based on the information provided. If approved, a certification letter will be provided and **a copy of the certification letter must accompany all sales of the product in Florida.**

To submit an approval request or to request further information, please contact the Division by email at Aquaculture_Web@FDACS.gov or by calling (850) 617-7600.

List of Approved Net Coating Products

Product Name	ID Number	Manufacturer	Phone #
Net 3	NM3-401	Netminder Aquaculture Coatings	(267) 709-1397
GRAS (green and black) net dips	5001 (black); 5002 (green)	Kel-Glo Industrial Coatings	(305) 751-5641
Bat Stopper Blend - Acrylic Polymer	N/A	Cascade Columbia Distribution Co.	(800) 533-6334
Alkyd: black, green and blue; Latex: green and black	CX1713-black, CX1715-green, CX1719-blue, CX1720-green, CX1721-black	Lee Fisher International	(813) 875-6296

Once a material has been approved by the Division and has been placed on the approved product list above, a farmer does not have to request approval to use the product in accordance with the manufacturer's specifications.

The Florida Department of Agriculture and Consumer Services provides coating manufacturer information as a public service and does not endorse a manufacturer and/or imply satisfactory product performance.

Recapturing drip loss and preventing spills protects the environment and saves money.

Coated equipment must be fully cured to an inert condition.

Follow manufacturer recommendations for adequate ventilation and protective gear.

Different mesh sizes are used to protect clams during different stages of production.

How to Safely Apply, Handle and Cure Net Coatings

All coatings applied to shellfish aquaculture gear must be approved by the Division prior to use. Individuals that intend to add a protective coating to clam farming equipment must implement and adhere to all coating manufacturer instructions concerning handling, application, drying and curing, including the recommended materials to thin the coating. **Coatings that release pollutants, especially oil-based products of any kind or in any form, are prohibited by state law.** Examples of prohibited products include, but are not limited to, oil, asphalt-based tars, other tars, and creosote. Coatings that do not release pollutants when fully cured are acceptable. Examples of materials that are acceptable when properly handled, dried, and cured include acrylic, latex, polyester, epoxy or alkyd resins. Coated equipment must be fully dried or cured such that coatings do not release pollutants. **Improperly applied or cured coatings may release pollutants into the water.**

Coatings may be tinted using various colors (black, green, red, maroon, etc.) for a variety of reasons that may include: to identify net ownership, to camouflage net bags for additional predator protection or to hide planted clams from clam thieves. **Non-approved colorants or any other additives may leach pollutants and are also prohibited by state law.**

Coating manufacturers must provide information that clearly states fully cured coatings do not release pollutants. This information must include handling, drying or curing instructions for the use of the coating in the production of shellfish in a marine environment. Approved coating manufacturers must provide this information with all coating products sold to Florida clam farmers. **Aquaculturists using protective coatings must retain product labels and handling and application instructions** for review by Division personnel upon request.

In general, coating application practices include the following:

- ⇒ Nets should be cleaned, washed and dried thoroughly prior to treatment, especially if the nets are fouled from prior use in grow out.
- ⇒ High pressure cleaning of bio-fouled equipment may not occur over state waters.
- ⇒ Coatings should be handled and stored to prevent spillage and in containers with lids or tops that can be secured when the material is not in use.
- ⇒ Coatings should be applied with adequate ventilation and the means to capture or clean up drip loss.
- ⇒ Coatings may not be applied in locations that are over state waters.
- ⇒ Manufacturer application, drying and curing instructions must be followed.
- ⇒ Manufacturer recommended drying or curing times between coatings or prior to use must be followed.
- ⇒ Follow all coating manufacturer instructions regarding proper cleanup and disposal.