



## OYSTER CULTURE CYCLE: WORKSHEET

Answer the following questions for each section of the Oyster Culture Cycle:

### **Introduction/Background:**

1. Various answers.
2. Mariculture – the process of farming organisms from the sea  
aquaculture – the farming of aquatic organisms in general

**Answer  
Key**

### **Hatchery Business:**

#### **Stage 1 : Site Selection**

1. Site selection is important because a hatchery must have a good location, which includes having appropriate salinity, water temperature, and water quality.
2. The Gulf of Mexico water temperature does not vary much from season to season.
3. Oysters grown on-bottom are more susceptible to predation by oyster drill snails than oysters grown off-bottom.

#### **Stage 2 : Algal Culture**

1. The algal species used at the Grand Isle hatchery are *Isochrysis galbana*, clone C-ISO and *Chaetoceros muelleri*, clone CHGRA.
2. Algae are important in the oyster hatchery business as food source for oysters.
3. Algae need the proper pH, carbon, and light for proper growth to occur.

#### **Stage 3 : Broodstock**

1. The type of oyster produced at the Grand Isle hatchery is the cupped oyster *Crassostrea virginica*.
2. Oysters are kept at a temperature of 10° C because that temperature is the most favorable for oysters in nature. When they are ready to reproduce, the water temperature is raised 2° C every other day until 2° C is reached, mimicking nature in springtime.
3. Seawater should be used since *Crassostrea virginica* is a saltwater organism.

#### **Stage 4 – Spawning**

1. Oysters are encouraged to spawn by raising the temperature of the water.
2. Fertilization can occur by scraping (strip-spawning) the oyster's gonads and combining eggs and sperm, or the oysters can release sperm and eggs naturally.
3. If oysters were not identified as male or female before spawning begins, there may be a chance that all or most of the oysters would be of one sex; therefore, fertilization and the resulting larval production would be reduced.
4. The hatchery does not allow all of the oysters to spawn because the oysters' larvae are not all needed at one time. Ripe oysters are held to be used when an order comes in.

### **Stage 5 : Larval Rearing**

1. Embryological development occurs immediately after the egg is fertilized.
2. The larvae swim, unlike any other stage in the life cycle of an oyster.
3. The part of the larva that allows movement is the cilia.
4. (a) If salinity changes radically, then larval mortality will increase.  
(b) The larvae swim away from light (negative phototaxis) when setting.  
(c) Lower water temperature slows larval growth.

### **Stage 6 : Setting**

1. Larvae use their feet to attach to a substrate.
2. You know that attachment has been successful when you can feel a sandy bump on the substrate.
3. A metamorphic change is a developmental stage when an organism moves from one form to a completely different form.

### **Production Business:**

#### **A. Remote Setting**

1. A 225-micron screen is used to catch the larger larvae that are ready to set. The larvae that fall through are not ready to set and need more time to grow.
2. If the paper toweling were to dry out, the larvae would dry up and die.
3. An oyster producer can order larvae and place the larvae on substrate to grow.

#### **B. Nursery**

1. The spat stage is used for this part of the production business.
2. If clients want to sell individual oysters, they use a tiny substrate. If they don't care whether the oysters grow in clusters, they may request large-substrate spat.
3. If I were a client, I would request \_\_\_\_\_ because \_\_\_\_\_.

#### **C. Grow-Out**

1. Oyster producers put seed in mesh bags to hold them together. The oyster seed can then be easily manipulated as needed.
2. See Oyster Culture Methods diagrams.
3. Student choice and reasons.