Subaqueous Soil (Sediment) Sampling and Testing for Acceptability of Sunray Venus Culture

Introduction

The relationship between subaqueous soils (bottom sediments) and sunray venus clam production has been examined in recent studies by University of Florida (UF) researchers. Soils were collected from 18 existing clam leases on the west coast of Florida where test plots of sunray venus clams had been planted. Survivals of >50% were achieved at lease sites with sand content ranging from 88 to 98% and organic matter content ranging from 0.2-1.3%. In a controlled mesocosm (bucket) study conducted at the UF lease near Cedar Key, findings suggested that >90% sand and <1.7% organic matter content were favorable for sunray venus clam culture. This information will now be used as a tool to aid clam growers in determining the suitability of bottom sediments at their farms for sunray venus clam culture. This soils-based approach is similar to how the USDA National Resources Conservation Service uses soil properties to survey lands best suited for various types of terrestrial crops.

Subaqueous Soil Test Kit

A subaqueous soil test kit has been assembled for clam growers to collect samples for analyses of soil properties. The kit consists of the following materials:

1) 8” section of 2”-D PVC pipe
2) Two – 2”-D PVC caps
3) Quart-size ziploc bags
4) Gallon-size ziploc bag(s)
5) Pre-paid addressed shipping box(s)
6) *Subaqueous Soil Sampling and Testing Fact Sheet*
7) *Subaqueous Soil Test Form*

Prior to collecting soil samples, fill out the labels attached to the quart-size bags for each soil sample (#1, 2, and 3). Information required is grower’s name and date. Also complete the label on the gallon-size bag. Soil samples in quart-sized bags should be placed inside a gallon bag to minimize possible leakage during shipping.

Where to Take Subaqueous Soil Samples

Most growers are familiar with the areas they farm and can determine where “sandier” or muddier” soils occur. Select an area which you think has “sandy” soils. Within each “sandy” area, take three subsamples to ensure you have representative coverage of the soils in the area. To be able to relate the soil test results to each sample site, it is recommended that a small PVC pipe or stake be placed at each sample location.

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How to Collect Subaqueous Soil Samples

In order to obtain reliable results from a soil test, the samples must be taken correctly. Soil samples should accurately represent the area being considered for farming. Follow the steps below to properly collect subaqueous soil samples.

1. At each sample site, insert the core tube (2”-D PVC pipe) into the soil to the red tape mark (about 4” in depth). A zip-tie is also placed at the 4” mark to assist in determining this depth. (Picture A)

2. Cover the end of the pipe above the soil by securely fitting the 2” PVC cap. (Picture B)

3. Push the tube over to one side until the bottom breaks free. Immediately cap the bottom of the pipe before bringing the sample to the surface.

4. At the water surface or in the boat, empty the soil from the tube by removing the bottom cap and inserting the pipe into a quart bag. Then remove the cap from the top of the pipe. The soil sample should slide into the bag. (Picture C)

5. Allow time for the contents of the bag to settle before pouring off any clear water. Seal the quart bag securely and place into a gallon bag. Make sure the bags have been properly labeled with name, sample number, and date sampled.

Subaqueous Soil Analyses and Results

Soil samples along with a completed *Soil Test Form* are to be mailed to the UF IFAS Shellfish Extension office in the addressed, pre-paid shipping box(s) provided. Each sample will be analyzed for soil particle size (sand, clay, and silt content) and organic matter content. Analyses may take up to four weeks to complete. After which, a soil test report will be provided with information on the results and how they relate to acceptability of sunray venus clam culture.

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