**Module 1

“Just The Berries”

Fall Semester**

 **Lessons 1-5**

 **Driving Question(s)**

* What are the basic needs of a plant?
* How do we best produce and care for strawberries in the classroom?
* How does an EarthBox function?
* How does the length of roots affect the growth of a plant?

 **Overview**

This module has students investigating what a plant needs to survive, reading and learning about an EarthBox and how it functions, planning and conducting an investigation on root length and how it affects a plants growth and observing the growth of strawberry plants over time by recording observations and data in their science notebook.

 **Major Products & Performances**

* Science Notebook/journal
* Planted EarthBox
* Completed data table of plant height with student’s findings/conclusions.

**Teacher Background**

Strawberries can be classified as June bearers, everbearers, and day-neutral. June-bearers bear fruit over a 3 to 4 week period in the spring. Everbearers bear fruit twice a year in the spring and fall. Day-neutrals will bear fruit in spring, summer and fall. Strawberries are grown from year-old roots or from seed. The plant will produce berries within 60 days from a root and around 122 days from seed. We have had the most success with Quinault (everbearing) and Allstar (June-bearing). This project has our students planting bare-roots in an EarthBox in the classroom. We plant in the fall so berries can be observed by winter. It is suggested to remove blooms as they appear the first year so that the plant can get established; however, we choose not to do this so the students can see the whole cycle and observe berries on the plant. When harvesting the berries we remove each fruit with its stalk and handle it carefully to give it a longer shelf life.

 **Teacher Background Cont’d**

Strawberry plants contain runners. June-bearing strawberries produce more runners than everbearing. The proper name for strawberry runners is “stolon.” Stolons are defined as horizontal connections between organisms, and they can arise from the organism. Strawberry stolons, or runners, are horizontal stems that run above the ground and produce new plants at nodes spaced at various distances. The long stems containing no leaves, between the main plant, plant-growing nodes, and growing tip of the stolon are called “internodes.” Runners can be planted to grow new plants. (See Caretaker’s Guide example on how to properly plant runners, propagate.)

For more background information on strawberries see - <http://strawberryplants.org/2010/05/what-are-strawberry-runners-stolons/> & <http://byf.unl.edu/Bareroot>

**Growing Tips:**

When strawberries are planted in the EarthBox it is best to fill the water reservoir (hold about 2 ¾ gallons) once a week through the tube. If transplanting the strawberries to outside bed you will need to acclimate them to the outside temperature by putting the EarthBox outside 2 hours the first day, 4 hours the second day, and 6 hours the third day. On the fourth day you can leave them outside or transplant them into an outside bed. If transplanting the strawberries, handle the plant and roots with care.

**Science Notebook Lesson:**

Guidelines for the notebook and table of contents page is in a Science and Children article called “Reuse that Notebook!” by Elizabeth Lener

**A Plant’s Needs Lesson:**

A **See/Think/Wonder (STW)** chart is a great teaching tool that is very similar to a KWL chart. The **S** (see) section needs to include only what children can see, or observe. The **T** (think) section allows students to describe their thinking without questions. The **W** (wonder) section lets students ask questions about what they see.

**Teacher Background Cont’d**

**A Plant’s Needs Lesson Cont’d:**

Soil temperature thermometer and soil moisture meter is used so students can compare the 2 scenarios. These are not mandatory but add to the lesson.

**Preparing EarthBox and Planting Bare Roots Lesson:**

\*\*\*Day 2 of this lesson is not necessary if you choose to do the Root Length Lesson\*\*\*

Please fully read the EarthBox Instructional Manual before doing the lesson with students. Step 1: Get Organized has very important information about dolomite & fertilizer that you will need to discuss with your students. Safety concerns about dolomite & fertilizer are on the packages.

Attached to this lesson are an EarthBox manual & placement chart and an example of a class chart. The manual and placement chart is also available at: [https://earthbox.com/earthbox-pdf/EB-WEB-INSTRUCTIONS\_NEW-2.pdf](https://earthbox.com/earthbox-pdf/EB-WEB-INSTRUCTIONS_NEW-2.pdf%20).

We included two YouTube videos with this lesson and the next. Be sure to watch these videos prior to teaching these lessons.

**Root Length Lesson:**

The Root Length Investigation Template is attached to this lesson as well as the Root Length Investigation (Teacher Guide).

A handout on Handling & Planting “Bare-root” plants is also attached to the lesson. More information on bare-roots and their anatomy can be found at: <http://www.hort.cornell.edu/expo/proceedings/2012/Berries/Berry%20Plant%20Structure%20Poling.pdf>

There are examples of anchor charts included in this lesson as well as pictures of students measuring and planting bare-roots.

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