

**Grade Level: 3**

**Title: Let's Get Dirty! (Aug - Sept.)**

**Purpose:**

Students will examine and analyze different types of soil.

**Subject Area(s) Addressed:**

Science and Math

**Common Core/Essential Standards:**

**Science:**

3.L.2.4 Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.

**Math:**

3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

**Vocabulary:**

clay  
humus  
sand  
soil

**Materials Needed:**

3 large pots or one raised bed divided into three sections or 3 raised beds  
at least 3 strawberry plants  
sand, clay, and loam, available at local Soil and Water Conservation office  
perlite or vermiculum (optional)

**Teaching Strategy:**

**Essential Questions:**

In which type of soil will strawberry plants grow best? Produce the most fruit?  
Compare to other types of plants (i.e. vegetable plants and other fruit plants).

**Activity:**

Students will be planting strawberry plants in three different types of soil. This may be done using raised beds or large pots. Show students examples of different types of soil – e.g. sand, clay, and loam (more extreme versions of soils will give more dramatic effects to your experiments). Have students work with the soil to determine its properties - water capacity, texture, formation. They should record their observations in their science journals. Next, have students make predictions

as to which type of soil they think is best for growing strawberries and why. This should be based on the properties of each type of soil. Students will plant the strawberries in the three different types of soil. (They could also set a plant into a sterile, nutrient-free growing medium, such as vermiculite or perlite.) Students will chart the growth of their plants. They will need to measure the growth of the plants weekly and record the amount of water given to the plants. If using a raised bed, students will be able to test the soil in the raised bed to determine if irrigation is necessary. Use this as an opportunity to teach measurement, both length and capacity.

For best understanding, continue to tend plants through harvest time and compare harvests from the different soil types. How did they grow through the year? Which did best? Was soil type a major factor or were other factors more important?

### **Extension Activities:**

Experiment with planting other plants besides strawberries in the three types of soil and compare the growth. Do certain plants require different types of soil for maximum growth?

Put a sample of each of your soils into a tall narrow container or jar (large test tubes work), add water, shake it up, and let the soil particles settle. Heavy particles (sand, gravel) will fall to the bottom, clay will be at the top, with the finest clay particles remaining in suspension.

Students can use a soil tester kit, available at the local Soil and Water Conservation office, to determine what nutrients are found in each soil.

### **Background Information:**

Call your Soil and Water Conservation District office. These offices have a lot of resources and prepared activities for teachers to use during a soil unit. To locate the office in your area, go to <http://www.ncagr.gov/SWC/findyourdistrict.html>.

Strawberries actually grow well in many different soil types, though each presents its challenges, and soil type is only one soil-related factor in the success of a planting. Other factors include how much organic matter (humus) is in the soil, the availability of nutrients (fertility), the presence of soil-borne diseases, and of course the land the farmer has available!

Sandy soils are easy to work up into the raised beds that strawberry growers use; they can be worked more rapidly after a rain and tend to have earlier crops. However, they also don't hold nutrients as well, and nutrients leach out quickly after heavy rain. Clay soils are harder to work with and stay wet longer, but have a more complex and ready supply of nutrients. Loam soils and the various combinations (e.g. sandy loam, clay loam) are in between.

**Assessment:**

Charts and science journals

**North Carolina Strawberry Association – [www.ncstrawberry.com](http://www.ncstrawberry.com)**

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