

## 2nd Grade Soil Exploration and planting fava beans

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**Date:** October

**Description:** After the introduction with the whole class then divide into two groups. If a volunteer will be present, break into 3 groups with the 3<sup>rd</sup> group learning the song “Dirt Made My Lunch” by the Banana String Slug Band. The two main stations will 1) explore soil samples from the garden following the Space Travelers outline and 2) clearing an area of the garden, planting cover crop of fava beans and discussing reasons to plant to prevent soil erosion and add to soil nutrition.

**Objective:** Students will use simple tools to explore and describe the components of garden soil. Students will describe the reasons for cover cropping to reduce erosion and improve soil health. Students will learn how to plant fava beans.

**Background:** To be a successful gardener or farmer, you care for and protect the soil. Every inch of soil takes hundreds of years to produce through breakdown of rocks and decomposition of organic matter. Students will explore garden soil by pretending to be aliens investigating soil by dissecting and recording a sample into its smallest parts (sand, rock, leaf, bugs, and seeds). Students also will plant a cover crop (fava beans). These plants will help protect the soil through the winter, its roots preventing erosion. The fava beans will be ready to harvest in the spring, and the plants will be chopped and mixed back into the soil to help improve soil health. All plants in the bean and pea family have the ability (with the help of root bacteria) to fix nitrogen (plant food) from the air into the soil. When the plant is incorporated back into the soil, it’s called green manure because it provides great nutrients to the soil to support plant growth.

**Preparation:**

Set up outside if possible with 3 tables for Station One – Space Travelers: One table contains magnifier glasses, tweezers, clip boards, paper, pencils, bin of soil with a trowel and yogurt container lids. The other tables are used for students to work on dissecting the soil. Station two: prepare the garden area, dividing it with twine/string to mark where each class will work, depending on the number of classes and if necessary. Bring out trowels and gloves (enough for half the class). Have enough fava beans for everyone to plant at least one bean.

**Action:**

Introduction: Welcome to the garden; who thinks soil is important? Why? We’ll be dividing into two groups. We’re going to look at soil as if we were from another planet and want to understand how to make soil ourselves. The other group will be planting a very special seed into the garden.

Review the 4 rules of the garden:

1. Keep feet on the paths and out of the beds (plant roots like soil that is not compacted).
2. Don’t pick anything without asking first (some plants aren’t edible or may not be ripe).
3. Be respectful to: creatures (rolly pollies, worms), the equipment, your fellow gardeners.
4. When using tools, keep them below the waist so no one gets hurt!

**Station 1: Space Travelers – Dissecting Soil (15-20 minutes)**

Explain the soil dissection group will work in groups of 3 with one getting the magnifier and tweezers, one getting the clip board, paper and pencil and the last getting the soil and trays. Students should look for every tiny thing in the soil. What do you think you might find in the soil? The recorder will list all of these things.

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### **Station 2: Planting Fava Beans into the garden**

- Ask students, why is soil important to us? If it rains very hard on bare soil, what happens to the soil? What if it is bare and the wind blows very hard? Bare soil in rain or wind will end up out in the oceans! Once it is in the ocean, can we get it back?
- Ask students if they can identify the fava bean seeds. Fava bean is special for multiple reasons 1) you plant it in the fall and it is ready to eat in the spring 2) Beans can fix nitrogen from the air into the soil 3) their roots will help hold the soil in place to prevent erosion.
- Demonstrate to student how to use a trowel to dig a weed out to get the roots and leave the soil in the bed. Hand students a pair of gloves to put on. Then hand students a trowel. Show them the area to help clean of weeds. Put trowels away.
- Now describe the planting method – plant seeds at a depth two times the size of the seed. Have students make their planting hole and plant their seed into the correct area.

### **Wrap up:**

Ask students if there was something surprising or interesting they learned in the garden today. Did they learn how to make soil for another planet? Can we make soil quickly? How will cover crops help the soil over the winter?