



## Title: Which Soil is the Best Home for Carrots?

### Grade Level: Kindergarten-3rd

#### Target Standards:

- Kindergarten
  - SKE2. Students will describe the physical attributes of rocks and soils.
    - a. Use senses to observe and group rocks by physical attributes such as large/small, heavy/light, smooth/rough, dark/light, etc.
    - b. Use senses to observe soils by physical attributes such as smell, texture, color, particle/grain size.
    - c. Recognize earth materials— soil, rocks, water, air, etc.
- 1st Grade
  - S1L1. Students will investigate the characteristics and basic needs of plants and animals.
    - a. Identify the basic needs of a plant.
      1. Air
      2. Water
      3. Light
      4. Nutrients
- 2nd Grade
  - S2L1. Students will investigate the life cycles of different living organisms.
    - c. Investigate the life cycle of a plant by growing a plant from a seed and by recording changes over a period of time.
- 3rd Grade
  - S3E1. Students will investigate the physical attributes of rocks and soils.
  - S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.

#### Materials:

- Carrots with greens (different colored varieties if possible)
- Different soils: loam, clay, sand (can be purchased at local garden supply stores)
- 3 identical containers (containers should be deep enough to accommodate length of carrots and have equal size and quantity of drainage holes - recycled containers are best, such as 2-liter bottles cut in half)

#### Engage (Whole Group): 15 minutes

##### Scientific Method: Make an Observation

Observe carrots with greens (different colored varieties if possible)

- Look: Describe color



For more information & other resources, visit [www.georgiaorganics.org/for-schools/rooting-for-carrots](http://www.georgiaorganics.org/for-schools/rooting-for-carrots)



--Orange roots contain betacarotene which is converted into Vitamin A and helps our eyesight

--Green leaves due to the chlorophyll in the chloroplasts that carry out photosynthesis

- Touch: Describe texture of carrot and greens
- Smell: Describe the smell of raw carrots
- Sound: Describe sound of the break (crunch)
- Taste: Describe the taste with adjectives!

#### Scientific Method: Research

Determine what you already know about growing carrots

- Watch a Video about Carrots: <https://www.youtube.com/watch?v=bxkUO0SIAss>
- Ask a Farmer: Contact a local farmer with questions about how and when to grow carrots, along with any experiments they have done. Search the [Local Food Guide](#) to find the contact information for local farmers in your area.

#### **Explore (Small Group): 10 minutes**

##### Scientific Method: Ask a Question

- Review prior knowledge: Plants need water, air, sun, and soil.
- Pose the question: What type of soil will carrots grow longest in?

##### Scientific Method: Make a Hypothesis

- Review or introduce soil types (with examples for hands-on exploration)
  - Loam: soil with equal parts of sand, silt, and clay
  - Clay: soil with the smallest particles; water does not pass through easily
  - Sand: soil with the largest particles; water passes through easily
- Gather student hypotheses on which soil type will grow the longest carrot

#### **Explain (Whole Group - Modeling): 20 minutes**

##### Scientific Method: Conduct an Experiment

- Plant carrot seeds in 3 labeled containers: soil, loam, and clay (containers should be deep enough to accommodate length and have equal size and quantity of drainage holes - recycled containers are best, such as three 2-liter bottles cut in half!)
  - If you need some carrot planting tips, watch the How to Plant Carrots video or review How-to Grow Carrots resource on Rooting for Carrots Resources webpage: [www.georgiaorganics.org/for-schools/rooting-for-carrots/resources](http://www.georgiaorganics.org/for-schools/rooting-for-carrots/resources)
- Place containers by the window or in the garden and water them regularly and equally for at least 2 months

#### **Extend (Small Group - Guided Practice): 10 minutes**

##### Scientific Method: Draw Conclusions



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# ROOTING FOR CARROTS!

- After at least 2 months, harvest the carrots from each type of soil and measure to see which soil type grew the longest carrot.  
Not sure how to harvest carrots? Watch How to Harvest Carrots video on the Rooting for Carrots Resources page: [www.georgiaorganics.org/for-schools/rooting-for-carrots/resources](http://www.georgiaorganics.org/for-schools/rooting-for-carrots/resources)
- Analyze results attempting to explain the results of the experiment given your prior knowledge about the pros / cons of each type of soil.

## **Evaluate (Independent - Independent Practice): Length varies**

### Scientific Method: Share Your Conclusion

Students can create a “How to Grow Carrots” guide based on what they learned from their experiment, from the seed pack, and from any further research they conduct.



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