

THE EDIBLE SCHOOLYARD PROJECT

Crop Planning

Summary: In this lesson, students apply what they learned about the soil in their garden in the previous two lessons to identify crops that may grow well in their garden. Students also consider the other **abiotic factors** that may affect crop growth and make observations of the garden in order to begin to plan which crops they want to grow for their project. Students will continue to revise this plan as they learn more about the garden ecosystem.

This is the fifth of a 12-lesson series in which students will explore the basic ecological principle of interdependence through the lens of common organic farming practices.

Time: 30-45 minutes

Materials

- Poster paper and markers for group planning (*optional*)
- Gardening books that include crops and their ideal soil types (*optional*)

Vocabulary

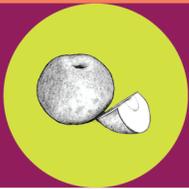
Abiotic factor: a nonliving condition or thing, such as climate or habitat, that influences an ecosystem or the organisms in it.



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Teacher Notes:

- For sections that instruct students to READ, you can record yourself reading aloud and send it to students. Invite them to read along with the recording. This is a helpful strategy for differentiating learning that supports all students.
- This lesson will have students explore the four core values of organic through discussion before diving into an exploration of ecology in the garden. The other values of care, fairness, and health could be further explored through discussion as well.
- If you are teaching this lesson in the garden, we suggest completing the sections as a whole class or in small groups. The garden is a great place for discussion-based lessons.
- This lesson is designed both to help students start to wrap their heads around this project in a more structured way, but also to prompt excitement and enthusiasm about the driving question. Encourage students to really get all their thinking on the table here, especially during the brainstorm section. At this stage in the process, the more possibilities the better! You never know what kind of creative solutions or ideas may arise from something that at first seems completely unrealistic or “out there”.
- At some point during this lesson, have students return to the garden bed in which they are conducting the plant start investigation (Lesson 3). They should record their observations about the plants and soil on the [Plant Start Investigation worksheet](#) from lesson L3: Cultivation.



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READ: Now you have learned about **tilling** and **cultivating**, two methods that farmers often use to support the health of their soils. You also conducted an investigation in which you determined what type(s) of soil you can find in your garden and compared the characteristics of tilled vs. un-tilled soil, including their impact on crop health and growth. Today, you will continue to explore the abiotic factors that influence plant growth and develop a plan for which types of crops you want to grow in the garden.

THINK-PAIR-SHARE: Soil type is just one of the conditions that influences crop growth. Take some time to discuss with a partner:

- What other abiotic factors, in addition to soil type, do you think might influence crop growth? Try to list as many as you can. What influence might each of these factors have on crops?

MAP: Now observe the location where you plan to plant your crops. Create a map that illustrates what you observe about the abiotic factors below. First notice the current conditions of each. Then try to imagine how they might be at other times of day. Understanding the conditions of your location will help you choose crops that will grow well there.

- Soil type
- Sunlight/shade
- Wind exposure
- Temperature
- Water/moistness

EXAMINE: Take some time to examine the chart titled **Crops and Their Ideal Soil Type**. Answer the questions below based on your observations of the chart.

- Given what you know about the soil type in your garden, which crops do you think might grow well in your garden?
- Which of these crops would you be most excited to grow? Why?

RESEARCH: Now conduct some research about the crops that are suitable for your soil type.

- What types of conditions do these crops grow best under? (ie. how much sun do they need? How much water? Do they require any specific types of nutrients?)
- Do they grow best during a particular time of year?
- How long do they take before they are ready to harvest?
- How much space do they require?
- How are they often prepared or eaten?
- Do they hold specific significance for any cultures or cuisines?



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PROPOSE: Choose one crop to focus on and answer the questions below.

- What conditions allow this crop to grow best? (ie. sun, water, nutrients, space etc.)
- How closely do these conditions match our garden? Are there any ways in which our garden is not ideal for this crop?
- How long after planting the crop would you anticipate being ready to harvest it?
- Do you think there are any actions you could take to amend (change) the soil, or other conditions, in order to improve crop growth? Explain your thinking behind any actions you propose.
- Do you intend to use cultivation or tillage to grow your crops? Why or why not?
- What questions do you still have?

DISCUSS: As a full class or in small groups, take some time to share your proposals. Don't worry if they aren't complete—you'll have time later to continue working on them. As you hear about plans from other groups, consider:

- What do you think are the strong points of this plan?
- Does anything in this plan cause you to want to revise aspects of your own plan?



CROPS AND THEIR SOIL TYPES

Sandy Soil	Clay Soil	Silty Soil
<p>Commonly found in desert landscapes, sandy soils warm quickly in sunlight and retain less moisture and nutrients than other soil types. Plants and crops with strong root systems that prefer well-drained soil tend to grow well in sandy soil. Examples include:</p> <ul style="list-style-type: none">• Root vegetables like potatoes, carrots, radishes, and beets.• Alliums (onions, chives, etc.)• Herbs that grow in Mediterranean climates, like thyme and rosemary.• Bulbs and shrubs such as sun roses, tulips, and hibiscus. <p>Many vegetables can grow well in sandy soil if it gets amended with organic material, including: lettuce, zucchini, squash, strawberries, tomatoes, peppers, corn, and collard greens, etc..</p>	<p>Clay soils are very compact. They tend to be cool in temperature and good at retaining moisture and nutrients. Clay soil is excellent for growing ornamental trees, fruit trees, shrubs, and perennials, all of which have hardy root systems that can push through the dense soil. Annual vegetables with more delicate root systems have a harder time growing in clay soil.</p>	<p>Silty soils are made of a mix of different textures and materials, including at least 80% “silt”, a mineral-rich material often found at the bottom of river beds. Silty soils tend to be very nutrient-rich, and have good water retention and air circulation. Almost all kinds of fruits and vegetable crops can thrive in silty soil. Grasses, perennials, climbers, shrubs, etc. also grow well on this soil.</p>

References: Felmann, Micheal (2019). Everything You Need to Know About Garden Soil Types. retrieved from <https://www.motherearthnews.com/organic-gardening/guide-to-garden-soil-types-zbcz2102/>