

MATERIALS

- Garden Map, Bed Layout Diagram, Yardstick
- (3) Amaranth seedlings
- Hand trowels, stored in a bucket
- Large watering can full of a gallon of water
- Compost or Revita
- (5) small watering cans, fish emulsion and liquid kelp

PREPARATION

- Make sure amaranth seedlings have been hardened off
- Consult your garden map to determine planting location (and number) of each seedling.
- Fill watering can with a gallon of water.
- Place bucket of hand trowels, compost, and watering cans by amaranth bed.

PROCEDURE

Part 1: Transplant Amaranth

- Identify the planting location on the garden map. Select a student to lead the group to the amaranth bed. There, consult the bed layout diagram. Identify the long edge of the bed that faces North-East. Amaranth seedlings are planted along the imaginary line that runs the length of the bed, one foot in from this North-East facing edge.
- Use a yardstick to identify the location for planting the first seedling. The first seedling on that imaginary line should be planted 3' from the North-Westerly short edge of the bed. Stick a trowel into the ground at this spot. Then, select a student volunteer to measure 2' further down the line, sticking a trowel into the ground there. Finally, select another student volunteer to measure another 2' further down the line, sticking a trowel into the ground at this spot. You should have three trowels in the ground, 2' apart from each other.
- Select three students to dig a hole at each trowel's location. It should be a little deeper than the seedling's pot and an inch or so wider. After digging the hole, return the trowel to the trowel bucket.
- While the holes are being dug, choose a student volunteer to water all the seedlings: *Seedlings need to be watered thoroughly both before and after transplanting.*
- After the holes have been dug, hold up a seedling and demonstrate how to gently tear off the rim of the newspaper pot, so that no newspaper will be exposed to the air once the seedling is planted. *Exposed newspaper wicks moisture from the roots and dries them out.* Leave the rest of the newspaper pot intact. Have two students remove the rims from the remaining two pots.
- Select three students to put a small handful of compost or Revita into the bottom of the hole.
- Select another three students to transplant: Place the seedling on top of the compost. The surface of the seedling's soil should be flush with the surface of the soil around it. Add or remove soil as needed. Once the seedling is positioned properly within the hole, fill in the rest of the hole. Use your hands (not a trowel) to firm the soil around the seedling. This will close any pockets of air around the seedling's roots.

Part 2: Plant Sunflower and Borage

- Introduce the four borage seeds and one sunflower seed. Pass them around for students to examine. Identify planting spots. Select students to loosen the soil around each spot with a hand trowel.
- Demonstrate how to poke a small hole to the appropriate depth (twice the diameter of the seed) into the loose soil. For each planting location, select a new student to poke a proper-sized hole. Check students' work then pass out seeds to a new group of students. Ask them to insert seeds into each hole and cover with soil.
- Mix the fish emulsion and liquid kelp in the large watering can. Pour into four small watering cans. Water the seedlings and seeds.

Companion Planting

Food & Technology

ENGAGE

What are the qualities of a good team? Take answers.

The best teams are made a variety of different people with different skills. A football team needs a strong quarterback, a fast running back and a great coach. A soccer team needs a fast goalie, swift offense and tough defense. Would a whole team of goalies win very many soccer games? Each position helps the others to succeed! Today, we're going to talk about plants that work as a team.

OBJECTIVES

- Students will be able to define *companion planting*
- Students will be able to name the “three sister” crops and define functions

EXPLAIN

Benefits of Companion Planting

Plants that serve and benefit one another in unique ways are known as “companion plants”. Throughout this week, we are introduced to three plant companions – borage, marigold, and nasturtium. Borage is a host plant for spiders and attracts many other beneficial insects to the garden. In addition, its long roots bring important minerals up from the subsoil to the topsoil where they can be accessed by nearby plants. Marigolds deter pests from the garden. Below ground, marigold roots secrete a special substance that is said to kill soil parasites, like the nematode. Marigolds also emit a strong smell that helps to deter whiteflies, a common tomato pest in the greenhouse (and in the garden, if the seedlings came from a greenhouse). Nasturtium acts as a trap crop, attracting bad insects to its tasty leaves and away from our important food crops.

Companion plants usually do one or several of these things: they improve the soil, they help deal with pests, and they provide structural layers to the garden (e.g. corn provides vertical structure for beans to grow up; squash provides low-growing, horizontal structure to shade out weeds).

ADDITIONAL CONTENT INTEGRATION *(see previous page)*

Pair the idea of companion planting with an art project. Provide students with photos of companion plants, and allow students to design gardens using these pairings. Consider including patterning elements into the design process.

For companion planting combinations, visit:

http://www.seedsofchange.com/newsletter/issue_55/companion_planting.aspx

ADDITIONAL MATERIALS

- Companion plant photos
- Paper
- Paint or other medium for art project

EVALUATE

Journal prompt: What are three things that plants can do to help out other plants nearby? Name one way you are like a companion plant to the people around you.