

Plant Pals – A Living Necklace

Purpose: This lesson allows students to see firsthand how a seed sprouts and the conditions necessary for this germination process to happen. In addition, students are introduced to corn and soybeans – two important commodities in Minnesota agriculture.

Time: 45 minutes – on-going

Level: 2 (easily adaptable to other levels)

Materials:

- Soybeans seeds and corn kernels (*these can be obtained from local farmers or purchased at a garden center*)
- Jeweler size plastic bags (*these can be purchased from craft stores, online or might even be free from a jewelry store*)
- Cotton balls
- Water
- Hole punch
- Yarn or string

Optional

- Soil
- Planting pots
- Commodity cards from Minnesota Ag in the Classroom

<http://www.mda.state.mn.us/kids/commoditycards.aspx>



Minnesota Science Standards and Benchmarks

- 2.4.2.1.1 Recognize that plants need space, water, nutrients and air, and that they fulfill these needs in different ways.
- 2.4.3.1.1 Describe the characteristics of plants at different stages in their life cycles.

Background

Corn and soybeans (sometimes referred to as beans) are two very important agricultural commodities grown in Minnesota. In 2010 Minnesota ranked third in the United States in soybean production and fourth in the United States in corn production. Both of these crops are important food sources for livestock animals like cattle, pigs, sheep, and poultry. Corn and soybeans are also important ingredients in many food products that we consume as well as a wide variety of non-food products like ethanol, biodiesel, fiber for clothing, paint, varnishes, ink, cosmetics, plastics, and crayons. The Minnesota Agriculture in the Classroom has a set of commodity cards that include both corn and soybeans. These cards provide valuable information and illustrations of both of these crops. These cards are FREE at:

<http://www.mda.state.mn.us/kids/commoditycards.aspx>

This lesson will allow students to see one or both of these crops germinate (also known as sprout). In this process students will be able to describe what conditions the seed needs to germinate and also how the farmer or producer can help meet the needs of the seed and plant.

Procedure

1. Display a jar of soybean seeds and a jar of corn kernels. Ask students:
 - a. What are these?
 - b. Why are these seeds important to us? (*Grow into plants that produce corn and soybeans for animals and for us to eat*)
2. If you have the commodity cards, show the Corn and Soybeans cards. Observe the root system, stem, and other parts of the plants in the illustrations. Compare the differences and similarities between the two crops. Also share some of the background information found on these cards.
3. Turn your focus to the seeds. Ask students:
 - a. What do Minnesota farmers have to do in order to get the seed to grow into the plant that provides animals and humans food?
Water – from rain or irrigation
Air – plants need to breath in order to grow
Light – the bright summer sun provides solar energy for the plant
Soil – once the plant is growing it needs nutrients (minerals, vitamins from the soil)



- b. What kind of resources are needed to get the seed to grow and provide food?
 - i. *Natural resources – water, sun, soil*
 - ii. *Capital resources – tractors, planters, irrigation methods, harvesters (combines) etc.*
 - iii. *Human resources – farmers, plant scientists*
 4. Tell students that they are going to provide the seed with everything it needs to sprout. The scientific name for sprouting is germination. Ask students:
 - a. What do you need to give the seed so it will germinate?
Water, air, light
Soil is not necessary to get the seed to germinate but once the seed gets past germination and starts to grow it will need nutrients from the soil.
 5. Demonstrate the process of making a plant pal or living necklace to the students:
 - a. Punch a hole in the top of a small jeweler sized plastic bag.
 - b. Dip a cotton ball in water. Give the cotton ball three “flat” squeezes to remove excess water.
 - c. Place the cotton ball inside the plastic bag.
 - d. Place two seeds (2 soybean seeds, 2 corn seeds, or 1 corn and 1 soybean seed), one on each side, in contact with the dampened cotton ball.
 - e. Tie a string or piece of yarn through the hole punched in the top of the plastic bag. Wear the string and bag like a necklace.

DO NOT close or seal the plastic bag – the seed needs air to sprout!

The seed should soon swell up from the moisture and germination should take place in about three days.

6. Assist students in making their Plant Pal. Students are encouraged to wear the necklace because their body heat can help the seed germinate even faster!
7. Once one of the seeds has germinated, remove the other seed. There is only enough room and moisture to support the growth of one seed.
8. The seed can be transplanted into soil by cutting off the bottom of the bag, pulling out the germinated seed (cotton ball and all), and transplanting to a container with soil.

Additional Activities

- Have students record their prediction about what they think will happen with their Plant Pal. Record (with drawings and written descriptions) what occurs with their Plant Pal in a daily journal to see if their predictions come true.
- Have students design a scientific experiment with the germinating conditions. Students can compare environmental factors such as wearing the necklace inside the shirt or outside the shirt; squeezing the cotton ball once versus three times, two seeds versus one, etc.
- Once the germinated seeds are transplanted to soil, take daily measurements and create a class graph of plant growth.

Resources

- FREE commodity cards and also children's books that focus on agriculture commodities can be found on the Minnesota Agriculture in the Classroom website.
<http://www.mda.state.mn.us/maitc>

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