



Seeds 2nd - 5th

SUMMARY

Students plant lettuce seeds outdoors.

OBJECTIVE

Students learn the life-cycle of a seed and to grow food.

SPECIFIC OUTCOMES

- Plant growth, survival and reproduction depends on variables such as light, water and nutrients
- Soil has different properties, types and abilities to support plant growth. Some plants prefer more acidic soil, others do not.
- Farming is a viable vocation and way of life
- Visiting farmer will be compensated for their time and expertise

MATERIALS

A garden bed with organic soil and a water source.

Lettuce seeds of different varieties

A few examples of lettuce varieties from the store (wash).

Research ahead the cost of lettuce(s) in the grocery store

Paper plates

Magnifying lenses

Paper napkins (optional: ranch dressing)

Colored pencils and paper for drawing

MAKING CONNECTIONS in Sustainable Agriculture:

THE PROJECT DEMONSTRATES ECONOMIC VIABILITY

- Organic foods are made available for a market that doesn't want to support the terminator seeds distributed by large corporations. Because these seeds cannot reproduce, limited resource farmers cannot save them and pass on the best.
- Look at the cost of the seed compared with the product. What is the return on your investment? Take into account production costs, labor and materials. Can you save money by providing your own sustenance? (Call Grocer for prices.)

THE PROJECT IS SOCIALLY RESPONSIBLE:

- Research the price of organic lettuce and conventional lettuce. Why are you paying more for organic lettuce? (The farmer spends more money growing it. You choose to eat local food raised without pesticides and synthetic fertilizers.
- Why are you paying more for organic food? Because, you are concerned about the health of your body, you care for the soil and water, and eating locally supports our community.
- You can grow your own food (self-esteem, empowerment).

Grade Level

2nd through 5th

Subject Areas

Science, Math, Writing, Art

Key Concepts

- Plant growth and adaptations
- Soil concepts: properties of color, texture and ability to hold water; ability to support plants, including those in our food supply; various types of soil; composting as a way to make soil.
- Patterns and systems (of growth).

Key Cognitive Skills

• planning (when to plant), cost-benefit analysis, comparison. Optional research. See K-1 lesson for other skills to practice. Also, see K-1 for interdisciplinary skills.

Duration

For a 25 person classroom, it takes about 30 - 45 minutes outdoors, so that each child has a chance to plant their seeds. We suggest sending small groups out (5-8 at a time). Work in the interdisciplinary activities during appropriate time units throughout the day for a seed-theme-centered day.

Setting

Outdoors for direct seeding into beds. Indoors for other activities.

Vocabulary Choices:

seed
germination
nutrients
worm castings
sow
pesticide
beneficial insects
varieties

Background Information:

Students we have worked with in the past who do not like vegetables, are excited to eat their own-grown plants. A little dab of ranch dressing also seems to encourage the most hesitant.

The planting of seeds *indoors* extends the growing season. They can be started earlier, and finish their growth by the end of the school year. This is also an opportunity to teach the history of the school calendar as built on an agrarian schedule so children could stay home and help out on the farm.

NC Standard Course of Study

- **Farming involves scientific research.**
(Grade K-5: Science Strands)
- **Plant growth, survival and reproduction depends on variables such as light, water and nutrients**
(Grade 3: Science Goals 1.01-1.05)
- **Soil has different properties, types and abilities to support plant growth.**
(Grade 3: Science Goals 2.01 - 2.03)
- **Plant and animal interdependence.**
(Grade 5: Science Goals 1.01-1.06)

FARMER CONTACTS FOR HELP:

To reach Farmer Jay Hamm for help, call Carolina Farm Stewardship Association. 542-2042. For any other assistance, call: Screech Owl Farm School: 542-0333, or CCCC Sustainable Agriculture Program for Robin Kohanovich 542-6495 ext 229

THE PROJECT USES ENVIRONMENTALLY SOUND PRACTICES:

- The seeds we use are able to reproduce (open-pollinated) and are sometimes heirlooms (older varieties).
- Treatments of pest problems is done manually, or, with flowers and beneficial insects rather than with pesticides. Nutrition for the soil comes from compost or worm castings rather than synthetic fertilizer.

PROCEDURE:

ENGAGE (10 Minutes)

Today we're going to sow seeds! Show a lettuce plant and the tiny seed. Isn't it incredible that a big plant like this comes from this tiny seed? How many of you like lettuce? Who has grown their own before? Today we're going to plant several **varieties**.

EXPLORE (5 Minutes)

Show a lettuce seed and talk about how all the parts (components) of the plant are contained in that little seed. Amazing! Look at the seed pack to determine if now is the **time to plant**.

EXPLAIN (15 Minutes)

Look at a seed close up. Ask how we plant the seed - what the seed needs: soil, sun, water - all in **balance**. What would threaten our seeds' survival? Review packet instructions for the planting of their seed. Head outside in small groups and Plant seeds!

EXPAND (5 Minutes) "Let's Take it One Step Further"

Talk about the cost of lettuce compared to the cost of the seed. What are other rewards of growing our own food? (Joy, learning, knowing we can, saving money, survival skills, healthy food.) How do we place a value on self-confidence and joy?

- Try a comparison taste test.

EVALUATE (5 Minutes) "You Tell Me"

Write a letter to a parent or grandparent or adult friend who loves gardening (or loves you). Tell them about what you did today. What will you need to do to have healthy plants growing in your plot?

EXTENSIONS:

- Math: Use a seed catalog (Johnny's Seeds) for cost of goods analysis: seeds+labor vs. buying the plant. -
- Science Experiment: Raise some lettuce indoors to compare it's growth with that of the lettuce in the beds.



SEEDS

Things we learned along the way in doing seeds and transplants:

Successful growing of seeds indoors:

- A grow light helps start seeds indoors, but must be watched carefully because imbalanced resources can cause seedlings to bolt (for light), drown (too much water) or wilt and die (too little water/too high an evaporation rate relative to water source.) Beware fluctuating temperatures, cold windowsills, jarring of plants, and old seeds.
- Crops fail sometimes. This is a lesson a farmer lives with.
- Check the little root balls of indoor seedlings to see if they are hardy enough to transplant.
- Consider transplanting when the plant is 1 - 2 inches tall, and has 2 healthy true leaves.
The second leaves are true and the first are called cotyledons or false leaves.
- Consider direct seeding lettuce varieties rather than transplants.
- Beans can be planted out after April 15th. Good varieties are Carthage and Glendon.
- Sprouting seeds are more expensive than growing plants and letting them go to seed.

Sustainable Agriculture promotes Seed Saving: because seed saving undermines massive corporate control of seeds, especially for limited resource people and countries. Sustainable Agriculture promotes freedom in the seed market and does not support the terminator seed.

In discussing the source of our food:

In a trip to the local grocery store, and the farmer's market, we consider the high cost of globe-trotting food. Organic lettuce from afar is cheaper than local organic lettuce. Why? If NC could supply the organic lettuce purchased and sold by NC stores, California organic growers wouldn't be able to compete because of shipping costs. For now, California can meet the demand and out-competes our local farmers. California has a corner on the market. The high-cost is the cost to our community when we ship our money out of state instead of keeping it local.