

Michigan Farm Bureau Agriscience Lessons -- Connections to Michigan Content Standards

3rd GRADE LESSON - "Where Would We Be Without Seeds?"

Michigan Farm Bureau Promotion and Education

This lesson meets the following science content standards for the elementary level:

Content Standard 1: Construct New Scientific and Personal Knowledge

- 1-1: Generate reasonable questions about the world based on observation.
- 1-2: Develop solutions to unfamiliar problems through reasoning, observation and/or experiment.
- 1-6: Construct charts and graphs and prepare summaries of observations.

Content Standard 2: Reflect on the Nature, Adequacy and Connections Across Scientific Knowledge

- 1-1: Develop an awareness of the need for evidence in making decisions scientifically.
- 1-3: Describe ways in which technology is used in everyday life.
- 1-4: Develop an awareness of sensitivity to the natural world.

Content Standard 3: Use Scientific Knowledge from the Life Sciences in Real-World Contexts

- 1-1: Describe cells as living systems.
- 2-1: Compare and classify familiar organisms on the basis of observable physical characteristics.
- 2-3: Describe life cycles of familiar organisms.
- 2-4: Compare and contrast food, energy and environmental needs of selected organisms.
- 2-5: Describe functions of selected seed plant parts.
- 3-1: Give evidence that characteristics are passed from parents to young.
- 5-2: Explain common patterns of interdependence and interrelationships of living things.
- 5-3: Describe the basic requirements for all living things to maintain their existence.
- 5-4: Design systems that encourage growing of particular plants or animals.
- 5-5: Describe positive and negative effects of humans on the environment.

Content Standard 4: Use Scientific Knowledge from the Physical Sciences in Real-World Contexts

- 1-1: Classify common objects and substances according to observable attributes: color, size, shape, smell, hardness, texture, flexibility, length, weight, buoyancy, states of matter, or magnetic properties.
- 1-3: Identify properties of materials which make them useful.

3rd GRADE LESSON
"Where Would We Be Without Seeds?"
Presented by
Members of Michigan Farm Bureau

Materials/Actions

**Max. Time
Allotted**

Opening Question: How many of you know a farmer?

Introductions: My name is _____ and I am a farmer. I farm in _____ and raise _____.

Overview: I'm going to ask you a few questions. I'd like you to listen carefully and to raise your hand if the answer is yes.

1. How many of you have ever planted a seed?
2. How many planted flower seeds?
3. How many planted vegetable seeds?
4. How many planted tree seeds?

Today we are going to look at several kinds of seeds. We will learn how they are alike and different, how they grow, what they need to grow and why they are very important to all of us.

Show seed samples

Distribute 5-6 different seeds to each group and 1 handout per group

Part I - Types of Seeds

We would like to have you look at some seeds and make some observations of them. What do we use when we make observations? (senses, eyes, ears, nose, touch, taste) For these observations you will use your eyes, nose and fingers (or sight, smell and touch).

Look at all of the seeds and write down on your paper how they are different from each other.

Let's have each group share one way that the seeds were different from each other.

(List on board size, shape, color, texture, etc.)

That's quite a few differences. Can you think about how they are alike? Raise your hand if you have an idea. (List on board - all seeds grow into plants, all need water, soil and sun, all came from plants, etc.)

Those are all ways that the seeds you looked at are alike. Another way that they are alike is the parts they each have on the inside.

Part 2 - Parts of Seeds

Every seed, no matter how big or small it is, has the same three parts in it. They are the embryo, which will grow into the new plant, the food supply that will help the embryo grow until it can see the sun and a seed coat to protect the embryo and the food supply.

On your handout write each part in the correct place.

Part 3 - Plant Cycle

If all seeds have the same three parts, does that mean they will all grow into the same plant? No, of course not, each seed you looked at will become a different plant when it grows. But, every seed goes through certain stages when it grows and we call these stages the plant cycle.

Let's take this bean seed for example. Each of you has a soybean seed in

Show poster w/parts
Pass out 1 handout per
student

Distribute sequencing
handout, plants at
various stages

your set of seeds. If we planted that seed and gave it the water and nutrients it needs, pretty soon it would come up out of the ground as a soybean seedling (or small plant). Then with sunlight and nutrients the seedling would become a mature plant.

Once the plant was mature (all grown up) it would produce more seeds, which starts the cycle all over again (like this mature soybean plant). On your paper put the plant cycle in the correct order by numbering 1 through 4.

Show mature soybean plant and seed pod

The correct order is 3-4-1-2.

Part 4 - Uses of Seeds/Plants

Now that we know how seeds are alike and different and how they grow, let's talk about why they are important.

Show product samples
– pull products from bag, one at a time and show seed samples

How many of you had seeds for breakfast today?

Oh really! Well let's see if any of you had what's in my box here (pull out bread/toast, bagels, Cheerios, Frosted Flakes, Rice Chex, Rice Krispies, piece of fruit, milk carton).

As you can see, each of these products was made from a seed. But let's not forget that seeds grow into plants, too. So if you had fruit or juice for breakfast you ate something from seeds, too.

How about milk? Does it have anything to do with seeds? Well, milk comes from _____. Right! Do you think you need seeds to get milk?

Yes, cows eat grain, grass and hay, which all come from seeds. So, I guess there's no getting away from seeds, is there?

Part 5 - Needs of Plants

- Show soil sample bags, seed, soil, H₂O, pots, pH test paper, data sheet
1. Pass out 2 glasses per group
 2. Fill cups ½ full with the 2 different gallons of water. (1 plain and 1 with lemon juice)
 3. Pass out 2 pH strips per group
 4. Help students
 5. Explain lab sheets

Of course, it takes lots and lots of seeds to make all the food that we eat as well as food for all the livestock to eat. So farmers have to be pretty smart about helping each seed grow its very best. To do that, a farmer has to know what each seed needs to grow.

What do you think each seed would need to grow? (List water, nutrients, soil, sunlight, etc. on board.) That's right! But farmers need to know even more than that. They need to know if their soil has enough nutrients in it to help the seed grow. To find that out they collect soil samples from their fields in these bags and have them tested at a lab. Sometimes a farmer will do his or her own test. We're going to let you try a test that a farmer might do.

This is a test for pH (write on board). This means how acid the soil or water is. Most seeds like soil and water with very little acid in it. You are going to test 2 different cups of water to see which one would be the best to help seeds grow. This paper will turn color if there is acid in the water and it will stay the same if there is not. Farmers need to check a pH chart. (check – green could be OK).

Each of you may dip your paper in each glass to see what happens.

If a farmer found that his soil or water had more acid than it should, he or she would have to add limestone or other material to the soil to fix the problem. Then farmers use fertilizers, to provide the nutrition that seeds need to have.

1. Put students name on cup
2. Fill cup ½ full with soil
3. Pass out seeds to plant
4. Water planted seeds

Pull items (calculator, thermometer, soil test sheet) out of lab coat

Leave idea sheets with the teacher

Now each of you will plant your own seeds in a cup with soil and water. We are going to plant soybeans and corn seeds. The soybeans will grow into seedlings like this and into a mature plant in about 120 days, if they get water and sunlight. The corn will take longer, about 180 days.

Conclusion

(wait for the students' attention)

We have talked a lot today about seeds and how important they are. I hope you have also learned that farmers have to know a lot about seeds and lots of other things to do a good job farming. In fact, even though you've probably never seen a farmer in a lab coat like this (put on coat), a farmer is really an agri-scientist.

He or she needs to know how to calculate information about crops and livestock on a computer or calculator, how to test soils and plants, and how to keep machinery running smoothly.

So next time you see a farmer in the field, the barn, the greenhouse or the orchard, remember: It's because of them that we don't have to worry about where we would be without seeds!

If you have extra time:

Ask for questions and/or go back over what you did in the lesson.

What did we learn today?

1. Parts of the seed
2. How a plant is started, grows and produces more seeds.
3. Why seeds are important.

Names: _____

"Where Would We Be Without Seeds?"

3rd Grade Lesson Plan Observation Sheet

Use your eyes, nose and fingers to find out the color, shape, size and texture of the different seeds in your bag. Write your observations on this sheet as a group.

Check the box that describes the seeds

Seed	Color				Size		Shape			Texture (feel)			
	Brown/ Tan	White	Yellow		Big	Small		Wings	Round	Flat	Smooth	Soft	Hard
Corn													
Soybeans													
Wheat													
Maple													
Sugar Beet													
Navy Beans													
Cherry Pits													
Cotton Seeds													

Names: _____

"Where Would We Be Without Seeds?"

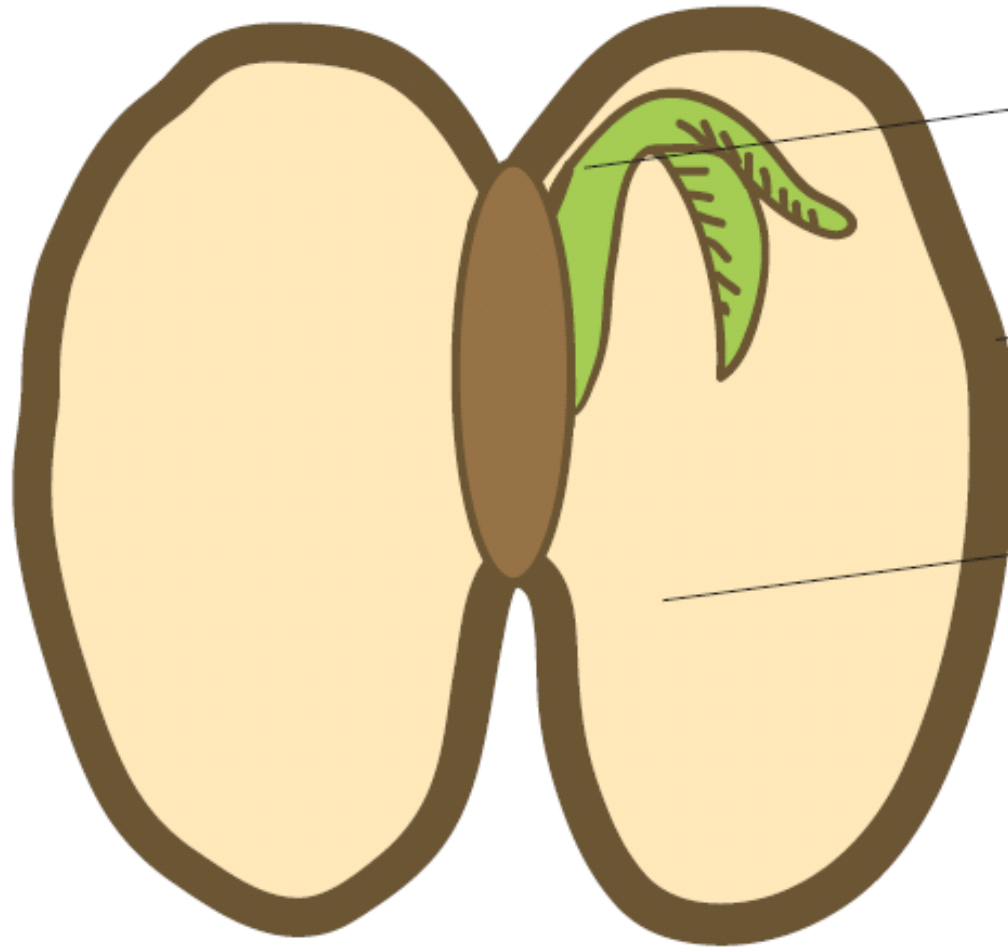
3rd Grade Lesson Plan Observation Sheet

Use your eyes, nose and fingers to find out the color, shape, size and texture of the different seeds in your bag. Write your observations on this sheet as a group.

Seed	Color	Size/Shape	Texture (feel)
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____

NAME THE PARTS OF A SEED

Name: _____



Write these parts of a seed on the correct lines above:

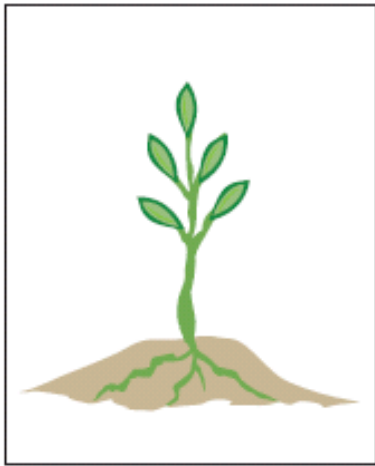
- Embryo
- Seed Coat
- Food Supply

How do seeds grow?

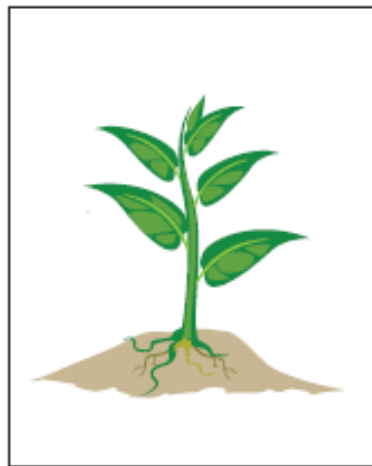
Name: _____

Number 1 through 4 how seeds grow into plants.

Seedling



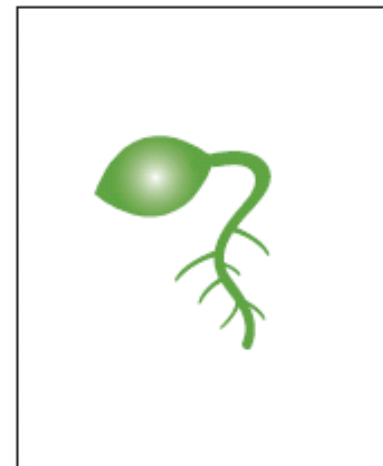
Mature Plant



Seed



Sprouting Seed



The correct order is: _____

Names: _____

“Where Would We Be Without Seeds?”

**3rd Grade Lesson Plan
Lab Sheet
(1 per 4 students)**

Work in your groups.

Procedure:

1. Obtain two (2) glasses of water (H_2O)
2. Label glasses with a 1 and 2
3. Obtain pH test paper
4. Dip the pH paper in H_2O
5. Observe the color change

What color does the test paper turn?

Glass #1 _____

Glass #2 _____

Conclusion:

Write a sentence explaining what happened in your experiment.

“Where Would We Be Without Seeds?”

3rd GRADE KIT PACKING LIST

Based on 35 students per class

10 bags of assorted seeds (containing 5 or more different kinds per bag)
(seed corn, wheat, soybeans, maple seeds, dry beans, cherry pits, apricot pits, sugar
beet seeds, cotton seeds)

20 seed observation handouts (1 per group of 4 students)

1 large poster with seed parts

70 seed part handouts (one per student)

70 seed growth sequencing handouts (one per student)

1 bag of product samples (bread, cereals, milk carton, juice, fruits, vegetables and eggs)

1 soil sample bags

2 plastic milk jugs for water •fill one with plain tap water •one with tap water and $\frac{1}{4}$ cup of
vinegar (label)

Potting soil (enough for 70 cups)

40 corn seeds (to plant)

40 bean seeds (to plant)

110 plastic cups

◆ 70 plastic or Styrofoam 5-6 oz. cups to plant seeds (1 per student)

◆ 40 plastic 5-6 oz. cups for pH test (2 cups per group)

20 Lab sheets (one per group)

70 pieces of pH test paper

1 jar of lemon juice or dish soap

2 lab coats filled with various items (calculator, thermometer, soil test sheet, and syringe)

Newspaper to cover tables

Paper towels

Magic marker or pen

Soybean seedlings (optional)

Mature soybean plants (sprayed with lacquer)