

**Lesson:** Organic vs Conventional Farming

**Time:** 1hr

**Common Core Standards:**

Next Generation Science Standards

NGSS.MS.LS4.5

Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. [Clarification Statement: Emphasis is on synthesizing information from reliable sources about the influence of humans on genetic outcomes in artificial selection (such as genetic modification, animal husbandry, gene therapy); and, on the impacts these technologies have on society as well as the technologies leading to these scientific discoveries.]

**Objectives:**

To discuss organic and conventional agricultural methods.

To identify the key differences between organic and conventional food production.

To understand the environmental effects of our food choices.

**Key words: Vocab Tree**

organic; genetically modified organism; pesticides; runoff; monoculture; humus; biodiversity

*(Using Key words: Students can create a glossary, in books or on wall in classroom. Students are encouraged to practice using vocab in written or verbal sentences - perhaps writing example sentences and displaying them. Students could earn points for using the vocab in novel sentences each week)*

**Resources:**

- PowerPoint- 'Organic vs Conventional Farming Methods'
- Organic vs Conventional Farming Glossary
- Examples of organic produce and non organic produce. For this activity, lets choose apples.

**Activities:**

**Introduction**

Ask the students to describe what they know about organic farming? What makes an item organic and how is this different from other items they see in the grocery store? What are their conceptions of organic food? Do they think eating organic food is better for them and the

environment or are they indifferent?

### **Class Activity**

(Show PowerPoint)

Now show the food examples you have brought for the class. Ask the students to identify the differences between the two apples; be sure not to identify which apple is organic and which was grown conventionally. (*The organic apple will generally be smaller and will not be as perfectly formed as its non organic counterpart. The organic apple will also lack the waxy sheen that is a common characteristic of non organic apples.*)

Have the students identify the differences between the apples, ask the students why they think that is. Why is one apple noticeably smaller than the other? Why does one apple appear to have a waxy coating while the other does not? How could pesticide usage and artificial fertilizer affect the growth of the apple? Could either option potentially be a GMO? Finally, ask the students to identify which apple they think is organic.

Once the organic apple is identified, see if the children's hypothesis were correct regarding which apple was organic and why.

### **Further Activity**

The next time the students are grocery shopping with their parents, turn it into a learning experience! Have the students find three organic items and their non organic counterparts (*Be sure to have them pick something other than apples!*) Ask the students to list the key differences between these items: shape, size, appearance, etc. If it is an item with multiple ingredients like bread, have the students list the first five ingredients of each and note the key differences between these ingredients and a non-organic option.

Have the students bring their observations to class and present on their findings. What do these differences mean to them? What do they think is the reasoning for these differences? Ask the students how this has changed their perception of organic foods, if it has at all.

Another option is to have the students break into groups and choose a keyword to research from the Organic vs Conventional Farming glossary. Have each group investigate the environmental impacts of their word and how their keyword applies to both organic and conventional farming (*Students with the keyword biodiversity can research how species diversity leads to a healthier ecosystem, etc...*).

### **Recap**

What must take place in order for a food item to be considered organic?

What are some of the USDA's quality standards for organic crops, livestock, and multi-ingredient foods?

How does the organic growing process differ from conventional growing?

What are some effects industrial farming has on the environment i.e. water, biodiversity, soil

conditions?

**Healthy Growing Session (if participating):**

With your garden, you are taking part in small scale, sustainable farming. Take note of how your growing practices differ from conventional farming. In your garden, diversity and sustainability are encouraged and offer a positive educational experience.

To take it one step farther, try using organic plants and other growing products exclusively.