

# An Apple a Day Keeps the Doctor Away



One 60 minute class period

Grades 3-5

## Purpose

This lesson allows students to explore organic and conventional practices by investigating the differences between conventionally grown apples and organically grown apples. Students will first analyze several multi-media texts that explore the issue. Then, students will determine the claims being made and provide evidence from the texts to support each claim. Finally, students will integrate knowledge and ideas to choose a claim to support and articulate why this claim is substantiated.

## Academic Content Standards

### MN K-12 Academic Standards and Benchmarks

#### Social Studies

**4.2.1.1.1** Apply a reasoned decision-making process to make a choice.

#### Science

**5.1.3.2.1** Describe how science and engineering influence and are influenced by local traditions and beliefs. For example: Sustainable agriculture practices used by many cultures.

**5.4.4.1.1** Give examples of beneficial and harmful human interaction with natural systems.

### Common Core Connections

#### Reading

##### CCSS.ELA-Literacy.RI.5.6

Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.

##### CCSS.ELA-Literacy.RI.5.8

Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).



### CCSS.ELA-Literacy.W.5.1

Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

### CCSS.ELA-Literacy.W.5.3

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

## National Agricultural Literacy Outcomes

### Agriculture and the Environment

- Recognize the natural resources used in agricultural practices to produce food, feed, clothing, landscaping plants, and fuel (e.g., soil, water, air, plants, animals, and minerals) **(T1.3-5 e)**

### Plants and Animals for Food, Fiber & Energy

- Understand the concept of stewardship and identify ways farmers/ranchers care for soil, water, plants, and animals **(T2.3-5 e)**

### Food, Health, and Lifestyle

- Identify food sources of required food nutrients **(T3.3-5 g)**

## Background—Agricultural Connections

Twenty-four varieties of apples begin to be harvested in MN every July. Keepsake, the final apple to ripen in MN will begin to be harvested in October. The Minnesota Grown website <https://minnesotagrown.com> lists one hundred orchards in MN, as well as extensive information about why people should eat apples. Apple growers that use conventional farming practices can use synthetic, or man-made, pesticides to control pests. Organic apple growers control pests by using pesticides which can be found naturally. Conventional orchards typically spray three types of pesticides on their apples. The times that the apples are sprayed are carefully calculated to have the highest effect on the crop and to ensure that humans ingest the smallest amount of chemicals. The website Chemservice.com explains that chlorpyrifos are used as an insecticide to decrease the amount of insects in apples. Diphenylamine is used to reduce scalding, or browning. Captan is a fungicide used while the apples are growing to reduce a fungus that kills the apple crop.

Organic farming may also use insecticides or pesticides for pest control. The difference is that they must be derived from nature. Rotenone, pyrethrum, Neem, Entrust, Surround, and insecticide soaps and oils are all used to control pests in organic apples. Scalding in organic apples is controlled by picking them after they have ripened on the tree to ensure

## Materials

### Activity 1:

- An Apple A Day Keeps the Doctor Away Video -link available at <https://minnesota.agclassroom.org/educator/sclb.cfm>
- Projection for watching video
- Reading Journal or notebook paper for each student

### Activity 2:

- Two apple articles, one highlighting organic and one highlighting conventional production - links available at <https://minnesota.agclassroom.org/educator/sclb.cfm>
- Reading Journal or notebook paper for each student

### Activity 3:

- Reading Journal or notebook paper for each student



## Vocabulary

**Claim** – a strong opinion

**Argument** – a claim supported by reason and evidence

**Unsubstantiated** – a claim that does not have good reasons

**Overview** – a text that gives a summary of both sides of an argument

**One-sided** – a text that gives one side on an argument

**Pesticides** – a substance used to destroy pests

**Organic** – farming using natural sources for nutrients and pest control

**Conventional Farming** – farming using synthetic and natural sources for nutrients and pest control

that they have a high antioxidant level. All apples must be kept cool to reduce scalding, no matter what the farming practices. Scalding can destroy the market value of the crop because people do not want to buy brown or bruised apples.

## Interest Approach - Engagement

### Ask students:

- How many of you have heard the phrase “An apple a day keeps the doctor away?”
- How many of you really do eat one apple every day?
- Do you think eating an apple every day really makes a difference?
- Do you know how many different types of apples are harvested in Minnesota every summer?
- Have you ever been to an apple orchard? What did you notice while you were there?
- How many apple orchards do you think there are in Minnesota?
- Do any of you eat organic foods at home? What kind(s)? What do you think makes organic foods different from non-organic or conventionally produced foods?

## Procedures:

### Activity 1

#### Introduction

1. Today we will investigate apples. People are always telling us to eat them, but I wonder whether there really is evidence that I should eat them. I also have friends who are adamant that I need to eat only organic apples, but I don't know if they are correct or not. All farmers must follow strict guidelines to reduce erosion, control pest and manage manure and compost to certain guidelines. All farmers have state enforced guidelines for these but they are much stricter for organic farmers.
2. Watch the video *An Apple A Day Keeps the Doctor Away*, keeping in mind what they are trying to convince us to think and what evidence they are providing. We will watch it



twice so that you can jot down your ideas in your reading journal one of the times. Ask yourself, is there an argument and is it a strong argument?

3. Tell students: In your reading journal or on a sheet of paper, answer the questions:
- What claim is being made? (*An apple a day does keep the doctor away.*)
  - What reasons are given to support each claim? (*The CSIRA claims that it reduces cholesterol, asthma, and diabetes.*)
  - What evidence is used to support the reasons?
    - 100-year-old Edna eats an apple a day and is still alive.
    - 10 years of research by the Horticulture of Australia deduced that it reduces diabetes, cholesterol, and asthma, as well as regulating metabolism if the skin of the apple is eaten.



## Activity 2

### Organic and Conventional Apple Readings

1. Instruct students to analyze two articles about organic and conventionally grown apples. Share with students some basic information:
  - a. The word “organic” is a marketing term that is regulated by the United States Department of Agriculture (USDA). To earn the organic label, crops must be grown on land that is managed to reduce erosion and improve soil quality. Weeds, insects, and other pests are controlled by crop rotation, mulching, tillage, variety selection, and biological controls. Most synthetic herbicides and pesticides are forbidden, although a few are allowed. There are strict manure and compost guidelines. Organic farmers may not use genetically modified or fungicide-treated seeds.

Examples of how Organic and Non-organic farmers control pests:

- At Loon Organics Farm in Hutchinson, MN, insects like ladybugs are used to eat pests like aphids. They also use a floating row cover (a big white sheet of thin material) to cover young plants and protect them from bugs.
- Pepin Heights Orchard is a non-organic farm near Lake City, MN that uses modern agricultural tools. This means that they sometimes help the apple trees grow better by controlling pests with chemicals. Summer rainfall can bring pests and diseases to the orchard, so they use Integrated Pest Management (IPM). IPM uses just the minimal amount of chemicals. They are only used when necessary.



Floating row cover

**Teachers:** Hand out at least two opposing articles to the students. They should annotate on the articles, so they will need their own copy even if they are reading with a partner. A collection of articles can be found at <https://mn.agclassroom.org/educator/sclb.cfm>



2. Tell students to read the articles with a partner. Instruct students to remember to ask themselves what the authors are trying to convince them of. Write notes in the white spaces and answer these questions in your reading journals.
  - a. Who is the author?
  - b. Is the author a reliable source? If no, why not? If yes, how do you know?
  - c. What claim is being made?
  - d. What reasons are given to support each claim?
  - e. What evidence is used to support the reasons.
  - f. Is the author credible? How can you tell?
  - g. What do the articles make you wonder about?
3. Monitor student progress by providing questions that encourage students to support their ideas with evidence from the text.

**Teachers:** Select articles that are at an appropriate reading level and length for the different groups. Students should be grouped by reading ability so that they can discuss matching articles with their group but each group should have reading level appropriate articles.

### Activity 3

### Conclusion: Drawing conclusions based on evidence

1. Tell students: Today you read articles where the authors made claims about what type of apple you should eat. You now need to draw your own conclusion based on the evidence you read.
  - a. First, ask yourself what claim had the most evidence to support it. Was the claim supported by experts? Is there an article which is discredited because it is one-sided or unsubstantiated?
  - b. In your reading journal, write your conclusion. Make sure to back your claim with direct evidence from the articles you read.

### Did you know?

- 100 species of commercial apples and over 2,500 varieties are grown in the United States.
- Apples are a member of the rose family.
- Since 1888, the University of MN has released nearly 30 apple varieties.



## Enriching Activities (optional)

- Continue researching apples to write a business letter to the school or business to purchase conventional and/or organic apples.
- Research the cost difference in purchasing or growing conventional and organic apples.
- Make bar graphs comparing conventional and organic apples. Students could compare the amount of apples purchased, the amount of pesticides used or how long the apples last.
- Additional activities can be found on these websites.
  - [http://organic.lovetoknow.com/Organic\\_Kids\\_Sites](http://organic.lovetoknow.com/Organic_Kids_Sites)
  - <https://www.usda.gov/our-agency/initiatives/usda-kids>

