



Reading Plant Produce Labels

Middle School Food and Agricultural Literacy Curriculum

Precepts

- J. Mental Growth
- J1. Think Critically

National Standards

- FPP.03.01.06.c. Prepare and label foods according to the established standards of regulatory agencies.
- CS.02.04.01.c. Demonstrate critical and creative thinking skills while completing a task.
- NL-ENG.K-12.4 – Communication Skills
- NL-ENG.K-12.12 – Applying Language Skills
- NS.5-8.6 – Science in Personal and Social Perspectives

Student Learning Objectives

- As a result of this **unit** the students will...
- Recognize the importance of plant uses and consumer product awareness.
- As a result of this **lesson** the students will ...
- Differentiate labeling of plant products.

Content Outline

Objective 1. Differentiate labeling of plant products.

I. Understanding Plant Product Labeling

- A. Fruits and vegetables are often labeled with colorful, eye-catching, and informative labels that tell the consumer more about where, when, and how the produce was grown. However, these labels can sometimes be misleading. It is important that consumers understand the meaning of plant product labels and can recognize misleading labels.

II. Organic Labels

- A. Organic produce are fruits and vegetables grown in a way that reduces the negative impact plant production can sometimes

Time

Instruction time for this lesson: 45 minutes.

Resources

Forestel Design. Certified Organic Label Guide. Retrieved August 2, 2009, from <http://www.organic.org/articles/showarticle/article-201> — University of Georgia Department of Family and Consumer Sciences. Shoppers: Produce Better Grown in Georgia. Retrieved August 7, 2009, from <http://georgiafaces.caes.uga.edu/getstory.cfm?storyid=1557> — United States Department of Agriculture. National Organic Program. Retrieved August 2, 2009, from <http://www.ams.usda.gov/AMSv1.0/nop>. — National FFA Organization. (2009). LifeKnowledge Online. Retrieved July 9, 2009, from <http://agedlearning.org> — National FFA Organization. (2003). LifeKnowledge Precepts and Signs of Success.

Tools, Equipment, and Supplies

Overhead projector/transparencies
Samples of different tomatoes with labeling such as "organic," "vine-ripened," "all-natural," "locally grown," or "pesticide free"
Large sheets of white paper
Coloring pencils, markers, or crayons
MS.PS.2.2.AS.A – one per student
MS.PS.2.2.TM.A – one per teacher
MS.PS.2.2.TM.B – one per teacher
MS.PS.2.2.TM.C – one per teacher
MS.PS.2.2.TM.D – one per teacher
MS.PS.2.2.TM.E – one per teacher
MS.PS.2.2.ASSESS.A – one per student

Key Terms

The following terms are presented in this lesson and appear in **bold italics**:

Organic

Country of Origin Labeling (COOL)

have on the environment. For the most part, certified organic food is grown in the absence of synthetic fertilizers, pesticides, growth hormones, or bioengineered seeds. Before a food can be labeled with the official USDA organic seal, facilities and farms where the food is grown, transported, stored, and processed are inspected and must meet rigid national standards set forth by the United States Department of Agriculture (the government organization that regulates and monitors agriculture, food, and nutrition in the United States).



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- B. Benefits of organic production: Organic farming is built on the principle of reducing strain on the soil, water sources, and the environment. Often producers and marketers claim that organic food is healthy and tastes better. To date, there is not any definite scientific research to support the claim that eating organic produce rather than conventionally grown produce has any health benefits for humans. And since taste is an individual perception, it is hard to say whether or not organically grown fruits and vegetables taste better.

III. Locally Grown Labels

- A. Because the transportation of agricultural goods across the world and country is both expensive and costly for the environment, many producers are marketing their fresh produce as "locally grown." However, these labels may be tricky because regulations on locally grown labels are not clear in most circumstances. In some situations, the locally grown label may only mean that the produce was grown in the geographic region of the United States, which may consist of several states. However, some states such as Georgia have implemented a locally grown marketing plan of their own. The Georgia Grown label means the produce was grown in the state of Georgia. Buying locally grown produce reduces the amount of fossil fuels needed for transportation, mitigates the environmental impact of transportation, and supports the local economy and farmers. Also, many consumers claim that locally grown food is fresher, and therefore tastes better than foods imported from far away.

IV. COOL: Country of Origin Labeling

- A. Recently, the United States Department of Agriculture implemented a plan to mandate country of origin labels on all muscle meats, fish and seafood, perishable fruits and vegetables, and certain nuts. These mandatory labels notify consumers of the country of origin (country in which the animals were raised or the plants grown) of these foods. This law became completely effective in March 2009.

V. Other Plant Produce Labels:

Produce, grocery shelves, and food packaging are all designed to catch the consumer's eye and

compel them to purchase a product. Labels may appeal to a consumer's desire for environmentally friendly food, food that supports the local economy, fresh and tasty produce, or simply the most cost effective product choice. A few additional common plant product labels include:

- A. Pesticide-free – Produce labeled pesticide free should have been grown in the absence of synthetic pesticides. However, these labels are not regulated by the USDA or other regulating agencies and may be misleading.
- B. Vine Ripened – In most cases, fruits and vegetables are harvested before they ripen to reduce spoilage and allow time for transportation and storage. Producers then induce ripening using chemical stimulations such as ethylene. However, many plant products are labeled as "vine ripened," meaning they were ripened on the vine. These products are often more costly but may yield a fresher and tastier product.
- C. In addition to these labels, producers may also place labels that describe the produce in further detail (for example: the label on an apple may tell you that it is a Granny Smith apple, or the bananas you buy may advertise that they are the popular Chiquita brand.) These labels can be very informative as well as eye catching to the consumers.

Interest Approach

Before class, prepare the samples of organic, conventionally grown, and other varieties of the produce of your choice. Start with a Hole-in-One e-Moment® allowing the students to mentally walk through the process of walking down the produce aisle at the grocery store.

Good morning, class! I am so excited that everyone could make it to class on time and eager to learn today. Let's jump right into learning! Everyone, close your eyes, get really still, and concentrate. Picture the last time you were in a grocery store. You are walking down the produce aisle looking at all of the delicious shelves of fresh apples, pears, mangoes, broccoli, squash, and cucumbers. Then you spot just what you were looking for... delicious red tomatoes.

They are all so round, fresh, and flawless. But wait.... Why are there six different types of tomatoes? They all look alike. Which do you choose? What is the difference?



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Well, one has a label that says “USDA **Organic**,” one has a colorful sticker saying it was grown in your state, and the other does not have a label at all. The prices are different too. The **organic** tomatoes are slightly more expensive than the rest. What do you choose?

Now open your eyes. Every time you or your parents visit the grocery store, you face choices just like this. And all over the place there are labels that are designed to persuade you to choose one product over the other. So how do you know which one to buy? First, you have to understand what all of the labels mean; and that is what we will be discovering today.

Summary of Content and Teaching Strategies

Objective 1. Differentiate plant product labels.

Now, hand out **MS.PS.2.2.AS. A** to each of the students and instruct them to fill in their name and today's date. The students will be using this sheet throughout the lesson to take notes on as well as to record their own thoughts.

Fruits and vegetables are often labeled with colorful, eye-catching, and informative labels that tell the consumer more about where, when, and how the produce was grown. However, these labels can sometimes be misleading. It is important that consumers understand the meaning of plant product labels and can recognize misleading labels. As we discuss the following information, take notes using your worksheet. If you need time to catch up, raise your hand and we will slow down for discussion or review.

Let's talk about some of the most common labels you will find on produce at the grocery store. As we talk about each of these, think critically about the benefits of the different types of products and the labels that distinguish them. What does it mean to think critically?

Allow students to answer: Critical thinking is the purposeful and reflective judgment about what to believe or what to do in response to observations, experience, verbal or written expressions, or arguments.

Place yourself in the shoes of the consumer who must decide which tomato, apple, or pear to purchase.

Now discuss each of the common labels with the students. As you discuss each label, show the students the transparency that corresponds with the label you are discussing. Begin with **MS.PS.2.2.TM.A**.

If you see this seal on your produce, what does it mean?

Show the students the transparency of the official USDA organic seal. Take suggestions from the class regarding what this seal means. And what does **organic** mean?

Take suggestions from the class about what organic really is. Some responses may include that organic means it was grown without pesticides, or that is environmentally friendly. Then discuss the definition of organic and the meaning of the seal.

Organic produce are fruits and vegetables grown in a way that reduces the negative impact plant production can sometimes have on the environment. For the most part, certified **organic** food is grown in the absence of synthetic fertilizers, pesticides, growth hormones, or bioengineered seeds. Before a food can be labeled with the official USDA **organic** seal, facilities and farms where the food is grown, transported, stored, and processed are inspected and must meet rigid national standards set forth by the United States Department of Agriculture (the government organization that regulates and monitors agriculture, food, and nutrition in the United States).

Remind students to continue taking notes. You may wish to stop and review their notes to ensure they have the most important information recorded.

Remember as we are going over this information to take notes on your student activity handout. Feel free to ask questions at any time.

Organic farming is built on the principle of reducing strain on the soil, water sources, and the environment. Also, often times, producers and marketers claim that **organic** food is healthy and tastes better.



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To date, there is not any definite scientific research to support the claim that eating **organic** produce rather than conventionally grown produce has any health benefits for humans. And since taste is an individual perception, it is hard to say whether or not organically grown fruits and vegetables taste better.

What questions are there about what **organic** really means? Do you think **organic** produce tastes better than conventionally grown produce? We will have a chance to test this question in just a few minutes. But for now, let's talk about another label you may commonly see in the produce section.

Display **MS.PS.2.2.TM.B**.

Has anyone ever seen a label or sign like this displayed on the board? If so, raise your hand.

Observe student responses.

Great! These are all examples of labels expressing that your fruit and vegetables are locally grown. Many producers are marketing their fresh produce as "locally grown" to attract increased interest. Now take a minute to think before you answer the following question: how close to your home do you think an apple with a label that says "locally grown" was grown?

Take several suggestions from the class before explaining that locally grown labels could still mean several thousand miles away.

These labels may be tricky because regulations on locally grown labels are not clear in most circumstances. In some situations, the locally grown label may only mean that the produce was grown in the geographic region of the United States, which may consist of several states, so a locally grown apple may still be from one thousand miles away.

However, some states such as Georgia have implemented a locally grown marketing plan of their own. The Georgia Grown label means the produce was grown in the state of Georgia.

Why do you think a consumer would choose to purchase locally grown fruits and vegetables?

Take suggestions from the class. Encourage the students to think about the environmental, economical, and other reasons for buying locally. Then explain some of the benefits.

Buying locally grown produce reduces the amount of fossil fuels needed for transportation, mitigates the environmental impact of transportation, and supports the local economy and farmers. Also, many consumers feel that locally grown food is fresher, and therefore tastes better than foods imported from far away. We will see in just a few minutes if this claim is true when we do our taste test.

Now let's talk about one more common label you may see in the grocery store. These are the **COOL** labels.

Display **MS.PS.2.2.TM.C**.

What do you think **COOL** stands for?

Display the pictures as a hint. Take a few suggestions and let the students know when they are getting "warmer or cooler." Then, explain the purpose of COOL labels.

The United States Department of Agriculture implemented a plan to mandate **country of origin labels** on all muscle meats, fish and seafood, perishable fruits and vegetables, and certain nuts. These mandatory labels notify consumers of the country of origin (country in which the animals were raised or the plants grown) of these foods.

This law became completely effective in March 2009. So pay attention the next time you are in the grocery store and you should be able to map out exactly where your food comes from around the world. You may be surprised!

See the extension idea below.

We have talked about three of the most common labels you may see in the grocery store; now take a minute to ensure you have your worksheet completed with notes from our discussion. You should have notes on **organic**, locally grown, and **COOL** labels. What others are there?

Take suggestions from the students and discuss the labels they have seen. Discuss the purposes of having labels as informative sources and advertisement. Some of these labels may include pesticide-free, vine-ripened, or advertisement and logo labels.

Produce, grocery shelves, and food packaging are all designed to catch the consumer's eye and compel them to purchase a product.



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Labels may appeal to a consumer's desire for environmentally friendly food, food that supports the local economy, fresh and tasty produce, or simply the most cost effective product choice.

Have you ever seen labels or advertisements saying your produce is pesticide free? What does that make you think about these specific products?

Determine whether these labels make the students feel the food is safer or more nutritious.

Produce labeled pesticide free should have been grown in the absence of synthetic pesticides. Farmers use pesticides to keep harmful insects from ruining their crops. This is one reason it is important to always thoroughly wash fruit and vegetables before you eat or cook them. However, these labels are not regulated by the USDA or other regulating agencies and may be misleading.

Which of you have seen a label similar to this?

Display **MS.PS.2.2.TM.D**.

In most cases, fruits and vegetables are harvested before they ripen to reduce spoilage and allow time for transportation and storage. Producers then induce ripening using chemical stimulations such as ethylene. However, many plant products are labeled as "vine ripened," meaning they were ripened on the vine. These products are often more costly but may yield a fresher and tastier product.

In addition to these labels, producers may also place labels that describe the produce in further detail (for example: the label on an apple may tell you that it is a Granny Smith apple, or the bananas you buy may advertise that they are the popular Chiquita brand.) These labels can be very informative as well as eye catching to the consumers.

Continue to discuss any other labels the students may remember seeing in stores. Then, ensure students have had plenty of time to complete the notes section of the student activity sheet. Now, allow the students to complete the taste test and record their observations on the activity sheet. Review this lesson by discussing these results.

Great! Now that everyone has completed the notes and we have learned so much about the different types of label, let's see if you can tell the difference between these three tomatoes with different labels. There are four tomatoes, labeled A, B, C, and D.

You will taste each and then fill in the information on the bottom of your student activity sheet. We will read the directions first.

Step one: after tasting each of the three types of produce, labeled A, B, C and D. Rank them in order from best to worst in taste – #1 will be the best and #4 will be the worst.

Step two: observe the price of each product. Consider both price and taste and decide which you are most and least likely to purchase. Label the tomato you are most likely to purchase with an A and the one you are least likely to purchase with a D.

Finally, when everyone completes the activity, we will discover what label was found on each of these.

You will have five minutes to complete this activity. What questions are there?

Allow a few moments for any student questions or clarifications. Then allow the students five minutes to complete the activity.

Review/Summary

Thank you for tasting, recording, and reflecting quietly and intently. Now let's share our thoughts.

Raise your hand if A tasted best to you.

Raise your hand if B tasted best to you.

Raise your hand if C tasted best to you.

Raise your hand if D tasted best to you.

Be sure to update prices for accuracy.

Considering the price as well as the taste, which were you most likely to purchase.

Raise your hand if you would purchase A.

Raise your hand if you would purchase B.

Raise your hand if you would purchase C.

Raise your hand if you would purchase D.

Now, reveal the original labels for each of the types of tomatoes (or other produce of your choice) and ask the students to record this information on the table as well.



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Now that you know the difference between the four different types of tomatoes you tasted, we will spend a few minutes reflecting.

End the class by conducting a Me-You-US e- Moment by allowing the students to reflect on what they have learned today and then share their thoughts with the class. Then their ticket-out-the-door will be everyone sharing one interesting fact they learned today.

Think about the following questions for the next 30 seconds:

Refer to MS.PS.2.2.TM.E

Did the **organic** produce taste better to you?

Is the difference in taste worth the price?

To you, is environmentally friendly produce worth the price increase?

Now discuss your opinions with your neighbor.

Thanks for the great conversation – who will be the first to share?

Allow time for a few people to answer the questions.

Now, our time is almost up for the day. But first, think about what you have learned today about product labels, safety, and advertisement. On this note card, list one important thing you learned today that you feel your parents or other adult friends would benefit from knowing. This will be your ticket-out-the-door.

Have a great day!

Application

Extended classroom activity:

Using COOL (Country of Origin Label) labels and a world map, the class can conduct a week-long exploration of where their food comes from. Throughout the week, encourage students to bring in labels, pictures of produce labels, or notes about labels they notice on fruits and vegetables at home or at the grocery store. Using a large world map, mark each country of origin with colored markers or thumb tacks.

FFA activity:

Students who enjoy this lesson may be interested in the floriculture FFA CDE which requires students to have extensive knowledge of plant parts, functions, needs, and uses as well as to be able to identify common floriculture plants.

SAE activity:

This lesson can be used to introduce the many opportunities students have to pursue a Supervised Agricultural Experience Program in plant science. Students may wish to conduct an experimental SAE that measures how plant growth is affected when leaves are removed or roots are cut. Or they may wish to track how different seeds are spread. Also, students who find this lesson interesting may wish to pursue an SAE placement in plant production or greenhouse management.

Evaluation

MS.PS.2.2.ASSESS.A

Answers to Evaluation

1. C
2. D
3. B



Investigating Produce Labels

Activity A

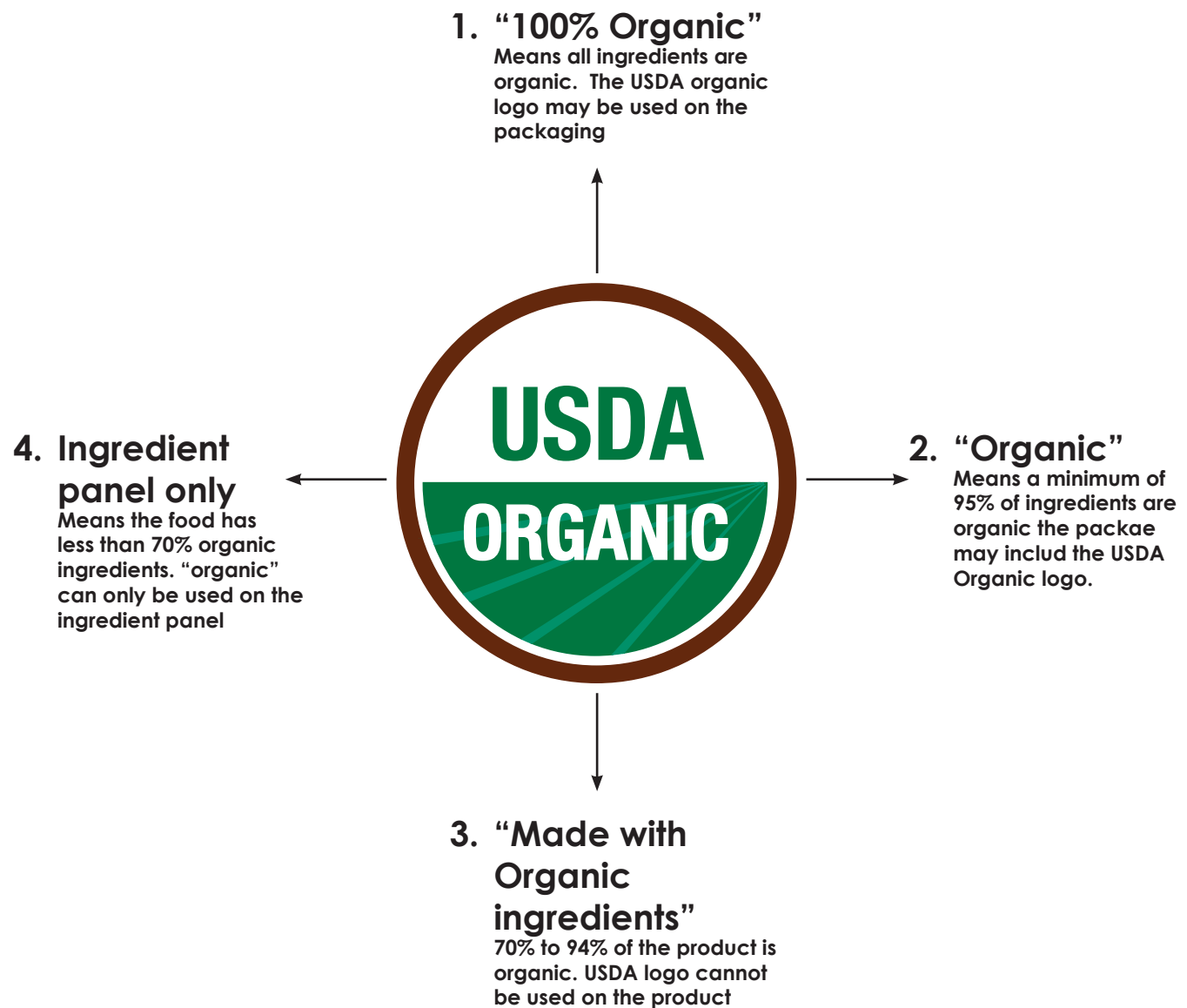
Directions: As each type of label is discussed in class, record notes in the space provided. For each label, draw an example of the label and list 3-5 facts about what the label means.

COOL	Locally Grown	USDA Organic

Activity B

- After tasting each of the three types of produce, labeled A, B, and C, rank them in order from best to worse in taste – #1 will be the best and #3 will be the worst.
- Then your teacher will tell you the price of each produce. Consider both price and taste and decide which you are most and least likely to purchase.
- Finally, your teacher will reveal the original label that came on each of the fruits. Answer the reflection question to sum up the activity.

	Taste Score 1= Best	Price Per Pound	Considering price and taste, rank in order from most likely to least likely to purchase. 1= most likely	What type of label was on the produce?
A		\$0.85		
B		\$0.99		
C		\$1.09		











Did the organic produce taste better to you?

Is the difference in taste worth the price?

**To you, is environmentally friendly
produce worth the price increase?**



Multiple Choice

Name _____

Directions: Answer the following questions by choosing the correct answer.

1. **Which government organization regulates official organic labeling?**
 - a. FDA
 - b. FFA
 - c. USDA

2. **Buying locally grown food is beneficial to the environment and community because it:**
 - a. Reduces the amount of fossil fuels needed for transportation
 - b. Supports local farmers and businesses
 - c. Reduces chemicals because locally grown food is always organic
 - d. Both A and B
 - e. All of the above

3. **What does COOL stand for?**
 - a. Country Orange Origin Lunch
 - b. Country of Origin Labeling
 - c. Computer Occupation Orientation Leadership