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# What's Going On Down Under the Ground?

Michigan Potatoes: Nutritious and delicious



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# Lesson Outline

## Objective

*Students will*

1. Learn about the different varieties of potatoes.
2. Understand how potatoes are grown.
3. Learn of the many uses of potato products.
4. Understand the ways that potatoes can be a part of our daily diet.

## Full Lesson Time

Approx. 45 minutes to 1 hour

## Grade Level

7-9

## Introduction

### 1. Not all potatoes are the same

- Activity- Students will be given 3 different varieties of potatoes (i.e. Michigan russet, yellow, red skin, fingerling, purple, etc.), they will list the characteristics of each variety and complete a Venn diagram or chart comparing and contrasting the varieties. Discussion on how different potatoes are good for different purposes.

### 2. How do potatoes grow?

- Activity- After showing students a seed potato, they will look at a diagram of a potato plant and label the parts. Discussion on how food can come from all different parts of a plant, how all plants need the same nutrients and growing conditions, similarities between potato plants and other plants.

### 3. What makes potatoes good for you?

- Activity- Students are given several different foods' nutrition information. As a group they should identify the good characteristics of the potato. Discussion on benefits on potatoes as a food source (no fat or cholesterol, good source of fiber, niacin, Vitamin C), and on how method of preparation can change the health value of a food.

### 4. Extension Suggestions:

- How are potatoes like other vegetables that grow under the ground?
- Potato Facts- Number grown in MI. how they are harvested, first vegetable grown in space, amount eaten annually, etc.
- How potatoes have impacted history- Ireland and Russia, Native Americans
- Taste testing the different varieties or a simple recipe
- Weighing or measuring circumference of different varieties
- Processing Potatoes Video
- How the body uses nutrients from potatoes

### 5. Conclusion

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# Introduction to Potatoes

## Origins of the Potato

The potato, from the perennial *Solanum tuberosum*, is the world's fourth largest food crop, following rice, wheat, and maize. The Inca Indians in Peru were the first to cultivate potatoes around 8,000 BC to 5,000 B.C.

In 1536 Spanish Conquistadors conquered Peru, discovered the flavors of the potato, and carried them to Europe. Before the end of the sixteenth century, families of Basque sailors began to cultivate potatoes along the Biscay coast of northern Spain. Sir Walter Raleigh introduced potatoes to Ireland in 1589 on the 40,000 acres of land near Cork. It took nearly four decades for the potato to spread to the rest of Europe.

Eventually, agriculturalists in Europe found potatoes easier to grow and cultivate than other staple crops, such as wheat and oats. Most importantly, it became known that potatoes contained most of the vitamins needed for sustenance, and they could be provided to nearly 10 people for each acre of land cultivated.

In the 1840s a major outbreak of potato blight, a plant disease, swept through Europe, wiping out the potato crop in many countries. The Irish working class lived largely on potatoes and when the blight reached Ireland, their main staple food disappeared. This famine left many poverty-stricken families with no choice but to struggle to survive or emigrate out of Ireland. Over the course of the famine, almost one million people died from starvation or disease. Another one million people left Ireland, mostly for Canada and the United States.

## Potatoes in the United States

Potatoes arrived in the Colonies in 1621 when the Governor of Bermuda, Nathaniel Butler, sent two large cedar chests containing potatoes and other vegetables to Governor Francis Wyatt of Virginia at Jamestown. The first permanent potato patches in North America were established in 1719, most likely near Londonderry (Derry), NH, by Scotch-Irish immigrants. From there, the crop spread across the country.

Idaho, the present-day largest producer of potatoes, actually did not begin growing potatoes until 1836, when missionaries moved west in an effort to teach the native tribes to grow crops instead of relying upon hunting and gathering methods. However, it wasn't until 1872 when the Russet Burbank variety was developed, that the Idaho potato industry began to flourish.

A. Parmentier helped King Louis XIV popularize the potato in France in the 18th century. Parmentier created a feast with only potato dishes, a concept he realized was possible when he was imprisoned in Germany and fed only potatoes. Benjamin Franklin, ambassador to France, was in attendance of Parmentier's feast in 1767.

French Fries were introduced to the U.S. when Thomas Jefferson served them in the White House during his Presidency of 1801-1809. Collinet, chef for French King Louis Phillipe (reign 1830-1848) unintentionally created soufflés (or puffed) potatoes by plunging already fried potatoes into extremely hot oil to reheat them when the King arrived late for dinner one night. To the chef's surprise and the king's delight, the potatoes puffed up like little balloons. In 1853 railroad magnate Commodore Cornelius Vanderbilt complained that his potatoes were cut too thick and sent them back to the kitchen at a fashionable resort in Saratoga Springs, NY. To spite his haughty guest, Chef George Crum sliced some potatoes paper thin, fried them in hot oil, salted and served them. To everyone's surprise, Vanderbilt loved his "Saratoga Crunch Chips," and potato chips have been popular ever since.

## Michigan Potatoes

Michigan grows both table potatoes and processing potatoes. Fresh Michigan potatoes are available from July to October, while they are available in their processed form virtually all year. Michigan leads the nation in raising potatoes for processing into potato chips. Montcalm County in the west central portion of the state grows more potatoes than any other county in Michigan. In both volume and sales, potatoes are Michigan's leading produce commodity.

Text from U.S. Potato Board, [www.potatogoodness.com](http://www.potatogoodness.com) and Michigan Ag Council, [www.michiganagriculture.com](http://www.michiganagriculture.com)



# Not all Potatoes are the same!

## Objective

*Students will*

1. Learn about the different varieties of potatoes.
2. Utilize a Venn diagram to distinguish the differences between multiple varieties of potatoes.

## Time:

15 minutes

## Grade Level:

7-9

*Curriculum Standards:*

Common Core:

RST.6-8.1

RST.6-8.7

## *Extension Activity*

On the back of the Venn diagram paper, ask students to write a paragraph summarizing the major similarities and differences between the different potato varieties

## *Sources*

International Potato Council  
[www.cipotato.org](http://www.cipotato.org)

Michigan Potato Industry  
Commission  
[www.mipotato.com](http://www.mipotato.com)

## Materials Needed

- A Venn diagram on pg. 6 for each student
- 3-6 different types of potatoes (plan enough so students can taste pieces if desired)

## Background

Potatoes are grown under the surface of the soil as a tuber on a stolon (which is an underground stem). The rest of the plant above the surface looks pretty much like any other flowering plant. In Michigan, we grow mostly white and Russet potatoes. The white potatoes are well suited for chips or fresh use and Russets are for fresh or frozen use.

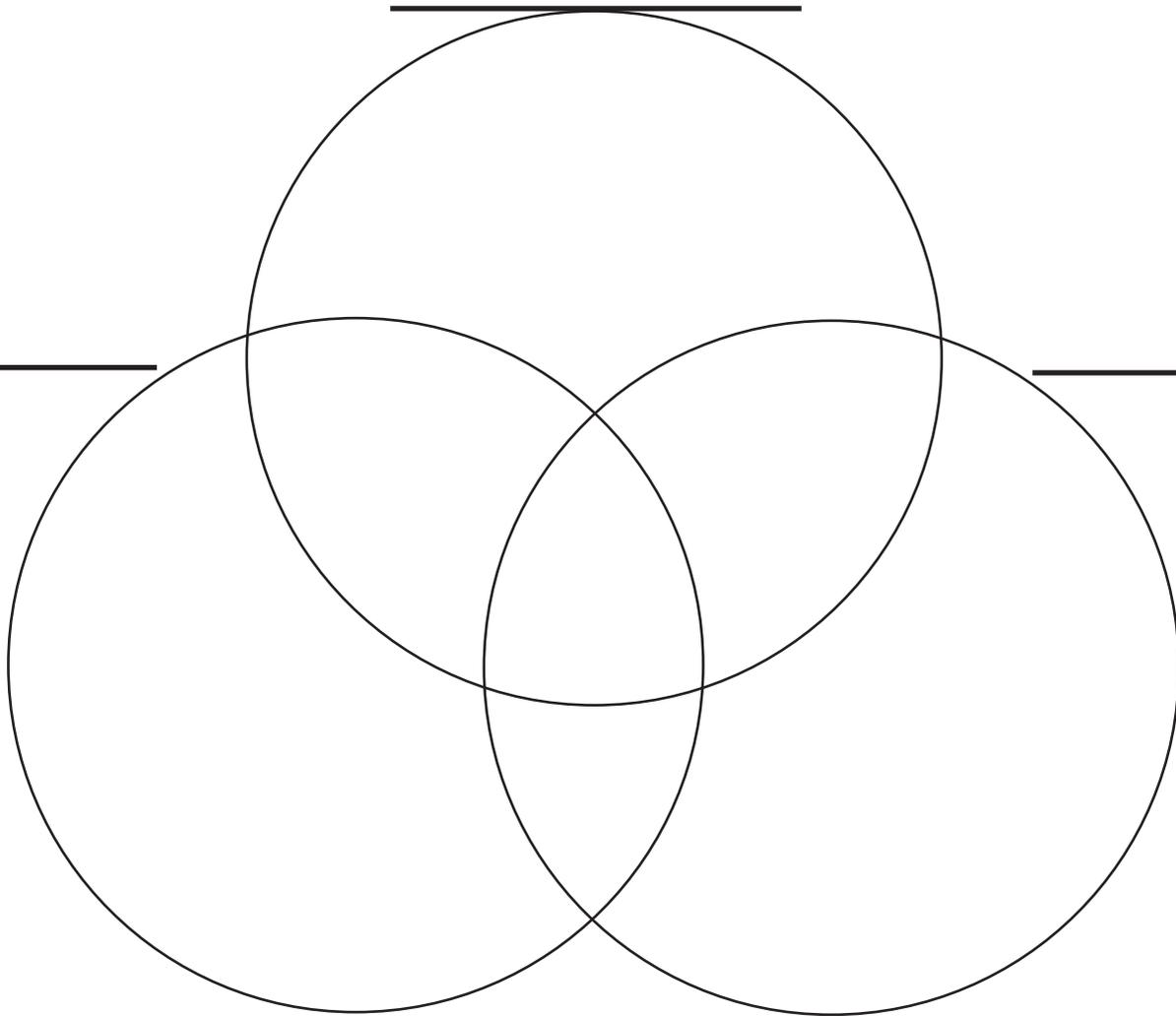
## Directions/Discussion Guide

1. After introducing students to potatoes facilitate some discussion:
  - How many of you like potatoes?
  - What is your favorite way to eat potatoes? (Mashed, fries, chips, etc.)
  - Have any of you grown potatoes before?
  - How many varieties of potatoes do you think there are? There are almost 4,000 varieties. We will not see all of these varieties in the grocery store, but there is some variation at the store.
2. Pass out the handout with a Venn diagram to groups of four students.
  - Review how to fill in a Venn diagram by having students look carefully for both similarities and differences of multiple potatoes.
  - If necessary, suggest a number of traits students should have for each circle on the diagram.
3. Distribute three distinct varieties of potatoes to each group or use page 8 (i.e. red skin, Yukon gold, russet, round white, etc.). Each group doesn't need the same varieties.
  - Weigh and measure the size of each variety if equipment is available.
  - Cut a few potatoes in half to see the internal differences.
4. When the students finish, have them volunteer their findings. Optional: create a combined class diagram while sharing findings.
5. Prompt a discussion
  - Why do you think that people would want to buy these different varieties? Each type works better for different forms of preparation. Some are better for baking, others for salads, French fries or chips.

# Not all Potatoes are the same!

## Directions

Carefully examine each of the varieties provided. Using the Venn diagram below, label each circle with the name of a variety. Write similarities between the varieties in the area where the circles overlap. Write differences in the areas of the circles that do not overlap. Be sure to include size, shape, color of skin and flesh, texture, and any other characteristics you observe.



# Not all Potatoes are the same!



## **RUSSETS**

This is the most widely used potato variety in the United States. High in starch, light and fluffy when cooked, russets are ideal for baking, mashing, frying and roasting.



## **REDS**

With rosy skin and white flesh, red-skinned potatoes have a firm, smooth, moist texture well-suited for salads, roasting, boiling and steaming. Round reds are often referred to as “new potatoes,” but the term “new” technically refers to any variety of potato that is harvested before reaching maturity.



## **WHITES**

Round and long whites are medium in starch with a creamy texture. They hold their shape well after cooking and are so versatile that they can be used in most potato preparations.



## **FINGERLINGS**

Firm, waxy and flavorful, these small, slender potatoes are fingersize (2-4 inches long) and come in different shapes and colors - red, gold, yellow and purple - with flavors like those of their larger potato cousins. Due to their small size, fingerlings cook quickly and their color and shape make for a welcome visual addition to any dish.



## **BLUES/PURPLES**

Originally from South America, blue and purple potatoes are new to the scene in the United States. They have a subtle nutty flavor with flesh ranging from dark blue or lavender to white. Microwaving best preserves color, but steaming and baking are also recommended.



## **Yellows**

Round in shape with a yellowish color and a thin outer skin. These potatoes are good for any cooking method. Yellows are dense with a creamy texture which means you can use less or no butter for lighter dishes.



# How do Potatoes Grow?

## Objectives

*Students will*

1. Understand how potatoes are grown.
2. Learn the purpose of each part of a potato plant.

### Time:

15 minutes

### Grade Level:

7-9

*Curriculum Standards*

Next Generation Science

Standards:

MS-LS1-4

MS-LS1-5

MS-LS2-4

*Plant Classification*

### Potato:

Family: Solanaceae

Genus: Solanum

Specie: Solanum tuberosum

### Tomato:

Family: Solanaceae

Genus: Lycopersicon

Family: Lycopersicon lycopesicum

### Sweet Potato:

Family: Convolvulaceae

Genes: Ipomoea

Family: Ipomoea batatas

*Extension Activity*

Plant Science Comparison:

Compare and contrast how different plants grow. What is the difference between fruits and vegetables?

*Additional Resources*

[http://msue.anr.msu.edu/news/what\\_are\\_those\\_fruit\\_growing\\_on\\_my\\_potato\\_plants](http://msue.anr.msu.edu/news/what_are_those_fruit_growing_on_my_potato_plants)

## Materials Needed

- A potato plant diagram on pg. 9 with blank labels
- Potato with sprouts
- Photo of a sprouted potato

## Background

As stated earlier, potatoes are grown under the surface of the soil as a tuber on a stolon. This activity will go into more depth about what the plant looks like under and above ground.

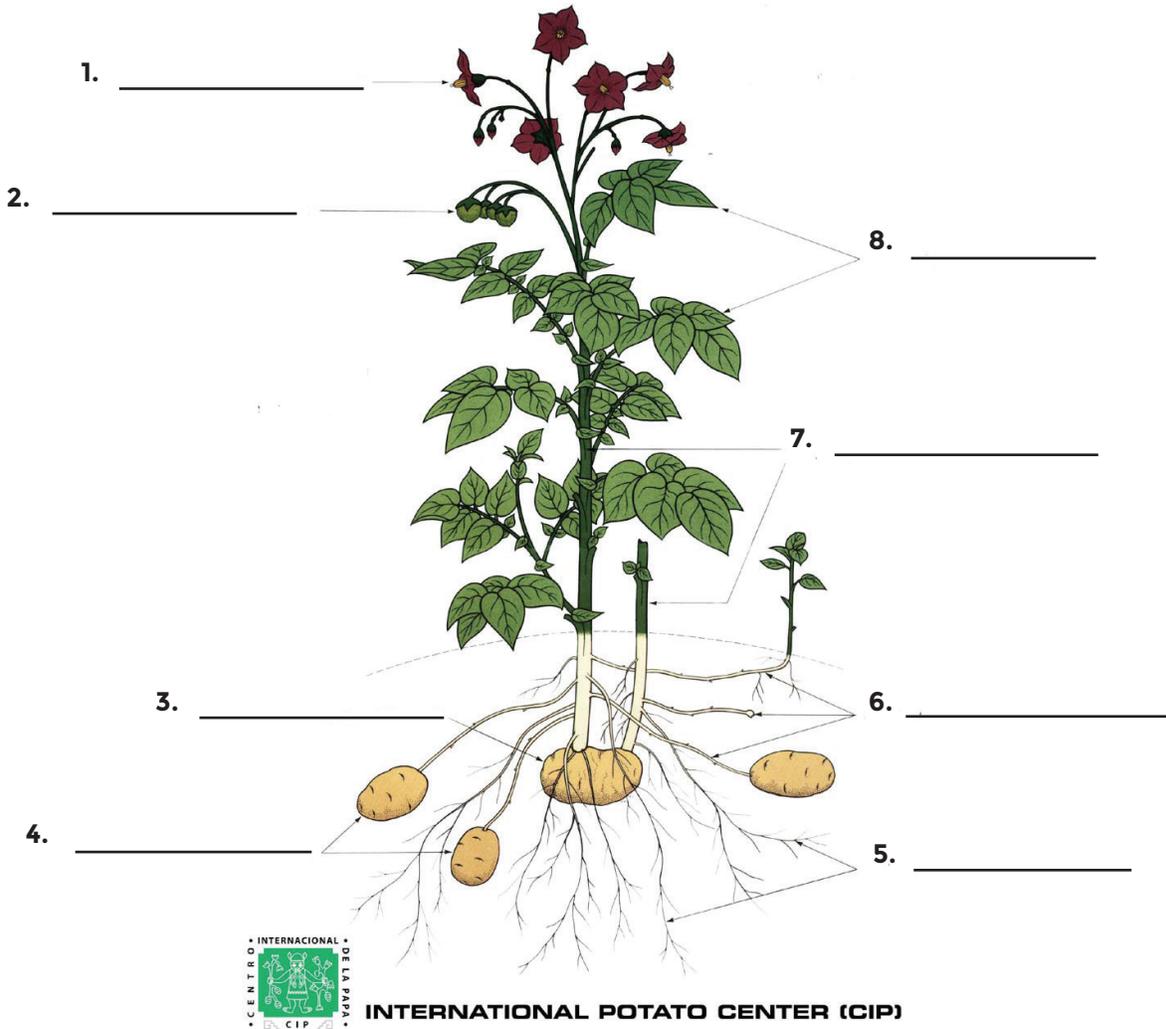
## Directions/Discussion Guide

1. Prompting a discussion.
  - **Q: Where on the plant I would find the potato or the part that we consume?**  
A: The potatoes grow under the surface of the soil as a tuber on a stolon which is an underground stem. The rest of the plant above the surface looks pretty much like any other flowering plant.
2. Pass out the diagram of a potato plant on pg. 9 with blanks to fill in. Using the visual, work with the class to fill in the correct labels.
3. Discuss the function of the various parts.
  - The leaves are important for photosynthesis,
  - The flowers facilitate pollination by insects/honeybees but are not necessary for tuber production. These flowers may produce a fruit with seed. These seeds could be used to grow another potato that is genetically different from the parent plants.
  - The stolons are stems that grow at or beneath the soil surface. While many other plants have stolons, potatoes are unique because tubers form at the end of the stolons. Stolons are not the same as roots.
  - Thickened stolons are called stem tubers. These storage organs contain the same parts as normal stems, such as nodes, but also store starches for the plant. The stem tubers are the potatoes we eat.
  - The stem and roots provide support for production of tubers.
  - The mother tuber is the original seed potato planted with the intent to reproduce more potatoes.
4. So why haven't we mentioned sweet potatoes at all? Although they seem similar in several ways and are also a healthy food choice, they are not the same as a traditional potato. The edible part of a sweet potato is actually the plant's root, whereas the edible part of a traditional potato is the thickened stolon, called a tuber. In fact, potatoes are more closely related to tomatoes. See the left side bar for the plant classifications.

# Characteristics of a Potato Plant

## Directions

As you listen to the description of the parts of the potato plant, fill in the labels on the diagram below. After you have labeled each part, answer the following questions.



1. Why do potato plants have flowers?

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2. What are the two different methods of propagating (growing) potatoes?

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3. What are three other foods which the edible part grows under ground?

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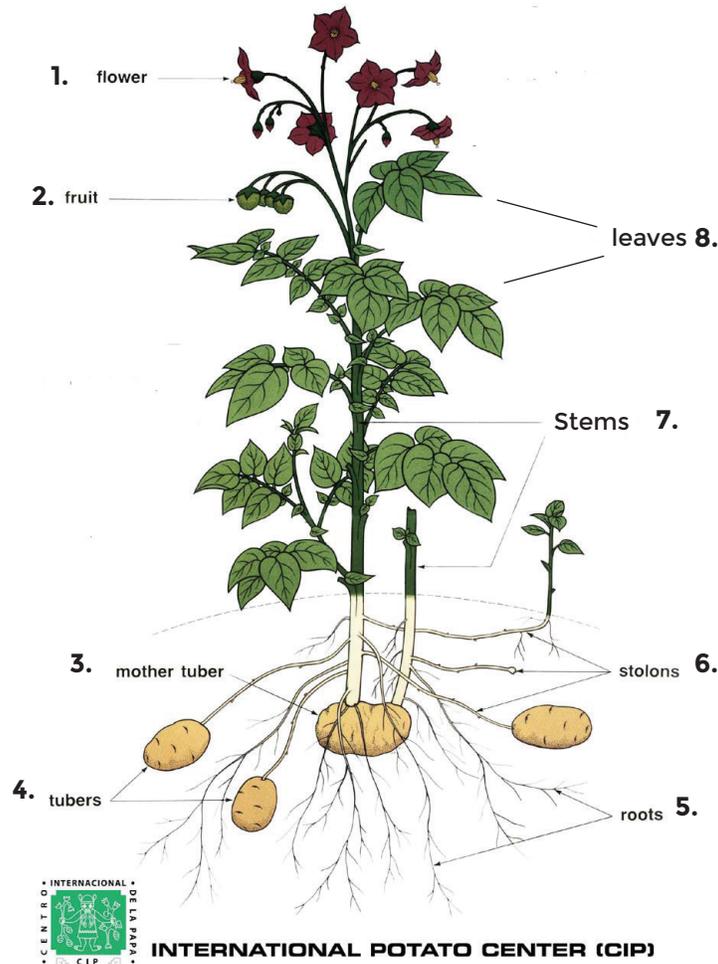
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# Characteristics of a Potato Plant

## Directions

As you listen to the description of the parts of the potato plant, fill in the labels on the diagram below. After you have labeled each part, answer the following questions.

## The Potato Plant



1. Why do potato plants have flowers?

Potatoes have flowers to produce a fruit with seeds which can be used to grow another potato plant that is genetically different from the parent plants.

2. What are the two different methods of propagating (growing) potatoes?

One method is planting the seeds produced from the fruit of the plant's flower. A second method is planting a "seed potato" which has stems beginning to grow from its nodes, giving it the ability to produce a plant and more potatoes.

3. What are three other foods which the edible part grows under ground?

Examples: carrots, beets, sweet potatoes, garlic, onions, peanuts, turnips, etc.



# Potato Nutrition

## Objectives

*Students will*

1. Understand the nutritional benefits of potatoes
2. Compare and contrast nutritional values of common foods.

### Time:

15 minutes

### Grade Level:

7-9

*Curriculum Standards:*

Common Core:

RST.6-8.1, RST.6-8.9, 7.RP.A.2, MP.2, 6.SP.B.4, RST.6-8.7

*Additional Terms:*

**Gram (g):** A metric measurement of mass and is the base of the International Standard of Units (SI).

**Miligram (mg):** A metric measurement of mass and is a thousandth (0.001) of the International Standard of Units (SI).  
1g= 1000mg or  $10^{-3}$  of a gram.

**Mircogram (ug):** A metric measurement of mass and is a millionth (0.000001) of the International Standard of Units (SI).  
1mg= 1000ug or  $10^{-6}$  of a gram.

**Kilojoule (kJ):** A measurement of energy that is 1000 of the base measure of a Joule. 1 kJ= 1000 J

**International Unit (IU):** A measurement of drugs and vitamins. The mass or volume varies based on which substance is being measured based on it's biological activity or effect.

*Extension Activity*

Pair this lesson with further study of macromolecules including what role each nutrient plays in bodily functions.

## Materials Needed

- The potato nutritional info-graph on pg. 12
- The potato nutrition handout on pg. 13

## Background

Potatoes can be an excellent part of our diet, but how they are prepared has a lot to do with how healthy they are. One of the major reasons that potatoes are a healthy choice is the amount of water they contain. A 100 gram portion of potatoes contains 79 grams of water.

Potatoes are also important to our economy in Michigan and around the world. Potatoes are the world's fourth largest food crop behind corn, wheat and rice.

## Directions/Discussion Guide

1. Prompting discussion
  - **Q: Who thinks potatoes are good for you?**  
A: Potatoes can be an excellent part of our diet with the healthiness based on how they are prepared.
  - **Q: What cooking methods are likely the healthiest?**  
A: Baked, roasted, grilled, steamed.
  - **Q: What choices might be okay occasionally but not all the time?**  
A: French fries, chips, cheese-based.
  - One of the major reasons that potatoes are a healthy choice is the amount of water they contain. A 100 gram portion of potatoes contains 79 grams of water.
2. Pass out the info-graph with nutrition information about various staple crops to see how potatoes measure up.
3. Review the meanings of the abbreviations g, mg, ug, kJ, IU. See left side bar for the definitions.
4. Direct students in finding the first answer - The amount of vitamin C in potatoes as compared to sweet potatoes.
  - Depending on the academic level of students, answers can be ratios or simple subtraction.
  - Have students independently work through finding additional data responses.
5. When students are finished go over the answers.

# Potato Nutrition Chart

Nutrition content of major staple foods around the world.

STAPLE	Corn (yellow)	Rice (white)	Rice (brown)	Wheat	Potato	Soybean (green)	Sweet Potato
<b>Component (per 100g) portion</b>							
Water (g)	10	12	10	13	79	68	77
Energy (kJ)	1528	1528	1549	1369	322	615	360
Protein (g)	9.4	7.1	7.9	12.6	2	13	1.6
Fat (g)	4.74	0.66	2.92	1.54	0.09	6.8	0.05
Carbohydrates (g)	74	80	77	71	17	11	20
Fiber (g)	7.3	1.3	3.5	12.2	2.2	4.2	3
Sugar (g)	0.64	0.12	0.85	0.41	0.78	0	4.18
Calcium (mg)	7	28	23	29	12	197	30
Iron (mg)	2.71	0.8	1.47	3.19	0.78	3.55	0.61
Magnesium (mg)	127	25	143	126	23	65	25
Phosphorus (mg)	210	115	333	288	57	194	47
Potassium (mg)	287	115	223	363	421	620	337
Sodium (mg)	35	5	7	2	6	15	55
Zinc (mg)	2.21	1.09	2.02	2.65	0.29	0.99	0.3
Copper (mg)	0.31	0.22	0.1	0.43	0.11	0.13	0.15
Manganese (mg)	0.49	1.09	3.74	3.99	0.15	0.55	0.26
Selenium (ug)	15.5	15.1	9.8	70.7	0.3	1.5	0.6
Vitamin C (mg)	0	0	0	0	19.7	29	2.4
Thiamin (mg)	0.39	0.07	0.4	0.3	0.08	0.44	0.08
Riboflavin (mg)	0.2	0.05	0.09	0.12	0.03	0.18	0.06
Niacin (mg)	3.63	1.6	5.09	5.46	1.05	1.65	0.56
Pantothenic acid (mg)	0.42	1.01	1.49	0.95	0.3	0.15	0.8
Vitamin B6 (mg)	0.62	0.16	0.51	0.3	0.3	0.07	0.21
Folate Total (ug)	19	8	20	38	16	165	11
Vitamin A (IU)	214	0	0	9	2	180	14187
Vitamin E, alphanatocopherol (mg)	0.49	0.11	0.59	1.01	0.01	0	0.26
Vitamin K I (ug)	0.3	0.1	1.9	1.9	1.9	0	1.8
Beta-carotene (ug)	97	0		5	1	0	8509
Lutein + zeaxanthin (ug)	1355	0		220	8	0	0
Saturated fatty acids (g)	0.67	0.18	0.58	0.26	0.03	0.79	0.02
Monounsaturated fatty acids (g)	1.25	0.21	1.05	0.2	0	1.28	0
Polyunsaturated fatty acids (g)	2.16	0.18	1.04	0.63	0.04	3.2	0.01

# Potato Nutrition Chart-Definitions

Water (g)	human body is more than half water. Water is necessary for all bodily functions.
Energy (kJ)	used to calculate the calories in food, which provide energy to the body.
Protein (g)	macromolecule made up of amino acid chains.
Fat (g)	Fats or lipids are hydrocarbon chains that do not mix with water. The three most common types are triglycerides, phospholipids and cholesterol.
Carbohydrates (g)	changed into glucose by the body's digestive system, carbohydrates are a source of energy.
Fiber (g)	a type of carbohydrate that can't be broken down by the body.
Sugar (g)	or glucose is an energy source for the body through aerobic or anaerobic respiration.
Calcium (mg)	mineral required for strong bones, teeth, blood supply and other body tissues.
Iron (mg)	mineral found in every cell of the body, needed to make up blood cells.
Magnesium (mg)	mineral which helps to maintain nerve and muscle function, keep a steady heart beat, and support a healthy immune system.
Phosphorus (mg)	mineral needed to help build strong bones and teeth and important for nerve and muscle function.
Potassium (mg)	mineral which helps nerves and muscles communicate and is also important in maintaining a healthy blood pressure.
Sodium (mg)	mineral needed to help regulate the balance of fluids in the body. The amount of sodium in the body is controlled by the kidneys.
Zinc (mg)	mineral which helps in fighting off bacteria and viruses, also helps in making proteins and DNA.
Copper (mg)	essential trace mineral in the body. Along with iron, it helps to form red blood cells.
Manganese (mg)	a mineral which is involved in many chemical processes in the body such as the processing of cholesterol, carbohydrates and protein.
Selenium (ug)	mineral which helps making special proteins, antioxidants enzymes, to help prevent cell damage.
Vitamin C (mg)	an antioxidant which helps the body absorb iron and is important for skin, bones and connective tissue.
Thiamine (mg)	also known as vitamin B1 which helps the body use or make energy from food and helps to form red blood cells
Riboflavin (mg)	also known as Vitamin B2 which also helps the body use or make energy from food and helps to form red blood cells
Niacin (mg)	also known as Vitamin B3 which also helps the body use or make energy from food and helps to form red blood cells
Pantothenic acid (mg)	also known as Vitamin B5 which also helps the body use or make energy from food and helps to form red blood cells
Vitamin B6 (mg)	needed for more than 100 enzyme reactions involved in metabolism
Folate Total (ug)	also a B Vitamin which is needed to make new cells
Vitamin A (IU)	an antioxidant needed for healthy vision, bone growth, cell function, immune system function and reproduction.
Vitamin E, alpha-tocopherol (mg)	an antioxidant which assists the body's immune system and metabolic processes
Vitamin K1 (ug)	helps the body make proteins for bones, tissues and blood clotting
Beta-carotene (ug)	carotenoid nutrient provides Vitamin A to the body
Lutein + zeaxanthin (ug)	carotenoid nutrients which benefit vision and eye health
Saturated fatty acids (g)	tend to be solid at room temperature and increase risk of disease and cholesterol problems.
Monounsaturated fatty acids (g)	provide essential fatty acids our body can't make, tend to be liquid at room temperature, thus not raising blood cholesterol.
Polyunsaturated fatty acids (g)	similar to monounsaturated fats, these provide essential fatty acids our body can't make, tend to be liquid at room temperature, thus not raising blood cholesterol.
Source: MedlinePlus, U.S. National Library of Medicine <a href="http://www.nlm.nih.gov/medlineplus">www.nlm.nih.gov/medlineplus</a>	

# Potato Nutrition Questions

## Directions

Using the Potato Nutrition Chart provided, answer the following questions.

1. How does the amount of water in a 100 g sample of potato compare with the other foods listed?

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2. How much potassium is found in a 100g sample of potatoes? \_\_\_\_\_  
How does that compare with corn and white rice?

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3. What are the three fatty acids found in food? How much of each do potatoes contain?

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4. Choose three other foods on the chart and explain how they differ from potatoes in amounts of each type of fatty acid.

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5. Compared to other foods on the chart, are potatoes a good source of Vitamin C? Why is vitamin C an important part of our diet?

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6. What other unique facts can you find on this chart?

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# Potato Nutrition Handout - KEY

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## Directions

Using the Potato Nutrition Chart provided, answer the following questions.

1. How does the amount of water in a 100 g sample of potato compare with the other foods listed?

A potato has the highest amount of water compared to all of the other foods listed.

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2. How much potassium is found in a 100g sample of potatoes?  
How does that compare with corn and white rice?

A potato has 421 mg of potassium compared to corn which has 287 mg and white rice which has 115 mg of potassium.

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3. What are the three fatty acids found in food?

The three fatty acids found in foods are saturated, monounsaturated, and polyunsaturated.

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4. Choose three other foods on the chart and explain how they differ from potatoes in amounts of each type of fatty acid.

(Depends on the student's comparison)

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5. Are potatoes a good source of Vitamin C? Why is vitamin C an important part of our diet?

Yes, potatoes are a good source of Vitamin C. Vitamin C is an essential vitamin in your nutrition that is important for the growth and repair of body tissues.

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6. What other unique facts can you find on this chart?

Various answers.

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# Lesson Conclusion

## Background

Review what was learned through the activities: Different potato varieties, how potatoes are grown and the nutritional benefits of potatoes compared to other staple crops.

## Directions/Discussion Guide

1. Review the different potato varieties:
  - Q: How many potato varieties are there?  
A: Nearly 4,000 varieties.
2. Review how potatoes are grown:
  - Q: What is unique about how potatoes are grown?  
A: They are grown underground.
  - Q: What part of the potato plant do we consume?  
A: The tuber
3. Review the nutritional benefits of potatoes:
  - Q: What is the most abundant component in potatoes?  
A: Water
  - Q: Which vitamin in potatoes has the highest concentration?  
A: Potassium

# Potato Lesson Script

Pass out handout with Venn diagram to groups of four students and distribute three distinct varieties of potatoes - red skin, Yukon gold, russet, round white, etc. (if real potatoes are not available copy pg. 7 on back of Venn diagram worksheet.) Review how to fill in a Venn diagram and have students look carefully for both similarities and differences. Students could also weigh and measure each variety if equipment is available. A few of the potatoes could be cut in half to show internal differences. After students have examined and described their findings, share their results orally - may write on board or use a Smartboard.

Pass out the diagram of a potato plant (pg.9) with blanks to fill in. Using the visual (poster, power point, handout, etc...) work with the class to fill in the correct labels. Discuss the function of the various parts, leaves for photosynthesis, flowers to facilitate pollination by insects/honeybees, stem and roots for support and production of tubers. (use pg. 8 for discussion points)

My name is \_\_\_\_\_ and I am a farmer from \_\_\_\_\_ . How many of you know a farmer? I'm here today to talk to you about growing potatoes in Michigan and why potatoes are part of a healthy diet.

Introduction - How many of you like potatoes? What is your favorite way to eat potatoes? (French fries, baked, mashed, chips, etc...) Have any of you ever grown potatoes? How many different varieties of potatoes do you think there are? (close to 4,000). I'll bet most of you like potatoes in one form or another but I'm guessing many of you don't know how they grow or how they fit into a healthy diet.

Were you surprised when I told you that there were almost 4,000 different varieties of potatoes? I know I was surprised the first time I heard that. We won't see all those varieties in our grocery store but we will find some different choices. Potatoes are the world's fourth largest food crop, following rice, wheat and corn. In Michigan, we raise.....Let's look at a few of those and determine how they are similar and different.

**\*Follow activity directions at left\***

We saw some pretty distinctive differences between these varieties, didn't we? Why do you think people would want to buy these different varieties of potatoes instead of just one kind? That's right, different types work better for different methods of preparation. Some are better for baking, others for salad and others for French fries or potato chips. In Michigan, we grow mostly white and Russet potatoes. The white potatoes are well suited for chips or fresh use and Russets are for fresh or frozen use.

Now that we know a bit about some of the different types of potatoes, let's look at how they are produced by farmers. What can you tell me about where in the plant I would find the potato? (That's right, the potatoes grow under the surface of the soil as a tuber on a stolon which is an underground stem). The rest of the plant above the surface looks pretty much like any other flowering plant. Let's look at a diagram of a growing potato plant and discuss some of the significant parts.

**\*Follow activity directions at left\***

# Potato Lesson Script

## *Continued*

Pass out info-graph with nutrition information about various staple crops and handout with questions. Review meanings of abbreviations g, mg, C, kJ, IU. Direct students in finding the first answer – amount of vitamin C in potatoes as compared to sweet potatoes. Depending on academic level of students, answers can be ratios or simple subtraction. Have students independently work through finding additional data responses. Review answers when students are finished. (key on pg. 14)

You probably noticed we haven't mentioned sweet potatoes. Although they seem similar in several ways and are also a healthy food choice, they are not closely related to traditional potatoes. The edible part of a sweet potato is actually the plant's root, whereas the edible part of a traditional potato is the thickened stolon, called a tuber. In fact, potatoes are more closely related to tomatoes. Depending on growing conditions, sometimes a potato plant will produce a small fruit that looks similar to a small tomato. This fruit is not edible, but its seeds can be planted to grow a potato plant.

So, are potatoes good for you? Potatoes can be an excellent part of our diet but how they are prepared has a lot to do with how healthy they are. What methods of preparation would be the best choice? (baked, roasted, grilled, steamed) What choices might be okay occasionally but not all the time? (French fries, chips, cheese-based). One of the major reasons that potatoes are a healthy choice is the amount of water they contain. A 100 gram portion of potatoes contains 79 grams of water. Let's compare potatoes to show other staple foods and see how they measure up.

### **\*Follow activity directions at left.\***

Potatoes are not only an important part of our diet but also an important part of our economy, in Michigan and around the world. Potatoes are the world's fourth largest food crop behind corn, wheat and rice. It is the number one vegetable crop grown in the U.S., where more than 22 million tons were grown in 2013. Can anyone tell me how many pounds are in one ton? 2,000 pounds is correct, that's like the weight of one full grown elephant! The top potato producer in the world is China at more than 97 million tons in 2013. Potatoes are difficult to store for long periods so not many are exported as fresh but often in processed form (dried, chips, frozen). Potatoes can grow under a variety of conditions, so they can help people in under-developed countries fight hunger. Americans eat an average of 130 pounds of fresh and processed potatoes annually.

So the next time you sit down to a meal including a delicious potato, I hope you remember some of what we learned today. Perhaps you'll consider trying a new variety of potato next time you go to the store. When you drive by a field filled with white flowering plants next summer, remember how potatoes grow and reproduce. And as you savor that delicious potato, remember it helps your body's immune system and helps make energy in your body through Vitamin C and niacin.

# ADDITIONAL POTATO RESOURCES

## Books

From Eye to Potato by Ellen Weiss ISBN 987-0-531-18535-3

Tomatoes, Potatoes, Corn, and Beans by Sylvia A. Johnson ISBN 0-689-80141-6

Potato by Larry Zuckerman ISBN 978-0-86547-578-6

Buried Treasure: Roots and Tubers by Meredith Sayles Hughes  
ISBN

What's for Lunch, Potatoes by Claire Llewellyn ISBN 0-516-26223-8

Eating the Alphabet: Fruits & Vegetables from A-Z by Lois Ehlert  
ISBN 0-15-224435

I Like Potatoes by Jennifer Julius ISBN 0-516-23134

## Agriculture & Nutrition Education Websites

[Best Food Facts](#)

[Potatoes Raise the Bar](#)

[Michigan Agriculture in the Classroom](#)

[Michigan Agriculture Council](#)

[Food Dialogues](#)

[Choose My Plate](#)

[My American Farm](#)

[Nutrients for Life](#)

[National Agriculture in the Classroom](#)

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# DIG THIS!

Watch out! Some packaged foods and beverages pack more servings than you need.



## Nutrition Facts

Serving Size 1 potato (148g/5.3oz)

Amount Per Serving

**Calories** 110      Calories from Fat 0

% Daily Value\*

**Total Fat** 0g      **0%**

Saturated Fat 0g      **0%**

Trans Fat 0g

**Cholesterol** 0mg      **0%**

**Sodium** 0mg      **0%**

**Potassium** 620mg      **18%**

**Total Carbohydrate** 26g      **9%**

Dietary Fiber 2g      **8%**

Sugars 1g

**Protein** 3g

Vitamin A 0%      **Vitamin C 45%**

Calcium 2%      Iron 6%

Thiamin 8%      Riboflavin 2%

Niacin 8%      Vitamin B<sub>6</sub> 10%

Folate 6%      Phosphorous 6%

Zinc 2%      Magnesium 6%

\*Percent Daily Values are based on a 2,000 calorie diet.

Do the math: % Daily Value adds up to a balanced diet.



Too much fat, sodium and cholesterol can bully your body.

For health, vitamin C gets an A+.



Potassium is a superhero for healthy blood pressure.



There's more to fiber than a good crunch.

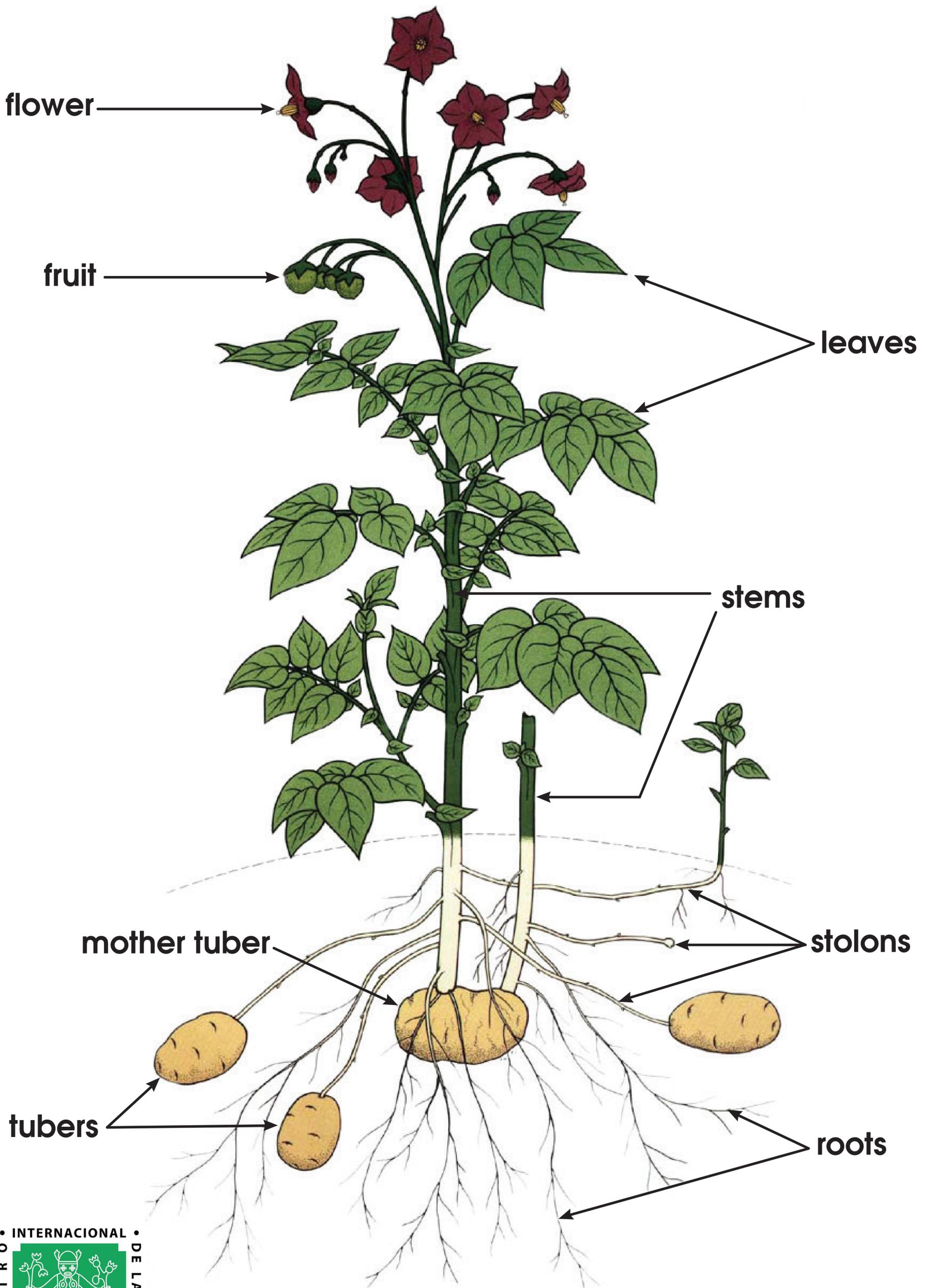


# READ THE LABEL. IT'S GOOD FOR YOUR BODY.

[www.healthypotato.com](http://www.healthypotato.com)



# THE POTATO PLANT



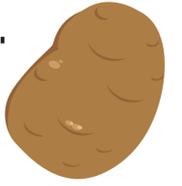
# POTATO FACTS



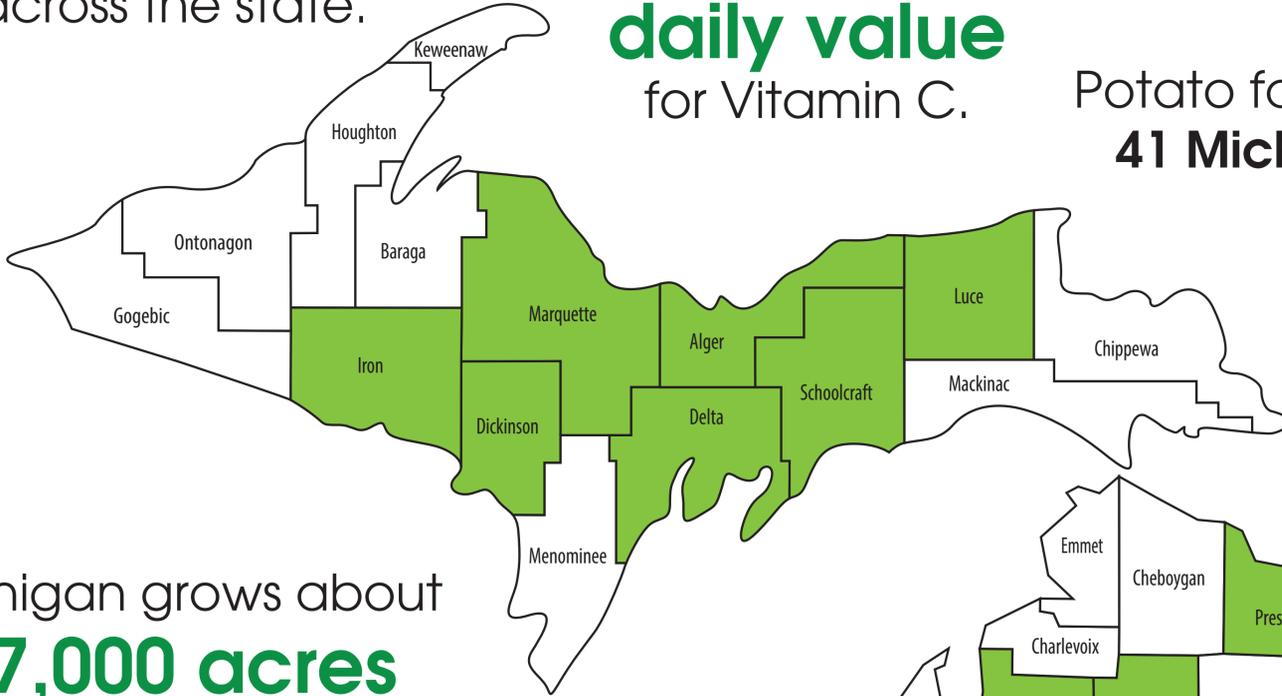
There are approximately **75 potato farms** across the state.

A potato has **45% of the daily value** for Vitamin C.

Potatoes take about **90 days** to grow.



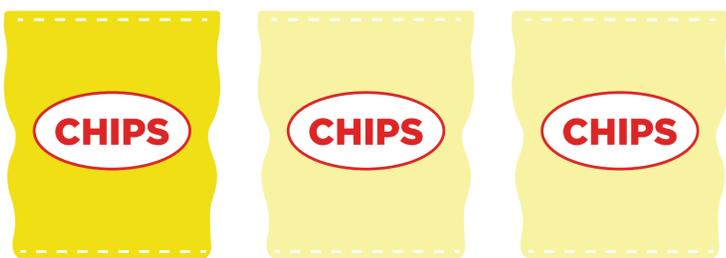
Potato farms are found in **41 Michigan counties**.



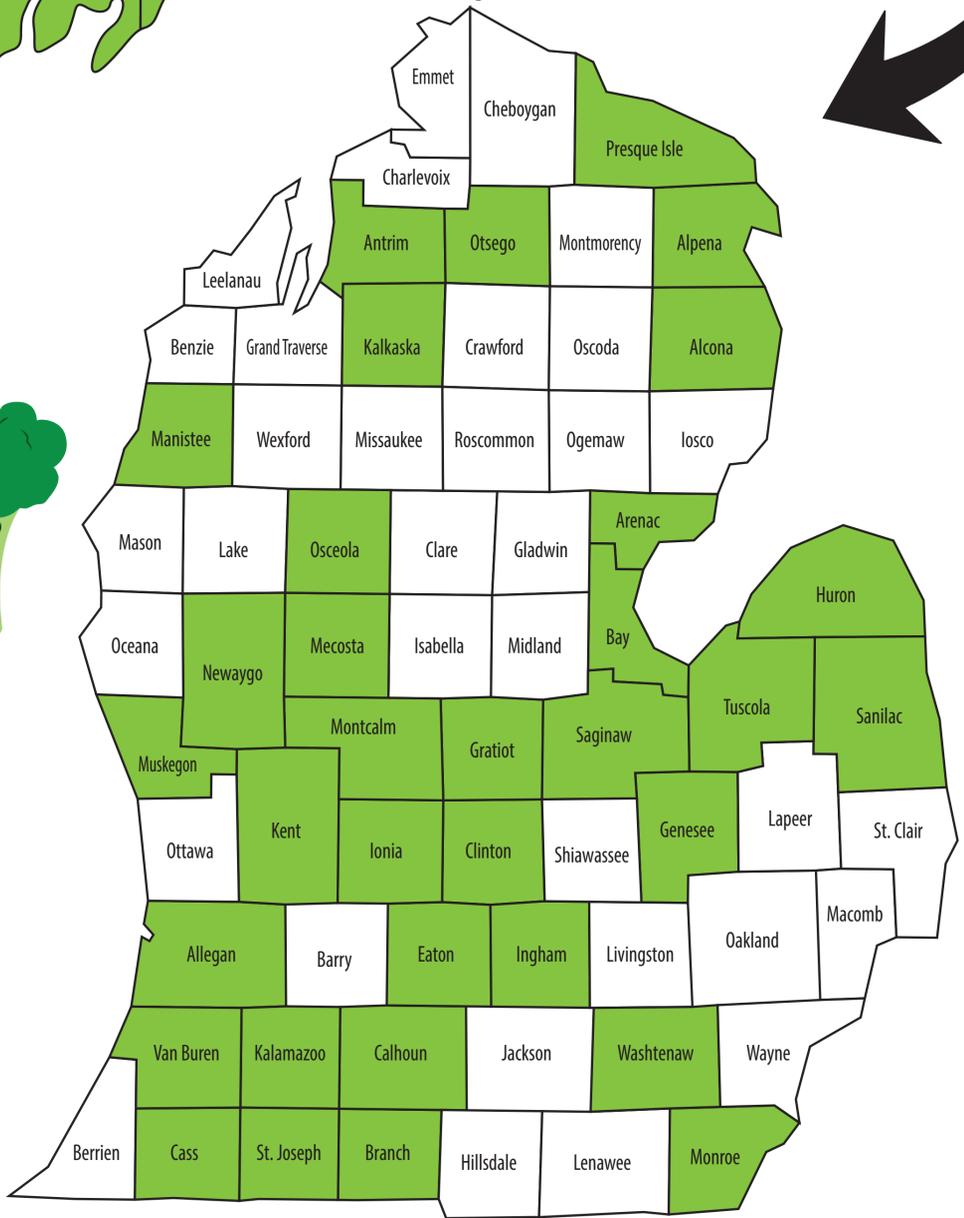
Michigan grows about **47,000 acres** of potatoes each year.



Potatoes have more potassium than bananas, spinach and broccoli.



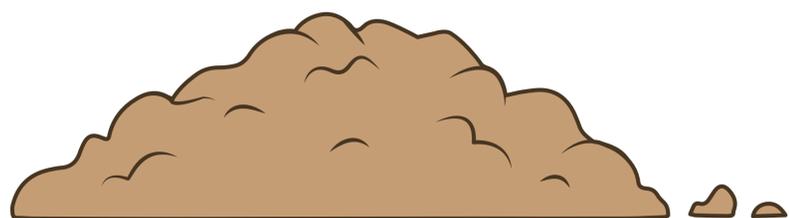
**1 out of every 3 bags** of all potato chips in the country were grown in Michigan.



Michigan is **#1** for growing potatoes that are turned into potato chips.



Michigan is **6th in the nation** for growing potatoes.



Potatoes grow well in Michigan's cool, moist climate and sandy soil.

