

Classify Potatoes

Unit: Preparing Foods

Problem Area: Potatoes, Pasta, and Grains

Lesson: Classify Potatoes

- **Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

- 1 Define classifications of potatoes.**
- 2 Identify specific potato types within each classification.**

- **Resources.** The following resources may be useful in teaching this lesson:

Fabricant, Florence. *The Great Potato Book*. Ten Speed Press, 2000.

“Potatoes,” *The Cook’s Thesaurus*. Accessed July 29, 2010.

<<http://www.foodsubs.com/Potatoes.html>>.

“Potato Varieties,” *Potatoes Goodness Unearthed*. Accessed July 28, 2010.

<http://www.healthypotato.com/AboutPotatoes/Potato_Varieties.php>.

“Types of Potatoes,” *All About Potatoes*. Accessed July 28, 2010.

<<http://www.all-about-potatoes.com/types-of-potatoes.html>>.



■ **Equipment, Tools, Supplies, and Facilities**

- ✓ Overhead or PowerPoint projector
- ✓ Visual(s) from accompanying master(s)
- ✓ Copies of sample test, lab sheet(s), and/or other items designed for duplication
- ✓ Materials listed on duplicated items
- ✓ Computers with printers and Internet access
- ✓ Classroom resource and reference materials
- ✓ 3 to 4 Idaho or russet potatoes
- ✓ Pot of water and a strainer
- ✓ ½ cup of milk or cream
- ✓ ½ stick of butter
- ✓ Mixer, bowl, and paddle or wire whip attachment
- ✓ Salt, pepper, spices of choice
- ✓ *If possible, having physical examples of all or most of the potatoes in this lesson would be a great help during lecture

■ **Key Terms.** The following terms are presented in this lesson (shown in bold italics):

- ▶ all-purpose potatoes
- ▶ Bintje potatoes
- ▶ chef's potatoes
- ▶ fingerling potatoes
- ▶ Idaho potatoes
- ▶ mealy potatoes
- ▶ new potatoes
- ▶ Peruvian blue potatoes
- ▶ red potatoes
- ▶ russets
- ▶ starchy potatoes
- ▶ sweet potatoes
- ▶ tubers
- ▶ waxy potatoes
- ▶ white potatoes
- ▶ yams
- ▶ Yukon Gold potatoes (Yukon)

- **Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Open the topic of potatoes with a cooking demonstration. Intentionally tell your students that you are about to make perfect fluffy whipped potatoes. Have several new red or white potatoes (or any waxy potatoes) on hand, along with a pot of water, milk or cream, salt, butter, a strainer, and a hand or stand mixer. To expedite the demonstration, have the water at boiling and the potatoes already peeled and cut (keeping one whole and unpeeled to show students what you're using).

Boil until tender, discussing in general terms the variety of potato dishes that students enjoy. Drain the potatoes and put them in a bowl. With a paddle or beater attachment, whip the potatoes at high speed, adding salt, a bit of milk or cream, and butter. Naturally, students will expect a white, light, and fluffy whipped potato—not the gluey mess that will result.

Encourage students to observe and taste the product and to offer ideas on what went wrong. Assuming they have not offered the correct solution, end the discussion by telling them that the wrong potato was chosen—that they were set up. The unexpected sticky mess in the bowl will illuminate the need for understanding potato types and uses. Ask students to ponder what would have happened if the new red (or Red Rose or White Rose) potatoes had been steamed instead of boiled prior to mashing?

CONTENT SUMMARY AND TEACHING STRATEGIES

Objective 1: Define classifications of potatoes.

Anticipated Problem: What are the potato classifications?

- I. Potato classifications
 - A. Historical classifications
 1. Potatoes (pommes de terre in French and literally “apples of the earth”) are **tubers**—tube-shaped root vegetables. Many grocery stores and restaurant supply houses offer an assortment of heirloom potatoes.
 2. Potatoes are native to South America and are 77 percent water. Potatoes were not popular in the United States until Irish immigrants brought them to

North America. Most of the white to yellow flesh varieties are thought of as Irish potatoes. At first, potatoes were cultivated for their flower, not their flesh.

3. Diet: Potatoes contain 2.5 times less carbohydrates than bread, which makes them a good choice for diabetics and desirable for those who are dieting.
 4. Versatility: Sweet potatoes are versatile and work well for most cooking applications.
 5. White, red, and yellow potatoes fall into three main categories:
 - a. Boiling potatoes
 - (1) These potatoes tend to be high in moisture, so they do not absorb as much moisture during boiling as other types.
 - (2) These potatoes tend to be low in starch, so they hold their shape for salads and are easy to slice and cube.
 - b. Baking potatoes
 - (1) These potatoes tend to be low in moisture, so their flesh is dry and fluffy.
 - (2) These potatoes tend to be high in starch, so their flesh is dry and fluffy when baked or fried.
 - c. All-purpose potatoes have a moderate amount of starch and moisture and work in most cooking applications.
- B. Starchy or mealy potatoes
1. **Starchy potatoes (mealy potatoes)** are a specific group of potatoes that are high in starch and low in sugar. These potatoes bake and mash fluffy and fry crisp.
 2. Starchy potatoes are best used for:
 - a. Baking
 - b. Frying
 - c. Mashing
- C. Waxy potatoes
1. **Waxy potatoes** are a specific group of potatoes that are high in sugar and low in starch. They hold their shape well after cooking, making waxy potatoes great for salads.
 2. Waxy potatoes are best used for:
 - a. Boiling (for salads or used whole)
 - b. Roasting (high sugar content helps them brown)
- D. **All-purpose potatoes** are a specific group of potatoes that have moderate levels of sugar and starch, making them an all-round useful potato for most any cooking style. All-purpose potatoes have properties of starchy and waxy potatoes.
- E. Sweet potatoes
1. **Sweet potatoes** are potatoes that are tubular in shape with tapered ends and a fibrous inedible skin with bright yellow-orange-red flesh inside. They are high in starch and sugar. Sweet potatoes also contain high levels of carbohydrates, calcium, iron, minerals, and vitamins A and C. They are a separate class of

potato and actually a distant cousin of the Irish potato classes mentioned thus far. The edible portion of sweet potatoes is termed a “swollen storage root” (versus a tuber), and their bright yellow to orange to red flesh is far more nutritious than typical white flesh potatoes.

2. Sweet potatoes are versatile and may be used for:
 - a. Baking
 - b. Boiling
 - c. Frying
 - d. Pie filling
 - e. Roasting
3. **Yams** are tropical tubers often mistaken for sweet potatoes. Yams come in a variety of colors: usually white to yellow flesh. Yams have less starch and less sugar than sweet potatoes, and many people use them interchangeably. Like sweet potatoes, yams are quite versatile and offer more nutrition than standard potatoes. True yams are often available in Latino grocery stores.

Teaching Strategy: After your lecture, use VM–A to review the four potato classes and their characteristics. Students may enjoy researching the new heirloom potatoes found in grocery stores and restaurant supply houses. The listing is long, and local varieties abound.

Objective 2: Identify specific potato types within each classification.

Anticipated Problem: Which potatoes are in each class?

II. Specific potatoes in each potato class

A. Starchy potato types

1. **Idaho potatoes (russets)** are potatoes that have an elongated shape, a brown and tasty skin, and a slightly yellowish flesh. They are extremely high in starch. These potatoes are also known as **chef’s potatoes** because of their extremely common use in the restaurant industry. Varieties of russet potatoes are based on geographic location.
2. **Bintje (BEN-jee) potatoes** are creamy yellow heirloom potatoes that are rather starchy and look somewhat like a smaller and rounder russet. Bintje potatoes are also good boiling potatoes.
3. Other heirloom starchy varieties include Russet Burbank and Lemhi Russet.

B. Waxy potato types

1. **New potatoes** are immature red- or white-skinned potatoes, clearly identified by their small size and tissue paper thin skin. Many chefs consider new potatoes as “just dug.” The flesh can range from snow white to yellowish.
2. **Fingerling potatoes** are potatoes easily identified by their “finger-like” shape and often have a beige/brown skin. However, fingerling potatoes come in a variety of colors, depending on geographic location.

3. Heirloom waxy potatoes include Yellow Finn, Butterfinger, and Russian Banana.
- C. All-purpose potato types
1. **Yukon Gold potatoes (Yukon)** are potatoes that are more round than Idaho potatoes but more tube-shaped than red potatoes, with a smooth golden skin. Their flesh is typically a distinct yellowish color, so they may be called “yellow potatoes.”
 2. **Peruvian blue potatoes** (sometimes called “blue” or “purple” potatoes) are heirloom type potatoes with a round shape and a distinctly reddish-purple colored flesh. Moderate in sugar and starch, they taste just like a typical potato—with a surprising color!
 3. **Red potatoes** are potatoes that are round in shape that may have a white to yellowish flesh. They have a moderate amount of starch and a somewhat high sugar level, making them ideal for boiled or steamed potatoes or potato salad. New red potatoes mature into standard red potatoes; Red Rose is a common type.
 4. **White potatoes** are potatoes that are virtually identical in shape to red potatoes—round—with the difference being skin color. The uses, flavor, and texture are virtually the same.
 5. Heirloom all-purpose potatoes include some fingerlings, Red Gold, and Peruvian Blue.
- D. Sweet potato and yam types
1. Yams and sweet potatoes grow well. They are most popular in the southern United States and are used extensively in Latino and Caribbean cooking. Dry-fleshed sweet potato varieties (pale skin and flesh; dry, crumbly texture similar to a baking potato) have a distinct mouth-feel that is different from the moist varieties (thick, dark orange skin; sweet, moist orange flesh). Moist-fleshed varieties convert more starch to sugar during cooking or baking and tend to become softer and sweeter than dry-fleshed varieties.
 2. Common types of sweet potatoes include Goldrush, Georgia Red, Centennial, Puerto Rico, and Velvet.
 3. Yams include at least 150 types.

Teaching Strategy: *Physical examples of all or most potatoes in this unit would be extremely useful and would allow students to make visual and hands-on connections with the potato varieties and types. If this is not possible, consider using online sources (e.g., YouTube). Use VM–B to relate potato varieties and types. Assign LS–A to have students practice sorting potatoes into varieties and types.*

Review/Summary. Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle. Questions at the ends of chapters in the textbook may also be used in the review/summary.

- **Application.** Use the included visual master(s) and lab sheet(s) to apply the information presented in the lesson.
- **Evaluation.** Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is provided.
- **Answers to Sample Test:**

Part One: Matching

1. e
2. a
3. c
4. b
5. d
6. f

Part Two: True/False

1. T
2. F
3. F
4. F
5. F
6. T
7. T
8. T

Part Three: Completion

1. yellow-orange-red
2. tubers
3. high sugar
4. color
5. white
6. red potatoes
7. Irish
8. baking, frying, mashing (in any order)

Classify Potatoes

► Part One: Matching

Instructions: Match the term with the correct definition.

- | | |
|-------------------------|------------------|
| a. all-purpose potatoes | d. tubers |
| b. mealy potatoes | e. waxy potatoes |
| c. sweet potatoes | f. yams |

- ___ 1. A specific group of potatoes that are high in sugar and low in starch; hold their shape well after cooking
- ___ 2. A specific group of potatoes that are moderate in starch and sugar levels
- ___ 3. Potatoes that are tubular in shape with tapered ends, a fibrous inedible skin, and bright yellow-orange-red flesh inside
- ___ 4. A specific group of potatoes that are high in starch and low in sugar content; bake and mash fluffy and fry crisp
- ___ 5. Tube-shaped root vegetables
- ___ 6. Tropical tubers

► Part Two: True/False

Instructions: Write T for true or F for false.

- ___ 1. Russet potatoes are virtually the same as Idaho potatoes.
- ___ 2. New potatoes make good French fries.
- ___ 3. All-purpose potatoes are very low in starch and very high in sugar.
- ___ 4. Sweet potatoes and yams are identical.



- ___ 5. Fingerlings are round potatoes.
- ___ 6. New potatoes are a good choice for boiling.
- ___ 7. Sweet potatoes are more nutritious than other potato varieties.
- ___ 8. Sweet potatoes are used for pie filling.

► **Part Three: Completion**

Instructions: Provide the word or words to complete the following statements.

1. The flesh of sweet potatoes is _____ in color.
2. Regardless of variety, all potatoes are known as _____ based on their typical shape.
3. The reason waxy potatoes brown so well in the oven is due to the _____ content.
4. What stands out about Yukon Gold and Peruvian Blue potatoes is their _____.
5. A _____ potato is the perfect substitute for a red potato.
6. New red potatoes mature into standard _____.
7. Potatoes are native to South America, were introduced into Europe, and then were brought to the United States by _____ immigrants.
8. Starchy potatoes are best used for _____, _____, and _____ styles of cooking.

POTATO CLASSES AND USES CHART

◆ Starchy (Mealy):

- High starch
- Low sugar
- Uses:
 - Frying, baking, and mashing

◆ Waxy:

- Low starch
- High sugar
- Uses:
 - Boiling, roasting, and whipping

◆ All-Purpose:

- Moderate starch
- Moderate sugar
- Uses:
 - Most cooking styles

◆ Sweet Potatoes and Yams:

- High starch
- High sugar
- Uses:
 - Most cooking styles



EXAMPLES OF POTATO TYPES BY VARIETY

Starchy



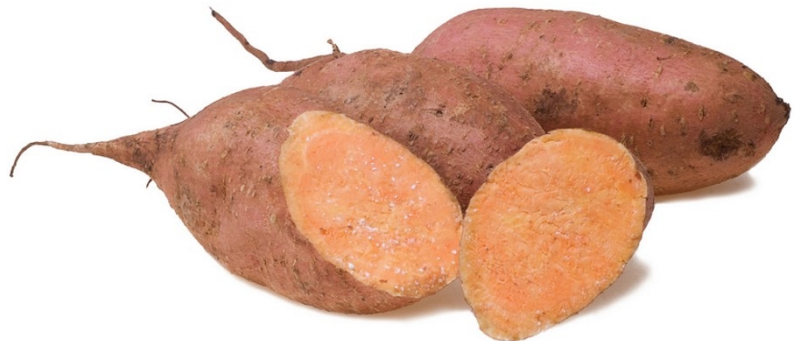
Waxy



All-Purpose



Sweet Potatoes and Yams



Potato Varieties and Types

Purpose

The purpose of this activity is to improve potato knowledge.

Objectives

1. Identify potato classes.
2. Identify types of potatoes in each class.
3. Identify uses of various types of potatoes in each class.

Materials

- ◆ lab sheet
- ◆ writing utensil

Procedure

1. The “Word Bank” below contains various potato variety and type classifications. Use the Word Bank to complete each “Potato Fact” description.
2. You may use each word multiple times and use as many words as are appropriate to each Potato Fact description.

Word Bank

all-purpose
Idaho
red potato
tuber
Yukon Gold

Bintje
mealy
russet
waxy

chef’s potato
new potato
starchy
white potato

fingerling
Peruvian
sweet potato
yam



- a. Less sweet than sweet potatoes and come in different colors

- b. Immature white or red potatoes _____
- c. Similar to a russet _____
- d. Looks like a small roundish russet _____
- e. Strikingly yellow flesh _____
- f. Quite starchy _____
- g. Strikingly purple flesh _____
- h. Good for boiling, whipping, and roasting; holds its shape after cooking

- i. Best when baked or fried _____
- j. Has a long, slender shape _____
- k. High in sugar and starch _____
- l. Flesh that is always bright orange in color _____
- m. Examples include new potatoes and red potatoes _____
- n. Have a moderate amount of sugar and starch _____
- o. A “chef’s potato” _____
- p. A type of root vegetable (e.g., Irish potatoes) _____

Potato Varieties and Types

1. The answer key below is intended as a guide only. Potato varieties and types may vary based on geographic location and cooking style, so please use your judgment in grading the student's work on this Word Bank.
2. Potato Variety and Type Word Bank Key:
 - a. yam
 - b. new potatoes
 - c. chef's potato, Idaho
 - d. Bintje
 - e. Yukon Gold (Yukon)
 - f. Bintje, chef's potato, Idaho, mealy, russet, sweet potato, yam
 - g. Peruvian
 - h. new potatoes
 - i. Bintje, chef's, Idaho, mealy, russet
 - j. fingerling
 - k. sweet potato, yam
 - l. waxy
 - m. white potato
 - n. all-purpose
 - o. Idaho, russet
 - p. tuber