

# Harvest of the Month



Network for a Healthy California

## Health and Learning Success Go Hand-In-Hand

Encouraging students to try new foods through taste tests is a great classroom strategy. Create a safe environment for students to taste new fruits and vegetables. A low-pressure approach to taste testing can help students develop a sense of what they like. Incorporate *Harvest of the Month* fruits and vegetables into lesson plans and help students expand their eating horizons.

## Exploring California Root Vegetables: Taste Testing

### Getting Started:

- Partner with your school nutrition staff, local farmers' market, or grocery store to obtain produce for taste tests.

### What You Will Need (per group):

- ½ cup each of raw, peeled, and sliced jicama and turnips
- ½ cup each of cooked\* and sliced russet potatoes and rutabagas
- Printed Nutrition Facts labels for jicama, turnips, potatoes, and rutabagas\*\*

### Activity:

- Record sensory impressions by creating a Venn diagram on the board.
- Taste vegetables and note the look, texture, smell, color, and taste.
- Ask students to write a reflection or thank you letter to the farmer or school nutrition staff. Include sensory descriptions or reasons why they liked or disliked certain items.
- Examine Nutrition Facts labels for all items. Discuss how they differ nutritionally.
- Refer to *Botanical Facts* (page 2) and explain how tubers differ from roots.

\*Make arrangements to cook (steam) potatoes and rutabagas in advance.

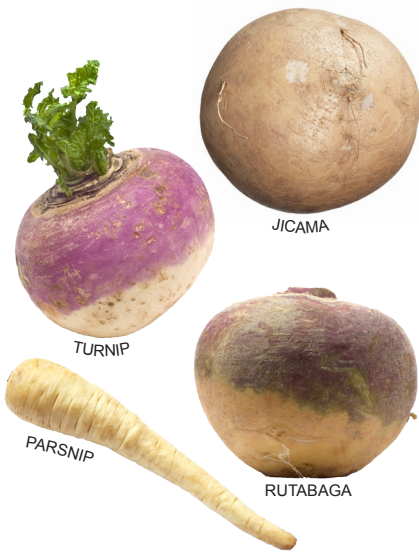
\*\*Download from the Educators' Corner of [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

### For more ideas, reference:

*Kids Cook Farm-Fresh Food*, California Department of Education, 2002.



RADISH



JICAMA

TURNIP

PARSNIP

RUTABAGA

## Nutrition Facts

Serving Size: ½ cup raw jicama, sliced (60g)

Calories 23      Calories from Fat 0

% Daily Value

Total Fat 0g      0%

Saturated Fat 0g      0%

Trans Fat 0g

Cholesterol 0mg      0%

Sodium 2mg      0%

Total Carbohydrate 5g      2%

Dietary Fiber 3g      12%

Sugars 1g

Protein 0g

Vitamin A 0%      Calcium 1%

Vitamin C 20%      Iron 2%

## Cooking in Class: Jicama Cucumber Salad

### Ingredients:

Makes 24 tastes at ¼ cup each

- 1 pound jicama, peeled and cut into ½-inch cubes
- 2 medium cucumbers, quartered, and sliced ¼-inch thick
- 1 fresh lime
- 3 teaspoons chili powder
- Small plates and forks

- Combine jicama and cucumbers in a large bowl.
- Squeeze lime juice over salad and mix well.
- Sprinkle seasoning over salad and mix well. Serve immediately.

Source: Hawthorne School District, 2009.

For nutrition information, visit: [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

## Reasons to Eat Root Vegetables

- A ½ cup of most root vegetables provides an excellent source of vitamin C.
- A ½ cup of sliced jicama is a good source of fiber.
- Complex carbohydrates\* (commonly referred to as “starches”) are a key nutrient in root vegetables.

\*Learn about complex carbohydrates on page 2.

### Champion Sources of Complex Carbohydrates\*

- Corn
- Dry beans
- Peas
- Sweet potatoes

\*Champion foods include those in which most of their calories come from complex carbohydrates.

Source: USDA Nutrient Database

### For more information, reference:

*Wellness Foods A to Z* by Sheldon Margen, Rebus, 2002.

**ROOT  
VEGETABLES**

## What Are Complex Carbohydrates?

- “Starchy vegetables” provide calories in the form of complex carbohydrates. They also provide vitamins, minerals, and fiber.
- The primary function of carbohydrates is to provide energy for the body, especially the brain and nervous system.
- Most people should get 55-60%, or over half, of their total calories from carbohydrates, preferably starches and naturally occurring sugars.
- Complex carbohydrates are made of polysaccharides (long chains of sugar units) that come from plant-based foods.
- The body uses enzymes to break down complex carbohydrates like starch into glucose, which the body then uses for energy.
- In plants, starch is produced by photosynthesis. Tubers store the highest quantities of starch of all vegetables.

Source: *Understanding Normal and Clinical Nutrition* by Catalog, Whitney, and Rolfe, Sixth Edition, 2002, pp. 97, 114-117.

For more information, visit:  
[www.fruitsandveggiesmatter.gov](http://www.fruitsandveggiesmatter.gov)

## How Much Do I Need?

A ½ cup of sliced root vegetables is about one cupped handful. Root vegetables come in a variety of colors and most can be eaten raw or cooked. The amount of fruits and vegetables you need depends on your age, gender, and physical activity level. Remind students to eat a variety of colorful fruits and vegetables throughout the day. It will help them reach their recommended daily amounts.

### Recommended Daily Amounts of Fruits and Vegetables\*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
<b>Males</b>	2½ - 5 cups per day	4½ - 6½ cups per day
<b>Females</b>	2½ - 5 cups per day	3½ - 5 cups per day

\*If you are active, eat the higher number of cups per day. Visit [www.choosemyplate.gov](http://www.choosemyplate.gov) to learn more.

## How Do Root Vegetables Grow?

Root vegetables are cool-weather crops. Roots such as beets, carrots, radishes, rutabagas, and turnips can be planted in early spring and late summer for two crops. Tubers are a single-crop vegetable that can take up to one year to harvest. Roots need to be thinned so they have enough room to develop properly. Tubers do not require thinning, but they do need plenty of space and soil covering the underground vegetables.

For a chart with information about how to plant and grow root vegetables, refer to *Root Vegetables Botanical Images* (in the Educators' Corner) on [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

For more information, visit:  
[www.ncsu.edu/sustainable/profiles/pppotato.html](http://www.ncsu.edu/sustainable/profiles/pppotato.html)  
[www.urbanext.illinois.edu/veggies/potato1.html](http://www.urbanext.illinois.edu/veggies/potato1.html)

## Botanical Facts

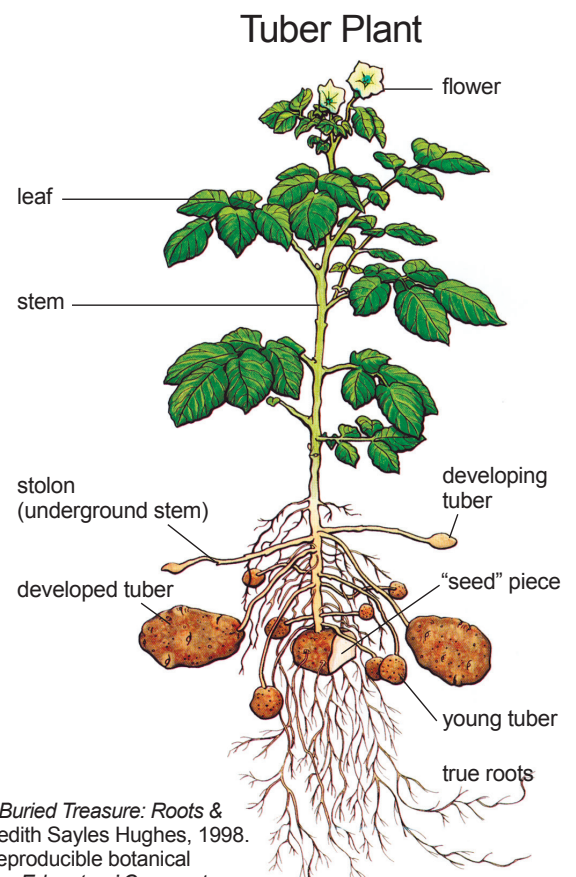
Root vegetables are the roots of plants that are eaten as vegetables. These roots grow into the ground from the base of the plant stem. They anchor the plant, absorb water and nutrients, and store energy. Root vegetables are divided into six subgroups: Tap Roots, Tuberous Roots, Corms, Rhizomes, Tubers, and Bulbs.

Tubers differ from other roots in that they are swollen underground stems, capable of producing new plants and storing energy for the parent plant. If the parent plant dies, the underground tubers can create new plants. Other roots can take nutrients from the ground, but cannot store energy or use it for reproduction. So while every tuber is a root vegetable, not all roots are tubers.\*

Subgroup	Varieties
Tubers	Potato, sunchoke, yam
Tap Roots	Beet, carrot, cassava, jicama, parsnip, radish, rutabaga, turnip
Tuberous Roots	Sweet potato, yucca
Corms	Celeriac, eddo, taro, water chestnut
Rhizomes	Arrowroot, galangal, ginger, ginseng, lotus root, turmeric
Bulbs	Garlic, onion, shallot

\*Refer to *Carrots*, *Potatoes*, and *Sweet Potatoes* newsletters for more information about root vegetable varieties.

For more information, visit:  
<http://aggie-horticulture.tamu.edu/extension/specialty>



Adapted from: *Buried Treasure: Roots & Tubers* by Meredith Sayles Hughes, 1998. To download reproducible botanical images, visit the *Educators' Corner* at [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

## School Garden: To Dig or Not to Dig?

If your school has a garden, here is an activity you may want to implement. Look for donations to cover the cost of seeds, tools, irrigation systems, electric pumps, and any salary incurred by garden educators or others.

Demonstrate the importance of planting in loosened soil. In compacted or dense soil, there is less room for air, making it difficult for water to drain.

### Materials:

- 20 root seeds of same variety (e.g., turnips, parsnips)
- 4' x 8' unprepared garden area (i.e., soil is hard)
- String
- Markers
- Spading forks

### Student Activity:

- Divide garden area in half using string.
- Label one side "Bed A." Use forks to loosen soil to six inches deep.
- Label the other side "Bed B." Leave it untouched.
- Plant equal number of seeds in Beds A and B. Record predictions about growth and harvesting in a journal.
- Harvest mature plants and taste the edible parts.
- Write an analysis of which bed was more suitable for plant growth and why. Compare it to original predictions. Complete *Student Sleuths* #5.

**Adapted from:** *The Growing Classroom: Garden-Based Science* by Roberta Jaffe and Gary Appel, Addison Publishing Company, 1990.

## Home Grown Facts

- Jicama is not commercially grown anywhere in the United States.
- California leads the nation in production of Daikon radishes.
- Turnips are produced mainly as a small (approximately 400 acres) commercial crop in Kern and Imperial counties.
- In California, parsnips are grown mainly in home gardens.



**Source:** [www.agcensus.usda.gov/Publications/2007/Full\\_Report/Volume\\_1,\\_Chapter\\_1\\_State\\_Level/California/st06\\_1\\_034\\_034.pdf](http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_1_State_Level/California/st06_1_034_034.pdf)

### Student Activity:

California imports produce from other states or countries. Locally grown foods, especially fruits and vegetables, are likely to be fresher and taste better than foods shipped from out-of-state.

- Find more information about farmers' markets and local growers near you by visiting [www.ams.usda.gov](http://www.ams.usda.gov). (Select "Wholesale and Farmers Markets" under "Browse by Subject.") Or, visit [www.localharvest.org](http://www.localharvest.org).
- At your local market, ask the produce manager where the store buys its produce.

**For more information, visit:**  
[www.cdfa.ca.gov](http://www.cdfa.ca.gov)

## Student Champions

- Form a Nutrition Advisory Council to promote nutrition and school meals to student peers.
- Collaborate with school nutrition staff to create a taste testing event, make seasonal produce suggestions, or develop a standardized menu that complies with USDA school meal nutrition guidelines.



**For more information, visit:**

[www.calsna.org/NAC/NAC.asp](http://www.calsna.org/NAC/NAC.asp)

[www.fns.usda.gov/cnd/menu/menu\\_planning.doc](http://www.fns.usda.gov/cnd/menu/menu_planning.doc)

## Student Sleuths

- 1 Complex carbohydrates, like those found in starch, provide the body with longer releasing energy. How does this differ from the energy provided by simple carbohydrates?
- 2 What is a root? What is a tuber? List examples of each.
- 3 Sweet potatoes (a root) are a good source of potassium. (USDA defines a "good source" as supplying at least 10% daily value of a nutrient per serving.) List three other fruits or vegetables that are good sources of potassium.
- 4 What is the difference between annual and perennial plants?
- 5 How do soils become compacted? What happens when the soil becomes compacted? How can we avoid compacting our garden beds?

**For information, visit:**

[www.fruitsandveggiesmatter.gov](http://www.fruitsandveggiesmatter.gov)

[www.nal.usda.gov/fnic/foodcomp/search](http://www.nal.usda.gov/fnic/foodcomp/search)

[www.extension.umn.edu/distribution/cropsystems/components/3115s01.html](http://www.extension.umn.edu/distribution/cropsystems/components/3115s01.html)

[www.garden.org](http://www.garden.org)

## A Slice of Root Vegetable History

- Root vegetables were an essential part of the diet during the early evolution of humankind (about five million years ago).
- Turnip fossils were found in caves in China dating back thousands of years.
- Jicama was brought to the Philippines and Malaysia by the Spanish in the 1600s.
- Rutabagas are believed to have originated in Bohemia in the 1700s as a cross between the turnip and wild cabbage.
- American colonists relied heavily on root vegetables because they could be stored for months in the harsh New England winters.

**For more information, visit:**

[www.idph.state.ia.us/pickabetersnack/common/pdf/factsheets/potatoes.pdf](http://www.idph.state.ia.us/pickabetersnack/common/pdf/factsheets/potatoes.pdf)

[www.ba.ars.usda.gov/hb66/078jicama.pdf](http://www.ba.ars.usda.gov/hb66/078jicama.pdf)

## Adventurous Activities

### Math Analysis

Compare and contrast the content of predominant nutrients – including vitamins and minerals – in different root vegetable varieties (e.g., jicama, parsnips, rutabagas, turnips, yams, sweet potatoes, potatoes).

#### Helpful Hint:

Complete in conjunction with *Taste Testing* activity on page 1.

For information, visit:

[www.nal.usda.gov/fnic/foodcomp/search](http://www.nal.usda.gov/fnic/foodcomp/search)

### Cafeteria Connections

- Examine the school lunch menu. List the different choices of root vegetables. Have students design posters promoting the nutritional significance of a root vegetable of their choice. Display posters in cafeteria.
- Ask students to select which root vegetables they will try. Record feedback and submit summary to the school nutrition staff with recommendations.
- Promote lunch time as a way for students to obtain maximum nutrition and help meet their daily fruit and vegetable needs. Design promotional messages around fruits and vegetables served that week.

For more ideas, visit:

[www.schoolnutrition.org](http://www.schoolnutrition.org)



### Activities & Resources Galore

Visit the Educators' Corner online for more resources:

- Cooking in Class (recipe analyses, cooking tips)
- Reasons to Eat (Nutrition Glossary)
- How Does It Grow (botanical images, growing tips)
- Student Sleuths (Answer Key)
- Adventurous Activities
- Literature Links (book lists)
- Links to California Content Standards (all grades)

All available at [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

## Just the Facts

- Only the roots of jicama plants are edible.
- Turnips are members of the mustard family.
- The name *rutabaga* comes from the Swedish word *rotbagga*, meaning “thick root.”
- The word *Daikon* comes from two Asian words: *dai-* (large) and *kon* (root).

For more information, visit:

[www.uga.edu/rootandtubercrops](http://www.uga.edu/rootandtubercrops)

[www.panen.psu.edu/s.n.a.c](http://www.panen.psu.edu/s.n.a.c)

## Literature Links

- Research the history of turnips and rutabagas in Irish, Scandinavian, and Russian cultures.
- Talk with a local dietitian to identify valid resources for nutrition information. Discuss popular beliefs about carbohydrates and resolve myths and facts.
- If allowed, conduct a taste test in a school library. Have the librarian present literature, such as a book related to food and/or nutrition.

For a list of book ideas, visit:

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

## Physical Activity Corner

Form a “walking school bus” to promote physical activity. For ideas on how to start a walking school bus, visit [www.walkingschoolbus.org](http://www.walkingschoolbus.org). A healthy lifestyle consists not only of a healthy overall diet, but also plenty of physical activity. The recommended amount of physical activity for children is 60 minutes on most days and 30 minutes for adults.

For more information, visit:

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

