


Table 9.9: Types of Root and Tuber Vegetables *continued*

Name	Characteristics	Sample varieties
Yams 	<ul style="list-style-type: none"> • Yams are often confused with sweet potatoes. They have more natural sugar and moisture than sweet potatoes. • Colors range from deep red to creamy white. • They can be substituted for sweet potatoes in most recipes. • USES: Yams are best when boiled, baked, or puréed for soups. 	<ul style="list-style-type: none"> • Purple Ube • Japanese Mountain • White Guinea

[fast fact]**Did You Know...?**

On average, an American consumes around 21 pounds of fresh and processed onions every year.

[ServSafe Connection]**Do You Know Your Chanterelles from Your False Morels?**

Some mushrooms are edible and delicious. Others are poisonous. Different kinds of mushrooms can cause a variety of symptoms, from mild, such as swollen lips, to severe gastrointestinal upset or even death.





Foodborne illnesses linked with mushrooms are almost always caused by people eating toxic, wild mushrooms collected by amateur hunters. Most cases happen because toxic mushrooms are mistaken for edible ones.

If you want to use mushrooms or mushroom products in a dish, make sure to buy them from an approved, reputable supplier.

Stem Vegetables

Stem vegetables include asparagus, celery, artichokes, and mushrooms. In this category, the vegetables that we eat are the stems of plants. Table 9.10 lists the characteristics of each type of stem vegetable.

Table 9.10: Types of Stem Vegetables

Name	Characteristics	Sample varieties
Asparagus 	<ul style="list-style-type: none"> • Asparagus has tender stalks and tips. • Thicker stalks mean that the plant is older. • USES: Asparagus can be steamed while standing upright in a pot, with the tips on top, roasted, or sautéed. 	<ul style="list-style-type: none"> • White • Green • Viola
Celery 	<ul style="list-style-type: none"> • Green, leafy stalks of celery are familiar ingredients. • USES: They are commonly used in salads, soups, stews, and as a garnish in tomato juice. In addition, the crisp, sturdy stalks make celery an excellent appetizer, either stuffed or served with dip. 	<ul style="list-style-type: none"> • Ventura • Giant Red • Giant Pascal
Artichokes 	<ul style="list-style-type: none"> • Artichokes are the immature flowers of a thistle plant brought to America by Italian and Spanish settlers. • Whole artichokes can be simmered, steamed, or microwaved. Often they are served with lemon juice, garlic butter, or hollandaise sauce. • The artichoke heart may be cooked separately and then served in salads, puréed as a filling, or served as a side dish. • USES: Young, tender globe artichokes can be cooked whole. Mature artichokes need to have the fuzzy center (known as the choke) removed first. 	<ul style="list-style-type: none"> • Green Globe • Emerald • Imperial Star
Mushrooms 	<ul style="list-style-type: none"> • Mushrooms are a family of fungi, many of which are edible. • Fungi (FUN-ghee) are a large group of plants ranging from single-celled organisms to giant mushrooms. • The flavor of mushrooms ranges from delicate and fruity to pungent and garlicky. • Mushrooms come in many shapes, sizes, and colors. Though many varieties are perfectly safe to eat, there are some that can cause severe illness or even death. • USES: They are served raw with dips and in salads, deep-fried, and cooked in a variety of sauces, soups, stews, and stir-fry recipes. 	<ul style="list-style-type: none"> • White • Crimini • Portabella

Purchasing Vegetables

Improved shipping methods and new ways of farming have made most produce available all year. The use of hydroponic farming is popular. In **hydroponic** (hi-dro-PON-ick) **farming**, vegetables are grown indoors year-round, under regulated temperatures and light, in nutrient-enriched water. To reduce cost and promote freshness, some restaurants grow their own fresh herbs on the premises. Figure 9.16 shows vegetables being grown using hydroponic farming.



Figure 9.16: Hydroponic farming allows vegetables to be grown indoors year-round, under regulated temperatures and light in nutrient-enriched water.

Some vegetables, such as spinach, potatoes, and broccoli, are available all year. The quality, degree of ripeness, and price vary with the season. Others, such as asparagus, summer squashes, tomatoes, and green beans, have a specific growing season. Knowing the growing season for a particular vegetable is important. As with fruit, during their growing seasons vegetables are plentiful, the quality is higher, and the prices are usually lower. Some operations have seasonal menus that are based on what is fresh and locally available. Many customers today have shown interest in eating local produce and supporting the restaurants that serve it.


The same factors that could affect the purchasing decisions that operations make for fruit apply for vegetables. See page 556.

[what's new]

A Lettuce Farm on a Rooftop

Hydroponic gardening is done without soil, in a water-and-nutrient solution. The word "hydroponic" means "water work," and that is exactly what happens. The water does all the work! Well, the hydroponic farmers work hard, too. Plants are supported in a rack or frame, the correct fertilizing nutrients are added to the water, and that's all there is to it! It involves more chemistry than weed-pulling.

Many of the carrots, lettuces, and other vegetables that you eat, especially during the winter months, are produced hydroponically.



In Lima, Peru, Alfredo Rodriguez Delfin, professor of biology at the Universidad Agraria La Molina, has helped a group of mothers improve their families' lives by teaching them hydroponic gardening techniques. Low-income women in a section of Lima called Villa el Salvador banded together to start a hydroponic lettuce farm on their apartment-building rooftop. Their system allows for nearly three times the harvest yield of the same square-footage of dirt using traditional methods. A small rooftop becomes a big farm. The women of Villa el Salvador produce about 30,000 lettuce plants each month.

They raise dark green leafy lettuce in a nutrient-boosted solution, sterile from foodborne pathogens. Their lettuce is ready to harvest in two months. They sell it in sealed, clean containers to local grocers. This is a source of income. It's also a major nutritional boost for their families and community members who buy it. With the proceeds of sales, they can afford to add eggs, potatoes, and a few other staples to their otherwise meager diet. They are improving their families' health, their economic status, and their community.

Quality Grades

The same quality grades that the USDA applies to fruit apply to vegetables as well.

Storing Vegetables

All produce must be properly stored. Roots and tubers should be stored dry and unpeeled in a cool, dark area. Many of the other ripe vegetables can be stored at 41°F or lower, but not all will be stored at these temperatures. For example, potatoes should never be stored in the refrigerator. They should be in a cool, dark place, because the low temperatures of a refrigerator convert the starch to sugars. Remember, if possible, vegetables should be stored separately in one refrigerator and fruit in another refrigerator. As with some fruit, certain vegetables emit ethylene gas, which causes fruit to ripen.

Most vegetables need to be kept dry because excess moisture causes produce to spoil quickly. For this reason, produce should not be peeled, washed, or trimmed until just before it is used. For example, outer leaves on lettuce should be left on the head, and carrots should be unpeeled. Leafy tops on root vegetables (beets, turnips, carrots, radishes) should be removed and either discarded or used immediately. These tops can be used for stock, since they contain flavor and nutrients. The leaves on these green vegetables absorb nutrients from the root and increase moisture loss.

Vegetables that need to ripen, such as tomatoes and avocados, should be stored at room temperatures of 65°F to 70°F. Once produce is ripe, refrigerate it immediately or it will become overripe. Even with proper storage, most foodservice operations do not keep produce for more than four days. Some vegetables, such as onions and beets, have a longer life, but most restaurants limit the storage of these items to three weeks. Figure 9.17 shows the proper storage of produce.



Figure 9.17: Proper storage of vegetables keeps them fresher longer.

Green vegetables must be placed carefully in a refrigerator. A refrigerator has cold and warm spots, and vegetables can be sensitive to temperature variations of a few degrees, so it is important to know the temperatures in your refrigerator.

Preparing Vegetables

Vegetables must be properly prepared before they are cooked. Preliminary preparations might include cleaning, peeling, slicing, dicing, chopping, and mincing.

Cleaning

All fresh vegetables, even if they will be peeled before cutting, must be cleaned thoroughly. Washing removes surface dirt as well as bacteria and other contaminants. Leafy vegetables contain sand and dirt, and even bugs. Celery and leeks are always dirty at the root. To clean vegetables, run them under water that is a little warmer than the produce. When cleaning leafy greens, such as lettuce and spinach, remove the outer leaves, and pull the lettuce and spinach completely apart and rinse thoroughly. As with fruit, special solutions are available for cleaning vegetables. Wash vegetables as close to preparation time as possible.

Chopping, Dicing, Mincing

The cutting surface should be at a comfortable height so that the elbows are in a natural position. It is best to set up a cutting station with a container to hold

any peelings and another container to hold the cut vegetables as you cut them. This allows you to safely cut on a clear cutting board. It should be large enough to accommodate piles of chopped material while the cook is still chopping. It should be securely in place, and not move as the cook chops. Placing a damp towel or rubber mat underneath a cutting board can anchor it on the counter. For safety, foods such as meat, fish, and poultry require a different cutting board from that used for fruits and vegetables. Make sure the vegetables do not touch surfaces exposed to raw meat, seafood, or poultry.

Essential Skills

Dicing Onions

- 1 Start by cutting off the root end.
- 2 Slice off the stem end.
- 3 Peel the onion. See Figure 9.18a.
- 4 Cut the onion in half from the stem end to the root end and lay one half on the cutting board.
- 5 Make a series of horizontal cuts, evenly spaced, from one end of the onion to the other. See Figure 9.18b. Make sure not to cut through the end so the onion will hold together as you continue to cut.
- 6 Hold the onion together and slice vertical cuts in the opposite direction in the desired width to finish the cut.

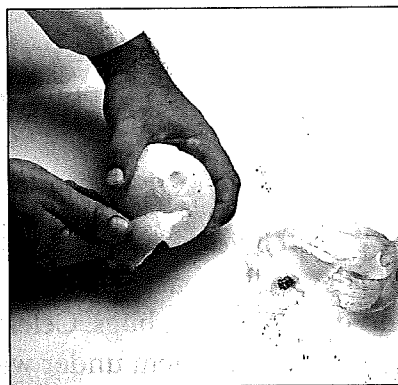


Figure 9.18a: Step 3—Peel the onion.

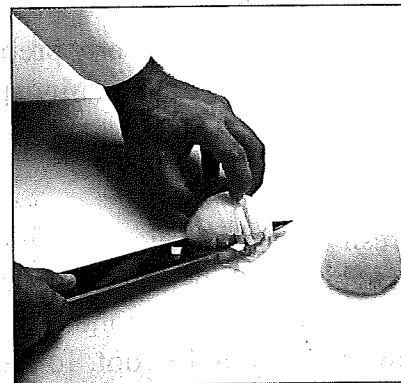


Figure 9.18b: Step 5—Make a series of horizontal cuts.

Essential Skills

Mincing Carrots

- 1 Peel the carrot.
- 2 Cut off the ends and slightly flatten one side.

- ③ Now it will sit on the board while you slice it into lengthwise slices. See Figure 9.19a.
- ④ Lay the slices flat and slice them again into julienne strips. See Figure 9.19b.
- ⑤ Collect the strips together and chop across them, using the rocking motion of the blade. The free hand can hold the carrot. Keep the fingertips tucked back to protect them from the blade. The knuckles can help guide the size of the chop. Go very slowly at first, so that your guiding hand does not come in contact with the sharp edge of the blade. See Figure 9.19c.

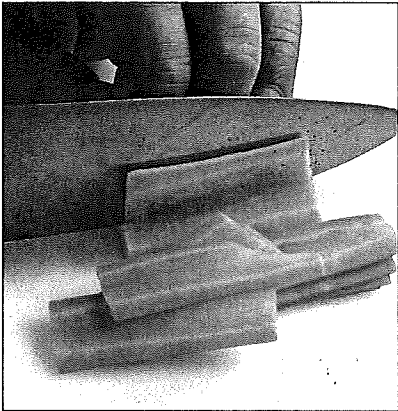


Figure 9.19a: Slice lengthwise.

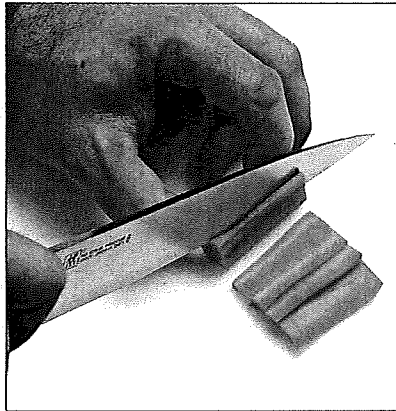


Figure 9.19b: Step 4—Lay slices flat and slice again.

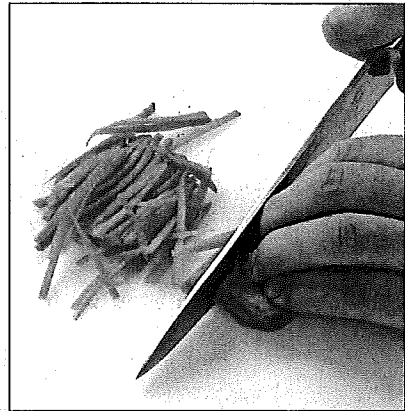


Figure 9.19c: Step 5—Chop strips using a rocking motion.

Dicing is cutting a product into cubes with a chef's knife. Normally, dicing refers to about a half-inch cube—the same size as dice. This is a common technique for use with vegetables.

Essential Skills

Dicing Vegetables

- ① Determine the size of cube that is needed.
- ② Prepare the vegetable by washing and peeling.
- ③ Trim the vegetable so that the sides are straight and at right angles. It is often helpful to cut vegetables in half first so that you are working with a flat surface. See Figure 9.20a.
- ④ Cut into panels. Before something can be diced, it needs to be cut into logs or sticks, such as a julienne. Always begin by cutting off one side to make it flat. Next, make rectangular slices or panels. See Figure 9.20b.

- 5 Cut into logs. Stack a number of the rectangles or panels on top of each other and then slice lengthwise, making uniform logs or sticks. See Figure 9.20c.
- 6 Line up the logs or sticks and cut across them again, creating perfect cubes. See Figure 9.20d.



Figure 9.20a: Step 3—Trim the vegetables.

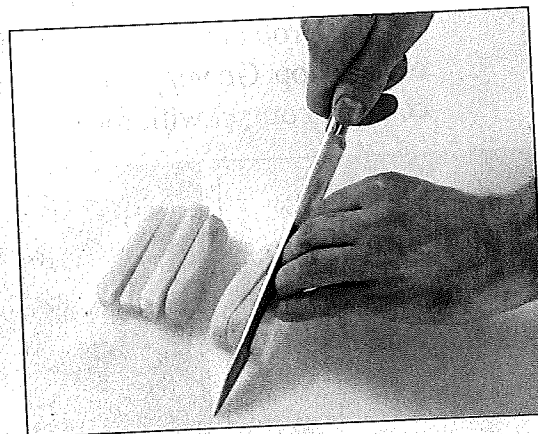


Figure 9.20b: Step 4—Cut into panels.

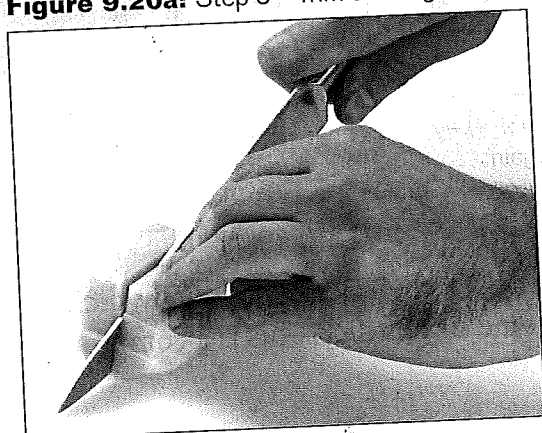


Figure 9.20c: Step 5—Cut into logs.

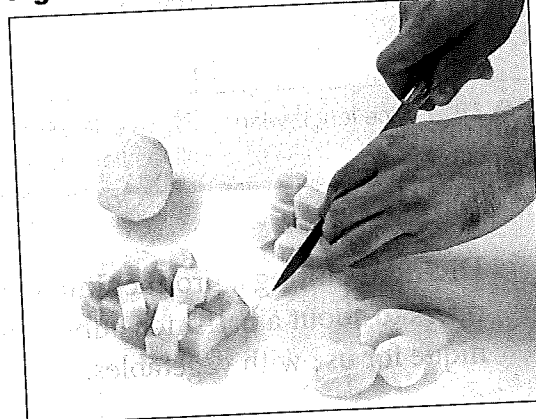


Figure 9.20d: Step 6—Line up logs and cut into cubes.

Mincing is a fine chop cut made by using a chef's knife or mezzaluna. This cut is commonly used on smaller foods, such as garlic, fresh herbs, and ginger.

Essential Skills

Mincing Garlic

- 1 Separate garlic cloves by wrapping an entire head of garlic in a towel and pressing down on the top. See Figure 9.21a.
- 2 Loosen the skin from each clove by placing a clove on the cutting board, placing the flat side of the blade on top, and hitting the blade with a fist or the heel of your hand. See Figure 9.21b.

- ③ Peel off the skin and remove the root end and any brown spots. See Figure 9.21c.
- ④ Crush the cloves by laying them on the cutting board and using the same technique as for loosening the skin, but this time apply more force. See Figure 9.21d.
- ⑤ Mince the cloves using a rocking motion.
- ⑥ Sprinkling a garlic clove with a dash of salt before mincing will allow the salt to absorb a little of the liquid so it won't stick to the knife and will be easy to mince.

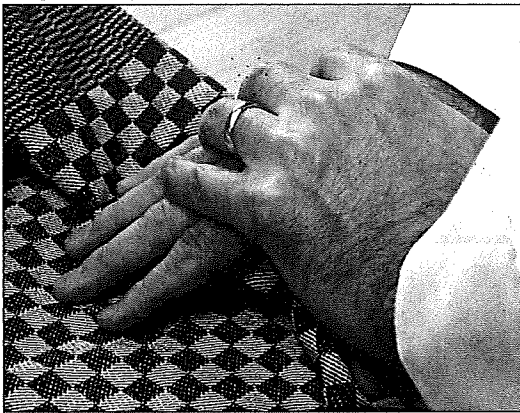


Figure 9.21a: Step 1—Separate the cloves.

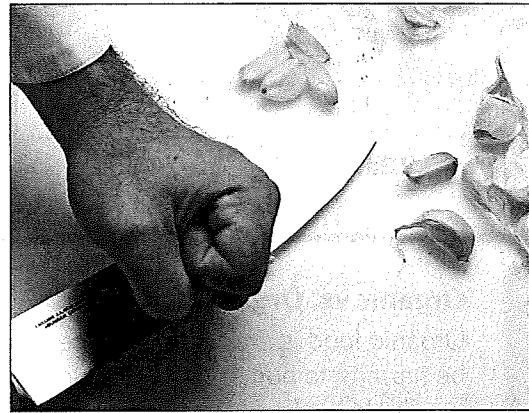


Figure 9.21b: Step 2—Loosen the skin.

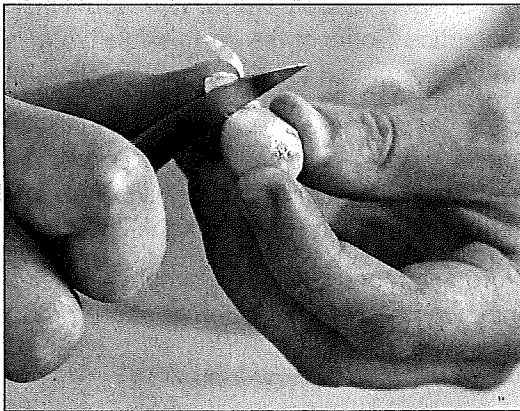


Figure 9.21c: Step 3—Peel the skin and remove the root end.

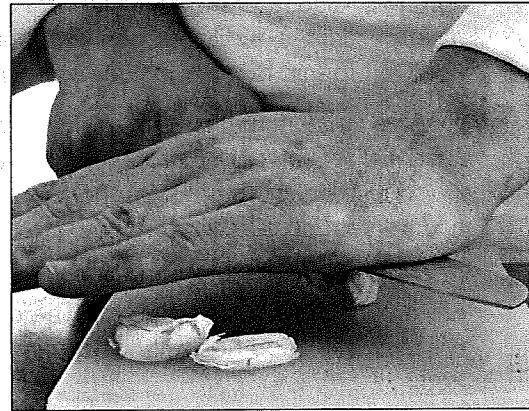


Figure 9.21d: Step 4—Crush the cloves.

Essential Skills

Slicing Celery

- ① Chop off the ends and quickly string the stalks, removing the major strings.

- 2 Place the stalk curved-side up, and use the tip of the knife to cut the stalk into strips.
- 3 Once in strips, proceed to chop the same as a carrot.

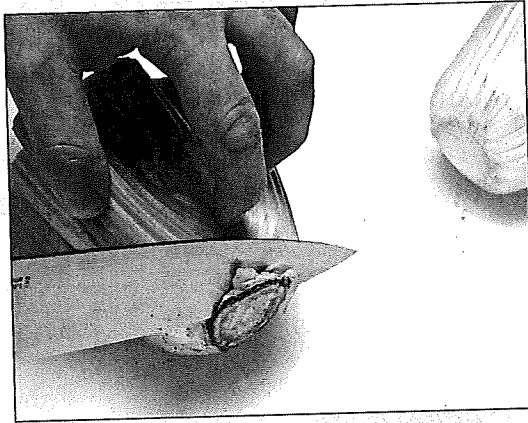


Figure 9.22a: Step 1—Chop off the ends.

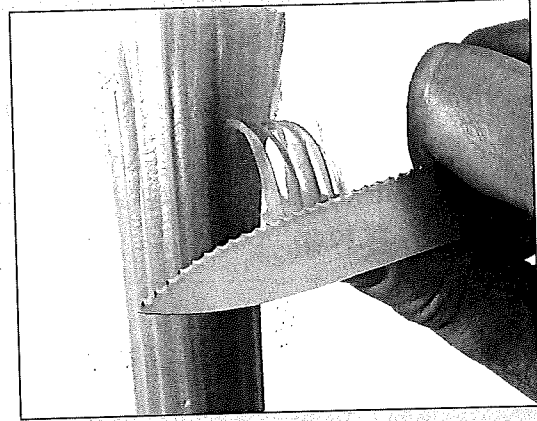


Figure 9.22b: Step 2—Cut the stalk into strips.

[trends]

Organic vs. Organic

Organic food is grown or produced using methods that are free of chemicals that could be harmful to humans. This includes pesticides, fertilizers, added hormones, and antibiotics. Sustainable, meaning the product can be grown without damaging the environment, is not the same as organic, but they often go hand-in-hand.

"Organic" also refers to any chemical compound that is carbon-based. This would include most pesticides, fertilizers, hormones, and antibiotics. Some of the permissible chemicals used in organic farming include some mineral fertilizers that are not organic molecules.

Organic material that is used for fertilizer is often based on manure. For this reason, it is essential for safety to thoroughly wash any and all organic fruits and vegetables, just as you would all produce in the kitchen. Manure, even though it is usually thoroughly composted and treated for safety before being used to fertilize plants, may harbor harmful pathogens.

Chemistry terms aside, consumers seeking organic foods want safe, simple, wholesome products free of toxic additions. The consumer wants to feel confident that the product will promote good health and nutrition, without being harmful.

Cooking Vegetables

Prepare vegetables for cooking as close to the actual cooking time as possible. This will ensure the vegetables' freshness and add to the overall quality and flavor of the finished dish. Here are some other factors essential to well-cooked vegetables:

- Purchase vegetables that are at the peak of quality.
- Maintain proper storage and handling standards.
- Select a cooking process that is best suited to the vegetable.