

11

UNDERSTANDING VEGETABLES

Vegetables were, at one time, abused and neglected, relegated to the minor role of unimportant side dishes, to be taken or left, or not even noticed on the table.

Today, however, lowly vegetables are much more appreciated, not only for their nutritional importance but for the variety, flavor, eye appeal, and even elegance and sophistication they bring to the menu. Modern cooks owe it to themselves and their customers to treat vegetables with understanding, respect, and imagination.

Because they are so perishable, vegetables require extra care from receiving to service. Freshness is their most appealing and attractive quality, and one must be especially careful to preserve it. The goals of proper vegetable cookery are to preserve and enhance fresh flavor, texture, and color, and to prepare and serve vegetables that are not just accepted but sought after.

AFTER READING THIS CHAPTER, YOU SHOULD BE ABLE TO

1. Describe the factors that influence texture, flavor, color, and nutritional changes when vegetables are cooked.
2. Describe how to cook vegetables to their proper doneness and judge the quality of cooked vegetables.
3. Perform pre-preparation tasks for fresh vegetables, including proper storage.
4. Determine the quality of frozen, canned, and dried vegetables.



CONTROLLING CHANGES DURING COOKING

As a cook, you have a choice of many kinds of vegetables and many cooking methods. Not surprisingly, then, you are also faced with the necessity of learning many rules for cooking vegetables.

Many guides to vegetable cookery simply present a long list of rules to memorize. You will be able to understand the principles more easily, however, if you first learn how vegetables change as they are cooked and how to control those changes. In other words, it is suggested you not just memorize what to do but also understand why you do it.

Cooking affects vegetables in four ways. It changes the following:

1. Texture
2. Flavor
3. Color
4. Nutrients

How much these four characteristics change determines whether your final product is attractive and delicious to the customer or whether it ends up in the garbage. You can control these changes if you understand how they occur.

Unfortunately, there is still legitimate controversy among chefs about proper vegetable cooking techniques. Modern technology has not yet solved all the problems experienced chefs tackle successfully every day in the kitchen.

CONTROLLING TEXTURE CHANGES

Changing texture is one of the main purposes of cooking vegetables.

Fiber

The fiber structures of vegetables (including cellulose and pectins) give them shape and firmness. Cooking softens some of these components.

The **amount of fiber** varies:

1. In different vegetables. Spinach and tomatoes have less fiber than carrots and turnips, for example.
2. In different examples of the same vegetables. Old, tough carrots have more fiber than young, fresh carrots.
3. In the same vegetable. The tender tips of asparagus and broccoli have less fiber than their tougher stalks.

Fiber is made **firmer** by acids or sugars:

1. Acids.

Lemon juice, vinegar, and tomato products, when added to cooking vegetables, extend the cooking time.

2. Sugars.

Sugar strengthens cell structure. You will use this principle primarily in fruit cookery. For firm poached apples or pears, for example, cook in a heavy syrup. For applesauce, cook apples until soft before sweetening.

Fiber is **softened** by heat or alkalis:

1. Heat.

In general, longer cooking means softer vegetables.

2. Alkalis.

Do not add baking soda to green vegetables. Not only does it destroy vitamins but it also makes the vegetables unpleasantly mushy.

Starch

Starch is another vegetable component that affects texture:

1. **Dry starchy foods** like dried legumes (beans, peas, lentils), rice, and macaroni products must be cooked in enough water for the starch granules to absorb moisture and soften. Dried beans are usually soaked before cooking to replace lost moisture.
2. **Moist starchy vegetables** like potatoes and sweet potatoes have enough moisture of their own, but they must still be cooked until the starch granules soften.

Doneness

A vegetable is said to be done when it reaches the desired degree of tenderness. This stage varies from vegetable to vegetable. Some, such as winter squash, eggplant, and braised celery, are considered properly cooked when they are quite soft. Most vegetables, however, are best cooked briefly, until they are crisp-tender or **al dente** (firm to the bite). At this stage of tenderness they not only have the most pleasing texture but also retain maximum flavor, color, and nutrients. Note, however, that we use the term “crisp-tender” to describe texture. The “tender” part of this term is as important as “crisp.” While the vegetables retain texture, they are still cooked enough to be pleasingly edible. Vegetables such as green beans are sometimes served barely cooked, difficult to cut, and tough to chew. Avoid this fault as much as overcooking.

GUIDELINES for Achieving Proper Doneness in Vegetables

1. Don't overcook.
2. Cook as close to service as possible. Holding vegetables in a steam table continues to cook them.
3. If vegetables must be cooked in advance, slightly undercook them, cool rapidly in cold water, drain, and refrigerate, then reheat to order.
4. For uniform doneness, cut vegetables into pieces of uniform size before cooking.
5. Vegetables with both tough and tender parts need special treatment so the tender parts are not overcooked by the time the tougher parts are done. For example,
 - Peel the woody stalks of asparagus.
 - Peel or split broccoli stalks.
 - Pierce the base of Brussels sprouts with a sharp knife.
 - Remove the heavy center stalks of lettuce leaves before braising.
6. Don't mix batches of cooked vegetables. They are likely to be cooked to slightly different levels of doneness.

CONTROLLING FLAVOR CHANGES

Cooking Produces Flavor Loss

Many flavors are lost during cooking by dissolving into the cooking liquid and by evaporation. The longer a vegetable is cooked, the more flavor it loses.

Flavor loss can be controlled in several ways:

1. Cook for as short a time as possible.
2. Use boiling salted water. Starting vegetables in boiling water shortens cooking time. The addition of salt helps reduce flavor loss.
3. Use just enough water to cover to minimize leaching. Note that this rule contradicts rule 1 in that adding vegetables to a small quantity of water lowers the temperature more, so cooking time is extended. Save your questions on this until you have finished reading the sections on color and nutritional changes.
4. Steam vegetables whenever appropriate. Steam cooking reduces leaching out of flavor and shortens cooking time.

Strong-Flavored Vegetables

With certain strong-flavored vegetables, it is desirable to lose some of the flavor to make them more appealing to the taste. These include the onion family (onions, garlic, leeks, shallots), the cabbage family (cabbage, Brussels sprouts, cauliflower, broccoli), and some root vegetables (turnips, rutabagas).

When cooking strong-flavored vegetables, leave uncovered to allow these flavors to escape, and use larger amounts of water.

Cooking Produces Flavor Changes

Cooked vegetables do not taste like raw vegetables because cooking produces certain chemical changes. As long as the vegetables are not overcooked, this change is desirable. It produces the flavors one looks for in vegetable dishes.

Overcooking produces undesirable changes in members of the cabbage family. They develop a strong, unpleasant flavor. Cabbage and its relatives, as well as strong root vegetables such as rutabaga and turnip, should be cooked quickly, uncovered.

Cooking and Sweetness

Young, freshly harvested vegetables have a relatively high sugar content that makes them taste sweet. As they mature, or as they sit in storage, the sugar gradually changes to starch. This is especially noticeable in corn, peas, carrots, turnips, and beets.

To serve sweet-tasting vegetables:

- 1. Try to serve young, fresh vegetables that have been stored as short a time as possible.
- 2. For older vegetables, especially those just listed, add a small amount of sugar to the cooking water to replace lost sweetness.

CONTROLLING COLOR CHANGES

It is important to preserve as much natural color as possible when cooking vegetables. Because customers may reject or accept a vegetable on the basis of its appearance, it can be said that its visual quality is as important as its flavor or nutritional value.

Pigments are compounds that give vegetables their color. Different pigments react in different ways to heat and to acids and other elements that may be present during cooking, so it is necessary to discuss them one at a time. Table 11.1 summarizes this information.

TABLE 11.1 Vegetable Color Changes During Cooking

Color	Examples of Vegetables	Cooked with Acid	Cooked with Alkali	Overcooked
White	Potatoes, turnips, cauliflower, onions, white cabbage	White	Yellowish	Yellowish, gray
Red	Beets, red cabbage (not tomatoes, whose pigment is like that in yellow vegetables)	Red	Blue or blue-green	Greenish blue, faded
Green	Asparagus, green beans, lima beans, broccoli, Brussels sprouts, peas, spinach, green peppers, artichokes, okra	Olive green	Bright green	Olive green
Yellow (and orange)	Carrots, tomatoes, rutabagas, sweet potatoes, squash, corn	Little change	Little change	Slightly faded

White Vegetables

Pigments called **anthoxanthins** (an tho zan thins) and **flavonoids** range from pale yellow to white. These are the primary coloring compounds in potatoes, onions, cauliflower, and white cabbage and in the white parts of such vegetables as celery, cucumbers, and zucchini.

White pigments stay white in acid and turn yellow in alkaline water. To keep vegetables such as cauliflower white, add a little lemon juice or cream of tartar to the cooking water. (Don't add too much, though, as this may toughen the vegetable.) Covering the pot also helps keep acids in.

Cooking for a short time, especially in a steamer, helps maintain color (and flavor and nutrients as well). Overcooking or holding too long in a steam table turns white vegetables dull yellow or gray.

Red Vegetables

Red pigments, called **anthocyanins**, are found in only a few vegetables, mainly red cabbage and beets. Blueberries also are colored by these red pigments. (The red color of tomatoes and red peppers is due to the same pigments that color carrots yellow or orange.)

Red pigments react very strongly to acids and alkalis:

Acids turn them a brighter red.

Alkalis turn them blue or blue-green (not a very appetizing color for red cabbage).

Red beets and red cabbage, therefore, have their best color when cooked with a small amount of acid. Red cabbage is often cooked with tart apples for this reason.

When a strongly acid vegetable is desired, as for Harvard beets or braised red cabbage, add just a small amount of acid at first. Acids toughen vegetables and prolong cooking time. Add the rest when the vegetables are tender.

Red pigments dissolve easily in water, so follow these guidelines:

1. Use a short cooking time. Overcooked red vegetables lose a lot of color.
2. Use only as much water as is necessary.
3. Cook beets whole and unpeeled, with root and an inch of stem attached, to protect color. Skins easily slip off cooked beets.
4. When steaming, use solid pans instead of perforated pans to retain the red juices.
5. Whenever possible, serve the cooking liquid as a sauce with the vegetable.

Green Vegetables

Green coloring, or **chlorophyll**, is present in all green plants. Green vegetables are common in the kitchen, so it is important to understand the special handling required by this pigment.

Acids are enemies of green vegetables. Both **acid** and **long cooking** turn green vegetables a drab olive green.

Protect the color of green vegetables by observing these guidelines:

1. Cook uncovered to allow plant acids to escape.
2. Cook for the shortest possible time. Properly cooked green vegetables are tender-crisp, not mushy.
3. Cook in small batches rather than holding for long periods in a steam table.

Steaming is a good method for cooking many green vegetables. Steam cooks food rapidly, lessens the dissolving out of nutrients and flavor, and does not break up delicate vegetables. Overcooking, however, can occur rapidly in steamers.

Do not use baking soda to maintain green color. Soda destroys vitamins and makes texture unpleasantly mushy and slippery.

How much water should be used when boiling? A large quantity of water helps dissolve plant acids, helps preserve colors, and speeds cooking. But some cooks feel an excessive amount of nutrients are lost. See the next section for further discussion.

Yellow and Orange Vegetables

Yellow and orange pigments, called **carotenoids**, are found in carrots, corn, winter squash, rutabaga, sweet potatoes, tomatoes, and red peppers. These pigments are very stable. They are little affected by acids or alkalis. Long cooking can dull the color, however. Short cooking not only prevents dulling of the color but also preserves vitamins and flavors.

CONTROLLING NUTRIENT LOSSES

Vegetables are an important part of our diet because they supply a wide variety of essential nutrients. They are our major sources of vitamins A and C and are rich in many other vitamins and minerals. Unfortunately, many of these nutrients are easily lost.

Six factors are responsible for most nutrient loss:

1. High temperature
2. Long cooking
3. Leaching (dissolving out)
4. Alkalis (baking soda, hard water)
5. Plant enzymes (which are active at warm temperatures but destroyed by high heat)
6. Oxygen

Some nutrient loss is inevitable because it is rarely possible to avoid all of these conditions at the same time. For example:

- Pressure steaming shortens cooking time, but the high temperature destroys some vitamins.
- Braising uses low heat, but the cooking time is longer.
- Baking eliminates the leaching out of vitamins and minerals, but the long cooking and high temperature cause nutrient loss.
- Boiling is faster than simmering, but the higher temperature can be harmful and the rapid activity can break up delicate vegetables and increase loss through leaching.
- Cutting vegetables into small pieces decreases cooking time, but it increases leaching by creating more exposed surfaces.
- Even steaming allows some leaching out of nutrients into the moisture that condenses on the vegetables and then drips off.



KEY POINTS TO REVIEW

- What factors affect changes in texture when vegetables are cooked?
- What are the guidelines for achieving proper doneness in vegetables?
- What factors affect changes in flavor when vegetables are cooked?
- What factors affect changes in color when vegetables are cooked? Describe factors specific to white vegetables, green vegetables, red vegetables, and orange and yellow vegetables.
- What steps can you take to maintain the highest nutritional values when cooking vegetables?

GENERAL COOKING AND QUALITY FACTORS

Now that you understand how vegetables change as they cook, let's summarize that information in some general rules. You should now be able to explain the reasons for each of these rules:

- Don't overcook.
- Cook as close to service time as possible, and in small quantities. Avoid holding for long periods in a steam table.
- If the vegetable must be cooked ahead, undercook slightly and chill rapidly. Reheat at service time.
- Never use baking soda with green vegetables.
- Cut vegetables uniformly for even cooking.
- Start with boiling, salted water when boiling green vegetables and other vegetables that grow above the ground. Roots and tubers are started in cold, salted water for more even cooking.
- Cook green vegetables and strong-flavored vegetables uncovered.
- To preserve color, cook red and white vegetables in a slightly acid (not strongly acid) liquid. Cook green vegetables in a neutral liquid.
- Do not mix a batch of freshly cooked vegetables with a batch of the same vegetable that was cooked earlier and kept hot in a steam table.

COOKING IN A LITTLE LIQUID VERSUS A LOT OF LIQUID

Two factors are important to understand when determining how much water to use when cooking vegetables:

1. Using a lot of liquid increases vitamin loss by leaching. Use just enough liquid to cover. Save the cooking liquid for reheating the vegetables or for stocks or soups.
2. Using a little liquid increases cooking time. When the vegetables are combined with the small quantity of boiling water, the temperature is lowered greatly and the vegetables must sit in warm water while it again heats up. Also, plant enzymes may destroy some vitamins before the water again becomes hot enough to destroy them.

In the case of green vegetables, the second factor is particularly important. To minimize loss of color, use enough water to ensure that the water will remain at the boil when the vegetables are added. This shortens cooking time and helps to preserve the green color.

With other vegetables, the color is not as sensitive to longer cooking. White, red, and yellow vegetables can be cooked with enough water to keep the vegetables completely submerged.

The best cooking methods, nutritionally, are usually those that produce the most attractive, flavorful products. Vegetables that are discarded because uneaten benefit no one, no matter how nutritious they are.

PRODUCTION AND HOLDING PROBLEMS IN QUANTITY COOKING

We have emphasized throughout this chapter that vegetables should be cooked as close as possible to serving time. They lose quality rapidly when held in a steam table.

In quantity cooking, however, it is rarely possible to cook individual vegetable portions to order. After 20–30 minutes at steam table temperatures, even carefully prepared vegetables are usually overcooked.

Two systems have been devised to help solve this problem. **Batch cooking** is especially well suited to set meal service, and the **blanch-and-chill** method is most helpful in extended meal service. Needs vary from institution to institution, and you will probably find both techniques useful in one kitchen.

Batch Cooking

Rather than cooking all your vegetables in one batch large enough for the entire meal service, this method (described in Chapter 7, p. 141) involves dividing the food into smaller batches and cooking them one at a time, as needed.

Blanch-and-Chill Method

It is usually impractical to cook vegetables completely to order. Too much time is required. But if the vegetables have been partially cooked, the time needed to finish them to order is short.

Partially cooking, chilling, and finish-cooking is not as good, nutritionally, as cooking completely to order, but it is almost as good. It's certainly better than holding vegetables for hours at serving temperature, and it gives the cook complete control over the degree of doneness when served.

PROCEDURE for Batch Cooking



1. Steamers and small tilting trunnion kettles behind the service line are the most useful kinds of equipment for vegetable batch cooking.
2. Divide each vegetable into batches small enough to be served within 20 to 30 minutes. Arrange in steamer pans ready to be placed in steamers or in containers ready for pouring into the kettles.
3. Keep the prepped vegetables in the cooler until needed.
4. Cook batches as needed. In planning, allow time for loading and unloading the equipment, for cooking, for finishing the product with the desired seasoning, sauce, or garnish, and for carrying to the serving line.
5. Undercook slightly if the vegetable must be held before serving.
6. Have all your seasonings, sauces, and garnishes ready for finishing the dish.
7. Do not mix batches. They will be cooked to different degrees, and colors and textures usually will not match.

PROCEDURE for Blanching and Chilling



1. Steam or simmer the vegetable until partially cooked to the desired degree. (In the case of French fries, blanch by deep-frying.)
The amount of cooking required depends on the vegetable and on the method by which it will be reheated or finished. Frozen vegetables need less cooking than fresh. Often, they need only be thawed.
2. Chill immediately in ice water. (Needless to say, French fries are an exception.)
3. Drain and keep chilled until needed.
4. Finish to order by desired cooking method.
For example, one or more portions can be placed in a strainer and lowered briefly into a ready pot of boiling water.
Sautéing in butter is a popular method for finishing such items as peas, green beans, and carrots.
Potato croquettes are an example of a more complicated application of this same method. The potatoes are boiled or steamed, puréed, seasoned, formed, and breaded in advance. They are then deep-fried to order.

STANDARDS OF QUALITY IN COOKED VEGETABLES

1. Color.

Bright, natural colors.

Green vegetables, in particular, should be a fresh, bright green, not olive green.

2. Appearance on plate.

Cut neatly and uniformly. Not broken up.

Attractively arranged or mounded on plate or dish.

Not swimming in cooking water.

Imaginative and appropriate combinations and garnishes are always well received.

3. Texture.

Cooked to the right degree of doneness.

Most vegetables should be crisp-tender, not overcooked and mushy, but not tough or woody, either.

Vegetables intended to be soft (potatoes, squash, sweet potatoes, tomatoes, vegetable purées) should be cooked through, with a pleasant, smooth texture.

4. Flavor.

Full, natural flavor and sweetness, sometimes called *garden-fresh flavor*. Strong-flavored vegetables should be pleasantly mild, with no off flavors or bitterness.

5. Seasonings.

Lightly and appropriately seasoned. Seasonings should not be too strong and should not mask the natural garden flavors.

6. Sauces.

Butter and seasoned butters should be fresh and not used heavily; vegetables should not be greasy.

Cream sauces and other sauces should not be too thick or too heavily seasoned. As with seasonings, sauces should enhance, not cover up.

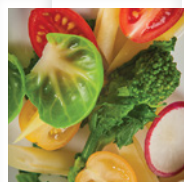
7. Vegetable combinations.

Interesting combinations attract customers.

Flavors, colors, and shapes should be pleasing in combination.

Vegetables should be cooked separately and then combined to allow for different cooking times.

Acid vegetables (like tomatoes) added to green vegetables will discolor them. Combine just before service.



KEY POINTS TO REVIEW

- What are the steps in the procedure for batch-cooking vegetables? For what kind of meal service is this method usually used?
- What are the steps in the blanch-and-chill method for cooking vegetables? For what kind of meal service is this method usually used?
- What guidelines are used for storing fresh vegetables?
- What standards are used to judge the quality of cooked vegetables?

HANDLING FRESH VEGETABLES

Because many vegetables are very perishable, it is important to purchase fresh produce in good, fresh condition and to use it within a few days, with the exception of those items, like onions and

ORGANIC FOODS

As noted in Chapter 4, the law in many countries, including the United States, regulates the use of the term *organic*. Although many foods, including meats and poultry, can qualify for the organic label, organic vegetables, fruits, and other plant products have long been most prominent in the market.

First of all, for a food item or an ingredient in a processed food to be labeled organic in the United States, it must not contain hormones, antibiotics, synthetic pesticides, irradiated components, genetically modified organisms, or reprocessed sewage. Second, food products may be labeled in one of four ways, depending on how organic they are:

1. The label “100 percent organic” can be used only on products that contain only organic ingredients.
2. The label “organic” may be used on products that contain at least 95 percent organic ingredients by weight.
3. If a product contains 70 percent or more organic ingredients by weight, it can be labeled “made with organic ingredients.” Up to three of those ingredients may be listed on the packaging.
4. If a product contains less than 70 percent organic ingredients by weight, those ingredients may be listed on the ingredient information panel, but the product may not use the word “organic” on the front of the package.



The green and white “USDA ORGANIC” seal may be used on the packaging of only those products in the first two of these categories.

garlic, that withstand longer storage. The freshest vegetables are the highest in flavor and nutritional content and have the best appearance.

Although most vegetables are available year-round, this availability often involves shipping them long distances. Today many chefs are involved in the farm-to-table movement and look for local, organic, sustainable sources for some or most of their produce. Depending on the locale, local farmers often grow heirloom varieties that can contribute new interest to restaurant menus. These topics are discussed in more detail in Chapter 1. See also the Organic Foods sidebar.

Washing

1. Wash all vegetables thoroughly.
2. Root vegetables that are not peeled, such as potatoes for baking, should be scrubbed very well with a stiff vegetable brush.
3. Wash green, leafy vegetables in several changes of cold water. Lift the greens from the water so the sand can sink to the bottom. Pouring off into a colander dumps the sand back onto the leaves.
4. After washing, drain well and refrigerate lightly covered. The purpose of covering is to prevent drying, but covering too tightly cuts off air circulation. This can be a problem if the product is stored more than a day because mold is more likely to grow in a damp, closed space. Use a drain insert in the storage container to allow drainage.

Soaking

1. With a few exceptions, do not soak vegetables for long periods. Flavor and nutrients leach out.
2. Cabbage, broccoli, Brussels sprouts, and cauliflower may be soaked 30 minutes in cold salted water to eliminate insects, if necessary.
3. Limp vegetables can be soaked briefly in cold water to restore crispness.
4. Dried legumes are soaked for several hours before cooking to replace moisture lost in drying. Dried beans absorb their weight in water.

Peeling and Cutting

1. Peel most vegetables as thinly as possible. Many nutrients lie just under the skin.
2. Cut vegetables into uniform pieces for even cooking.
3. Peel and cut vegetables as close to cooking time as possible to prevent drying and loss of vitamins through oxidation.
4. For machine paring, sort vegetables for evenness of size to minimize waste.
5. Treat vegetables that brown easily (potatoes, eggplant, artichokes, sweet potatoes) with an acid, such as lemon juice, or an antioxidant solution, or hold under water until ready to use (some vitamins and minerals will be lost).
6. Save edible trim for soups, stocks, and vegetable purées.

Storing

1. Potatoes, onions, and winter squash are stored at cool temperatures (50°–65°F/10°–18°C) in a dry, dark place.
2. Tomatoes are best stored at a cool room temperature and used within a short time. Refrigerating tomatoes damages both flavor and texture.
3. Other vegetables must be refrigerated. Do not wash vegetables before placing them in storage, because the excess moisture can cause molding or other spoilage. At the same time, vegetables should not be allowed to dry out. To prevent drying, they should be kept covered or wrapped, or the humidity in the cooler must be high. Allow for some air circulation to help prevent mold.

4. Peeled and cut vegetables need extra protection from drying and oxidation. Cover or wrap, and use quickly to prevent spoilage. Potatoes, eggplants, and other vegetables that brown when cut (see sidebar) should be treated with an acid or antioxidant. As an alternative, they can be blanched to destroy the enzymes that cause browning. Raw cut potatoes are sometimes held in cold water for a short time.
5. Store all fresh vegetables as short a time as possible. They lose quality rapidly. Peas and corn lose sweetness after even a few hours in storage.
6. Keep refrigerators and storage areas clean.

Classifying Vegetables

Many people are bothered by the fact that tomatoes are referred to as vegetables when they are, in fact, fruits. Yes, tomatoes are fruits, and carrots are roots, and spinach is a leaf, and they are all vegetables.

To a botanist, the term **fruit** refers to a specific part of a plant, just as do the terms **stem**, **root**, and **leaf**. A fruit is defined as the ripened ovary or ovaries of a seed-bearing plant, and it contains the seeds. In other words, if it has seeds, it's a fruit. We shouldn't be misled by the fact that a few fruits are sweet. Many, if not most, fruits in nature are not sweet at all. Some examples of fruits used in the vegetable kitchen are tomatoes, eggplant, peppers, green beans, okra, cucumbers, squash, pea pods, and avocados.

There are many ways of classifying vegetables. Some are more helpful to the cook than others. Putting vegetables into groups based on their botanical origin is not always helpful. For example, okra and eggplant are both fruits, but they are handled and cooked so differently that this information doesn't really help us. Potatoes and tomatoes are both members of the nightshade family, but because one is a tuber and the other a tender fruit, they are handled and cooked in completely different ways. And turnips are members of the cabbage family, but it is more useful for the cook to classify them with other root vegetables.

EVALUATING AND PREPARING FRESH VEGETABLES

The following section lists the fresh vegetables commonly used in North American kitchens, including many products that have become familiar from Asian and Latin cuisines. Tips for evaluating and trimming the products, as well as the average trimming yield, are indicated.

The vegetables discussed in this section are grouped in useful categories. Keep in mind that, for the reasons just discussed, many of them could be included in more than one category. For example, kale is both a leafy green and a member of the cabbage family.

Note that the vegetables in the first three categories are all fruits or, in some cases, seeds from fruits.

THE GOURD FAMILY

The gourd family, also called the cucurbit family, includes cucumbers and squashes, as well as melons like watermelon and cantaloupe. When picked while immature, they have tender, edible skins, as in the case of cucumbers and summer squash. When allowed to mature, as in the case of winter squash and pumpkins, the skins become hard and are not generally eaten. (Some sources put eggplant in the gourd family, but this is incorrect.)

Chayote

Identification: A member of the gourd or squash family, this vegetable has a crisp texture and a mild flavor somewhere between zucchini and cucumber. It is roughly pear-shaped, although more rounded, with a thin yellow-green skin and creamy white flesh. It is also known as **mirliton** and **vegetable pear**.

Evaluation: Look for firm, solid chayotes without blemishes.

ENZYMATIC BROWNING

Some vegetables and fruits, including potatoes, mushrooms, apples, pears, and bananas, turn brown when cut or bruised. This browning is due to a chemical reaction caused by two kinds of compounds in the plant cells reacting with each other and with oxygen when cells are damaged. Plant enzymes and other compounds called phenolic compounds are both stored within plant cells but are kept separated from each other in healthy cells. When the cells are damaged, they come in contact with each other and react with oxygen to form new compounds that have a brown color.

Minimizing enzymatic browning when vegetables are cut can be done in several ways. Storing them in water, as with potatoes, keeps oxygen away from the cut surfaces, so the browning doesn't occur. Treating the cut surface with lemon juice also helps, because the chemical reaction occurs very slowly in the presence of acid. Keeping the produce chilled also helps, because the browning occurs more slowly at low temperatures.



Chayote

FIGURE 11.1 Cucumber garnishes can be made more decorative by scoring the cucumber before slicing or cutting.



(a) Scoring with a fork.



(b) Scoring with a channel knife.



Yellow summer squash



Zucchini



Spaghetti squash



Acorn squash



Butternut squash



Buttercup squash

Preparation: Skin can be left on if served raw, but peel chayotes to be cooked, because the skin toughens. The soft seed in the middle can also be eaten.

Percentage Yield: 100% if unpeeled; 85%–90% if peeled

Cucumber

Identification: A member of the gourd family, like squash, the cucumber has a thin green skin and a crisp, mild, juicy off-white flesh.

Related Varieties: Cucumbers are of two types, slicing and pickling. The common green slicing cucumber, with dark green skin, is most often used in food service. The long, slender hothouse cucumber, also called *seedless* and *burpless*, is another common slicing cucumber. Pickling cucumbers, also called *Kirbys*, range in size from tiny gherkins to the large ones used to make dill pickles. They are somewhat drier and a little more flavorful than the slicing types. Their green skin is a little lighter in color than that of slicing cucumbers, and the surface is bumpy.

Evaluation: Look for vegetables that are firm, crisp, dark green, well shaped. Yellow color means the cucumber is overmature.

Preparation: Wash. Trim ends. Peel if skin is tough or has been waxed. Skin may be scored to make decorative slices (Fig. 11.1).

Percentage Yield: 75%–95%, depending on peeling

Squash, Summer

Identification: Several types of tender-skinned members of the gourd family are called *summer squash*. All have tender seeds in a firmly filled seed cavity, unlike the hard seeds encased in a fibrous mesh in the hollow interior of winter squash.

Related varieties: Green-skinned *zucchini* is well known and the most popular. *Yellow straight* and *crookneck* squashes are similar in flavor and use. *Pattypan* squash has a squat, round shape, slightly resembling the popular idea of a flying saucer. They can be yellow, dark green, or pale green. Many other, less common types are available.

Evaluation: Look for firm, heavy, and crisp squash, with tender skin, no blemishes.

Preparation: Wash or scrub well. Trim ends.

Percentage Yield: 90%

Squash, Winter, including Pumpkin

Identification: Winter squash are mature members of the gourd family, with thick skins and hard seeds in a hollow cavity. They are starchier and less moist than summer squash and, unlike summer squash, are not generally eaten raw.

Related Varieties: Many types, of all sizes and shapes, are available, including *Hubbard*, *acorn*, *butternut*, *buttercup*, *kabocha*, *turban*, *delicata*, *sweet dumpling*, and *pumpkin*. *Spaghetti squash* has a fibrous flesh that, when cooked and scraped out of the shell, resembles a tangled pile of spaghetti.

Evaluation: Heavy and firm. Hard rind. No blemishes.

Preparation: Wash. Cut in half. Scrape out seeds and fibers. Cut into portion sizes. For puréed or mashed squash either steam or bake, then remove peel; or peel, dice, then steam.

Percentage Yield: 65–85%

Squash Blossoms

Identification: Young, yellow blossoms of any summer squash.

Related Varieties: Female flowers are attached to the ends of new squashes. They fall off after the squash is a day or two old so must be harvested, attached to the tiny fruit, in a timely manner. Male blossoms contain the pollen and grow on a separate part of the same plant. Both types are used, often for stuffing, or simply sliced and sautéed.

Evaluation: Squash blossoms should be fresh and bright yellow, not wilted. They are best if used within a day or two of harvest.

Preparation: Open the flower petals gently and carefully rinse in water.

Percentage Yield: 100%



Squash blossoms

SEEDS AND PODS

This category includes pod vegetables, such as green beans and snap peas, as well as seeds removed from their pods, such as lima beans and green peas, and also other seeds eaten as vegetables, such as corn. Dried beans and peas are covered at greater length in Chapter 14.

Beans, Fava

Identification: Also called *broad bean*. Unlike most of our common beans, which originated in the Western Hemisphere, favas are Old World beans. The large pods hold four to six beans in a soft, white lining. The flat beans slightly resemble limas, but they are not as starchy. Flavor is subtle and nutlike.

Evaluation: Select small to medium pods that are fresh green in color, not overly large. Yellowing pods may be too mature. Some spots on pods is normal.

Preparation: Preparation is labor-intensive. Shell the beans, parboil, then peel off skins or husks (Fig. 11.2).

Percentage Yield: 15–20%

FIGURE 11.2 Preparing fava beans.



(a) Split open the pods and remove the beans.



(b) Blanch the beans for a few minutes. This cooks the beans and loosens the skins. Peel off the outer skins. Unpeeled beans are on the left, peeled beans on the right.

Beans, Fresh Shell

Identification: These are the fresh, moist versions of the many types of dried beans.

Related Varieties: Although many types of beans are grown to be shelled, most of these are dried, and, with the exception of *cranberry* or *borlotti beans*, *southern peas* or *cowpeas*, and *black-eyed peas*, few are available fresh. Soybeans and lima beans have their own entries below.

Evaluation: Look for firm, fresh, moderately filled-out pods containing firm but not hard seeds. Avoid yellow or brownish pods, which are likely to be too mature.

Preparation: Shell and rinse. Cook before serving; raw beans can be harmful.

Percentage Yield: 40%

Beans, Lima

Identification: Flat, pale-green beans in flat, slightly fuzzy pods, with three or four beans per pod. Larger limas tend to be starchier than small or baby limas.

Related Varieties: Many varieties are grown, but they are not usually distinguished from one another in the market.

Evaluation: Beans should be plump, with tender skins.

Preparation: Shell, wash, and drain.

Percentage Yield: 40%

Beans, Snap

Identification: Fresh green beans and other varieties are in the same family as shell beans, except they are grown to be picked immature for their tender, edible pods.

Related Varieties: Green beans are the most common. Some green varieties, picked when very small and tender, are known as *haricots verts* (ah ree coh vehr, French for “green beans”). Other varieties include *yellow* or *wax beans*, purple beans, and flat, *Italian-style green beans*. Closely related is the **Chinese long bean**, similar to the green bean except 18–30 inches (45–75 cm) long and softer or more flexible.

Evaluation: Look for firm and straight beans, with few shriveled ends; even color, without blemishes. Should be tender and crisp enough to break when bent to a 45-degree angle (except for the softer Chinese long bean). Enclosed seeds should be small, not large and bulging.

Preparation: Wash. Cut or snap off ends. Remove any spots. Leave whole or cut into desired lengths.

Percentage Yield: 88%



Green beans

Chestnut

Identification: Chestnuts are the seed or nut of a variety of trees grown primarily in Europe. They have a thin, hard, dark brown outer shell and a bitter inner skin surrounding a soft, starchy meat.

Evaluation: Look for plump, firm nuts with no blemishes on the shells.

Preparation: The shell and skin must be removed before use. With the point of a paring knife, cut an X in the shell on the flat side of each nut. Roast at 350°F (180°C) for 15 minutes, or blanch in boiling water. Peel while still hot.

Percentage Yield: 75%

Corn

Identification: Corn is a grain used as a vegetable if immature. It grows in rows on the outside of a central woody cob and is covered with a leafy husk. Varieties grown for vegetable use are sweeter than grain varieties.

Evaluation: Look for fresh, moist husks, not dry; no worm damage; kernels well filled, tender, and milky when punctured.

Preparation: Strip off husks, remove silk, and cut off bottom stump. Cut into two or three sections as desired, if serving on cob, or cut from cob. Keep refrigerated and use as soon as possible.

Percentage Yield: 28% after husking and cutting from cob



Corn

Okra

Identification: Okra is the pod or fruit of a member of the mallow family. It is long and tapered, with ridges running its length. Inside the pod are tender seeds and a thick, sticky juice. The flavor is very mild.

Related Varieties: Common okra varieties are green. Red-skinned varieties, which turn green when cooked, are uncommon but available.

Evaluation: Look for tender, full pods, not dry or shriveled. Ridges should be soft. Seeds should be soft and white. Uniform color.

Preparation: Wash. Trim ends (Fig. 11.3). Slice or leave whole.

Percentage Yield: 82%

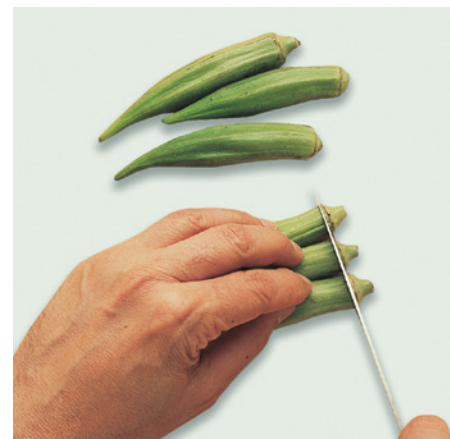


FIGURE 11.3 To prepare okra, cut off the stem ends.

Peas, Green

Identification: The tender, immature seed of a legume (see Chapter 14).

Evaluation: Look for firm, fresh, moderately filled-out pods. Peas lose sweetness quickly after harvest, so locally grown, just-harvested peas are best. Frozen peas are likely to be sweeter than fresh peas that have been stored for some time.

Preparation: Shell and rinse. (Peas are not often purchased by food-service operations because of the labor required for shelling.)

Percentage Yield: 40%

Peas, Edible Pod

Identification: Unlike shell peas, above, whose pods are too fibrous to be eaten, these peas have tender, edible pods and so are always served in the pod.

Related Varieties: The two main varieties are the flat-podded *snow pea*, with tiny undeveloped seeds, and the rounder *sugar pea* or *sugar snap pea*, with larger seeds.

Evaluation: Look for fresh green color, crisp pods, no blemishes.

Preparation: Remove stem end. Pull off strings at side veins. Wash.

Percentage Yield: 90%



Snow peas



Sugar snap peas

Soybean

Identification: Most soybeans are allowed to mature and dry and are harvested and processed as a grain. The use of tender, unripe soybeans, known as *edamame* (edd ah mah meh), is a popular adoption from Japanese cuisine. The small, fuzzy pods usually hold two or three light green, roundish beans.

Evaluation: Same as shell beans.

Preparation: Rinse, boil in the pod until the beans are tender, and shell.

Percentage Yield: 50%



Green soybeans



Soybeans in the pod

OTHER TENDER-FRUITED VEGETABLES

Tomatoes, eggplants, and peppers are all members of the nightshade family (as are potatoes, included in the category of roots and tubers, below). Avocados are unrelated.

Avocados

Identification: The egg-shaped fruit of a small tree, with a leathery skin, tender, pale green flesh, and a single large seed or pit in the center.

Related Varieties: There are several varieties that fall into two main categories: (1) The Mexican or Californian avocados, mostly the *Hass* variety, which have rough, dark green skins that turn black when ripe. These have a rich, buttery flesh with a high oil content. (2) The West Indian or Florida type, which has smoother skin that remains green. These are juicier and have a lower oil content.

Evaluation: Look for fresh appearance; fruit heavy for size; no blemishes or bruises.

Preparation: Ripen at room temperature, 2 to 5 days. Cut in half lengthwise and remove pit (Fig. 11.4). Peel (skin pulls away easily from ripe fruit). Dip into or rub with lemon juice immediately to prevent browning.

Percentage Yield: 75%

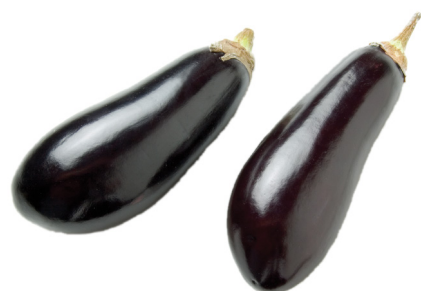
FIGURE 11.4 Preparing avocados.



(a) To remove the pit or seed from the cut avocado, strike it sharply (but carefully) with the heel of a chef's knife.



(b) Twist the knife slightly and pull out the pit.



Italian eggplant



White eggplant

Eggplant

Identification: Eggplants are members of the same family as tomatoes, peppers, and potatoes. They have purple, white, or pale green skin and a firm but spongy off-white flesh containing tiny edible seeds. Also called *aubergine*.

Related Varieties: Worldwide, there are dozens of varieties. In the West, the most common is the large, oblong, purple-skinned variety. Smaller, elongated varieties are sometimes called *Italian eggplant*. White-skinned varieties are round, egg-shaped (the origin of the name *egg-plant*), or long and slender. *Japanese eggplants* are small, long, and slender, with a purple instead of green stem. Asian types include small round, green-skinned fruits, including a Thai eggplant no larger than a pea. The flesh of these varieties is similar in flavor, varying in texture or density from soft to almost hard.

Evaluation: Eggplants should be firm, not soft. Common purple types should be shiny, dark purple color; heavy and plump; without blemishes or soft spots.

Preparation: Wash. Trim off stem end. Peel if skin is tough. Cut just before use. Dip in lemon juice or antioxidant solution to prevent discoloration if not to be cooked within a few minutes after peeling and cutting.

Percentage Yield: 90% (75% if peeled)

Peppers, Sweet

Identification: Peppers are the fruit of a plant related to tomatoes, eggplant, and potatoes. Both sweet and hot peppers are members of the *Capsicum* family. They have fleshy walls and a hollow interior, with a seedy core just below the stem. Also called *bell peppers*.

Related Varieties: Green, red, yellow, orange, and purple peppers are widely available.

Evaluation: Shiny color; well shaped; no soft spots or shriveling.

Preparation: Wash. Cut in half lengthwise and remove core, seeds, and white membranes. Peppers to be julienned or diced may have the interior ribs trimmed. Or leave whole (as for stuffed peppers) and cut out core from the end. Peppers are often roasted and peeled as preparation for use in recipes (Fig. 11.5).

Percentage Yield: 82%



Red pepper



Green pepper



Yellow pepper



Orange pepper

Peppers, Hot, or Chiles

Identification: Relatives of sweet peppers, but containing a compound called *capsaicin*, which makes them spicy hot. (*Chile* is the original Spanish spelling; also spelled *chili* and *chilli*.)

Related Varieties: Many varieties are available worldwide. The heat of any particular pepper is determined by how much capsaicin it contains and is measured in Scoville units. A mildly hot jalapeño averages 2,500 to 3,000 units, while the intensely hot habanero averages around 200,000 units. Commonly used fresh chiles include *the jalapeño, serrano, poblano, California, New Mexico, Thai green, and cayenne*.

Evaluation: See Peppers, Sweet.



Green cayenne chiles



Italian hot peppers



Jalapeños and cherry peppers



Hot pepper varieties: red habanero, caribe, orange habanero, and green chiles

FIGURE 11.5 Roasting peppers.



(a) Roast the peppers over an open flame until the skins blacken. For large quantities, you may do this under a broiler or in a hot oven. In this case, the skins will not darken as much but can still be peeled off.



(b) Wrap the peppers in plastic film while they are still hot. This helps loosen the skins.



(c) Peel off the loosened skin. You may do this under running water to help rinse off charred skin, but nutrients and flavor may be lost.

Tomatoes

Identification: One of the most widely used vegetables, the fruit of a plant in the nightshade family, related to eggplant, potatoes, and peppers.

Related Varieties: In addition to the common red slicing tomato and the small cherry tomato, dozens of varieties of heirloom tomatoes are grown and marketed. These come in all shades of red, pink, yellow, and green, all with somewhat different flavors.

Evaluation: Firm but not hard, with little or no green core. Smooth, without bruises, blemishes, cracks, or discoloration. If underripe, let stand two to three days at room temperature. Do not refrigerate.

Preparation: For use with skin on: Wash, remove core. To peel: Plunge into boiling water 10 to 20 seconds (riper tomatoes take less time). Cool immediately in ice water. Slip skins off and remove core. (Note: Many chefs core the tomatoes and cut a shallow x in the skin at the bottom before blanching in boiling water. Other chefs, wishing to avoid even the slightest loss of flavor and nutrients from the exposed flesh into the water, first blanch the tomatoes and then core them and pull off the skins, which slip off just as easily.) See Figure 11.6 for further techniques.

Percentage Yield: 90% (peeled)

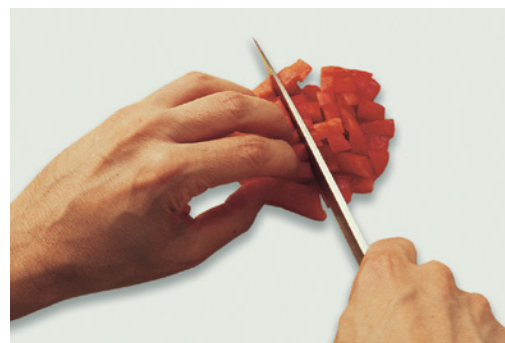


Tomato varieties

FIGURE 11.6 Preparing tomato concassé.



(a) Blanch and peel the tomato and cut it in half crosswise. Gently squeeze out the seeds, as shown.



(b) Dice the seeded tomato, or chop it coarsely.



Tomatillos

Tomatillos

Identification: A small green fruit vegetable resembling a green cherry tomato encased in a papery husk. It is not a tomato, although it is in the same family as tomatoes, eggplant, peppers, and potatoes. Widely used in Mexican cuisine.

Evaluation: Look for firm, dry tomatillos with tight husks.

Preparation: Remove the husks and rinse.

Percentage Yield: 95%

ROOTS AND TUBERS

This complex group of vegetables includes underground parts of plants. A botanist would make a distinction between taproots (such as carrots), root tubers (such as sweet potatoes), stem tubers (such as potatoes), bulbs (such as onions), corms (such as water chestnut), and rhizomes (such as ginger). For the cook, however, these distinctions are not always easy to make, and in the kitchen the similarities between the groups are more important than the differences. In all cases, these are underground portions of the plant that swell into storage organs. Some root vegetables, such as potatoes and sweet potatoes, are high in starch, while others, such as carrots, are low in starch.

Except for the onion family, considered next, we include all types of root vegetables and tubers in this category.

Artichokes, Jerusalem

See Sunchoke.

Beets

Identification: A tender, bulbous, somewhat sweet root, usually but not always dark red. The tops can also be cooked like other greens; handle and treat beet tops like Swiss chard (see below), which is in the beet family.

Related Varieties: Beets come in several shapes and colors in addition to the common red, including yellow, pink, orange or brick red, and white. *Chioggia* (kee oh ja) are striped red and white. Shapes include round, elongated oval, and cylindrical.

Evaluation: Look for firm, round, uniform size; smooth skin. Tops, if any, should be fresh or just wilted, but not yellow or deteriorated. Large, rough beets are often woody.

Preparation: Cut off tops, leaving 1 inch (2–3 cm) of stem attached to beets. Leave roots on to avoid loss of color and juice during cooking. Scrub well. Steam, boil, or bake before peeling.

Percentage Yield: 40%–45% (75% if purchased without tops)



Red beets

Carrots

Identification: Long, pointed, orange roots. Among the most widely used vegetables. Specialty carrots are also available in other colors, including yellow, red, and purple.

Evaluation: Look for bright orange color; crisp, straight, and well-shaped shaft; smooth surface. Large carrots are sometimes woody.

Preparation: Trim top and bottom ends. Pare with hand peeler.

Percentage Yield: 75%–80%



Carrot

Courtesy of Grimmway Farms



Celery root

Celery Root or Celeriac

Identification: A variety of celery grown for its round, fleshy white root.

Evaluation: Select firm and heavy roots. Large ones are often soft and spongy in the center.

Preparation: Wash well, peel, and cut as desired.

Percentage Yield: 75%

Jicama

Identification: *Jicama* (HEE kama) is a large, round tuber with a thin brown skin and crisp, mild, juicy, creamy white flesh similar to water chestnuts.

Evaluation: Look for smooth, almost shiny skin with no blemishes.

Preparation: Peel. Cut as desired.

Percentage Yield: 85%



Jicama

Lotus Root

Identification: Cylindrical root of an aquatic flowering plant, about 6–8 inches (15–20 cm) long, with light reddish brown skin. Crosswise slices show a circular pattern of holes. Slightly crunchy flesh.

Evaluation: Skin should be fairly smooth, with no soft spots or spoilage.

Preparation: Peel. Cut as desired.

Percentage Yield: 80%



Parsnips

Parsnips

Identification: The parsnip is a long, conical root vegetable that looks like a carrot, only more tapered and with a wider top. Its skin is tan and its interior is yellow-beige, with a distinctive, sweet flavor.

Evaluation: Look for firm, smooth, well-shaped parsnips, with light, uniform color. Large ones are often woody.

Preparation: Refrigerating for two weeks develops sweetness. Trim ends and peel. Rinse.

Percentage Yield: 70%–75%

Potatoes, White

Identification: See Chapter 13.

Percentage Yield: 80%

Potatoes, Sweet

Identification: Sweet potatoes are any of several types of tubers, usually bulbous, with tapered or pointed ends. They are unrelated to potatoes and to yams. (True yams are an entirely different vegetable, with starchy white flesh. They are not often seen in North America, except in Hispanic and some other specialty markets.)

Related Varieties: There are two basic groups of sweet potatoes, those with a creamy white or pale yellow flesh and those with orange flesh. The variety that has a moister, deeper orange flesh is sometimes referred to, incorrectly, as the *yam*. These varieties are interchangeable for most purposes. Skin colors range from beige to orange to red, depending on the variety.

Evaluation: Look for clean, dry surface. Firm, not shriveled or blemished. Fat, regular shapes are preferable because of less waste in trimming and portioning.

Preparation: Scrub, boil, or steam, then peel. May be peeled before cooking but must be dipped in antioxidant to prevent discoloring. Machine paring is wasteful with irregular shapes.

Percentage Yield: 80%



Sweet potato

Radishes

Identification: Crisp, juicy root vegetables in the mustard family, with a peppery taste.

Related Varieties: In North America and Western Europe, the word *radish* usually indicates the small, round or tapered, red-skinned and white-fleshed variety, or sometimes the white icicle radish. Other important radishes are the turnip-size *black radish*, eaten raw or cooked, and the very large, long Asian *daikon* (the name is Japanese for “big root”), with white skin and flesh, also served raw or cooked. Cooked radishes are somewhat like turnips in both flavor and texture.

Evaluation: Select firm, tender, crisp radishes, with good shape and color.

Preparation: Cut off root and stem ends. Wash. Decorative cuts are shown in Figure 11.7.

Percentage Yield: 90%



Radishes



Black radish



Daikon



FIGURE 11.7 Radishes can be cut into many decorative forms, including those shown here.

Rutabagas

See Turnips.

Salsify

Identification: The name *salsify* (sal si fee) refers to either of two distantly related long, slender root vegetables with off-white flesh and a flavor, when cooked, sometimes said to resemble artichoke.

Related Varieties: True salsify, or white salsify, has brownish-white roots, often forked and branched, with many root hairs attached. *Scorzonera* (score tso nerra), or black salsify, is straight, long, and slender, with dark brown skin. Both have off-white flesh.

Evaluation: Select medium-size roots, as larger ones may be fibrous. They should be as smooth as possible.

Preparation: Scrub with a brush. Peel with a swivel peeler and immediately drop into water containing an acid, such as lemon juice or vinegar, to prevent discoloration. Wear gloves to prevent staining the hands.

Percentage Yield: 65%–70%



Salsify

Sunchokes or Jerusalem Artichokes

Identification: Sunchoke is a relatively new marketing term for a Jerusalem artichoke, created because the vegetable is not an artichoke and has nothing to do with Jerusalem. Sunchoke are knobby brown tubers with crisp, creamy white flesh.

Evaluation: Look for firm sunchoke with clean brown skin, no soft or green spots, and no sprouts.

Preparation: Wash and peel off brown skin.

Percentage Yield: 80%



Sunchokes

Turnips and Rutabagas

Identification: Root vegetables in the mustard family, related to cabbages.

Related Varieties: Turnips are white with purple skin around the stem end. The flesh is white. Rutabagas, also called *swedes*, are much larger and have yellow-orange flesh.

Evaluation: Look for roots that are firm and heavy, with good color and no blemishes. White turnips over 2½ inches (6–7 cm) in diameter may be woody or spongy.

Preparation: Peel heavily by hand or in machine to remove thick skin (Fig. 11.8). Rinse.

Percentage Yield: 75%–80%

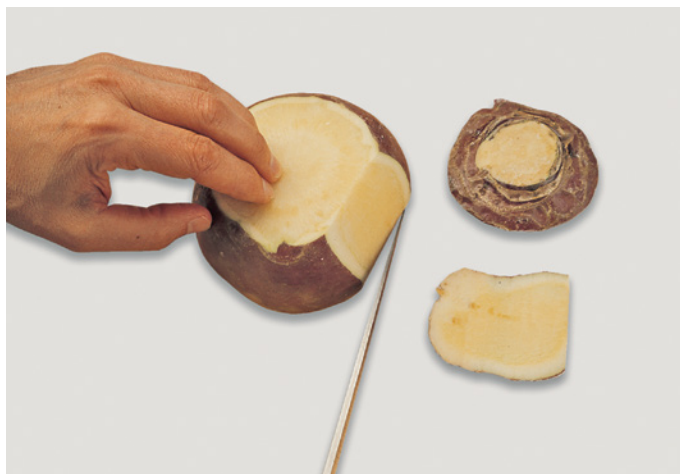


FIGURE 11.8 Peel rutabagas and turnips deeply enough to remove the full thickness of skin, as pointed out in this photograph.

Water Chestnuts

Identification: Water chestnuts are corms, or swollen underground stem bases, of plants that grow in moist, warm environments. They are small and roundish, with dark brown skin and crisp white flesh.

Evaluation: Look for solid water chestnuts with no sign of softness, bruising, rot, or shriveling. They spoil easily.

Preparation: Scrub well with a brush, as they are often muddy. Peel with a paring knife.

Percentage Yield: 75%

THE ONION FAMILY

The onion family includes a range of vegetables that are among the most important in the kitchen. When raw, they are especially pungent and aromatic due to various sulfur compounds in their cells. When cooked, these compounds are changed into a variety of other compounds of many flavors. Cooking with high heat tends to generate stronger flavors than cooking at lower temperatures.

Garlic

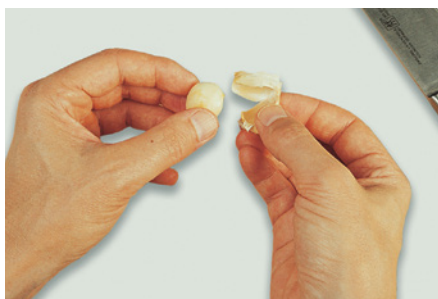
Identification: A pungent member of the onion family, garlic forms bunches of cloves attached at the root end and covered with a papery skin.

Related Varieties: There are many varieties, with white or purplish skins. Some are more pungent than others. *Elephant garlic* is the size of an apple, with relatively few large cloves; it is milder than other varieties. *Black garlic* is not a separate variety of garlic but is regular garlic that aged at a temperature of 140–170°F (60–77°C) with controlled humidity for 2 to 6 weeks. The Maillard reaction turns the garlic black. The flavor of the garlic is sweet and slightly tart.

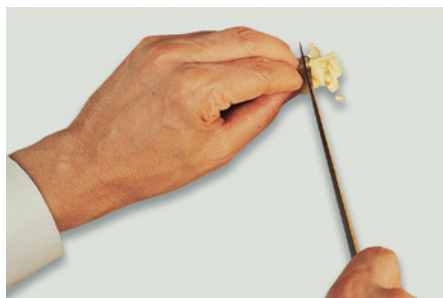
Evaluation: Skin may be white or pink. No brown spots, soft spots, or spoilage; dry skin; no green shoots.

FIGURE 11.9 Peeling and crushing garlic.

(a) Place the garlic on the worktable. Hold a broad knife blade over it as shown and strike it firmly with the palm of the hand.



(b) You can now peel the garlic easily.



(c) Chop or mince the garlic.



(d) To make a paste of the garlic, sprinkle it with salt and mash it firmly with the back of the knife blade.

Preparation: Separate cloves as needed, or strike whole bulb with heel of hand to separate. To peel cloves, crush slightly with side of heavy knife. Peel and trim root end (Fig. 11.9).

Percentage Yield: 88%

Leeks

Identification: A long, slender member of the onion family with distinctive flavor, milder than onions.

Related Varieties: *Ramps* are wild leeks with broad, flat leaves and bulbs that resemble those of scallions. They have a pungent, garlicky flavor.

Evaluation: Look for fresh green leaves; 2–3 inches (5–8 cm) or more of white. White part should be crisp and tender, not fibrous.

Preparation: Cut off roots and green tops. Cut deeply through white part, separate the layers slightly, and wash carefully to remove all embedded soil (Fig. 11.10).

Percentage Yield: 50%

FIGURE 11.10 Cleaning leeks.

(a) Trim off the root end and as much of the green as desired.



(b) Make one or two deep cuts to within 1 in. (2.5 cm) of the root end.



(c) Spread apart the layers, as shown. Carefully wash out all embedded dirt under running water.



Yellow onions

Onions, Dry

Identification: A pungent, many-layered bulbous root that is the kitchen's most common vegetable.

Related Varieties: Onions come in almost limitless varieties, from tiny white, yellow, and red pearl onions and *cipolline* (chip oh lee neh, Italian flat pearl onions) to medium and large yellow onions, the workhorse of the kitchen, to large red and white onions. Mild varieties include Vidalia, Walla Walla, and Maui. These are often said to be sweeter, but they do not contain more sugar than regular varieties. Rather, they have less of the chemical compounds that make onions strong. In general, yellow onions have better keeping qualities than white onions.

Evaluation: Select onions that are clean, hard, well shaped; no mold or black fungus; no green shoots. Skins should be very dry.

Preparation: Cut off root and stem ends. Peel. Wash. Cut or slice as needed (Fig. 7.16).

Percentage Yield: 90%



Red onions



White onion



Pearl onions



Scallions

Onions, Green (Scallions)

Identification: These are very young, immature bulb onions, sold with their stems. Scallions are almost always white varieties of onion, although red varieties can sometimes be found.

Evaluation: Scallions should have fresh, crisp green tops; little or no bulb formation at white part.

Preparation: Cut off roots and wilted ends of green tops. Amount of green left on varies with recipe or use.

Percentage Yield: 60%–70%

Ramps

Identification: A kind of wild leek, ramps have broad, flat leaves and small, slightly bulbous root ends that have a pungent, garlicky flavor. Generally available only in the spring.

Evaluation: Leaves should be fresh and green, and white root should be firm, not shriveled. Ramp bulbs are small, typically only about 1/14 oz (2 g).

Preparation: Cut off fibrous roots. Leaves and stems are generally not eaten and so are usually cut off, but they may be left on for appearance, depending on the plating presentation.

Percentage Yield: 30%



Shallots

Shallots

Identification: Shallots are small, dry-skinned onions that grow in clusters attached at the root end. They have a brown, papery skin and white and purple flesh. Their flavor is milder than that of onions.

Evaluation: Same as for dry onions.

Preparation: Same as for dry onions.

Percentage Yield: Same as for dry onions.

THE CABBAGE FAMILY

Most of the members of the cabbage, or *brassica*, family are raised for their leaves, which may form tight heads (cabbage), loose heads (bok choy), or which may not form heads (kale). Others are raised for their flowers (cauliflower and broccoli) or their enlarged stems (kohlrabi). Turnips and rutabagas are also brassicas, but they are grouped with root vegetables.

Bok Choy

Identification: An Asian member of the cabbage family, related to Chinese cabbage, except the stalk is thicker and fleshier and the green portion is smoother and darker in color. Leaves and stalks are tender, crisp, and juicy.

Related Varieties: Several varieties all form compact, elongated bunches. The most common variety forms large heads or bunches with white stems. *Shanghai bok choy* is smaller, with pale green stems. *Choy sum* is allowed to become more mature, so the central stem or core is longer, and there may be small yellow flowers among the leaves. Small varieties are known as *baby bok choy*.

Evaluation: Fresh, green appearance for all varieties, with no wilting or discoloration.

Preparation: Cut in half lengthwise and wash under running water to remove soil from the crooks of the stalks. Trim bottom by cutting off a thin slice, or cut out core. Cut as desired. Small varieties may be cooked whole.

Percentage Yield: 80%



Bok Choy

Broccoli

Identification: A green vegetable in the cabbage family, consisting of tight clusters of tiny green flower buds on fleshy stalks.

Related Varieties: Pale green *broccoflower* is closer in character to cauliflower than to broccoli and should be handled like cauliflower. *Broccolini* is a relatively new broccoli hybrid with slender stems and small, loose florets (flower bud heads). *Broccoli rabe* (also called *broccoli raab*, *broccoletti di rape*, *rapini*, and *cima de rapa*), like broccolini, has slender stems and loose florets, but it also has tender leaves attached to the stems, and the stems are slightly ribbed rather than smooth. Broccoli rabe has a stronger, more mustardy flavor. Several varieties of *Chinese broccoli* are similar to broccoli rabe in both shape and flavor, but the stems are smoother and fleshier.

Evaluation: Look for dark green, tightly closed buds in regular broccoli and broccoflower. Broccoli rabe, and Asian types should be dark green with crisp, not wilted, leaves.

Preparation: Wash well. Soak in salted water 30 minutes if necessary to remove insects. Split large stalks into smaller sizes for portioning. Split thick stalks partway for faster cooking, or cut tops from stalks. Tougher stalks may be peeled (Fig. 11.11).

Percentage Yield: 65%–75%



FIGURE 11.11 Prepare tough bottoms of broccoli stalks by pulling off the fibrous peel, as shown.

Brussels Sprouts

Identification: This cabbage relative resembles a tiny cabbage head. The clusters of leaves grow in rows along a thick stalk. Flavor is somewhat stronger than that of green cabbage.

Related Varieties: Red or purple (the color of red cabbage) Brussels sprouts exist but are not often seen, probably because their flavor and texture is less appealing to most people.

Evaluation: Look for bright green, tight heads; uniform size.

Preparation: Trim bottom ends and remove yellowed outer leaves (but don't cut off too much of the bottom or you will lose too many leaves). For more even cooking, pierce base with sharp knife point. Rinse well. Soak in cold salted water 30 minutes if necessary to remove insects.

Percentage Yield: 80%



Brussels sprouts



Green cabbage



Red cabbage



Savoy cabbage



Cauliflower

Cabbage: Green, Red, and Savoy

Identification: Cabbages are large leaf clusters in dense, round heads (heads may also be flat or elongated, depending on the variety). Cabbage and mustard are in the same family, a relationship that can be detected in the faintly peppery taste.

Evaluation: For both green and red cabbage, look for a firm head, heavy for size. Good color. Crisp leaves, finely ribbed. Savoy cabbage is not as heavy, with darker green, ruffled leaves.

Preparation: Remove coarse or discolored outer leaves. Remove core and rinse whole, or cut into quarters and then remove core. For wedges, core is left in, but with bottom trimmed, to hold sections together (Fig. 11.12).

Percentage Yield: 80%

FIGURE 11.12 Cutting and shredding cabbage.



(a) Cut the cabbage head into quarters. Then cut out the core as shown.



(b) With a French knife, cut into thin shreds.

Cabbage, Chinese

Identification: Heads of tender, crinkly, pale green leaves with broad, flat center stalks. The flavor is mild and slightly spicy.

Related Varieties: The two main varieties have different head shapes, although their flavor and texture are virtually the same. The head of *napa cabbage* is stout and barrel shaped. A more elongated, slender head cabbage is often called *celery cabbage* for its shape. See also Bok Choy, a closely related cabbage.

Evaluation: Look for firm, tightly packed heads with no dry or browned tips, crisp and not limp, or wilted.

Preparation: Wash. Cut as desired, discarding the center core.

Percentage Yield: 85%

Cauliflower

Identification: White or off-white, tight cluster of tiny flowers (florets) branching off a central stalk. Member of the cabbage family.

Related Varieties: *Broccoflower* is a light green relative that looks like a cross between broccoli and cauliflower. Handle like regular cauliflower.

Evaluation: Look for white color, not yellow or brownish; fine-grained, tightly closed buds; fresh green, well-trimmed leaves.

Preparation: Remove leaves and trim tough part of stalk. Cut away discolored parts. Wash. Soak in salted water 30 minutes if necessary to remove insects. Separate into florets, leaving portion of center stalk attached to each one to minimize trim loss (Fig. 11.13). If cooking whole, cut out center of stalk for more even cooking.

Percentage Yield: 55%

FIGURE 11.13 Cauliflower disassembly.**(a)** With a paring knife or small utility knife, cut out the central core.**(b)** Separate the cauliflower into florets.

Greens, Cabbage Family (Collards, Turnip Greens, Kale)

Identification: These sturdy, flavorful greens are nearly always cooked because they are too tough to eat raw, unless very young. The kale varieties have curly or ruffled dark green leaves (except the ornamental varieties, which may have touches of red or other colors). Turnip greens resemble large, lobed mustard or arugula leaves. Collards are similar, generally with heavier stems and more rounded leaves.

Evaluation: Avoid browned, yellowed, or dried leaves. Look for smaller leaves that are dark green and have a moist feel.

Preparation: Strip the leaves off the stems if they are tough. Cut off any discolored parts. Wash well in several changes of water.

Percentage Yield: 80%



Collard greens



Turnip greens



Kohlrabi



Kale

Kohlrabi

Identification: Kohlrabi, when trimmed, resembles a root vegetable, but it is actually a swollen stem. A member of the cabbage family, its pale white, crisp flesh resembles, in texture and flavor, the interior of a broccoli stem. The skin is tough and must be removed.

Related Varieties: Purple-skinned kohlrabi are similar to the more common green variety, except for skin color.

Evaluation: Look for uniform light green color; 2–3 inches (5–8 cm) in diameter. Crisp and firm. no woodiness.

Preparation: Peel like turnips, being sure to remove the full thickness of skin.

Percentage Yield: 55%

LEAFY GREENS

In addition to members of the cabbage family, many other leafy plants are cooked as vegetables. The list below includes members of several unrelated families. Kale, collards, and turnip greens are included with the cabbage family, above. Leafy greens eaten raw are included with the discussion of salads in Chapter 22. Parsley and other fresh herbs are discussed in Chapter 6.



Pea shoots

Pea Greens or Pea Shoots

Identification: These are the tender tips, with leaves, of pea vines, usually snow peas.

Evaluation: Look for fresh, medium-green leaves and tender, not woody, stems.

Preparation: Wash well; trim ends of stems, especially if tough. Cook like spinach.

Percentage Yield: 90%–95%

Sorrel

Identification: A tender leafy green with a tart, astringent taste, used in small quantities, usually to flavor sauces. The leaf resembles spinach but is longer and not as dark green.

Evaluation: Same as for spinach.

Preparation: Pull off coarse stems. Wash in several changes of water if sandy. For most purposes, sorrel is cut into chiffonade (p. 150).

Percentage Yield: 90%



Sorrel



FIGURE 11.14 When trimming spinach leaves, remove the heavy center rib along with the stem.

Spinach

Identification: A tender, dark green leaf, probably the most popular of leafy vegetables after lettuce.

Related Varieties: Two main types are curly-leafed and flat-leafed.

Evaluation: Look for fresh, crisp, dark green leaves. No rot or slime or badly bruised leaves.

Preparation: Remove stems and damaged leaves (Fig. 11.14). Wash in several changes of water. Use a large quantity of water and lift spinach up and down to float off sand and dirt. Lift from water and drain well.

Percentage Yield: 50–70%



Red-stemmed Swiss chard



White-stemmed Swiss chard

Swiss Chard

Identification: A leafy green related to the beet. Chard leaves resemble beet greens in both flavor and appearance, but the center stalks of chard are broader.

Related Varieties: Red-stemmed, white-stemmed, and yellow-stemmed chard are available. *Beet greens* may be trimmed from fresh beets and cooked as a vegetable. They have a flavor similar to that of chard but are slightly less tender.

Evaluation: Fresh, dark green color, not wilted. Crisp, not wilted or rubbery stalks.

Preparation: Wash thoroughly. Trim ends of stalks. Remove leafy greens from stalks by cutting along the margins of the stalk down the center of the leaf. Center stalks may be cooked separately like asparagus.

Percentage Yield: 85%

Watercress

Identification: See discussion of salad greens in Chapter 22.

Evaluation: Bright green, crisp, unbruised leaves.

Preparation: Wash well. Remove heavy stems and discolored leaves.

Percentage Yield: 90%



Watercress

SHOOTS, STALKS, AND STEMS

This category includes a variety of unrelated vegetables that don't fit well into other categories. They are, for the most part, new growth on the plant and are often tender and delicate.

Artichokes, Globe

Identification: Artichokes are the unopened or immature flowers of a type of thistle. They vary in size and coloration but are usually round to somewhat elongated, colored light to medium green, sometimes with purple tints.

Related Varieties: Baby artichokes are not actually babies but come from a different place on the plant and are at their full size. Especially young baby artichokes may be tender enough to eat whole, with little trimming except for removing the top points of the leaves.

Evaluation: Look for compact, tight leaves; heavy for size; few or no brown blemishes.

Preparation: Wash. Cut 1 inch (2–3 cm) off tops. Cut off stem and lower leaves. Scrape out choke (fuzzy center) with melon ball cutter. (Remove choke before or after cooking.) Dip in lemon juice immediately. To prepare bottoms, see Figures 11.15 and 11.16.

Percentage Yield: 80% (whole, trimmed), 30% (bottoms only)

FIGURE 11.15 Trimming artichoke bottoms.



(a) Cut or break off the stem flush with the bottom of the artichoke, as shown.



(b) Break off the outer leaves.



(c) Alternatively, trim the outer leaves with a knife as shown, being careful not to cut into the base of the artichoke.



(d) Cut off the remaining leaves above the base.



(e) With a paring knife, trim off the green outer peel to give the base a smooth, neat appearance.



(f) With a ball cutter or tablespoon, scrape out the fuzzy choke.



(g) A trimmed artichoke bottom on the left; a trimmed whole artichoke on the right. Note that the points of the leaves have been cut off and the center choke removed.



FIGURE 11.16 To keep the cut stem end of an artichoke from darkening during steaming or boiling, tie a slice of lemon over the cut surface.

Asparagus

Identification: Spear-shaped new shoot or stem that emerges from the plant's roots in the spring. The pointed spear-tip sprouts branches when the shoot is allowed to grow.

Related Varieties: *White asparagus* is the same plant as green, but soil is mounded over the shoots, protecting them from the sun so they do not turn green. In Europe, white asparagus is more common than green. The flavor is milder than that of green, although North American white asparagus is usually more bitter than European. *Purple asparagus* turns dark green when cooked. It is tender and sweet.

Evaluation: Look for tightly closed tips; firm, not withered, stalks. For white asparagus, buy only product that has been kept chilled for its entire storage time; unchilled white asparagus becomes fibrous.

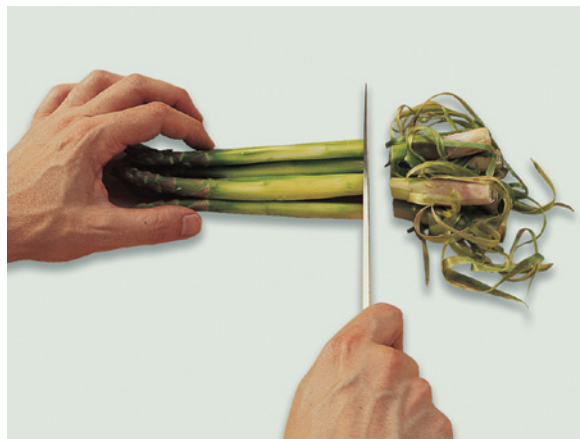
Preparation: Break off woody lower ends. Remove lower scales, which may harbor sand, or peel lower part of stalk. Figure 11.17 shows an alternative method. Cut tips to uniform lengths and/or tie them in bundles for cooking. White asparagus should be peeled the entire length of the stalk. Purple asparagus needs no peeling; just trim the bottoms.

Percentage Yield: 55% (green, peeled)

FIGURE 11.17 Trimming asparagus.



(a) With a vegetable peeler, pare the stalk from about 2 in. (5 cm) below the tip down to the base.



(b) Cut or break off the hard, woody bottoms of the stems.



(c) Another method used by many chefs is to break off the stems first...



(d) ... and then peel the stem.

Bamboo Shoots

Identification: The young shoots of various species of bamboo plants, harvested as they just begin to emerge from the ground. They are roughly cone-shaped, with tough brown skins and a creamy, crisp, tender interior.

Evaluation: Look for solid, heavy shoots with no soft spots or cracks; no trace of sour smell.

Preparation: Peel down to the creamy white or pale yellowish cone-shaped core. Slice and boil in salted water until tender, then cut as desired for use in recipes.

Percentage Yield: Varies greatly, depending on size of shoots, which range from a few ounces to a pound (less than 100 grams to 500 grams) or more.

Cactus Pads or Nopales

Identification: Nopales are tender pads of the prickly pear cactus. When cooked, their texture is slippery, like that of okra, and their flavor slightly resembles cooked green pepper or possibly green beans with a slight sourness.

Evaluation: Try to purchase pads with the spines removed. Look for full, firm, crisp pads, not wilted or soft ones.

Preparation: If spines are present, wear rubber gloves and brush them vigorously under running water, then with a vegetable peeler remove the eyes that held the spines. Trim the base if necessary. Cut as desired. Can be sautéed, boiled, steamed, or grilled.

Percentage Yield: 90%



Cactus pad

Celery

Identification: Pale green stems that form bunches or clusters attached at root end. One of the most common vegetables.

Evaluation: Look for bunches that are straight, compact, well trimmed; fresh green color.

Preparation: Cut off root end. Separate stems and scrub well. Reserve leaves and tough outer stems for stocks, soups, mirepoix. Ribbed outer side of stems may be peeled to remove strings.

Percentage Yield: 75%



Celery

Fennel

Identification: The clustered or bunched stems form a bulbous base. The fleshy bulb is white with a pale hint of green, while the stems are darker green. The aroma and flavor have a faint suggestion of licorice.

Related Varieties: The vegetable fennel is more properly known as *Florence fennel*, to distinguish it from the varieties grown as a spice (seed) and herb. The vegetable is sometimes incorrectly called *anise*, which is a different plant.

Evaluation: Look for bright, pale green color with few or no brown spots. Fresh green tops, not wilted or spoiled. Compact, heavy for size.

Preparation: Trim stems and feathery leaves. Split in half through the base. If the fennel is large, cut out the core as for cabbage if it is fibrous or tough.

Percentage Yield: 80%



Fennel

Fiddlehead Fern

Identification: This spring vegetable is the early shoot of a fern, usually ostrich fern, harvested just as it emerges from the ground. It consists of a tightly curled stem lined with the tiniest beginnings of leaves. It is usually handled and cooked like tender asparagus.

Evaluation: Look for jade green, firm and resilient, not wilted, fiddleheads with fresh looking, not spoiled, cut ends and leaf tips.

Preparation: Trim the cut ends. Rinse well.

Percentage Yield: 85%



Fiddlehead ferns

MUSHROOMS

Because of the great interest today in exotic mushrooms, and because eating some poisonous species of wild mushroom can be fatal, it is important for the cook to be familiar with at least the most popular varieties of exotic mushrooms, both cultivated and wild.

Although hundreds of mushroom varieties are edible, until recently only the common cultivated button mushroom was used with any frequency in most commercial kitchens. Now, however, many varieties are available. Some of these mushrooms, especially the wild ones, are expensive, but the demand always seems to exceed the supply.

Strictly speaking, the term *wild* should be used only for those mushrooms that are not cultivated but rather hunted and gathered in the wild. In the kitchen and on menus, however, exotic cultivated varieties, such as shiitakes, are often referred to as “wild mushrooms” because they are seen as rare and unusual, like true wild mushrooms, and they are generally more flavorful than the button mushroom.

One important advantage of cultivated exotic mushrooms is that they are available all year, while certain wild mushrooms may be in season only a few weeks annually.

Mushrooms, White

Identification: Mushrooms are the fruiting body of a fungus—that is, the part of the fungus that produces spores for reproduction.

Evaluation: Select firm, white caps, closed at the stem. Stems should be relatively short. No dark spots, bruises, or mold.

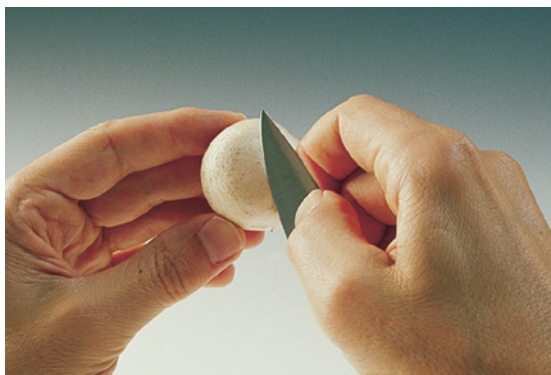
Preparation: Trim bottoms of stems. Just before cooking, wash quickly in cold water; drain well. If you desire to keep the mushrooms white, add a small amount of acid (lemon juice, vinegar, ascorbic acid) to the rinse water. To flute mushrooms, see Figure 11.18.

Percentage Yield: 90%



White mushrooms

FIGURE 11.18 Basic method for fluting mushrooms.



(a) Grasping the blade of a paring knife, hold the edge against the center of the mushroom cap at a sharp angle.



(b) The first cut is completed.



(c) Continue making cuts all around the mushroom.



(d) The fluted mushroom cap.

Mushrooms, Cultivated Exotic

- 1. Shiitake.** Sometimes known as *Black Forest mushroom* or *golden oak mushroom*, the shiitake is also available in dried form as *Chinese black mushroom*. The fresh mushroom is golden brown to dark brown. It has a firm, fleshy texture and a broad, dome-shaped cap with creamy white gills. The stem is rather tough, so it is trimmed off and chopped fine or used in stocks.
- 2. Oyster mushroom.** Also called *pleurotte*, it is a light tan or cream-colored fan-shaped mushroom with a short stem at the side. Tender, with delicate flavor, it is best prepared simply so its mild flavor is not overwhelmed by stronger-tasting ingredients. (Note: The name *oyster* refers to the shape of the mushroom, not its taste.)
- 3. Enoki mushroom.** Also called *enokitake* or *enokidake*, this mushroom has a tiny white cap on a long, slender stem, and it grows in clusters or bunches attached at the base. The base is trimmed off before use. The enoki mushroom has a crisp texture and a fruity, slightly acidic but sweet flavor. It is often used raw (for example, in salads or as garnish) or in clear soups. When used in cooked dishes, it should be added in the last few minutes so as not to be overcooked.
- 4. Cremini mushroom.** The cremini is a variety of the common cultivated button mushroom, but it has a brown or tan skin. It may have a slightly more robust flavor than white cultivated mushrooms. Sometimes marketed as *baby portobello*.
- 5. Portobello mushroom.** This is a mature cremini whose cap has opened and spread into a broad, flat disk. It may be 6 inches (15 cm) or more across. Portobello mushrooms are often grilled, brushed with olive oil, and served plain as a first course.



Shiitake mushrooms



Oyster mushrooms



Cremini mushrooms



Chanterelle mushrooms

Mushrooms, Wild

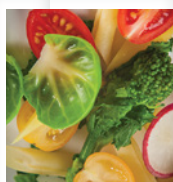
Of the many varieties of edible wild mushrooms, those described here are among the most prized as well as the most likely to be found on menus. As a rule, they are expensive and of limited availability.

Wild mushrooms should be carefully examined for spoilage and insect infestation. Cut away any damaged parts.

The four varieties described here are also available dried (pp. 307–308). Dried mushrooms have a high price per pound but are more economical to use than fresh wild mushrooms because they are equivalent to seven or eight times their weight of fresh mushrooms. In addition, they have a more intense, concentrated flavor, so a little goes a long way.

Caution: Never eat any wild mushroom that has not been identified by an expert. Many mushrooms are poisonous, and some are deadly. Many species are difficult to identify, and some poisonous varieties resemble edible ones.

- 1. Morel.** Several varieties exist, including black, golden, and nearly white. The morel is shaped somewhat like a conical sponge, with a pitted surface, on a smooth stem. It is completely hollow. The most prized of spring mushrooms, it is usually sautéed in butter or cooked in a sauce and is especially good with cream.
- 2. Bolete.** Other names for this mushroom include *cep*, *cèpe* (sepp; the French term), *porcino* (por chee no; the Italian term; the plural is *porcini* [por chee nee]), and *steinpilz* (stine pilts; the German term). It is a brown-capped mushroom with a light-colored, bulbous stem. The interior flesh is creamy white. The underside of the cap has no gills but many tiny pores. With a meaty but smooth texture and rich, earthy flavor, it is often sautéed or braised with garlic and olive oil or butter. It is available late summer to fall.
- 3. Chanterelle.** Also called *girolle*, the chanterelle is yellow to orange in color and shaped like an umbrella that has turned inside out. The underside of the cone-shaped cap has ridges instead of gills. It has a rich, woodsy aroma and flavor and is best cooked simply, such as sautéed in butter, perhaps with garlic. It is available summer and fall.
- 4. Black trumpet.** This mushroom is closely related to the chanterelle but is black in color and has much thinner flesh. It is also called *black chanterelle*, *horn of plenty*, and *trompette de la mort* (French name, meaning “trumpet of death,” so called because of its black color). In spite of this French name, it is edible and delicious.



KEY POINTS TO REVIEW

- What basic preparation techniques are common to all vegetables?
- For each vegetable commonly used in food service, what standards are used to evaluate freshness?
- For each vegetable commonly used in food service, what basic preparation techniques are used?
- Outside of standard white button mushrooms, what are the five most commonly used varieties of cultivated mushroom?

HANDLING PROCESSED VEGETABLES

It is generally agreed that the quality of frozen and canned vegetables can never equal that of the best-quality fresh product at its peak of maturity, prepared properly, and cooked while still fresh. However, because of the high perishability of fresh produce, seasonal variations in availability and price, and the amount of labor required to handle fresh produce in commercial kitchens, food service relies, to a great extent, on processed vegetables. Therefore, it is important to know how to handle processed foods properly. Your goal should be to make them as close as possible in quality to the best fresh produce.

The quality of processed vegetables varies greatly. For example, frozen cauliflower always lacks the slightly crunchy texture of properly cooked fresh cauliflower. In fact, most frozen vegetables are a bit mushier than fresh because cell walls rupture during freezing. On the other hand, frozen peas are almost universally accepted, not just for their convenience but for their dependably high quality in comparison with the highly perishable fresh product.

In the section of Chapter 7 called “Handling Convenience Foods,” we learned that convenience foods are products that are partially or completely prepared or processed by the manufacturer. This means you should treat frozen and canned vegetables as though they are partially or fully cooked fresh vegetables, which deserve the same care in handling, heating, seasoning, and presentation.

HANDLING FROZEN VEGETABLES

Checking Quality

Examine all frozen products when received to make sure they have experienced no loss of quality. Check in particular for the following:

1. Temperature.

Check the temperature inside the case with a thermometer. Is it still 0°F (–18°C) or below, or have the vegetables begun to thaw during shipment?

2. Large ice crystals.

A little frost is normal, but lots of ice means poor handling.

3. Signs of leaking on the carton.

This is another obvious sign of thawing.

4. Freezer burn.

Open a package and check the vegetables themselves. Is the color bright and natural, or is there yellowing or drying on the surface?

COOKING

Frozen vegetables are partially cooked, so final cooking time is shorter than for fresh products.

Cook from the frozen state. Most vegetables need no thawing. They can go directly into steamer pans or boiling salted water.

Exceptions: Corn on the cob and vegetables that freeze into a solid block, such as spinach and squash, should be thawed in the cooler first for more even cooking.

Seasoning: Most frozen vegetables are slightly salted during processing, so add less salt than you would to fresh products.

HANDLING CANNED VEGETABLES

Checking Quality

1. Reject damaged cans on receipt.

Puffed or swollen cans indicate spoilage. Small dents may be harmless, but large dents may mean the can’s protective lining has been damaged. Avoid rusted or leaking cans.

2. Know the drained weight.

This varies with different grades of different vegetables and should be specified when ordering. Typical drained weights are 60 to 65 percent of total contents. You must know this drained weight in order to calculate the number of servings the can contains.

Some canned products, such as tomato sauce and cream-style corn, have no drained weight because the entire contents are served.

3. Check the grade.

Grades are determined by the packers or by federal inspectors. They are based on factors like color, absence of defect, and **sieve size** (size of individual pieces). Check to make sure you receive the grade you ordered (and paid for).

In the United States, the federal grades are

U.S. Grade A or Fancy

U.S. Grade B or Extra Standard (for vegetables) or Choice (for fruits)

U.S. Grade C or Standard

Cooking

1. Wipe the top of the can clean before opening. Use a clean can opener.
2. Drain the vegetable and place half the liquid in a cooking pot. Bring it to a boil. This shortens the heating time of the vegetable.
3. Add the vegetable and heat to serving temperature. Do not boil for a long time. Canned vegetables are fully cooked—in fact, usually overcooked. They need reheating only.

Note: Health officials recommend holding canned vegetables at 190°F (88°C) 10 minutes or more—20 to 30 minutes for nonacid vegetables like beets, green beans, or spinach—to eliminate the danger of botulism. See Chapter 2.

4. Heat as close to serving time as possible. Do not hold in steam table for long periods.
5. Season and flavor with imagination. Canned vegetables require more creativity in preparation than fresh because they can be dreary when served plain.
6. Season the liquid while it is coming to a boil, before you add the vegetable. This will give the flavors of the herbs and spices time to blend.
7. Butter enhances the flavor of most vegetables, and it carries the flavors of the other seasonings you choose to add.
8. Dress up the vegetables with flavors and garnishes, such as beets or sauerkraut with caraway, limas or green beans with crisp crumbled bacon, corn with sautéed minced onion and green or red pepper, carrots with butter and tarragon or orange juice and brown sugar.

The combinations suggested in the table in Chapter 12 apply to canned vegetables as well as to fresh and frozen.

HANDLING DRIED VEGETABLES

There are two basic kinds of dried vegetable.

Dried Legumes

Dried beans and peas have been used as food for thousands of years, and they continue to be important foods today. In fact, with today's increased interest in healthful eating and in vegetables of all sorts, many more interesting varieties of beans are widely available now than only a few years ago.

Although legumes are dried forms of seed vegetables, they are hard and starchy and handled much like grains (which are also dried seeds). Grains and legumes are discussed in more detail in Chapter 14.

Freeze-Dried and Other Dehydrated Vegetables

Drying has always been an important method for preserving vegetables, especially before modern canning and freezing techniques were developed. Modern technology has developed new methods for drying foods, so a great variety of dried products is on the market, including dried potatoes, onions, carrots, celery, beans, peppers, tomatoes, and mushrooms.

Follow manufacturers' directions for reconstituting these products. Many must be soaked in cold or warm water for specific lengths of time. They continue to absorb water as they are simmered.

Instant dried products, especially potatoes, require only the addition of a boiling liquid and seasonings to be ready to serve. Again, manufacturers' directions vary with their brands.

An important category of dried vegetable is dried mushrooms. Many flavorful wild mushrooms are in season for only a short time and are in limited supply at high prices. They are available year round in dried form, however. The most popular types—morels, chanterelles, and porcini—are illustrated, along with dried shiitake, a cultivated mushroom that originated in Japan and China.

Dried mushrooms, clockwise from top left: morels, porcini, shiitake, chanterelles.



Dried mushrooms should be soaked in hot water until soft, then drained and lightly squeezed before being cooked. The flavorful soaking liquid is strained and used as a flavoring for cooking liquids and sauces.

STORING PROCESSED VEGETABLES

Frozen Vegetables

1. Store at 0°F (−18°C) or colder, in original containers, until ready for use.
2. Do not refreeze thawed vegetables. Quality will be greatly reduced.

Dried Vegetables

1. Store in a cool (less than 75°F/24°C), dry, well-ventilated place.
2. Keep well sealed and off the floor.

Canned Vegetables

1. Keep in a cool, dry place, away from sunlight and off the floor.
2. Discard cans that show signs of damage or spoilage (swollen, badly dented, or rusted cans). When in doubt, throw it out.

Leftovers

1. The best way to store leftovers is not to create them in the first place. Careful planning and small-batch cooking reduce leftovers.
2. Don't mix batches.
3. Store leftover creamed vegetables for one day only. Then either use or discard. Before storing, cool rapidly by placing the container on ice.



KEY POINTS TO REVIEW

- How do you check frozen vegetables and canned vegetables for quality?
- What guidelines are used for handling and cooking frozen vegetables and canned vegetables?
- What guidelines are used for storing frozen vegetables? canned vegetables? dried vegetables? vegetable leftovers?



TERMS FOR REVIEW

al dente

pigment

anthoxanthins

flavonoids

anthocyanins

chlorophyll

carotenoids

batch cooking

blanch-and-chill

sieve size

QUESTIONS FOR DISCUSSION

1. Give two reasons for not adding baking soda to the cooking water for green vegetables.
2. Besides appearance, why is proper uniform cutting of vegetables important?
3. What are some advantages of steam-cooking vegetables over boiling or simmering?
4. You are trying a recipe for blueberry muffins. When you break open a finished muffin, you see the baked dough around each berry is green. What caused this? How can you correct it? (*Hint:* The batter is made with buttermilk and leavened with baking soda. Even though berries aren't discussed in this chapter, the information about color changes will enable you to answer this question.)
5. Discuss the reasons for cooking green vegetables in a large quantity of water and in just enough water to cover.