

Cooking Techniques, vegetables & Soups: Unit 5F

Basic Food Production
HAT2324

Understanding Vegetables

Chapter 16

Vegetables

- Today, vegetables are appreciated for their nutrition, variety, flavor, eye appeal, and sophistication
- Vegetables are highly perishable (they go bad quickly)
- They are often inexpensive

Controlling Quality Changes During Cooking

- Cooking affects vegetables in four ways:
 - Texture
 - Flavor
 - Color
 - Nutrients
- How much is changed of each will determine the final products quality.

Controlling Texture Changes

- **Fiber** - Fiber structures of vegetables (including cellulose and pectins) give them shape and firmness.
 - Fiber is made firmer by acids and sugars.
 - Fiber is softened by heat and alkalis.
- **Starch** is another vegetable component that affects texture
 - Dry starchy foods must be cooked in enough water to absorb moisture and soften
 - Moist starchy vegetables have enough moisture of their own but must be cooked to be eaten
- **Doneness**
 - A vegetable is done when it has reached its peak degree of tenderness.
 - Most vegetables are best cooked **al dente** (firm to the bite).
 - Cooked vegetables cannot be kept hot very long.

Controlling Flavor Changes

- Cooking produces flavor loss. To keep to a minimum:
 - Cook as short a time as possible
 - Use boiling salted water
 - Add only enough water to cover vegetables
 - Steam vegetables when appropriate
- **Strong Flavored Vegetables** - When cooking strong flavored vegetables, cook uncovered and with lots of water.
 - Strong flavored vegetables are from the onion and cabbage families or root vegetables.

Cooking Produces Flavor Changes

- Some vegetables change flavors. Cook as short a time as possible
- Avoid overcooking because some vegetables develop a strong and unpleasant flavor when overcooked.

Cooking and Sweetness

- Young, freshly harvested vegetables have a high sugar content. As they mature or sit in storage the sugar turns to starch.
 - To serve sweet-tasting vegetables:
 - Serve young fresh vegetables that have not been stored long
 - For older vegetables use a little sugar in the cooking water to compensate for the lack of natural sweetness

Controlling Nutrient Losses

- The six factors responsible for most nutrient loss:
 - High temperature
 - Long cooking
 - Leaching (is the partial boiling of food in order to later finish cooking it)
 - Alkalis (baking soda, hard water)
 - Plant enzymes
 - Oxygen

Controlling Nutrient Losses (cont'd)

- Pressure steamers cook quickly
- Braising uses low heat but long cooking time
- Baking eliminates leaching of vitamins and minerals
- Boiling is faster than simmering
- Cutting vegetables into small pieces decreases cooking time

General Rules of Vegetable Cookery

- Don't overcook
- Cook as close to service time as possible
- If you need to cook it ahead of time undercook and chill rapidly, reheat at service time
- Never use baking soda with green vegetables
- Cut vegetables uniformly (same size)
- Start most vegetables cooking in boiling water, but start roots and tubers in cold water.
- Cook green vegetables uncovered
- Cook red and white vegetables in slightly acid liquid. Cook green vegetables in neutral liquid.
- Do not mix batches of cooked vegetables

Standards of Quality in Cooked Vegetables

- Color
- Appearance on plate
- Texture
- Flavor
- Seasonings
- Sauces
- Vegetable combinations

Handling Vegetables

- Fresh
 - Washing
 - Soaking
 - Peeling and cutting
 - Trimming loss

Classifying Vegetables as Used in the Kitchen

- The Gourd family (squashes)
- Seeds and Pods (beans, okra , peas)
- Tender-Fruited Vegetables (avocado, eggplant, tomatoes)
- Roots and Tubers (beets, carrots)
- The Cabbage Family (Brussels sprouts, cauliflower)
- The Onion Family (garlic, shallots, onions)
- Leafy Greens (spinach, lettuce, chicory)
- Stocks, Stems, and Shoots (asparagus, celery, fennel)
- Mushrooms

Fresh Vegetables: Evaluating and Preparing

- Artichokes
- Asparagus
- Avocados
- Bamboo Shoots
- Beans, Fava
- Beans, Fresh Shell
- Beans, Lima
- Beans, Snap
- Beets
- Bok Choy
- Broccoli
- Brussels Sprouts
- Cabbage, Green, Red, and Savoy
- Cabbage, Chinese
- Cactus Pads or Nopales
- Carrots
- Cauliflower
- Celery
- Celery Root or Celeriac
- Chayote
- Chestnut
- Corn

Fresh Vegetables: Evaluating and Preparing (cont'd)

- Cucumber
- Eggplant
- Fennel
- Fiddlehead Fern
- Garlic
- Greens, Cabbage family (collards, turnip greens, kale)
- Jicama
- Kohlrabi
- Leeks
- Lettuce
- Mushrooms
- Okra
- Onions, Dry
- Onions, Green (scallions)
- Parsley
- Parsnips
- Pea Greens or Pea Shoots
- Peas, Green
- Peas, Edible Pod
- Pepper, Sweet
- Peppers, Hot, or Chiles
- Potatoes, white

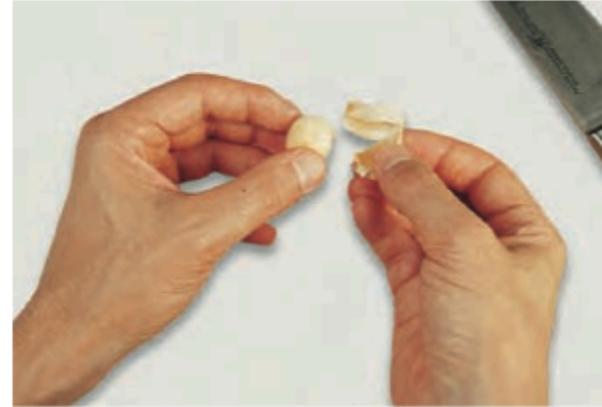
Fresh Vegetables: Evaluating and Preparing (cont'd)

- Potatoes, sweet
- Radishes
- Rutabagas
- Shallots
- Sorrel
- Soybeans
- Spinach
- Squash, Summer
- Squash, Winter, including pumpkin
- Squash, Blossoms
- Sunchokes or Jerusalem Artichokes
- Swiss Chard
- Tomatoes
- Tomatillos
- Turnips and Rutabagas
- Water Chestnuts
- Watercress

Figure 16.9
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.

Garlic

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

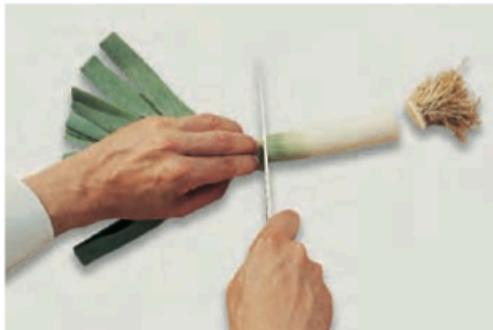
Related Varieties: *Ramps* are wild leeks with broad, flat leaves and bulbs that resemble those of scallions. They have a pungent, garlicky flavor.

Evaluation: Look for fresh green leaves; 2-3 inches (5-8 cm) 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 (see Figure 16.10).

Percentage Yield: 50%

Figure 16.10
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.

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. (See Figure 16.7.)

Percentage Yield: 80%

Figure 16.7
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.



Green cabbage



Red cabbage



Savoy cabbage



Yellow onions



White onion



Red onions



Pearl onions

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.

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 *eggplant*), 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.

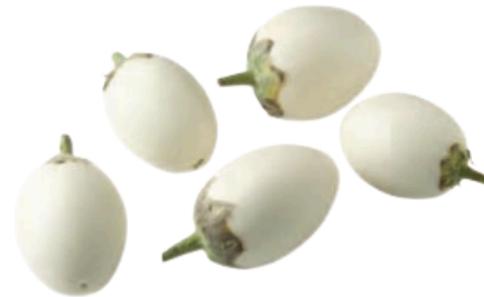
Evaluation: Eggplants should be firm, not soft. Common purple types should be shiny, dark purple color; heavy and plump; without blemishes or soft spots.

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)



Italian eggplant



White eggplant

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%



Sugar snap peas



Snow peas



Red pepper



Green pepper



Yellow pepper



Orange pepper



Green cayenne chiles



Italian hot peppers



Jalapeños and cherry peppers



Cauliflower

Carrots

Identification: Long, pointed, orange roots. Among the most widely used vegetables.

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

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

Percentage Yield: 75–80%

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. If cooking whole, cut out center of stalk for more even cooking.

Percentage Yield: 55%

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%

Mushrooms

- Cultivated Exotic Mushrooms
 - Shiitake
 - Oyster mushrooms
 - Enoki mushrooms
 - Cremini Mushrooms
 - Portobello Mushrooms
- Wild Mushrooms
 - Morel
 - Bolete
 - Chanterelle
 - Black trumpet



Oyster mushrooms



Shiitake mushrooms



Cremini mushrooms



Processed Vegetables

- The quality of frozen or canned vegetables never equals that of fresh
- Handling Frozen Vegetables
 - Checking Quality
 - Temperature
 - Large ice crystals
 - Signs of leaking on the carton
 - Freezer burn
 - Cooking
 - Cook frozen vegetables from the frozen state

Processed Vegetables (cont'd)

- Handling Canned Vegetables
 - Checking quality
 - Reject damaged cans in receipt
 - Know the drained weight
 - Check the grade
 - Cooking
- Handling Dried Vegetables
 - There are two basic types of dried vegetables:
 - Dried Legumes
 - Freeze-Dried and Other Dehydrated Vegetables

Storage – Fresh and Frozen

- Fresh vegetables
 - Potatoes, onions, and winter squash are stored at 50°-65° F in a dry place
 - Other vegetables stored in the refrigerator
 - Peeled and cut vegetables need extra protection from drying and oxidation
 - Store fresh vegetables for as short a time as possible
 - Keep refrigerators and storage areas clean
- Frozen vegetables
 - Store at -18c or cooler, in original containers, until ready to use
 - Do not refreeze vegetables

Storage – Dried and Canned

- Dried vegetables
 - Store in a cool (less than 20°C) in a dry, well-ventilated place
 - Keep well sealed and off the floor
- Canned vegetables
 - Keep in cool, dry place, away from sunlight and off the floor
 - Discard damaged cans

Cooking Vegetables

Chapter 17

Boiling and Steaming

- Almost all vegetables can be cooked by boiling or steaming. These methods are easy, economical, and can be adapted to a great variety of preparations.
- Unless you are serving immediately, boiled or simmered vegetables are drained and cooled immediately with cold water.
- In some cases vegetables are only partially cooked and finished with another method of cooking.
- Steaming is becoming more and more widely used, and it may be the ideal way of cooking certain vegetables, like broccoli.

Procedure for Boiling Vegetables

- 1. Collect all equipment and food products.**
- 2. Trim, peel, and cut vegetables as required. See pages 490–514 for prep requirements.**
- 3. Add the required amount of water to the pot (saucepot, steam-jacketed kettle, tilting skillet, or whatever equipment you are using).**

Most vegetables are cooked in just enough water to cover, but many green vegetables and strong-flavored vegetables may be cooked in a large quantity of water (2 or 3 times their volume). See page 489 for discussion.
- 4. Add salt (approximately 1½–2 tablespoons per gallon of water/6–8 grams per liter) and bring to a boil.**
- 5. Place the vegetables in the pot and return the water to a boil.**
- 6. Reduce heat to a simmer and cook the vegetables, covered or uncovered, as indicated, to required doneness.**
 - Green vegetables and strong-flavored vegetables are cooked uncovered.**
 - Other vegetables are cooked covered.**
- 7. Drain the vegetables quickly to avoid overcooking.**
- 8. If the vegetables are to be served at once, complete the recipe and serve.**
- 9. If the vegetables are not to be served at once, cool them (except potatoes and starchy vegetables) in cold water, drain as soon as cool, and refrigerate until needed.**

Sautéing and Pan-Frying

- Remember the main differences between sautéing and pan-frying are the **amount of fat** used and the cooking time
- In sautéing the vegetables are flipped or tossed over high heat
- With pan-frying the cooking time is longer and at a lower temperature
- Both methods may be used as finish-cooking methods of blanched and precooked vegetables
- Stir-frying is a quick-cooking technique used in Asian cooking (typical for China)

Procedure for Sautéing Vegetables

This method is used for precooked or blanched vegetables and for tender, small-cut vegetables that cook quickly.

1. Collect all equipment and food products.
2. Prepare vegetables as required.
3. Place sauté pan on high heat.
4. When the pan is hot, add a small amount of clarified butter, oil, or other fat, enough to coat the bottom of the pan. (Clarified butter is used because the milk solids in whole butter burn quickly at the high heat necessary for sautéing.)
5. As soon as the fat is hot, add the vegetable. Do not overload the pan, or the temperature will be lowered too much and the vegetables will simmer instead of sauté.
6. After the heat has recovered, flip the pan a few times to turn and toss the vegetables (see Figure 17.1). Let the pan set again over the heat.
7. Continue to flip the vegetables as often as necessary for them to cook or heat evenly and become coated with the cooking fat. (Don't flip more than necessary, however. It may be fun and a good way to show off, but it's a waste of time and accomplishes nothing except breaking fragile vegetables. Also, the heat must have time to recover between flips.)
8. As soon as the vegetables are cooked, or heated through if precooked, remove from the pan and serve. Browning may or may not be desirable, depending on the vegetable and the particular preparation.

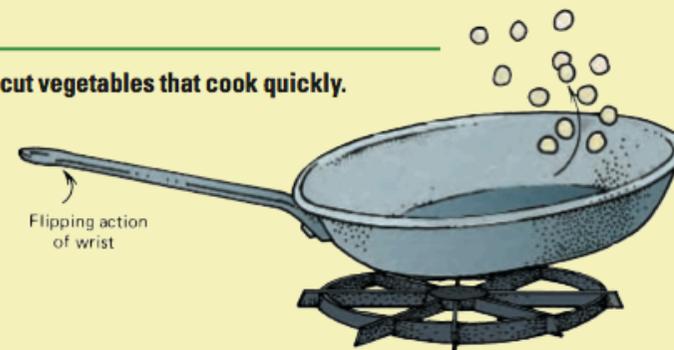


Figure 17.1 To flip foods in a sauté pan, give the handle a sharp twist upward with the wrist. Be sure to move the pan back far enough to catch the foods as they come down.

Procedure for Pan-Frying Vegetables

Note: A griddle is often used for this procedure if only a small amount of fat is required.

- 1. Collect all equipment and food products.**
- 2. Prepare vegetables as required.**
- 3. Place a sauté pan or cast-iron skillet on moderately high heat. Add required amount of fat to the pan and let it heat.**
- 4. Place prepared vegetables in the pan. Adjust the heat so the product cooks through with the desired amount of browning but without burning the outside.**
- 5. Turn vegetables with a spatula and continue to cook until done.**
- 6. Remove from pan. If necessary, drain on absorbent paper to eliminate excess fat.**

Braising

- Braising is a slow, moist-heat method of cooking, using a small amount of liquid
- Braised vegetables are not always cooked in fat before liquid is added
- Braising vegetables preparations tend to be more complex than boiled or steamed vegetables
- The cooking times are longer

Baking

- When we discuss **baking vegetables** we refer to one of two ways:
 1. Cooking starchy vegetables, such as potatoes, winter squash, sweet potatoes from raw to finished. Other vegetables can be done this way (tomatoes, beets, eggplant, onions, and turnips)
 2. Finishing partially cooked vegetables in casseroles for two reasons:
 - Slow, all-around heat allows the product to cook undisturbed.
 - Dry heat produces desired results, such as browning and caramelizing of sugars.

Broiling and Grilling

- Grilled quick-cooking vegetables like peppers, zucchini, large mushroom caps, and eggplant go well with grilled and roasted poultry and meats
- Grilled vegetables are often dressed with vinaigrette
- Broiling is also used to finish cooked or partially cooked vegetables.

Procedure for Broiling or Grilling Vegetables

- 1. Collect equipment and food supplies.**
- 2. Prepare the vegetables as necessary, including cutting them into required shapes and seasoning or marinating them.**
- 3. Preheat the broiler or grill.**
- 4. If necessary, brush the grill with a wire brush to clean it of any charred food particles.**
- 5. Place the vegetables directly on the grill or broiler grate. Alternatively, place tender vegetables on broiler platters or sheet pans and set under the broiler. Cook the vegetables to the desired doneness and color, turning them as necessary.**
- 6. Remove from broiler or grill and serve immediately.**

Deep-Frying

- Deep fried vegetables are divided into five categories
 1. Vegetables dipped in batter and fried
 2. Vegetables breaded and fried
 3. Vegetables fried without a coating (potatoes)
 4. Fritters - small vegetables or cuts mixed with batter
 5. Croquettes – thick purées and heavy binder that are shaped and breaded

Soups

Chapter 9



Soups:

- A wide variety of ingredients, seasoning, and garnishes can be used for soups
- You can use the worlds finest ingredients or use leftovers to make quality soup
- Remember if you use leftovers, you have to follow strict sanitation principles
- A soup's quality is determined by its **flavor**, **appearance** and **texture**

Types of Soups

- Clear soups
 - Broths and bouillons
 - Vegetable soups
 - Consommé
- Thick soups
 - Cream soups
 - Purées
 - Bisques
 - Chowders
 - Potages

Chicken Tomato Bouillon with Pesto



Clear Vegetable Soup with Cranberry Beans







Classifications (cont'd)

- Specialty and National Soups
 - Turtle Soup, Gumbo, Peanut, Cold fruit soups
 - Soups from Italy, France, Spain - Yours is_____?
 - Think of all the different soups in China? What is your favourite?
- Vegetarian and Low-fat soups
 - Good fresh vegetables, rich stocks - Good

Vegetarian and Low Fat Soups:

- The appeal of vegetarian soups depends on the freshness and quality of the vegetables.
- Review the vegetarian chapter for the types of vegetarian diets to match up with soups.

Service of Soups

- Standard portion sizes
 - Appetizer portion: 200ml – 250ml
 - Main course portion: 300ml – 350ml
- Temperature:
 - Hot soups – served in hot cups or bowls
 - Cold soups – served in chilled bowls

Temperatures

- Remember to serve hot food hot and cold food cold
 - Clear soups – 75c
 - Hot cream soups – 70c
 - Cold soups – 5c
- Safety Alert: If you are using high protein food items, please heat and cool properly!

Service of Soups

- Garnishes of Soups
 - Garnishes in the soup
 - Meat, poultry, pasta, rice, noodles, croutons
 - Toppings
 - Herbs, grated cheese, egg yolks, sour cream
 - Accompaniments
 - Crackers, cheese straws, wafers, bread