



Culinary Review - Vegetables

At one time, vegetables were neglected and relegated to a minor role in cooking. Today, vegetables are much more appreciated, not only for their nutritional importance, but also for their flavor, variety, and visual appeal, which adds a certain elegance and sophistication.

Many Americans think of vegetables as secondary to meats. Other cultures and cuisines, however, have vegetables taking center stage. For example, in China, vegetable stir-fry is embellished with a small amount of meat, poultry and seafood. In India, it is not uncommon, even among non-vegetarians, to have whole meals based on vegetables. The American vegetable marketplace has expanded dramatically in recent years. Now more than ever, supermarkets and specialty stores are stocking a larger range and greater variety of vegetables. The interest and integration of different cuisines are reasons for the addition of new and different vegetables to American markets. Whichever culture your recipe may be based upon, quality is of the essence. Therefore, the next section continues to address quality issues related to vegetables.

Composition and Structure

Vegetables are highly perishable. Freshness is their most appealing and attractive quality and you must be careful in preserving it.

The goal of proper vegetable cooking is to preserve and enhance their flavor, texture and color. As with beef, chicken and seafood, vegetables can be prepared using many different cooking methods. There are many rules for the many different vegetables available because cooking affects their texture, flavor, color and nutrient content. How you handle vegetables will affect whether or not your final product is attractive and tasteful to the customer.

Controlling Texture

Changing the texture of vegetables is one of the main objectives of cooking them. Fiber gives vegetables shape and firmness. Fiber varies with the type of vegetable. For example, spinach and tomatoes have less fiber than items like carrots and turnips. Old carrots have more fiber than young carrots. Broccoli has more fiber in the stalk than in the tops.

Fiber is made softer by heat and bases (such as alkali). Starches also soften the texture of vegetables. Foods that contain starch, such as dried beans and potatoes, must be cooked in enough water to soften the starch they contain.

Vegetables are cooked or "done" when they reach the proper degree of tenderness. This varies from vegetable to vegetable. Some vegetables need to be cooked for a longer time to become tender. However, most vegetables are best when cooked briefly, "tender-crisp" or al dente. This will allow the most pleasing texture while retaining the maximum flavor, color, and nutrients.

Controlling Flavor Changes

When vegetables are cooked they inevitably lose flavor. The longer the cooking time, the more flavor vegetables lose. The following are steps to minimize loss of flavor during cooking:

- ❖ Cook for as short a time as possible
- ❖ Cook vegetables in water that is already boiling to shorten the cooking time
- ❖ Add salt to help reduce flavor loss
- ❖ Use just enough water to cover vegetables to help prevent flavor leaching
- ❖ Steam vegetables whenever possible and appropriate



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Steaming is probably the best method for cooking most vegetables. It cooks the vegetables quickly with high heat, while minimizing the flavor and nutrient loss due to leaching.

Some vegetables have strong flavors that you may want to tone down or reduce, such as, collard greens or broccoli. Cook these vegetables in larger quantities of water and leave them uncovered, allowing flavors to escape.

Cooking vegetables causes certain chemical changes. This is the reason raw vegetables do not taste like cooked ones. As long as the vegetables are not overcooked, they are desirable.

Fresh vegetables are sweeter than old vegetables because the sugars gradually change into starch over time when stored. This is especially noticeable with sweet-tasting vegetables, such as corn, peas, carrots and peppers. Some sugar may be added to old vegetables during cooking to replace some of the lost sweetness.

Controlling Color Changes

Preserve the natural colors of vegetables when cooking. Visual appeal is just as important as flavor and nutrition. Pigments are responsible for giving vegetables their color. As we will discuss, different pigments react differently to heat and acids.

White Vegetables

White vegetables have pigments called flavones. These are found primarily in vegetables such as potatoes, onions, cauliflower and the white parts of celery and cucumbers. Vegetables with white pigments stay white in acid. They yellow in alkali water. That is the reason that a little lemon juice or cream of tartar will help keep them white. Short cooking times or steaming also will help keep them white. Overcooking causes yellowing or graying.

Red Vegetables

Red vegetables contain pigments called anthocyanins. They are found mainly in vegetables such as red cabbage and beets. These pigments react strongly to alkalis and acids. Acids brighten the pigments, while alkalis turn them to a blue or blue-green hue. Red pigments are best retained when vegetables are cooked in just a touch of an acid. They dissolve easily in water.

Green Vegetables

Vegetables get their green coloring from chlorophyll in their cells. Acids and long cooking times will destroy a vegetable's green coloring. To protect the green color, cook the vegetables uncovered to allow plant acids to escape. Cook your greens in small batches using the shortest cooking times possible. Green vegetables should be "tender-crisp," not mushy. Steaming, again, is the preferred method of cooking to maintain the best color.

Yellow and Orange Vegetables

Yellow and orange pigments are called carotenoids. Common foods that contain these pigments are corn, carrots, sweet potatoes, tomatoes and red peppers. These pigments are known to be stable and are not affected by acids or alkalis very much. However, long cooking times can dull these colors. Short cooking times (once again) will help preserve the flavor and nutrients.



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Controlling Nutrient Loss

Vegetables provide many important nutrients. They are a major source of vitamins A and D, although these vitamins can be lost easily. The main reasons for nutrient loss are high temperatures, long cooking times, leaching, alkalis, plant enzymes and oxygen. It is impossible to avoid all of the nutrient loss. Each cooking method has its own pros and cons regarding the loss:

- ❖ Steaming provides short cooking times (good), but uses high heat (bad)
- ❖ Braising uses low heat (good), but has a long cooking time (bad).
- ❖ Boiling provides a fast cook (good), but the agitation breaks up the food (bad) and increases the nutrient leaching (bad).
- ❖ Vegetables can be cut into smaller pieces to decrease the cooking time (good), but the increased surface area creates increased leaching (bad).

Cooking Vegetables – A Little Water Versus A Lot of Water

Some people believe that vegetables should be cooked in a small amount of water. This helps minimize the leaching of colors, vitamins and other nutrients. Some people believe that vegetables should be cooked in a larger quantity of water for quicker cooking, giving the vegetables less time to leach. Nonetheless, whichever method you choose, the vegetables will have some nutrient loss. The key, then, is to cook your vegetables quickly, without overcooking, for a product that has a good texture, maximum color and is visually appealing.

Handling Vegetables

Cleaning and Prepping

You should wash all vegetables thoroughly. Root vegetables should be peeled or scrubbed well with a vegetable brush. Greens and leafy vegetables should be rinsed several times in cold water to remove any dirt or sand, changing the water with each rinse. After vegetables have been washed, they should be drained well, lightly covered and refrigerated.

You should not soak vegetables for long periods of time. Vegetables such as broccoli or cauliflower can be soaked in cold salt water (for up to 30 minutes) to get rid of insects. Limp vegetables, especially greens, can be shocked briefly in cold water to restore crispness. Dried beans can be soaked to replace moisture and shorten cooking times.

Cooking Processed Vegetables (Frozen and Canned)

The quality that you get from processed foods, especially vegetables, usually isn't as good as the fresh product. Vegetables are very perishable and seasonal; however, limited availability and price concerns can be an incentive to use processed vegetables. Processed foods also can save you time and labor. However, if a product is not in season, yet is being sold "fresh", a canned item may be superior because canned vegetables are picked at their peak and packaged immediately, which helps them retain their nutrition and flavor.

Weigh the differences between the quality of the finished product and the time and money you will save by using processed vegetables. In some cases, especially when the item is only a small component in the recipe, using the processed vegetables will not significantly affect the quality of the final product. These types of decisions come down to your own tastes and standards. The quality of processed foods can vary greatly between the companies that make them, and the products they offer. You need to select products that give you the closest substitution for the fresh product.



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Handling Frozen Vegetables

As with other frozen foods, you need to inspect frozen vegetables for quality. Make sure the product is frozen and that it has maintained its frozen status since it was packaged, during transportation and in storage prior to purchase. Some frozen foods may have a little frost on them, but beware of large ice crystals. Check the packages for obvious signs of thawing. Make sure the product has no freezer burn and that it has a bright and natural color. Make sure there is no yellowing or drying on the surface.

Many frozen products have been partially cooked, so cooking times will be somewhat shorter. Many of them can be placed straight from the freezer right into the cooking pot. Some vegetables such as spinach, squash and corn on the cob, come in frozen blocks and should be thawed in the refrigerator first. Be careful when seasoning because many frozen products have been lightly salted.

Handling Canned Vegetables

When purchasing canned goods it is important to understand the quality of the products contained in the cans. Federal inspectors or packers grade the contents of canned goods for quality. Grades are:

- ❖ U.S. Grade A or Fancy
- ❖ U.S. Grade B – Extra Standard (for vegetables) and Choice (for fruits)
- ❖ U.S. Grade C or Standard

These grades are based on the quality of the product, including the color, the absence of defects, and the size.

Be aware of the drained weight of canned goods. Many products are packed in water or other liquids. The drained weight is the amount of the actual product after the packing liquid has been removed. This is important to know because the canned weight and drained weight can differ by as much as 35 to 40 percent. This affects the number of servings in the can, and the number of cans you may need.