



William T. Kemper Center for Home Gardening

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Vegetable Families

When talking about vegetable crops, vegetable gardeners often use special jargon that others may find unfamiliar or confusing. Chief among this jargon is talking about vegetable families. Grouping vegetables into their botanical families is useful, as closely related plants within a family often share both similar cultural requirements and the same or similar pest and disease problems. Understanding the vegetable family tree is key to proper and effective crop rotation. Following are four major vegetable families and the terms used to refer to them:

Crucifers or Brassicas (Brassicaceae)

This is the cabbage and mustard family.

Members of this family are often referred to as “**crucifers**” or “**brassicas**.” Another term used is “**cole crops**.” Coleslaw is made from sliced cabbage – a member of the cabbage family.

The cabbage family includes cabbages, radish, mustard greens, turnips, rutabaga, arugula, the spices mustard, horse radish and wasabi, and ornamentals such as candytuft. This family of plants also includes Asian vegetables such as bok choy, daikon, and Chinese (napa) cabbage.

Brassicas are cool season crops that can be started indoors and then placed outside for the spring in March or for the fall starting in mid-July.

All above ground parts of cruciferous plants are edible, although the flavor may be bitter in plants grown for flowering parts or headed cabbage. Kale and collards are often harvested after the first light frost, which sweetens the leaves. The crucifers tend to be high in fiber, vitamin C, and calcium, along with many other nutrients.

Many of the plants in this family are of a single species, *B. oleracea*, including broccoli, cauliflower, collard greens, kale, ornamental kale, cabbage, Brussel sprouts, and Chinese broccoli (*gai lan*).

Arabidopsis thaliana, a model plant used by plant biologists to study plant genes, diseases, and breeding due to its small size and rapid life cycle, is also in this family of plants.

Nightshades or Solanaceous (Solanaceae)

This is the nightshade family.

The **solanaceous** family includes many common garden “vegetables,” although the part of the plant usually eaten is the fruit (the potato is an exception – here the underground tuber is eaten). This group is also referred to as the “**nightshade**” family, after the poisonous weed.

Solanaceous crops include tomato, pepper, eggplant, white and red potato, and tomatillo.

This family also contains several plants that are toxic to humans, pets and livestock, such as the weeds Jimsonweed, nightshade and mandrake. The green parts (leaves, sun-scalded potatoes) of solanaceous crops are toxic and should not be eaten. Tobacco and petunia are also in this family, and are used as both ornamental and research plants.

There is a rich diversity in edible solanaceous plants within any one species. Hybrids and heirlooms alike are popular in the home garden, with benefits and drawbacks to growing each kind of plant. Solanaceous crops should be planted after all danger of frost has passed and the soil has begun to warm.

When planning a garden, the farmer must be careful to rotate plants within the same family as a block. For instance, if in year 1 tomatoes are planted, the same field in year 2 should not be planted with another solanaceous crop, such as potatoes or pepper.

Legumes (Leguminosae or Fabaceae)

This is the bean and pea family.

Beans and peas are often referred to as “**legumes**” or as “**leguminous** crops.”

The legume family includes edible beans, peas, and peanuts as well as numerous forage crops (alfalfa and clover), herbaceous ornamentals (indigo, wisteria and hyacinth bean), and trees (mimosa, redbud, and locust).

Edible legumes commonly grown in the home garden include cowpeas (such as black-eyed beans), lima beans, peas, green beans, dry beans, and long beans. Less commonly found in the home garden yet important protein sources worldwide are soybeans, peanuts, lentils, chickpeas, and fava beans.

In the garden, beans are commonly referred to either by the stage at which you eat the pods / beans or by their growth habit. Bush beans tend to stay small and compact while pole, or runner, beans grow more like a vine and require a support structure such as a trellis.

Common peas are snow peas, snap peas or garden peas. Snow and Snap peas are eaten at the pod stage, either before the seeds develop or while they are still small and immature, and can be eaten raw or lightly cooked. Garden or shelled peas can be eaten by shelling the fresh peas and either eating them fresh, freezing for later use, or after allowing them to dry for storage and later use (many times as split peas).

Peas are a cool season crop, often planted in the soil six weeks before the last frost date and harvested before the weather hits the mid-70s. The pea was used extensively by Mendel when he studied segregation genetics in the mid-1800s.

Legumes referred to as green beans are eaten as the whole pod, containing immature seeds. Many older varieties were called string beans, as a tough string needed removed from the split in the pod. Some heirlooms and many new hybrids have been bred for a less ‘stringy’ pod. Common varieties are green,

yellow or purple. Green beans are eaten fresh or can be frozen after blanching. Beans will yield several waves of crop if harvested while green, but many varieties of green beans can be left to mature for dry beans.

To produce dry beans, the bean pods are allowed to fully mature and dry, or desiccate, on the vine or bush, at which time the dried beans are shelled and can be stored for later use. Dry beans include kidney beans, navy beans, pinto, canellini, and numerous colorful heirloom varieties. If green beans are left on the plant to dry, the plant will cease flowering and producing new beans.

Legumes are an important source of protein in the human diet. Additionally, plants in this family form symbiotic relationships in their roots with bacterial species that 'fix' nitrogen in the soil, converting atmospheric nitrogen (N₂) into a form of nitrogen that can be absorbed by plants (NH₃ then NH₄). This 'fixed' nitrogen is then available to other plants grown in the soil, particularly when practicing crop rotation and using legumes as one 'block.'

Cucurbits (Cucurbitaceae)

This is the cucumber and squash family.

Members of this family are commonly referred to as "**cucurbits.**" Another term, used in a general way, is "vine crops," although this term includes a few other non-related plants.

The cucurbits are a family of vining plants that includes cucumbers, squash, pumpkins, watermelon, and melons. Other economic, but inedible, crops are gourds and luffa. All edible plants from this family are actually fruits, deriving from the ovary of a pollinated flower, even though we might call them a 'vegetable.' Many of the plants contain separate male and female flowers.

Cucumbers can be seeded, as a result of pollination, or unseeded, as a result of certain varieties that can develop fruit from unpollinated flowers, with taste often affected. Common types of cucumbers are eating and pickling,

There are two main crops of squash, winter and summer. Summer squashes are eaten when the fruit is immature, at a stage where the skin and seeds are still tender enough to eat, such as zucchini, marrow, and crookneck squash. Nearly all summer squash are varieties of *Cucurbita pepo*. Winter squash, such as delicata, acorn, spaghetti, and pumpkin, are harvested when the stem dries, the seeds are mature, and the rind is no longer easily scored with a fingernail. Only the flesh is edible at this time. Seeds can be saved from heirloom, or open-pollinated, varieties of both summer and winter squash when harvested at this stage. There are three main species in this family that yield an unimaginably vast array of squash: *Cucurbita pepo*, *C. moschata*, and *C. maxima*.

Melons tend to produce a sweeter and more watery flesh than squash. The melon, *Cucumis melo*, originated in south Asia but has spread through Europe, Asia and America, where it has been differentially selected to produce a wide diversity of sweet fruits. The bumpy Asian bitter melon is a separate species and is cooked before eating.

Watermelons are actually a separate species of melon, *Citrullus vulgaris*. Both seeded and unseeded (through parthenocarpy) varieties are available.

For the home garden, plants in this family tend to grow as long vines, requiring a lot of horizontal space, unless they are trellised and grown vertically. They are generally started after the soil has warmed, with different varieties ready to eat throughout the growing season.

Conclusion

Refer to this brief overview of popular vegetable families when you are planning your edible garden. Keep in mind that the planting location of crops within any one family should be rotated, or alternated, every year. A four year rotation of the four vegetable families (**crucifers, legumes, solanaceous, and cucurbits**) in your garden will increase nutrient availability and decrease disease incident, giving you a more bountiful harvest as you explore the world of edible plants for the home garden.

There are many edible plants not in these four families, but it is an interesting trick of botany that so many of our common foods come from a narrow range of plant species. Other popular food crops, such as lettuce and grains, will be discussed in an upcoming factsheet.