

Ginger, *Zingiber officinale*



Edible or culinary ginger is the fat, knobby, aromatic rhizome of *Zingiber officinale*, a tender herbaceous perennial plant in the large ginger family (Zingiberaceae) native to humid, partly-shaded habitats in moist tropical and subtropical forests of Southeast Asia. Ginger is grown for the hot, pungent flavor of the rhizome which can be used fresh, dried, ground or preserved (in brine, vinegar or sugar syrup). It was introduced to northern Europe by the Romans (who got it from Arab traders), was one of the most popular spices in the Middle Ages, and is an integral component of many Asian cuisines today. In Asia, the fresh stems are also used in many dishes. Ginger adds a spicy punch to fruit salads, teas, curries, preserves, and baked goods – gingerbread, gingersnaps, and other spicy desserts. In addition to its culinary value, it is used as a remedy for nausea and mild seasickness and medicinally in oral or topical preparations for several ailments. It does interact with some medications, including the anticoagulant drug warfarin.

Edible ginger is the rhizome of *Zingiber officinale*.

Other plants in this family used as spices include cardamom (*Elettaria cardamomum*), galangal (*Alpinia galanga*) and turmeric (*Curcuma longa*), while most of the other nearly 1,300 species in the family are grown primarily as ornamentals. It is not related to the wild gingers of the northern hemisphere (*Asarum* spp.) whose roots have similar aromatic properties, but should not be consumed as they contain aristolochic acid, a compound associated with permanent kidney damage.



Turmeric, *Curcuma longa*, plants (L), dug roots (LC), cleaned root with one end peeled to show the bright orange flesh (RC) and the edible ground powder with a fresh and dried section of root (R).



Ornamental gingers: pink cultivar of red ginger, *Alpinia purpurata*, (L), shell ginger, *Alpinia zerumbet* (RC), Khalili ginger, *Hedychium gardnerianum* (C), shampoo or beehive ginger, *Zingiber zerumbet* (RC), and long-tailed hermit at torch ginger, *Etilingera elatior* (R).

Also called ginger root (technically a misnomer, since it's a rhizome, which is an underground stem, and not a root) this plant is now grown throughout the world in tropical climates. It is grown commercially in South and Southeast Asia (India, China, Nepal), tropical Africa, parts of Central America and the Caribbean, and Australia where it takes about 8-10 months from planting to harvest the crop. It is hardy only in USDA Zones 8 – 12 but can be grown in containers and moved indoors for the winter in colder climates where the season is too short for the rhizomes to mature.

The thick, warty, branched rhizomes have a corky, brown to golden outer skin that is very thin and easily abraded, so they should be handled carefully to avoid damage that could lead to spoilage. The interior is pale yellow with a spicy, almost lemony scent. When young the rhizomes are juicy and fleshy with a very mild taste, but become hotter, more fibrous and drier as they mature. The characteristic fragrance and flavor comes from volatile oils and non-volatile phenolic compounds including zingerone, shogaol, gingerol, and gingeridione.



Ginger plants grow shoots 3-4 feet tall

Ginger rhizomes have a very delicate skin, especially when young (R - sold as "baby ginger").

from the rhizomes, gradually spreading outwards to eventually form a dense clump if not harvested. The shoots are actually pseudostems formed from a series of leaf sheaths wrapped tightly around one another. The blades of the medium green, alternate leaves are long and narrow (7 by $\frac{3}{4}$ inches), arranged in two ranks on each stem.

Container grown plants rarely flower, and the blossoms are not particularly spectacular. Clumps need to be at least two years old before they will flower. The terminal inflorescence grows on a separate, leafless stem from the foliage stem. The dense, cone-shaped flower spikes are composed of a series of greenish or yellowish bracts with translucent margins.

Ginger plants have narrow leaves.

Cream to yellowish green flowers, each with a mauve or deep purple lip, protrude just beyond the green bracts. Culinary ginger flowers are usually sterile, rarely producing seed.



Culinary ginger is rarely offered as a potted plant since it isn't particularly ornamental. However, ginger can be grown from rhizomes purchased at supermarkets or other food stores. Commercial ginger is often treated with a growth inhibitor to keep it from sprouting before use, but sometimes pieces – especially those marketed as organic – will begin to sprout. Plump pieces with many swollen buds at the end of the "fingers" are best. Buds that have started to turn green are even more likely to grow. The rhizomes can be planted whole or

The terminal inflorescence grows on a separate stem (L) and produces a green "cone" from which the yellowish and maroon flowers protrude (R — photo from Wikimedia Commons).

divided into pieces (being sure there are at least two eyes per section). Allow any cut pieces to dry for a few days in a warm, dry spot and callus over before planting. Rhizomes can be soaked overnight in warm water before planting. Place the rhizomes about an inch deep in warm soil (whether in a container or in the ground, ginger grows only when soil temperature is over 68F and grows best with soil temperatures around 77F) with the growth buds pointing upward. Water lightly until growth begins. It may take a few weeks for shoots to show, as the plant has to develop roots first. Once leaves develop keep the soil evenly moist, but not soggy. Some growers prefer to only partially fill the containers with growing medium before planting the rhizomes and then add additional growing medium in two increments a few months apart to encourage longer, larger rhizomes. In ground plants can be hilled up periodically to encourage larger rhizomes, too, but this is not necessary.



Ginger rhizomes purchased from grocery stores may sprout — look for pieces with swollen buds (L) or even shoots (C). Place the rhizome in the soil with the buds pointing upward (R).



Ginger growing in a Wisconsin vegetable garden (transplanted in late spring from greenhouse-grown container).

Plant ginger in the vegetable garden as a seasonal plant for “baby ginger” or “green ginger”, harvested after about four months while still immature; starting it in containers a few months ahead in early spring will enhance yield. The young rhizomes have thinner, easily bruised skin so care must be taken not to injure the rhizomes when digging them up. For larger mature rhizomes, grow it in containers to move inside before the first frost. A 14-inch pot easily holds three average rhizomes, and the plants don’t mind being crowded in a container. In areas where ginger will not survive the winter, plants should be moved inside when night temperatures drop below 50F. The plants will go dormant and lose all the stems with the onset of our short winter days and cool temperatures. The rhizomes can be stored over the winter in the soil in the container or can be dug, cleaned and stored in a brown paper bag in a cool, dry place, but don’t refrigerate rhizomes for replanting. Growth will resume with new



Container-grown ginger sprouting in spring. The plants lose all their leaves in the winter.

cleaned and stored in a brown paper bag in a cool, dry place, but don’t refrigerate rhizomes for replanting. Growth will resume with new

shoots in early spring if kept warm and in a bright spot. Plants grown this way can be dug to harvest all or just a portion of the rhizomes every year or two.

Ginger loves hot, humid conditions and rich soil with lots of nutrients. In our cool climate the plants do well in full sun; in more southern locations the plants may need partial shade. Fertilize regularly during the growing season unless planted in very fertile soil. If planting in the ground, amend it first with lots of compost, rotted manure or other rich organic matter. Mulch in-ground plants to retain soil warmth and moisture, and prevent competition from weeds. Water regularly, but do not allow the soil or planting medium to remain soggy. Container grown plants should not be watered at all when leafless and dormant; resume watering when new shoots appear.



**Ginger harvest at end of short
Midwestern growing season.**

In the Midwest culinary ginger has no significant insect or disease problems. In commercial production, bacterial wilt (caused by *Ralstonia solanacearum* race 4) is the most important disease of ginger, but this is rarely a problem elsewhere. If plants develop leaf yellowing and curling followed by wilting of the plant, they should be discarded.

– Susan Mahr, University of Wisconsin - Madison

Additional Information:

- *Zingiber officinale* – on the Missouri Botanic Garden’s Kemper Center for Home Gardening website at <http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a763>
- *Zingiber officinale* – on the Floridata website at <http://floridata.com/Plants/Zingiberaceae/Zingiber%20officinale/861>
- Ginger – Texas A& M AgriLife Extension publication EHT-014 at <http://aggie-horticulture.tamu.edu/vegetable/files/2010/10/EHT-014-Easy-Gardening-Ginger.pdf>
- Growing Edible Ginger in High Tunnels – Penn State University at <http://extension.psu.edu/plants/vegetable-fruit/news/2011/growing-edible-ginger-in-high-tunnels>