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Legumes

Legumes belong to the family Leguminosae (Fabaceae)

History of legumes

People have been growing legumes as crops for 6000 years. In Switzerland, the lake dwellers who lived between 5000 and 4000 B.C. cultivated peas (*Pisum* sp.) and a dwarf field bean, both legumes. In China, farmers began cultivating soybeans between 3000 and 2000 B.C. The Papilionoideae, with a worldwide distribution, are the largest subfamily. They are mostly herbs and include the most important species for human food. Most common legumes include peanuts (groundnuts), soybeans, peas, lentils, pigeon peas, chickpeas, mung beans, kidney beans (also known as common or dry beans), cowpeas, alfalfa (lucerne), clovers (*Trifolium* spp.), and vetches. Legume trees like the Locust trees (*Gleditsia*, *Robinia*) or the Kentucky coffee tree (*Gymnocladus dioicus*) can be used in permaculture food forests.

Gram (*Cicer arietinum* Linn)

The chickpea (*Cicer arietinum*) is a legume of the family Fabaceae, subfamily Faboideae. Its seeds are high in protein.

India accounts for 64% of chickpea production as of 2016, producing 7.1 million tons of chickpeas that year. Myanmar produces 0.6 tons, Pakistan and Turkey each produce half a ton, and Russia and Ethiopia produce 0.4 and 0.3 tons, respectively.

Origin:

Several varieties of chickpeas are grown across the world. ‘Desi chana’ most closely resembles the chickpeas found in archaeological digs and is grown mostly in Pakistan and India. It has small, dark seeds, and a rough coat. ‘Desi chana’ is the wild ancestor of *Cicer reticulatum* which are domesticated chickpeas. *Cicer reticulatum* is grown mostly in Turkey.

Chickpeas are one of the earliest cultivated legumes. Remains of chickpeas from the Middle East have been found that are roughly 7,500 years old. These remains were found in the aceramic levels of Jericho and Çayönü, Turkey, meaning that humans had been cultivating chickpeas since

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before they could produce pottery. Other samples have been found in Neolithic pottery in Hacilar, Turkey, and appear throughout history in Greece, France, and other areas of Europe.

They begin to appear in literature around 800 AD with Charlemagne's *Capitulare de villis*. In that text, Charlemagne describes how chickpeas were grown in each imperial demesne, or area of a manor controlled by a lord. Chickpeas are later mentioned by Albert Magnus in three different colors, and by Nicholas Culpeper as less "windy" then peas and more nourishing.

Chickpeas are also mentioned by a German writer in 1793 as a substitute for coffee. Germany would later use this knowledge and grow chickpeas for this purpose during World War 1. Chickpeas are occasionally used as a coffee substitute even today.

The name chickpea is derived from the French "chiche" and Latin "cicer," which is Latin for chickpea. The word chick-pea was first found in English print in 1338, which was later cited by mid-18th century dictionaries. In 1548, the *Oxford English Dictionary* noted, "*Cicer*" may be named in English Cich, or ciche pease, after the Frenche (sic) tongue.

It is likely that the legume became known as a chickpea after the French word "pois chiche." As it travelled across the English Channel, this became "chiche pease." The "s" sound then became mistaken for a pluralization, leading many to the conclusion that one "chiche pease" was a "chickpea." "Garbanzo" comes from the Spanish term for chickpea, a compound of "garau" meaning "seed," and "antzu" meaning "dry."

It is one of the earliest cultivated legumes: 7,500-year-old remains have been found in the Middle East. Other common names for the species include garbanzo bean, ceci bean, channa and Bengal gram. Chickpea distinguished by their seed size, shape and colour. Desi chickpeas, the smaller variety are wrinkled in appearance and may be brown, yellow, orange, black or green. These are usually sold dehulled or split. Kabuli chickpeas, known for their nutty flavour are round and white to cream in colour. There are three main kinds of chickpeas Desi, Bombay and kabuli.

Desi, which has small, darker seeds and a rough coat, cultivated mostly in the India and much of the Indian Subcontinent, as well as Ethiopia, Mexico, and Iran. Bombay (Bambai), which is also dark in colour but slightly larger in size than the Desi variety. They too are popular in the Indian Subcontinent. Kabuli, associated with Kabul in Afghanistan. These are lighter coloured, with

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larger seeds and a smoother coat, mainly grown in Southern Europe, Northern Africa, South America and Indian Subcontinent, having been introduced during the 18th century to India.

Morphology:

Gram is a small, much-branched annual herb, viscously hairy all over. Leaves are even-pinnate, alternate, stipulate; the rachis ending in a bristle or tendril or rarely with a terminal leaflet; leaflets elliptic-ovate, dentate. 6-8 mm long: stipules strongly veined, foliaceous, deeply toothed.

Flowers solitary axillary, small, bluish purple, on slender peduncle. Calyx oblique, gamosepalous, tubular, with 5 lanceolate teeth, longer than the tube. Corolla short, papilionaceous; standard petal largest, covering the wing petals and keel: Wing petals obliquely obovate, free: keel incurved. Stameus 9 + 1, Diadelphous, the vexillary one free; anthers uniform.

Ovary superior-sessile, 2-many ovuled on marginal placentas: style filiform, incurved, persistent, not bearded; stigma capitate. Pod oblong, turgid, sessile, 2-seeded, 2-2.5 cm long. Seeds obovate or subglobose, beaked, reddish brown, pale brown or often dark brown in colour. 0.5-0.8 cm long.

This is called the Desi or brown gram to distinguish it from the Kabuli or White gram with larger and pale coloured seeds, which according to some is a different species, viz. *C. kabulinum*. This has the seeds larger but the yield is poor.

Gram is important as a pulse but it is consumed much as sattu a powdered form of the parched seeds. Bason is the powder obtained by grinding the seeds and is also much used. Gram soaked in water is given to the cattle and especially to the horses to make them strong. The husks with broken particles of the seeds make the chunithat is also given to the cattle.

Gram is cultivated as a cold weather rabi crop. It is grown as a pure crop or as a mixed crop with wheat and other winter crop and as a catch crop in sugarcane fields. Like other leguminous plants nodular swellings are found on the roots of gram-plant harbouring bacteria that fix atmospheric nitrogen. For this reason gram is often cultivated as a rotation crop to increase the fertility of the soil.

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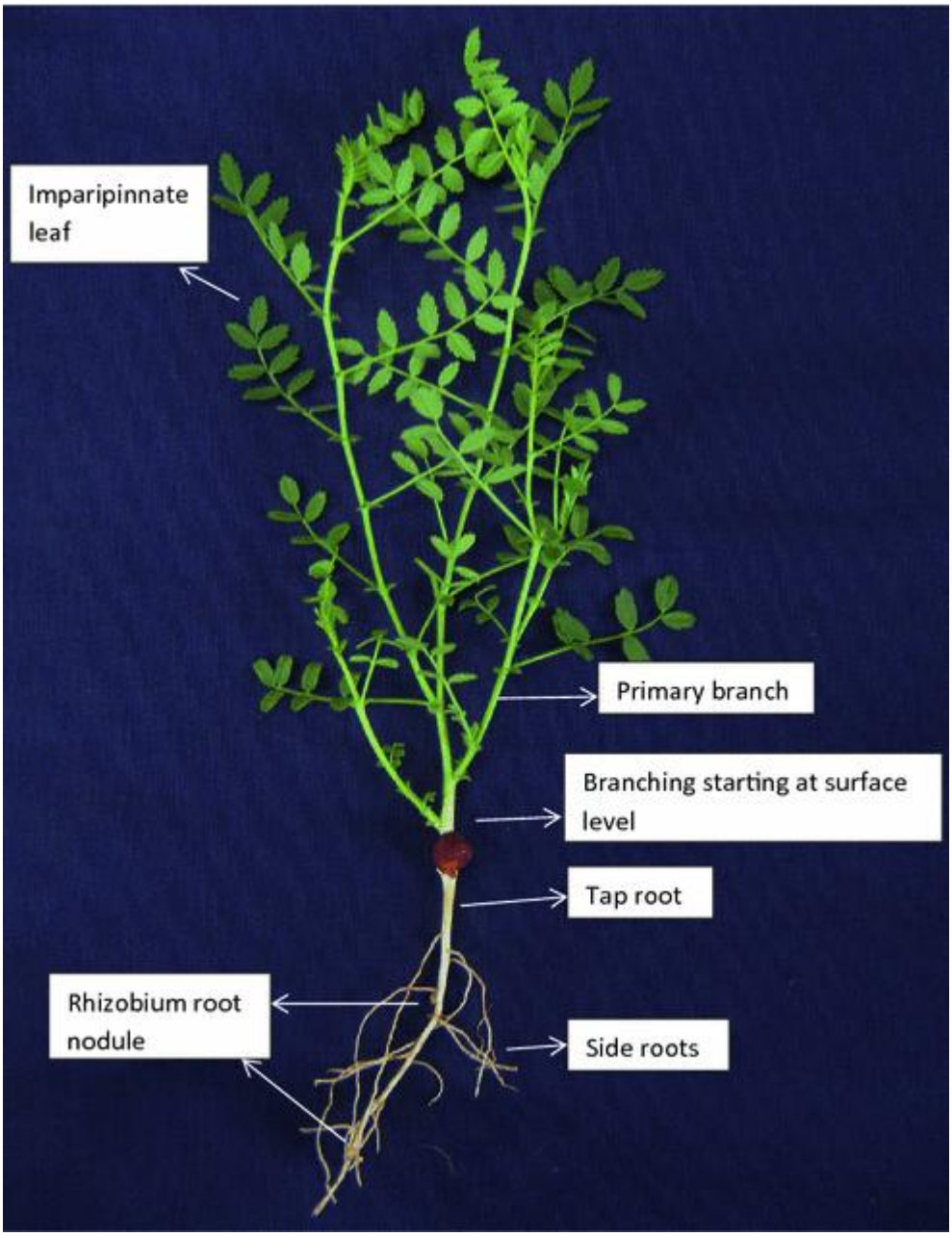

Light loamy soil is best for cultivation of gram. Black cotton soil and alluvial soil are also quite suitable. Soil should be well drained and there should not be any water-logging.

A cool dry climate is preferred. Seeds are sown by broadcasting or by drills in rows about 2.5 cm. apart. September - October is the sowing season but seeds can be sown till the month of January. Frost, hailstorm and excessive rain are harmful to gram-crop.

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The crop is ready for harvest in 4-6 months and when the plants start drying they are uprooted. Bundles of plants with the pods are taken to the threshing floor and the pods are threshed by beating with sticks or trampling under the feet of cattle, preferably of goats. The grains are then separated by winnowing. The yield of grain per acre is 400-600 kg per acre and in some good variety it is as high as 800 kg.

Irrigation is seldom necessary and usually no manure is applied. Sometimes organic manure is mixed with the soil before sowing. Gram blight and Rust disease are caused by *Meyosphaerella rabiel* Kov. and *Uromyces cicerisarietina* J & B.

These come from infected seeds and to use disease free seeds is the best means to get a crop unaffected by such diseases. Caterpillar and white ants also cause serious damage. Dusting DDT powder and spraying solution of the same make the plants free from the pests. In India 18M9 million acres of land are usually cultivated for gram every year and the annual yield is about 4.5 million tons.

The Uses of Chickpeas

Chickpeas are used for human consumption and for animal feed.

Chickpeas are rich in protein and energy, which makes them great for animal feed. Raw chickpeas have been shown to be a healthier alternative than similar legumes, such as peas. Research has shown that chickpeas have no adverse effects on livestock, allowing animals to grow and produce milk equally as well as soy or cereal.

For human consumption, chickpeas are nutrient dense, providing more than 20% daily value of protein, dietary fiber, folate, and minerals like iron and phosphorous. They also provide a moderate amount of zinc, thiamin, vitamin B6, and magnesium. Cooked chickpeas are high in amino acids.

When cooking chickpeas for human consumption, preparation typically involves 10 minutes of boiling followed by a long period of simmering. Dried chickpeas must be cooked for 1 to 2 hours, but this can be cut to half an hour with 12-24 hours of soaking.

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Chickpeas can also be consumed raw, most frequently being used in salad. Chickpeas are commonly used in hummus, which comes from the Arabic word for hummus. Hummus is prepared by cooking chickpeas, and then ground into a paste. Chickpeas might also be popped and eaten like popcorn, or ground into flour. Chickpeas and garbanzo beans are also commonly used in soups, stews, and chilis.

Source: Internet Archives.