

### 3. legumes

General account - with special reference to gram & soya beans

Introduction - legumes are greatly used as food, and are next to cereals. They are also used as green manures due to root nodules containing nitrogen fixing bacteria. They belong to family leguminosae. They are not only rich in protein but also in minerals & vitamins - B.

A legume fruit is a simple dry fruit that develops from a simple carpel & usually dehisces on two sides.

Legume is also called pod, fruit of plants in the pea family (Fabaceae). It is a group of plant food which aren't just for vegetarians. 12 Dec, 2018, most common varieties of legumes are beans. These include adzuki beans, black beans, soya beans, kidney beans etc. They contain low content of fat. 8 Nov - 2016 Food such as beans & lentils are known as legumes.

A legume is a plant in the family Fabaceae. The seed of such plant is called pulse. Legumes are grown agriculturally for human consumption, livestock forage & silage & as soil enhancing green manure. Well known legumes include alfalfa, clover, peas, chickpeas, lentils, lupin bean, carob, soya beans, peanuts etc.

## (10) Gram —

Also called chick pea, Vernacular name is Chana. The chick pea is native of Southern Europe (It was known to Egyptians, Hebrews & Greeks since very long time). It forms important food in many parts of Asia, Africa & Central America.

### Vernacular names —

English — Gram, Chick Pea,  
Sanskrit — Chanaka,  
Hindi — Chana, Buti,  
Bengal — Chola, etc.

Botanical name — Cicer arietinum, L.

### Systematic position —

Kingdom — Plantae  
Division — Angiosperms  
Class —  
Class — Dicotyledons  
Order — Leguminales  
Family — Fabaceae  
(Papilionaceae)

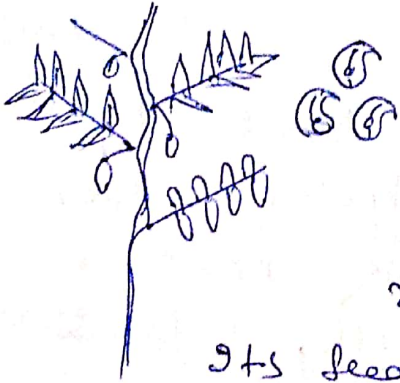
### Description —

- i/ Chick pea seeds are the high source of Protein. Plant is annual herb upto 0.5m etc
- ii/ leaves imparipinnately compound.
- iii/ leaflets small, lanceolate, hairy, margins serrate.
- iv/ Hairs of leaflets are glandular & secrete oxalic & malic acids.
- v/ Flowers are papilionaceous, solitary axillary, whitish pink or blue in colour.
- vi/ Pods inflated usually contain two seeds.



(2) Seeds are spherical & beaked

- vii Seed coats may be smooth or puckered & wrinkled, light brown or chocolate red in colour.
- viii cotyledons light to deep yellow in colour.



Habitat —

Anthropogenic (man made or disturbed habitats).

Chick Pea is the third most important pulse in the world.

Its seeds have been eaten by human since around 7,000 B.C. It is widely cultivated for its nutritious seeds, which are harvested when ~~not~~ immature & eaten raw, roasted & boiled & when mature & dry processed into flour.

Origin — The native home of gram is South-Western Asia mainly. Afghanistan & Persia. The Sanskrit name indicates that the crop has been under cultivation in India, than in any other country. The important gram producing countries are India, Pakistan, Ethiopia, Turkey. <sup>India</sup> The states where the gram is cultivated is Madhya Pradesh, Rajasthan, UP, Haryana, Bihar, Maharashtra & Punjab.

Cultivation — Gram (chickpea) is cultivated in tropical, sub tropical & warm temperate zones including the Mediterranean, the ~~cat~~ Canary Islands, Western & Central Asia & north eastern tropical Africa.

It is a rabi crop. cultivated in winter season.  
It is adapted in 2 Indian regions, with low to moderate rainfall & cool dry climate.

It prefers deep alluvial clay soil. The crop is sown in rough seed beds with aeration.  
The seeds are sown by broadcasting or by drill at a row spacing 30-45 cm. About 75-100 Kg seeds are required per hectare. The crop matures in February - ~~April~~ <sup>March</sup>, which is harvested & threshed manually when the stock is dry.

Gram is of two types -

a) Brown gram. (Desi)

Cicer arietinum - chr 2n = 14, 10  
seeds are small, yellow to dark brown

b) Kabuli or white gram

Cicer Kabulianum - chr 2n = 16.

seeds are larger, bold, attractive.

Improved Varieties - Several improved varieties -

UP - Type-1, Type-2, Type-3, M-468,  
K-850, Pant G-114, H-208, L  
H-335 etc

Punjab - Hare chhole #101, G-24, G-130,  
C-235, C-214, Pusa 209, etc

Kabuli gram varieties -

K-6, K-5, C-104, BR-65, BR-7)  
etc



(5)

(10)

Chemical (Nutritional Value) Per 100gm.

Protein	-	17.1 gm
Fat	-	5.3 gm.
Minerals	-	3.0 gm.
Fibres	-	3.9 gm
Carbohydrates	-	60.9 gm
Energy	-	38 Kcal.
Calcium	-	202 mg
Phosphorus	-	312 mg.
Iron	-	4.8
Vit-C	-	3 mg
Mg	-	119
Na	-	37.3 mg etc.

Uses -

- i) Gram is eaten as fried & boiled & salted & cooked as dal (soup)
- ii) Fresh green leaves are used as vegetable
- iii) used as Chhole eaten with Rice, bread & Bhaturo
- iv) Gram flour is used to make chapatis, Sweets & namkeens
- v) sprouted seeds are rich in vitaming 'C' & other nutrients are used in breakfast items & as salad.
- vi) The husk & bits are used as valuable cattle & horse feed
- vii) It is used as sizing material & adhesive in textile industry.

Soya Bean