

Botany of some useful plants—III.

By

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Vigna catiangu.

The cowpea (Tam. Karamani or Payaru) is an indigenous plant and has been under cultivation from remote times in most parts of India. It is grown either alone as a subordinate crop—as a second crop in rice fields—or more often as a mixed crop along with millets. Bunds round paddy fields are sometimes sown with cowpea. Many varieties are present differing in their habits, in the colour of flowers or in the size and colour of pods and seeds. The seeds are generally sown with the rains in July and the pods are gathered from October to December.

It is a low sub-erect herbaceous annual resembling in general appearance Phaseoli but differing from the latter in being glabrous. The leaves are pinnately trifoliolate with a distinctly grooved petiole and prominent stipules produced below the point of attachment. Stipels are present; the leaflets are ovate to cuneate-lanceolate in shape—the lateral ones being oblique—and entire.

The flowers which vary in colour from white to yellow or pink are borne in axillary racemes, clustered at the end of an elongated nodiform peduncle. Bracts and bracteoles are present. The calyx is bell shaped with the upper two teeth being more or less connate. The standard, wings and keel petals are of equal lengths; the standard is orbicular; the keel petals are as broad as the wings, free below but fused above. The stamens number 10 and are diadelphous, with uniform anthers. The ovary is sessile with many ovules and a filiform style profusely bearded on the inner surface, the stigma is glabrous. The pod is glabrous, elongated almost cylindrical with a slightly beaded appearance and many seeded.

The young pods are cooked and eaten as a vegetable. The ripe seeds are used as they are or made into flour just like dhal. The whole plant as well as the pods form a rich cattle food especially for mich cows. It is also used as a green manure.

Dolichos.

This genus is found in the tropics of both the hemispheres and includes 20 species of which six are indigenous to India. The horsegram and lablab beans come under this. The representa-

sives of this genus are twiners or prostrate or sub-erect herbs. The leaves are pinnately trifoliolate with small stipules and the leaflets are stipellate. The flowers are borne in axillary racemes, fasciated on a nodiform rachis. Striated bracts and bracteoles are present. The calyx is persistent campanulate and five toothed, the two upper being usually connate. The corolla is exserted, the petals being almost equal in length. The standard is orbicular and provided with two hard auricles at the base. Stamens are 10 in number and diadelphous with uniform anthers. The ovary is subsessile, many ovuled, with a thickened or filiform style bearded on the surface and round the terminal globose stigma. The pod is flat or inflated linear or broad, incurved with the remains of the persistent style. The seeds are thick and oblong.

Dolichos lablab var typicus.

The common lablab bean (Tam. Avarai) is largely cultivated throughout India mostly in gardens and round about dwellings. It is made to grow over pandals or roofings of houses. Innumerable varieties and forms are present exhibiting much variation in the colour of the flowers, fruits, seeds and sometimes in the whole vines. The size and shapes of the pods also vary in the different forms. The flowers show all gradations of colour from white to pink. The pods too exhibit variations in colour from whitish to green and violet; in some cases a mixture of all these colours are found. The pods may be short or long, flattened or inflated and broad or narrow. The seeds are sown in July-August and the plants continue to bear from November onwards for five to six months. Generally this plant is grown as an annual being removed during the hot months, but it is capable of continuing as a biennial or perennial. When grown like this, fruiting ceases during the hot weather, but resumes with the rains.

It is a herbaceous twiner the stem being covered with rough short hairs. The plant branches profusely and spreads far and wide producing a dense growth. The lateral leaflets are oblique while the terminal one is symmetrical, subacuminate, with three prominent veins from the base, herbaceous and pubescent. The keel petals are narrow, bent sharp, free at the base but united for the rest of the length. The stamens are ten in number of two lengths five of each sort. The ovary is flattened with a style thickened upwards and bearded. The pod contains usually 4 to 6

seeds and the ventral edges often present a corrugated appearance. Generally the seeds are arranged with their long axes parallel to the suture.

The pods are held in great esteem as a vegetable and used fresh in the preparation of a number of curries. Young pods are salted, steamed and dried in the sun to be used later on in the preparation of soups or to be fried in oil.

Dolichos lablab var lignosus.

This is a more robust variety known as Mochai in Tamil and is cultivated in fields as a subordinate crop. It is also grown alone as a fodder or smother crop or mixed with millets especially cholam. It is sown from June to August and fruits are gathered from October to March. It is a twining bushy perennial but an annual under cultivation. This plant does not spread so much as the variety typicus. There is a characteristic odour associated with the plant. The flowers are generally white. The pods are flat with 4 to 6 seeds. The seeds have their long axes at right angles to the suture. In other respects this resembles the former variety.

The seeds alone are used, the pericarp being very fibrous. They are boiled, spiced and eaten as such or mixed with curries. The mature seeds are soaked overnight in water and when they begin to germinate they are sundried and stored for future use. The pods are used as cattlefood also.

Dolichos biflorus.

The horsegram (Tamil Kollu) is grown throughout the year especially in the Madras Presidency and hence it is sometimes called as the Madras gram. It is found throughout the tropics of the Old World. It thrives on very poor soil and requires only a small amount of rainfall. It is often grown as the first crop in newly reclaimed lands. It is generally cultivated in fields by itself and can be sown at any time and in any soil but the usual practice is to sow it in November and harvest in March.

It is a low densely branched herbaceous annual with long trailing branches. The stem is round and hoary; the leaves are tri-foliolate and the stipules are lanceolate 6 to 9 mm. long. The leaflets are ovate (the lateral leaflets being slightly oblique) and densely covered with long hairs. The flowers are yellow and formed in axillary fascicles. The keel petals are as long as the wings but broader and slightly free at the base. The stamens

are of two lengths, 5 of each kind with oblong anthers. The ovary is sessile and covered with hairs; the style is slightly bent with a slightly swollen dark green stigma. The pods are flattened, falcate, softly hairy, 2 inches long and $\frac{1}{3}$ of an inch broad with 5 to 6 seeds. The seeds are kidney shaped, reddish brown to black and often with a mottled appearance.

It is cultivated both for its seed and as a fodder crop for horses and cattle. It is also raised as a green manure or smother crop. The seeds and the flour made from them are used in the preparation of many articles of food. The seeds are often boiled with water used for drinking purposes especially in the cold season. The pulse is boiled and given to horses. Soups and porridges are also made with this. Medicinally also the seeds are valued.

Cajanus Indicus.

It is known as cadjan or pigeon pea (Tamil: Thovarai, Hindi: Dal) and is supposed to be a native of Africa where it grows wild but has been in cultivation in India from as early as 1686. The common varieties are (1) *Cajanus indicus* var. *flavus*, where the standard is wholly yellow, with 2 or 3 seeds in pods which are never spotted and (2) *Cajanus indicus* var. *bicolor* in which the standard has red veins, the pods are streaked and contain 3 to 5 seeds. The former is a 3 months crop and is comparatively less robust. The latter is really perennial but is kept in the field only for 9 months and is profusely branching and robust. There is yet a third variety which assumes the size of a bush and is commonly met with in gardens in Bangalore and Mysore as a hedge plant. *Cajanus indicus* is grown throughout India more extensively in Bombay, United Provinces and Central Provinces. In Madras it is commonly cultivated in Salem, North Arcot, South Arcot, Madura, Tinnevely, Bellary, Ganjam and Coimbatore. It is grown either as a pure or mixed crop. The var. *bicolor* is sown in June and harvested in February. It is a hardy plant and thrives even in seasons of drought. It grows best in red clayey loam.

It is a branching annual undershrub, growing to a height of 3 to 5 feet. There is a deep tap root reaching to a length of $1\frac{1}{2}$ to 2 feet with a number of lateral branches. The stem is round at the base with 5 to 6 raised whitish ridges running down the lengths of the branches from the leaf bases. The branches and the stem are finely pubescent woody and fibrous. The leaves are

pinnately trifoliolate, stipulate. the stipules being small and lanceolate, petiolate, the petioles being ridged and pulvinate. Leaflets are stipellate, elliptic, entire, acute, 5 to 7 cms. by 2 to 3 cms., densely clothed with soft hairs, velvety to touch and with a number of yellow glands distributed on both the surfaces but more on the lower.

The flowers are in axillary and terminal racemose fascicles, bracteate and ebracteolate with orange coloured corolla. The calyx is gamosepalous, persistent, green with 5 lobes, the posterior two being connate. The standard is suborbicular and short clawed; the wings are as long as the standard and spurred; keels are of a light greenish yellow colour, free at the base and apex and united in the middle and as large as the wings. The stamens are diadelphous, 9 plus 1, of two heights, 5 short and 5 long and curved with yellow anthers. The ovary is flattened with a bent style and capitate stigma. The pod is 3 to 4 seeded constricted between the seeds. In one variety irregular coloured markings, giving a mottled appearance, are present on the surface of the pod. The seeds are round and flattened with yellow or orange coloured kernels.

Next to rice or wheat it forms the most important constituent of the Hindu diet. The seed is cooked as it is or made into a flour and consumed. The tender green pods are sometimes used as a vegetable; the split peas are employed in the preparation of sweets and pungent delicacies. The leaves and the prunings of young shoots are given to cattle. The husk of the seed with the attached bits of kernel forms favourite food of milch cows. They are used for making charcoal for gunpowder. The seeds are soaked and mixed with wet red earth and kept in this condition for a length of time. Later they are dried and then split. This treatment improves the keeping and cooking qualities of this pulse.