

## COLEUS

*Coleus forskohlii* Syn: *Coleus barbatus* Brig.,

It belongs to the family Lamiaceae, is one of the most significant potential medicinal crops of the future as its pharmaceutical properties have been discovered only recently. The tuberous roots are found to be rich source of forskolin (syn.Coleonol) which is being developed as a drug for hypertension, glaucoma, asthma, congestive heart failures and certain types of cancers. The plant is well known throughout the country. In Egypt and Africa the leaves of *C.barbatus* are used as an expectorant, emmenagogue and diuretic while its foliage is employed in treating intestinal disorders, and it has been used as a condiment in India for a long time. The tuberous roots of this plant resembling a carrot in shape and brown in color are the commercial parts.

### Orgin and Distribution

The crop has been distributed all over the tropical and subtropical regions of India, Pakistan, Srilanka, Brazil and Ethiopia. In India, it is found to be in the subtropical Himalayan regions from Kumaon to Nepal, Bihar and the Decan Plateau of Southern India. It is cultivated in parts of Rajashan, Maharashtra, Karnataka and Tamilnadu in an area of about 2500ha.

### Description of the plant

*Coleus barbatus* ( $2n = 30$ ) is an aromatic perennial plant 0.5 m tall with thick tubers and with very showy bluish to pale lavender coloured flowers, arranged in whorls on a long spike like recemes. The entire plant is aromatic (whether fresh or dried).The leaves and tubers have quite different odours, the latter being reminiscent of but quite different from, ginger.



Members of the genus *Coleus*, have square stems, branched, the nodes are often hairy. The leaves are usually pubescent, narrowed into petioles. The flowers borne on racemes are perfect; the calyx is finely toothed and deflexed in the front. The pale-blue corolla is bilabiate, the lower lobes are elongated and concave. The ovary is four parted and the stigma is bilobed. *Coleus* flowers are cross-pollinated by means of wind or insects. The species has four didynamous, with declinate stamens where filaments unite as a sheath at the base. The roots are tuberous, fasciculated, up to 20 cm long and 0.5-2.5 cm thick, they are conical, fusiform, straight, orangish and strongly aromatic.

## **Varieties**

**1. Manganiperu:** It is cultivated in and around Belgaum districts of Karnataka. The tubers are big, 30.00cm length. It is also commercially cultivated in Tamil Nadu.

**2. Garmai:** It is cultivated in Gujarat state. The tubers are in medium size.

## **3. Maimul**

## **Soil**

It thrives best in porous and well-drained soils with a pH ranging from 5.5-7. It does not require very fertile soils and can be grown on soils with marginal fertility. The red, sandy loam soils of Karnataka are ideal for the cultivation of the crop.

## **Climate**

Coleus is a crop of the tropics and is found growing well on barren hills at an attitude of about 2400 m, under tropical conditions. In India it is grown mainly in Belgaum and in Gujarat. The climate here is humid with RH ranging from 83 to 95% and a temperature of 10 -25C. The annual rainfall is 100-160cm, mainly between June to September. It is also found to perform well in less humid and warmer regions of South India like Coimbatore, where it is grown as an irrigated crop.

## **Seed and seed rate**

The crop is propagated through terminal cuttings (10 cm) or rooted cuttings.

## **Season**

Planting is done during June – July.

## **Planting**

Planting is done at 60 x 45 cm spacing (37,030 plants/ha). In low fertile soils, planting is done at 60 x 30 cm which requires 55, 500 plants/ha.



Before planting the field is ploughed deep soon after the pre monsoon showers and brought to a fine tilth.

### **Manures and fertilizers**

Studies conducted at TNAU, Coimbatore, to standardize the nutritional requirement of this crop have shown that it response well to the application of FYM 15t/ha, 30kg N, 60kg P<sub>2</sub>O<sub>5</sub> and 50kg K<sub>2</sub>O/ha and dry (3.982t/ha) tuber yield from this crop. Half the dose of N, the whole P and whole K may be applied as the basal dose followed by the remaining half N, 30 days after planting as top-dressing. Apply 10 kg ZnSo<sub>4</sub>/ha to avoid micronutrient deficiency.

### **Irrigation**

The first irrigation is given immediately after transplanting, if there are no rains. During the first 2 weeks after planting, the crop is irrigated once in 3 days and thereafter weekly irrigation is enough to obtain good growth and yield.

### **Weeding**

Due to the frequent irrigations during the initial stages, there is a lot of competition from weeds. In order to obtain economic yields, frequent weeding during the early growth period is desirable.

### **Pest and diseases**

#### **Pests**

The leaf –eating caterpillars, mealy bugs and root-knot nematodes are the important pests that attack this crop. These insects can be controlled by spraying the plants and drenching their roots with 0.1% methyl parathion, while nematodes can be controlled by the application of carbofuran granules @ 20kg/ha.

#### **Plant protection**

Among diseases, bacterial wilt is he major one.

#### **Nematode**

1. Crop rotation with Sorghum and Maize can be maintained
2. Planting of marigold along the sides of channels control nematode population
3. Apply 200 kg/ha of neem cake before planting
4. Apply 15 – 20 kg/ha of Carbofuran to control the infestation

#### **Root rot**

*Trichoderma viridi* @ 5 kg/ha is mixed with well rottened FYM and applied twice at 20 days interval.

### **Bacterial wilt**

Drench 300 ppm of Streptocycline to control the wilt. Also apply *Pseudomonas fluorescence* 5 kg/ha by mixing it with well rottened FYM.

### **Harvesting**

Flowers if any should be nipped off during the growing period to obtain more biomass of roots. The crop is ready for harvest 4.5 to 5 months after planting. The plants are loosen, uprooted, the tubers separated, cleaned and sun dried for the extraction of “forskolin”.



### **Yield**

Fresh tubers : 15 – 20 t/ha  
Dry tubers : 2000 – 2200 kg/ha

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1. Economic part of coleus is \_\_\_\_\_
2. Active ingredients present in coleus is \_\_\_\_\_
3. Propagation of coleus is \_\_\_\_\_
4. Coleus can be used as drug for \_\_\_\_\_
5. Mode of pollination in coleus is \_\_\_\_\_