

stalk borer and weevils (when in storage). Other important pests also include the cowpea aphid (*Aphis craccivora*), various leafhoppers, the Egyptian leafworm (*Spodoptera littoralis*), larvae of the African bollworm (*Heliothis armigera*) and cowpea leaf beetle (*Oothea mutabilis*).

Diseases reported are fusarium wilt, bacterial canker, southern stem blight, cowpea mosaic virus, Cercospora leaf spot, rust and powdery mildew. The root-knot nematode and damping-off can be a problem. Other diseases reported are brown blotch (*Colletotrichum capsici*), Septoria leaf spot (*Septoria vignae*), stem cancer (*Macrophomina phaseolina*) and bacterial blight (*Xanthomonas campestris*), scab (*Sphaceloma* sp.), brown rust (*Uromyces appendiculatus*) and web blight (*Rhizoctonia solani*).

Pests can be controlled by cultural practices like crop rotation. The use of specific pheromone lures, will confuse the males and keep them from mating with the females. It is important to get rid of infected leaves, branches, etc. as they might harbour eggs over winter.

Diseases can be controlled by using diseases-free seed by using hot water seed treatment at 50 °C for 25 to 30 minutes. Strictly follow time and temperature recommendations to minimise damage to seed germination and vigour. Hot water treatment can also eliminate fungal pathogens on the seeds. Chlorine can also be used effectively for seed treatment; use one part household bleach to 4 parts plus a half teaspoonful of surfactant (liquid soap) per 4,5 l of solution, agitate seed for one minute, then rinse in running water for 5 minutes. Dry the seed thoroughly. Spraying with a copper compound can be effective in controlling bacterial blight.

### Harvesting

Harvesting of young tender leaves for vegetables can be done as soon as 2 to 3 weeks from sowing. Cowpea leaves tend to be quite coarse when they are old. The seed are harvested when the pods started to dry but before they shatter.

### Uses

Leaves are eaten as a vegetable, either fresh or dried. Immature pods and dried seeds can also be used as vegetables. Entire plants may be used as livestock fodder.

### Acknowledgements

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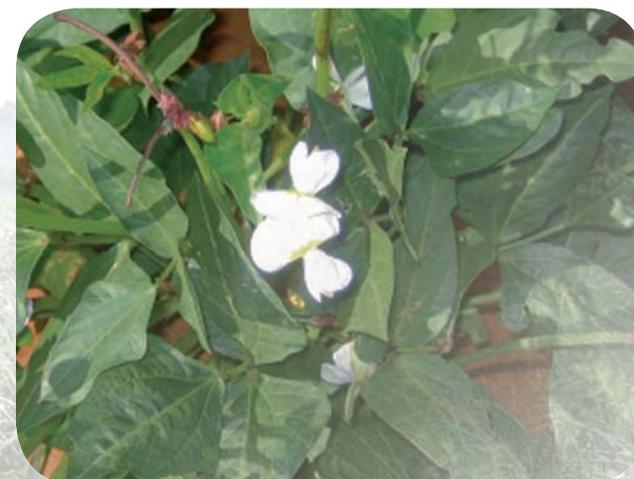
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Scientific name: *Vigna unguiculata*  
Common names: Cowpea, Dinawa, Dinaba,  
Munawa, Imbumba, koertjie



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REPUBLIC OF SOUTH AFRICA

## Origin and distribution

The origin of cowpea is not known, but it is believed to have originated from West Africa and South Africa. It is distributed from East and Central Africa to India, Asia, South and Central America.

## Production areas in South Africa

Cowpea is grown in the following provinces: Limpopo, Gauteng, Mpumalanga, North West and KwaZulu-Natal.

## Description

Cowpea is an annual summer leguminous plant with varying growth forms. It may be erect, trailing, climbing or bushy, usually indeterminate under favourable conditions.

### Roots

Cowpea has a strong taproot and many spreading lateral roots in topsoil.

### Leaves

The first pair of leaves is simple and opposite while the rest are arranged in an alternate pattern and are trifoliate (three leaflets). The leaves are usually dark green in colour. Cowpea leaves show considerable variation in size (6–16 x 4–11 cm) and shape (long, pointed to oval), depending on the variety. The leaf petiole is 5 cm to 25 cm long.

### Stems

Stems have fine lines, smooth or slightly hairy with some purple shades.

### Flowers

Flowers are borne in alternate pairs, usually with only two to few flowers per complete flower-head, including stems, stalks and flowers. They are conspicuous, self-pollinating, borne on short stalks like pedicels structures and the whorls of petals forming the inner envelopes of flowers may be white, dirty-yellow, pink, pale blue or purple in colour.

### Fruit

Seed colour varies from red, black, brown, green, white, spotted or blotched. The seeds are relatively large (0,2 to 1,6 cm long).

## Climate and soil requirements

### Temperature

Cowpea requires temperatures above 10 °C for germination, while optimal temperatures for growth and development range from 20 °C to 30 °C.

### Rainfall

Cowpea is tolerant to drought but sensitive to waterlogging and usually grown under a dryland system.

### Soil

Cowpea grows on a wide range of soils but shows a preference for sandy soils that are less restrictive to root growth. Cowpea can grow in a pH range of 5,6 to 6,5.

## Cultural practices

### Propagation

Cowpea is grown directly from seed.

### Planting

Preferably sow directly in the fields when the soil is wet. Plant manually, using two to three seeds per hill or use mechanical planter. The recommended spacing is 50 to 75 cm between rows and 50 to 70 cm between plants for spreading varieties and 50 cm between rows and 25 to 25 cm for erect and semi-erect varieties.

### Fertilisation

Cowpea makes its own nitrogen but needs phosphorus to grow well. Using a hoe, open a furrow and apply 40 g of superphosphate in the bottom of the furrow at the rate of 40 g/m or teacupful per 5 m row. When using chemical fertiliser, purchase a 2:3:2 NPK mixture and apply at the rate of 40 g/m or one teacupful per 5 m. After spreading

the fertiliser evenly in the furrow, use a stick to mix the fertiliser with the soil. Water the furrow and make the holes for the transplant

When using poultry or pig manure, use a 10-l bucket in a band of about 20 cm wide over a length of 15 m, work the manure into the topsoil, water the band thoroughly and wait one to two weeks before transplanting. When using kraal manure, follow the same procedure but use a 10-l bucket over a length of 5 m.

### Irrigation

Water requirements vary with the crop's growth stage, soil type and weather conditions (hot or cold). Cowpea tolerates drought, however, water it regularly if it is grown as a leafy vegetable. The frequency of irrigation depends on the soil type. Frequent irrigation will be required for sandy soils as these drain quickly and do not hold a great deal of water. Clay soils, on the other hand, drain quite slowly and hold more water than sandy soils. There are few 'rules of thumb' to use as a starting point for irrigation frequency and volume. First, sandy soil should be irrigated three times a week. Second, sandy loam should be irrigated twice a week. Third, clay, clay loam and loam soils should be irrigated once a week. Irrigate up to 4 l for a plot size of 1 m x 1 m (4 l/m<sup>2</sup>). Sprinkler and drip irrigation can be used to irrigate; however, water savings with drip are substantial and roughly half as much water can be just as effective as a sprinkler system. Excess water application leaches nutrients away from the roots of the plants, therefore careful planning of irrigation volume and frequency is required to prevent crop stress to help produce large, healthy cowpea plants.

### Weed control

Weed control can be manual or by presowing application of herbicides. Herbicide application is not recommended where leaves are used for consumption. *Striga gesnerioides* and *Alectra* spp. are the principal parasitic weeds attacking cowpea, particularly in the semi-arid regions.

### Pest and disease control

Insect pests attacking cowpea are Mexican bean beetle, bean leaf beetles, cowpea curculio, green stink bug, maize