



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

## Cowpea

### Scientific name(s)

*Vigna unguiculata* (formerly *Vigna sinensis*)

### Strengths

- Multi-purpose legume
- Improves soil fertility
- Easy to establish
- High nutritive value and high palatability
- Adapted to a wide range of soils.
- Drought tolerant.
- High yields in a short period of time.
- High seed production.

### Limitations

- Must have well-drained soil
- Susceptible to a number of pests and diseases
- Alternative host for pests/diseases of French beans

### Plant description

**Plant:** Forage cowpeas are herbaceous annual legumes, with spreading to fairly erect habit, growing 50 to 100 cm high.

**Stems:** Hollow, hairless; the main stem to about 1 cm thick; trailing and twining stems somewhat thinner.

**Leaves:** Comprise three hairless leaflets, with the terminal leaflet symmetrical, and the remaining pair more or less triangular to egg-shaped, about 10 cm long and 7 or 8 cm wide.

**Flowers:** Pale violet/mauve, about 2.5 cm across, borne in groups on stems over 30cm long.

**Pods:** Greyed orange when ripe, circular in section, 10 - 20 cm long, and 0.5 to 1 cm diameter.

**Seeds:** 'Ebony': black in colour, 8,000 seeds/kg; 'Red Caloona': greyed orange in colour, 15,000 seeds/kg; 'Meringa': greyed orange in colour, 9,000 seeds/kg

### Pasture type and use

Fast growing, annual legume suitable for grazing, hay/silage, grain, or green manure.

### Where it grows

#### Rainfall

Moderately drought tolerant, growing in areas with average annual rainfall down to 500 mm; best grown in areas with annual rainfall between 750-1,100 mm. They also grow in rainfall environments up to about 2,000 mm/yr, but incidence of fungal disease increases.

#### Soils

Adapted to a wide range of soils from sands to heavy, well-drained clays, with a preference for lighter soils that favour good root development. Commonly grown on heavy textured, strongly alkaline soils. Better adapted to strongly acid soils than lablab. Does not tolerate extended flooding or salinity.

## Temperature

Cowpeas are heat tolerant, but intolerant of frost.

## Establishment

### Companion species

Can be grown as an intercrop with forage sorghum, pearl millet or maize.

### Sowing/planting rates as single species

10 - 15 kg/ha of good quality seed under dryland conditions, and 20 - 25 kg/ha in irrigated areas and higher rainfall areas. Best sown 3 - 6 cm deep with good seed-soil contact into a well-prepared, fallowed seedbed with at least 75 cm of subsoil moisture. Row spacings of 30 - 50 cm, or 70 - 90 cm where inter-row cultivation is required for weed control.

### Sowing/planting rates in mixtures

Generally half above rates.

### Sowing time

Cowpeas can be sown when danger of frost is over, and when soil temperatures at sowing depth reach 18°C or more over 3 or 4 consecutive days. Earlier sowings usually produce the most feed.

### Inoculation

Group I/cowpea inoculum

### Fertiliser

Very fertile soils generally do not require any fertiliser, but on less fertile soils, may require 125 - 250 kg/ha of single superphosphate and 50 - 100 kg/ha muriate of potash, depending on soil analysis. Single superphosphate delivers sulphur as well. Molybdenum may be necessary on very acid soils, and zinc on soils with high pH.

## Management

### Maintenance fertiliser

Maintain soil phosphorus levels above 10 ppm bicarb. P. Also monitor levels of other nutrients using soil analysis. Apply molybdenum every 3 or 4 years, often necessary on more acid soils.

### Grazing/cutting

The ideal time to cut a cowpea crop for hay is at peak flowering, or about 70 - 90 days after sowing. When seasons are suitable and when sown relatively early, the best forage types will regrow after grazing. Grazing should be light to ensure that the plant frame is retained and damage is limited.

### Seed production

Grain or seed crops should be ready to harvest 120 - 150 days after sowing. Yields range from 100 - 1,000 kg/ha, but are generally in the order of 200 - 600 kg/ha. Drum speed of the header must be low (250 - 300 rpm) to avoid seed damage. Harvesting should be carried out before the crop is too dry in order to avoid damaging the seed.

### Ability to spread

Limited

### Weed potential

Minor. Regenerates in subsequent crops if allowed to set seed.

### Major pests

Cowpea is very susceptible to insect damage. Bean fly attacks seedlings in some areas, often causing death of plants. Heliothis, aphids, mirid bugs, green vegetable bug, flower thrips and lucerne seed web moth should be closely monitored during flowering and pod fill.

### Major diseases

Phytophthora stem rot is the major disease of cowpea and can devastate susceptible varieties under wet and water logged conditions. Plants yellow-off and begin to die-back in patches. 'Red Caloona' and 'Ebony PR' are the only varieties with any tolerance to the disease. Need at least a 4-year break before sowing cowpea again in an infected paddock. Other fungal diseases include fusarium wilt, powdery mildew, charcoal rot, and sclerotinia, as well as the bacterial disease, tan spot, and cowpea mosaic virus all cause problems in cowpea crops.

### **Herbicide susceptibility**

Cowpeas are highly sensitive to hormone herbicides and dicamba.

## **Animal production**

### **Feeding value**

High nutritive value: crude protein in green foliage 14 - 21%, in crop residues 6 - 8%, and in grain 18 - 26%; IVDMD of foliage >80%. IVDMD of residues after grain harvest 55 - 65%.

### **Palatability**

Very palatable

### **Production potential**

Not as productive as lablab. Produce 3 - 5 t hay/ha in 8 - 12 weeks; grain production 100 - 1,000 kg/ha in forage types.

### **Livestock disorders/toxicity**

None

## **Cultivars**

<b>Cultivar</b>	<b>Seed source/Information</b>
Ebony	Heritage Seeds QDPI&F
Meringa	NSW DPI
Red Caloona	QDPI&F

## **Further information**

Tropical Forages database (SoFT) - Cowpea  
DPI&F Qld  
DRDPIFR NT

## **Acknowledgements**

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## **Author and date**

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