

Foliar diseases

- Destroy diseased plant debris
- Use pathogen free seeds from healthy plants
- Seed treatment with Carbendazim or Thiram @2g/kg of seeds
- Spray Mancozeb (0.2%) or Carbendazim (0.2%) at fortnight interval



Anthracnose

Cercospora leaf spot



Rust

Septoria leaf spot

Viral diseases

- Plant resistant varieties wherever available
- Use disease free healthy seeds
- Crop rotation with non-legumes for 4-5 seasons
- Remove the infected plants at the first instance, weeds and alternate hosts



Cowpea aphid borne mosaic virus



Cowpea yellow mosaic virus

- Management of vectors through insecticide spray to prevent secondary infection
- Spray any one of the insecticides like Chlorpyrifos @0.1% or Metasystox @ 0.1% to control the vector.



Cowpea mosaic virus

Harvesting

Pluck the pods on maturity (100–105 days after sowing) once they turn brown

Storage

Dry the seeds to reduce the moisture level below 10–12%

Add finely grounded *Tirphal* / Boric acid powder @ 2 g / kg of seeds to reduce storage pest.

Quantities of input for 1 ha and 1000 square meter of cowpea

Inputs	1 hectare = 10000 square metre	1000 square metre
Seed rate	35-40 kg	3.5-4.0 kg
Rhizobium	375-500 grams	37.5 – 50.0 grams
Biocontrol agents	400g	40g
Carbendazim/ Thiram	80g	8g
Imdacloprid	175 gram	17.5 grams
Pendimethalin	2 liter	200 mL
Lime	1 tonne	100 kg
Rockphosphate	250 kg	25 kg

Urea	54 kg	5.4 kg
Single Super Phosphate	312 kg	31.2 kg
Muriate of Potash	83 kg	8.3 kg
Granubor	10 kg	1 kg
Quinalphos	1 liter	100 mL

Crop Calendar

No.	Operations	When to do	Days
1	Land preparation	0	0
2	Application of fertilizers	Before sowing	1
3	Seed treatment and sowing	At the time sowing	1
4	Watering	2-3 days after sowing if soil moisture is not enough and then 10 days interval	
5	Application of herbicide	3 rd day after sowing	3
6	Weeding	As and when required	15, 30
7	Flowering	Alsondo – 47 days NB-4 – 60-65 days DU-3 – 70days	
8	Spraying of pesticides	Dimethoate - 30 days Chlorpyrifos - 45 days Fungicides - 30 and 45 days	30, 45
9	Harvesting	Alsondo – 90 days NB-4 – 100 days DU-3 – 100 days	9 0 - 100

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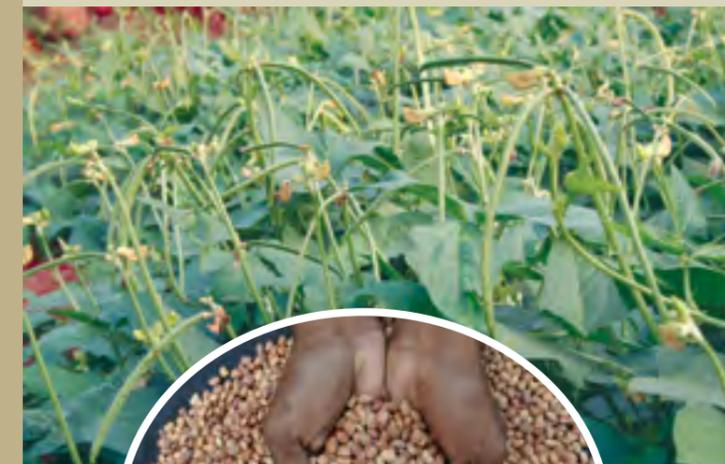
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COWPEA

(*Vigna unguiculata*)
(*Alsando*)



PRODUCTION GUIDELINES

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Introduction

Cowpea is one of the important pulse, vegetable, fodder and green manuring crops grown in different part of India and Goa. It is of considerable importance in dry land farming. There are numerous varieties of cowpea available but Goan cowpea (locally called *Alsando*) is unique. It is bold seeded type with a viny growth upto three meters producing higher biomass. It is fairly tolerant to drought situations and suits for residual moisture situation in rice fallows.

Soil and Land preparation

Cowpea can be grown on wide variety of soils like sandy loam, red loam, coarse gravel, heavy loam, hilly tracts of slopy land etc. It thrives well between 21°C to 35°C.

Prepare the land by ploughing at right moisture content using a tractor or power tiller drawn plough to get the required soil tilth during first fortnight of November.

Time of sowing

Sowing can be done between second fortnight of November (15th November) to first fortnight of December – (15th December) based on soil moisture.

Varieties recommended



Alsando-1- Determinate type



Goa Nadora (Nadora Bardez-4) - Indeterminate type



Dhulape Utorda-3 (Goa Cowpea-3) - Indeterminate type

Seed rate

Seed rate of different cowpea varieties is different. Normally, 35-40 kg *Alsando-1* is sufficient for sowing one ha.

Seed treatment

Treat the seeds with *Rhizobium* @ 10g/ kg of seeds.
Seed treatment for sucking pest - treat the seed with Imidacloprid 70 Water soluble (Trade name - Gaucho) @ 5g/kg seed

Spacing

Maintain row to row spacing of 45 cm; plant to plant spacing of 15 cm.
Dibble the seeds at 5 cm depth at a given spacing

Weed management

Spray Pendimethalin (Trade name – Stomp) @ 2 litres /500 litre water / ha on 3rd day after sowing
Hand weeding on 30 days after sowing to clean the field.

Water management

If adequate irrigation available irrigate the field at following intervals
1) Immediately after sowing, if enough soil moisture is not available
2) Irrigate at intervals of 7 to 10 days thereafter
3) If limited irrigation water is available irrigate at flowering and pod formation stages

Nutrient management

- Apply 25 kg N (54 kg urea): 50 kg P₂O₅ (312 kg SSP): 50 kg K₂O (83 kg MOP).

- Apply boron as Granubor @ 10 kg/ha at the time of planting
- Apply Rockphosphate @ 250 kg/ha at the time of sowing preferably in the planting lines in case of acidic or red soils.

Foliar spray of nutrients

Spray Di-ammonium phosphate (DAP) 20 g/litre water or urea 20 g/litre at flowering

Spray Granubor @ 2-3 g/Litre of water solution at the time of flowering

(Note: Do not remove the residues of cowpea crops after harvesting, plough it and mix it into the soil. This makes soil more fertile)

Insect management

A) Aphid management:



Spray chlorpyrifos (Trade name – Dursban) @ 2 ml / litre of water at 45 days after sowing

If the terminal buds are infested, spray Dimethoate (Trade name – Rogor) @ 2 ml / litre of water at 30 days after sowing

At pod formation stage spray Neem oil @ 50 ml / litre of water

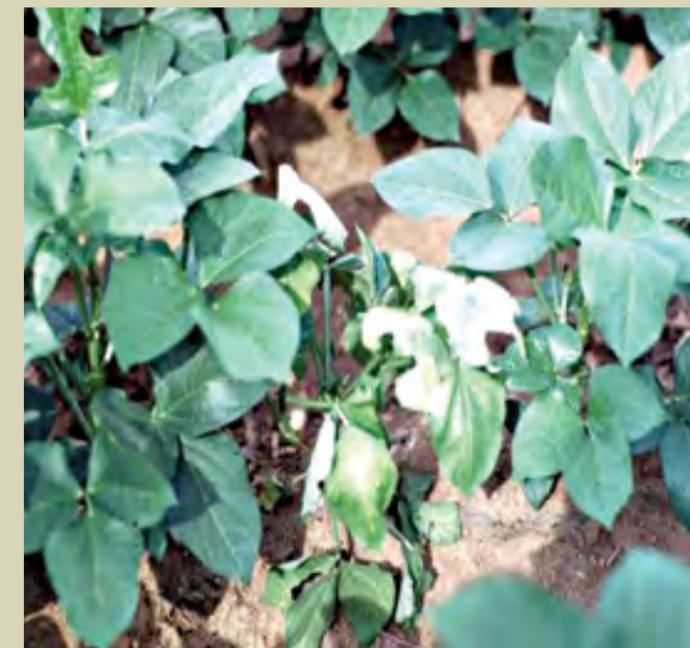
Fix yellow color sticky traps in the field. Aphids get attracted to yellow colour.

B) Pod borer management-

Spray quinalphos 25 EC (Trade name – Ekalux) @ 1000 ml/ha after noticing the incidence

Disease management

Seedling diseases and root rot



Damping off



Root Rot

- Crop rotation with non-host crops for 2-3 years
- Seed treatment with Carbendazim or Thirum @2g/kg of seeds
- Seed treatment with *Trichoderma* or other biocontrol agent @10g/ kg of seeds and soil application of biocontrol agents (2.5 kg/ha) along with organic manure.
- Use pathogen free certified seeds