

How to grow a good cowpea crop in Nigeria

COWPEA

Cowpea Production

The importance of cowpea

Cowpea is an important major staple food crop in sub-Saharan Africa, especially in Nigeria. The seeds form a major source of plant proteins, vitamins to man, and feed for animals. The young leaves and immature pods are eaten as vegetables.

The sale of cowpea seeds and fodder earns income to farmers. In Nigeria, farmers who cut and store cowpea fodder for sales at the peak of the dry season have been found to obtain as much as 25% of their annual income by this means. Cowpea also plays an important role in providing soil nitrogen to cereal crops (such as maize, millet and sorghum) grown after cowpea cropping.

In Nigeria, the greatest production of cowpea comes from the northern region. The north produces about 1.7 million tonnes from 4 million hectares. This represents over 60% of total production.

Constraints to cowpea production

In Nigeria, cowpea yield is very low. Grain yield ranges between 100 and 300 kg/ha. This is due to several constraints such as weather, parasitic weeds or insects, and diseases.

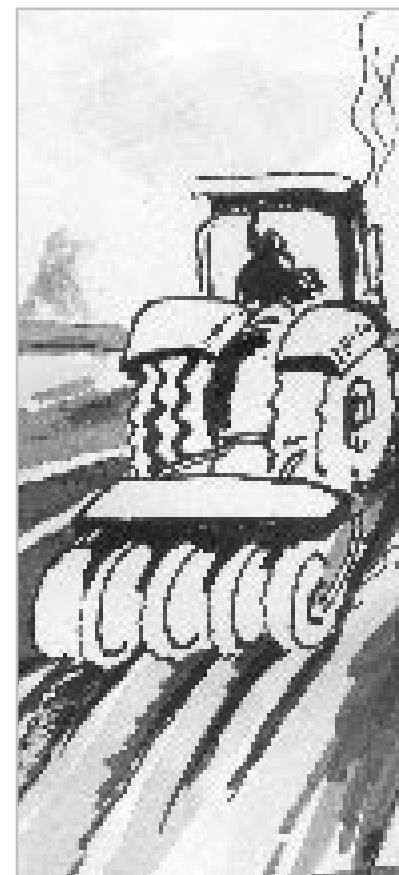
However, production can be improved through the use of improved pest-resistant and high-yielding varieties. Good land preparation, pest control, fertilizer application, harvesting and storage also help to improve production.

In addition, adequate and good distribution of rainfall especially from planting till mid-podding is very vital for high yield of cowpea.

Step 1a. Land preparation



Use well drained land. During land preparation, cut down and clear the existing fallow weeds, trees and shrubs on the site and clear manually, or slashed with a tractor.



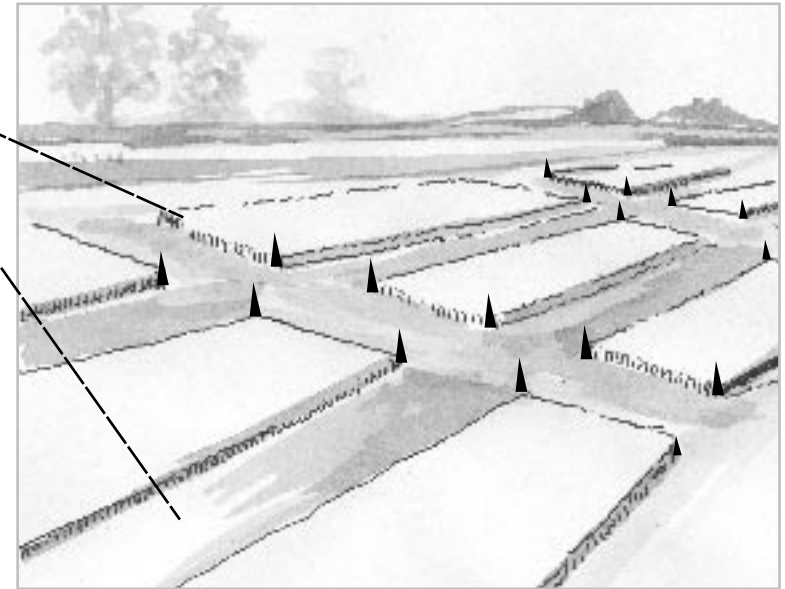
Allow six days between plowing and harrowing to enhance soil tilt for good seed germination and destruction of newly emerged weeds.

Step 1b. Land preparation

ridged land



flat seedbeds



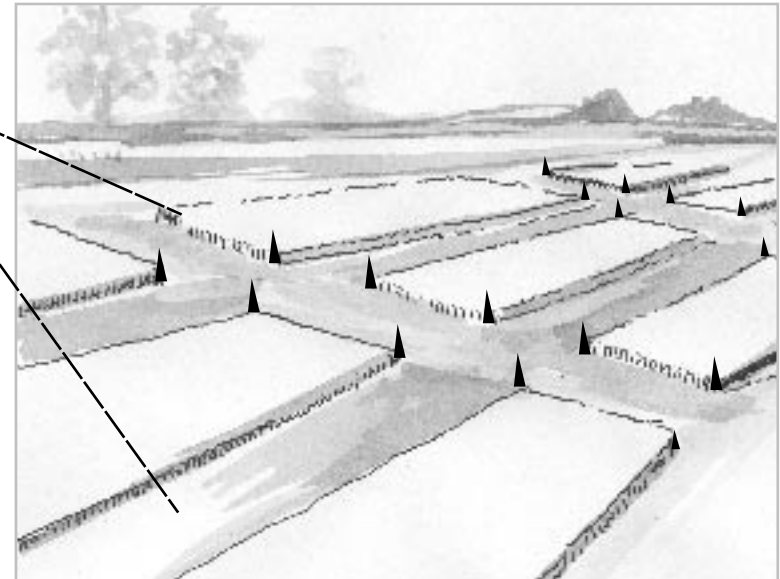
Form ridges on the land or leave as flat seedbeds after harrowing.

Step 2. Marking or plot layout

ridged land

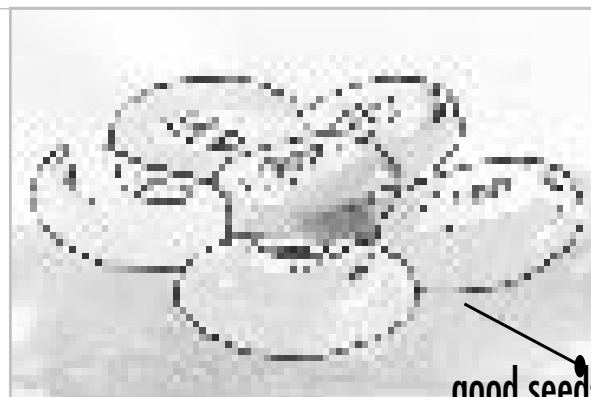


flat seedbeds

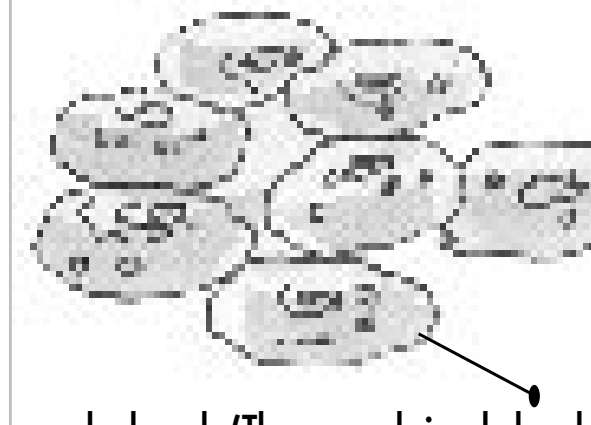
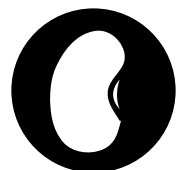


Mark the field into blocks of known areas after land preparation, with alleyways between blocks to enhance movement of materials and agronomic operations.

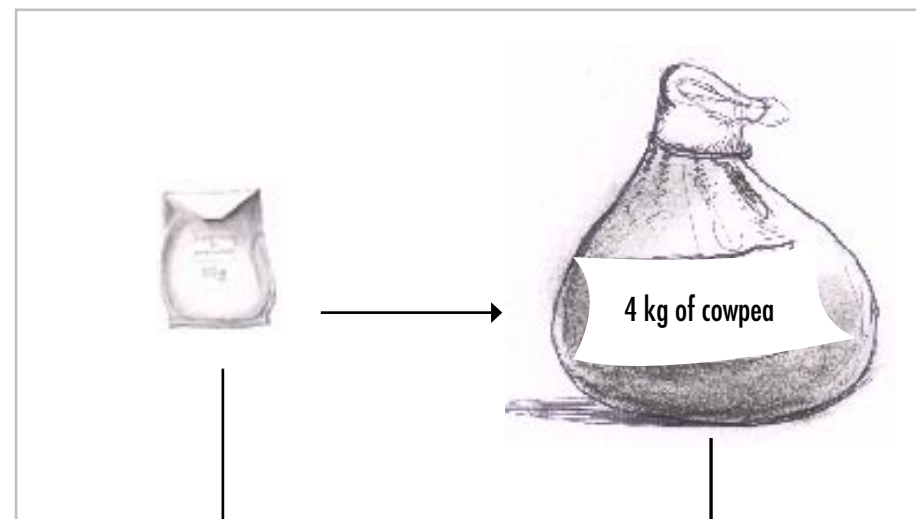
Step 3. Seed preparation for planting: *Sorting and seed treatment*



good seeds



bad seeds (These are shriveled and may also have insect exit holes or punctures)



10 g of Apron[®] Plus[®]

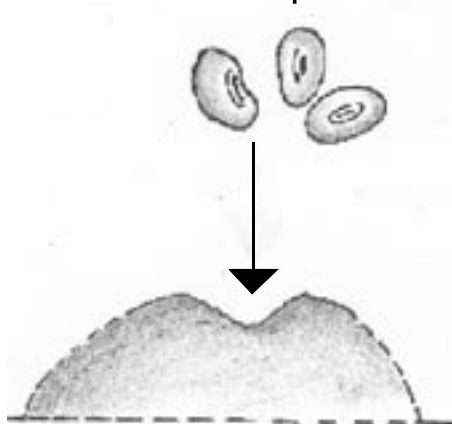
4 kg of cowpea

Select good seeds without damage holes or wrinkles for planting.

Treat the seeds with Apron Plus at the concentration of 10 g / 4 kg seed or one sachet per 4 kg seed to enhance good germination and protection of the seedling from insect and fungal infection soon after emergence.

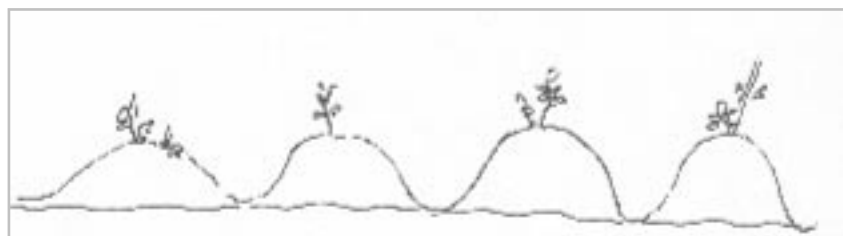
Step 4a. Planting

Three seeds are planted



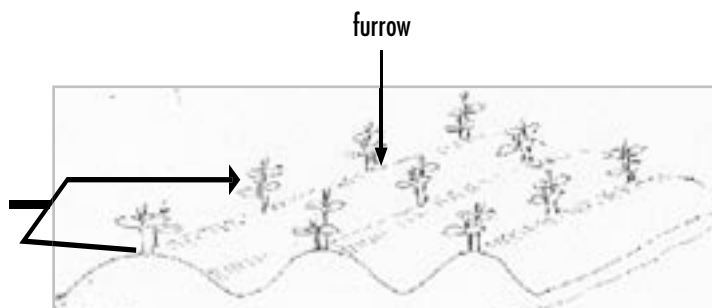
before thinning

after thinning



sign of bad emergence which may be due to poor seed viability or unsorted seed.

20 cm for erect varieties and 50 cm for creeping varieties



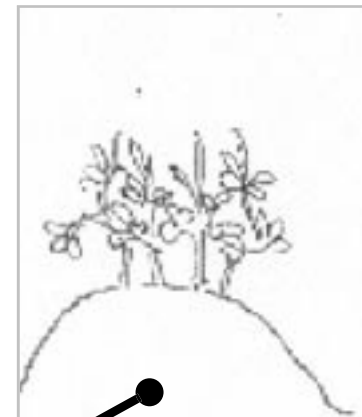
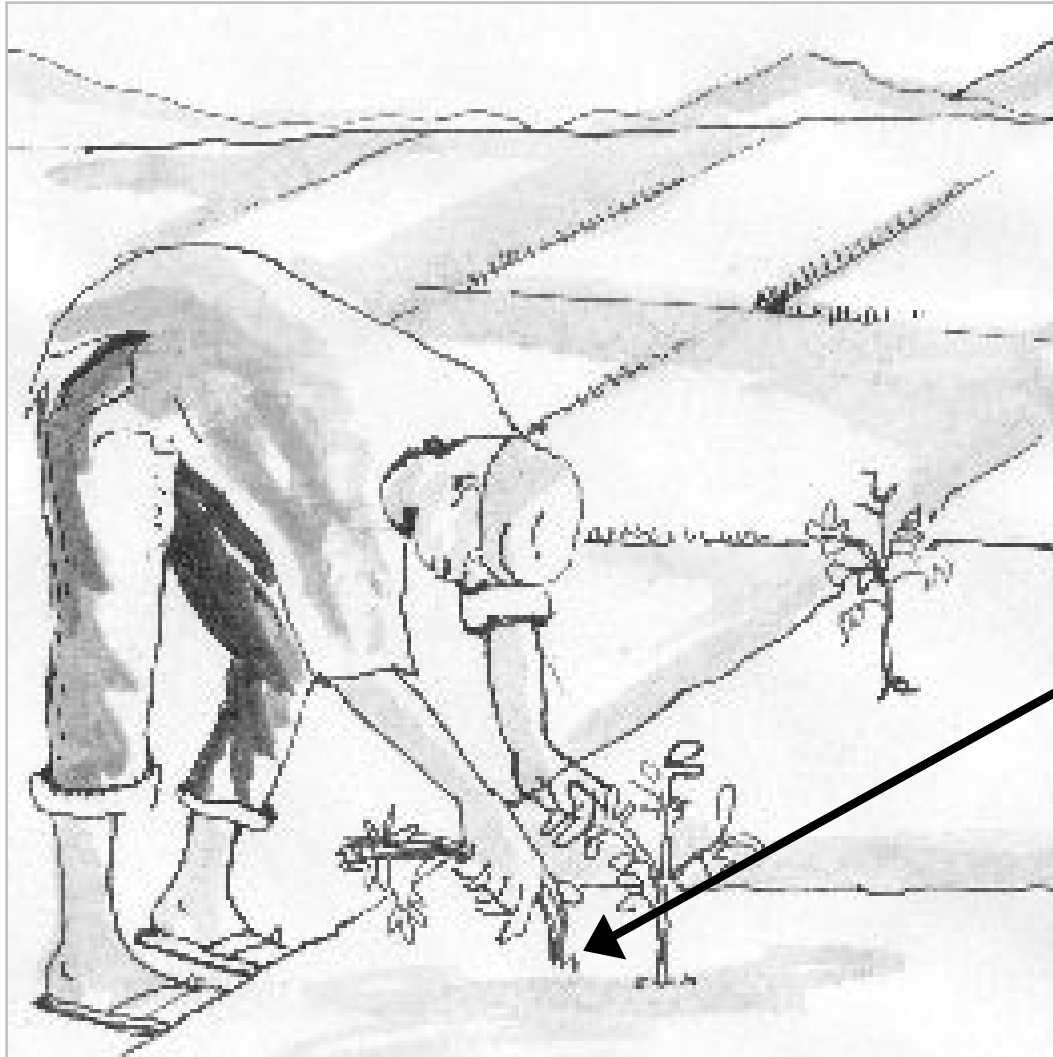
sign of good emergence

Commence planting of cowpea in June/July in the north, and first week of September in the south. Seeding rate ranges from 25–30 kg of good and viable seeds per hectare.

To reduce over-dependence on pesticides, plant insect pest and disease resistant and high-yielding varieties. Improved cowpea varieties resistant to various insects pests and diseases are available at the International Institute of Tropical Agriculture (IITA), Ibadan.

Plant three seeds at 20 cm along the ridge spaced 75 cm apart for erect/semi-erect varieties and (50 cm x 75 cm) for the spreading types. Thin this later to two seedlings per hill, one week after germination.

Step 4b. Thinning



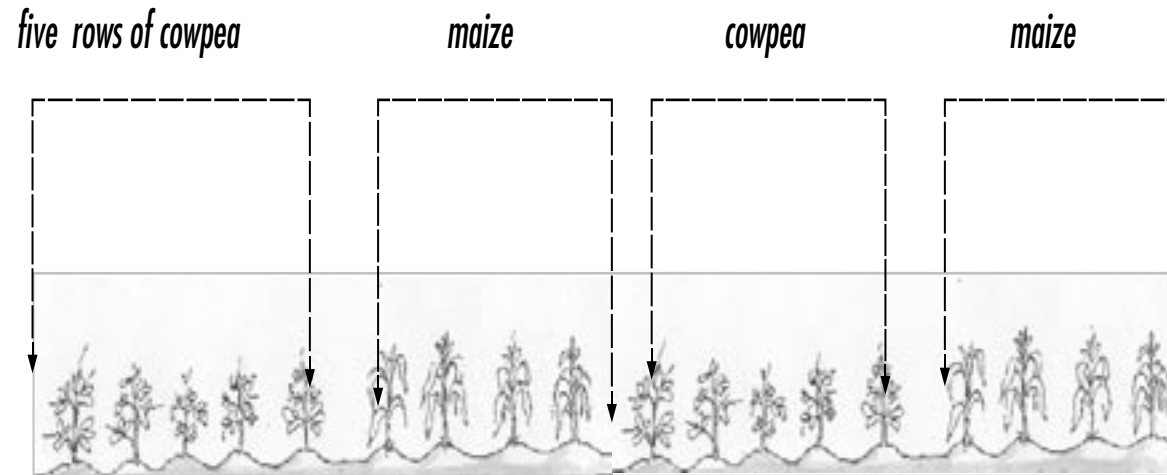
before thinning



after thinning

Step 5. Intercropping cowpea with cereals

cowpea intercropped with maize



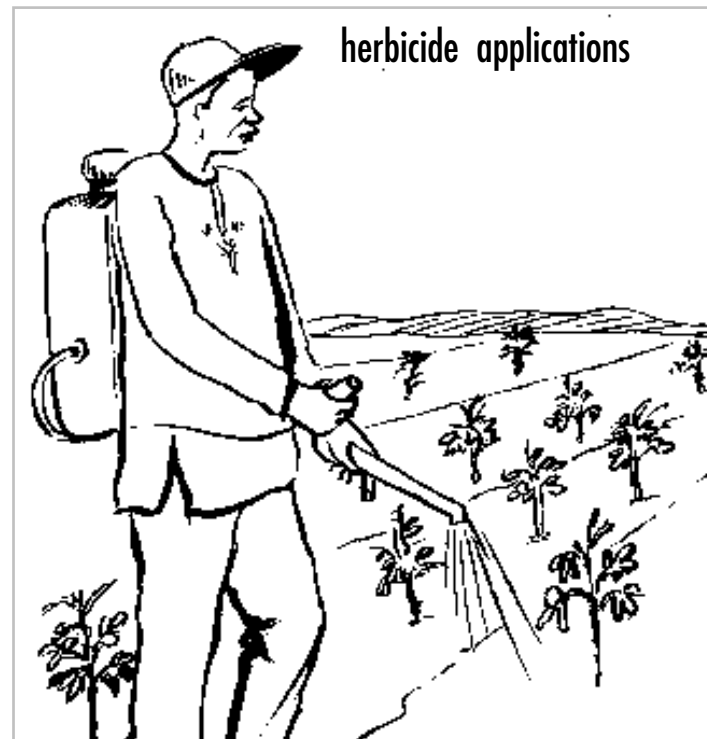
Cowpea may be planted alone or intercropped with maize, sorghum or millet. There are several intercropping patterns. Plant 5-7 rows of cowpea in-between 4-5 rows of millet or sorghum or maize. This allows the farmer to earn cash from both crops.

Step 6. Weed control

hoe-weeding or manual weeding

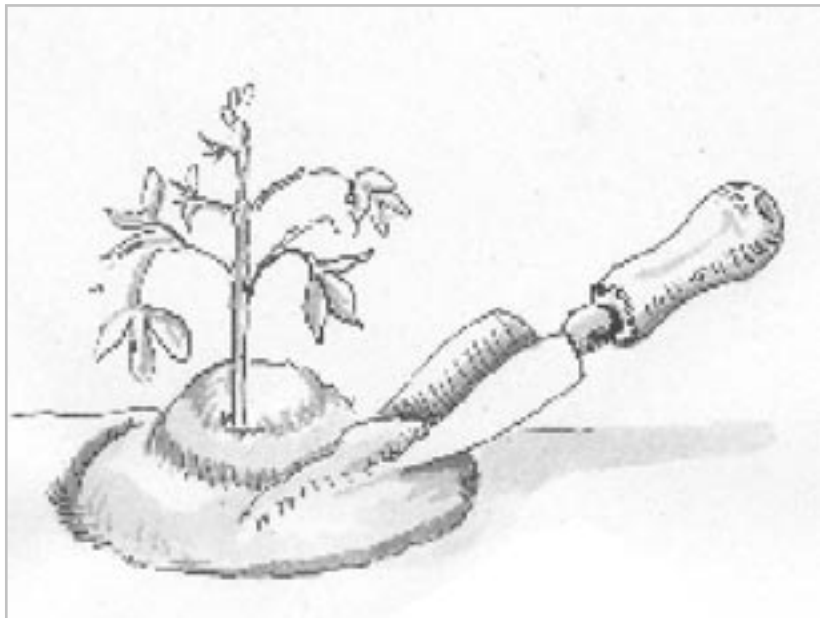


herbicide applications



To effectively control weeds in cowpea fields, carry out two sessions of hoe-weeding or herbicide application spaced at 3 weeks between each weeding. Recommended herbicides include Grammoxone (non-selective), Scepter and Fusilade (selective). Apply at 2.5-3 litres per hectare.

Step 7. Fertilizer application



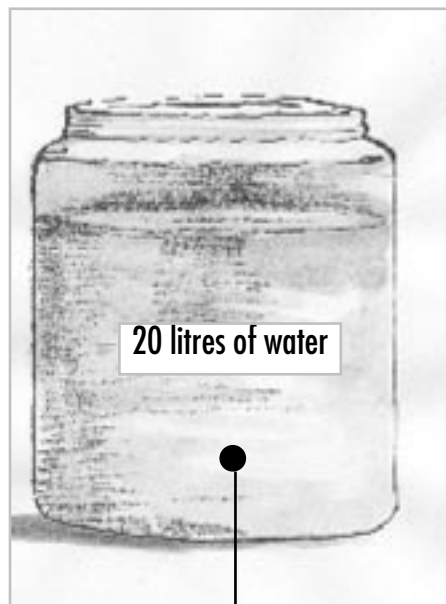
Apply organic fertilizer during land preparation or immediately after planting.



Collection of animal dung

Apply organic and inorganic fertilizers when nutrients are deficient in the soil. Cured animal dung can be applied. Phosphorus is often the most deficient nutrient. Therefore, apply an optimum application of Phosphorous fertilizer for good yield in cowpea. Apply single Super Phosphate fertilizer at the rate of 50-100 kg (1-2 bags) of single Super Phosphate per hectare depending on the level of Phosphorus deficiency. Nitrogen and Potassium fertilizers are needed only when there are obvious proofs of deficiencies. Apply micro-nutrients such as zinc, cobalt and boron, if available, to further boost the grain yield of cowpea. Cowpea generally fixes up to 80-90% of its nitrogen requirements.

Step 8. Insect control



80 ml of insecticide to 20 litres of water

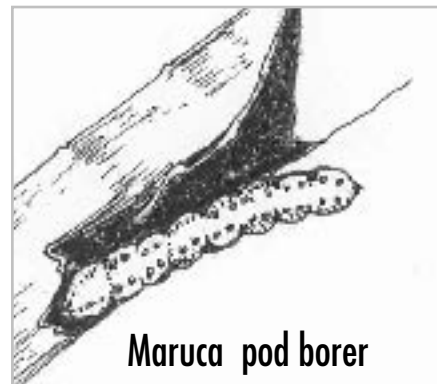
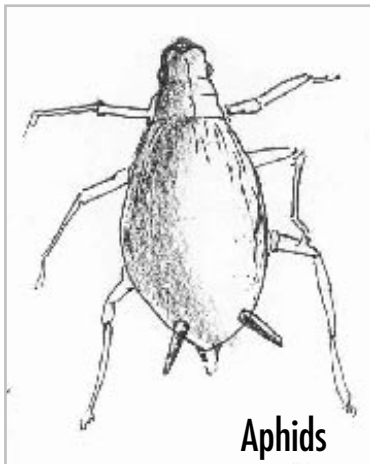
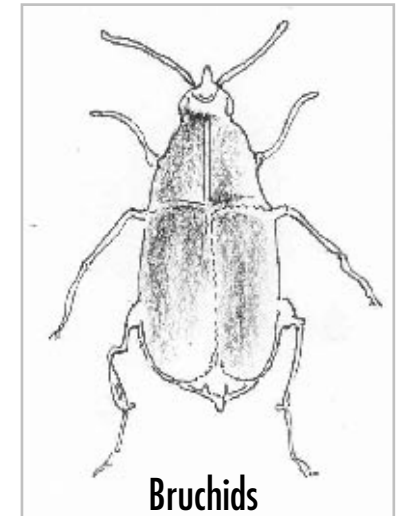
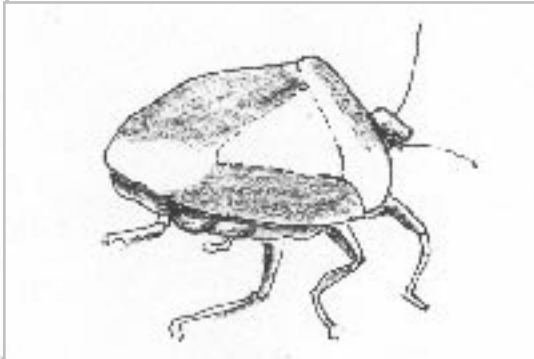
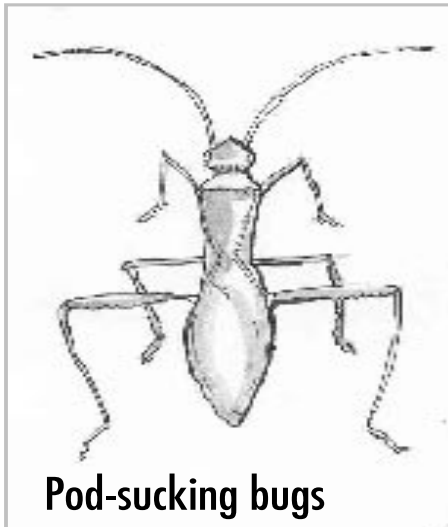


To achieve insect control, apply insecticides such as Karate EC, Thiodan or Sherpa Plus at 80 ml/20 Litres of water (i.e. 1 L/ha). To obtain good yield, spray once, 3 weeks after planting (seedling stage), and 2-3 times more during the flowering and podding stages depending on insect pressure.

Note: Insecticide use in insect pest control in cowpea

Insecticide	Formulation	Rate of Application (L/ha)	Rate of Application (ml/20litres of water)	Target insects
Sherpa Plus	280 EC	1.0	80	Beetles, aphids, thrips maruca, pod bugs
Decis	2.5 EC	0.5	40	Beetles, aphids, thrips maruca
Nuvacron	40 EC	0.5-0	40-80	Beetles, aphids, thrips, pod bugs
Perfekthion	40 EC	0.5-0	40-80	Beetles, aphids, thrips, pod bugs
Rogor	40 EC	0.5-0	40-80	Beetles, aphids, thrips, pod bugs
Thiodan/Thionex	35 EC	0	80	Beetles, aphids, thrips, pod bugs
Karate	EC	0	80	all
Cymbush super	Eelectrodyne formulation	0	-	all
Pirimor	50 WP	16g	1g	Aphids

Step 9. Five major insect pests of cowpea



Other common pests of cowpea

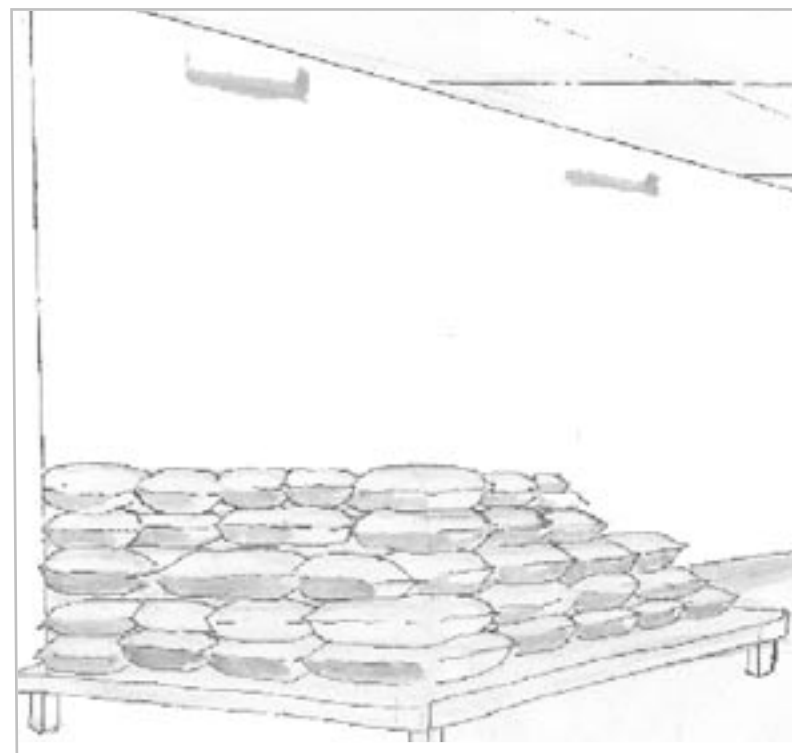
Diseases
Fungi
Scab, Septoria
Anthracnose
Stem rot
Fusarium wilt
Web blight
Rust
Viruses
Cowpea yellow mosaic virus (CYMV)
Cowpea golden mosaic
Bacteria
Bacteria blight (canker)
Nematodes
Root knot nematodes
Weeds

1. Apart from insect pests, other pests that limit the yield of cowpea include bacterial, fungal and viral diseases, nematodes and parasitic weeds.

2. The seriousness of these diseases vary with latitude, which is related to rainfall pattern. The important ones in the Guinea savanna include septoria, scab, brown blotch, bacteria blight and cercospora. Black spot cercosporal and macrophomina are important in the Sudan and Sahel Savannas.

3. To control these diseases, plant resistant varieties as well as utilize such cultural practices as land and crop rotations.

Step 10. Harvesting



Commence harvesting when pods are dry. Harvesting of cowpea in most cases coincides with the onset of the dry season when the dry pods can be left for about a week awaiting harvesting without spoilage. Do not leave dry pods on the field for more than two weeks after full pod maturity so as to avoid weathering or shattering.

After harvesting, pack harvested pods and convey them to an open hall for further drying to enhance threshing. Spread the pods on the ground or put in dryers.

Drying cowpea harvested during the rainy season could pose a lot of challenges to farmers if there are no good high-capacity dryers.

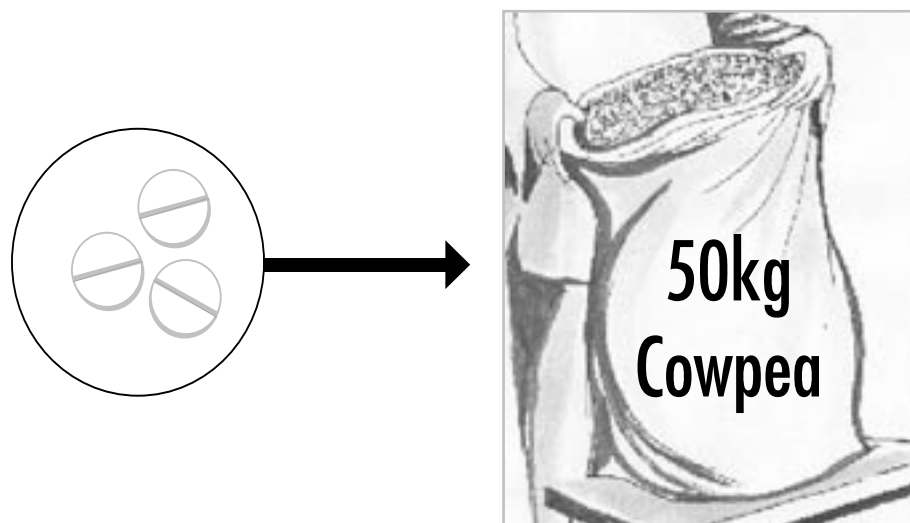
Step 11. Seed processing (threshing and winnowing)



Thresh the pods manually or use a threshing machine depending on the scale of production.

● manual threshing

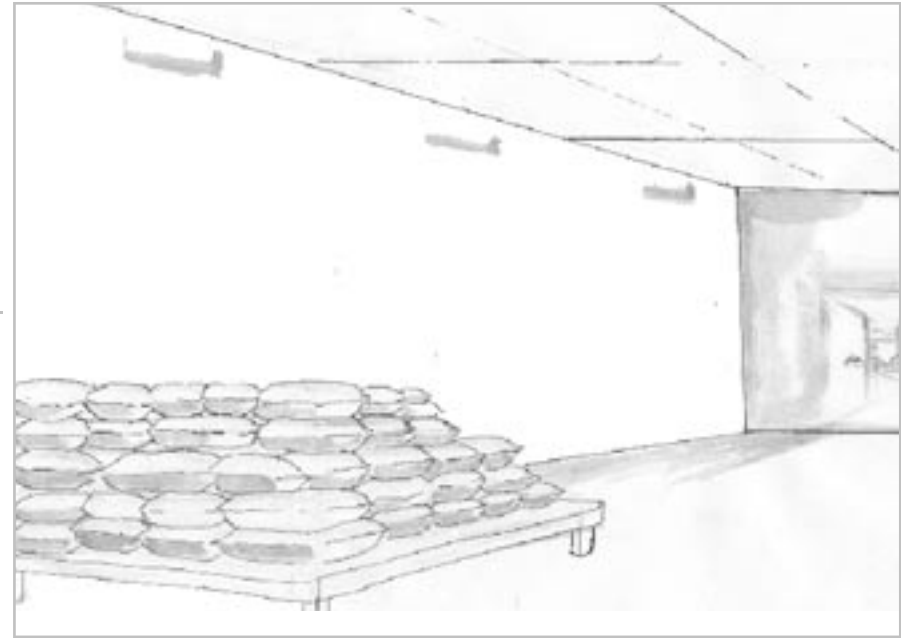
Step 12. Fumigation



Cowpea seeds are easily damaged by such field-to-store pests as bruchids. Therefore protect the seeds with fumigants such as Gastoxin and Aluminium phosphide.

Fumigate the dried seeds in airtight containers or drums with Gastoxin or Aluminium phosphide using 3-4 tablets per 50 kg seed. Do not fumigate within human dwelling area or living rooms.

Step 13. Storage



Store dry seeds in dry containers such as drums and sacks and store on wooden racks.