# Cowpea Production

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1. Introduction
Scientific Name: *Vigna unguiculata* L.

Family: Leguminoseae

Chromosome No.: 2n=22

Common Name: Bodi

It is also known as weed smothering crop. Cowpea is a low growing, semi-prostrate, twining, annual legumes.

2. Origin
Africa, introduced to other countries.

3. Area, Production and Distribution of Cowpea
Cowpea grown throughout the tropics and subtropics as a grain legume mainly for dry beans, green vegetables, forages and cover crop. Major area lies in Africa and few countries of Asia, America, Australia and Europe. Highest cowpea production nations are Nigeria, India, Brazil. Cowpea is grown across the world on an estimated 14.5 million ha of land planted each year and the total annual production is 6.2 million metric tons. Over the last three decades, global cowpea production grew at an average rate of 5%, with 3.5% annual growth in area and 1.5% growth in yield, and the area expansion accounting for 70% of the total growth during this period (Boukar et al., 2016).

In Nepal, Area of production of Cowpea: 6752ha, Production:9186ton, Productivity: 1.36ton/ha. (2073/74)

4. Importance of Cowpea
It can be used as pulse, fodder, green manure crop. Feeding value and forage value of cowpea is very high compared to other legumes. Crop gives heavy vegetative growth and covers ground very quickly thus it checks weed growth. It is an erosion resistant crop. It is an important alternate pulse crop on dryland areas. Cowpea seeds are highly nutritious with high protein (23-24%), carbohydrates, minerals and vitamins.
5. Soil and Climatic Requirements

• Soil:
Cowpea grown in wide range of soils from sands to clays. The primary soil requirement with good drainage and presence of nitrogen fixing bacteria. It can thrive well in acid soils pH 6.5-7.0. The crop is moderately susceptible to soil salinity.

• Climate:
It is a warm weather crop adopted to tropics and subtropics. It can tolerate heat and dry weather and grown at low rainfall of 300-400mm (drought resistant). Maximum yields obtained at day/night temperatures around 22°-27°C. It is a short-day plant sensitive to cold and killed by frost.

6. Varieties
Released variety of cowpea in Nepal:
For Terai and Inner Terai: Aakash, Prakash, Surya
For Terai, Inner Terai and Mid hill: Malpatan-1

7. Morphology, Growth, and Development

• Morphology:
Grow up to 15-80 cm high
Leaves - Alternate, trifoliate with petioles 5-25 cm long. The lateral leaflets are opposite and asymmetrical. Central leaflet is symmetrical.
Inflorescence - raceme
Flowers - White, cream, yellow, mauve or purple.
Pods -10-23 cm long with 10-15 seeds/pod.
Seeds - Variable in size and shape, square to oblong and variously colored, including white, brown, maroon, cream and green.

• Growth and Development
Vegetative Growth Stages
VE: Seedling emergence
VC: Two cotyledons & primary leaves at nodes 1 & 2
V1: 1st trifoliolate leaf unfolded at node 3
V2: 2nd trifoliolate leaf unfolded at node 4
V3: 3rd trifoliolate leaf unfolded at node 5
V4: 4th trifoliolate unfolded at node 6 + branching
Vn: nth trifoliolate leaf unfolded at node (n+2)

**Reproductive Growth Stages**
R1: One open flower on the plant (early bloom)
R2: 50–100% of flowers are open (full bloom)
R3: One pod at maximum length (early pod set)
R4: 50% of pods at maximum length (mid pod set)
R5: One pod with fully developed seeds (early seed fill)
R6: 50% of pods with fully developed seeds

**Physiological Maturity**
R7: One pod at mature color (physiological maturity)
RH: 80% of pods at mature color (harvest maturity)

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**8. Manure and Fertilizer Management**
Application of 15-20 kg N/ha is found optimum. Application of higher doses of nitrogen may reduce nodule number and nodule growth and adversely affect the nitrogen fixation capacity. In Nepal, under sole-cropping the recommended doses of N,P,K is 20:40:20 kg/ha.

**Bio-fertilizers:** Rhizobium inoculation also influences growth and yield of cowpea. Treat the cowpea seed with appropriate Rhizobium strain at initial stages, increases soil nitrogen availability, organic matter content, moisture status of soil determines the response to nitrogen applied through fertilizers.

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**9. Land Preparation**
Land preparation is obtained by the land prepared for the main crop in case of intercropping. While in case of sloe crop deep ploughing by M.B plough to a depth of 20-30 cm that is followed by harrowing to bring the land to fine tilth. In farrow planting minimum tillage (in light soil) is also equally good.

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**10. Seed Treatment**
Seeds should be treated with fungicides like thiram @ 2gm/kg of seed before sowing.
11. **Seed Rate**
Seed rate is 20-25kg/ha (for grain or vegetables purpose) and 60-80kg/ha for green manuring.

12. **Sowing Time**
Sowing is done in May/June for summer crop and March/April for spring season.

13. **Sowing Methods**
Sown in rows. Broadcasted for forage or cover or green manuring crop.

14. **Spacing**
Spacing for sole crop is,
5-10cm plant to plant and 40-70cm row to row for bush type cultivars.
30-50cm plant to plant and 100-120cm row to row for trailing type.
In intercropping with maize for local trailing type of cowpea the spacing is 50-60cm (within row) and 90-100 cm (between row).

15. **Cropping systems:**
**Inter-cropping:** -
- Sorghum + cowpea
- Maize + cowpea
- Pearl millet + cowpea
- Pigeon pea + cowpea

**Cropping sequences:** Rice-wheat – cowpea
- Pigeon pea-wheat – cowpea
- Sorghum + pigeon pea – cowpea
- Cowpea-wheat – Green gram
- Cowpea-cotton – wheat

16. **Water or Irrigation and Weed Management**
- **Water Management:**
  1-2 irrigations may be required at critical moisture stress period. Moderate moisture stress is essential for timely inducement of reproductive phase. Critical stages for irrigation are-flowering and pod filling. Irrigation at 75% available soil moisture in top 30cm soil has been found beneficial to achieve higher yields.
• Weed Management
Weeding or intercultural operations should be done within 20-25 days after emergence. These operations involve weeding and inter-row cultivation, which is generally done manually with the help of light spade (khute). Cowpeas have good smothering effect on weeds plant and so they do not require weeding at later stages. Generally, no herbicides is used in Nepal.

17. Harvesting and Threshing
For indeterminate type of cowpea harvesting is done in 2-3 times (local cultivar). For determinate type (bushy type) crops should be harvested when the pods are yellowish brown in color and about 70-80% of pods are ripe.

The threshing is done by beating with sticks after drying. Then it is cleaned, sun dried (to moisture of 8-10%) and safely store in a air tight bin.

18. Yield
Fodder yield: 14t/ha
Grain yield: 3-4q/ha

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