

## Major Diseases of Cowpea and Their Management

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### Introduction

The cowpea (*Vigna unguiculata* L.) is an annual herbaceous legume (family Fabaceae) grown predominantly in Africa and is an important staple crop providing an affordable source of protein (Muranaka *et al.*, 2016). Among the cultivated crop plants, the cowpea is one of the most variable species in terms of its plant growth, morphology, maturity and grain types (Singh, 2014). As a legume crop, the cowpea fixes atmospheric nitrogen through symbiotic interactions with soil rhizobia (Sarr, Fujimoto and Yamakawa, 2015). The cowpea is highly nutritious and has potential health benefits because of its high protein, high fibre and low glycaemic index, (Aguilera *et al.*, 2013). Cowpea suffers from many diseases caused by fungi, bacteria, viruses, nematodes.

#### 1. Root rot or Damping-off diseases (*Rhizoctonia* sp., *Phythium* sp., *Fusarium* sp.)

Symptoms are discoloration of taproots, longitudinal cracks of the stems, stunting, wilting and poor yields. Seeds may rot before emergence from the soil and young seedlings may die. The condition is most common on early plantings or when soil contains a large amount of undecomposed plant residue. Damping-off diseases are favoured by cool, wet soil conditions.

#### Management

- Avoid planting in wet, cold soils.
- Soil application *P. fluorescens* or *T. viride*– 2.5 kg / ha + 50 kg of well decomposed FYM or sand.
- Spot drenching with Carbendazim @ 1 gm/ litre

#### 2. Cowpea wilt (*Fusarium oxysporum*)

*Fusarium* wilt usually causes the lower leaves on one side of the plant to turn yellow. Infected plants usually are stunted and wilted as the organism develops in the

food and water conducting tissues. Brick red tissue can be observed in the stem when it is split lengthwise.

### **Management**

- Use resistant varieties, if available
- Control root-knot nematodes since nematodes increase plant susceptibility to *Fusarium* wilt
- Treating high quality seed with fungicides labeled for cowpeas.
- Following a four to five year rotation with other crops.
- In addition to the cultural practices listed above, bury previous crop debris and the sclerotia, to control Southern blight at least 6 inch deep as far ahead of planting as possible.
- Spray any one of the systemic insecticide like Monocrotophos @0.1% to control the vector.
- When resistant varieties are not used, it is important that root-knot nematode control practices be followed since nematodes increase plant susceptibility to *Fusarium* wilt.

### **3. Southern blight (*Sclerotium rolfsii*)**

It attacks roots and stems of cowpeas. The first visible symptom of southern blight is a progressive, yellowing and wilting of the foliage beginning on the lower leaves. The plant dies within a few days after the rust symptoms appear. A brownish vascular discolouration inside the stem may extend several inches above the soil line. During warm, moist conditions, the coarse, white mycelium of the fungus makes characteristic fan-shaped patterns of growth on the stem at the soil line. In these white-mat of the fungus, numerous smooth, round, light-tan to dark-brown mustard seed-like bodies called sclerotia are formed.

### **Management**

- Practise good field sanitation.
- Practise crop rotation with non-legumes.
- Plough the soil deep.
- Spot drenching with Carbendazim @ 1 gm/ litre

### **4. Cowpea mosaic diseases**



These viruses produce a mosaic pattern on cowpeas. They may be found singularly or in combination with others. They cause irregular light and dark green mosaic patterns in the leaves. Some virus cause thickened, malformed leaves. The mosaic patterns are best observed on the younger foliage. Plants may be stunted and fail to produce normal pods. If the disease attacks plants at the early growth stage, no pods should be expected. The most common virus disease on cowpeas is cowpea aphid-borne mosaic potyvirus. It is transmitted by aphids.

### Management

- Plant resistant varieties, where available.
- Use healthy, disease-free seeds rather than saving seed from a crop that could be infected.
- Practice crop rotation with non-legumes (e.g. cereals).
- Remove alternative hosts of virus diseases (legumes).
- Spray any one of the systemic insecticide like Monocrotophos @0.1% to control the vector.

### References

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