


# SPROUT

The word "SPROUT" is written in a large, light gray, sans-serif font. The letter "Q" is replaced by a magnifying glass icon with two green leaves inside the lens.

Diseases and Pests

## **Disease of Chilli and Eggplant**

### **FUNGAL DISEASES:**

- **Fusarium wilt**
- **Powdery mildew**
- **Anthracnose**
- **Root rot**
- **Damping-off**
- **Leaf spot**

### **BACTERIAL DISEASES:**

- **Bacterial wilt**
- **Bacterial spot**

### **VIRAL DISEASES:**

- Tobacco mosaic virus
- Cucumber mosaic virus
- Tomato spotted wilt virus

# **DISEASES OF OKRA**

### **FUNGAL DISEASES:**

- **Fusarium wilt**
- **Powdery mildew**
- **Leaf spot**
- **Damping-off**

### **BACTERIAL DISEASES:**

- **Bacterial wilt**

### **VIRAL DISEASES:**

- **Okra Leaf Curl Virus**

# **CONDITIONS CONDUCTIVE TO INFECTION**

## **FUNGI AND BACTERIA**

**Favoured by high temperature and high humidity following periods of wind and rain**

## **VIRUS**

**Favoured by the population of its vector around the plants**

# FUNGAL DISEASE: FUSARIUM WILT

Fungi: *Fusarium oxysporum*

## Symptoms:

- 1) Yellowing of leaves at the edges and eventually spread to lamina
- 2) The leaves dry up and eventually wilt

The vascular system is blocked by fungal spore and cause water and nutrient stress and eventually wilting occur and followed by death



# POWDERY MILDEW

Fungi: *Erysiphe cichoracearum* and *Sphaerotheca fuliginea*

## Symptoms:

- 1) Blotches of small and white powdery coatings on surface of the leaves and sometimes on the stem.
- 2) The powders enlarge rapidly until it covers almost all the leaves surface
- 3) Eventually, the infected leaves turns yellow, then turns dry and brown.

The white powder is composed of spores of the fungi that can be blown by winds to the vicinity of the infected plants.



# ANTHRACNOSE

Fungi: *Colletotrichum* species

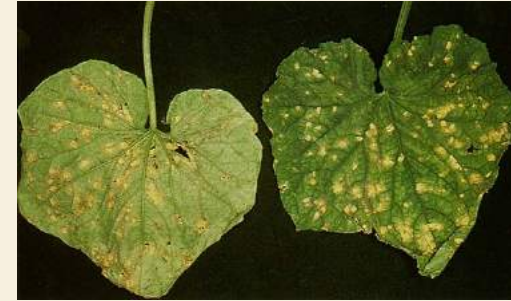
Symptoms:

- 1) Usually infects the fruits instead of the leaves
- 2) A small, water-soaked and circular spot
- 3) This spot increase in size
- 4) Over time, the centre of the lesion turn black
- 5) Infected fruits have a very short storage life



# LEAF SPOT

Fungi: *Cercospora* species



## Symptoms:

- 1) Usually affects older leaves first
- 2) Small, water-soaked circular spot which surrounded by dark brown margins
- 3) The centre of the spot eventually turns grey
- 4) The spots will spread upwards and infect younger leaves
- 5) Lastly, the leaves turn yellow to brown and slow



# BACTERIAL DISEASE: BACTERIAL WILT

Bacteria: *Ralstonia solanacearum*

Symptoms:

- 1) The upper leaves will wilt first followed by the lower leaves
- 2) No yellowing of leaves
- 3) The vascular browning will occur along the stem and into the large petioles of the leaves





# VIRAL DISEASES: MOSAIC VIRUS

Virus: Tobacco mosaic virus

Vector: Aphids, whiteflies, flea beetle and thrips

Symptoms:

- 1) It mostly affects the leaves
- 2) Chlorotic pale yellow appear along the veins of the leaves



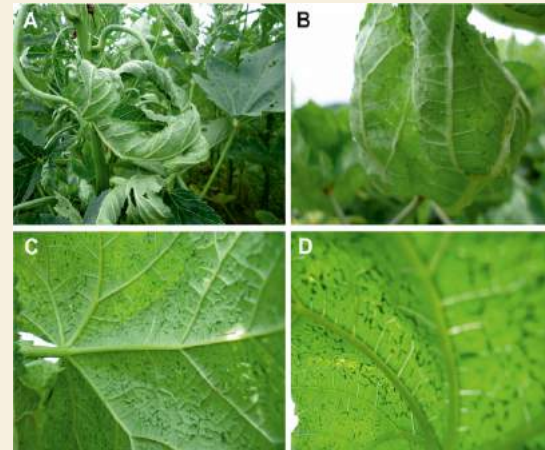
# ENATION LEAF CURL

Virus: Leaf Curl Virus

Vector: Whiteflies

Symptoms:

- 1) Blisters are seen on both young and mature leaves
- 2) Curling of leaves in an adaxial direction
- 3) Size of leaf become reduced
- 4) Fruits produced on the infected plants are few and deformed



# CONTROL OF FUNGAL AND BACTERIAL DISEASE

- 1) Use of disease-resistant varieties
- 2) Avoid watering directly to the leaves as fungi grows best in moist condition (drip irrigation is preferred than spray irrigation)
- 3) Monitor the crops regularly
- 4) As the symptom of disease become apparent, remove the infected part immediately
- 5) Avoid any unnecessary movements of agriculture tools from infected to healthy plant/area
- 6) Apply appropriate fungicides

## Control of viral disease

- 1) Use of disease-resistant varieties
- 2) Control insects population as they are the common vector for virus
- 3) Apply appropriate insecticides
- 4) Put netting around the plant

# Pests



Aphids



Whiteflies



Armyworm



Spiny bollworm



Thrips



Leafhopper



Fruit borer



Mealy bugs





Leafroller



Okra white grubs



Cotton worm



Flea beetle



Chili thrip

# HOW TO CONTROL PEST ATTACK?

## Inorganic way:

1) Application of insecticides (easiest and faster)

## Organic way:

1) Crop rotation – the practice of growing different types of crops at different time and at the same area of land

- Best to rotate with any green vegetables and legumes
- **Hint:** Rotate with different family from chilli, eggplant and okra
- Okra (Malvaceae), Chilli (Solanaceae) and egg

2) Netting







**Disease:** Damping-off

**Fungicides:** Monceren 25 WP

**How to prepare:**

Fill the tank to half full with clean water

10L of water (for 1 hectare) - add 10g and mix well

500L of water – add 500g and mix well.

**When to apply:**

When the symptoms already apparent.

Apply directly to both upper and lower side of the leaves.

Apply every 7 days interval when necessary

If disease is persisted, apply a different fungicides for these diseases other than Monceren 25 WP to prevent fungicides resistant.



**Disease:** Leaf spot

**Fungicides:** Dithane NT

**How to prepare:**

Fill the tank to half full with clean water  
10L of water - add 20g and mix well  
900L of water – add 1.8kg and mix well.

**When to apply:**

When the symptoms already apparent.

Apply directly to both upper and lower side of the leaves.

If disease is persisted, apply a different fungicides for these diseases other Dithane NT to prevent fungicides resistant.



# INSECTICIDES APPLICATION

**Insect:** Armyworm

**Insecticides:** Glamer

**How to prepare:**

Fill the tank to half full with clean water

10L of water - add 10ml and mix well

500L of water – 500ml and mix well.

**When to apply:**

When the symptoms already apparent.

Apply directly to both upper and lower side of the leaves.

If disease is persisted, apply a different fungicides for these diseases other Dithane NT to prevent fungicides resistant.





For insect: Spiny bollworms



For insect:  
Aphid, thrips and whiteflies



For insect: Leaf roller

