



DISEASE OF FIELD AND HORTICULTURAL CROPS – I

SESSION 14 PIGEONPEA DISEASES

Important Diseases

❖ Major Diseases

1. Phytophthora Blight - *Phytophthora drechsleri fsp. cajani*
2. Wilt - *Fusarium oxysporum fsp udum*
3. Sterility mosaic - *Pigeonpea sterility mosaic virus*

❖ Minor Diseases

1. Powdery mildew - *Leveillula taurica*
2. Stem canker - *Diplodia cajani*
3. Leaf spot - *Cercospora cajani*
4. Bacterial leaf spot - *Xanthomonas campestris pv cajani*

Phytophthora Blight

❖ *Phytophthora drechsleri fsp. cajani*

❖ ~Stem Blight

❖ Symptoms

1. Water soaked lesions on their leaves
2. Brown to black, slightly sunken lesions on their stems and petioles.
3. Infected leaves loose turgidity, and become desiccated.
4. Lesions girdle the affected main stems or branches which break at this point and foliage above the lesion dries up.
5. Gall formation
6. Seedlings and young plants may die



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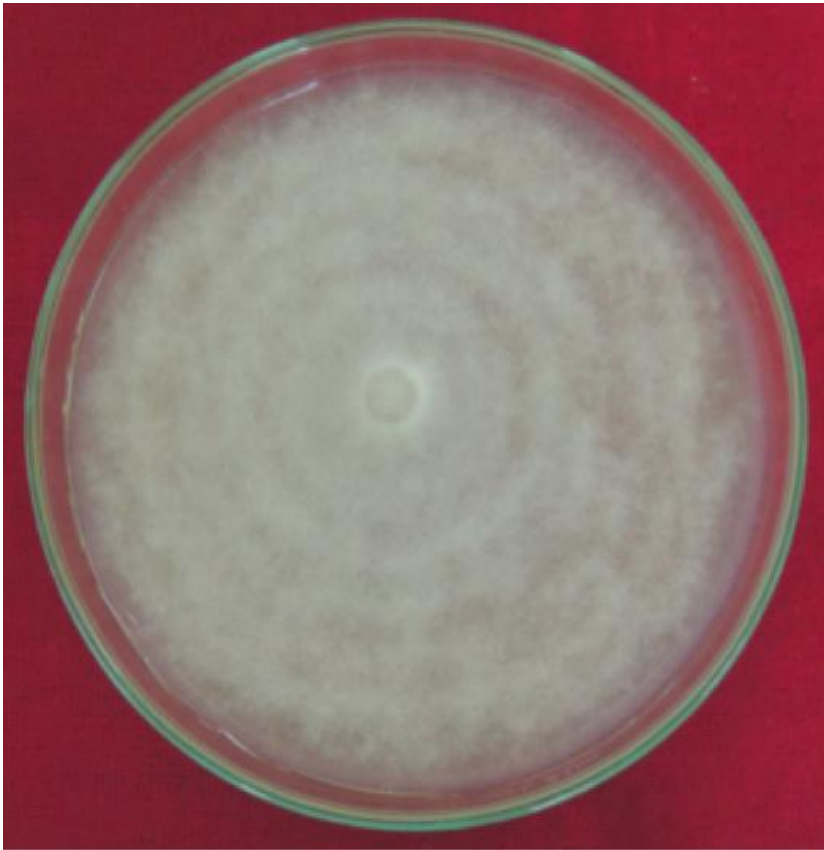
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Etiology

- ❖ Chromista>Oomycota>Oomycetes>Perenosporales>Perenosporacea
- ❖ Hyphae - Coenocytic, Cellulosic cell wall
- ❖ Sporangia, Oospores



❖ Disease cycle

- ✓ Primary inoculum - Oospores and dormant mycelia in soil/ crop debris
- ✓ Secondary spread - Zoospores

❖ Favourable Conditions

- ✓ $T \sim 25\text{ }^{\circ}\text{C}$; $\text{RH} > 90\%$
- ✓ Cloudy weather with light rains
- ✓ Water logging
- ✓ Young plants are more susceptible

❖ Management

1. Resistant variety – BDN 1, ICPL 150, ICPL 288, ICPL 30
2. Field sanitation
3. Crop rotation
4. Ensure drainage
5. Deep summer ploughing
6. Green manuring and application of Neem cake @ 2.5t/ha
7. Soil application of *Trichoderma* enriched FYM (5t/ Ha)
8. Seed treatment
 - i) *Trichoderma viridae* @ 10g/Kg seeds
 - ii) Metalaxyl @ 6g/kg
8. Foliar spray :
 - i) Metalxyl MZ- 0.2%

Wilt

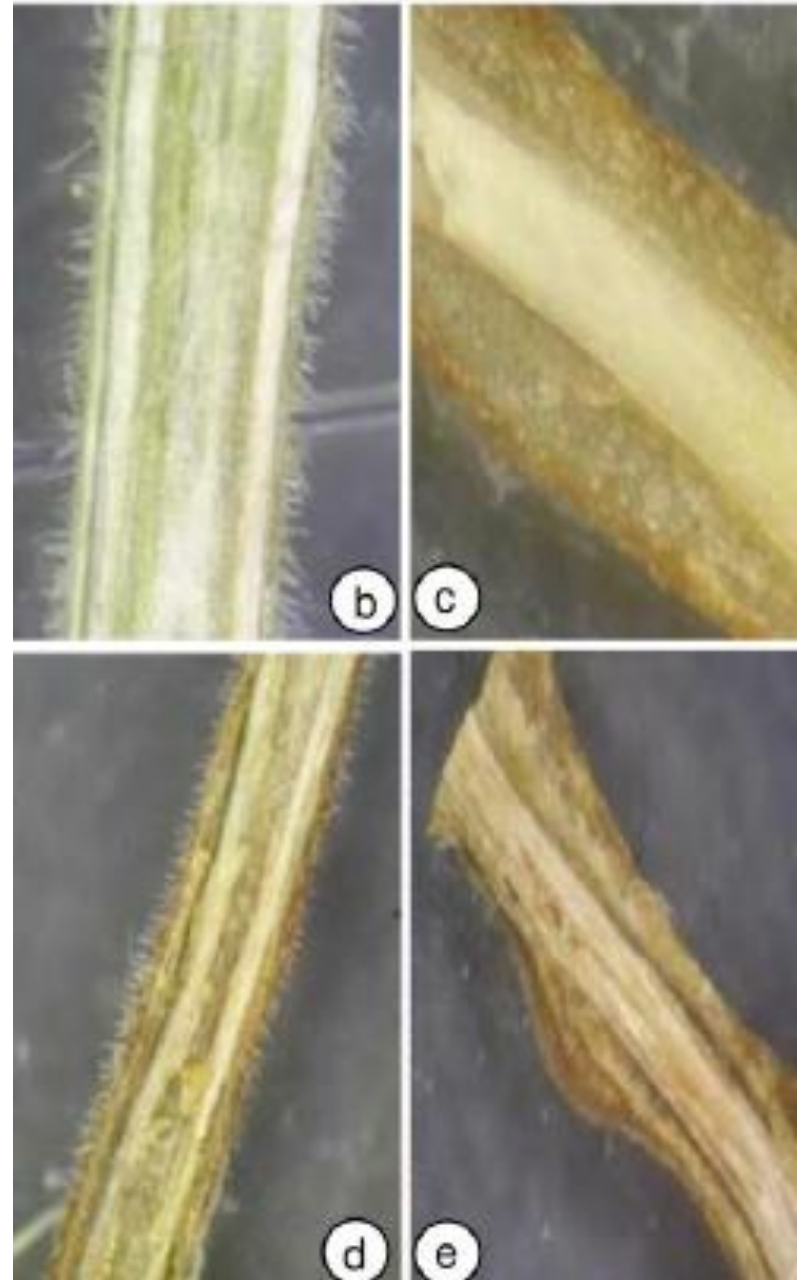
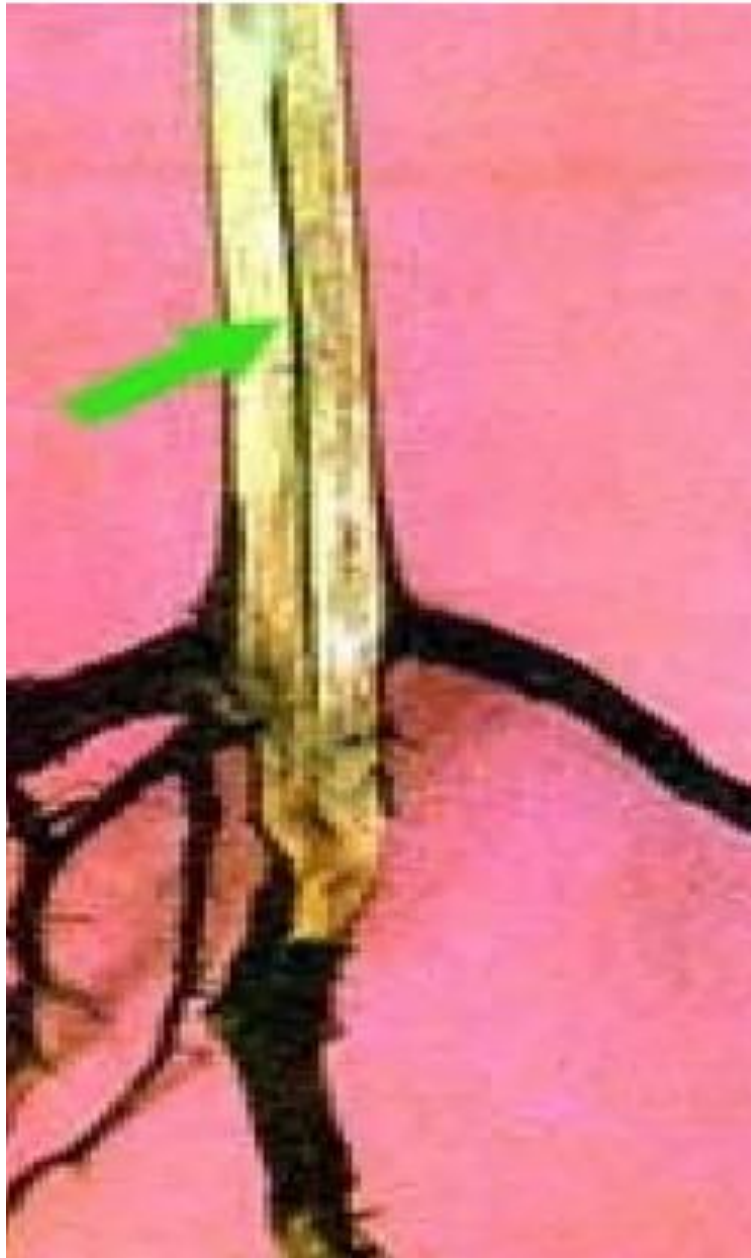
❖ *Fusarium oxysporum* fsp *udum*

❖ Symptoms

1. Patches of dead plants in the field when the crop is flowering
Purple band extending upwards from the base of the main stem.
2. Vascular tissues exhibit brown discolouration
3. Partial wilting (Lateral root infection) or Complete wilting (tap root infection)
4. Foliar symptoms include loss of turgidity, interveinal clearing and chlorosis.



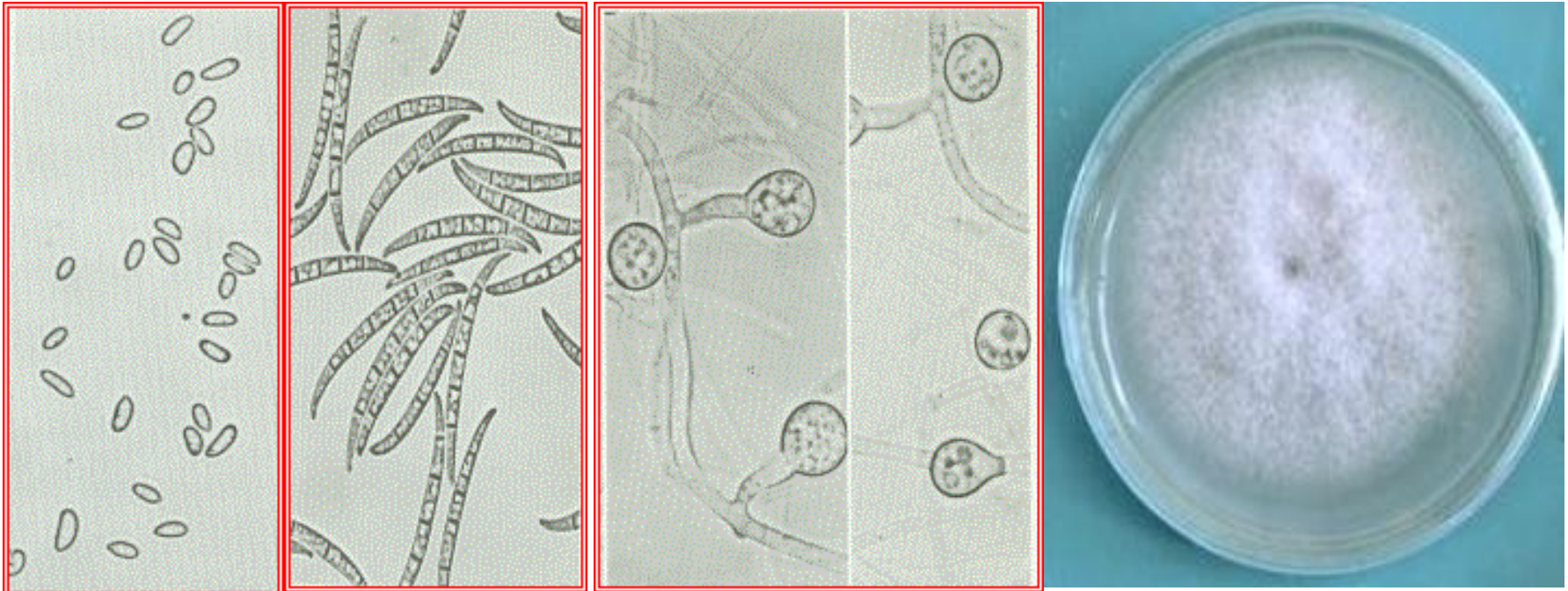
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Etiology

- ❖ Hyaline septate mycelium
- ❖ Microconidia – oval, single celled
- ❖ Macroconidia – Sickle shaped, multiseptate
- ❖ Chlamydospore – Spherical, thick walled



Disease cycle

- ❖ **Primary infection** – Seeds, Soil borne Chlamydospore
- ❖ **Secondary infection** – Irrigation water, Implements

Favourable condition

- ❖ T ~ 25 °C; Low soil moisture
- ❖ Flowering plants are more susceptible
- ❖ Monocropping

Management

1. Resistant varieties – Asha, Muktha, Prabhat
2. Field sanitation
3. Crop rotation??
4. Mixed/Intercropping with sorghum
5. Irrigating the crop at flowering
6. Green manuring and application of Neem cake @ 2.5t/Ha
7. Soil application of Trichoderma enriched FYM @ 5t/ha
8. Seed treatment:
 - i) Trichoderma @ 10g/kg seeds
 - ii) Thiram @ 3g/kg

Sterility mosaic

❖ *Pigeonpea sterility mosaic virus*

❖ **Symptoms**

1. **Bushy, pale green plants without flowers or pods.**
2. Leaves- small with light and dark green mosaic.
3. Initially appear as vein-clearing on young leaves.
4. Leaves become smaller and cluster near tip
5. Plants are stunted.
6. Partial/ Complete sterility
7. Seeds - small, shrivelled and immature.



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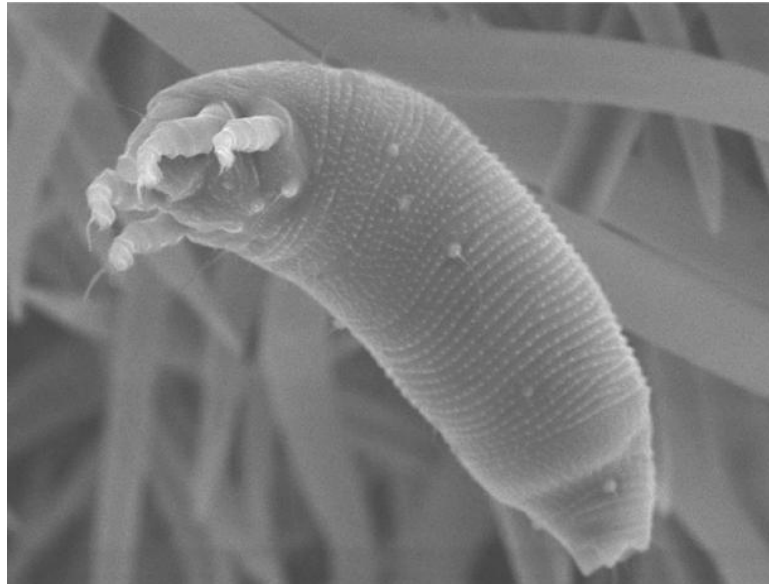


Etiology

- ❖ *Emaravirus*; ssRNA genome; Isometric

Disease Cycle

- ❖ **Primary inoculum** – Collateral hosts and volunteer plants
- ❖ **Transmission** – **Eriophid mites (*Aceria cajani*)**



Favourable condition

- ❖ Hot humid weather with frequent rains

Management

- ❖ Resistant varieties - Asha, Narendra Arhar
- ❖ Crop rotation
- ❖ Field sanitation
- ❖ Roughing
- ❖ Foliar spray of Dicofol 3ml or Wettable Sulphur 3g/ L
- Spiromesifen @ 3ml/10L