



DISEASE OF FIELD AND HORTICULTURAL CROPS – I

SESSION 17 TOBACCO DISEASES

Important Diseases

❖ Major Diseases

1. Black shank - *Phytophthora parasitica var. nicotianae*
2. Black root rot - *Thielaviopsis basicola*
3. Tobacco mosaic - *Tobacco mosaic virus*

❖ Minor Diseases

1. Damping off - *Pythium aphanidermatum*
2. Frog eye leaf spot - *Cercospora nicotianae*
3. Powdery mildew - *Erisiphe cichoracearum*
4. Brown spot - *Alternaria alternata*
5. Granvile wilt - *Ralstonia solanacearum*
6. Tobacco leaf curl - *Tobacco leaf curl virus*
7. Orobanche - *Orobanche cernua*

Black Shank

❖ *Phytophthora parasitica* var. *nicotianae*

❖ Symptoms

1. All growth stage and all aerial parts – mainly **roots** and **base of the stem**.
2. Seedlings blight- **black discoloration of the stem** in collar region; blackening of roots, leading the wet rot
3. Mature plants - **minute black spot on the stem**, enlarge into irregular black patches; **girdling of stem**.
4. Lesion extend upwards - **necrotic patches on the stems** with depression and shrivelling;
5. Plant wilt and dry up
6. Pith region - dried up in **disc-like plates** showing black discolouration.
7. Leaves - large water soaked spots ; blighting.



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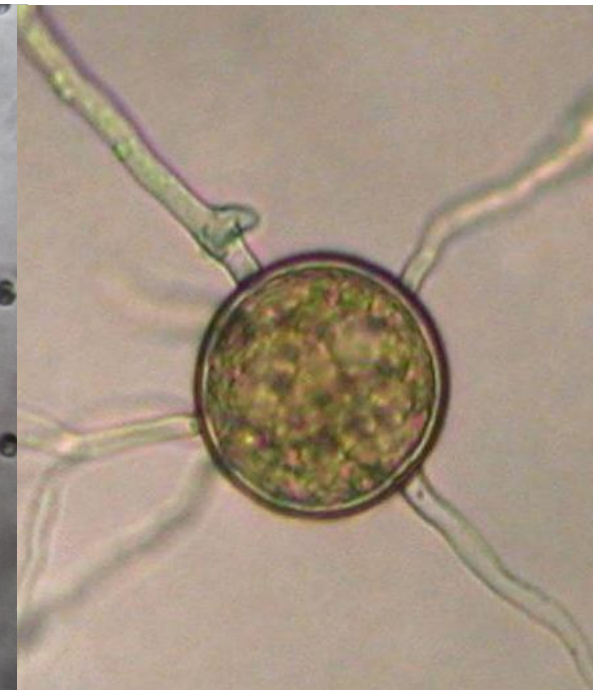
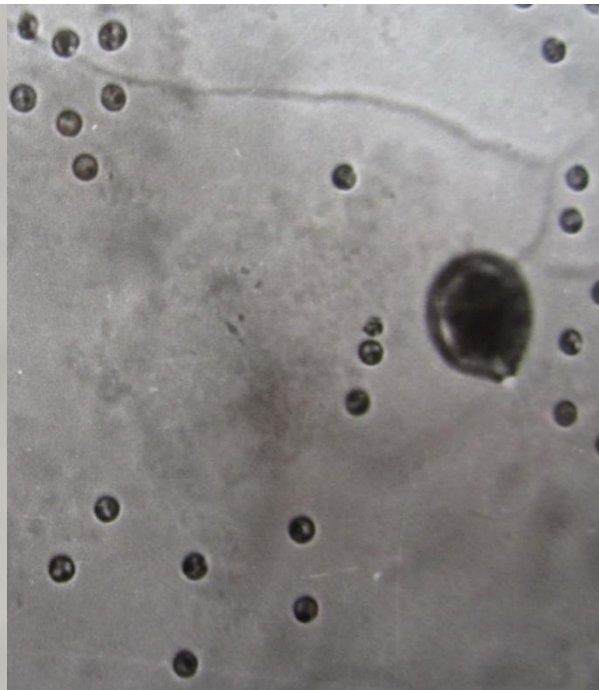
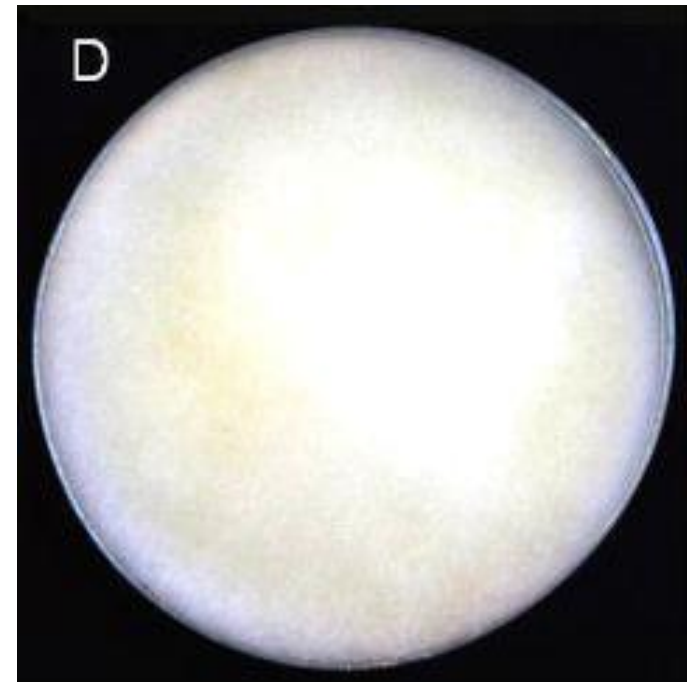
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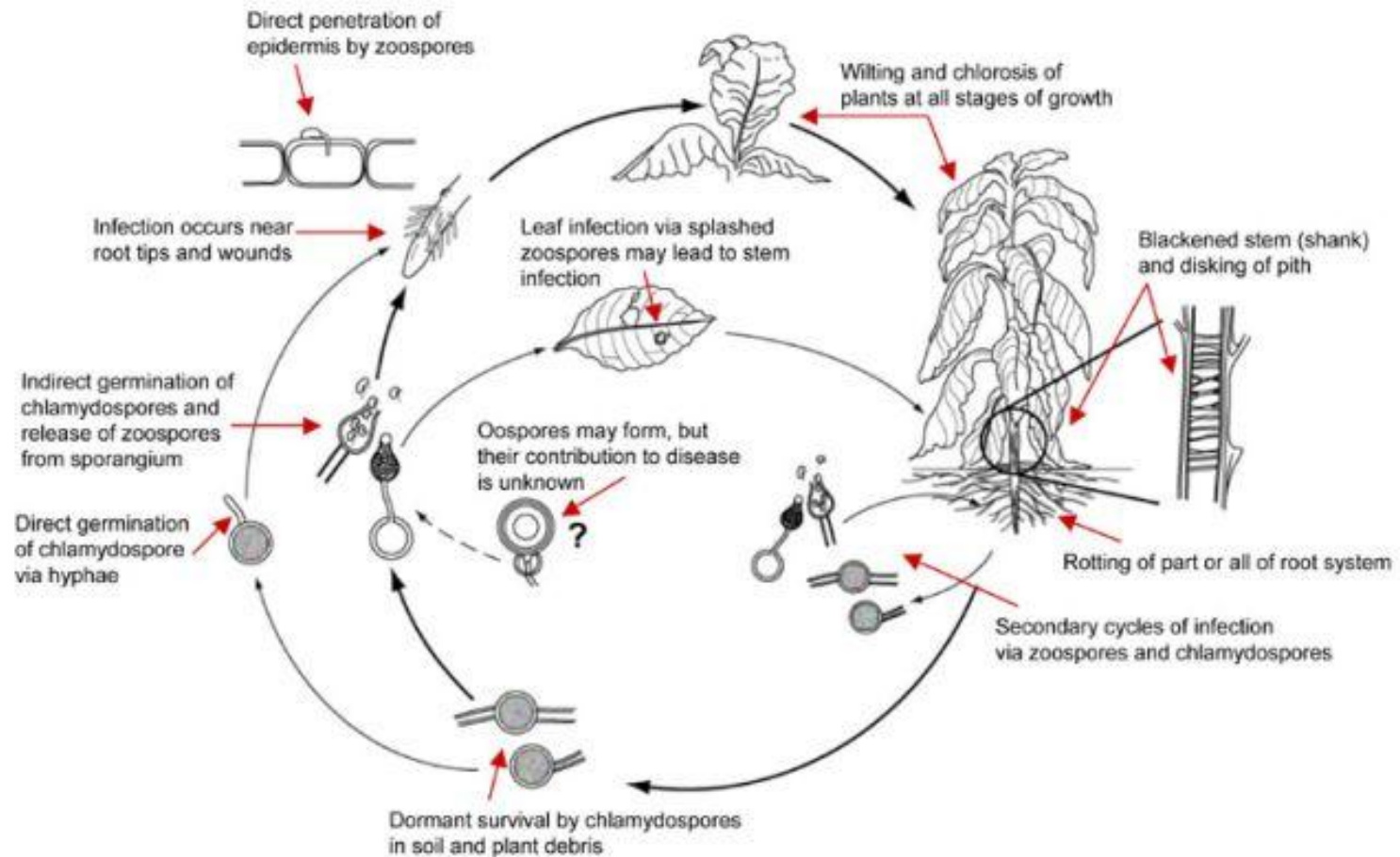
Etiology

- ❖ Hyaline ; coenocytic mycelia
- ❖ Zoospores in sporangia;
- ❖ Chlamydo-spore
- ❖ Oospores



❖ Disease cycle

- ✓ Primary inoculum - Chlamydospores & Oospores in crop debris/Soil
- ✓ Secondary spread - Zoospores and sporangia



❖ Favourable Conditions

- ✓ T ~ 20 °C; RH > 90%
- ✓ Frequent rains and Water logging
- ✓ Nematodes – *Meloidogyne incognita*

❖ Management

1. Crop rotation
2. Field sanitation
3. Ensure drainage
4. Use disease free healthy seedlings
5. Rabbing in nursery
6. Soil drenching with Bordeaux mixture 1% or COC 3% in nursey
7. Foliar spray with metalaxyl MZ @ 0.2%

Black root rot

❖ *Thielaviopsis basicola*

❖ Symptoms

1. Initially - yellowing of foliage, marginal leaf scorch and overall plant decline.
2. Infected herbaceous plants wilt rapidly during the hottest part of the day and recover during the evening hours.
3. Die back and the entire plant may eventually die.
4. Root systems are reduced to roots that are short, stubby, black and decayed.



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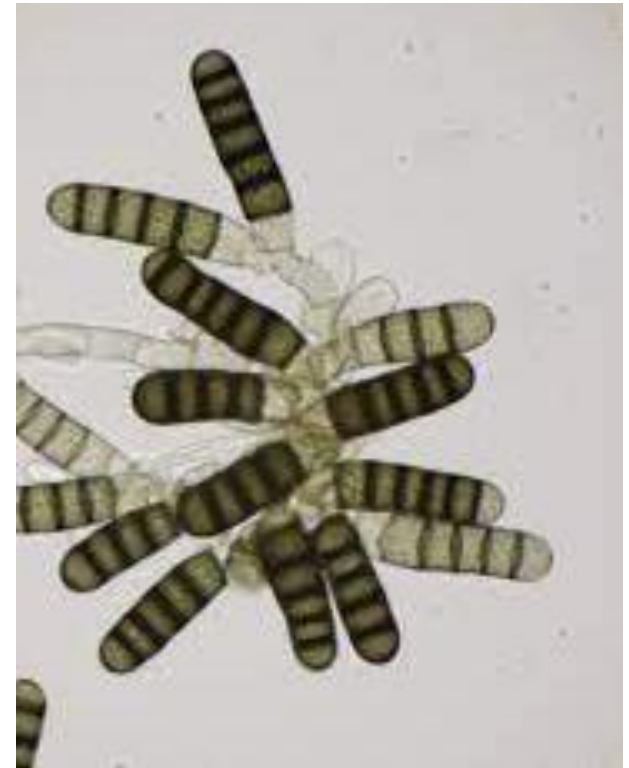
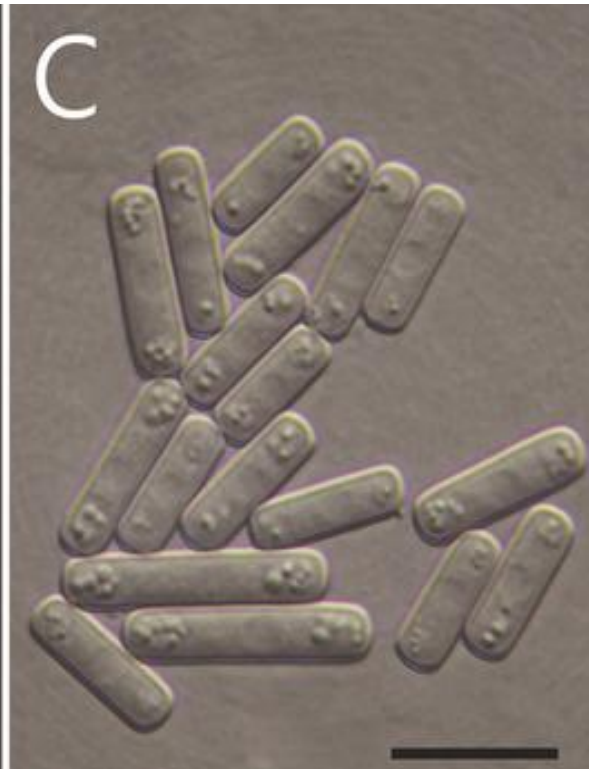
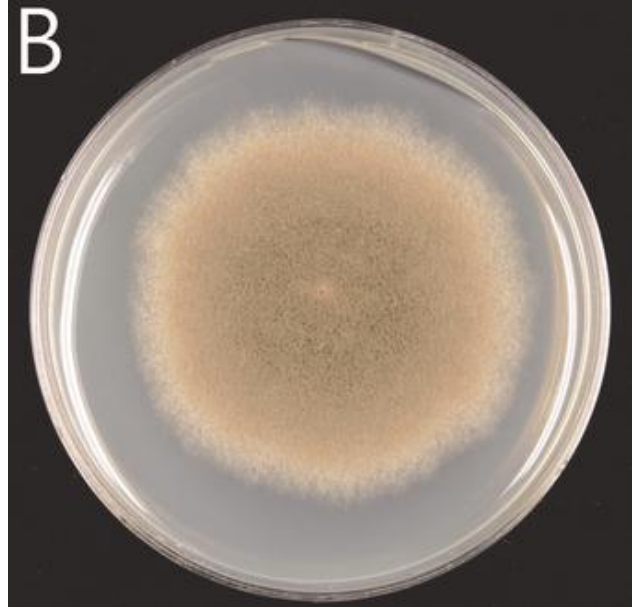




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Etiology

- ❖ Phylum Ascomycota
- ❖ Pigmented; Septate mycelium
- ❖ Conidia – two types
 1. Single celled
 2. Aleuriospores (Multiseptate)
- ❖ Chlamydospores



Disease cycle

- ❖ **Primary infection** – Chlamydospores
- ❖ **Secondary infection** – Root contact; Infested soil

Favourable condition

- ❖ $T \sim 17-20\text{ }^{\circ}\text{C}$
- ❖ $\text{pH} > 6.5$ (Neutral to Alkaline soils)

Management

1. Crop rotation
2. Field sanitation
3. Ensure proper drainage
4. Soil solarization in nursery
5. Decrease the soil pH < 6.0 by adding Gypsum
6. Green manuring and addition of organic manures
7. Application of *Trichoderma* enriched FYM
8. Seed treatment with Thiram @ 3g/kg
9. Soil drenching with Carbendazim + Mancozeb or COC @ 0.3%

Tobacco Mosaic

❖ *Tobacco mosaic virus*

❖ **Symptoms**

1. Light discoloration along the veins of the youngest leaves.
2. Characteristic light and dark green **mosaic**
3. The dark green areas later develop into **irregular blisters** due to more rapid growth.
4. The plants stunted with small, chlorotic, mottled and curled leaves.
5. Leaves are narrowed, puckered, thin and **malformed** beyond recognition.
6. Later, **dark brown necrotic spots** develop under hot weather and this symptom is called “**mosaic burn**” or “**mosaic scorching**”



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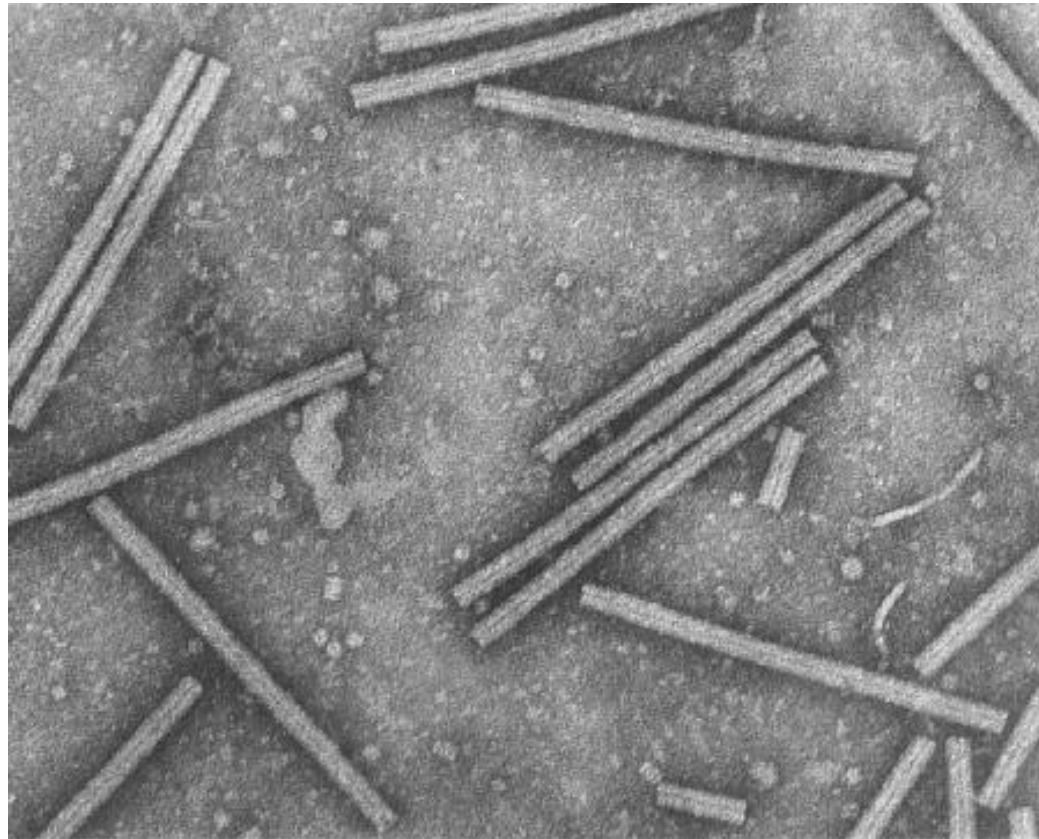
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Etiology

❖ *Tobacco mosaic virus (Tobamovirus)*

❖ ssRNA; Rod shaped

❖ 300 x 18 nm



Disease Cycle

- ❖ **Primary inoculum** – Collateral hosts
- ❖ **Secondary spread** - Contact, implements (No vectors)

Management

1. Grow resistant varieties - **Prabhat, Gautami, Godavari special**
2. Roughing
3. Field sanitation
4. Wash hands with soap and running water before or after handling the plants or after weeding.
5. Prohibit smoking, chewing and snuffing during field operations
6. Spray the nursery and main field with leaf extracts of *Bougainvillea* 1 litre of extract in 150 litres of water, two to three times at weekly intervals.
7. Spray tannic acid 1% at 30th, 40th and 50th day after planting.

Damping off

❖ *Pythium aphanidermatum*



Frog eye leaf spot

❖ *Cercospora nicotianae*



Powdery mildew

❖ *Erisiphe cichoracearum*



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Brown spot

❖ *Alternaria alternata*



Granvile wilt

❖ *Ralstonia solanacearum*



Tobacco leaf curl

❖ *Tobacco leaf curl virus*



Orobanche

❖ *Orobanche cernua*



