DISEASE OF FIELD AND HORTICULTURAL CROPS – I

SESSION 12

GROUNDNUT DISEASES

Important Diseases

❖ Major Diseases

1. Tikka disease (Leaf spot)

   i) Early LS - *Cercospora arachidicola (Mycosphaerella arachidis)*

   ii) Late LS – *Cercosporidium personatum (M. berkeleyii)*

2. Rust - *Puccinia arachidis*

3. Wilt/ Budnecrosis - *Tomato spotted wilt virus*

❖ Minor Diseases

1. Stem rot - *Sclerotium rolfsii*
2. Collar rot - *Aspergillus niger*
3. Fungal wilt - *Fusarium oxysporum*
4. Bacterial wilt - *Ralstonia solanacearum*

TIKKA DISEASE

i) Early LS - *Cercospora arachidicola (Mycosphaerella arachidis)*

ii) Late LS – *Cercosporidium personatum (M. berkeleyii)*

❖**Symptoms**

A. Early Leaf Spot

1. Circular to irregular spots 1-10 mm in diameter
2. Upper surface – Reddish brown; Lower- Light brown
3. Yellow hallow
4. Seen before - 30 DAS

B. Late Leaf Spot

1. Small, circular spots 1-5 mm in diameter
2. Upper surface – Dark brown, Lower – Black
3. Yellow hallow is rare
4. Seen after - 30 DAS

Early Leaf Spot

Late Leaf Spot

Sl. No.	Character	Early Leaf Spot	Late Leaf Spot
1	Causal organism	*Cercospora arachidicola (Mycosphaerella arachidis)*	*Cercosporidium personatum (M. berkeleyii)*
2	Lesion	Irregular, 1-10 mm, Yellow hallow Upper – Reddish brown Lower – Light brown	Circular, 1-6 mm, Yellow hallow absent Upper – Dark brown Lower – Black
3	Appearance	Before 30DAS	After 30DAS
4	Conidia	Longer; Mostly on upper surface	Shorter More on lower surface

Etiology

❖*Cercospora and Cercosporidium*

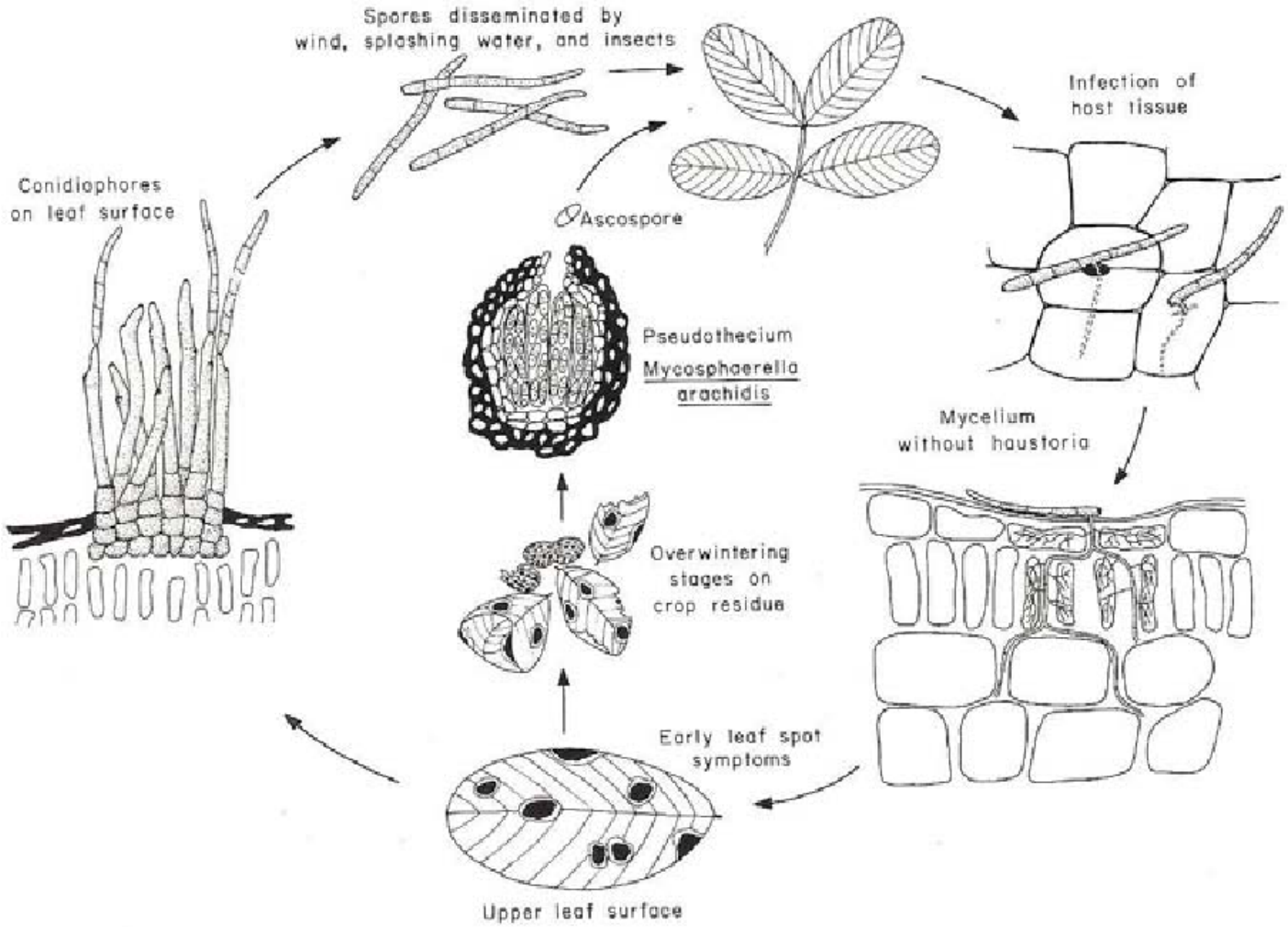
- Needle shaped spores
- Multiseptate
- In stroma

❖Mycosphaerella - Ascostroma

❖Disease cycle

✓Primary inoculum - Conidia/Ascospores from Crop debris; Collateral host

✓Secondary spread - Conidia



❖Favourable Conditions

✓T~ 25ºC; RH > 90%

✓Deficiency of Ca and Mg

❖Management

1. Resistant variety - Naveen, Vemana
2. Field sanitation
3. Crop rotation
4. Application of Magnesium Suphate/Gypsum
5. Seed treatment and foliar spray with *P. fluorescence*
6. Foliar spray :
   - i) Propiconazole @ 1ml/L
   - ii) Azoxystrobin @ 1ml/L

Rust

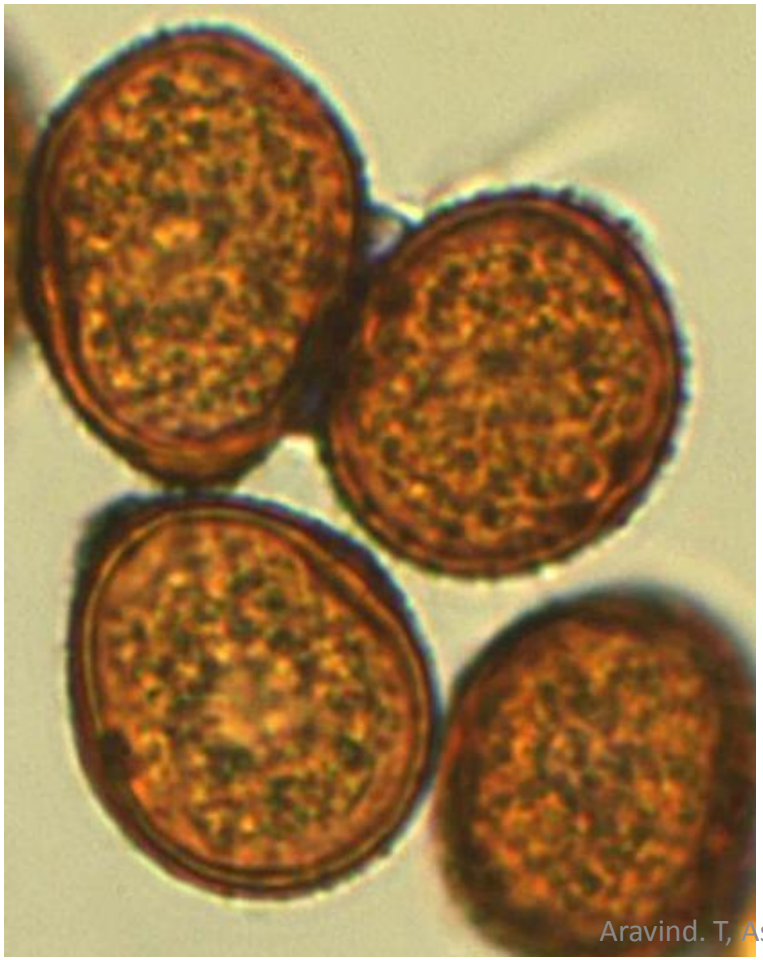
❖*Puccinia arachidis*

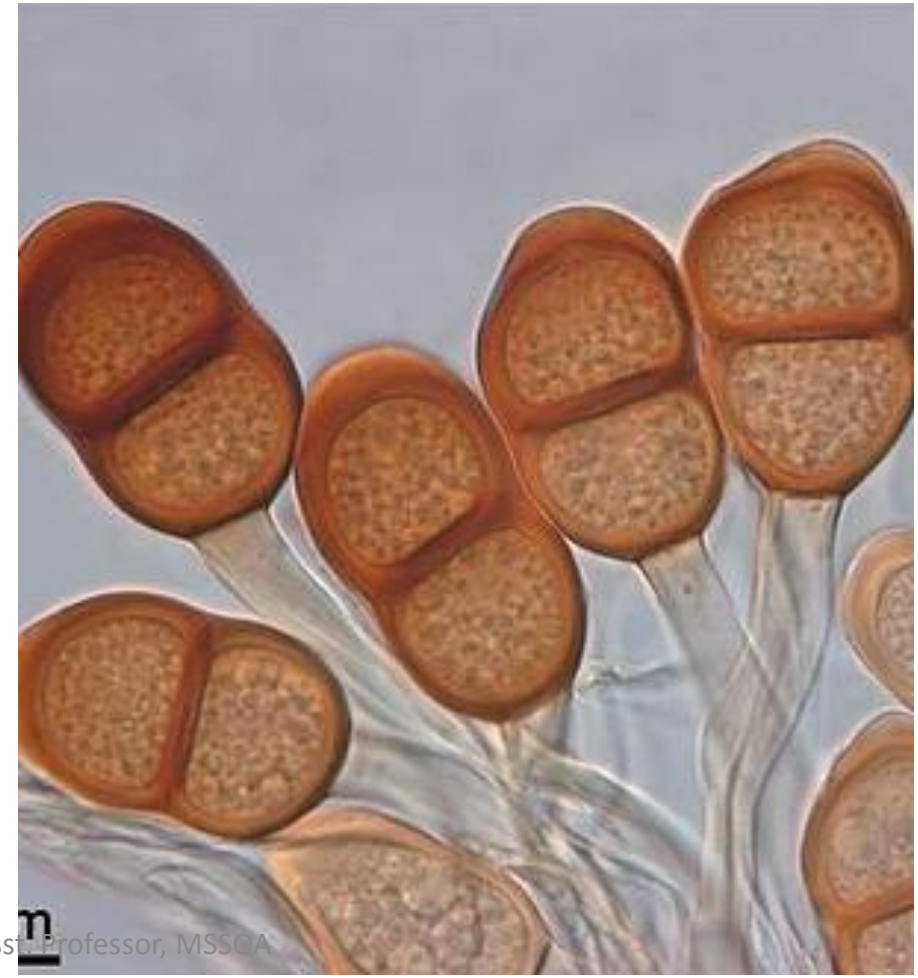
❖**Symptoms**

1. Seen after 30 DAS
2. Lower surface - Brown pustule (Uredospores)
3. Upper surface – Dark brown/ Black pustules (Teliospores)
4. Leaves dry up

Etiology

- Uredospores – Oval, Unicellular, yellowish brown
- Teliospores - Bicelled, Dark brown





Disease cycle

- **Primary infection** – Uredospores from collateral host/Seeds (rare)
- **Secondary infection –** Uredospores

Favourable condition

- T ~ 25 ºC; High RH

Management

1. Resistant varieties
2. Field sanitation
3. Crop rotation
4. Split application of nitrogenous fertilizers
5. Fungicides
    i) Oxycarboxin @0.1%
    ii) Propiconazole @ 0.1%

Bud Necrosis

❖ *Tomato spotted wilt virus* (*Tospovirus*)

❖**Symptoms**

1. Stunting of the plants
2. Necrotic spots and ring spotting on the leaves
3. New leaves – pinched with mottling
4. Death of the growing bud

Disease Cycle

- Primary inoculum - Collateral hosts
- Vector - Thrips

  (*Scirtothrips dorsalis*, *Thrips schultzi*)

Favourable condition

- ❖T ~ 25 ºC; Low RH
- ❖Low plant population

Management

1. Resistant varieties - Vemana
2. Field sanitation
3. Crop rotation
4. Roughing
5. Intercropping with bajra
6. Increase the plant population (33 plants/m^2)
7. Spray NSKE @5%
8. Insecticides – Imidachloprid @ 3ml/10L

Stem Rot

❖*Sclerotium rolfsii*

❖**Symptoms**

1. Affect the collar region
2. Yellowing and wilting
3. White mycelium and dark sclerotia

Collar Rot

❖*Aspergillus niger*

❖**Symptoms**

1. Pre-emergence seed rot
2. Seedling blight
3. Collar rot