

South American leaf blight (SALB): the causal pathogen and the disease

NOMENCLATURE

Dothidella ulei (P. Henn.)
Apospheria ulei (P. Henn.)
Fusicladium macrosporium (Kuyper)
Passalora heveae (G. Masee)
Scolecotrichum ulei (Griffon and Maublanc)
Melanosammopsis ulei (Stahel)
Microcyclus ulei (P. Henn.) von Arx

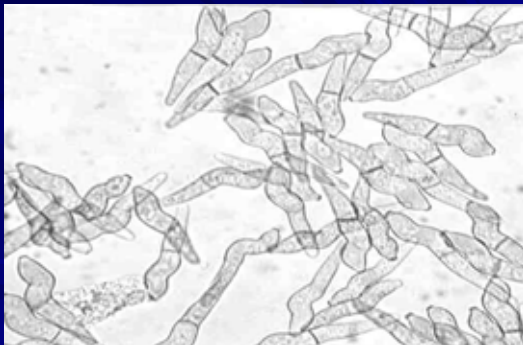
NOMENCLATURE

- *Dothidella ulei*, *Apospheria ulei* and *Fusicladium macrosporium* are descriptions of the same fungus.
- *Microcyclus ulei* (P. Henn.) von Arx is the accepted name with synonyms *Dothidella ulei* (P. Henn.) and *Fusicladium macrosporium* (Kuyper)

THE PATHOGEN OF SALB

- *Microcyclus ulei* is a fungus
- An ascomycete with sexual and asexual stages
- Produces three types of spores
 - The conidia (asexual)
 - pycnidiospores
 - ascospores (sexual)

Microcyclus ulei - conidia



CONIDIA

- Either septate (two cells) or aseptate (one cell). Percentage of aseptate conidia increased in drier periods and more common from laboratory cultures.
- Septate conidia are obclavate with broad proximal cell with truncate distal end.
- Possess a characteristic twist.
- Hyaline when young and turn grayish with age.
- Size of septate conidia vary – 23-65 x 5-10 µm (Chee); 23-62 x 5-10 µm (Holliday); 12-30 x 5-8 µm (Langford).
- Size vary with locations and season

Microcyclus ulei



Shrunken conidia

Microcyclus ulei - pycnospores



Pycnospores

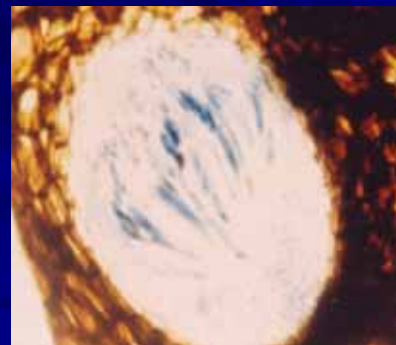
- Dumb bell shaped.
- One end larger (12-25 μm) than the other end (2-5 μm).
- 6 -10 μm in length.
- Borne on hyphal elements.
- Germinate but do not cause infection.

Microcyclus ulei - ascospores

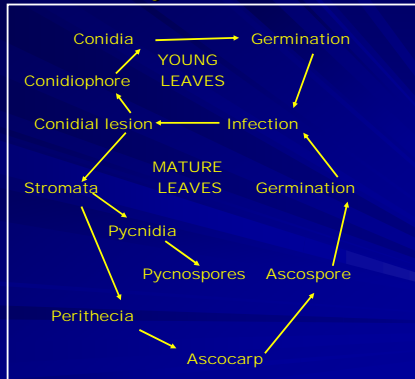


ASCOSPORES

- Septate with constriction at septum;
- Cells unequal in size;
- Various sizes reported – 12-20 x 2-5 μm (Chee); 10-15 x 3-5 μm (Holliday); 3-5 x 10-15 μm (Langford);
- Hyaline and ellipsoidal;



Life Cycle Of *M. ulei*



PLANT PARTS INFECTED

- Young plant parts - leaves, stems, petioles, inflorescence and fruits;
- Leaves at the copper brown stage are most susceptible;
- Leaves are more resistant as they age and old leaves are immune

SYMPTOMS OF SALB

- The symptoms depend on the age of leaves at time of infection;
- The young copper brown leaflets shrivel, curl, turn blackish and drop-off leaving the petioles for several days on the stems;
- The fully expressed conidial lesions are seen on the lower surface of the green leaflets;
- The lesions are covered with powdery masses of conidia giving dark grey to olive green colour.



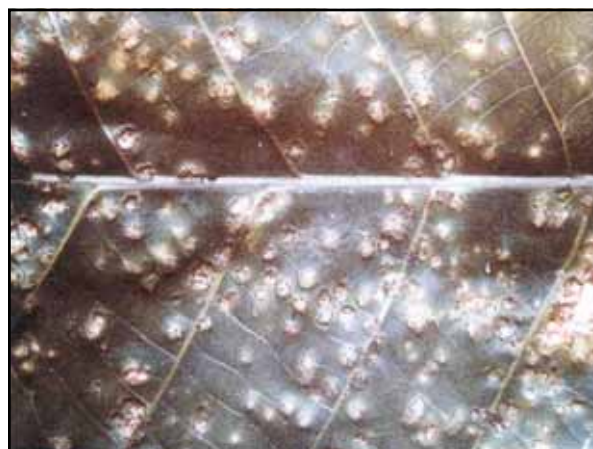
- Petioles remain on the stem for sometimes after the leaflets fall off





SYMPTOMS

- First visible symptoms are the distortion of leaves.
- Visible symptoms occur 2-3 days after inoculation.
- A few days later irregular shaped lesions developed on lower surface of leaves.
- Lesions appear dark or olive green.
- Size of lesions depends on susceptibility of leaves (age & clone)



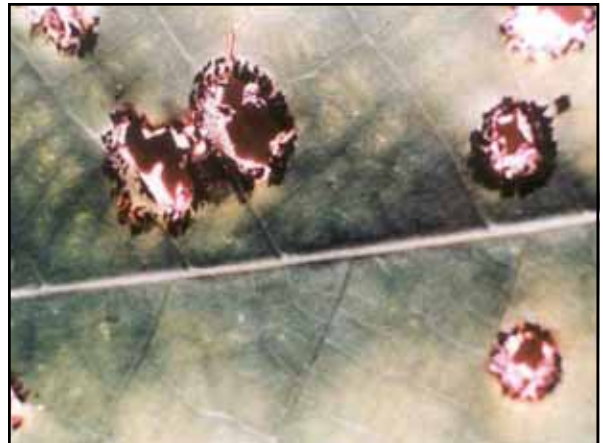
THE PYCNIDIA

- The pycnidia are small (120-160 μm diameter) dark bodies forming on the upper leaf surface along the periphery of lesions on the lower leaf surface;
- The pycnidia produce the pycnosspores



THE PERITHECIA

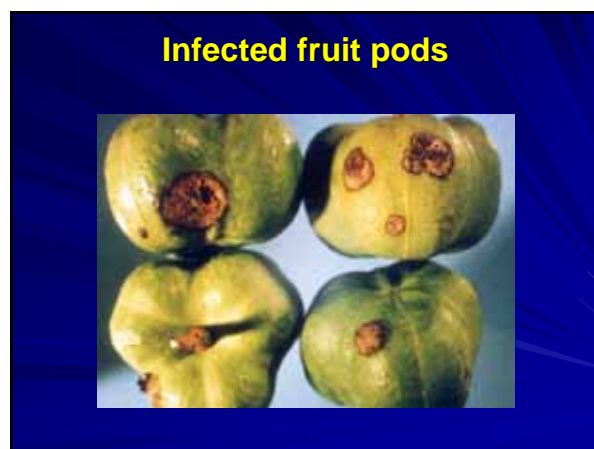
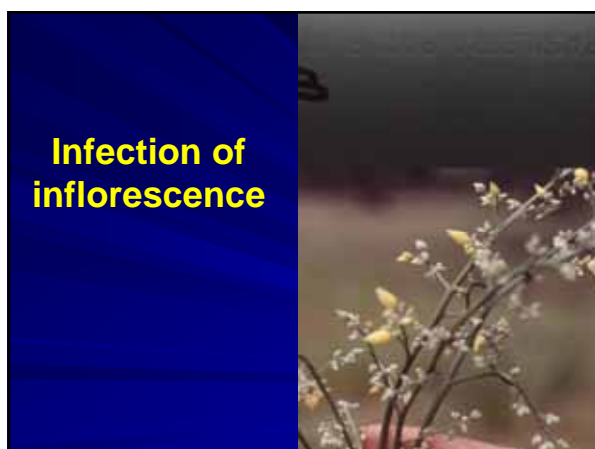
- At the site of the pycnidia large (200-400 μm diameter) raised black bodies (perithecia) developed;
- The perithecia produced the ascospores



OTHER PLANT PARTS INFECTED

- Flower stalks
- Young fruits
- Young shoots
- Young stems





**Shoot
dieback
and dead
branches**



PHYSIOLOGICAL RACES OF M. ULEI

- Occurrence of new race causes breakdown of resistance;
- Many races occur;
- Miller identified four races;
- Chee identified 9 races in Bahia;
- Ismail & Almeida confirmed 4 races (2, 3, 4 & 6);
- Rivano identified 12 races;
- Large number of strains - > 50 (Pinheiro);
- Strains also differ in virulence.

THANK YOU