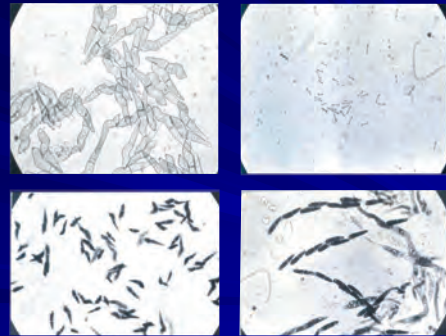


SALB – Epidemiology

THE EPIDEMIOLOGY AND HOST PARASITE INTERACTION OF SALB

SPORES OF *M. ulei*



DISEASE INFECTION

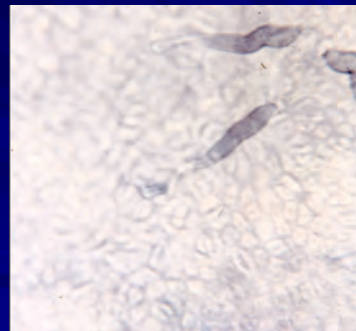
Conidia and ascospores are responsible for infection.

DISEASE SPREAD

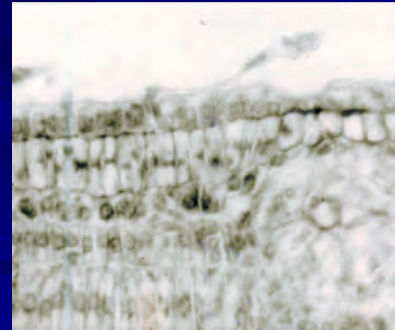
- Wind and rain splash;
- Insects and other animals;
- The ascospores initiate new disease cycle and the conidia are responsible for local spread of the disease.

GERMINATION

Conidia Infecting *Hevea* leaf

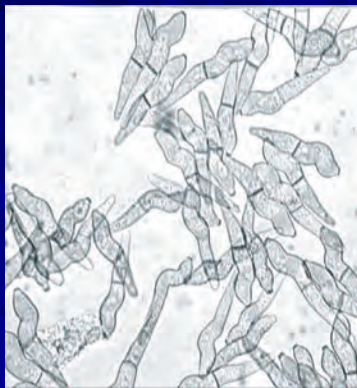


Infection by conidia



SPORE GERMINATION

- Distal end of the conidia germinated first followed by the proximal cell;



GERMINATION OF CONIDIA

- The conidia germinate within two hours;
- Hyphae penetrate directly or by forming appressoria;
- Formation of appressoria is influenced by resistance of leaves;
- Fungus spread intercellularly.

SPORE GERMINATION

Conidia germinate between 8-36 °C (maximum 24 °C);

RATE OF CONIDIAL GERMINATION

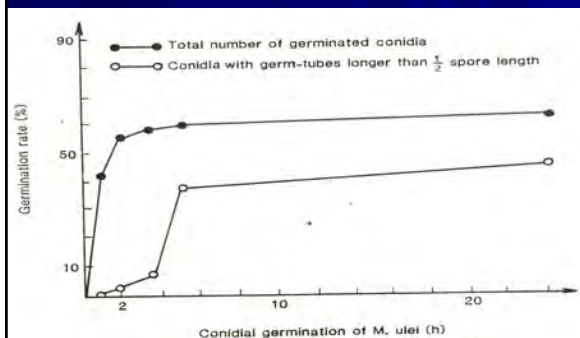
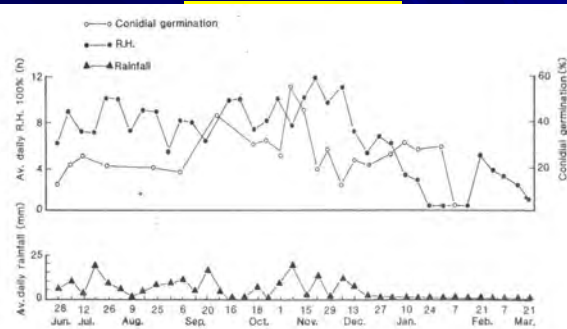


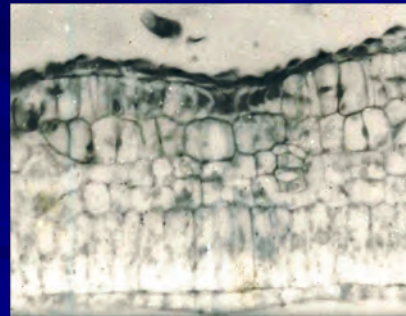
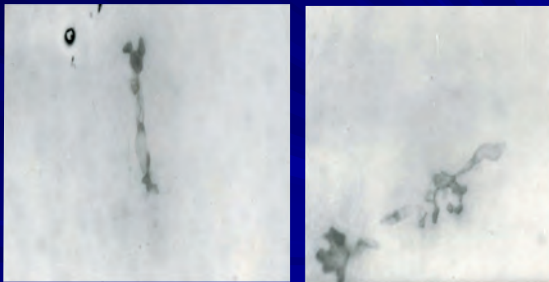
Figure 3. Rate of conidial germination of *M. ulmi* in relation to time.

SEASONAL EFFECT OF CONIDIAL GERMINATION



HOST REACTION AND DISEASE DEVELOPMENT

HOST CELL COLLAPSE



DISEASE DEVELOPMENT

- Lesion is visible by two days of infection;
- Host reaction is dependent on resistance of leaves;
- Host cell collapse may occur;
- Age of leaves and clonal resistance determine number and size of lesions.

INFLUENCE OF WEATHER ON DISEASE

EFFECT OF RAINFALL ON SEVERITY

■ High Severity

- Annual rainfall >250 cm, well distributed with no long dry season

■ Intermediate Severity

- Annual rainfall >200–<250 cm, well distributed with no long dry season

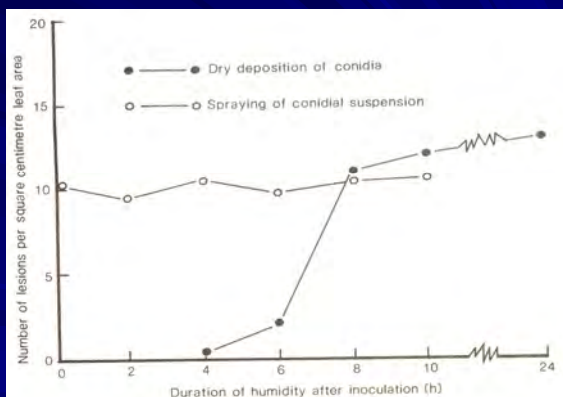
■ Low Severity

- Annual rainfall, variable with at least four months dry period with <7 cm rain per month

EFFECT OF HUMIDITY ON SALB

Months with 18+ days with RH exceeding 95% for 10.00 hours – severe SALB

EFFECT OF HUMIDITY ON INFECTION



SPORE PRODUCTION

- Spore production vary with weather conditions;
- Optimum temperature for spore production is 24 °C;
- High humidity favors spore production.

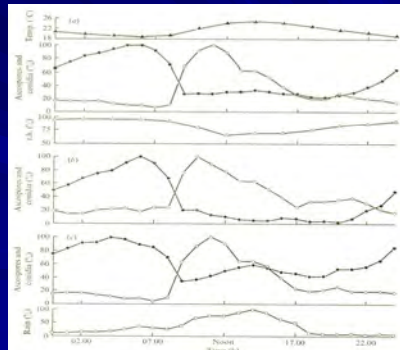
SPORE LIBERATION

SPORE LIBERATION

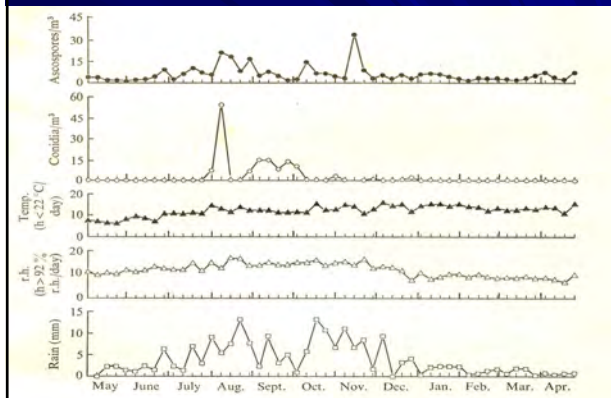
- Spore liberation varies with weather conditions;
- Diurnal periodicity in liberation of spores;
- Conidia liberation:
 - Low at night and rises in the morning;
 - Peak at mid day (10 a.m. to 12 p.m.) and declines there after.
- Ascospore liberation:
 - Ascospore are released at night and peak at 6 a.m.
- Liberation of conidia and ascospores is high after a rainfall.

DIURNAL PERIODICITY OF SPORE RELEASE

Conidia
(empty dots);
Ascospores
(darkened)



Annual dispersal of spores



Viability of spores

- Viability of spores depend on weather condition especially moisture and temperature;
- Spores in fruiting bodies remain viable for longer periods than detached spores;
- Several studies were made on viability of spores.

VIABILITY OF SPORES

- LANGFORD (1945)
 - High germination of conidia and ascospores kept for 3 days at 27 °C and 70% R.H.
 - 80 °F and 70% R.H. – some still germinated after 7 days
 - Conidia sprayed onto young leaves, then kept dry for 7 days still infect when re-moist
- HOLLIDAY (1970)
 - Kept at room condition for 18 days – Ten percent of conidia germinated

Viability Of Spores Of *M. ulei*

Spores	Storage condition	Viability period
Conidia (detached)	24 °C, 65-95% R.H.	3-4 weeks
Conidia (intact)	24 °C, 85-100% R.H.	2 weeks
	24 °C, desiccation	16 weeks
Ascospores	24 °C, 85-100% R.H.	9 days
Perithecia	24 °C, 65% R.H.	3 weeks
	24 °C, 100% R.H.	12 days

VIABILITY

- Spores stored under cold and dry conditions survived longer;
- Conidia and ascospores obtained from leaves stored for long period in a refrigerator remain viable;
- Ascospores stored under desiccation survived for 15 days;
- Spores stored at -74 °C still survived.