

The distribution and Importance of South American leaf blight (SALB)

South American leaf blight (SALB)

- The most serious disease of rubber
- Destructive, spreads rapidly, difficult and expensive to control
- Infects only rubber plants (*H. brasiliensis*, *H. benthamiana*, *H. guianensis*, *H. spruceana*, *H. camporum*).

Past Destruction By SALB

SURINAM	1911 - 40,000 Tree Planted 1918 - Plantation Destroyed
PANAMA	1935 - Good year plantation starter 1941 - Plantation destroyed
BRASIL	1927 - 3,200 ha planted at Fordlandia 1993 - Plantation abandoned 1936 - 6,478 ha planted at Belterra 1943 - Plantation abandoned 1967 to 1986 - 150,000 ha planted under (PROBOR) 1986 - PROBOR Terminated, 100,000 ha infected with SALB

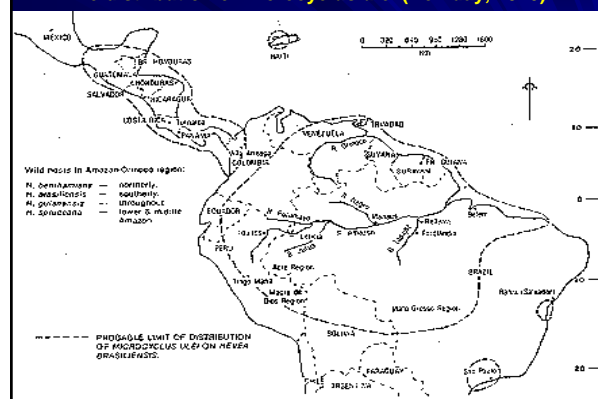
COSTA RICA

- Goodyear Speedway estate was planted in 1935 and was severely infected by SALB in 1941;
- History indicated that SALB caused a serious problem within 6-7 years of establishment of a plantation

DISTRIBUTION OF SALB

- Confined to the American tropics and Caribbean islands from Mexico to Brazil
- Present in Brazil, Bolivia, Colombia, Peru, Venezuela, Guyana, Surinam, French Guiana, Trinidad & Tobago, Haiti, Panama, Costa Rica, Nicaragua, Salvador, Honduras, Guatemala, Belize and Mexico
- Asia and Africa are free of SALB

The distribution of *Microcyclus ulei* (Holliday, 1970)



IMPACTS OF SALB ON THE TREE

- Repeated leaf defoliation
- Shoot dieback
- Trees with poor canopy
- Weedy conditions

ECONOMIC IMPORTANCE OF SALB

- Reduces tree growth
- Prolongs the immaturity period
- Reduces latex productivity by as much as 70%
 - Productivity of RRIM 600 in Brazil - 11.2 g/t/t and 15.9 g/t/t
 - Productivity of RRIM 600 in Malaysia - more than 60 g/t/t
- Kills the rubber plants and reduce density of stand
- Increases cost of rubber production – extra weeding and disease control

Shoot dieback and dead branches



ENVIRONMENTAL EFFECT OF SALB

Contamination of the environment and farmers by pesticides used for controlling SALB and also the weeds.

THE THREAT OF SALB TO ASIA AND AFRICA

SALB: HOW SEVERE IT WILL BE IF INTRODUCED INTO SOUTH EAST ASIA

- “It is an open secret in the industry that SALB should it crosses the Pacific could wipe out the supply of natural rubber “– Peter Wade in Fortune.
- “SALB would run through the Asian rubber plantations within five years”- Richard Evan Shultes.
- “It moves like a blow torch through the plantings” - Ernie Emle

SUITABILITY OF SALB IN ASIA

- Suitable climatic conditions
- Abundant susceptible clones
- Contiguous rubber plantings
- Rubber plant is mainly planted in smallholdings

Effect OF Rainfall On Severity On SALB

- 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 CLIMATE ON SALB

- Temperature : *Conidia germinate between 8 – 36 °C (maximum 24 °C)*
- Humidity : *Months with 18+ days with RH exceeding 95% for 10 hrs - severe SALB*

SIMILARITY OF CLIMATE IN MALAYSIA WITH CLIMATE IN SALB REGION

Months	Bahia, Brazil	Trinidad	Malaysia (N.S)
January	22	7	14
February	18	12	21
March	22	17	17
April	26	4	23
May	26	3	25
June	27	14	29
July	24	16	30
August	21	21	30
September	18	23	29
October	22	25	30
November	20	25	29
December	20	17	30

POSSIBLE METHODS OF INTRODUCTION OF SALB

- Infected *Hevea* Plants
- Spores Contaminating travelers, their belongings and imported commodities.

**The spores of
Microcyclus ulei remain
viable for a reasonably
long period**

VIABILITY OF SPORES

■ LANGFORD (1945)

- High germination of conidia and ascospores kept for 3 days at 80°F and 70% R.H. and some still germinated after 7 days
- Conidia sprayed onto young leaves, then kept dry for 7 days still infect when re-moist

■ HOLLIDAY (1970)

Ten percent of conidia kept at room condition for 18 days germinated

VIABILITY OF SPORES OF M. ULEI

SPORES	CONDITIONS	VIABILITY
Conidia (detached)	24 °C, 65-85% RH	3-4 weeks
	24 °C, 85-100% RH	2 weeks
	24 °C, desiccation	16 weeks
Conidia (intact)		
Ascospores	24 °C, 85-100% RH	9 days
	31 °C, 0-100% RH	3 days
Perithecia	24 °C, 65% RH	3 weeks
	24 °C, 100% RH	12 days

Survival Of Conidia Of M. ulei After 7 Days On Different Materials

Material	Germination (%)
Infected Leaves	53.3
Cloth	31.6
Polyethylene	29.3
Leather	26.5
Glass	26.0
Hevea Leaves	21.0
Metal	6.3
Paper	5.8
Dry Soil	50.0
Moist Soil	10.0

THANK YOU