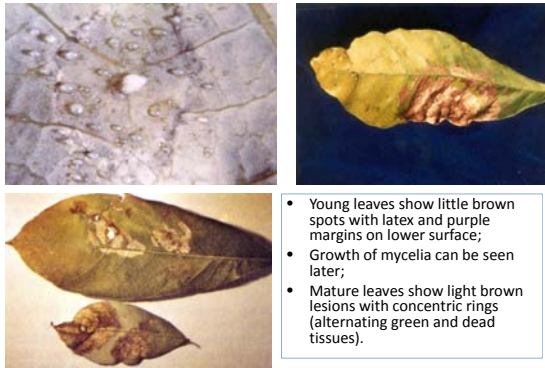


QUARANTINE PESTS AND DISEASES OF HEVEA RUBBER

TARGET LEAF SPOT

- Causal fungus:
Thanatephorus cucumeris
(anamorph: *Pellicularia filamentosa*);

TARGET LEAF SPOT



- Young leaves show little brown spots with latex and purple margins on lower surface;
- Growth of mycelia can be seen later;
- Mature leaves show light brown lesions with concentric rings (alternating green and dead tissues).

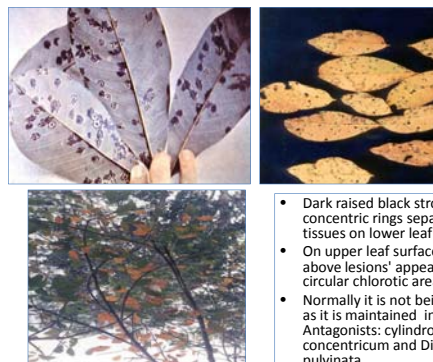
Target leaf spot (*T. cucumeris*)

- An important disease since 1940s but confined more to the Amazon region;
- Requires similar climatic conditions as SALB;
- Had been reported in Thailand and recently in Sri Lanka;
- Spread by basidiospores that are produced at night;
- Infect and cause defoliation of nursery and young plants. One lesion on main vein will cause leaf fall;
- Fungus remain viable on fallen leaves;
- Can be control with fungicides eg. triadimefon.

BLACK CRUST

- Pathogen: *Phyllachora huberi* (*Catacauma huberi*);

BLACK CRUST



- Dark raised black stroma appear as concentric rings separated by leaf tissues on lower leaf surface;
- On upper leaf surface immediately above lesions' appear yellow circular chlorotic areas.
- Normally it is not being controlled as it is maintained in suppression . Antagonists: *cylindrocladium concentricum* and *Dicyma pulvinata*.

INSECTS

- Lace bug or Mosca de renda (*Leptopharsa heveae*).
- Sphingid moth or Mandarova (*Erinyis ello*);
- White fly or mosca branca (*Aleurodicus cocois*);

LACE BUG (Mosca de Renda)

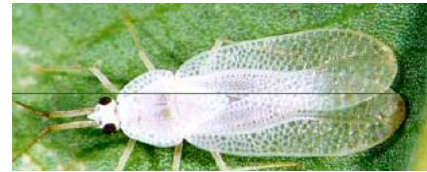
Leptopharsa hevea

Leptopharsa heveae on *Hevea* leaf



Source: Google

LACE BUG (*Leptopharsa heveae*)



Source: Google

LACE BUG (*L. heveae*)

- The most important insect pest of rubber in South America;
- Occurs commonly in rubber plantation and a limiting factor of rubber production;
- Infects the leaves of seedlings and mature plants;
- The adults suck the sap and damage the leaves and reduces photosynthesis;
- Heavy infestation defoliate the tree and repeated defoliation reduce plant growth, reduces latex yield and subject the plants to severe SALB infection;

LACE BUG - CONTROL

- Chemical insecticides (deltamethrin, triclofon, metamidophos);
- Biological control;
 - Antagonistic Organisms: *Hirsutella verticillioides*; *Sporothrix insectorum*; *Verticillium lecanii*; *Beauveria brongniartii* and *Metarhizium* spp.
- Integrated control using insecticides and biocontrol agents (*Beuveria* or *Metarhizium*)
- Plant resistance.
 - Some clones eg. Fx 4037, RO 38 and RO 46) are not infected

Biological control of Lace bug



Source: M. Faria & D. Rangel

WHITE FLY (MOSCA BRANCA)

Aleurodicus cocois

Aleurodicus cocois (white fly)



Source: Google

Aleurodicus cocois infection



Source: Google

White Moth (*A. cocois*)

- Other hosts: coconut, cashew, guava;
- Increasing importance on rubber plantings in the Amazon region especially in areas with low natural enemies;
- Cause wilting due to loss of fluid as insects suck plant sap;
- The honeydew secreted by insects encourages growth of sooty mould that reduces photosynthesis;
- Severe infestation cause leaf fall;
- Control:
 - Biological control (*Encarsella nuyesi*),
 - Natural enemies (*Paecilomyces fumosoroseus*, *Verticillium lecanii*, *Erythmelus tingitiphagus*),
 - Chemical e.g. malathion, endosulfan, mineral oil.

SPHINGID MOTH

Erinyis ello

