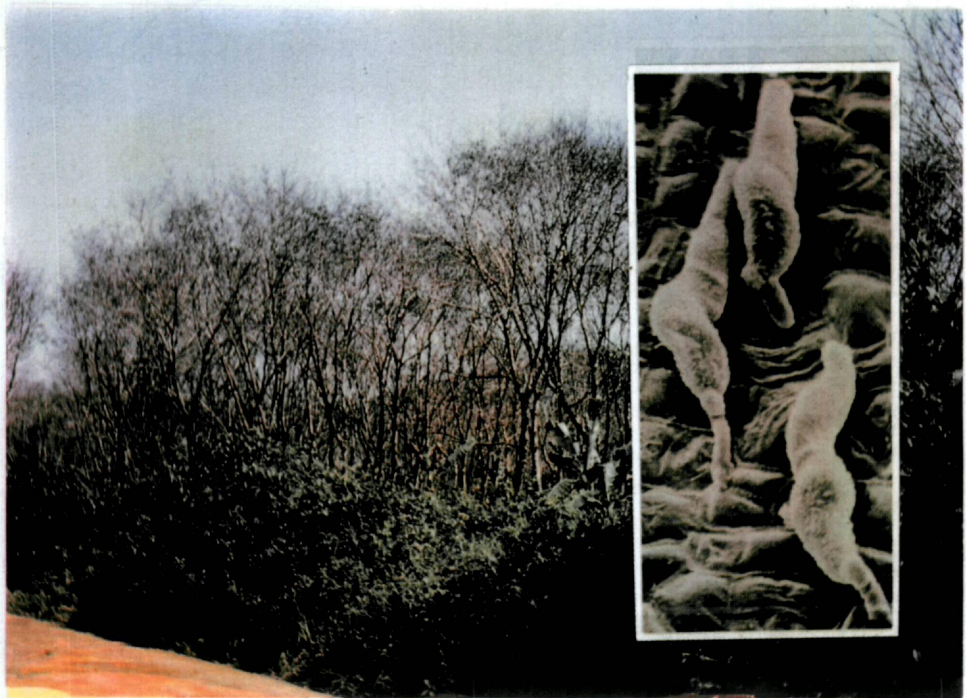


GUIDE TO IDENTIFY SOUTH AMERICAN LEAF BLIGHT IN RUBBER PLANTATIONS

C K Jayasinghe and R Jayaratne



South American Leaf Blight of *Hevea* rubber is identified as one of the world's five most threatening plant diseases and it is still endemic to Central and South American regions. Presently disease extends from Southern Mexico (18° latitude North) to state of Sao Paulo in Brazil (24° latitude South) covering Brazil, Bolivia, Colombia, Peru, Venezuela, Guiana, Surinam, Trinidad, French Guiana, Trinidad, Tobago, Haiti, Panama, Costa Rica, Nicaragua, Salvador, Honduras, Guatemala, Belize and Mexico.

The causative agent *Microcyclus ulei* (P. Henn.) Von Arx. is an obligatory parasitic fungus which affects only the genus *Hevea*. Other than rubber no any other plant in the world was shown to be affected by this disease. The fungus produces sexual and asexual stages both on the same rubber leaves. Three types of spores

namely conidia, pynidiospores and ascospores are produced and it was shown that conidia and ascospores are responsible for the disease dissemination. Conidia (Fig.b) are produced in large number and they are the most important propagules responsible for the spread of the disease. With regards to survival, ascospores (Fig.b) play a significant role as they are protected from desiccation by a thick wall of the spore producing organ (ascocarp).

Asia and Africa which supply more than 95% of the world natural rubber production are still free from this deadly disease. However, increased trade and movement of tourists and businessmen between American Tropics and Asian countries can possibly introduced SALB into our territory. The tremendous speed of air traveling has greatly reduced traveling time and this is likely to ensure the survival of spores and their eventual germination, infection and spread into new areas. Once the disease get introduced into our region, the chances of establishing and reaching the disease to epidemic levels are very high as almost all the clones planted in this region are highly susceptible to SALB. Moreover the climatic conditions in these countries are extremely favourable for the pathogen to establish.

Very young leaves are the most susceptible to SALB and the leaves become more resistant and finally immune as they aged. The type symptoms produced on the leaves is greatly influenced by (a) The age of the leaves at the time of infection. (b) The susceptibility of the clones and (c) the prevailing weather conditions.

Severe infection on copper brown leaves during wet weather will cause the leaves to shrivel, turn black and fall, leaving petiole intact (Fig. a).

When infection is less severe or infection occurs on relatively mature or less susceptible clones, the leaflets will not drop immediately. On these leaflets characteristic dull velvety lesions which are olive to grayish green in colour are developed mostly on lower surface (Fig.c). The lesions are covered with masses of conidia.

Fig. a. Severely infected copper brown leaves. Note the shriveled leaves (left) and intact petioles (right) after the leaf fall

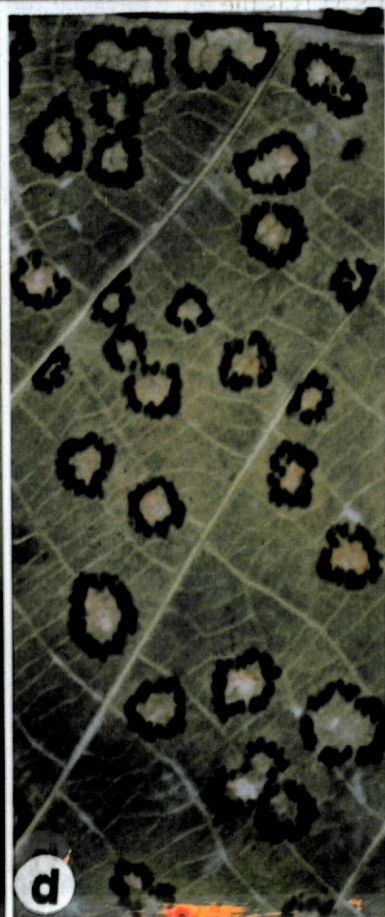
Fig. b. Conidiospores (up) and ascospores (down) of *Microcyclus ulei*

Fig. c. The typical dull velvety lesions which are olive to greyish green in colour. These lesions are covered with masses of conidia

Fig. d. The pycnidia on the lower surface of the leaf

Fig. e. The perithecia of *Microcyclus ulei*. The leaf tissues at the centre of the lesion die and eventually tear-off leaving a hole on the mature leaves (Figs. a-e with the courtesy of ANRPC)

Photograph on the first page: Defoliated rubber clearing in Brazil due to South American Leaf Blight and a scanning electron micrograph of conidiospores, the most important propagules responsible for the spread of the disease. (Courtesy: Rubber Research Institute of Thailand)



If leaves remain intact, after several weeks, small spherical black structures (Pycnidia) are formed on the upper leaf surface at the fringes of the disease lesions (Fig d).

Subsequently, (about a month later) more prominent raised bodies called perithecia are formed at the same site as the pycnidia. The perithecia produced another type of spores referred to as ascospores.

Finally, the leaf tissues at the centre of the lesions turn papery white as they die and eventually tear-off leaving holes surrounded by the black spherical perithecia (Fig. e).

Mulei also infects other tissues of the rubber plants such as the petioles, shoots, stems, flowers and young fruits. When shoot tips are infected, eventually they will cause shoot die-backs.

Public vigilance

As already pointed out SALB is the most devastating disease of rubber. Even though it is presently confined to Central and South America the chance of it's spreading beyond the American continent has greatly increased due to rapid air travel. Should this disease to be introduced into Sri Lanka (despite the special precautions that are being taken to exclude it) the success of eradication may totally depend on the detection of the disease before the widespread. Hence anyone suspecting the presence of SALB should send specimens to the Rubber Research Institute of Sri Lanka for investigations. A few leaves showing the suspected symptoms should be wrapped separately with newspapers and placed in polythene bags which are to be sealed and sent to the Institute. Before sealing the polythene bags, moisten the newspapers enclosing the leaves with 1% formalin solution.

**The Survival of the Rubber Industry Depends on You : Help Us to
Keep the
Asian Continent Free of SALB.**

ACKNOWLEDGMENTS

The authors are indebted to Association for the Natural Rubber Producing Countries (ANRPC) and Rubber Research Institute of Thailand for the photographs. Most of literature cited in this article are with the courtesy of ANRPC. They are also thankful to Mrs P Amarasekera for word processing.