

## RECOMMENDED FUNGICIDE APPLICATION

Below are fungicides used in affected member countries to control the disease.

COUNTRY	FUNGICIDE SPRAYING
India	Mancozeb (2,66 g/L, 2.5 L/tree with two weeks interval for immature trees. One round spray of copper oxychloride (8 kg) in agricultural spray oil (40 L/ha) for mature trees.
Indonesia	Fogging with hexaconazole 250 ml + 500 ml water and 2-litre diesel + 50 ml emulator per hectare/need to apply at night- early morning when there is dew. Apply this when it's at phase B - the bronze stage of the leaves before wintering season. Every two weeks until attaining 20% of the canopy and attached the scoring chart. spraying with hexaconazole, 1 to 2-litre fungicide per hectare and propiconazole, thiophanate-methyl, 1 to 2 litre per hectare (ground spraying). Every two weeks for spraying interval.
Malaysia	Propiconazole (1000 ppm a.i)/Benomyl (2000 ppm a.i)/Propineb (1400 ppm a.i)/Mancozeb (2600 ppm a.i)/Chlorothalonil (2000 ppm a.i). Spray after wintering and/or before monsoon season with 3-6 rounds with 7-14 days interval.
Sri Lanka	Carbendazim (10g / L) and hexaconazole (10 ml / L) were to be sprayed alternatively in three rounds at the time of the apple green to copper brown stage for mature plantations. This recommendation is for where more than 60% leaf fall is noted.
Thailand	Triazole fungicides : propiconazole (100-150 ppm a.i.) and difenoconazole (100-150 ppm a.i.) Benzimidazole fungicides : carbendazim (75-150 ppm a.i.) and thiophanate methyl (150-200 ppm a.i.) Spraying: Early rainy days or detects the disease symptom within 2-4 weeks interval, 3-4 times. Triazole fungicides and Benzimidazole fungicides should be sprayed alternately preventing fungicide resistance action.
Viet Nam	Propiconazole (187 ppm a.i.); Tebuconazole (250 ppm a.i.); Propiconazole (125 ppm a.i) + Tebuconazole (125 ppm a.i.); Hexaconazole (200 ppm a.i) with surfactant. Spray 2-3 times, 10-14-days interval. 500-750 l/ha/time



Different types of spraying machine used for fungicide application



ANRPC Technical Committee  
on Plant Protection

# LEAF FALL DISEASE (LFD) OF RUBBER

(*Hevea brasiliensis*)



## LFD IN THE ANRPC MEMBER COUNTRIES

The first incidence of leaf fall disease (LFD) in rubber was reported in Indonesia in 2016 affecting a rubber area in North Sumatra. The disease was subsequently reported from other member countries.

Mild and moderate infections can cause up to 50% defoliation. Severe and repeated infections cause leaves to drop up to 100%. High rainfall aggravates defoliation.

Country	Detected Year	Area affected (ha)*	As-to-date
Indonesia	2016	390,000	2022
Malaysia	2017	73,000	2021
India	2017	18,000	2022
Thailand	2019	124,000	2022
Sri Lanka	2019	30,000	2022
Viet Nam	2021	13,400	2022
Philippines	2022	1,897	2023

Note : \*As of August 2023



Defoliation caused by severe infection of LFD

## SYMPTOMS

- Evident on mature rubber leaves.
- Round pale green spots which turn to dark brown followed by light brown (with age).
- Leaf colour may change to yellow or remain green.
- The spot size varies between 0.5 to 3 cm diameters.
- The disease affects leaves, stems, branches and fruits, with the infection being most prevalent on the leaves than on other parts.



Symptoms on mature leaves



A



B

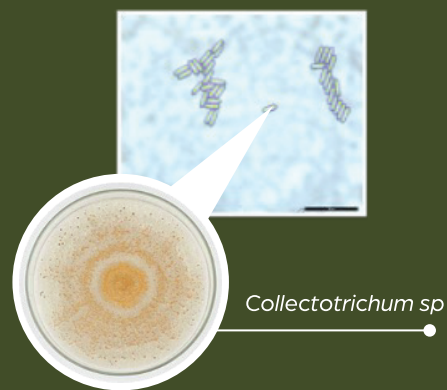


C

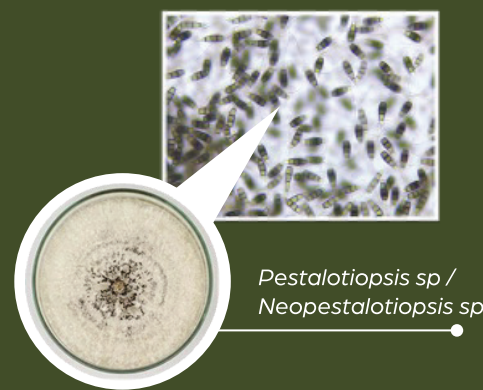
- Development of lesion:  
**A)** Early symptoms  
**B)** Lesions turn dark brown  
**C)** Older lesions are light brown in colour

## CAUSAL PATHOGENS

Potentially caused by fungi *Pestalotiopsis* spp. and/or *Colletotrichum* spp. Possible involvement of other pathogens (pathogen complex).



*Collectotrichum* sp

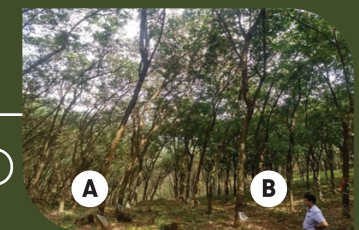


*Pestalotiopsis* sp /  
*Neopestalotiopsis* sp

## MANAGEMENT OF LFD

- Good agricultural practices are recommended to keep rubber tree strong and healthy. The practice involves manuring, weed control, pest and disease control.
- The use of disease-tolerant clones: RRIC 100, RRISL 2006, IRR 112, CEN4, PB235, BPM1
- Avoid tapping irregularity
- Prevent tree stress
- Apply fungicides

Please scan the QR Code to contact the relevant Rubber Research Institute officers for further information



A

B

Unsprayed (A) and sprayed area (B) in India