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# NEW PROBLEM FUNGUS IN TEA?

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An unusual problem was reported from a small holder's property in Athulanda, Kitulgala, in the Kegalla District, in August 1996 (A.Somarathne, TSHDA, personal communication). The property was located, remote from any motorable road, at an elevation of about 400 m amsl. According to the report, a new clearing of about 0.5 ha of tea, of the clone TRI 2026 about 2 years old has been totally destroyed.

The nursery plants were being smothered by some unusual fungal invasion, brownish-black in colour. This fungus, apparently had its origin in the soil and did not spare anything that was live and upright, including the *Gliricidia* posts that were found planted around the nursery beds. This brownish-black growth upon reaching a plant base, start to grow up, covering the entire surface including leaves (Fig. 1). On the leaf, first to be invaded was its undersurface (Fig. 2), and then it reached the upper surface. When only one surface is covered, an occasional necrotic patch or two could be seen on the opposite surface (Fig. 3). The fungus has a smothering effect on the host plant, which may not reflect a complete parasitism. Nevertheless, it is capable of complete annihilation of an average sized tea plant.

There were other plant species that were found to be invaded in the same vicinity such as, *Centella asiatica, Cyprus rotundus, Ageratum conizoides, Paspalum conjugatum* (Fig. 4), *Vanilla planifolia* (Fig. 5), *etc.* These plants were present there, either as weeds or cultivated species.

## What causes this?

The unusual growth is suspected as, that of a fungus of the class Basidiomycetes. No authentication is available yet from the International Mycological Institute (IMI) (accession No.W5295-W5297, dated, 21st August 1996), having sent the

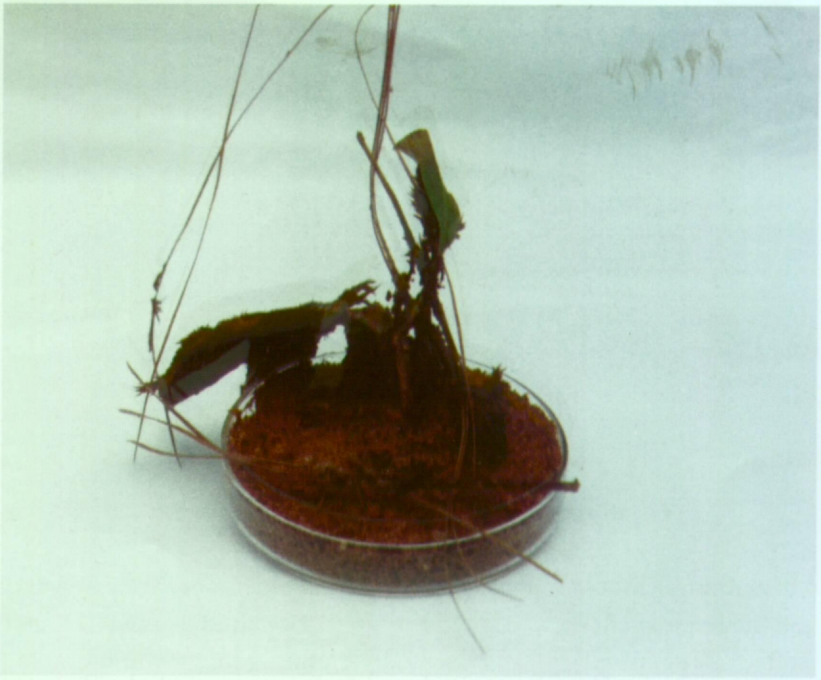

*Fig 1. A nursery tea plant completely smothered by the fungus*

*Fig 2. First to be invaded is the underside of the leaf*

*Fig 3. Necrotic patches caused on opposite surface of leaf by the invasion*

*Fig 4. Thelephora fungus on different plant species*

*Fig 5. Thelephora* fungus on *Vanilla planifolia*

samples immediately after collection. No fresh samples were available for a second attempt. However, the following taxonomic classification was possible based on Fergus (1960) and Alexopoulos (1962). According to the Fergus' classification this belongs to genus Thelephora;

Basidiocarps were observed on the ground as well as on the bases of living tea seedlings (Figs. 6 & 7);

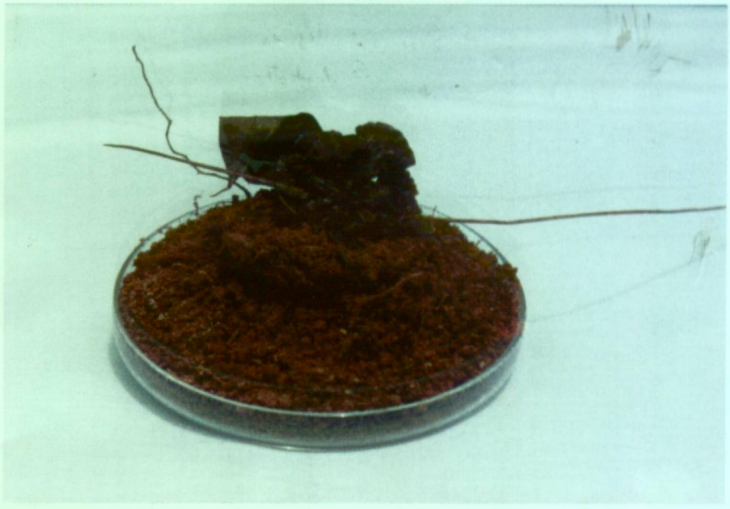

*Fig 6. Basidiocarps occurring on ground*

*Fig 7. Basidiocarps at the base of a young nursery tea plant*

They are either stipitate and infundibuliform or stipitate and more less branched or sessile and effused reflexed; thin and flexible, more or less brown in colour at maturity and turning black with KOH solution; hymenium usually on only one surface; context brown, basidiospores coloured, typically angular, echinulate; basidia one-celled, four-spored.

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| Division | :- Mycota |
| Sub Division | :- Eumycotina |
| Class | :- Basidiomycetes |
| Sub-class | :- Homobasidiomycetidae |
| Order | :- Theleporales |
| Family | :- Thelephoraceae |
| Genus | :- Thelephora |

**Background of the problem**

The first symptoms of this problem had been observed in February/March, 1996. When it started spreading in the 0.5 ha of a new tea land, the owner, with advice from the Tea Small Holders Development Authority (TSHDA) officials, had uprooted and burnt all the affected young plants. At the time of the visit, there was not a single plant left of it, thus indicating the gravity of damage.

Barely a few meters away, was a brush-wood, with some natural growth of Bracken Fern (*Gleichenia linearis*). The farmer has used 'Basamid' treated topsoil and (untreated) bracken fern branches obtained from this area, to make his nursery and shade the plants, raised in beds. At the time of the visit, only a few plants remained from an original nursery of about 100 $m^2$. Almost all of them were found already invaded by the fungus, at varying degrees. They were apparently left undisturbed for our observations.

This had been a fairly wet year (more than the usual), at an elevation befitting low country (400 m), with the associated high temperatures (T°) and relative humidity (RH). It was reported by the farmer that on a wet and warm night, the fungus could grow in excess one foot up, *Gliricidia* posts.

It is likely that the fungus found its way in, from the adjoining uncleared patch of jungle. During land clearing and cultivation it may have got disturbed in its own ecological niche, and got introduced into the nursery area along with soil and the 'Bracken Fern'. During the same operation, the organism would have got introduced to the recently planted field, as the above material had been transported along the edges that field. Therefore, it is possible that the normally different form of weather, the disturbed inoculum and seemingly new environment played a role together in the heavy rate of multiplication of the fungus.

After these observations, strict instructions were given to the farmer to contain the problem. That included cordoning-off the nursery area in which the fungus was still active, by converging all the debris into the center and burning all the debris, *in situ*. This has reportedly helped the full containment of the problem. This also recorded the unfortunate termination of the problem, because the organism was not available anymore, for further studies.

Further inquiries revealed that a problem with similar descriptions existed in another small holder's property in the Matara district in a village called Wilpita. This property too is located adjoining a natural forest reserve (Oliyagankelle). The farmer while clearing up boundary drains, had turned in, the litter into his tea garden. Within a few days, he had seen (probably under similar wet and warm conditions) something unusual growing up his tea plants (clone TRI 2026). Being a very enthusiastic farmer, he had tried all measures known to him, such as physically brushing off the growth, applying discarded engine oil and hydrated lime and even applying some agro-chemicals, on to tea bush frames. Very likely, due to his timely attention, he had been able to end his problem before it caused any serious damage to tea plants. This had happened around mid 80's (about 10 years previously) and by the time the farmer was visited (about 15 years, later) his recollections were not very clear, specially considering his age, around 70 years!

**Caution**

With these two examples (one very positive and one speculative), it is possible that problems of this nature could reappear under similar circumstances. What is very alarming is the promiscuity of the fungus, sparing no living plant on its way.

At present there may not be very much one could do about the problem. The organism as it appears is in nature, probably confined to the low country wet zone. But it is in records now of at least one big loss (to a small farmer) on account of this problem. Therefore, the importance of maintaining a constant vigil by those small growers in the low country, who very often cultivate tea, boardering natural or manmade jungles, in order to immediately recognise the problem before it becomes too late. There is already one probable experience in which, timely action has averted a big loss to a smalltime farmer. A few days over-sight, may cause another total failure, to another tea grower somewhere in the low country. Therefore, it is necessary to commence more systematic surveillance studies on this apparently rare problem.

## REFERENCE

Alexopoulos C J 1962 Introductory Mycology, Second edition. John Wiley & Sons. 613 p.

Fergus C L 1960 Illustrated genera of wood decay fungi. Burgess Publishing Company, Mennesota. 132p.