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Control of Teak Seedling Blight

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ကျွန်းပျိုးပင်ရွက်ပုတ်ရောဂါကာကွယ်ထိန်းသိမ်းခြင်း

စောစီဒူး
သစ်တောသုတေသနဗိမာန်

စာတမ်းအကျဉ်းချုပ်

အရှေ့ပဲခူးရိုးမ ပျိုးခင်းများတွင် ကျရောက်သောကျွန်းရွက်ပုတ်ရောဂါကို လေ့လာထားခြင်းဖြစ်ပါသည်။ ၎င်းရွက်ပုတ်ရောဂါကို ဖြစ်စေသော (*Phytophthora* sp.) မှိုပိုးရောဂါကို ကာကွယ်စိုက်ပျိုးပြုစုနည်းအရသော်လည်းကောင်း၊ မှိုပိုးသတ်ဆေးပက်ဖြန်းခြင်းဖြင့်သော်လည်းကောင်း လေ့လာတင်ပြထားသော စာတမ်းဖြစ်ပါသည်။

Control of Teak Seedling Blight

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Abstract

Studies were made on the leaf blight of Teak Seedlings occur in the East Pegu Yoma teak nurseries. *Phytophthora sp.* was isolated from the disease part of the teak leaf. Test of various fungicides for the control of teak seedlings blight was investigated.

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1. Title

Control of Teak Seedling Blight.

2. Objective

To establish a control method for teak leaf blight both by silvical and direct methods.

3. Background

There has been report of teak disease caused by both bacteria and fungi (2). A report of Teak seedling with (1) was also reported in the country. However, report on teak leaf blight was not recorded.

Teak seedling blight was detected in 1980 and 1981 where nurseries were raised all over East Pegu Yoma plantations centers in the country. The damages done by the causal organism were as high as 20% of the nurseries stock.

The disease occurred right from Pegu Forest Division to Yamethin Forest Division. The epidermal disease still continue to spread in the proceeding year at an alarming speed. Hence, methods for the control of this disease becomes important.

4. Symptom of the disease

The Symptom of the disease usually occurs on the leaf as a brown spot. The spot then gradually enlarge and necrosis appears on the leaf surface. As favourable conditions prevail the disease spread all over the leaf surface and the leaf turns dark. Subsequently, the disease attacks the young stem, and the seedling succumb to death.

5. Materials and Methods

Isolation of the disease plant parts was done in Potato Dextrose Agar Medium.

Diseased plant parts were thoroughly washed with tap water. The plant part were excised (2 mm x 2 mm) and sterilized with 1% HgCl for one minute, rinse in sterilized distilled water and again sterilized with 5% calcium hypochlorite. The plant parts were then plated out in petridishes (PDA).

The causal organism was then isolated and identified. To obtain a pure culture the fungal tip was cut and culture in test tube containing PDA.



Figure 1. Leaf blight of one year old grafted teak in Moswe nursery. Ngalaik Reserve. Yemethin Forest Division



Fig. 2. Leaf blight of Teak seedlings in Sein-ye teak nursery.
Kabaung Reserve South Taungoo Forest Division.



Fig. 3. Example of a Teak seedling succumb to death by the attack of
Phytophthora sp.

Sporulation

Formation of spores were induced in V-8 agar medium placed under light (1000 lux) for 12 hrs.

Virulent Test

A pure culture of isolates were placed on the leaf and incubated in a make-shift moisture chamber. The appearance of the disease symptom was observed daily.

Sensitivity Test

Fungicidal test was made *in vitro* (5) different fungicides were used in the test. 1 cm radius filter papers were dipped in 5 different fungicides for half an hour and plated out in PDA. At least 5 replications were used in the test. The fungus isolated was placed in the center of the plate and kept in room temperature. The development of the fungus was observed daily.

Temperature

Temperature is the critical factor in the development of *Phytophthora* sp. A test was made in different temperature to investigate the optimum temperature for both the growth *in-vitro* and infection *in-vivo*.

6. Results

The causal organism of the blight on teak seedlings was identified to be *Phytophthora* sp. (Fig.4). The isolate when inoculated on teak seedlings produced the same symptom as it has occurred in the field. Reisolate from the inoculated seedling disease was identical to the original species.

Sporulation of the causal organism occurred after 7 days when cultured on V-8 agar and placed under light (1000 lux) (Fig.5)

5 different fungicides were tested for the control of leaf blight in the field. Bordeaux mixture at the ratio of 5: 5:50 (CuSO₄-1b CaO-1b, water-gallon) was found to be effective, which is the cheapest mixture of fungicide.

Phytophthora sp. when incubated at different temperature, thrived well at 28°C. Little growth was observed below 10°C and above 36 °C (Fig.6). Development of disease on leaf was also found to be severe at 28°C. Little infection occurred at 16°C and at 36°C (Fig.7).

A higher concentration of inoculum readily infect the leaf after 96 hr. However, low concentration of inoculum infect the leaf after a longer period of incubation (Fig.8).

Both temperature and concentration of inoculum play important role in the development of disease. With high concentration of inoculum and optimum temperature, the development of disease was severe compared to other conditions (Fig.9).



Fig 4. Isolate of *Phytophthora* sp. from teak seedling blight



Fig 5. Development of a sporangium of *Phytophthora* sp. in V-8 agar medium.

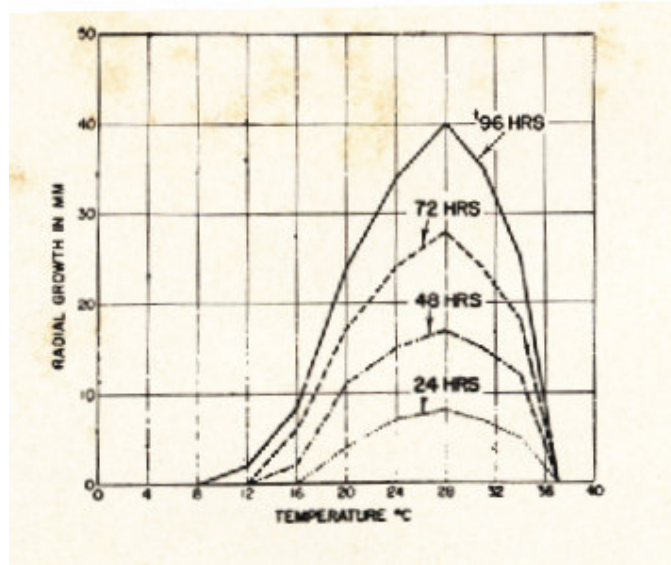


Fig. 6. Growth of *Phytophthora* sp. on V-8 agar medium at different temperatures

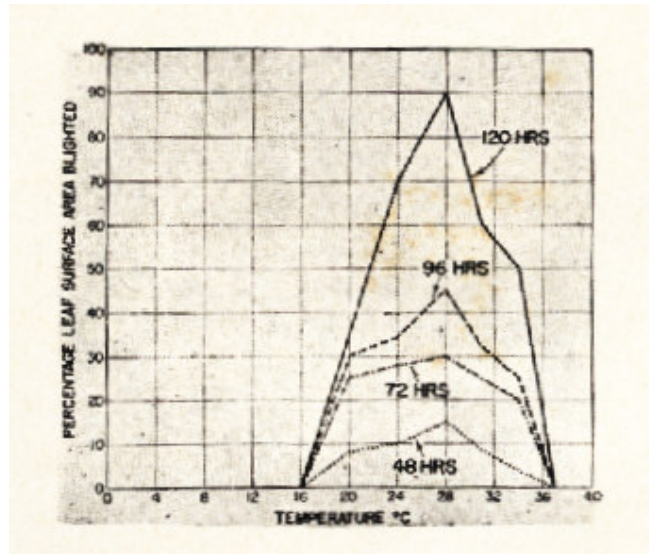


Fig. 7. Development of disease on leaf caused by *Phytophthora* sp.

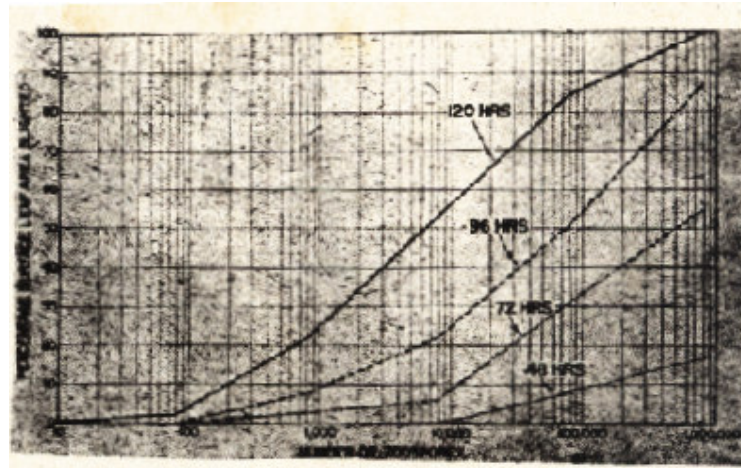


Fig. 8. A comparison of concentration of inoculum and the development of disease on leaf

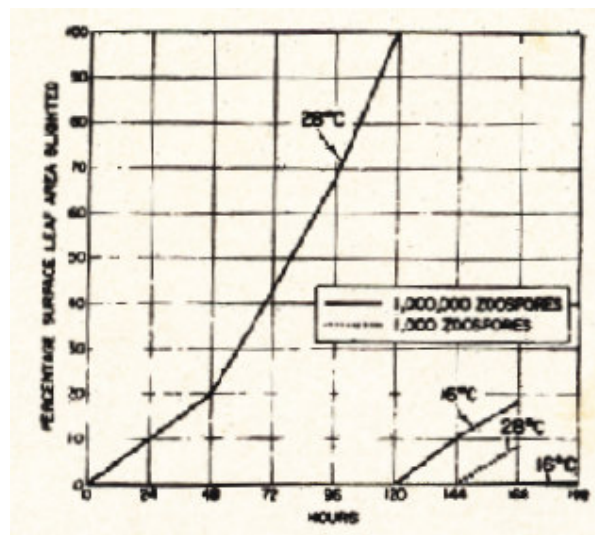


Fig.9. A comparison of Temperature, concentration of inoculum, and the development of disease on leaf

7. Discussions and Suggestions

Phytophthora sp. is one of the most virulent species in tropical countries. It attacks quite a number of trees. Recently, a further observation was made on the attack of *Xylia dolabriformis* (Pyinkado) by *Phytophthora* sp.

As plantation scheme is enlarged in the country care must be taken and raising Teak and Pyinkado seedlings in the nursery. To avoid loss in nurseries, protection of the raised seedling must be given priority.

The following informations may give a guideline to nursery-man in the field.

1. The causal organism start to spread as soon as the rains become heavy (i.e. May, June, July)
2. Moisture and temperature are the critical factors for the initiation of infection. (i.e. a warm weather 28°C -30°C and moist conditions.)
3. A congested nursery encourage the disease to spread faster with favorable conditions.

8. Suggestions

1. Nursery site should be chosen in a well-ventilated area, where air movement has no obstruction.
2. Nursery shed should be removed as soon as monsoon break.
3. Watering of seedlings should be adequate but not to the excess.
4. Protection by spraying the nursery with Bordeaux mixture once a week is recommended.
5. Disease plant parts should be removed as soon as possible to avoid spreading.
6. All the plants should be scattered as soon as seedling disease is observed.

References

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