

TREE DEFOLIATED BY THE COFFEE LEAF RUST



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**ITS' IMPACT ON COFFEE PRODUCTION
AND SOME CONTROL STRATEGIES TO
MINIMIZE THE IMPACT ON THE CROP**



THE COFFEE LEAF RUST:

- Is caused by a fungus-*Hemileia vastatrix*
- Is one of the most devastating and widespread disease of coffee worldwide.
- Has wiped out coffee in what is now known as Sri Lanka (Ceylon).

EFFECTS OF THE DISEASE

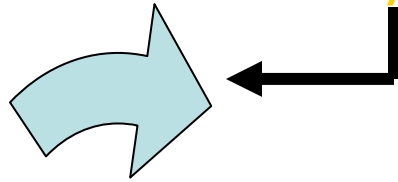
- ⇒ The fungus kills the section of the leaves on which it grows.
- ⇒ If the infection is severe this causes premature leaf fall
- ⇒ The trees ability to produce carbohydrates is then reduced.
- ⇒ Vegetative growth and berry growth and size are then significantly reduced.
- ⇒ The roots and shoots are starved of plant food due to leaf fall and the berries using up the carbohydrates.
- ⇒ This will lead to a reduction in the number of bearing nodes, thus a reduction in crop production for the next crop year.

COFFEE LEAF SHOWING THE UNDER SIDE WITH RUST INFECTION



Curative measures

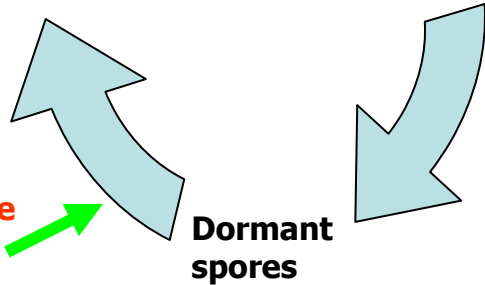
Disease symptoms



Spores multiplying in leaves

Spores reproduce

Preventative measures



Dormant spores

RECOMMENDED FUNGICIDES AND APPLICATION RATES

1. Apply 2 kg copper based fungicide per drum of water for mild infection levels or;
2. Apply 300 ml Tilt per drum of water for severe infection levels or;
3. Apply 500 ml Anvil 5 Sc per drum of water for severe infection levels.

CONDITIONS THAT MAY BE CONSIDERED IDEAL FOR THE DEVELOPMENT OF THE DISEASE.

- ♦ Susceptible host plants-*Coffea Arabica*.
- ♦ Host population or plant spacing.- closely spaced plants allow moisture to remain longer on the leaves. The disease will develop slower with wider spacing plants as moisture dries off faster.
- ♦ High yielding trees which become stressed after heavy nutrient loss to fruit development.
- ♦ Rainfall provides the moisture needed for germination and later the spread of the rust spores.
- ♦ Excessive shade which contributes to adequate moisture for the development of the disease.
- ♦ Temperature range most favourable for the disease development is 21°C to 25°C. However, the general range is between 15°C and 32°C.

THE DEVELOPMENT PROGRESS

- ◇ Free water is needed on the leaves for spore germination.
- ◇ With adequate moisture and temperature spores germinate within 2-4 hours.
- ◇ Within 24-48 hours infection process is completed.
- ◇ The time between infection and development of lesion (incubation period) is 3-6 weeks.
- ◇ Symptoms are therefore often evident in the dry season.

MANAGEMENT STRATEGIES

Non-Chemical Approach

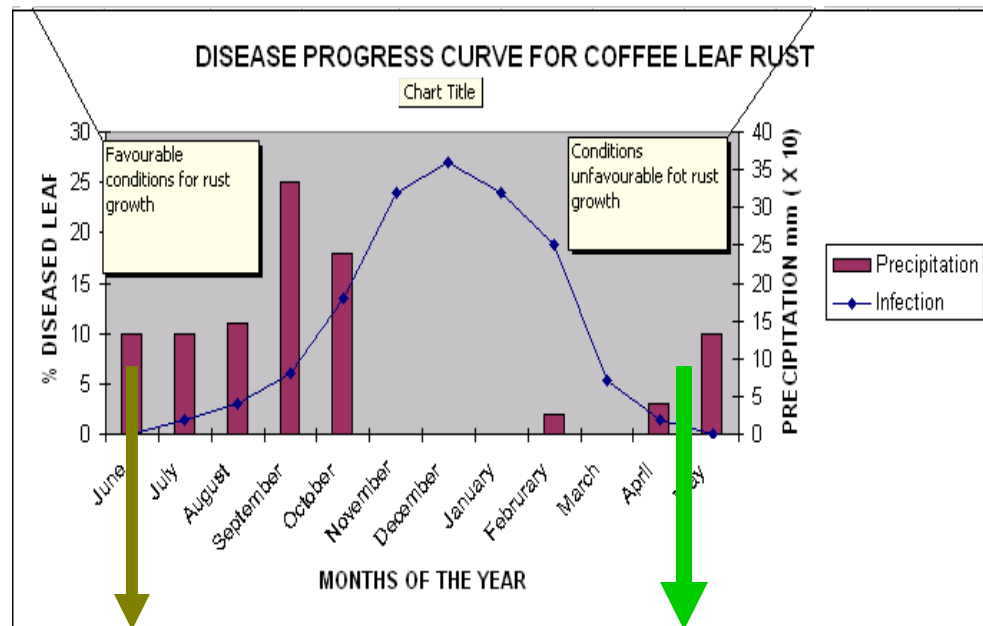
1. Proper shade regulation: reduce shade cover, increase light in field, do timely pruning of coffee plants.
2. Maintain fertile soil and hence healthy plants.
3. Prune coffee trees, remove gormandizer, dead branches and those branches that rest on the ground.

Chemical Approach

- a. Copper base contact fungicides have proven effective both in terms of cost and control.

- b. Systemic fungicides such as Anvil also gives good result but are more costly.
- c. Timing against rain and the appearance of the disease is important.
- d. Apply chemicals on the underside of the leaves where the spores are located.

HOW CLIMATE INFLUENCE THE DISEASE DEVELOPMENT



Conditions suited for rust development

Conditions not suited for rust development