

DISEASE OF IMPORTANT TREE SPECIES

BASTER UNIVERSITY

INTRODUCTION

- ❑ Disease is a continuous process not a temporary one such as injury in a tree that may be caused by lopping and browsing more over.
- ❑ A disease is different from a symptom in the same way as fever is a symptom of disease and not the disease itself.
- ❑ Plant pathology means (*pathos* = suffering, *logos* = the study) the “study of the suffering” Thus plant pathology is the “study of the suffering plants.”
- ❑ Plant pathology has the four main objectives.
 1. Etiology
 2. Pathogenesis
 3. Epidemiology
 4. Control

SYMPTOMS

- ❑ Apparent expressions of the process of disease in plants are termed as symptoms.
- ❑ symptoms do not develop immediately this time lag is known as the *incubation* period.
- ❑ Disease symptoms mainly 2 types.
 1. systemic symptoms : the whole plant or a major part of tree shows symptoms of the disease
 2. localized symptoms : These symptoms appear only on the particular part the tree that is affected e.g. root, shoot
- ❑ Disease symptoms may be classified into three classes.
 1. Nactrotic
 2. Atrophic
 3. Hypertrophic

DISEASES OF SHISHUM

BOTANICAL NAME :

Dalbergia sissoo

FAMILY : Leguminosae

CHARACTERS :

- ❑ Shisham is well distributed all over the sub- Himalaya tract and in many parts of the indo ganga plain.
- ❑ It is a large deciduous tree gaining a height of nearly 30 mts, under favourable condition.
- ❑ Natural regeneration comes up well under favorable

conditions. Artificial regeneration is brought about by the following methods. Direct sowing, Transplanting seedling, Root suckers, Stump planting.



(1) Wilt disease

- ✓ Caused by *Fusarium solani*.
- ❑ **Symptoms :**
- ✓ Yellowing & death of leaves in acropetal succession up the tree.
- ✓ The tree may present a yellowish appearance.
- ✓ Untimely defoliation
- ❑ **Control measure :**
- ✓ Sissoo should be raised on a site have high textured soil with adequate soil moisture & good drainage.
- ✓ Selection of the proper site for

raising sishum plantation is the most important preventive measure.



(2) Ganoderma root rot

- ✓ Caused by *Ganoderma lucidum*.
- ❑ **Symptoms :**
 - ✓ Tree becomes yellowing
 - ✓ Brick coloured sporophore are seen on root or root butt region.
- ❑ **Control measure :**
 - ✓ Prevention of injury to trees and removal of the affected individuals.
 - ✓ Removing stump after clear felling and introduce resistance species like Bombax.



(3) Powdery mildew

- ✓ Caused by *phyllactinia sissoo*.
- ❑ **Symptoms :**
 - ✓ It produces yellowish dense mycelium on the lower surface of the leaves.
- ❑ **Control measure :**
 - ✓ Affected parts are removed in plants.



(4) Leaf rust

- ✓ It is caused by *Uredo sissoo* .
- ❑ **Symptoms :**
 - ✓ Appears rusted coloured spots in leaf.
 - ✓ Tree becomes leafless.
 - ✓ Seedling becomes broom like structure.
- ❑ **Prevention and control :**
 - ✓ Using Blitex in spring season in nursery.
 - ✓ spreading protecting fungicide in stump.



LEAF RUST

DISEASES OF TEAK

BOTANICAL NAME: Tectona
grandis

FAMILY : Verbenaceae.

CHARACTERS :

- ✓ Teak is a native of India and Myanmar . major teak forest are found in Madhya Pradesh, Maharashtra, Karnataka Tamil nadu, A.P. M.P and Kerala.
- ✓ This is a large deciduous tree with large leaves and well developed bole. Teak becomes almost evergreen in characters.

- ✓ Regeneration have been done both Natural and Artificial.



(1) BACTERIAL WILT

✓ Caused by *Pseudomonas solanacearum*.

☐ Symptoms:

✓ In the initial stages small patches of brown tissue first appear between the veins of the leaves.

✓ There occurs wilting of the leaves and even young plants may wilt's a result of this wilting the plant up to pole stage may become yellow.

☐ Prevention and control :

✓ Nurseries must have good drainage and they should not be located in waterlogged sites.

✓ Care has taken to prevent root injury during transplanting



.(2) ROOT ROT

- ✓ Different pathogen are caused a root rot disease like *Peniophora rhizomorpha sulphurea* , *polyporous zonalis* , *Fomes noxius* etc.
- ✓ *Peniophora* root rot is caused by *peniophora rhizomorpha sulphurea*.
- ☐ **Symptoms :**
 - ✓ It causes yellow fibrous rot in the sap wood.
 - ✓ Its was affected the hole root system in the plant through of the wind.



❑ Prevention and control :

- ✓ Avoiding the coppicing of teak in wet and moist localities.
- ✓ Wherever possible, the roots of the affected stumps may be uprooted.

(3) PINK DISEASE

- ✓ Caused by *Corticium salmonicolor*.

❑ Symptoms :

- ✓ Infected young branches are killed in the beginning.
- ✓ In older branches infection forms canker and there develop longitudinal cracks in the bark.

❑ Prevention and control :

- ✓ Individuals affected by this disease must be removed from the forest as early as possible
- ✓ Infected branches lopped immediately.



(4) LEAF RUST :

- ✓ Caused by *Olivea tectonae*.
- ❑ *Symptoms :*
 - ✓ They cover the lower surface of the leaves with a rusty coat while the upper surface has a grayish appearance.
- ❑ *Prevention and control :*
 - ✓ In nurseries sulphur based fungicidal spray helps to control this diseases.
 - ✓ in forests, opening of the canopy helps to prevent and control leaf rust.



DISEASES OF SAL

BOTANICAL NAME : Shorea
robusta

FAMILY : Dipterocarpaceae

CHARACTER :

- ✓ Sal is found in two main region of India, viz in the northern or Himalayan foothill region and central or peninsular region.
- ✓ Sal is a large deciduous tree with a shining foliage, the bole is clean and straight.
- ✓ Sal is a light demander and Sal has a moderate coppicing power.

- ✓ Natural regeneration may be done by seedling and seedling establishment.
- ✓ And artificial regeneration is done by direct sowing, coppice, and planting of seedlings raised in the nursery.

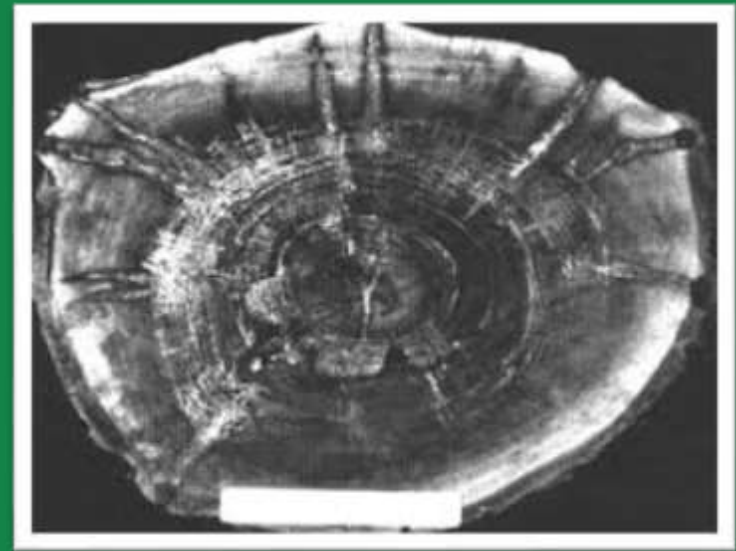


(1) POLYPORUS ROOT ROT

- ✓ Caused by *Polyporus shorae*.
- ❑ Symptoms :
 - ✓ Trees particularly the larger ones show symptoms of top dying as their remaining healthy roots are unable to meet the water requirements of the crown.
- ❑ Prevention and control :
 - ✓ Control burning reduces soil moisture and checks the growth of weeds.
 - ✓ All dead, dry , disease trees must be removed from Sal forest.

(2) HEART ROT

- ✓ Caused by *Fomes carophylli*.
- ❑ Symptoms :
 - ✓ branch/stem swelling.
 - ✓ Wood becoming white & decaying.



❑ Prevention and control :

- ✓ Forest fire can be minimised by controlled burning.
- ✓ And applying the silvicultural operation like thinning, felling etc.



- ✓ Death of the tree occurs particularly if it is a young age .
- ✓ The root system remains alive for a considerable period of time and it is the last to die.

❑ Prevention and control :

- ✓ Removal of dead, dying, diseased individuals.
- ✓ Protection against fire and biotic damage.

(3) DYING OF SAL

- ✓ Caused by *Polyporus shorae*
- ❑ Symptoms :
- ✓ There is dying back of the topmost branches of the crown.



DISEASE OF KHAIR

BOTANICAL NAME : *Acacia*
catechu

FAMILY : Leguminosae

CHARACTER :

- ✓ Khair occurs well distributed all over the country except in the very arid tracts and in the mountains.
- ✓ Leaf fall occurs for a short period in feb.and new leaves appear in may.
- ✓ It is a strong light demander particularly in the young stage.
- ✓ It is resistant to drought and also resistant to frost though not in

seedling stage.

- ✓ Artificial regeneration is done by direct sowing and transplanting seedlings.



(1) GANODERMA ROOT ROT

- ✓ Caused by *Ganoderma lucidum*
- ❑ **Symptoms :**
- ✓ The leaves become pale and young plants may die soon after infection.
- ✓ The pathogen attacks and kills the bark and white spongy rot may be caused in the bark.
- ❑ **Prevention and control :**
- ✓ Mechanised soil working.
- ✓ Resistant species.
- ✓ Mixed plantation.
- ✓ Affected plants are removed.



(2) FOMES BADIUS HEART ROT

- ✓ Caused by *Fomes badius*.
- ☐ Symptoms :
 - ✓ Initially the colour of the heart wood changes to a darker shade.
 - ✓ After some year the tree may become useless.
- ☐ Prevention and control :
 - ✓ Felling and removal of diseased trees.
 - ✓ Removal of all injuries to the tree.



(3) LEAF DISEASES

- a) **Leaf rust** : Caused by *Ravenelia tandonii* in parts of north India

b) **Powdery leaf spot** : Caused by *Microstroma acaciae* which produces snowy white tufts on the lower surface of the leaves.



Powdery leaf spot.



Leaf rust.

DISEASES OF NEEM

BOTANICAL NAME : *Azadirachta*
Indica.

FAMILY : Meliaceae.

CHARACTERS :

- ✓ Neem is native to the Indian sub continent but cultivated throughout south east Asia, Australia.
- ✓ In India Neem occur in the tropical dry deciduous forest. It is found U.P, Punjab, H.P, Rajasthan, Bihar, A.P., Haryana, Gujarat.
- ✓ It is a moderate sized to large evergreen tree.

✓ It is a light demander and drought hardy.

- ✓ It is a naturally from seed, coppice and root suckers. and artificial regeneration is done by direct sowings, root shoot cutting and transplanting.



NURSERY DISEASES

(1) DAMPING OFF

- ✓ Caused by the pathogen *Fusarium oxysporum*.
- ☐ Symptoms :
 - ✓ There is dying back of the topmost branches of the crown.
 - ✓ Death of the tree occurs particularly if it is a young age .
- ☐ Prevention and control :
 - ✓ Formalin is used for controlling this disease in the nursery.

(2) OTHER NURSERY DISEASES

- ✓ leaf web blight
- ✓ leaf spots
- ✓ leaf blight



Damping off



Leaf web blight



Leaf spots.

(3) ROOT ROT

- ✓ Caused by the pathogen *Ganoderma lucidum*.
- ❑ **Symptoms :**
 - ✓ The fungus attacks the sapwood and causes white spongy rot.
 - ✓ The root system is damaged by this fungus.
 - ✓ There occurs palling and yellowing of the leaves.
 - ✓ The branches dry after some time.
- ❑ **Prevention and control :**
 - ✓ Removal of residual roots and

stumps before new seedlings are planted.

- ✓ Isolation of the affected individuals.



(4) PINK DISEASE

immediately.

- ✓ Caused by the pathogen *Corticium salmonicolor*.
- ❑ **Symptoms :**
 - ✓ Die- back of the stem
 - ✓ development of cankers on the infected stem and branches.
 - ✓ Eventual death of the affected parts.
- ❑ **Prevention and control :**
 - ✓ Individuals affected by this disease must be removed from the forest as early as possible
 - ✓ Infected branches lopped



DISEASES OF BAMBOO

BOTANICAL NAME :

Dendrocalamus strictus

FAMILY : Poaceae

CHARACTERS :

- ✓ It is found throughout north west India up to 985 m in the hill.
- ✓ India has a rich diversity of bamboos with about 125 indigenous and exotic species belonging to 23 genera.
- ✓ It is height of about 40 mts.
- ✓ Natural regeneration is done by

rhizomes, coppicing , flowering and seedling.

- ✓ Artificial regeneration is done by direct sowing, transplanting seedlings, vegetative propagation.



(1) BAMBOO BLIGHT

✓ Removal of blighted culms.

✓ It is caused by a *Sarocladium oryzae*.

☐ Symptoms :

✓ Spots may develop on the undersurfaces of infected leaves the second prevalent symptom, wilting of the leaf margins.

☐ Prevention and control :

✓ Burning of debris in clumps in April and May before the onset of the rains.

✓ Application of certain chemicals as soil drench.



(2) RHIZOME BUD ROT

- ✓ Caused by a *Fusarium* and *Pythium* spp.
- ❑ Symptoms :
 - ✓ . There is infection of both scaly and flat Culm buds in the rhizomes of 1 to 2 year old seedlings. The infection usually occurs in the tender rhizome buds.
- ❑ Prevention and control :
 - ✓ . infected rhizomes are killed in digging and remove an infected rhizome.



(3) CULM ROT

- ✓ caused by two species of *Fusarium* .
- ❑ Symptoms :
 - ✓ It is a form of small spindle shaped brown lesions on the culm sheath.
- ❑ Prevention and control :
 - ✓ Removal of affected Culm and application of fungicides.



(4) ROOT ROT

- ✓ Caused by a *Ganoderma lucidum*
- ❑ Symptoms :
 - ✓ Outer side of root Ganoderma are found.
 - ✓ This disease are spread through root contact.
- ❑ Prevention and control :
 - ✓ Mechanised soil working and remove an infected root, bavistin are used.



(5) STEM INECTION

- ✓ Caused by a *Fusarium pallidoroseum*.
- ❑ Symptoms :
 - ✓ It attacks mature culms and also produces dark grayish brown lesions on young green branches.

- ✓ The infection is initiated as small dark brown or black lesion at the nodal region and spreads rapidly leading to rotting.
- ✓ The affected culms may break under influence of high speed winds.
- ❑ **Prevention and control :**
- ✓ The affected culms may be removed.



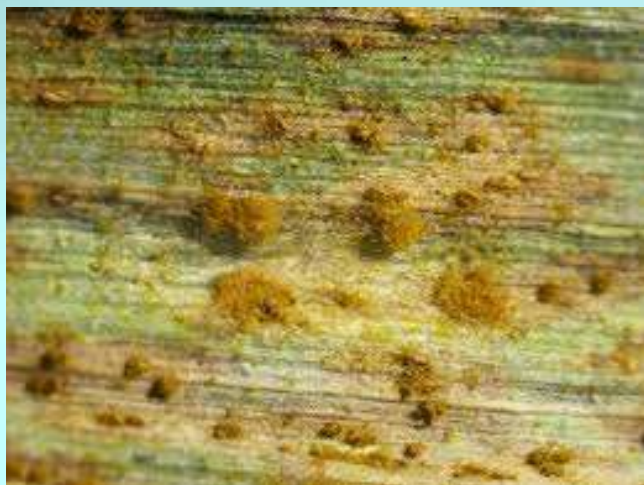
STEM INFECTION

(6) LEAF DISEASES

- **Leaf blight** :- Caused by *Rhizoctonia solani*, the infected leaves have profuse mycelial growth of the fungus it causes premature defoliation.
- **Leaf rust** :- Caused by a number of pathogen such as *Puccinia Xanthosperma Dasturella divina*, *Tunicospora bagchii*.
- **Leaf spot** :- It is caused by a number of pathogen such as *Phyllachora spp.* *Corticium koleroga*. These leaf spot may appear on either one or both the surface of the leaves.



LEAF RUST



LEAF BLIGHT



LEAF SPOTS.

CONCLUSION

- ❑ Pathology are help to the out break of diseases and damage of a plants some time diseases in the forest may developed in seriously affected of plant and reduces a maximum productivity.
- ❑ Control of the forest diseases may be done by direct measure such as isolation trenches and chemical control and indirect measures such as choice of species improvement of site and biological control.