

Vzdělávací materiály projektu

Inovace biologických a lesnických
disciplín pro vyšší
konkurenceschopnost
(InoBio)



Fungal diseases in Christmas tree plantations

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Introduction

Christmas tree production enormously increased in economy during the past 30 years, especially in Europe.

The conifer species planted are actually dominated by firs (Nordmann`s fir, Grand fir and others, more rarely spruces and pines are produced)

The set of species varies among the European countries, there are different fashions, not only regarding species preferred, but also shape and especially density of branches.

As a consequence of the increase in economic importance and number of produced trees fungal diseases and pest have been increasing in number as well.

The following presentation is aimed to reflect the situation of the most important fungal diseases of Christmas trees in Europe.

One aspect to be mentioned initially is, that any fungal species, unless it causes a optical impairment, has to be regarded as impact factor and thus as „enemy“), regardless of the severity of the harm it does to the tree. Any pathogen causing symptoms to needles reduces the value of a Christmas tree. Therefore this selection is not limited to life-endangering species but also includes needle pathogens, which are totally harmless in the forest.

Diseases of foliage, firs:

“Kabatina“-Needle disease – CSNN (*Sydowia polyspora*)

Needle rust of fir - *Pucciniastrum epilobii*

Lirula-needle cast of fir - *Lirula nervisequia*

Herpotrichia-needle cast of fir - *Herpotrichia parasitica*

Thysanophora penicillioides – needle cast

Rhizosphaera-needle cast - *Rhizosphaera* spp.

Phaeocryptopus-needle cast - *Phaeocryptopus nudus*

Delphinella needle cast – *Delphinella abietis*

Diseases of shoots, twigs and branches, firs:

Neonectria-dieback - *Neonectria* sp.

Diseases of foliage, spruces:

Chrysomyxa-needle rust – *Chrysomyxa abietis*

Lirula-needle cast – *Lirula macrospora*

Rosellinia-blight – *Rosellinia mycophila*

Diseases of buds and shoots, spruces:

Grey mould – *Botrytis cinerea*

Sirococcus-shoot dieback of conifers – *Sirococcus conigenus*

Thekopsora-shoot dieback of spruce – *Thekopsora areolata*

Diseases of stem and roots:

Phomopsis spp.

Armillaria spp.

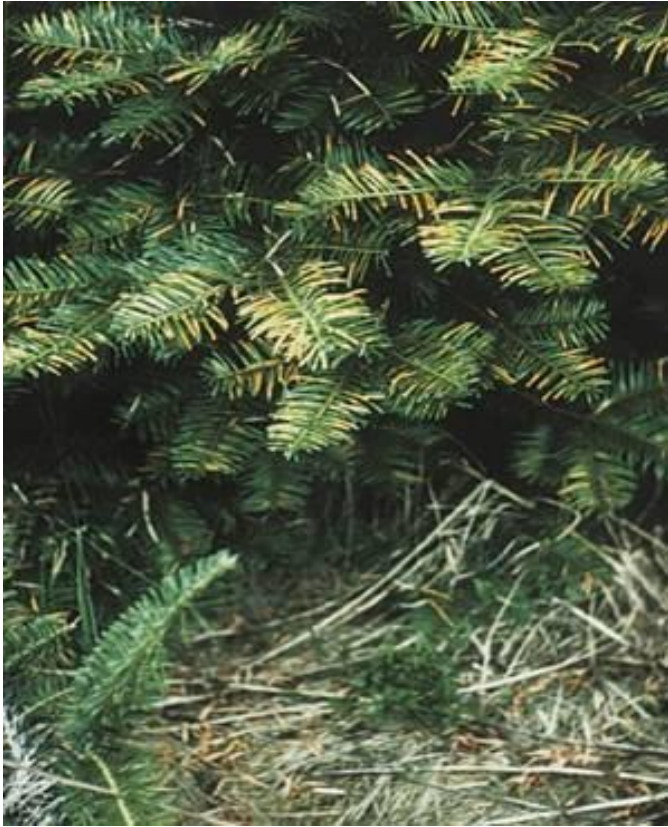
Phytophthora spp.

Violet root rot fungus - *Helicobasidium brebissonii*

Diseases of foliage

firs

“Kabatina“-Needle disease – CSNN
(*Sydowia polyspora*)



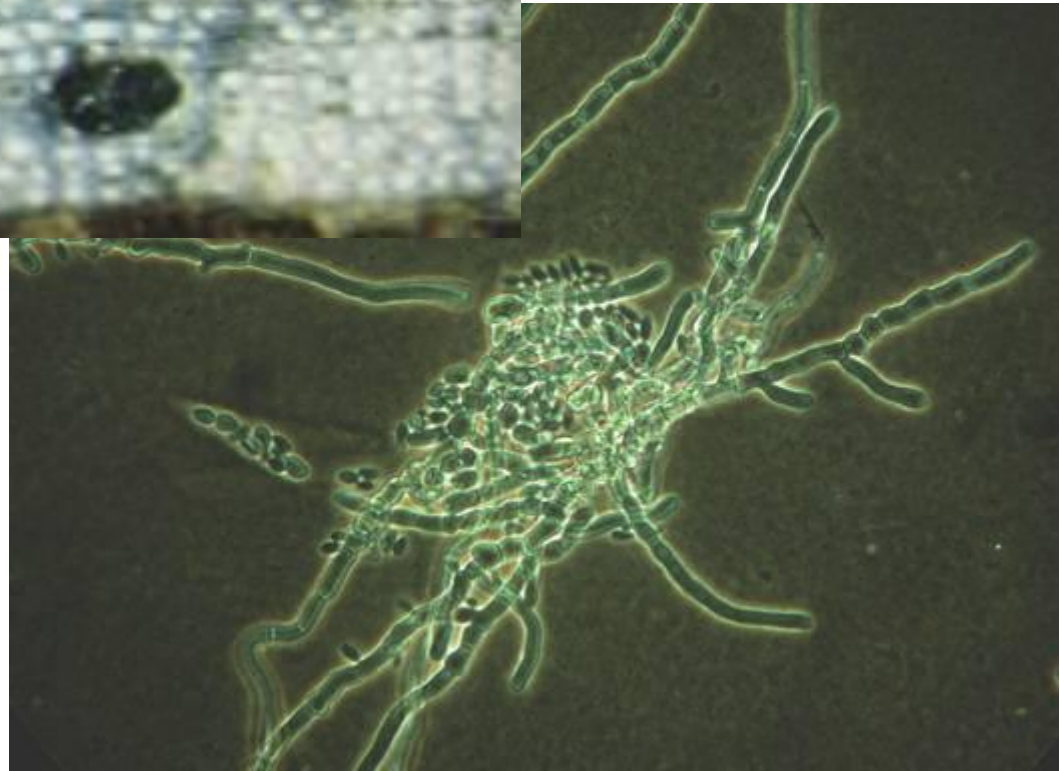
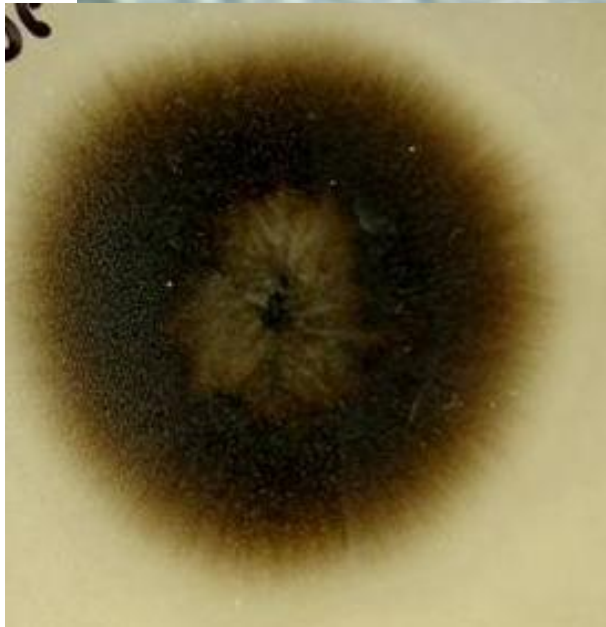
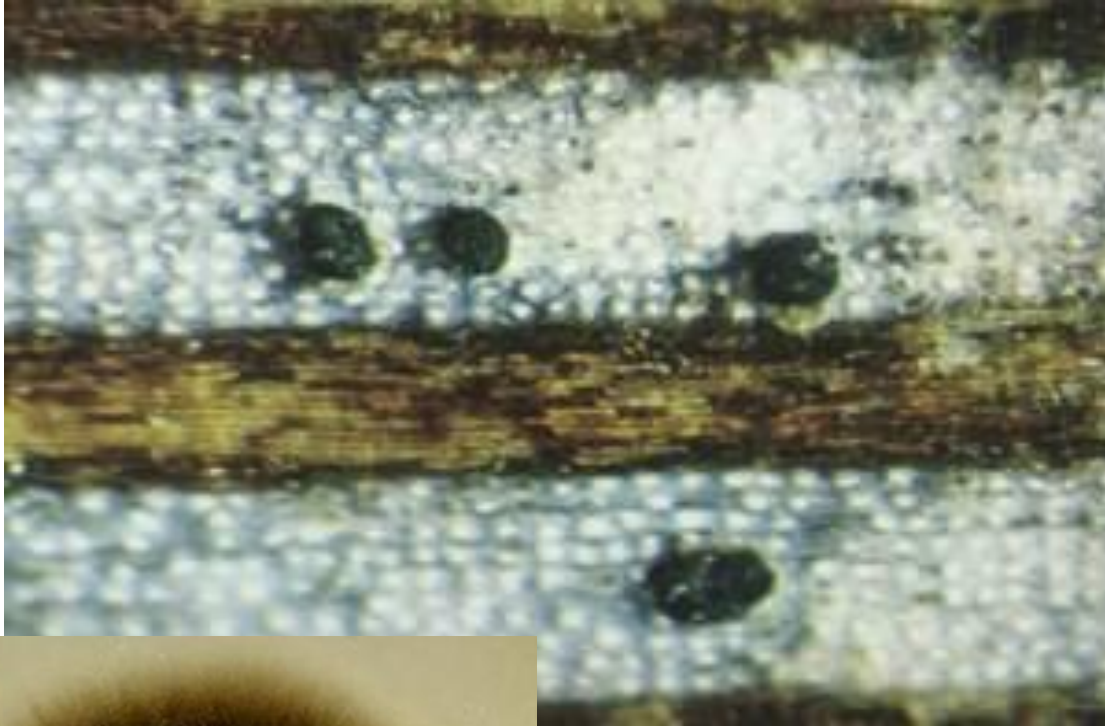
CSNN



CSNN



CSNN



Needle rust of fir - *Pucciniastrum epilobii*



Pucciniastrum epilobii



Host alternation with Fireweed (*Epilobium* sp.)

Dispositions for outbreaks:

Hosts close to each other

Weather conditions: first rainfall in May (>10mm) following a certain temperature sum trigger spore production on fireweed. Furthermore stage of flushing of firs.

Control: host removal, protective fungicides depending on exact evaluation of infection time

Lirula-needle cast of fir - *Lirula nervisequia*



Lirula nervisequia



Herpotrichia parasitica



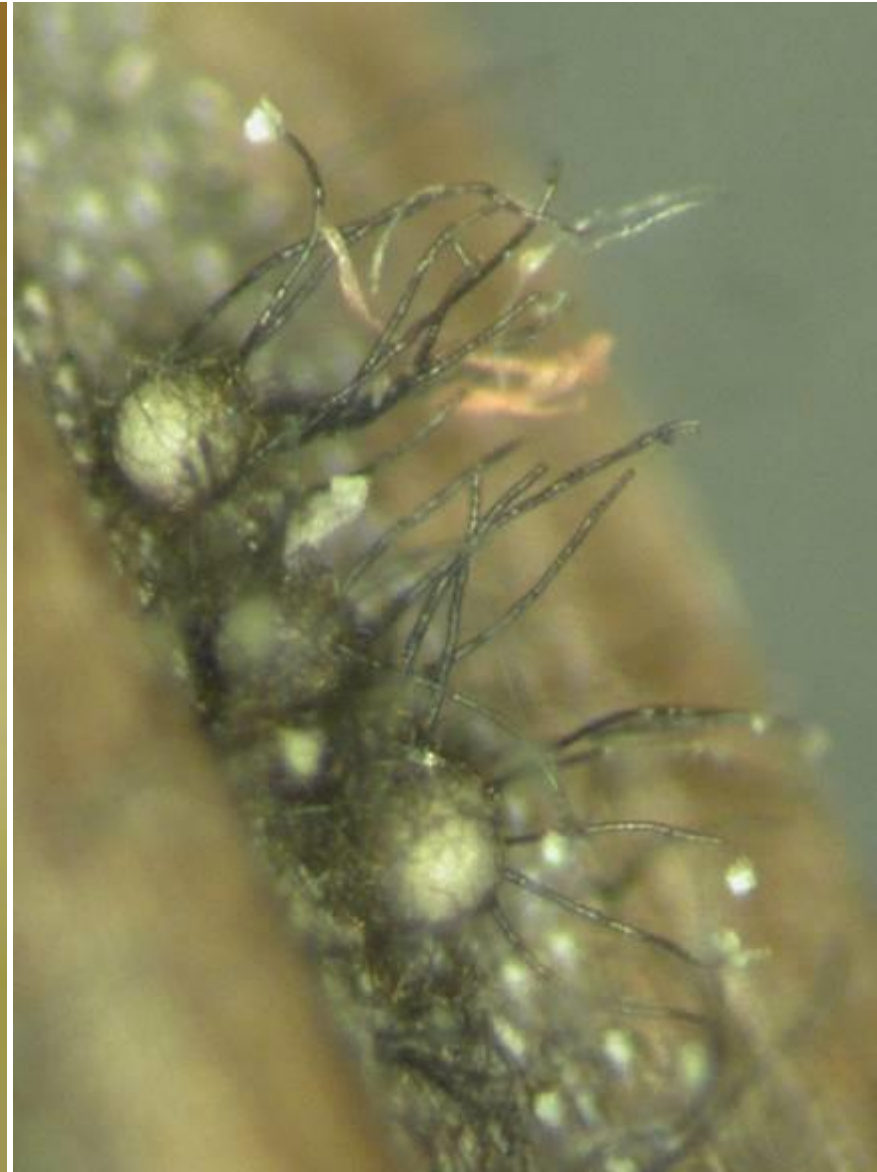
Herpotrichia parasitica



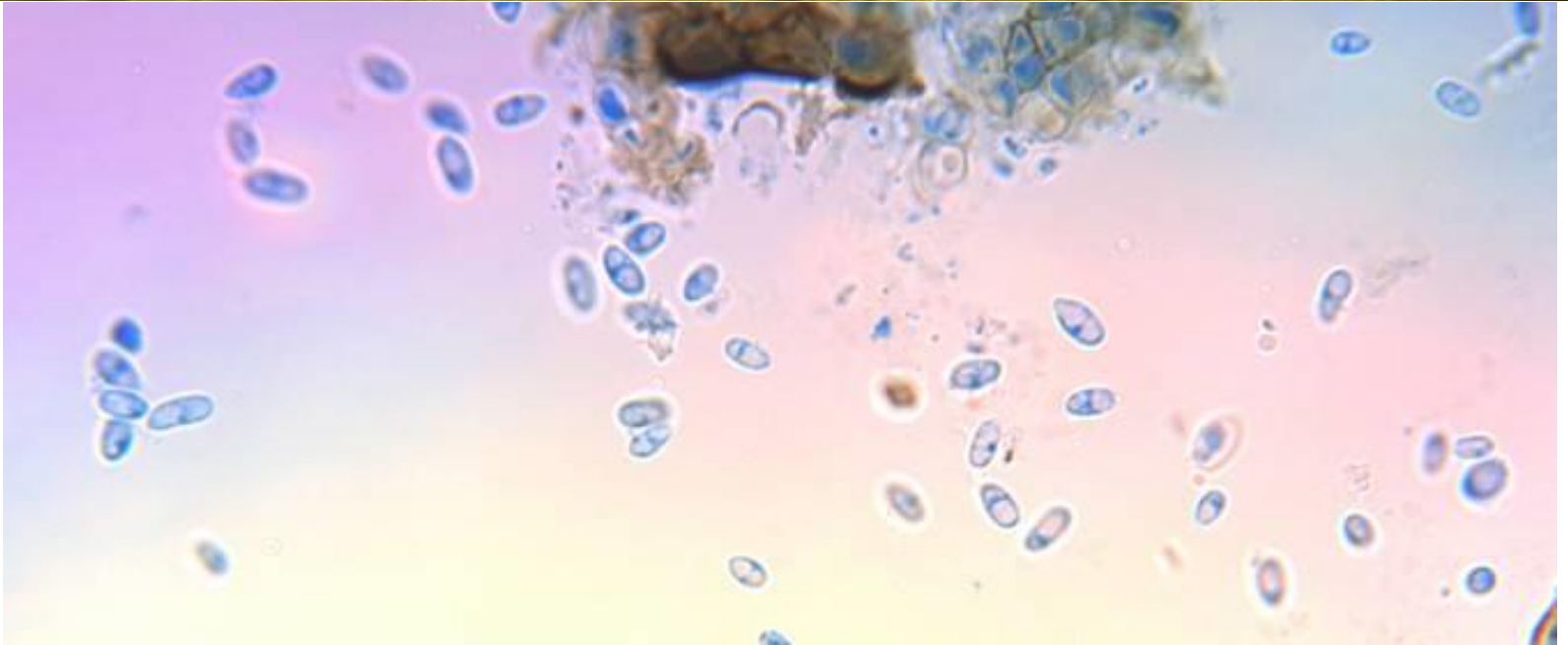
Thysanophora penicillioides – needle cast



Thysanophora penicillioides – needle cast



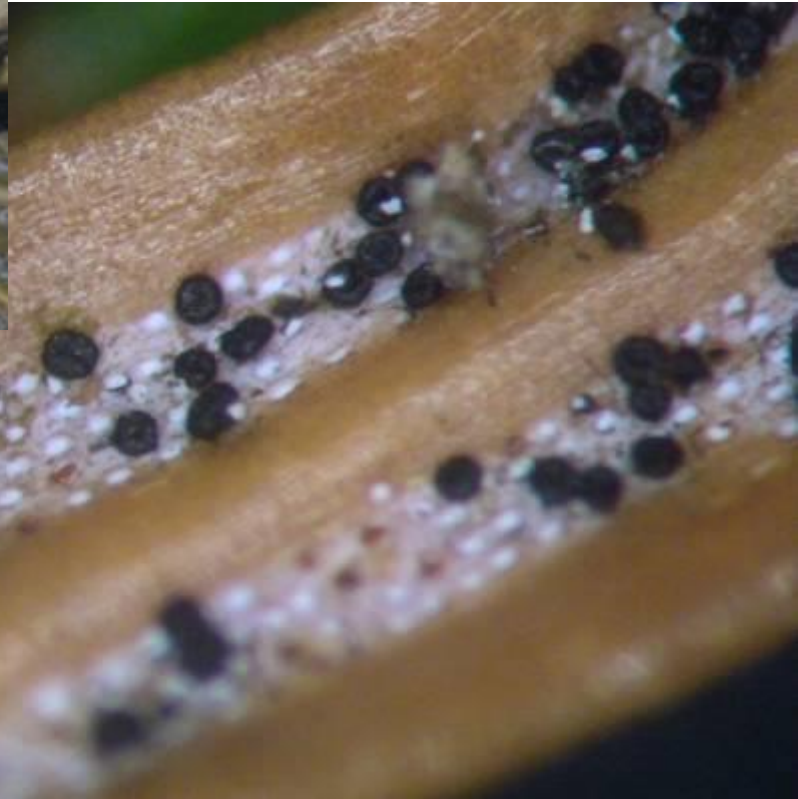
Rhizosphaera spp.



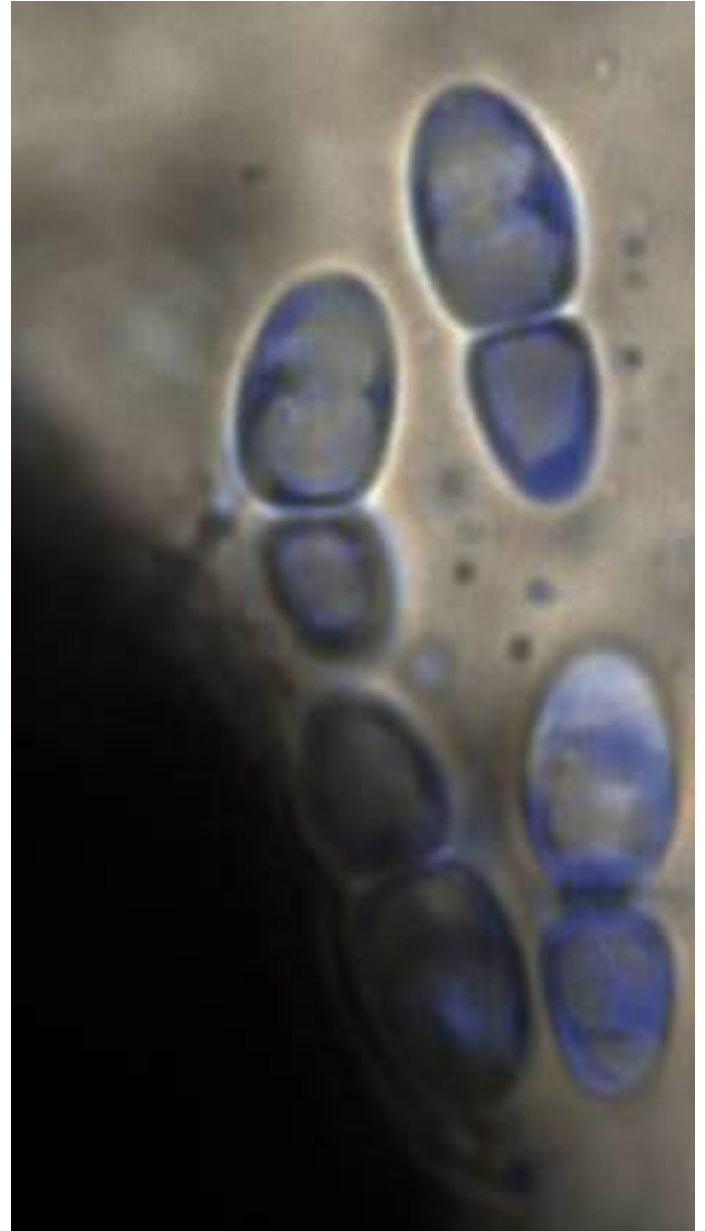
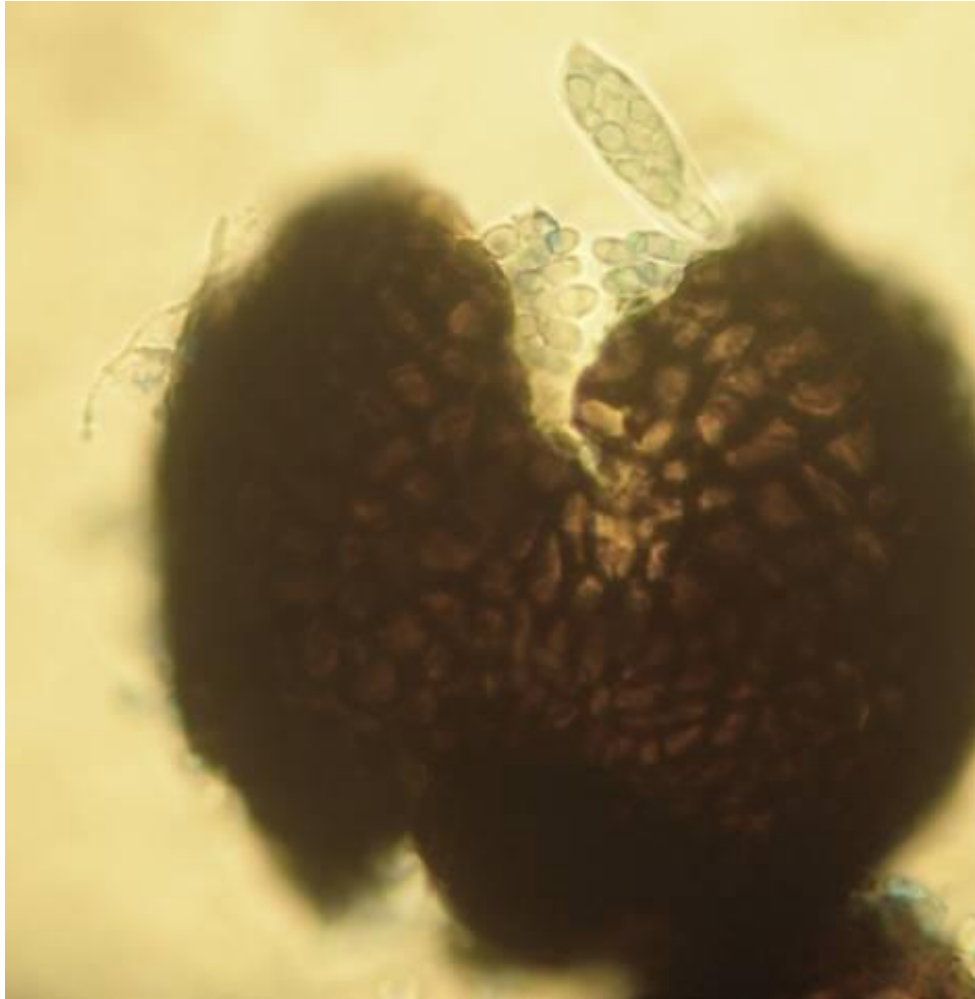
Phaeocryptopus nudus



Phaeocryptopus nudus



Phaeocryptopus nudus



Delphinella-needle cast - *Delphinella abietis*

to include fotos recently done by Jim and Bernhard and some data

Diseases of shoots, twigs and
branches -
firs

Neonectria – dieback of firs

Neonectria sp.



Neonectria – dieback of firs
Neonectria sp.



Neonectria – dieback of firs
Neonectria sp.



Diseases of foliage

spruces

Chrysomyxa abietis



Chrysomyxa abietis



Chrysomyxa abietis



Lirula macrospora



Lirula macrospora



Lirula macrospora



Lirula macrospora



Rosellinia mycophila



Rosellinia mycophila



Diseases of buds and shoots

Grey mould – *Botrytis cinerea*



Gemmamyces piceae



Gemmamyces piceae



Sirococcus conigenus



Sirococcus conigenus



Thekopsora areolata - dieback of spruce



Thekopsora areolata - dieback of spruce



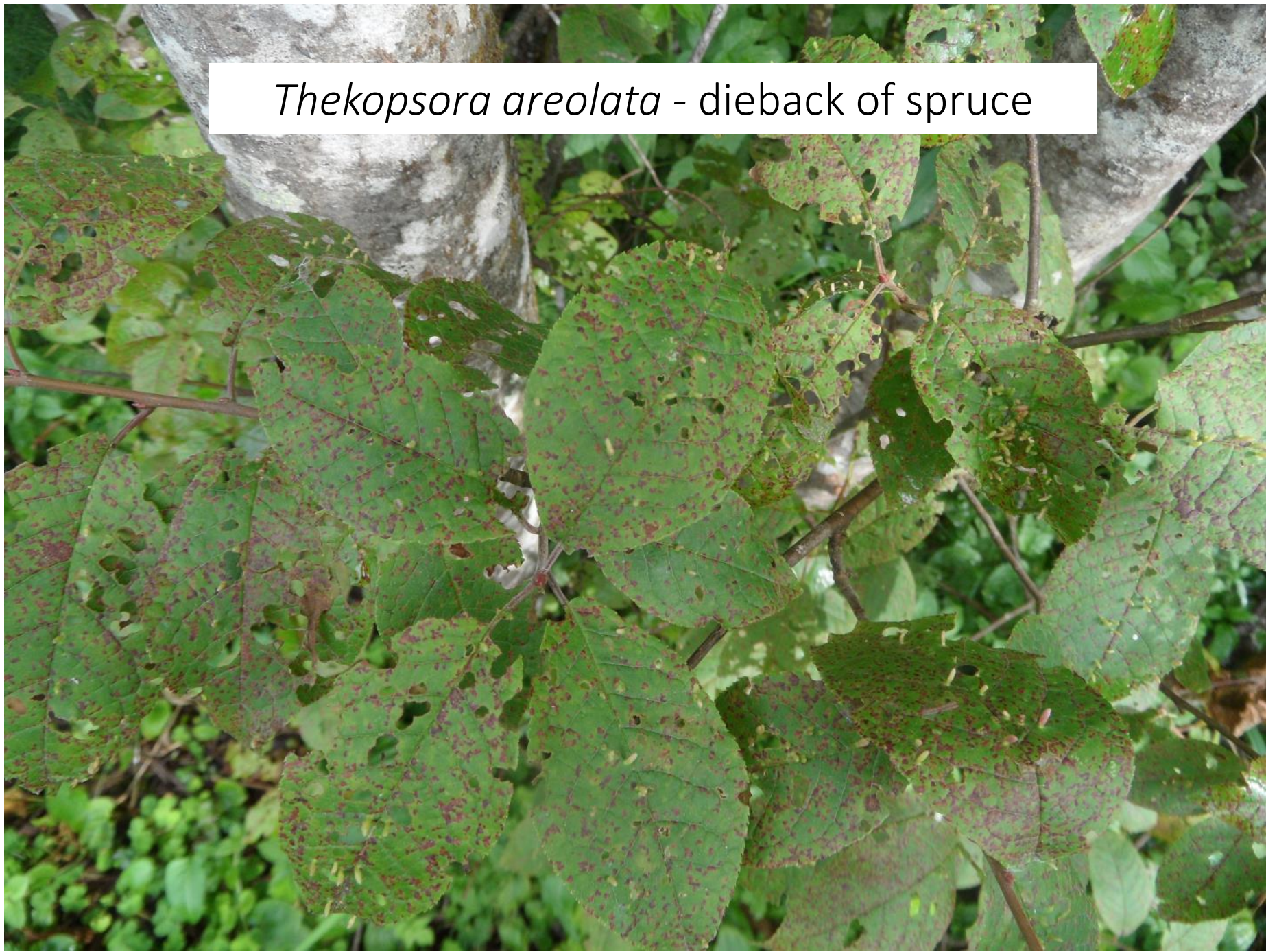
Thekopsora areolata - dieback of spruce



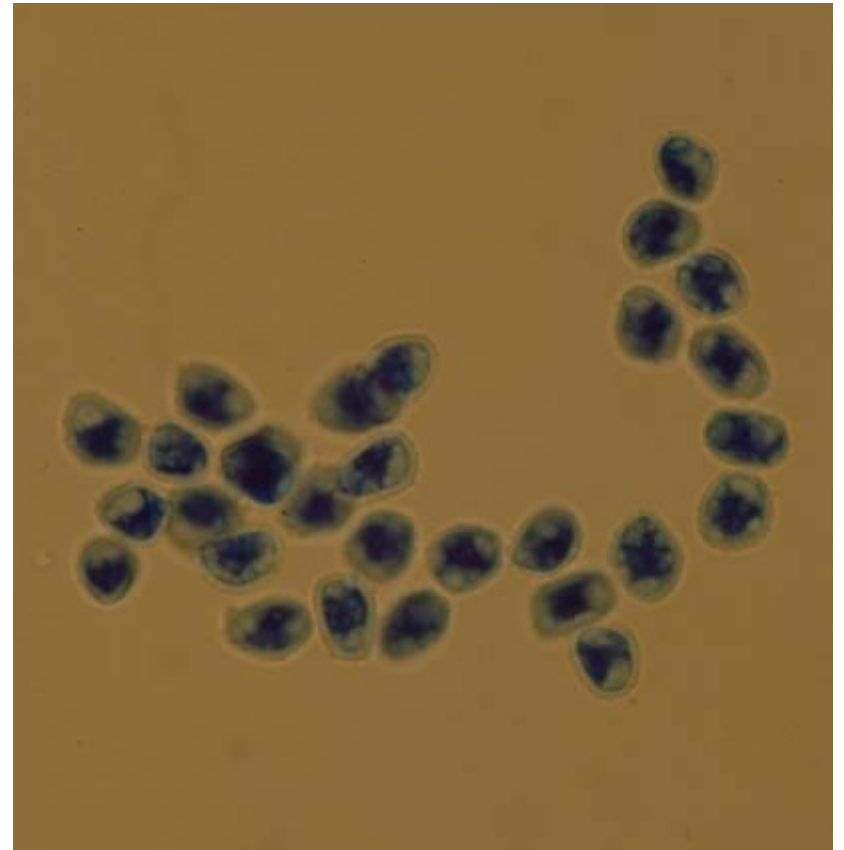
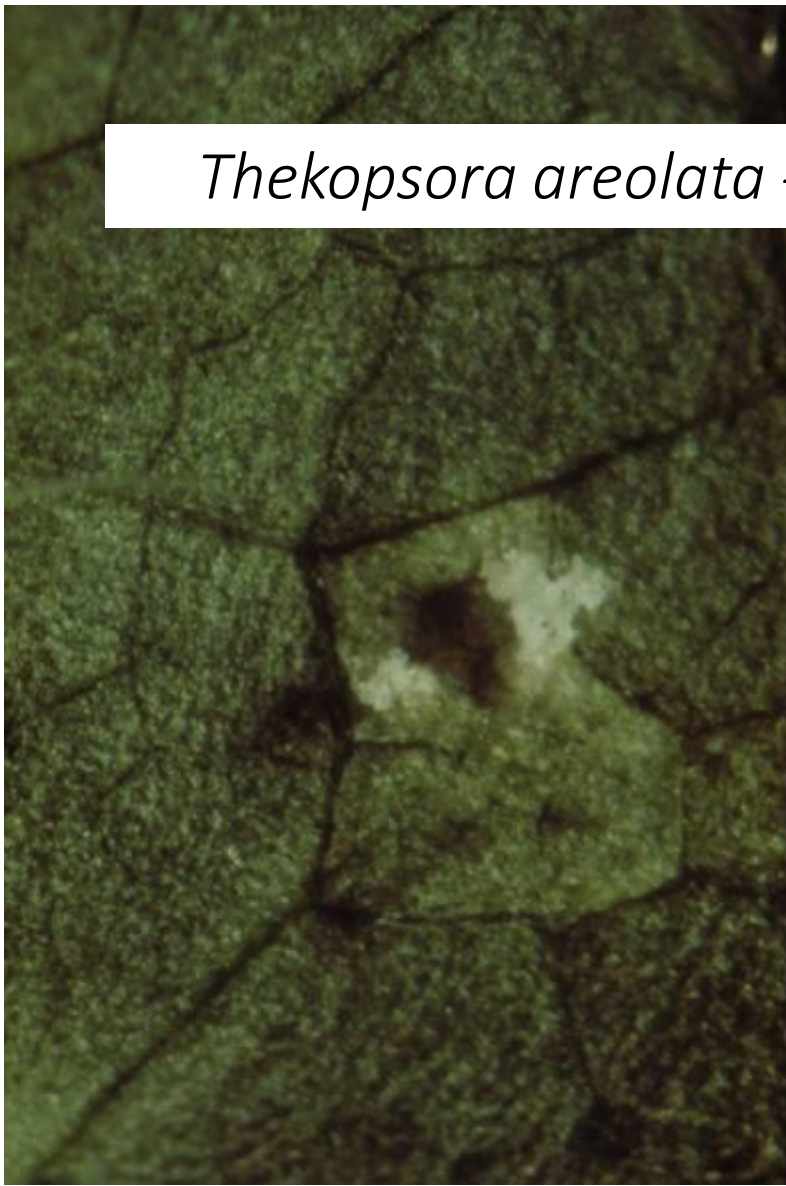
Thekopsora areolata - dieback of spruce



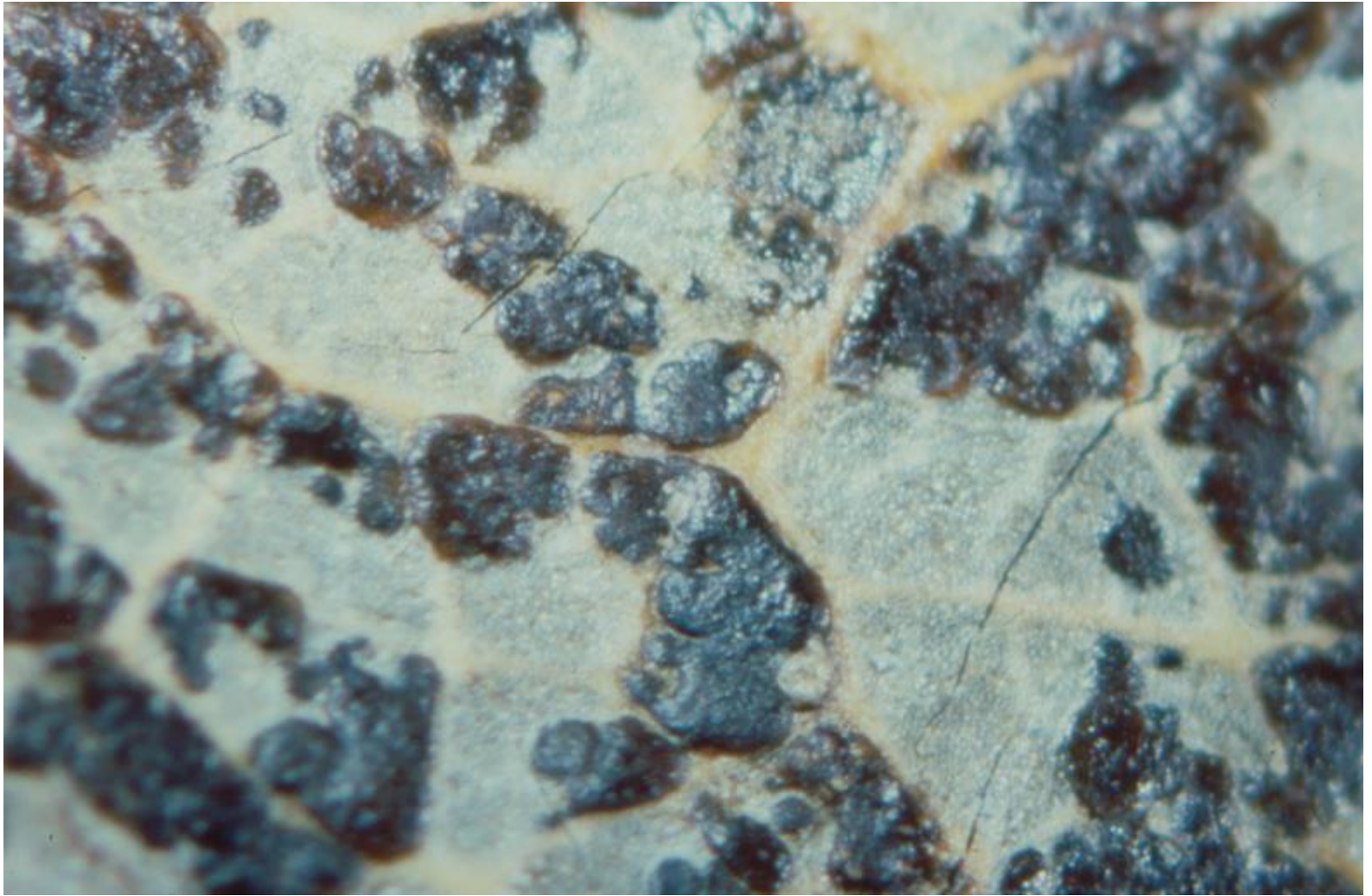
Thekopsora areolata - dieback of spruce



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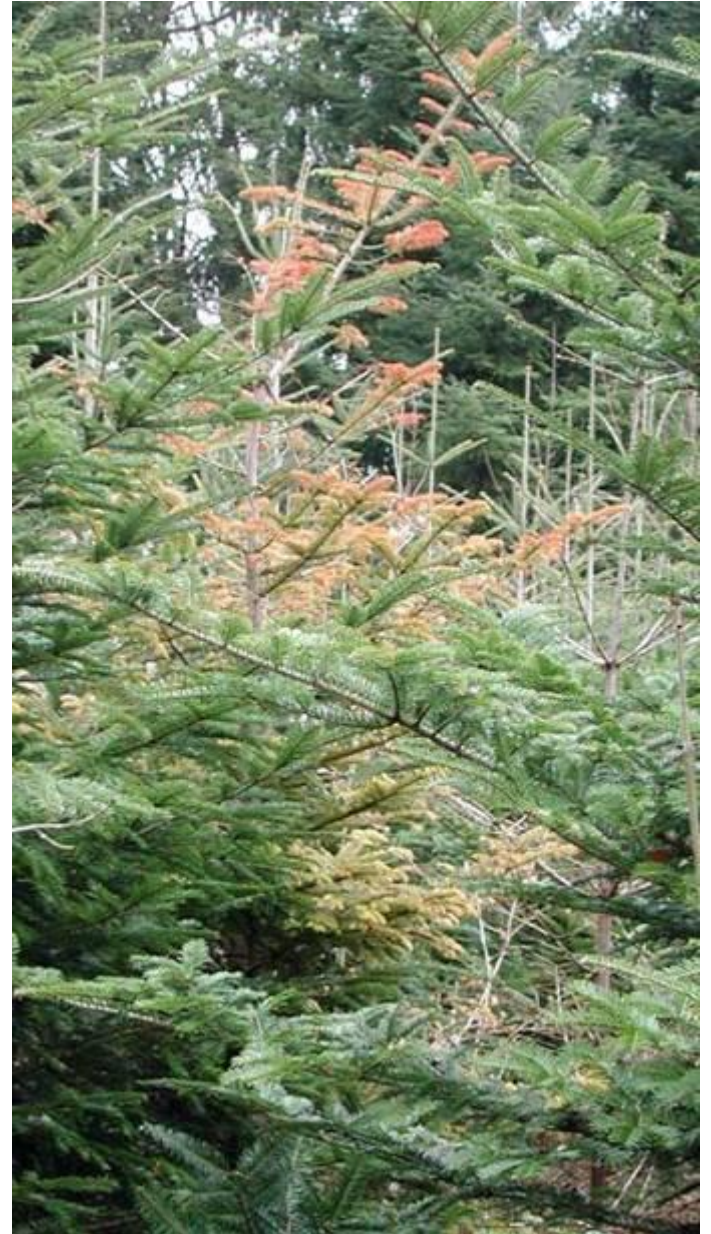


Diseases of stem and roots

Phomopsis spp.



Armillaria spp.



Armillaria spp.



Armillaria spp.



Phytophthora spp.



Phytophthora spp.



Phytophthora spp.



Violet root rot fungus (*Helicobasidium brebissonii*)

