

Vzdělávací materiály projektu

Inovace biologických a lesnických
disciplín pro vyšší
konkurenceschopnost
(InoBio)



Fungal diseases of Larch (*Larix* sp.)

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Needle diseases

Mycosphaerella laricina

Meria laricis

Hypodermella laricis

Melampsora-Rust (*Melampsora spp.*)

Lophodermium laricinum

Mycosphaerella – Needle cast (*Mycosphaerella laricina*)



Mycosphaerella laricina



Mycosphaerella laricina



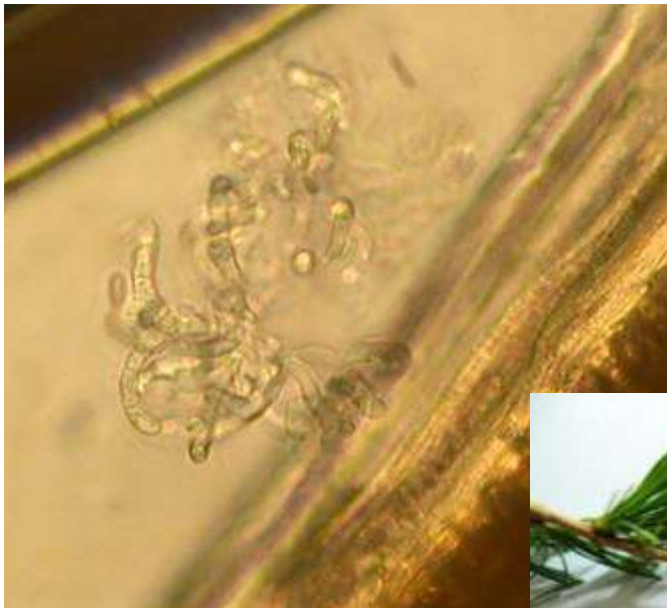
Sucking damage by the Larch aphid *Adelges geniculatus*



Females of the Larch aphid *Adelges geniculatus* and eggs



Meria-larch needle cast (*Meria laricis*)



Widely spread over most of the continents, typically following rain in spring



Meria-larch needle cast (*Meria laricis*)



Hypodermella – needle cast (*Hypodermella laricis*)

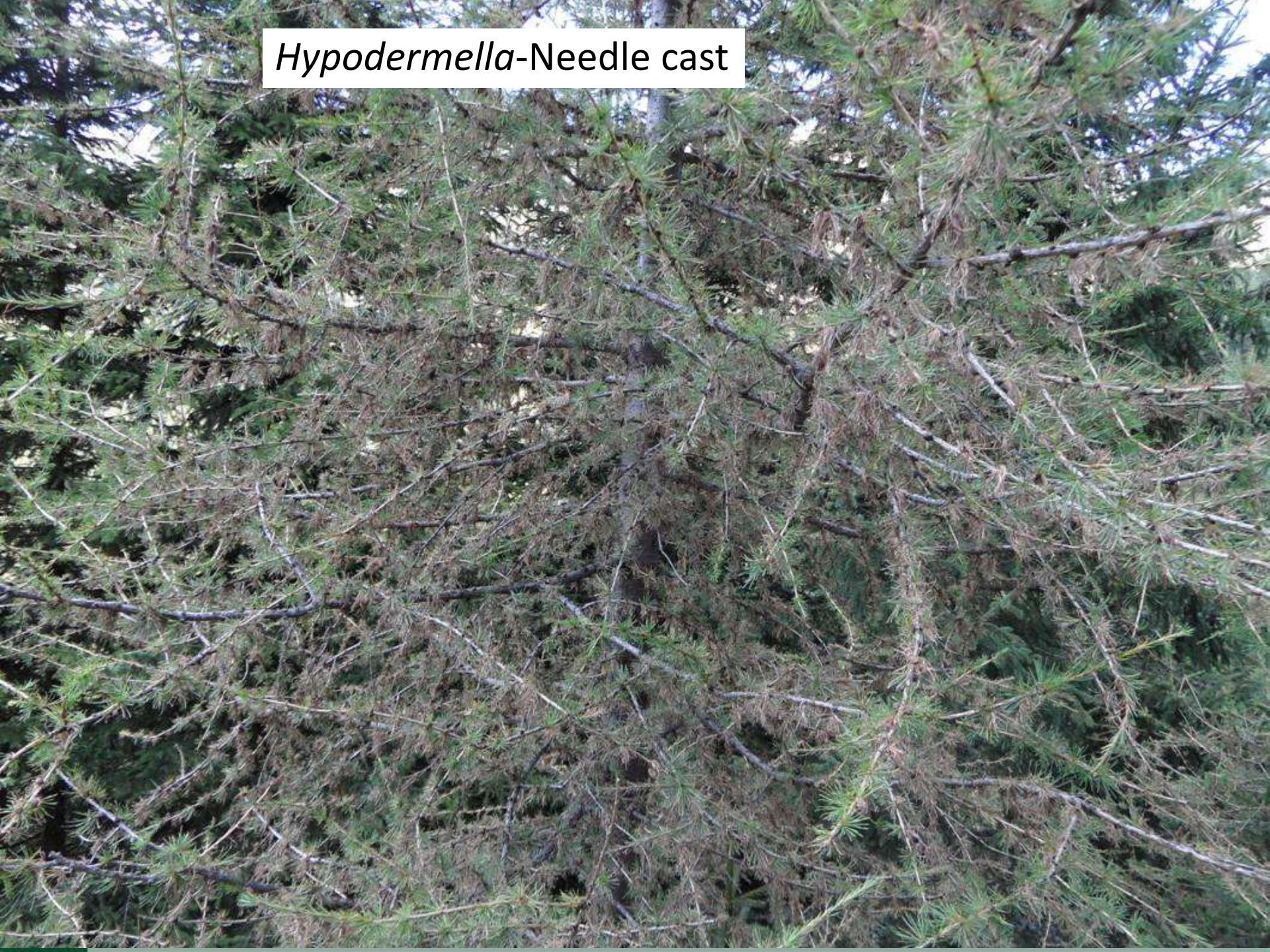


Hypodermella – needle cast (*Hypodermella laricis*)

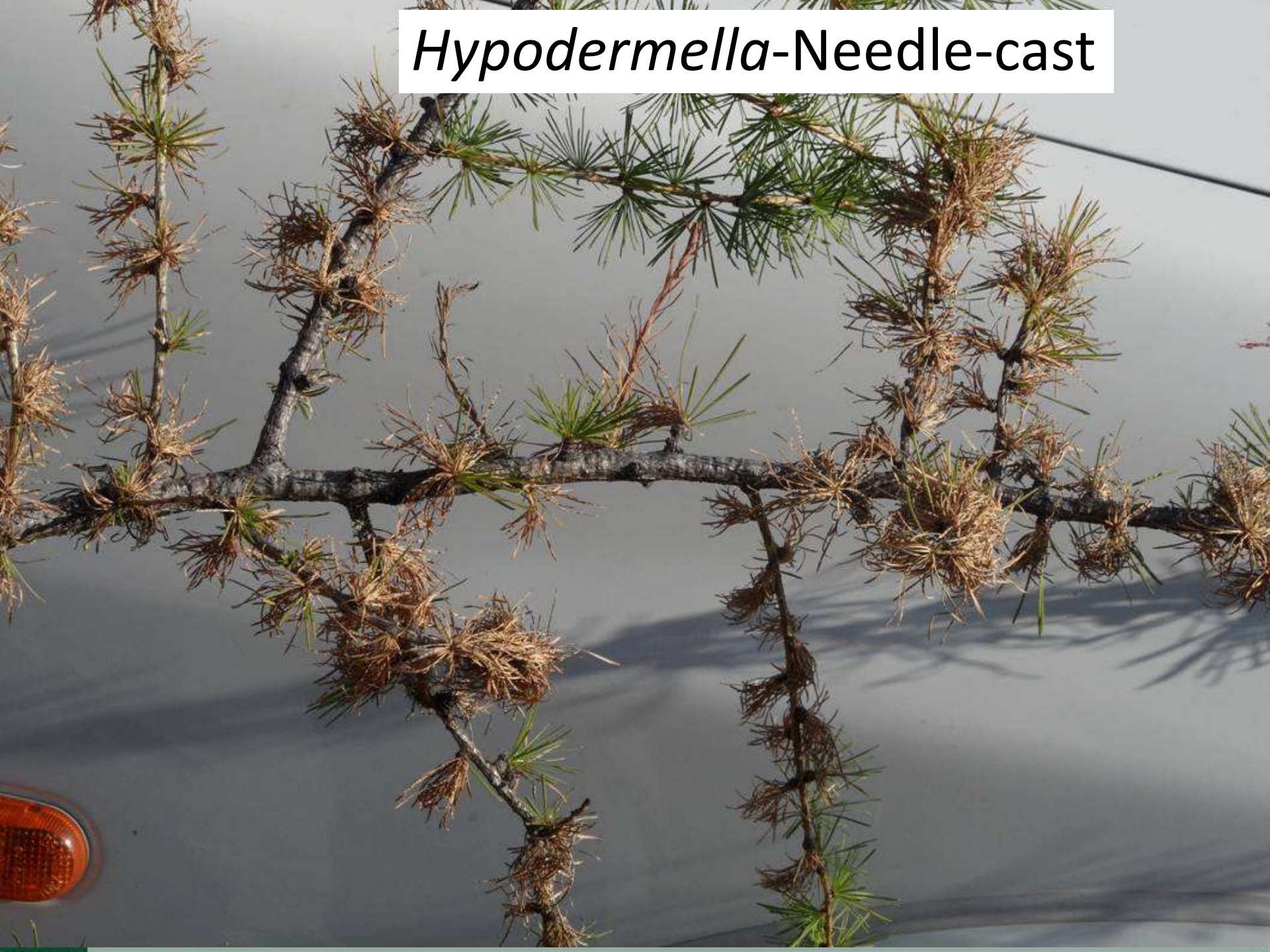


Very common in the Austrian Alps in altitudes more than 1000m a.s.l.,
Epidemics follow warm rainfall in June,
Dead needles stick to the twigs over the winter

Hypodermella-Needle cast



Hypodermella-Needle-cast

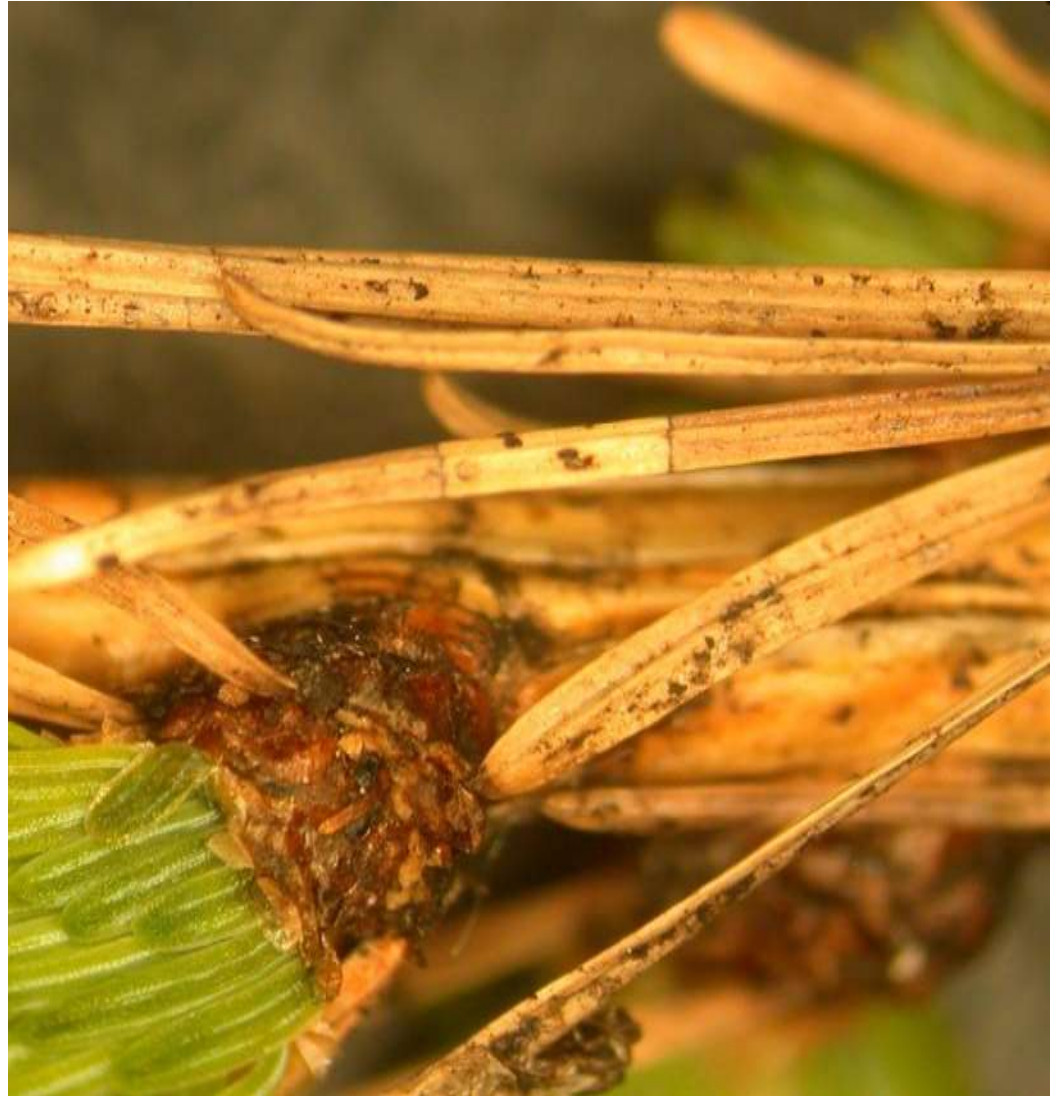


Larch needle rust (*Melampsora* spp.)

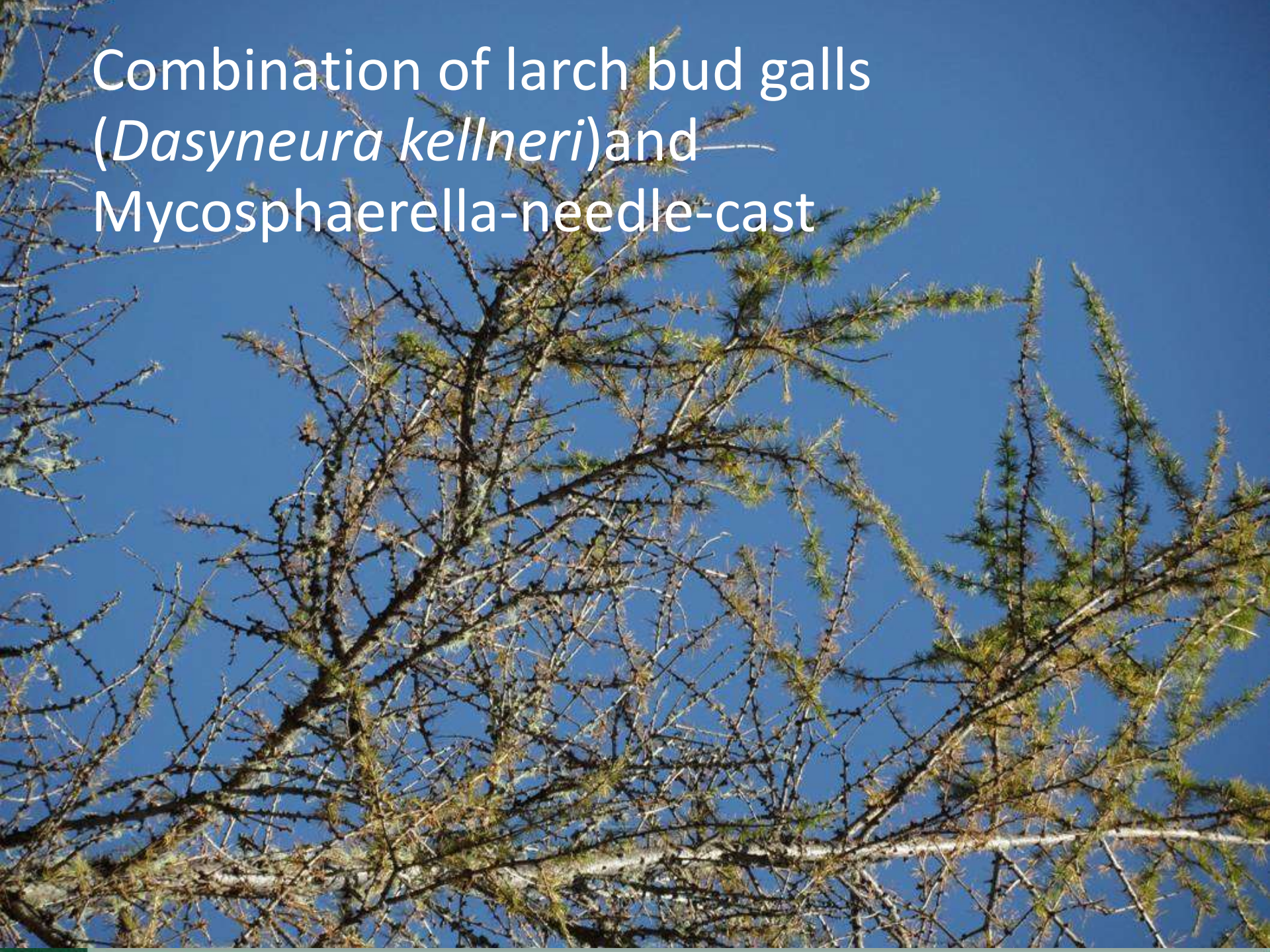


Several species, host alternation with willows, poplars, etc.

Lophodermium laricinum



Combination of larch bud galls
(*Dasyneura kellneri*) and
Mycosphaerella-needle-cast



Larch bud galls (*Dasyneura kellneri*) and
Mycosphaerella-needle-cast



Shoot and branch dieback, cankers

Frost (spring- and winter-frost)

Cytospora-dieback (*Cytospora spp.*)

Larch canker (*Lachnellula willkommii*)

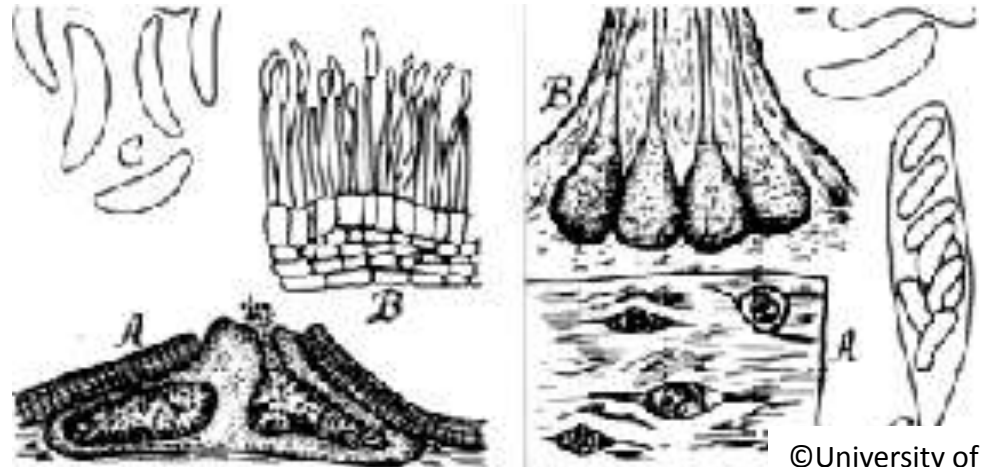
Alpine larch shoot dieback (*Ascocalyx laricina*)

Grey mould (*Botrytis cinerea*)

Guignardia shoot blight of larch (*Guignardia laricina*)

Shoot and branch dieback, cankers

- Following spring- or winter-frost *Cytospora* spp. infect damaged bark
- Genus *Cytospora*:
anamorphic stage of the ascomycetous genus *Valsa*
several species on conifers (also on firs!)
- secondary shoot-, branch-dieback



Spring frost



Spring frost



Spring frost



Spring frost



Cytospora sp.

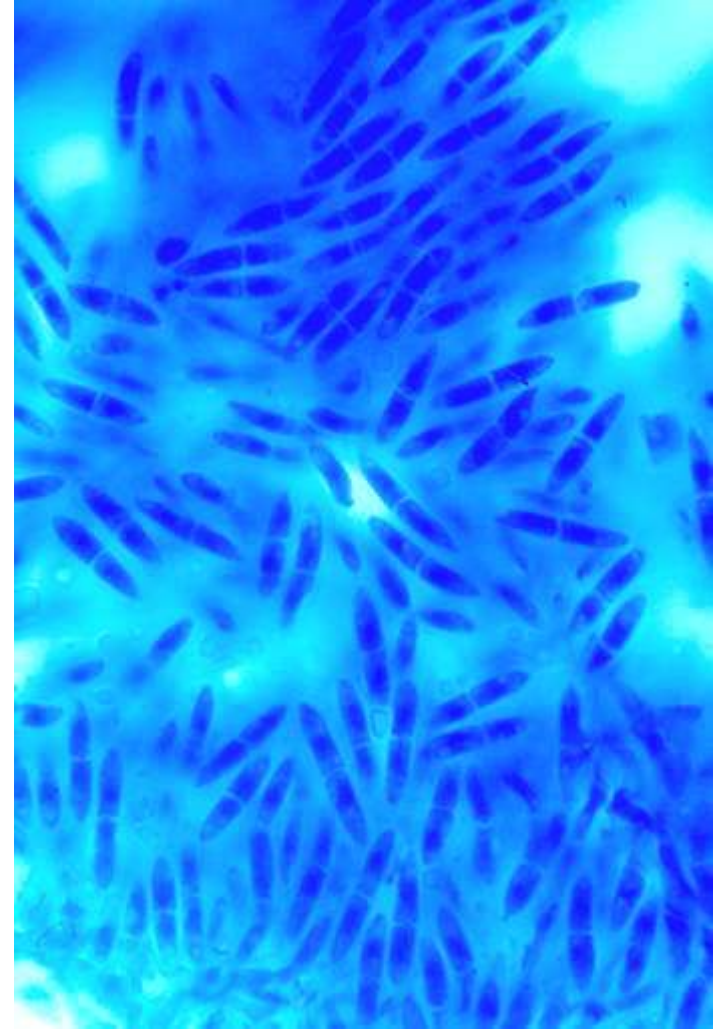


Grey mould (*Botrytis cinerea*)

Bud- and shoot-damage



Alpine larch dieback (*Ascocalyx laricina*)



Larch canker (*Lachnellula willkommii*)



Larch canker (*Lachnellula willkommii*)



Larch canker (*Lachnellula willkommii*)



Guignardia shoot blight of larch (*Guignardia laricina*)

Name: *Guignardia laricina* or *Botryosphaeria laricina*,
anamorph *Fusicoccum* sp.

Hosts: Larix spp. most susceptible *L. europaea*, *L. laricina* and
L. occidentalis. Intermediate resistance has been observed on
L. eurolepis and *L. leptolepis*.

Resistant *L. gmelinii* and *L. olgensis* var. *koreana*.

Pseudotsuga menziesii

In artificial inoculation many hosts susceptible.

Therefore high risk

Geographic distribution: Europe: far east of Russia

Asia: Japan, China, both Koreas, Russia

Guignardia shoot blight of larch (*Guignardia laricina*)

Biology: Anamorph on infected needles in early summer, causing secondary needle infections; teleomorph on dead twigs in October ripening after two years. Spore discharge between 10 and 35° C (25° C optimum!) and at 98% RH. Primary source of infection ascospores, infecting from August on. No wounds needed for infection! Cool winters and short summer do not favour spread.

Symptoms: very much like *Sirococcus conigenus* on spruces: succulent current years shoots dry and hang down with yellow leaves, later shed; twigs remaining attached for a long time. No infection of older shoots.

Guignardia shoot blight of larch (*Guignardia laricina*)



Phytophthora ramorum

England, Cornwall, *Larix kaempferi* (japanese larch)



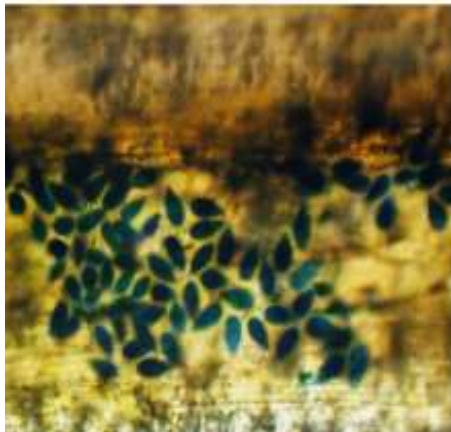
Damage across a block of mature *L. kaempferi*, Somerset, 2009



Figure 2: Crown dieback and mortality of mature *L. kaempferi*, Cornwall, September 2009



Figure 3: Purple to black lesions on naturally infected needles, Cornwall, September 2009



Larix occidentalis and

Larix europaea susceptible as well

Decline of plants following feeding damage to roots – *Armillaria* infection



„Hallimasch“
(*Armillaria* spp.)



Root diseases

Armillaria spp.

Velvet-top fungus *Phaeolus schweinitzii*

Stem rot fungi

Chicken in the woods - [Laetiporus montanus](#)

