

Wood quality threats for economically important tree species in Latvia: findings on wood colonizing fungi *in roundwood assortments*

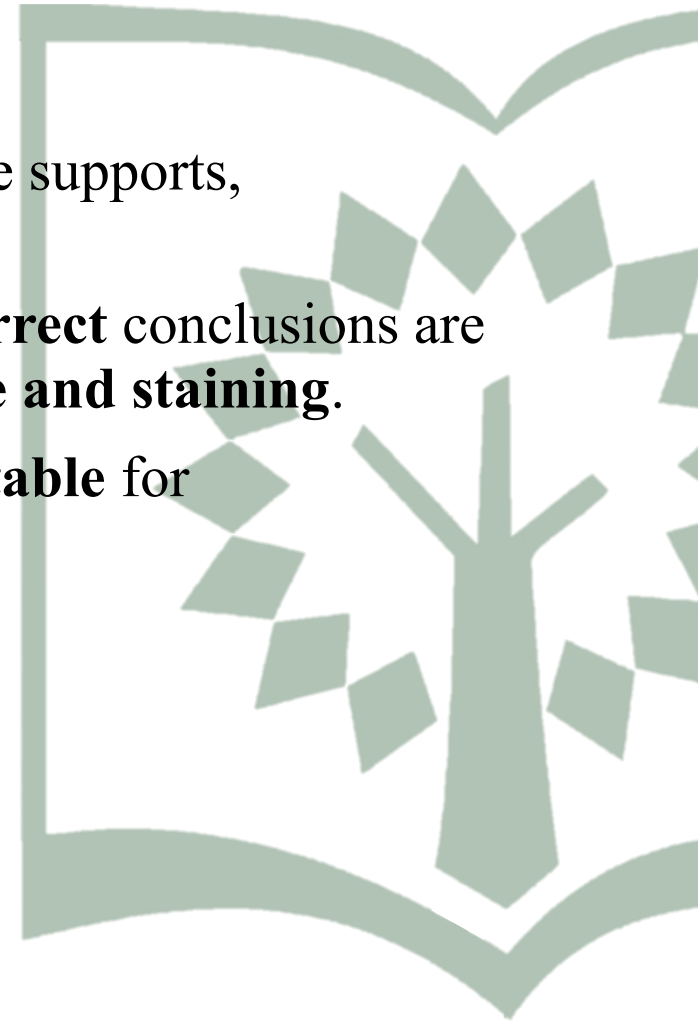
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Importance of understanding the quality of roundwood assortments

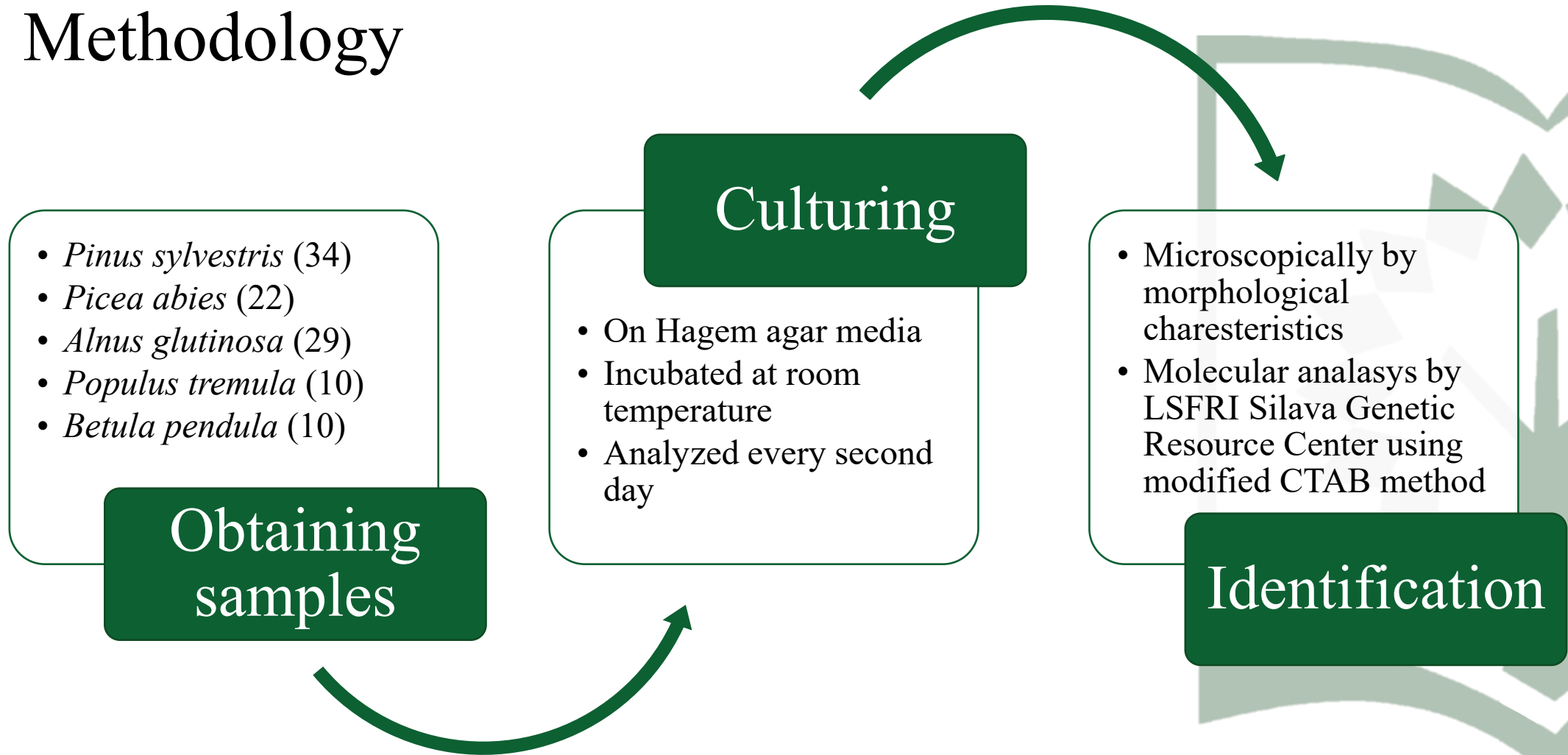
- > Assessing the quality of timber for building structures (power line supports, observation towers, etc.) is a very important process.
- > Due to the lack of experience and knowledge, often enough **incorrect** conclusions are drawn about the quality of the wood and the **reason of the damage and staining**.
- > When staining is detected, the sawn **timber is assessed as unsuitable** for constructions.



Importance of understanding the quality of roundwood assortments

- > **Improved** understanding of wood discoloration causing factors, as well as identification tool for different kind of discoloration is needed to help workers of forestry sector to evaluate timber assortment more precisely, thus **reducing** losses of valuable timber.
- > This study aims to investigate fungal pathogens associated with economically important tree species in Latvia, focusing on roundwood-colonizing fungi that cause **blue stain, discoloration, rot and decay** to **strengthen the knowledge** base of forest workers about fungal damage in timber.

Methodology



Results and discussion

- > From the 105 wood discs a total of 56 fungal taxa were identified.
- > Several pathogenic fungi were identified, including ascomycete *Botrytis cinerea* that causes grey mold in seedlings in nurseries and *Neonectria tsugae* that is associated with canker formation in conifers.



Basidiomycetes (decay causing fungi)

	<i>Pinus sylvestris</i>	<i>Picea abies</i>	<i>Alnus glutinosa</i>	<i>Betula pendula</i>	<i>Populus tremula</i>
	(% isolated from wood samples/% isolated from each wood disc)				
<i>Amylostereum areolatum</i>	-	3.2/10.0	-	-	-
<i>Bjerkandera adusta</i>	0.9/2.8	-	2.3/6.9	-	5.0/10.0
<i>Chondrostereum purpureum</i>	-	-	1.1/3.4	-	-
<i>Cylindrobasidium evolvens</i>	-	1.6/5.0	1.1/3.4	8.8/10.0	-
<i>Heterobasidion sp.</i>	6.0/5.6	17.4/25.0	-	-	-
<i>Phellinus tremulae</i>	-	-	-	-	7.5/30.0
<i>Phlebiopsis gigantea</i>	2.6/5.6	-	-	-	-
<i>Pholiota sp.</i>	-	-	-	8.8/20.0	-
<i>Porodaedalea pini</i>	7.8/16.7	-	-	-	-
<i>Schizophyllum commune</i>	-	-	-	2.9/10.0	-
<i>Sistotrema brinkmannii</i>	0.9/2.8	4.8/5.0	-	-	2.5/10.0
<i>Stereum sanguinolentum</i>	0.9/2.8	-	-	-	-
<i>Trametes versicolor</i>	0.9/2.8	-	-	2.9/10.0	-
<i>Xanthoporia radiata</i>	-	-	29.9/58.6	-	5.0/9.1
Number of samples/number of trees	116/34	63/20	87/29	31/10	43/10

Basidiomycetes (decay causing fungi)

Porodaedalea pini



Pinus sylvestris

Heterobasidion sp.



Picea abies

Basidiomycetes (decay causing fungi)

Chondrostereum purpureum



Alnus glutinosa

Phellinus tremulae



Populus tremula

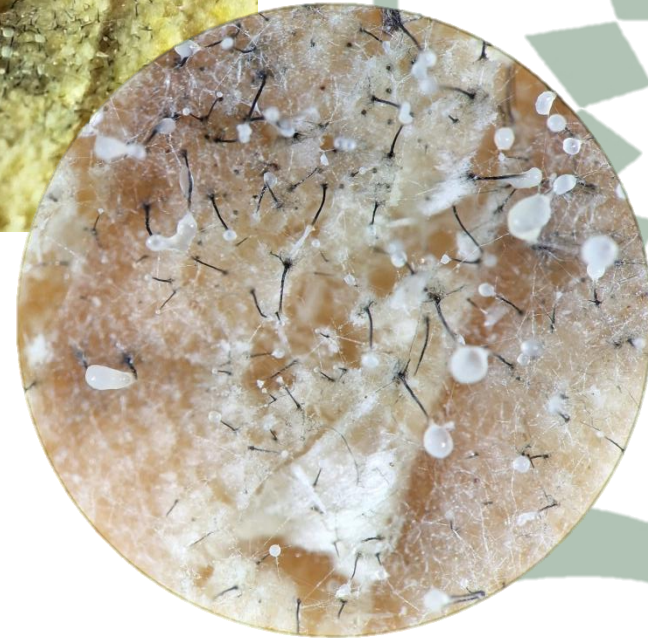
Blue-stain causing ascomycetes

	<i>Pinus sylvestris</i>	<i>Picea abies</i>	<i>Alnus glutinosa</i>	<i>Betula pendula</i>	<i>Populus tremula</i>
	(% isolated from wood samples/% isolated from each wood disc)				
<i>Aureobasidium pullulans</i>	0.9/2.8	1.6/5.0	2.3/6.9	2.9/10.0	2.5/10.0
<i>Ceratocystis minor</i>	0.9/2.7	-	3.4/10.3	-	-
<i>Leptographium piriforme</i>	-	-	-	-	7.5/9.1
<i>Ophiostoma</i> sp.	4.3/8.3	-	-	-	5.0/20.0
Number of samples/number of trees	116/34	63/20	87/29	31/10	43/10

Blue-stain causing ascomycetes

Ophiostoma spp.

Picea abies



Other ascomycetes

	<i>Pinus sylvestris</i>	<i>Picea abies</i>	<i>Alnus glutinosa</i>	<i>Betula pendula</i>	<i>Populus tremula</i>
	(% isolated from wood samples/% isolated from each wood disc)				
<i>Alternaria</i> sp.	0.9/2.8	4.8/15.0	-	5.9/20.0	2.5/10.0
<i>Botrytis cinerea</i>	-	-	-	2.9/10.0	-
<i>Diplodia</i> sp.	0.9/2.8	3.2/5.0	-	-	-
<i>Fusarium tricinctum</i>	1.7/5.6	-	-	-	-
<i>Neonectria tsugae</i>	0.9/2.8	9.5/20.0	-	2.9/10.0	-
Number of samples/number of trees	116/34	63/20	87/29	31/10	43/10

Diplodia spp.



Picea abies



Conclusions

- > The presence of blue-stain fungi such as *Ophiostoma* spp. and *Aureobasidium pullulans* highlights their importance in timber quality assessments. Moreover, wood **discoloration caused by factors other than fungal activity** is important in assessing several tree species (mostly birch, aspen and pine).
- > Our study identified a diverse range of fungi affecting economically important tree species in Latvia.
- > Our findings emphasize the need for effective forest management practices and accurate timber assessment to minimize economic losses and preserve forest resources.

Thank you for your attention!



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