

Influence of growth locations on the durability and other properties of wood

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Introduction

In this task, special attention was paid to the impact of climate change on the relevant properties of wood (resistance to decomposition and wetting, mechanical properties, chemical and anatomical structure, etc.). The effect of growing site and altitude on the resistance of wood was analysed. We sampled spruce wood from different sites in Switzerland, Austria and Slovenia. All the logs were cut into 25 mm thick boards and transported to the site of the Department of Wood Science and Engineering of the Biotechnical faculty and prepared for air-drying.

Methodology

Sampling and sample preparation

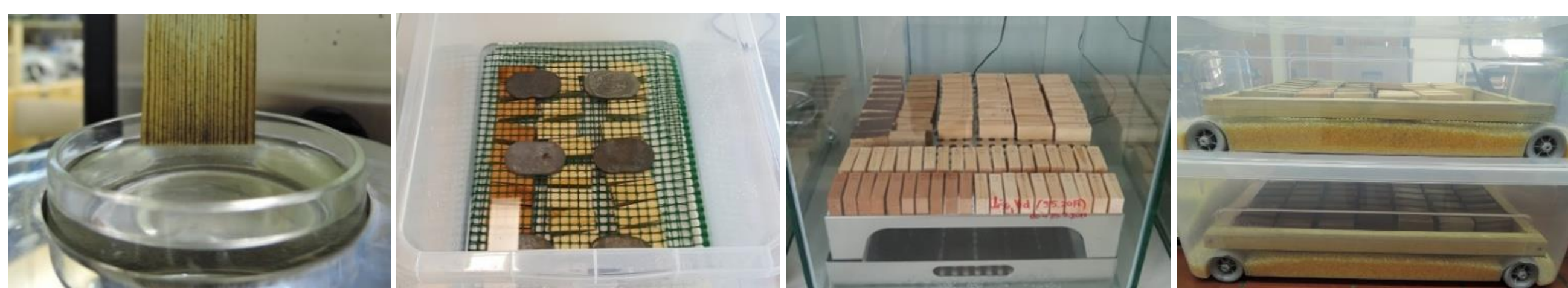


Tissues

Sapwood (Sap)
Adult heartwood (MA HW)
Juvenile heartwood (Ju HW)



Wetting ability (k_{wa})



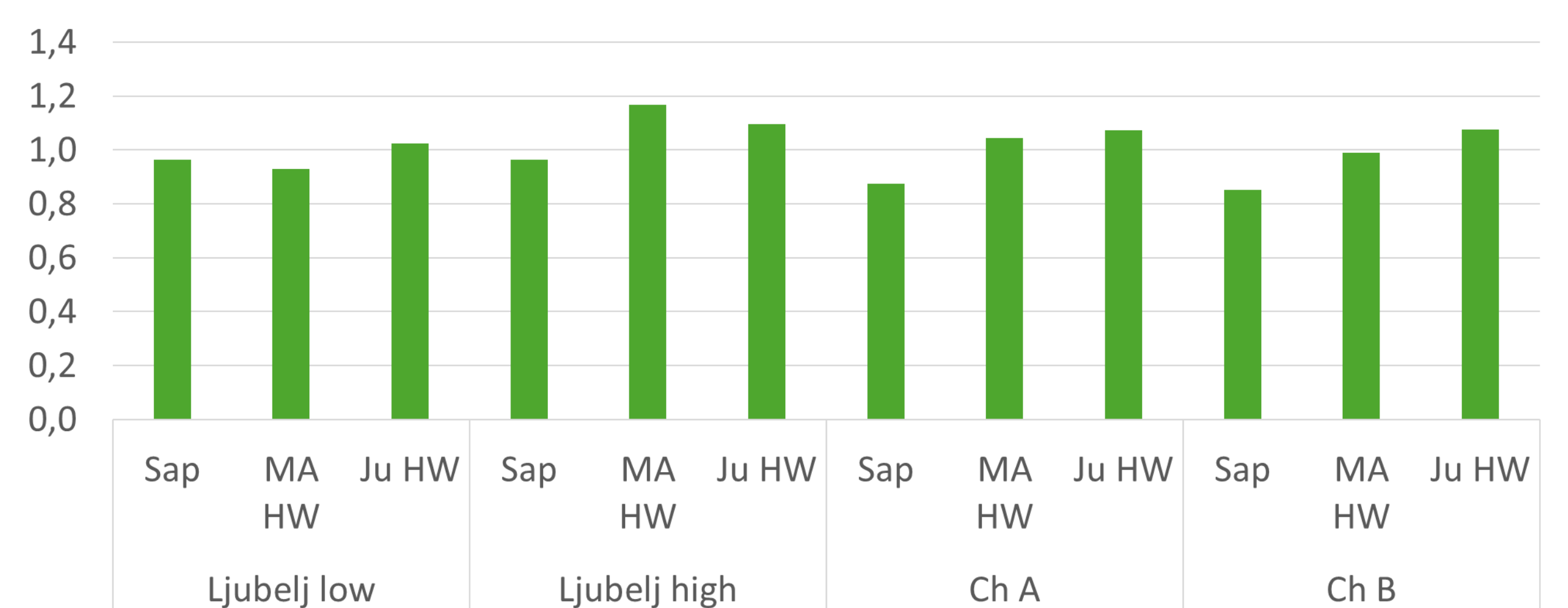
Capillary water uptake (tensiometer) Liquid water uptake (submersion) Vapor water uptake (RH = 100%) Water release – desorption (RH = 0%)

Inherent resistance (k_{inh})

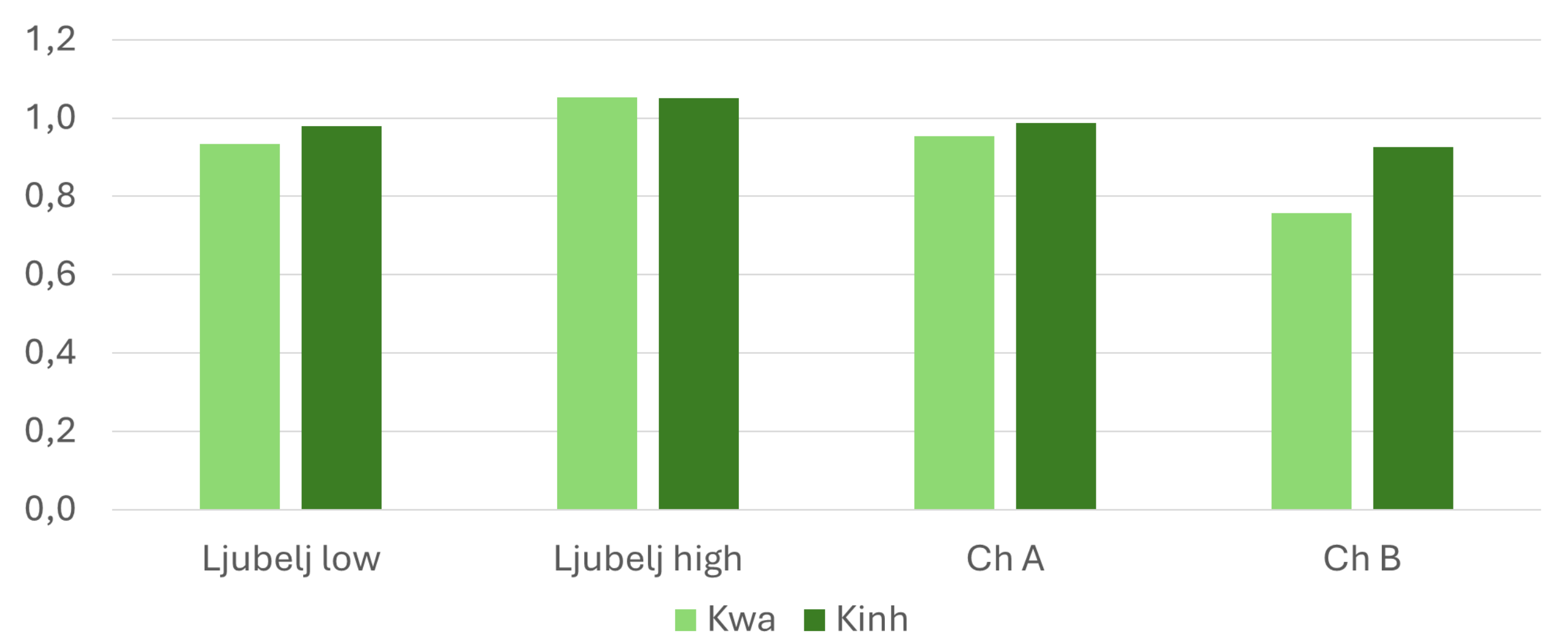
Soft rot test White rot test Brown rot test EN 252



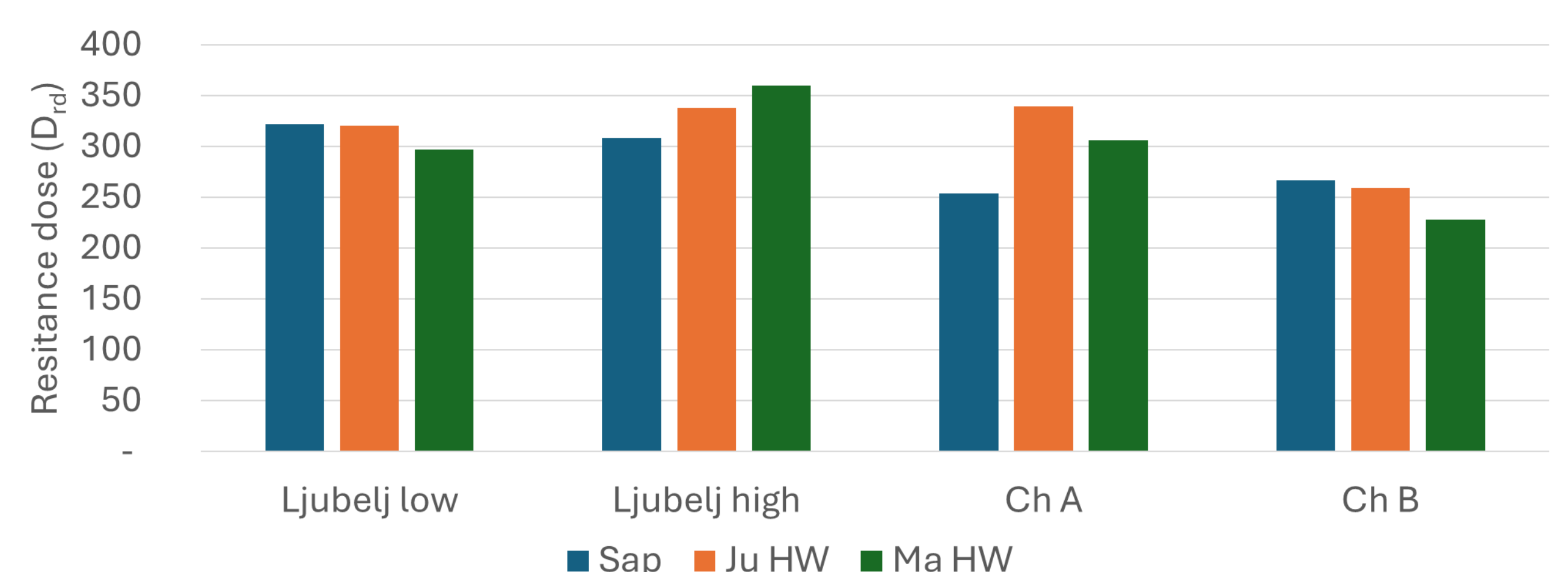
Results



Relative service life of Norway spruce tissues from different Slovenian and Swiss sites



Water ability (k_{wa}) and Inherent durability (k_{inh}) factor of Norway spruce from different Slovenian and Swiss sites



Resistance dose of Norway spruce tissues from different Slovenian and Swiss sites

Conclusions

On average, there are not many differences between the analysed spruce tissues. There are no significant differences between sapwood and mature heartwood. On the other hand, a 10% lower resistance was found in the juvenile heartwood. Among the sites, spruce from lower altitudes had a 5% lower relative service life than spruce from higher altitudes. Spruce from Slovenia proved to be more resistant to decay than spruce from Switzerland.

Acknowledgements

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