SORPTION BEHAVIOUR OF SCOTS PINE IN NORTHERN EUROPE

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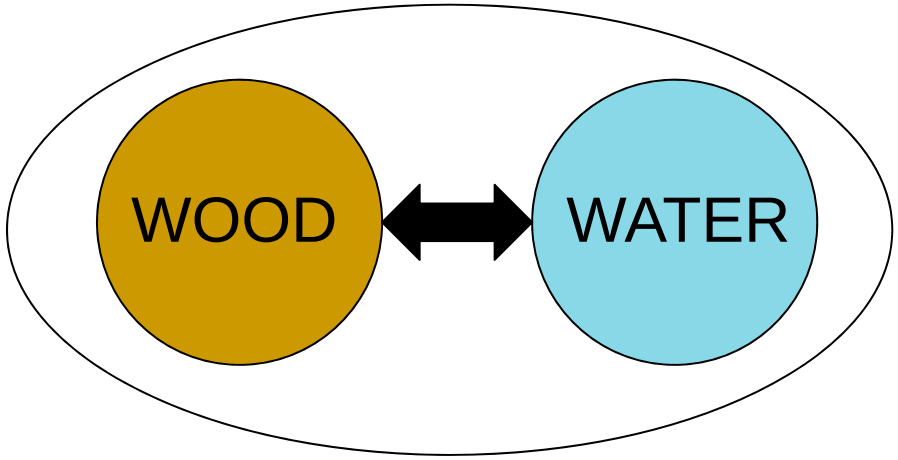
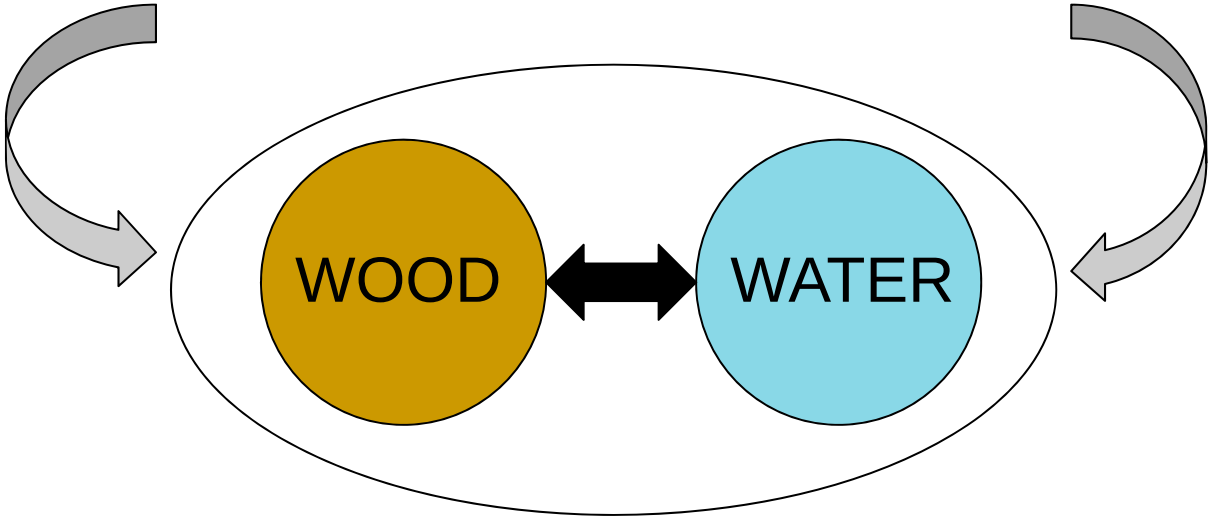
Introduction



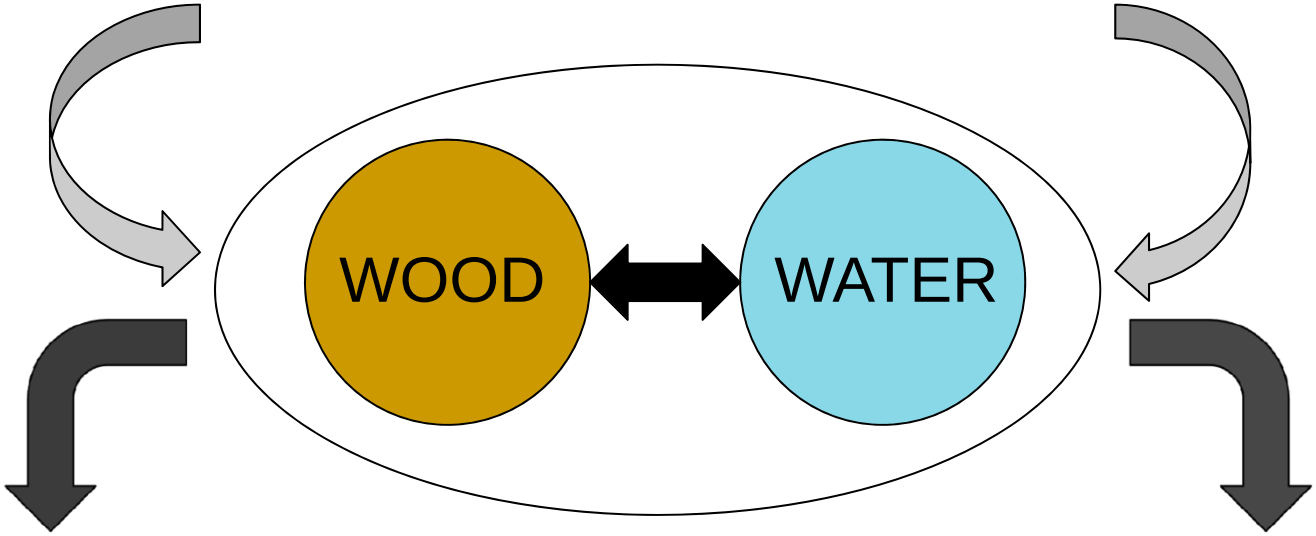
Introduction

density / temperature / chemical structure – cell-wall constituents / extractives / species / …



Introduction

density / temperature / chemical structure – cell-wall constituents / extractives / species / …



strength properties / hardness / durability / machinability

Introduction

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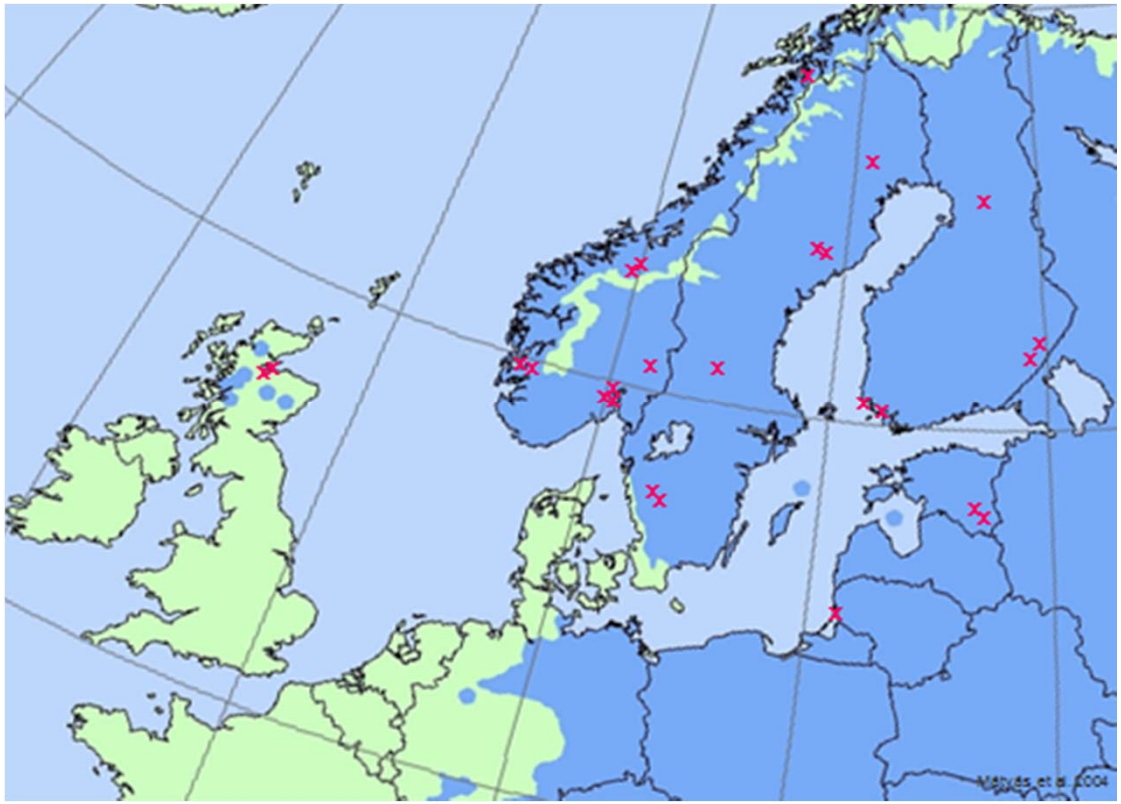
Aim of the study:

investigate the influence of raw material variability on the sorption behaviour of Scots pine

Material and Methods

- Scots pine: sap- and heartwood
- 25 sites in Northern Europe
  - latitude
  - longitude
  - altitude
  - site index



Material and Methods

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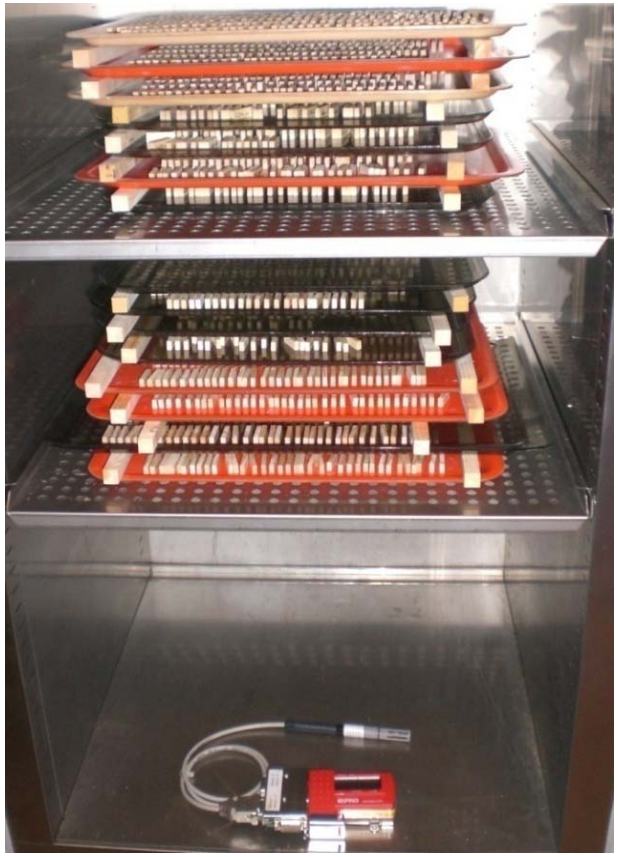
Climate chamber:

Temperature 25 ºC

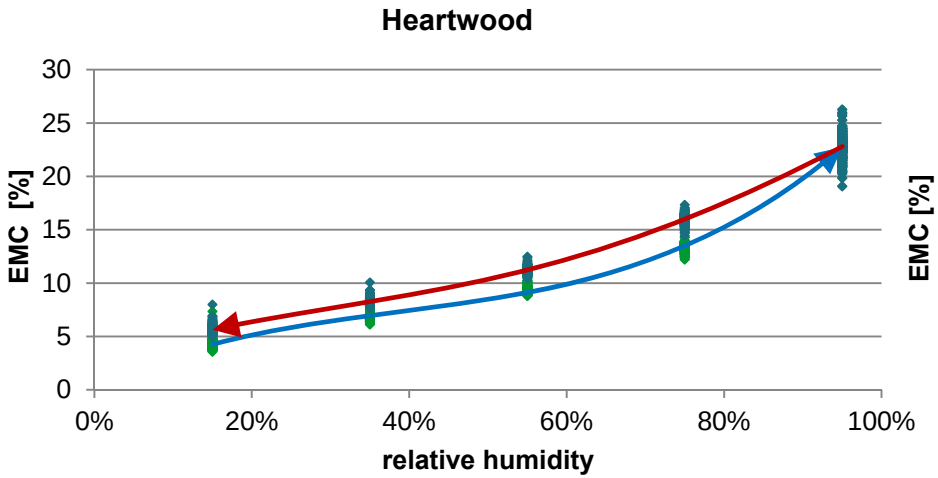
Relative humidity steps:
15, 35, 55, 75, 95 %

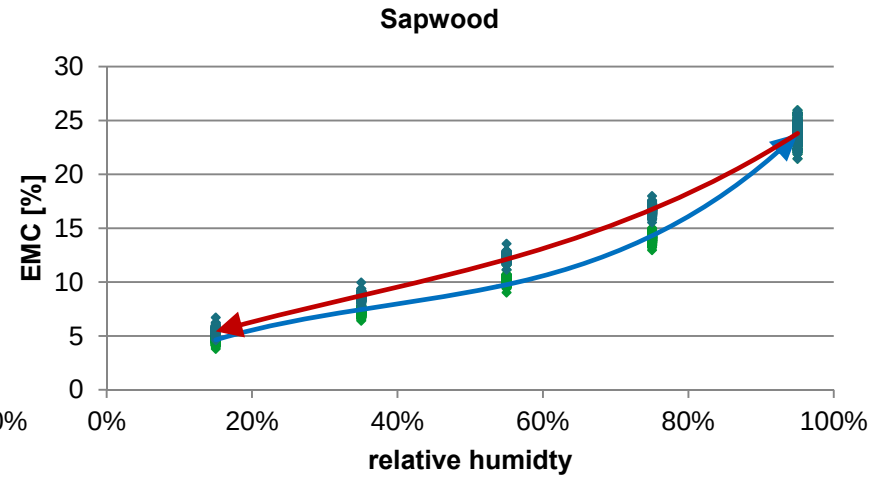
Oven-drying for calculating EMC



Results

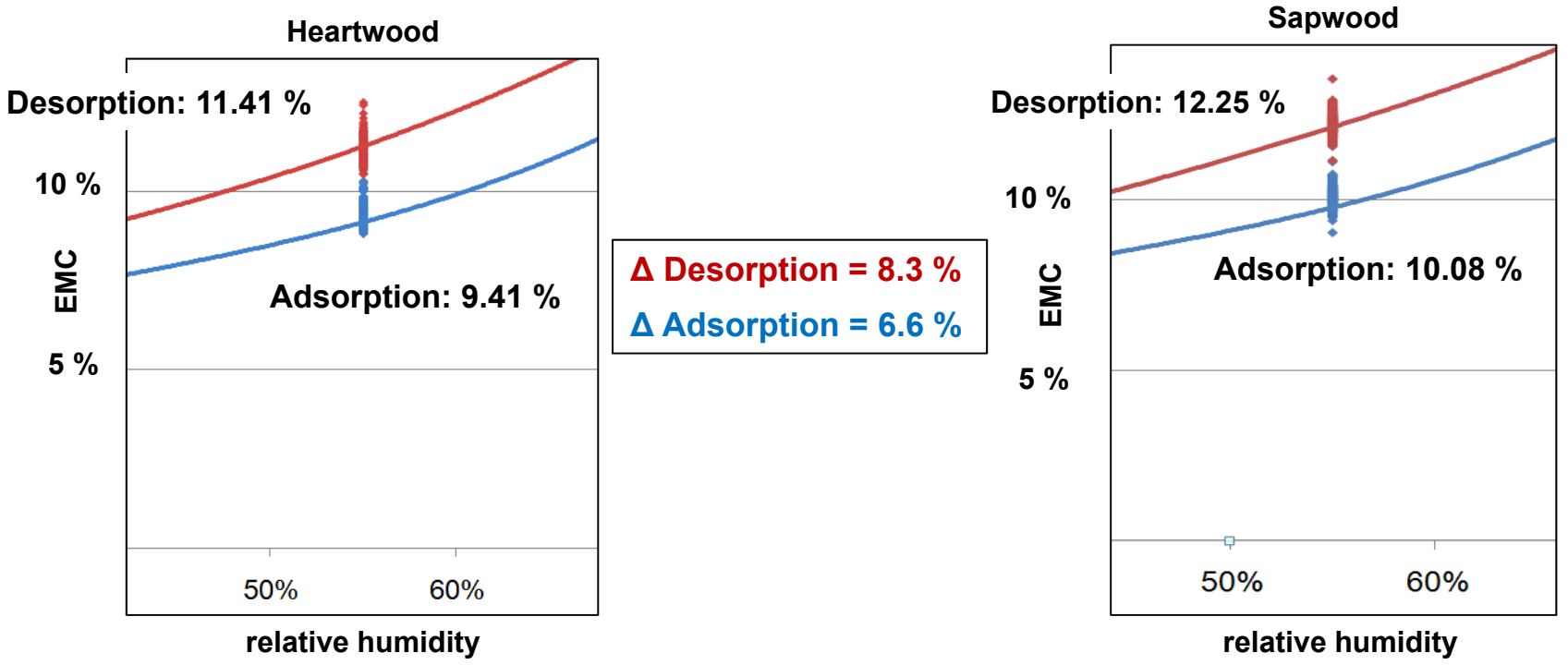
Sorption isotherms





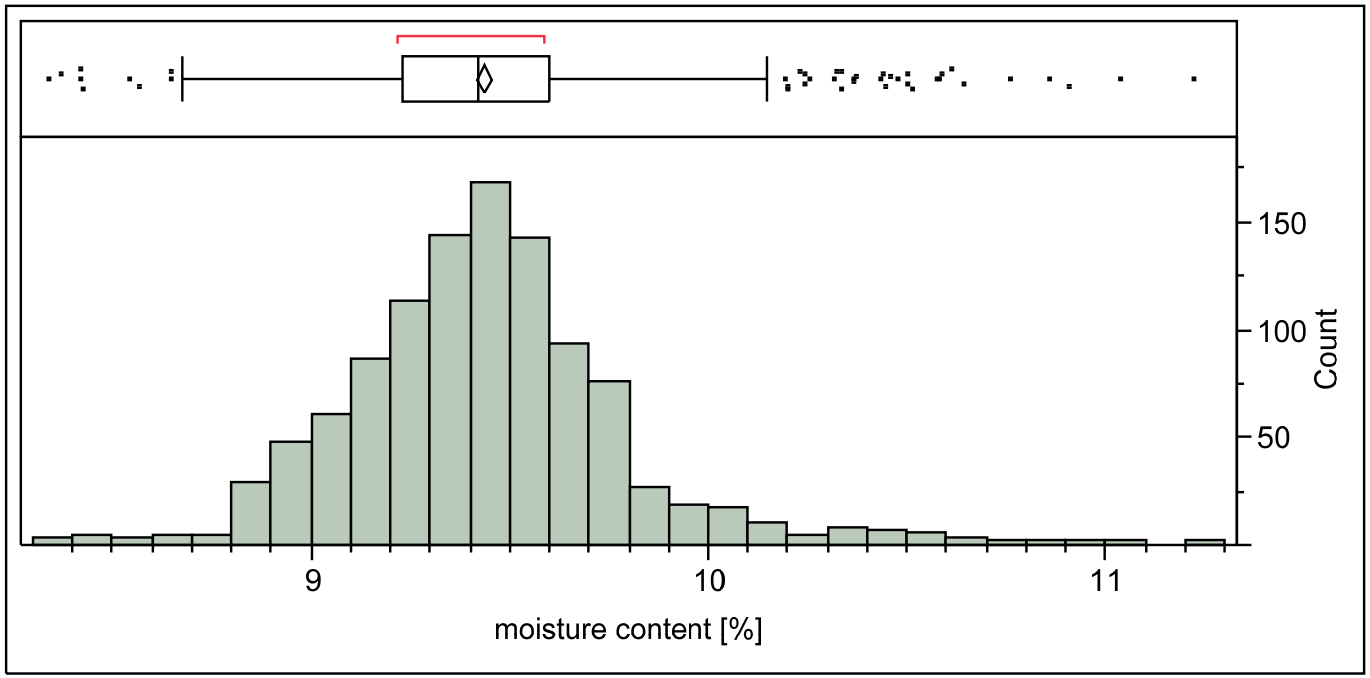
Results

Sorption isotherms



Results

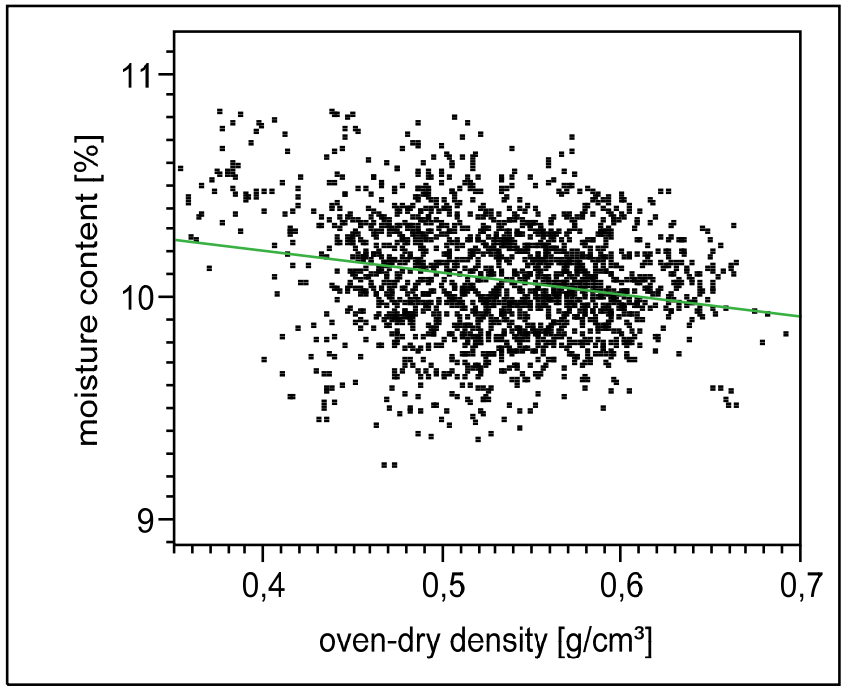
Variations within sample groups



Moisture content distribution for heartwood at 55 % RH adsorption

Results

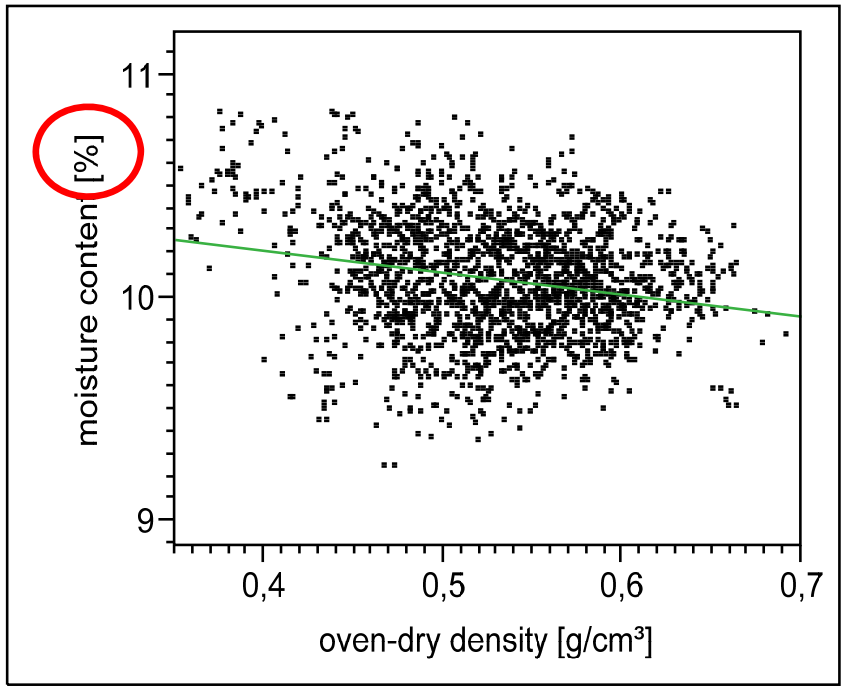
Influence of density



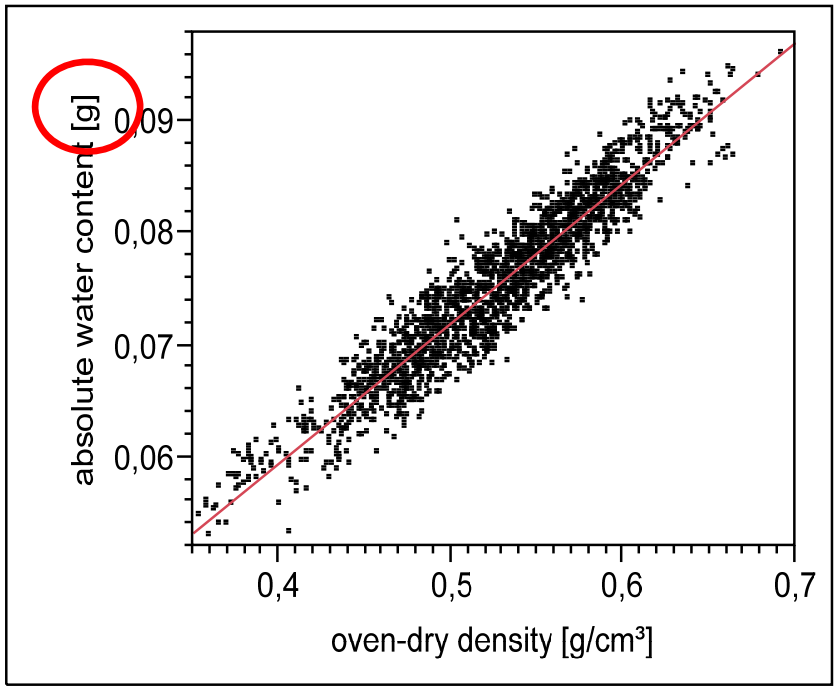
Relation of moisture content and density
(55 % RH adsorption, sapwood) **R^2 = 0.04**

Results

Influence of density



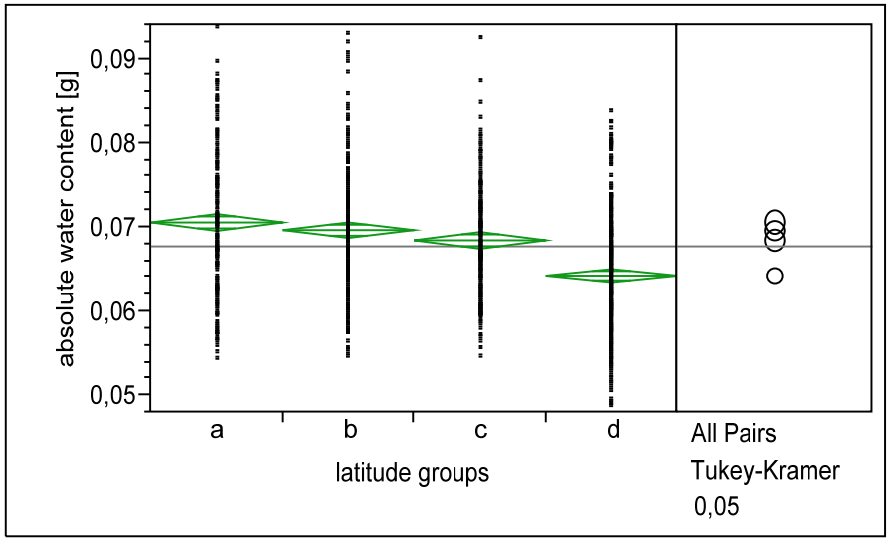
Relation of moisture content and density (55 % RH adsorption, sapwood) **R^2 = 0.04**



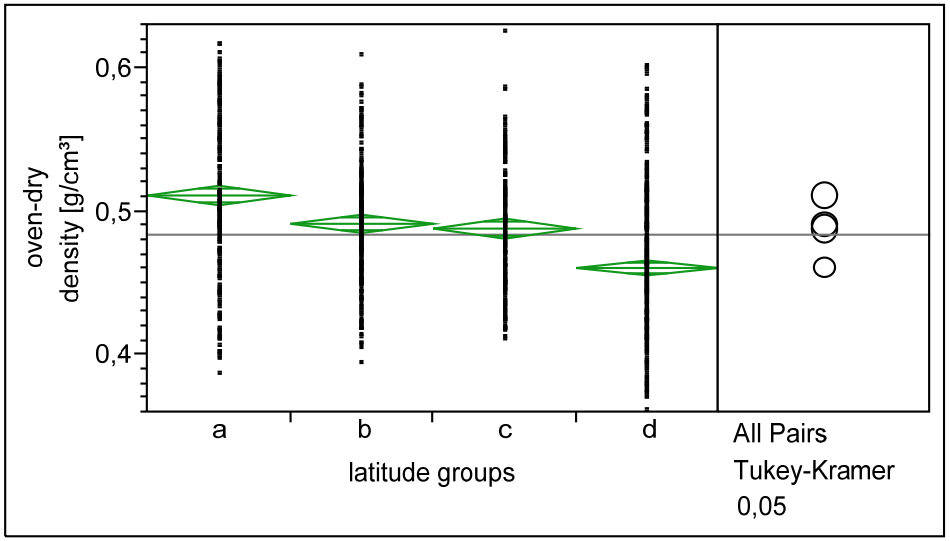
Relation of absolute water content and density (55 % RH adsorption, sapwood) **R^2 = 0.90**

Results

Latitude



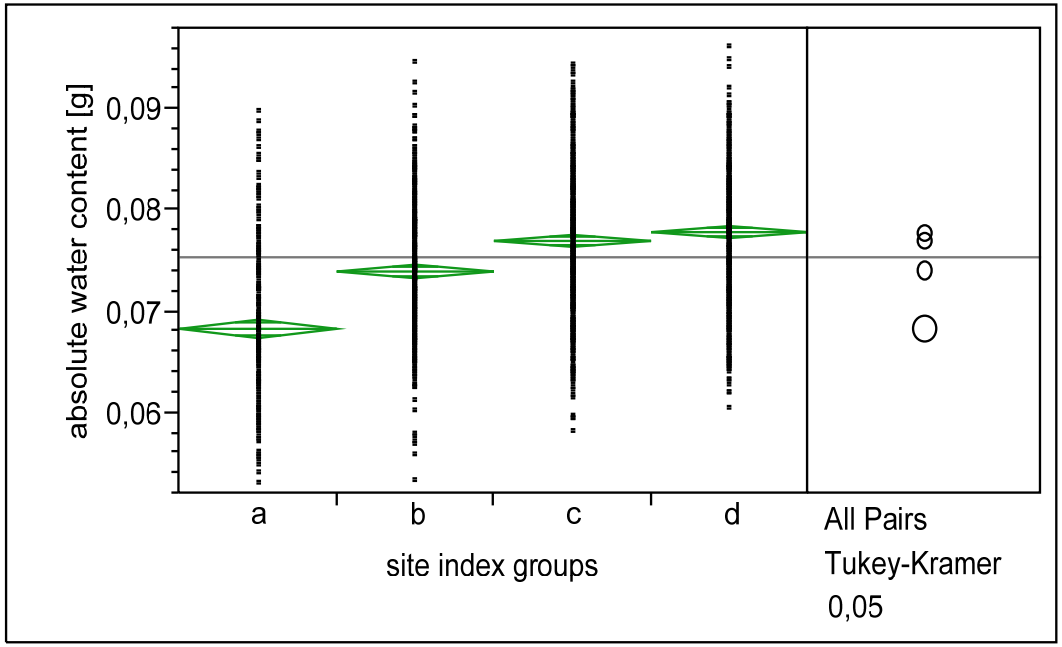
Relation of absolute water content and latitude (55 % RH adsorption, heartwood)



Relation of density and latitude (55 % RH adsorption, heartwood)

Results

Site index



Relation of absolute water content and site index (55 % RH adsorption, heartwood)

Conclusions

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Large variations between sap- and heartwood and within sample groups

Strong influence of extractives

Absolute water content [g] for investigations with density

Further investigations necessary

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Thank you for your attention!