



1918

TALLINNA TEHNIKAÜLIKOOL

TALLINN UNIVERSITY OF TECHNOLOGY



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# Leaching of Commonly Used Impregnation Agents Affected by Wood Properties

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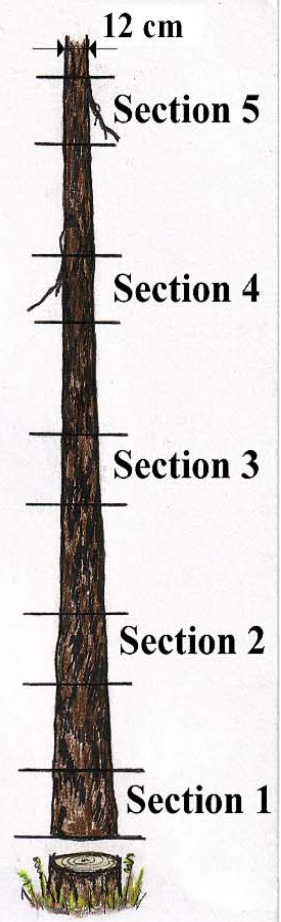
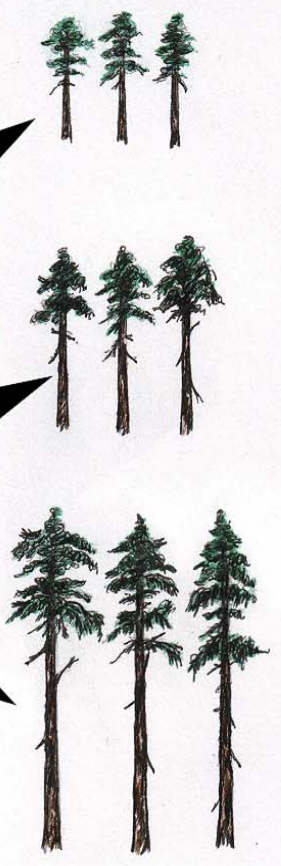
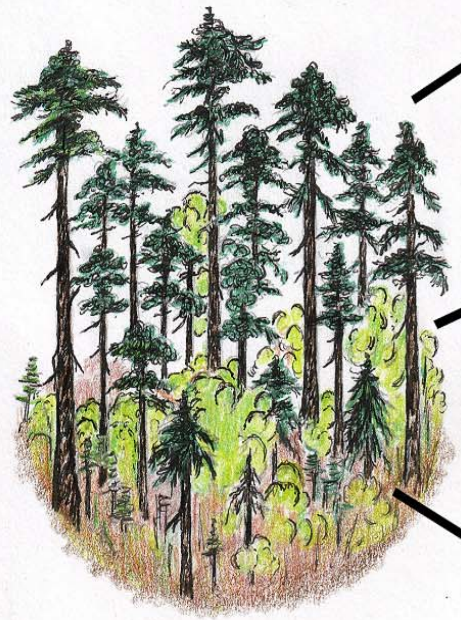
Aim

WHY?

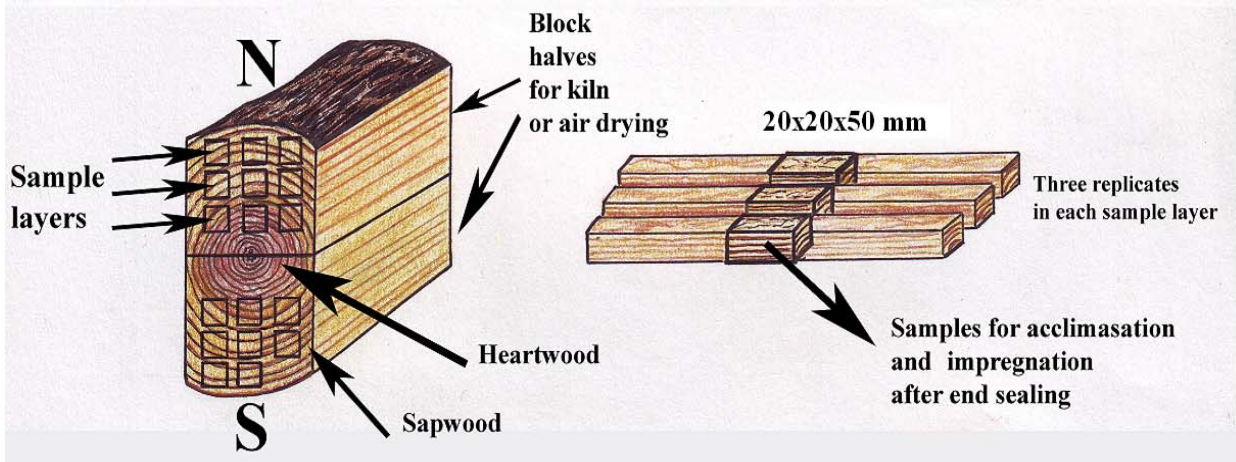
IF

HOW

# Scots pine



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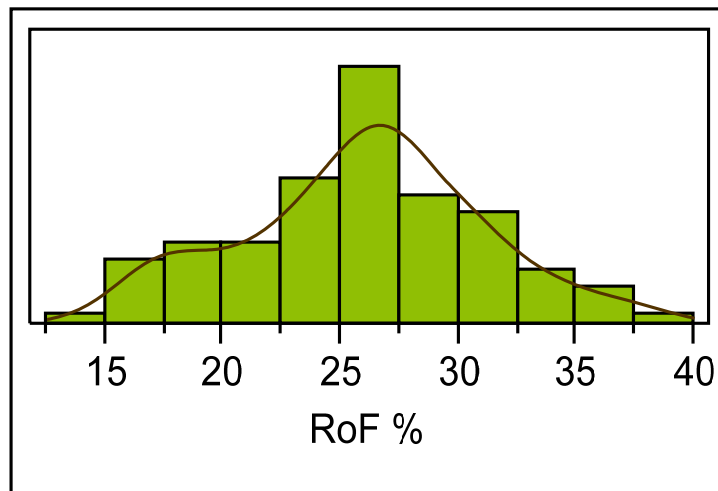


Drawing by Sigrun Kolstad



# Solutions

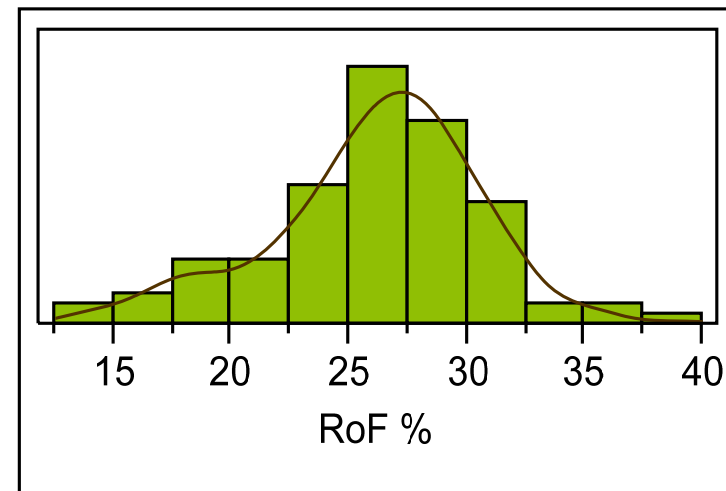
## Wolmanit CX-8



471 samples

RoF - how much of the possible void volume is actually filled with liquid

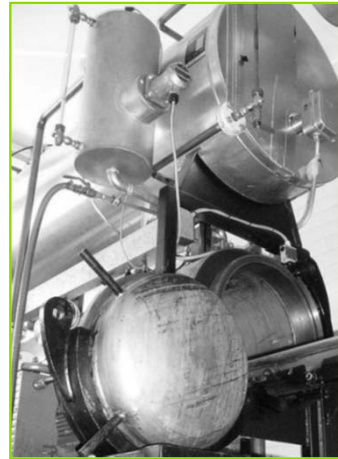
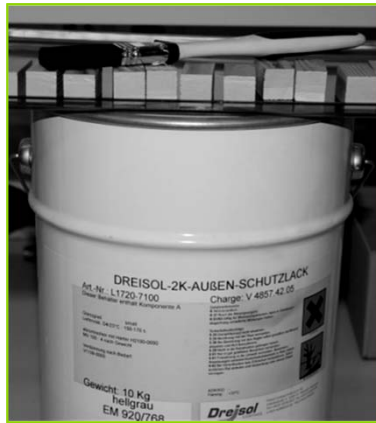
## Tanalith



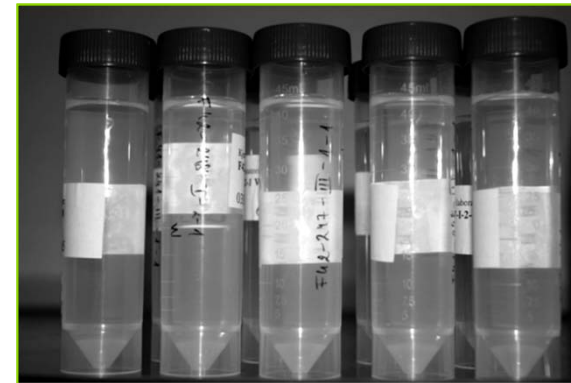
448 samples



# Method



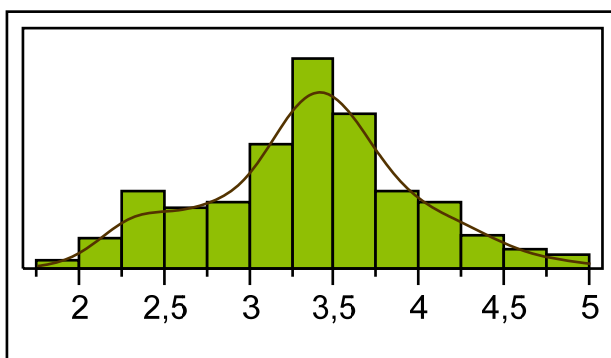
6 bar  
10 min



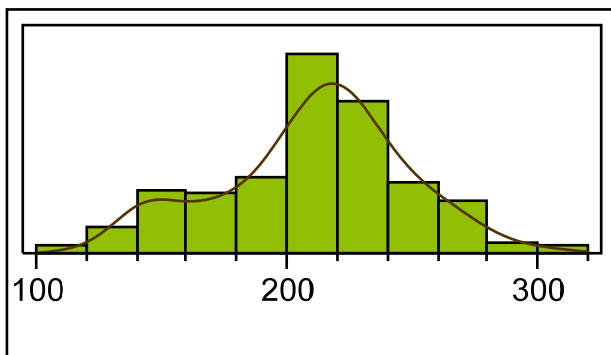


# Results

## Wolmanit CX-8

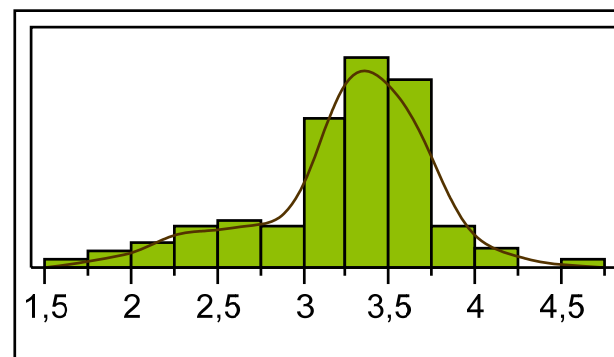


Copper uptake (mg)

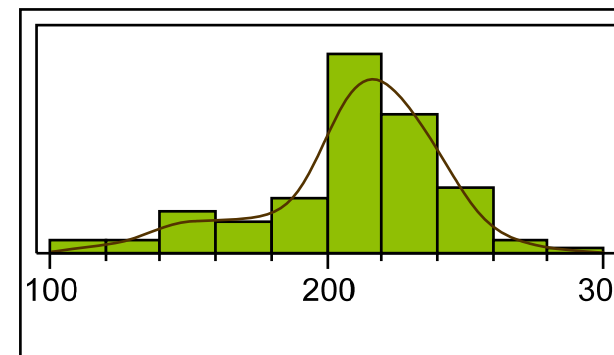


Solution uptake (kg/m3)

## Tanalith



Copper uptake (mg)

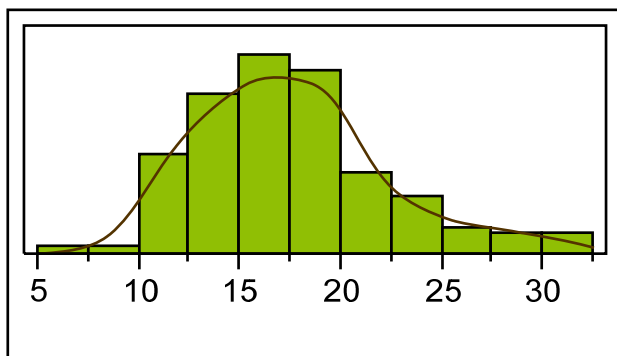


Solution uptake (kg/m3)

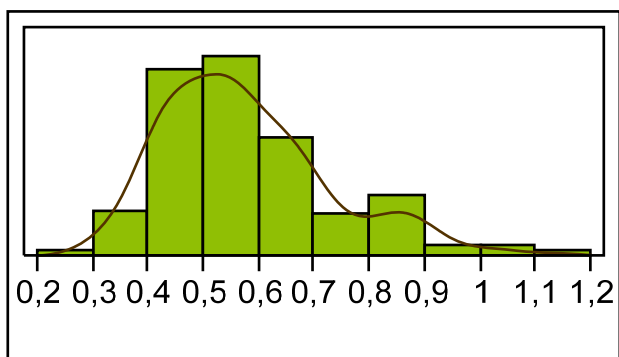


# Leaching

## Wolmanit CX-8

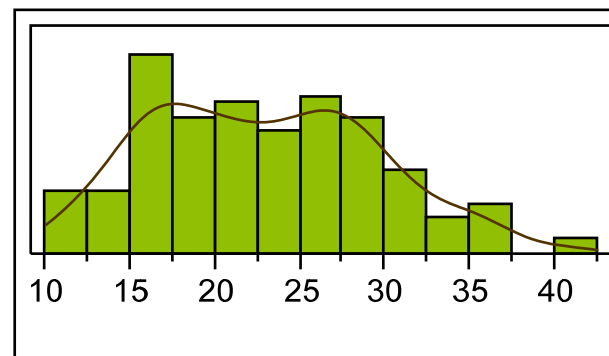


Copper leaching (%)  $\approx$  18%

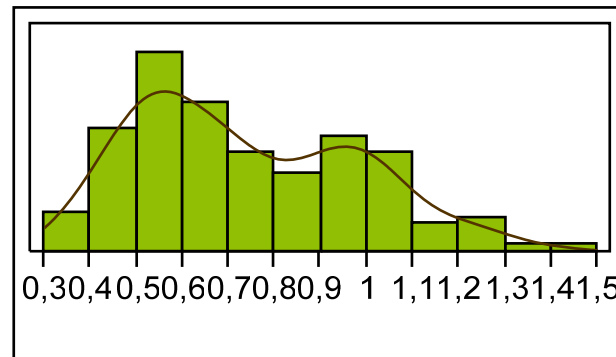


Copper leaching (mg/L)  $\approx$  0.58

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Copper leaching (%)  $\approx$  23%

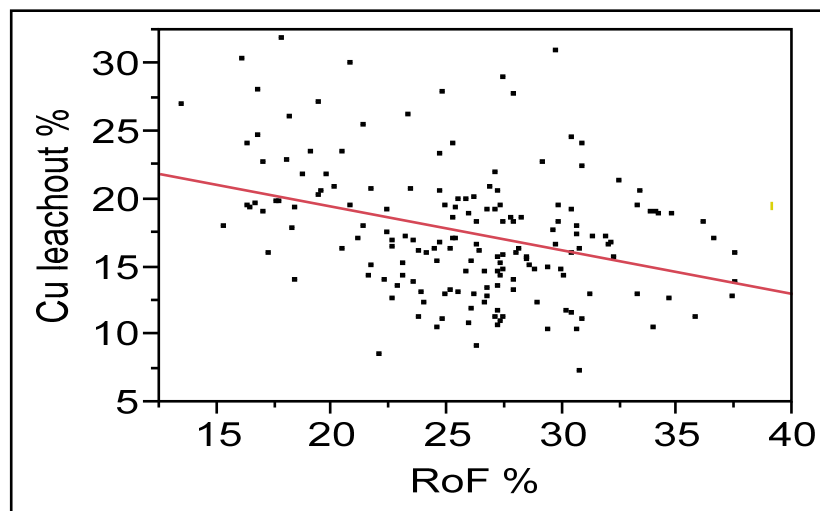


Copper leaching (mg/L)  $\approx$  0.74

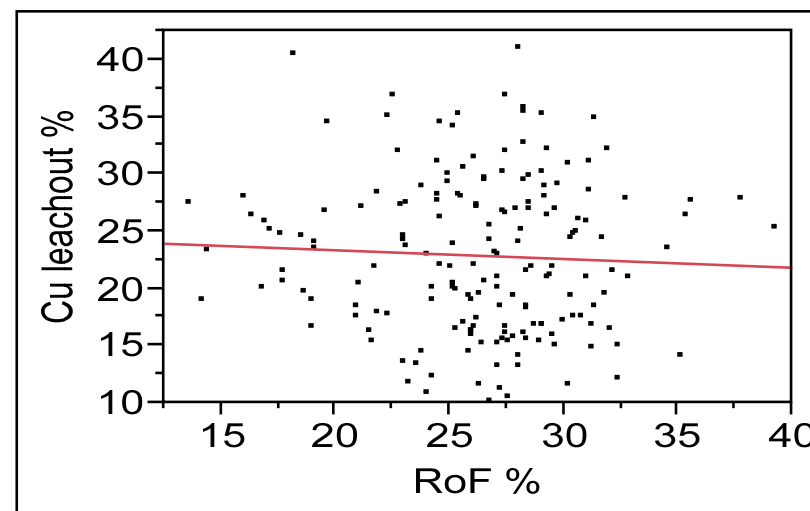


# Cu leachout % vs RoF

## Wolmanit CX-8

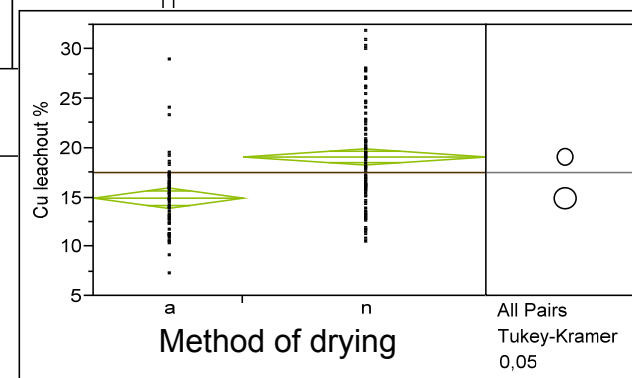
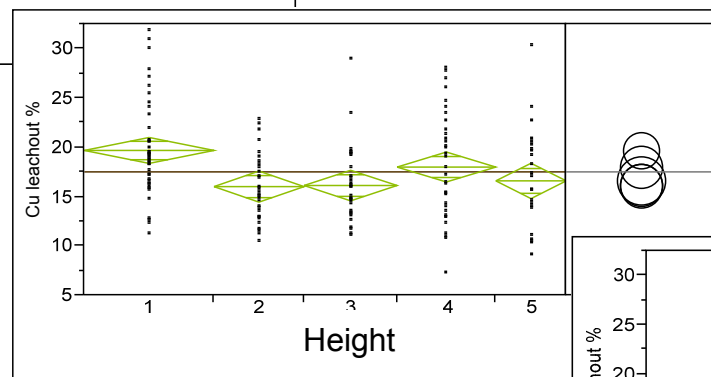
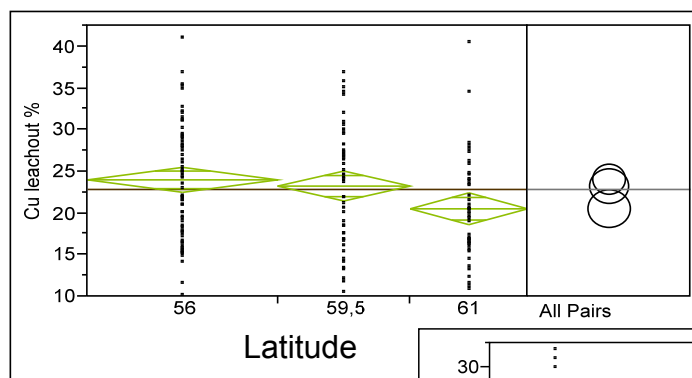


## Tanalith





# Cu leachout in correlation





# Linear mixed model

Fixed effect	Parameter	Observation		Tot %
		min	max	
<b>Method of drying</b>	$a_a$	-1.74	air dried	<b>8.65</b>
	$a_n$	1.74	kiln dried	
<b>Impregnation liquid</b>	$b_W$	-2.86	Wolmanit CX-8	<b>14.21</b>
	$b_T$	2.86	Tanalith	
<b>RoF</b>	$g$	-0.43	13.46 %	<b>27.52</b>
<b>Latitude</b>	$l$	1.45	56°	<b>18.01</b>
<b>Height</b>	$f$	3.18	1	<b>31.60</b>
Intercept	$\mu$	30.68		0
Total				100

$$R^2 = 0.44$$

$$Y = \mu + T_i + I_D + f_1 + a_a + b_T + g(\text{RoF}) + e_{iD1aT}$$



# Conclusions

Correlation found between:

latitude and leaching

height and leaching

drying and leaching



# Outlook

More samples from more stands to be examined

Futher analyses

Special thanks to Erik, Katrin, Ulrich and Monika!



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Thank you for your attention!