

An aerial photograph of Stockholm, Sweden, taken at sunset. The city's architecture, including numerous domes and spires, is silhouetted against the warm, golden light of the setting sun. The water of the harbor reflects the sky and the city lights. In the foreground on the left, a prominent brick tower with a golden, ornate spire is visible.

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Heartwood production and density of 22-year-old teakwood from fast-growth plantations: a comparative study across three locations in Brazil

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Introduction

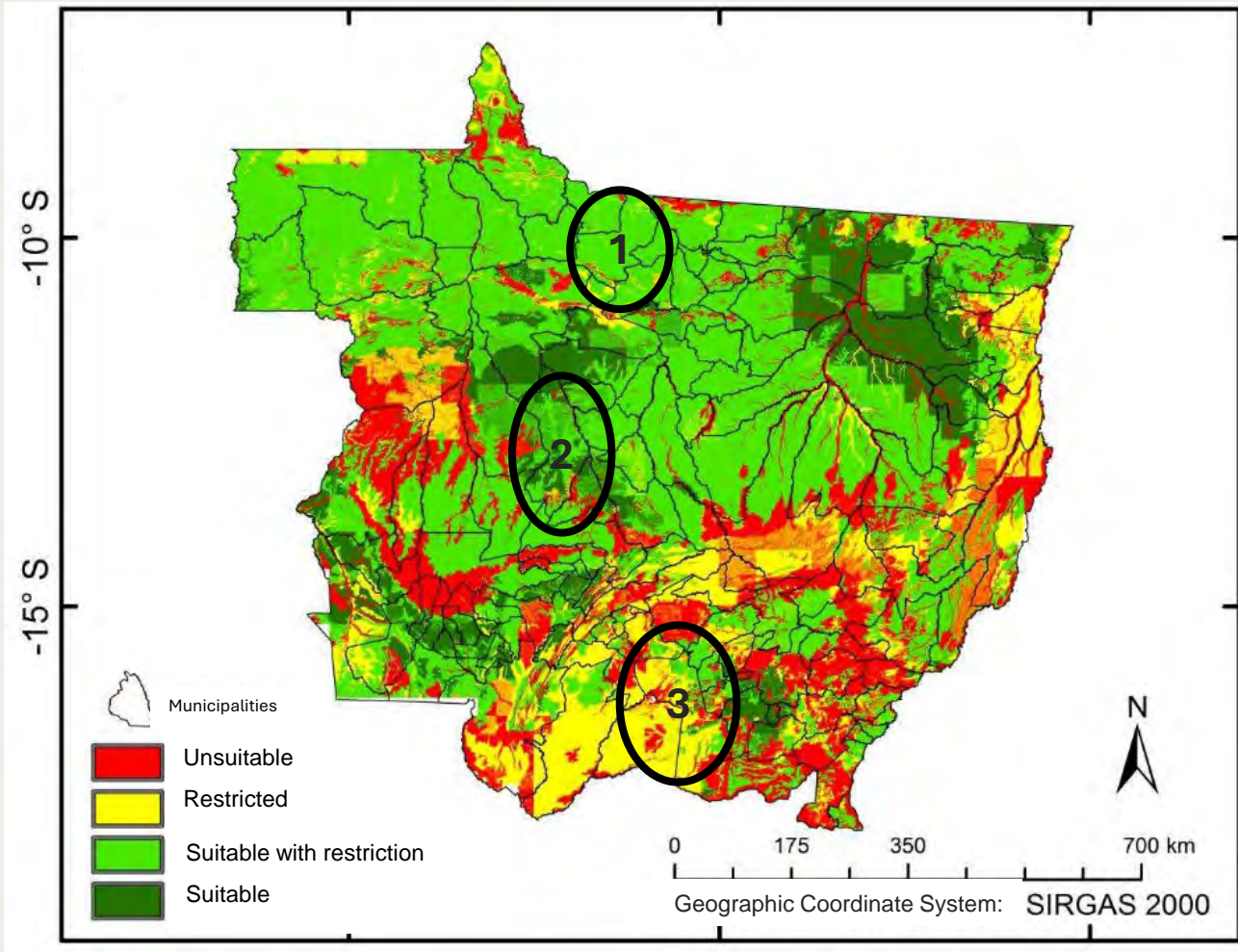


6% Teak Plantations – Latin America
(261- 413 thousand hectares)



Brazil - 76 thousand
hectares in 2022
78% Mato Grosso state

Introduction



Mato Grosso: 63% of the area is suitable or suitable with restrictions for teak plantations

- 1 – Suitable with restriction ✓✗
- 2 – Suitable ✓
- 3 – Restricted ✗

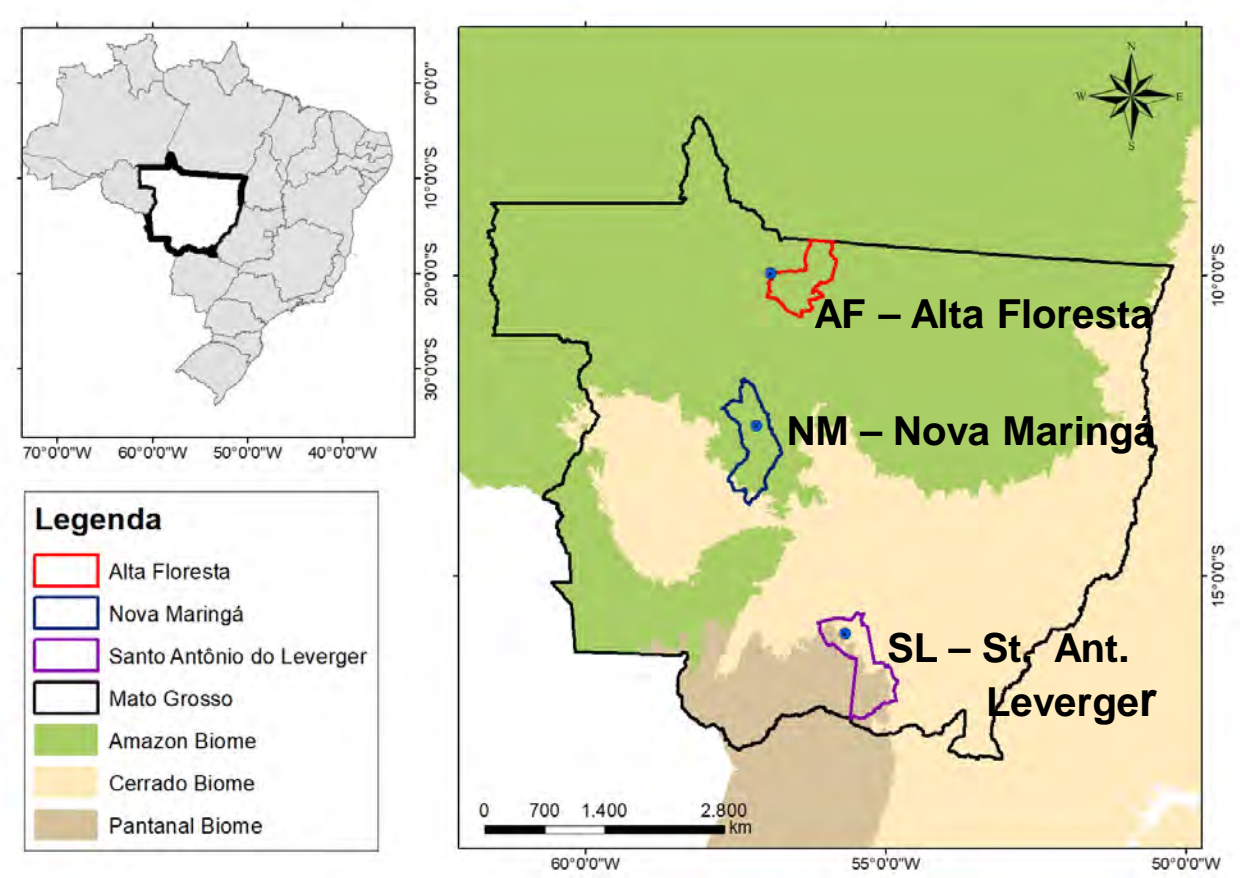
Climatic, edaphic, and physiographic zoning for *T. grandis* in Mato Grosso, Brazil (Medeiros, 2016).

Justificative and Objectives

- The teak plantations are typically established by private investors and 20 and 25 years rotations
- How does the planting location affect the properties of the wood?
- What are the characteristics of teak wood from final harvest in Brazilian plantations?
- This study aimed to compare the diameter, heartwood percentage, and wood density of 22-year-old *Tectona grandis* trees from three planting locations in Mato Grosso, Brazil.

Material and Methods

Study Locations

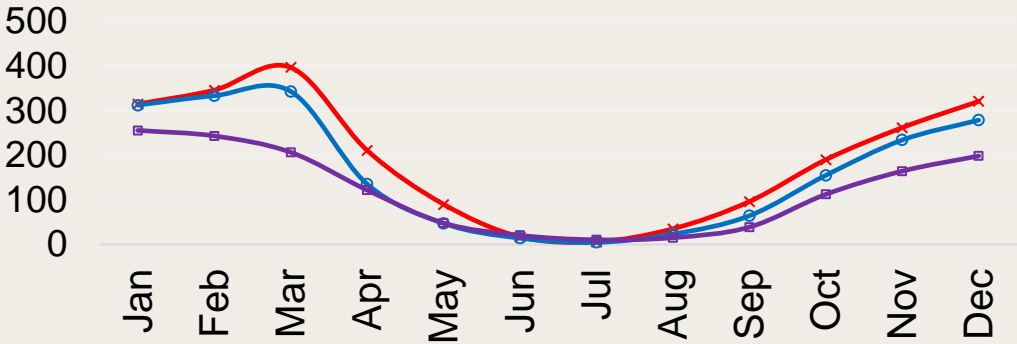


AF

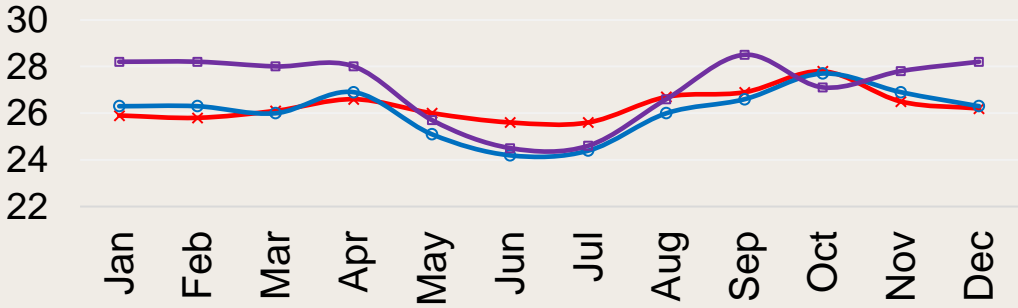
NM





SL

Precipitation (mm)



Average temperature (°C)

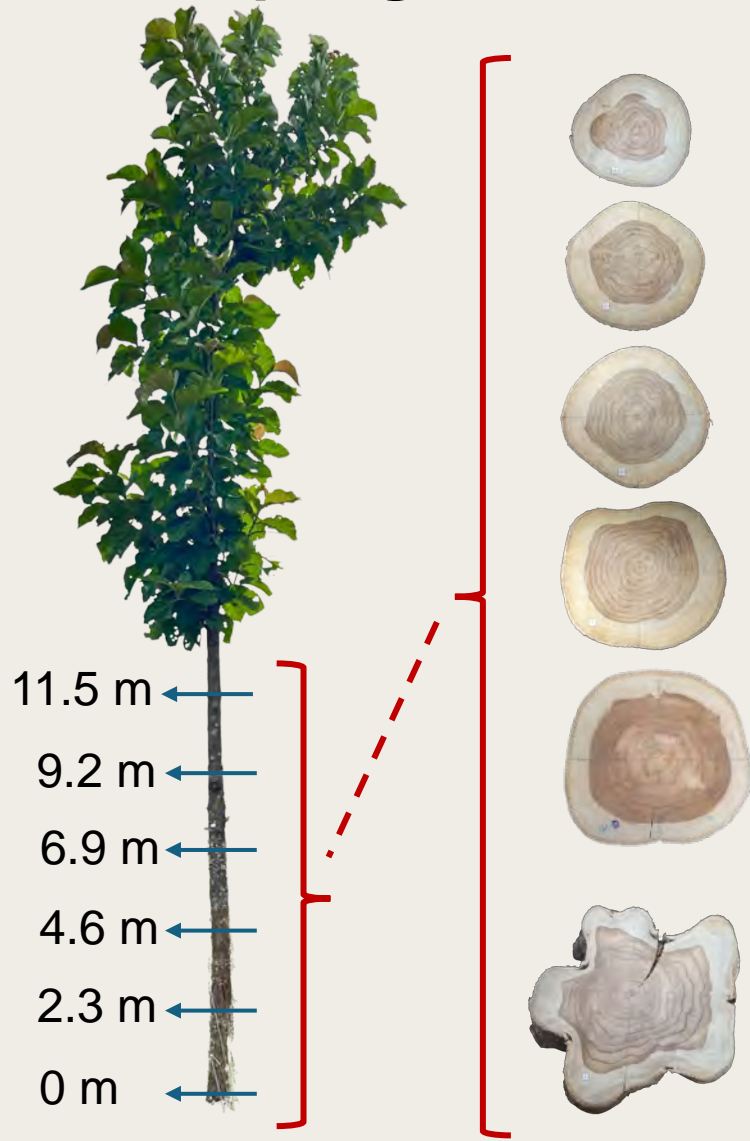


Loc.	Soil Atributtes (0-20 cm)			Anual precip. (mm)	
	Ca	T	Type		
	cmol _c .dm ⁻³				
AF	 	3.9	7.8	Clay	2313
NM		5.7	12.8	Sand	2284
SL		0.7	4.3	Sand	1567

Calcium (Ca); Total cation exchange capacity (T)

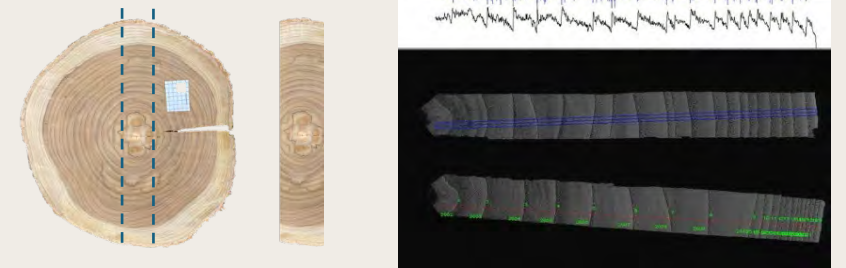
Material and Methods

Sampling



- 5 trees per location
- Mean diameter
- 22-year-old seminal plantations

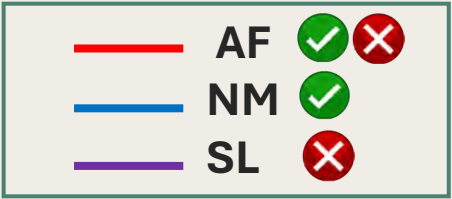
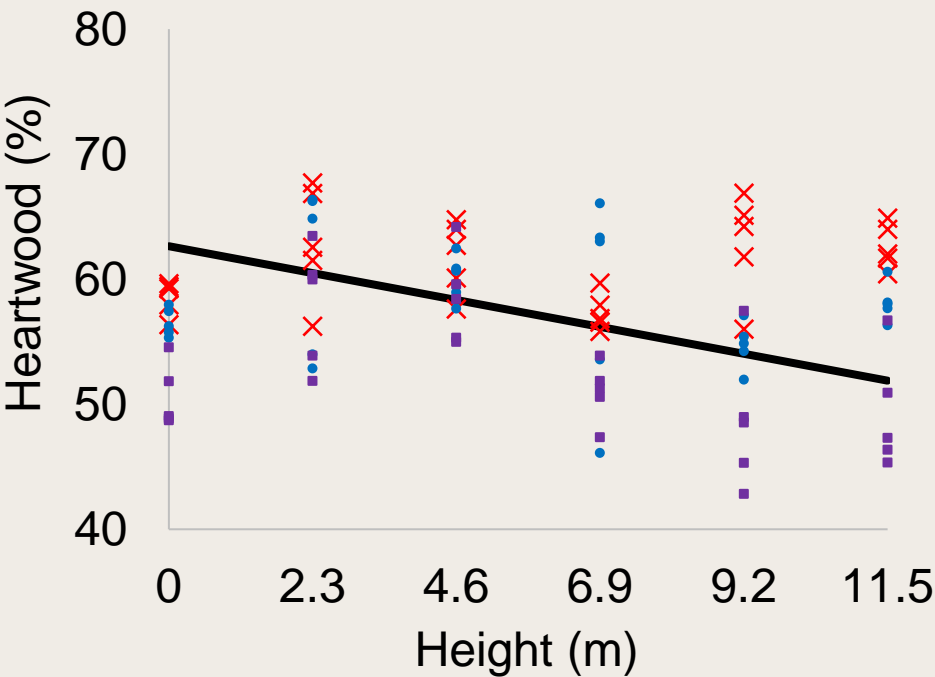
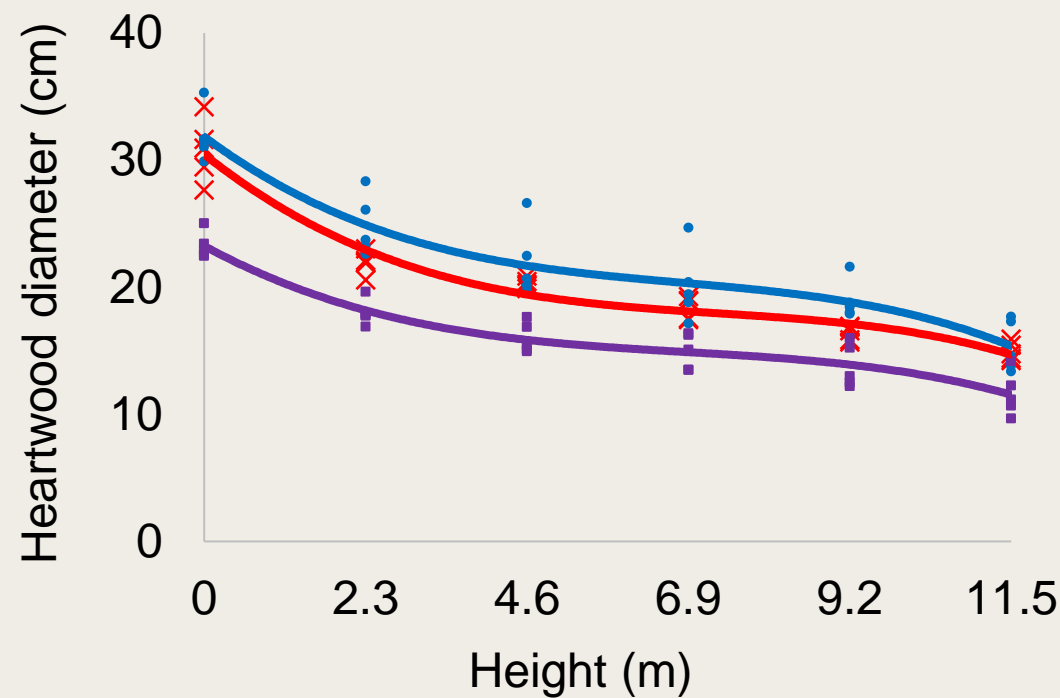
X-Ray Microdensitometry



- Total/ Heartwood diameter
- Heartwood (%)
- Growth rings width
- Wood density

Results

Heartwood – Diameter and Percentage



0 m



2.3 m



4.6 m



6.9 m



9.2 m

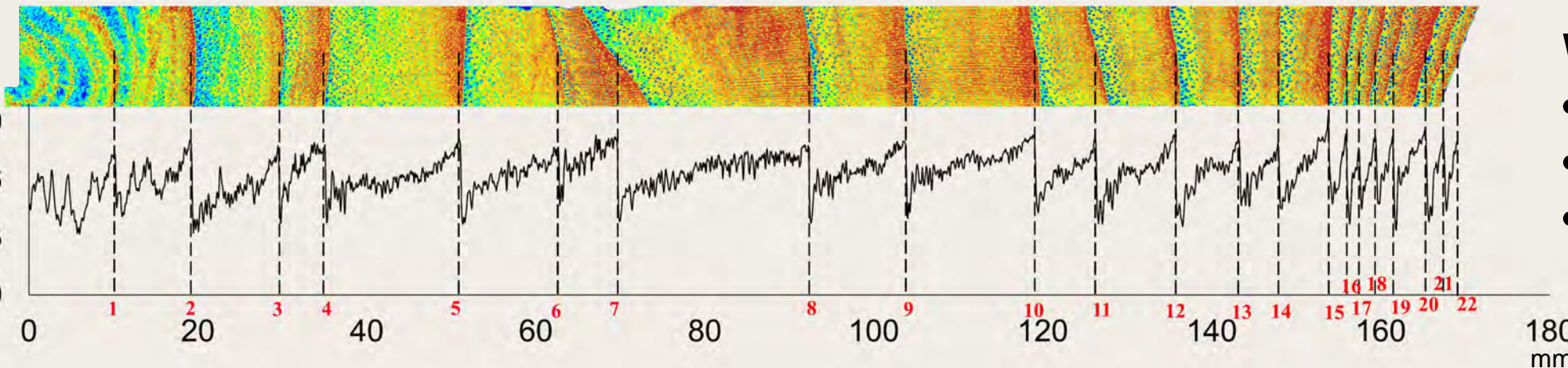


11.5 m

Results

Growth rings and wood density

✓ Nova Maringá (NM) – Height: 2.3m



Growth rings

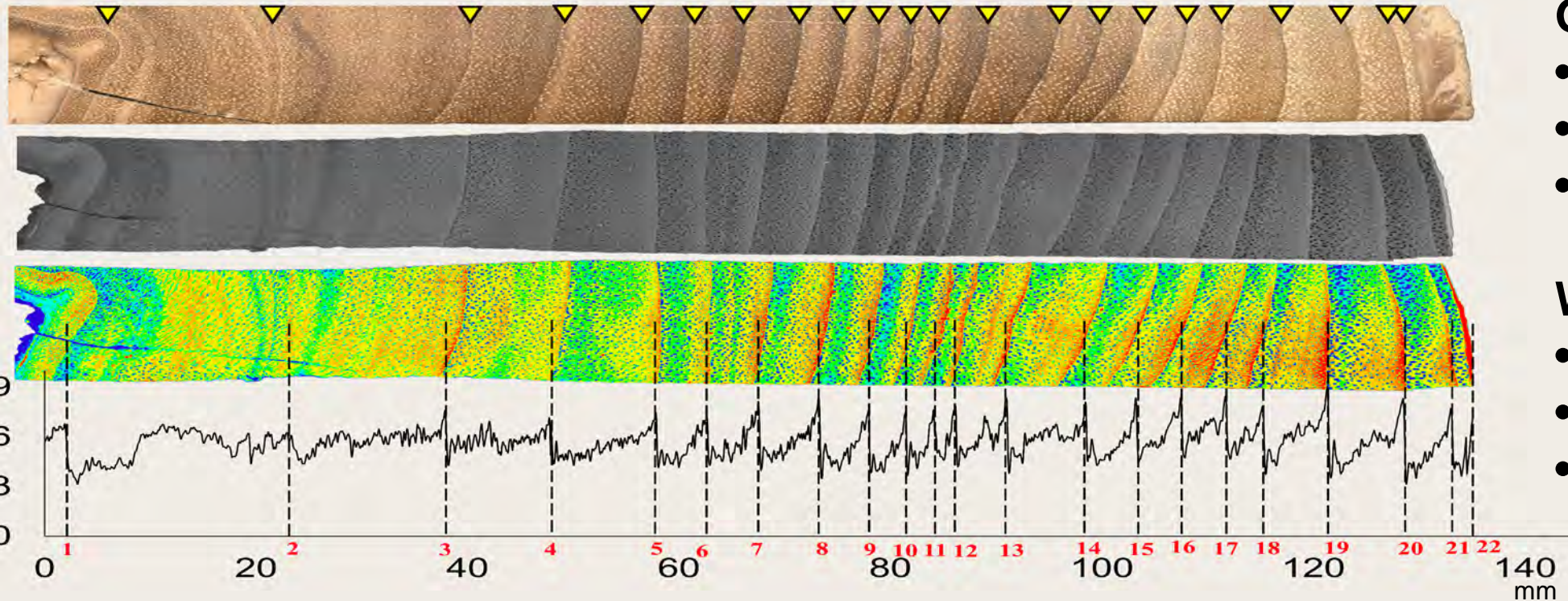
- Min.: 1.33 mm
- Max.: 19.88 mm
- Mean: 5.96 mm

Wood density

- Min.: 0.47 g.cm⁻³
- Max.: 0.70 g.cm⁻³
- Mean: 0.61 g.cm⁻³

Results

Growth rings and wood density ✓✗ Alta Floresta (AF) – Height: 2.3m



Growth rings

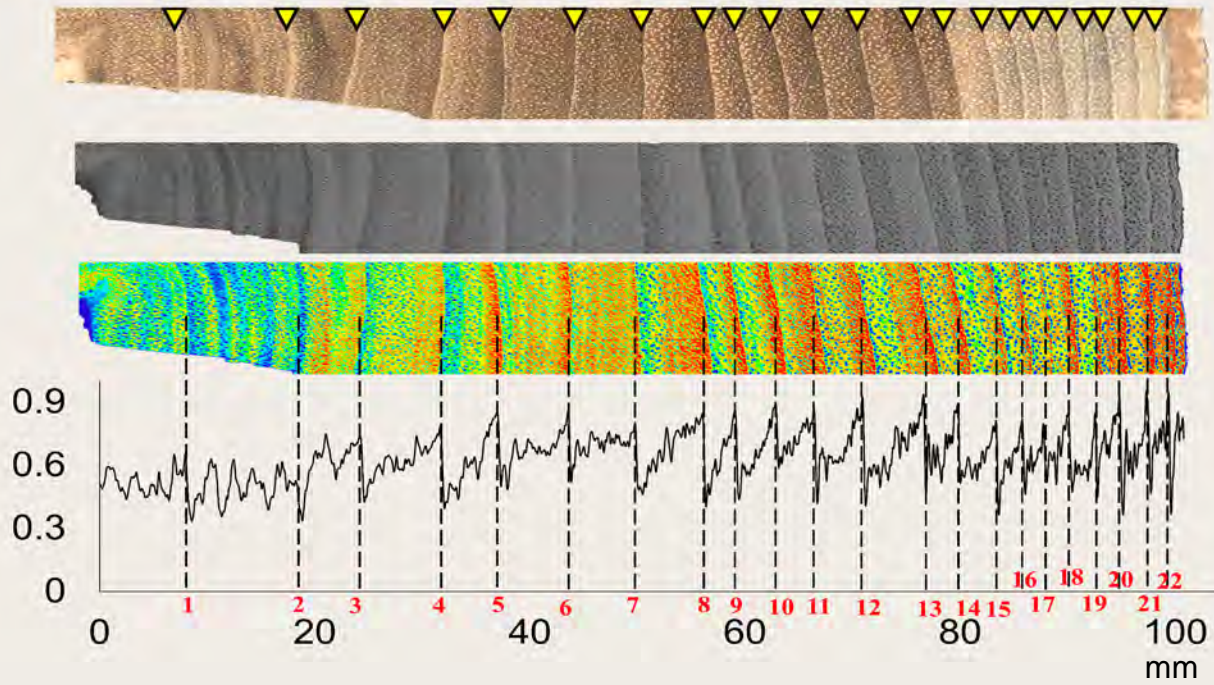
- Min.: 1.62 mm
- Max.: 19.68 mm
- Mean: 6.01 mm

Wood density

- Min.: 0.48 g.cm⁻³
- Max.: 0.64 g.cm⁻³
- Mean: 0.56 g.cm⁻³

Results

Growth rings and wood density ❌ Sto Antônio Leverger (SL) – Height: 2.3m



Growth rings

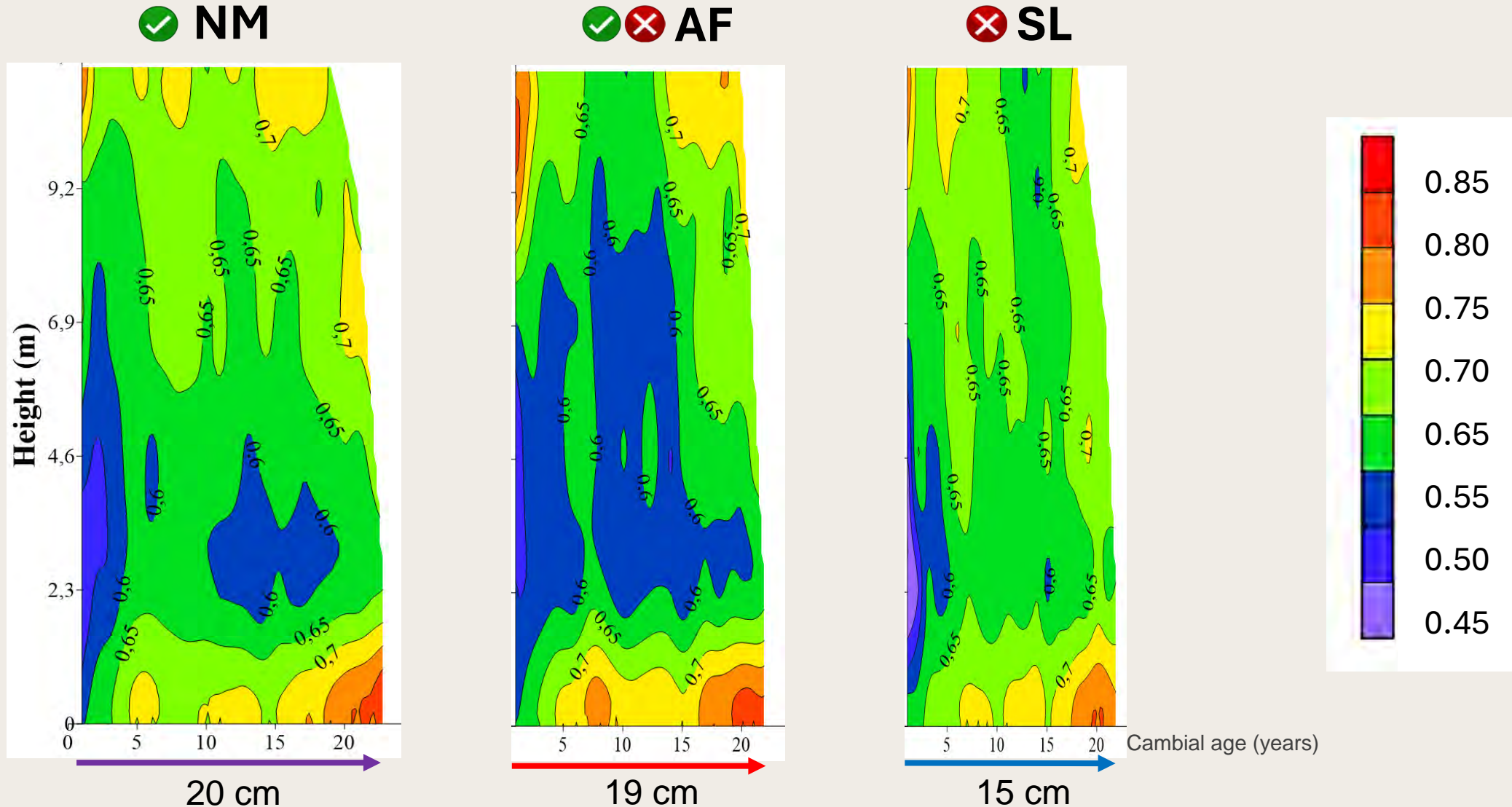
- Min.: 1.81 mm
- Max.: 10.20 mm
- Mean: 4.39 mm

Wood density

- Min.: 0.33 g.cm⁻³
- Max.: 0.95 g.cm⁻³
- Mean: 0.65 g.cm⁻³

Results

Profile of longitudinal and radial variation of X-ray wood density



Conclusions

- The heartwood production is proportional to the diameter growth.
- The growth ring width is constant from the 10th ring onwards.
- The average density ranged from 550 to 650 kg.m⁻³.
- Wood density is higher at the base and apex, and lower near the pith, increasing towards the bark.
- Growth is not directly associated with wood density. Wood from SL is more homogeneous and denser. NM has higher growth with intermediate wood density. Wood from AF has a lower mean wood density.

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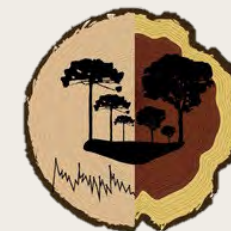
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Acknowledgment



Tack!
Besök oss!

Thank you!
Visit us!

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