



Study of the attractiveness and longevity of enrichment materials and wood species in a blocked farrowing house and a large gestation group setting

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Context and Objectives

Regulation: 1 suboptimal object per housing

→ Deformable, destructible, made of organic material (European Commission, 2016)

Numerous studies for fattening pigs on:

- Expressed behaviors (Bracke, 2006; Telkänranta et al., 2014; Giuliotti et al., 2019; Chou et al., 2020)
- Suitable and durable objects (Courboulay, 2014; Chou et al., 2019)

But few studies about sows... (Horback et al., 2016)

Test equipment or new solutions considering their attractiveness and durability

Farrowing House:

What object is the most 'suitable'?



Gestating Sows:

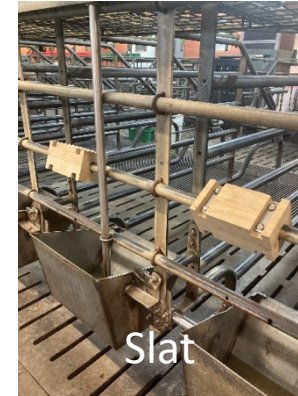
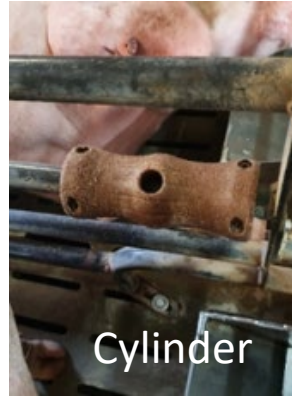
Which wood species is the most 'suitable'?



Farrowing House: Material and Method

Animals and Treatments

- 3 batches = 72 sows
- 4 objects tested
- 6 blocks of 4 sows according to parity
- Rotation of objects once a week



Measurements

- Weight of objects at each rotation
- Behaviors
 - Monitoring 1 hour
 - After meals $\Rightarrow$ More active sows
 - Scan sampling 3 min
 - Twice a week after installation/before rotation

Posture	Standing
	Lying
	Sitting
Behavior	Feeding
	Defecation
	Inactive
	Investigation directed towards the object
	Investigation directed towards the cage or floor
	Stereotypy
	Negative interaction with peers
	Positive interaction with peers
	Other

Analyses

Variable: % of behaviors / 1h

Non-parametric Kruskal-Wallis tests for effects:

- Enrichment object
- Week
- Batches
- Parity

Farrowing House: Results

Degradation of objects:

No effect after 1 week of exposure

Behaviors

■ Parity effect $\Rightarrow$ Lower parity ($\pm$ parity 1) more active (Cariolet and Dantzer, 1984; Rushen, 1985)

■ Enrichment object effect on investigation

- Cage investigation
Cylinder > others

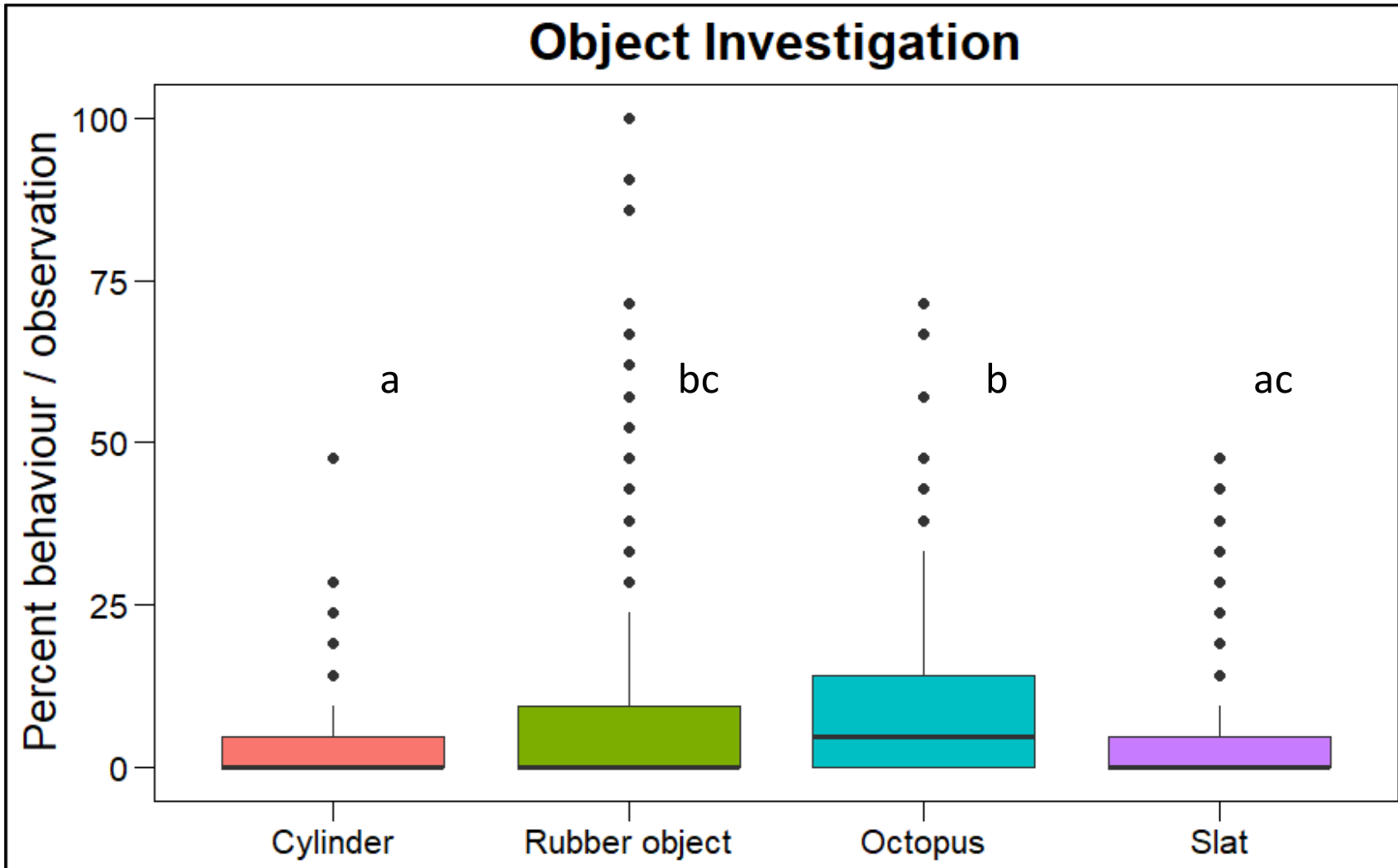
Significant batches effect

- Object investigation

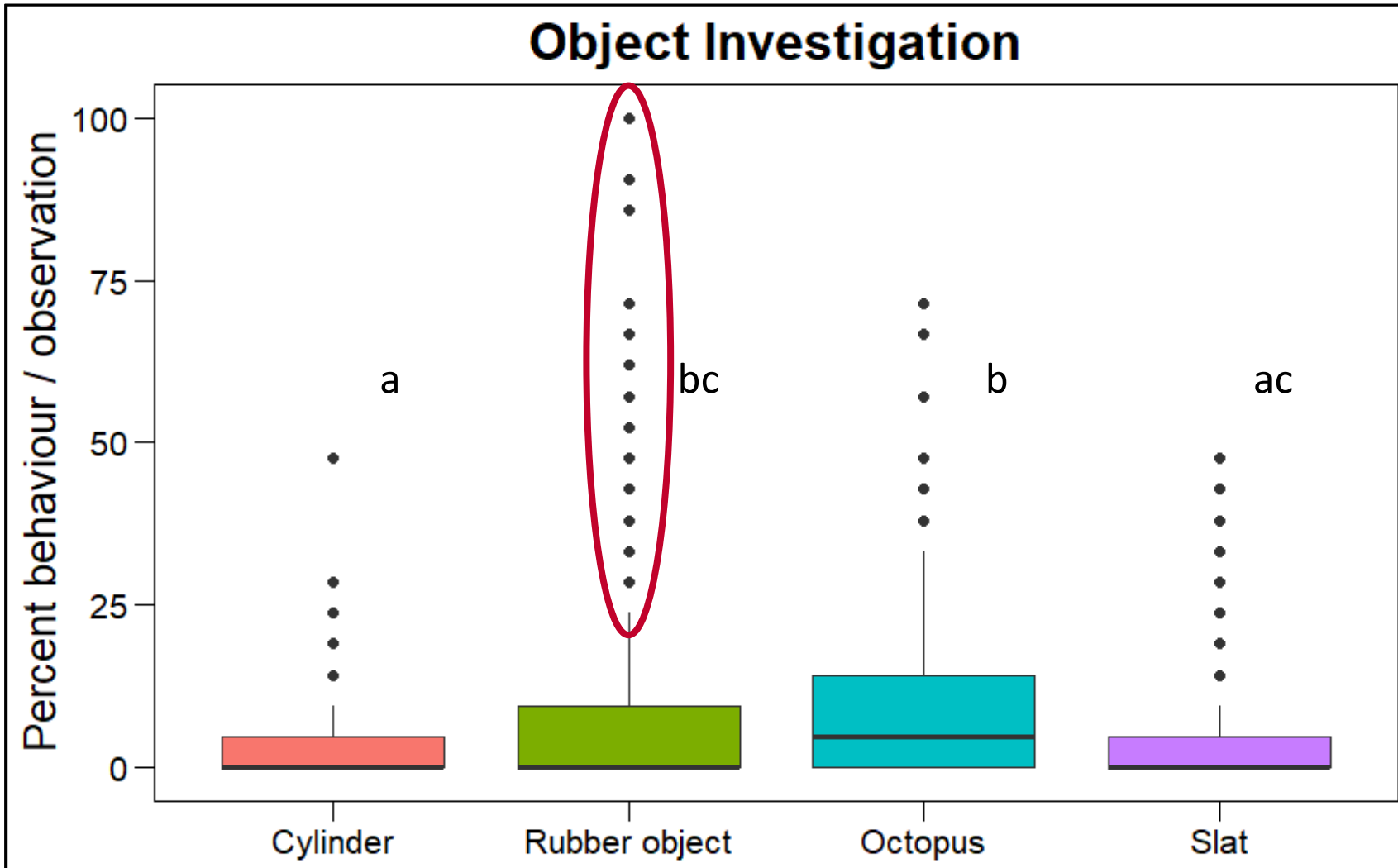
		Global	Stat
Behavior (en %)	Inactive	37,4	W***, B***, P**
	Investigation cage	23,5	O*, B***, P***
	Investigation object	7,2	O***, W***, B*, P***
	Sterotypy	18,2	W***, P***
	Feeding	11,8	W***, B***, P*
	Positive interaction	0,8	W**, P**
	Negative interaction	0,1	B**, P**
	Defection	0,1	P**
	Other	0,8	P***

W = week / P = Parity / B = Batches / O = Object

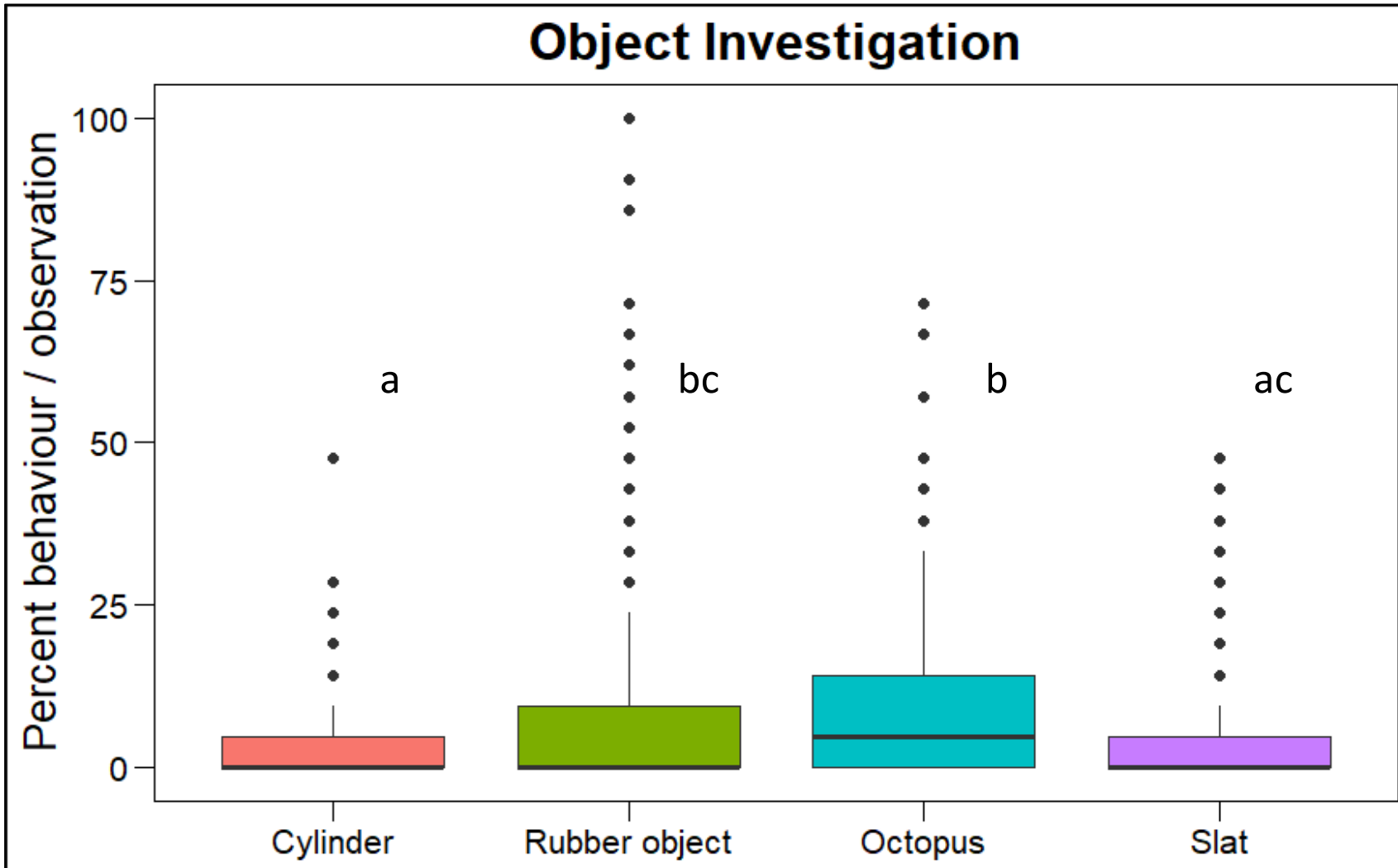
Farrowing House: Object Investigation Behavior



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Farrowing House: Object Investigation Behavior



Gestation: Material and Method

Animals and Treatments

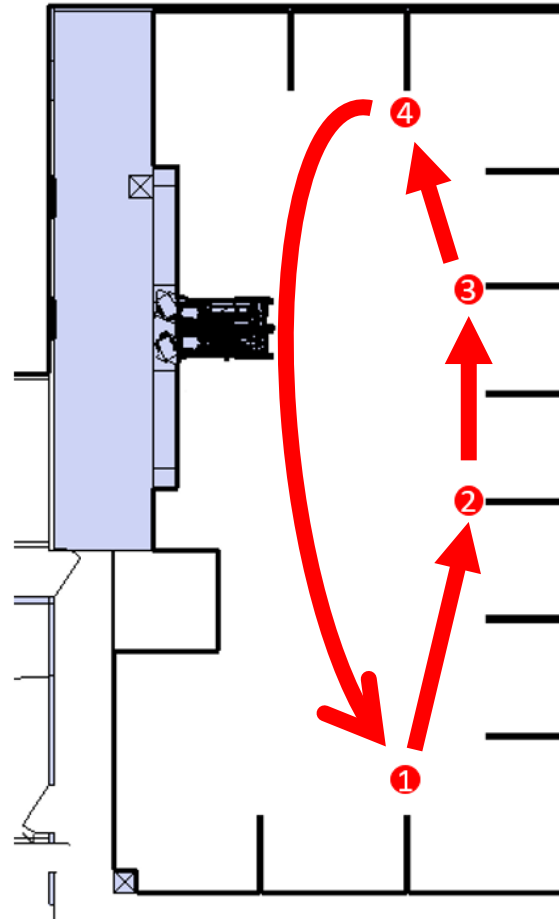
- Large dynamic pen
≈ 72 sows
- Duration: 3 months

Tested Wood Species

- Oak
- Maple
- Beech
- Scots pine



- Rotation every 3 weeks



Measurements

- Behaviors
 - 2h30 continuous monitoring once a week

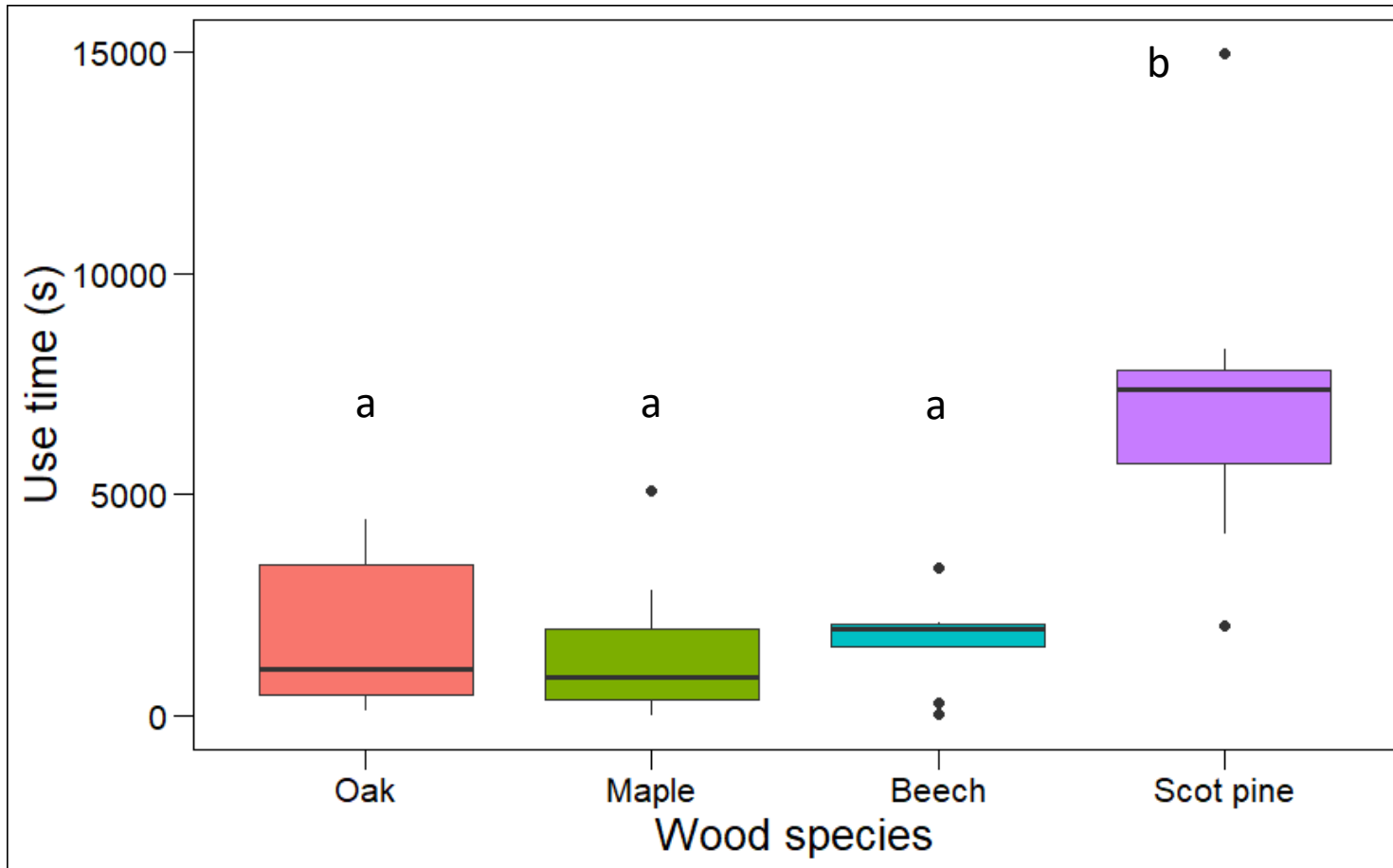
Behaviors	Chew	} Overall use
	Lift	
	Smell	
	Unknown	

- Object Degradation
→ Replacement frequency

Analyses

- Variables: Cumulative duration (s) / observation
- Variance analysis considering effects: wood species, position, and date

Gestation: Wood Species Use by Sows Species

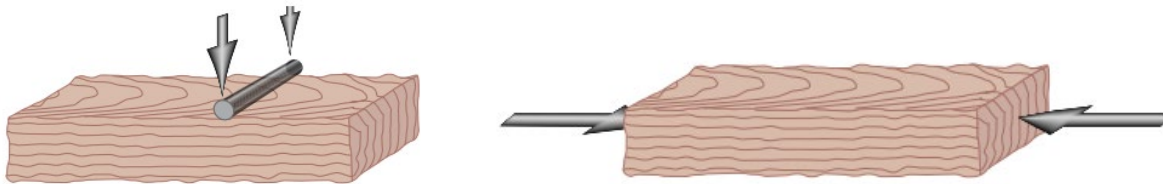


Woods	Mean (s)	Use time / observation
Oak	1782	19,8 %
Maple	1452	16,1 %
Beech	1847	20,5 %
Scot pine	7214	80,2 %

Gestation: use of wood species and analysis elements

Physical and mechanical properties & Renewal and costs

Wood species	Monnin hardness	Density	Axial compression rupture manage
Oak	4,2	0,74	58
Maple	4,7	0,64	55
Beech	4,2	0,71	NA
Scot pine	2,6	0,55	50



Conclusion of the two trials

Attractiveness

- Deformable = attractive

Hard cylinder (farrowing trial)

Rubber object (*Horback et al., 2016*)

→ Stereotypic support?

Wood → Good exploration support

(*Courboulay, 2014; Chou et al., 2018, 2020*)

Variability among wood species → Scots pine
(gestation trial)

Fattening pigs study

(*Chou et al., 2018 and 2020; Nannoni et al., 2018*)

- Enrichment objects, especially in wood
→ In France, the recommendations are
to be tested according to the physiological stage
(FAQ Pig Welfare Recommendation)

Accessibility

- Floor position preferred (farrowing trial)
(*Bracke, 2006; Studniz et al., 2007, Courboulay, 2014*)

Durability

- More fragile = more frequently renewed, costly (€€€)
(*Chou et al., 2020*)

Thank you for your attention

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