Efficiency of Topping Trees in Cable Yarding Operations

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Nutrient cycle of a forest ecosystem

Problem statement

Slash piles with high amounts of nutrient-rich compartments remain after WTH in cable logging

Extraction of these nutrient-rich fractions raised concerns about the sustainability of WTH

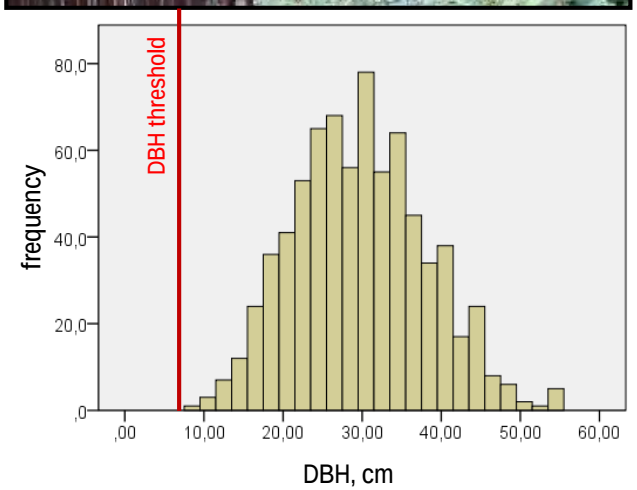
Ecological potential of topping trees

Typical tree within an initial thinning stand

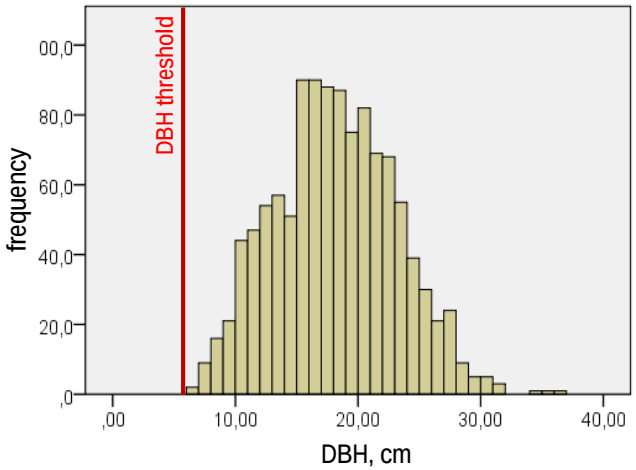
	BIOMASS	NITROGEN	Topping diameter
	2 %	8 %	4 cm
	7 %	19 %	6 cm
	14 %	33 %	8 cm
	46 %	71 %	14 cm

Study sites

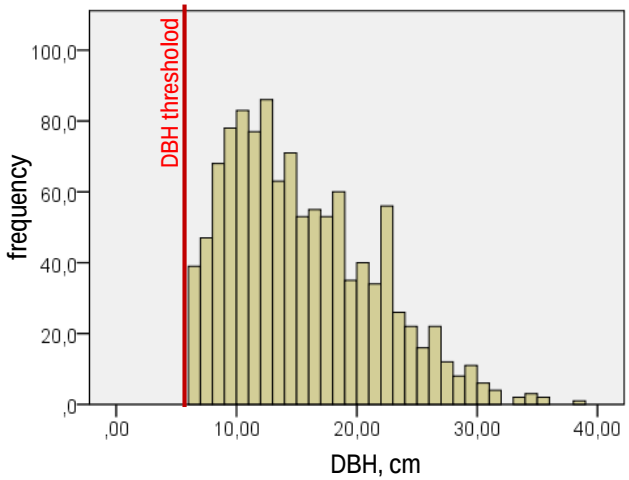
»KLOMMEGGER«
Second thinning operation



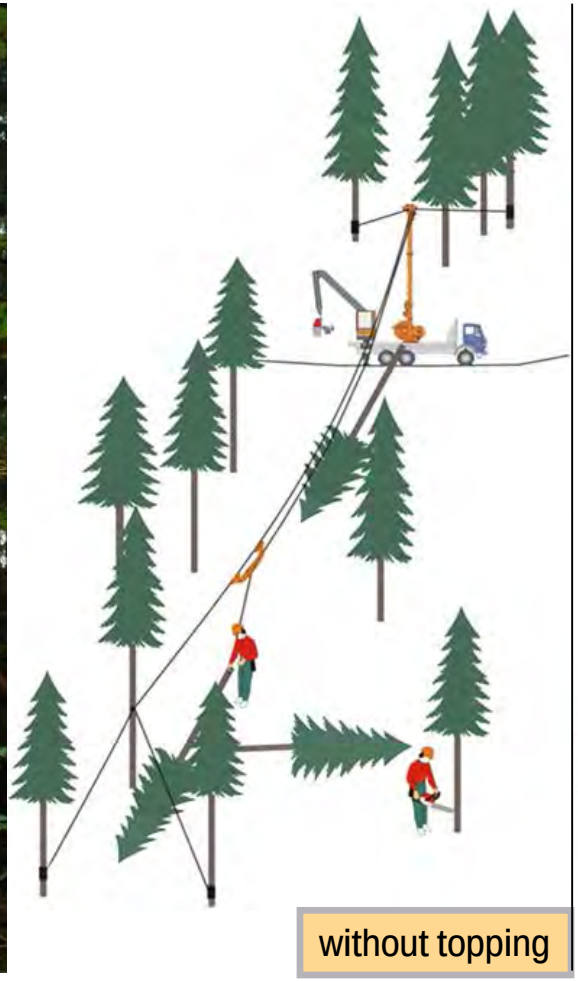
»BERGTAL«
First thinning operation



»BAIRHÜBL«
First thinning operation



Experimental setup

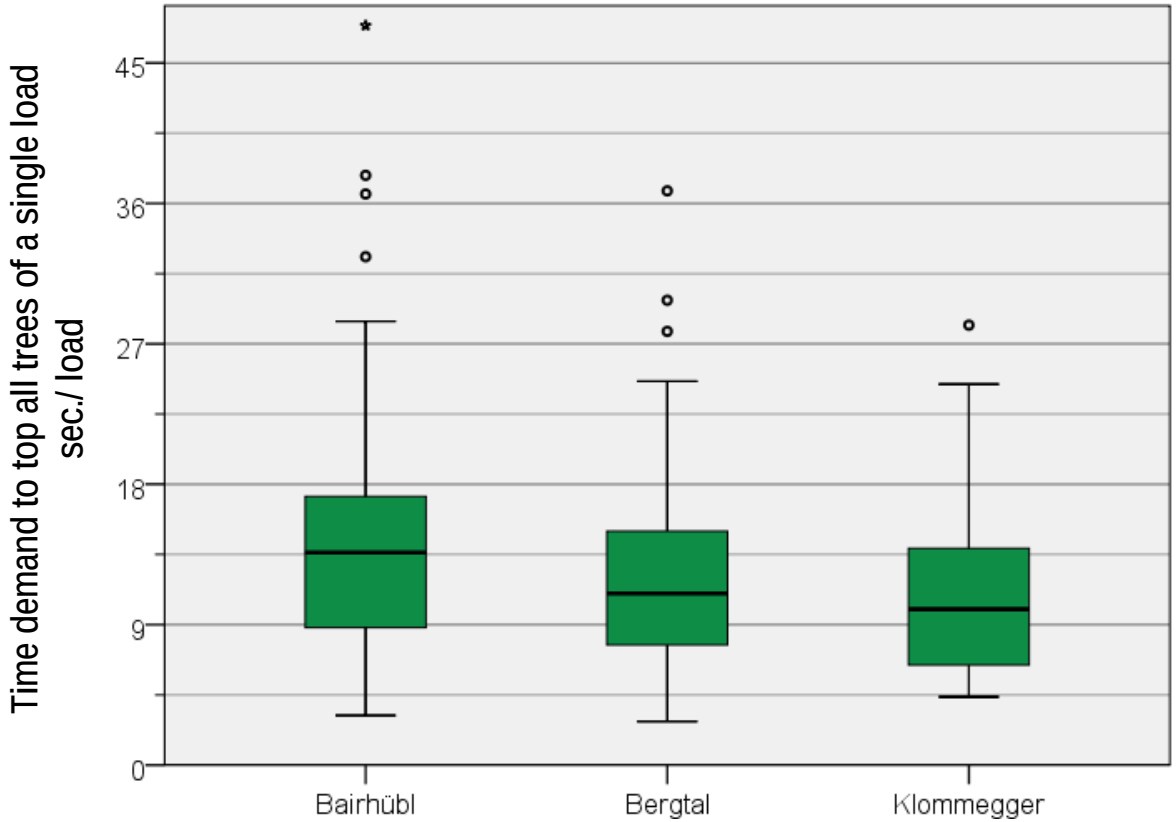


Topping trees after hook-on

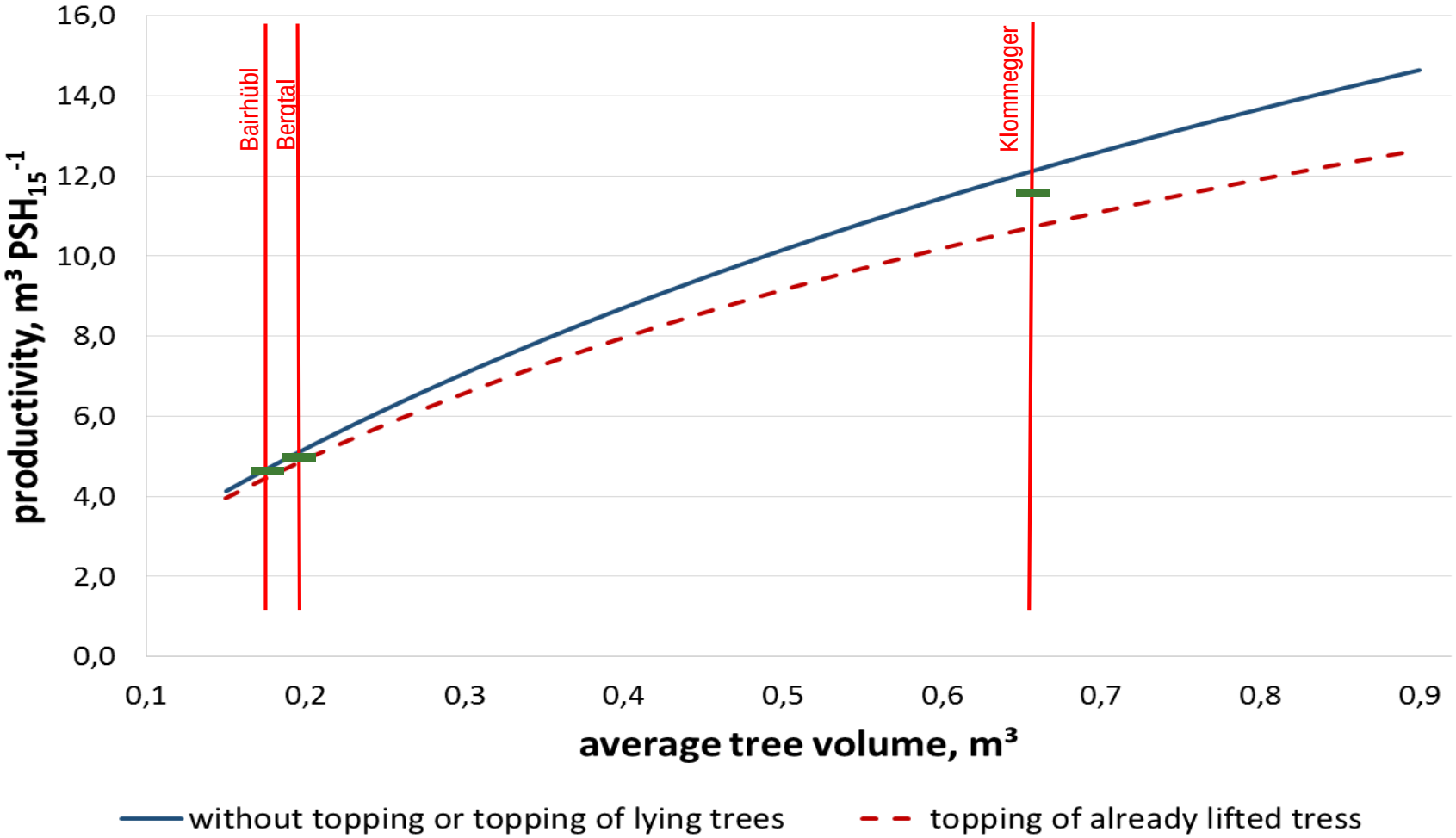
Topping trees after hook-on

Interruption times

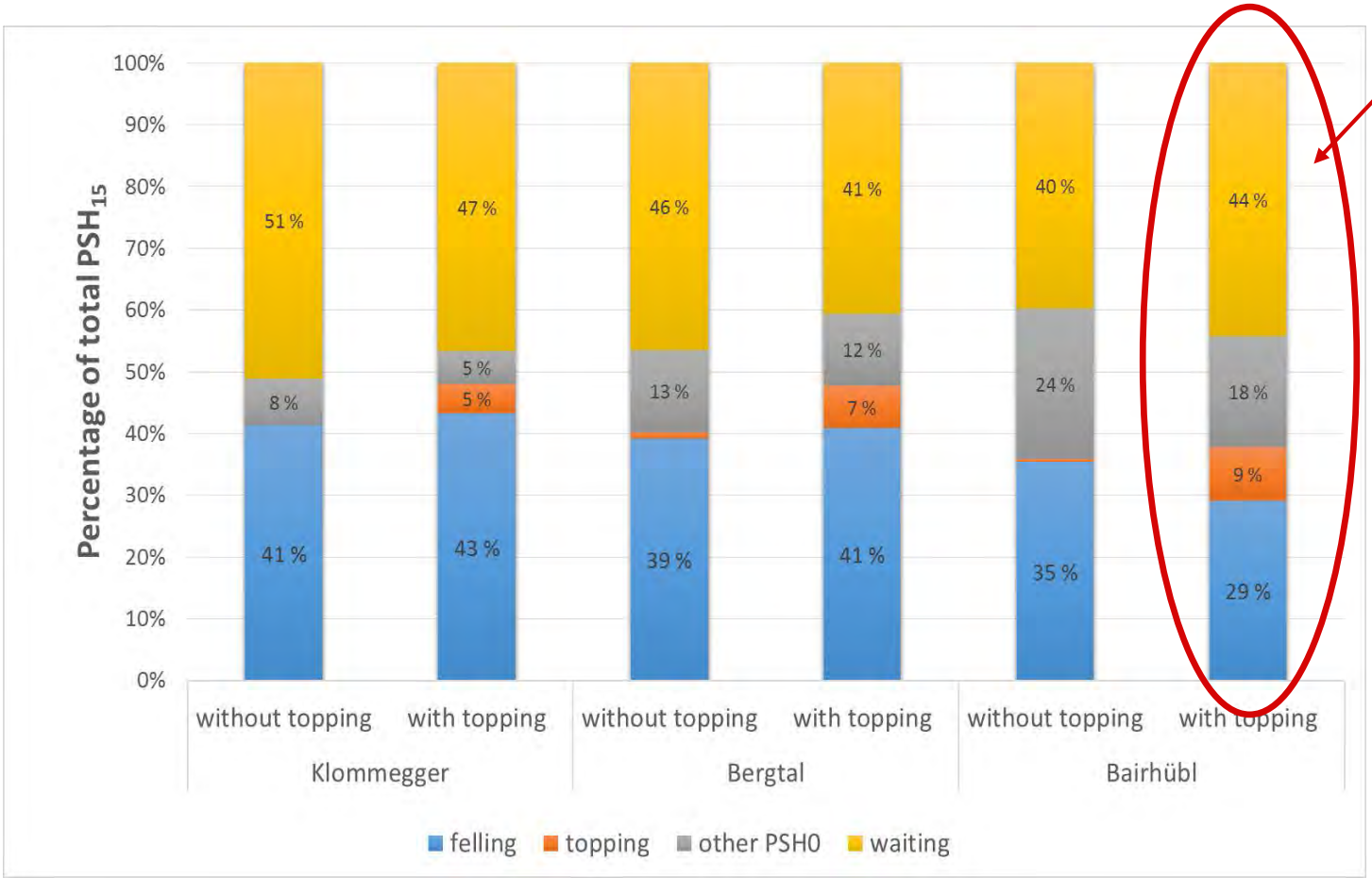
Outhaul of carriage | Spool out mainline | Hook-on | Lateral inhaul | TOPPING | Lateral inhaul | Inhaul of carriage



Impacts on yarder-productivity



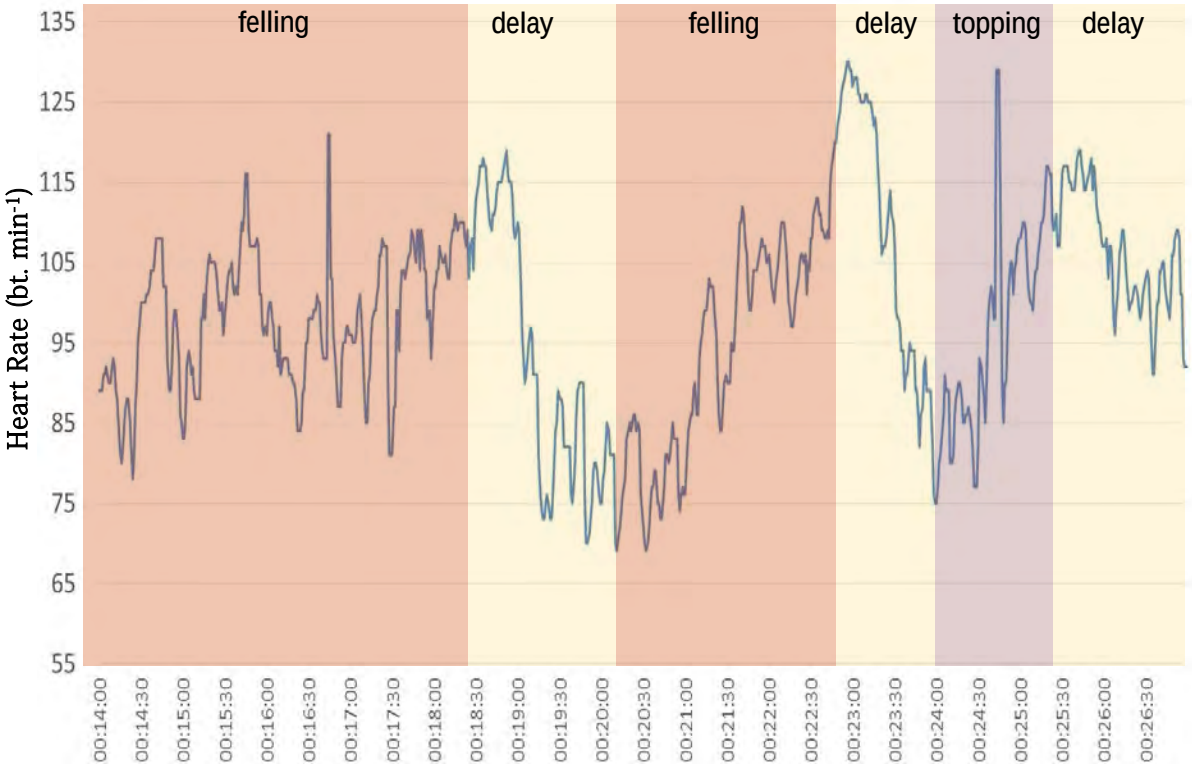
Working tasks of the chainsaw operator



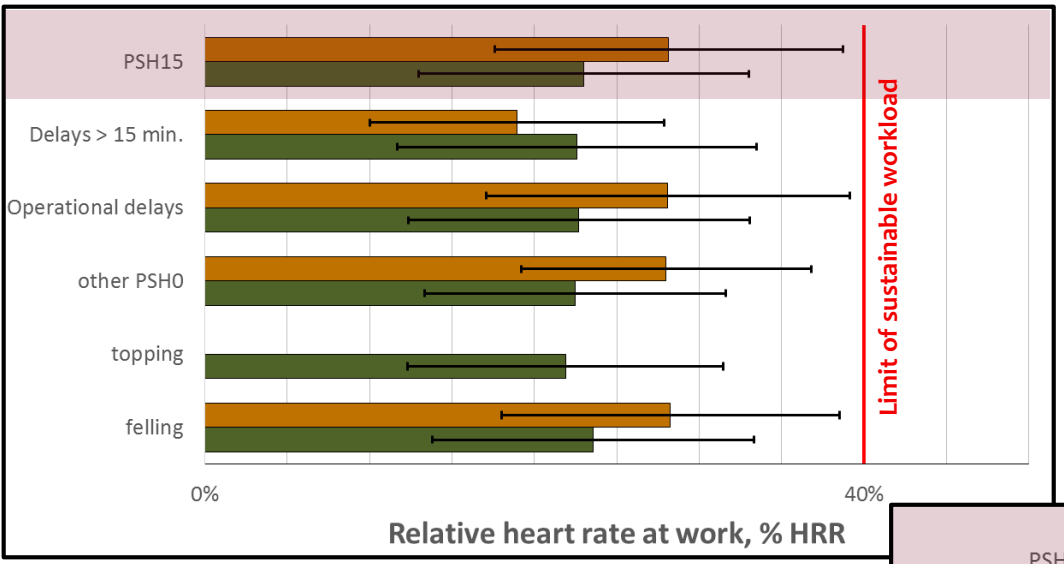
Other „hooker-on“

Heart rate measurements

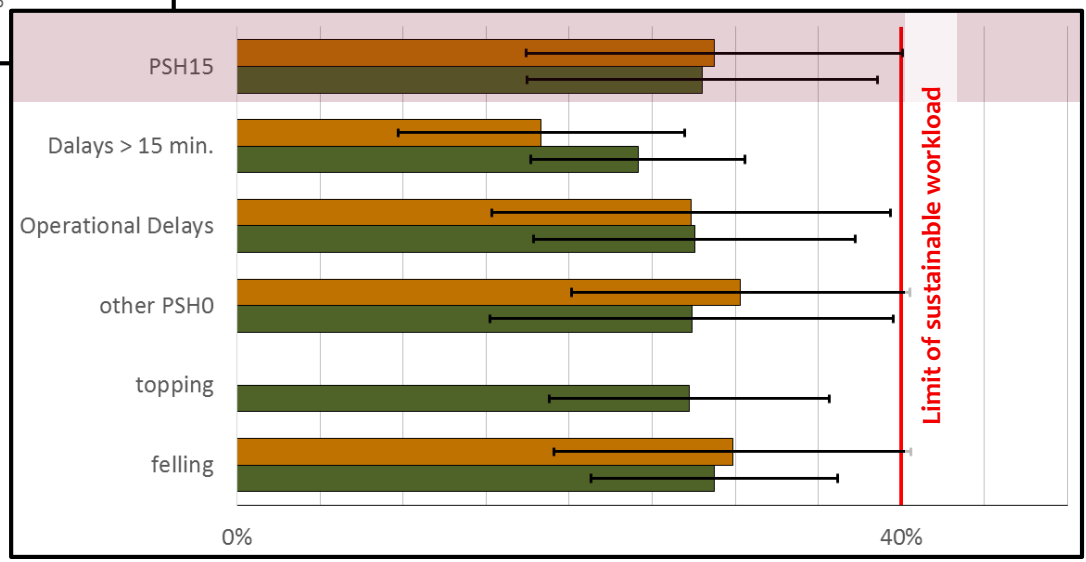
Excerpt of a heart rate-diagram of the study site »Bairhübl«:



Physiological measures - results



Second thinning stand



without topping with topping

First thinning stand

Conclusions

- **Topping of trees during lateral inhaul causes interruption times and lowers productivity**

- **Topping trees takes the chainsaw-operator ca. 5-10% of his entire working-time**

- **Topping trees during the lateral yarding process can facilitate the work of the chainsaw operator**

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