

# The effect of thinning intensity on sap flow and growth of Norway spruce

INA ZAVADILOVÁ<sup>1,2</sup>, JUSTYNA SZATNIEWSKA<sup>1</sup>, MARKO STOJANOVIĆ<sup>1</sup>,  
PETER FLEISCHER JR.<sup>3,4,5</sup>, LUKÁŠ VÁGNER<sup>1</sup>, MARIAN PAVELKA<sup>1</sup>, PETER PETRÍK<sup>6\*</sup>

<sup>1</sup>Global Change Research Institute, Czech Academy of Sciences, Brno, Czech Republic

<sup>2</sup>Department of Forest Ecology, Faculty of Forestry and Wood Technology, Mendel University in Brno, Brno, Czech Republic

<sup>3</sup>Faculty of Forestry, Technical University in Zvolen, Zvolen, Slovakia.

<sup>4</sup>Institute of Forest Ecology, Slovak Academy of Sciences, Zvolen, Slovakia

<sup>5</sup>Administration of Tatra National Park, Tatranska Lomnica, Slovakia

<sup>6</sup>Karlsruhe Institute of Technology (KIT), Institute of Meteorology and Climate Research  
– Atmospheric Environmental Research (IMK-IFU), Garmisch-Partenkirchen, Germany

\*Corresponding author: [peter.petrík@kit.edu](mailto:peter.petrík@kit.edu)

## Electronic Supplementary Material (ESM)

The authors are fully responsible for both the content and the formal aspects of the electronic supplementary material.  
No editorial adjustments were made

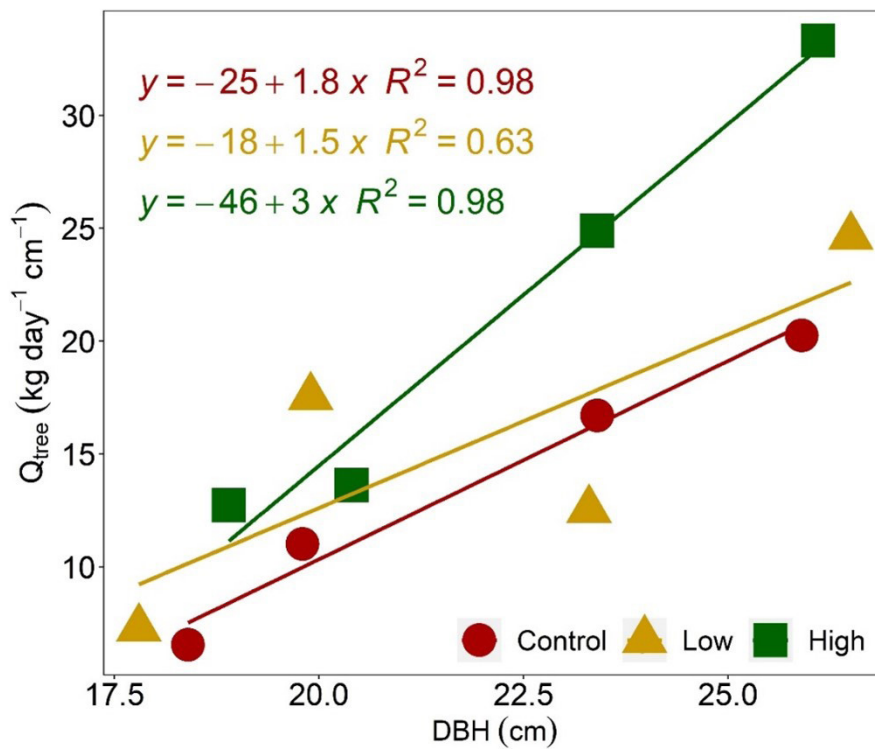


Figure S1. Scaling curves from tree sap flow of the four sampled trees per treatments

Control treatment (red), low intensity thinning (yellow) and high intensity thinning (green)  
 Q – sap flow; DBH – diameter at breast height

Table S1. Summary statistics from analysis of variance and Kruskal-Wallis' tests for evaluation of significant differences between thinning treatments and DBH classes

Two-way ANOVA	<i>df</i>	Sum square	Mean square	<i>F</i> statistic	<i>P</i> -value
<b>Sap flow</b>					
Treatment	2	1.02	0.5125	27.13	< 0.001
DBH	3	4.08	1.3593	71.96	< 0.001
Treatment × DBH	6	1.4	0.2334	12.36	< 0.001
Residuals	2 036	38.46	0.0189	–	–
Kruskal-Wallis'				Chi-square	<i>P</i> -value
<b>Radial growth</b>					
Treatment	–	–	–	18.72	< 0.05
<b>Tree water deficit</b>					
Treatment	–	–	–	0.93	0.6256

DBH – diameter at breast height