

GENERAL INFORMATION

author(s)	Van Hecke J
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data	

MATERIALS & METHODS

study area	5n (scientific zone)
time period	August 2001 – March 2002
goal	Description of the stem respiration dynamics of oak, ash, and beech in relation to the climate conditions in the forest. Use of models to calculate the measured data.
set-up	
data collection	<u>measuring tower</u> temperature at -4 cm, 0, 1, 7.5, 14.6, 21.6, 28.8, 36.0 m <u>sample trees</u> <ul style="list-style-type: none">- oak nr 293, ash nr 292, beech nr 229 near the measuring tower: stem respiration in NWES directions (29, 30 August, 5, 7 September), stem respiration + air temperature during the day (26, 27, 28 September), day-night changes in stem respiration and stem/air temperature (16–17 October), stem respiration (weekly, August 2001–March 2002)- ash nr 276 (d 38 cm): 1, 2, 3, 4, 5 cm below the bark, stem temperature (13–18 September) and respiration (13, 14, 18 September)- 12 oak, 12 ash, 9 beech trees with different diameters (p 74-75): stem respiration (oak: 13 October, ash: 9 November, beech: 5 November)
remarks	

RESULTS

Thermo couples did not yield accurate temperature measurements. Lots of problems arose with the stem respiration instrument.

Differences in stem temperature were larger close to the bark; the occurring lags in temperature changes increased with measuring depth. Correlations between stem temperature and respiration were weak. Stem respiration differed between N, W, E, S oriented parts of the stem. Stem respiration for beech was higher than for ash during the entire day. The pattern of respiration changes for ash during day-night was similar to literature data (not for oak/beech). Stem respiration tended to increase with stem diameter. The

seasonal variation in stem respiration was different for the 3 species, and was weakly related to the seasonal changes in air temperature.

The equation that related stem respiration and air temperature at 28.6 m was used to simulate the stem respiration for a summer and autumn day and for the year 1997. Oak showed the highest stem respiration on the summer day, beech on the autumn day. Stem respiration values were largest during the growing season: the primary maximum in August, secondary maxima in May and June. The calculated values were also used to estimate the stem respiration for the entire stand. The maximum respiration occurred in August (0.6 ton C/ha/month); the overall respiration was 2.6 ton C/ha/year.