

## GENERAL INFORMATION

<b>author(s)</b>	Bonne H
<b>year</b>	2007
<b>English title</b>	Crown exchange of beech ( <i>Fagus sylvatica</i> ), ash ( <i>Fraxinus excelsior</i> ), and pedunculate oak ( <i>Quercus robur</i> )
<b>original title</b>	Vergelijkende studie van kroonuitwisseling bij beuk ( <i>Fagus sylvatica</i> ), gewone es ( <i>Fraxinus excelsior</i> ) en zomereik ( <i>Quercus robur</i> )
<b>reference</b>	Msc thesis, Ghent University, Ghent
<b>pages</b>	121
<b>type</b>	dissertation (d2)
<b>ecosystem service</b>	regulating – nutrient cycling
<b>keywords</b>	dry deposition,
<b>taxa</b>	<i>Fagus sylvatica</i> , <i>Quercus robur</i> , <i>Fraxinus excelsior</i>
<b>project</b>	
<b>supervisor</b>	Verheyen K
<b>institution</b>	Laboratory of Forestry
<b>document</b>	pdf
<b>data</b>	

## MATERIALS & METHODS

<b>study area</b>	5n (measuring tower)
<b>time period</b>	September-October 2006, February 2007
<b>goal</b>	Study the impact of season, tree species, height in the crown, and rainfall water composition on the crown exchange via leaves or branches for Cl, NO <sub>3</sub> , PO <sub>4</sub> , SO <sub>4</sub> , Na, K, Ca, NH <sub>4</sub> .
<b>set-up</b>	<p>field experiment</p> <ul style="list-style-type: none"> <li>- living branches on the measuring tower: beech (level 1, 2, 3), ash (level 3)</li> <li>- 5 branches per species and per level</li> <li>- dry deposition: rinsed with deionised water in a plastic bag for 1 minute</li> <li>- crown exchange: shaken with rainfall water for 5 minutes</li> <li>- summer (12-13/09), autumn (30/10 – only beech), spring (5-6/02)</li> </ul> <p>lab experiment cut branches in the lab</p> <ul style="list-style-type: none"> <li>- branches collected for ash (level 2, 3, 4), oak (level 3, 4), beech (level 1, 2, 3, 4)</li> <li>- branches and leaves separated: 3 leaves per sample, 15 cm branch per sample</li> <li>- shaken with rainfall water, rainfall water enriched with NH<sub>4</sub>, rainfall water enriched with protons</li> </ul>
<b>data collection</b>	<p>KMI data for Melle: temperature and wind velocity</p> <p>field experiment</p> <ul style="list-style-type: none"> <li>- number of leaves per branch, branch area</li> </ul> <p>field &amp; lab experiment</p> <ul style="list-style-type: none"> <li>- conductivity, pH</li> <li>- concentration of NH<sub>4</sub>, NO<sub>3</sub>, SO<sub>4</sub>, Cl, K, Ca, Mg, Na</li> </ul> <p>lab experiment</p> <ul style="list-style-type: none"> <li>- LA, branch area</li> </ul>
<b>remarks</b>	

## **RESULTS**

Crown leaching was highest during winter. Ash showed the highest level of crown exchange, and ash showed retention of  $\text{NH}_4$  and  $\text{NO}_3$  in the crown. Crown exchange by leaves was highest at 28 m and lowest at 7 m; there was no clear height effect for branches. A higher concentration of  $\text{NH}_4$  in the rainfall water caused a higher crown exchange level, mainly for Cl. The effect of increased H levels was not as clear.