

GENERAL INFORMATION

author(s)	Schauvliege M, Lust N
year	1999
English title	C-accumulation and allocation after afforestation of a pasture with pin oak (<i>Quercus palustris</i>) and ash (<i>Fraxinus excelsior</i>)
original title	
reference	Silva Gandavensis 64
pages	72–81
type	article (a3)
ecosystem service	regulating – climate
keywords	C-sequestration – afforestation
taxa	<i>Fraxinus excelsior</i> – <i>Quercus robur</i> – <i>Fagus sylvatica</i> – <i>Quercus palustris</i>
project	Msc thesis Schauvliege 1995, Msc thesis Van Camp 1995
supervisor	Lust N
institution	Ghent University, Laboratory of Forestry
document	hardcopy, pdf
data	

MATERIALS & METHODS

study area	3b, 5k, scientific zone (5n)
time period	1995
goal	Investigate how afforestation of agricultural land affects the C cycle.
set-up	pasture, 2 old forest stands, 2 young forest stands planted on pasture allocation and accumulation of C
data collection	<p><u>pasture</u></p> <ul style="list-style-type: none"> - 12 soil samples (0–5, 5–15, 15–50, 50–100 cm) - C content: Walkley&Black <p><u>young stands</u></p> <ul style="list-style-type: none"> - 3 model trees per stand: aboveground biomass and dry matter - dead wood & belowground biomass: from literature - shrub layer: transects: count, dbh, C content of model shrubs - humus layer: L, F, H for 12 plots of 0.25 m² - soil: Walkley&Black for 12 samples (0–5, 5–15, 15–50, 50–100 cm) <p><u>old stands</u></p> <ul style="list-style-type: none"> - model trees: 12 oak, 4 beech, 3 ash - shrub layer: 10 plots of 5 m x 5 m - woody debris (< 1.5, 1.5–5, > 5 cm diameter): 5 plots (1, 5, 10 m²) per stand - humus and soil samples: 31 for the oak-beech stand, 28 for the ash stand
remarks	<p>The ash stand (1 ha) was planted in 1968-1969 after a full soil preparation (15 cm depth).</p> <p>The pin oak stand (0.63 ha) was planted in 1970 without soil treatment.</p> <p>C content of the pasture had been measured in 1956.</p>

RESULTS

The C content in the pasture was higher in 1995 than in 1956.

The C content in the soil of the young forest stands was lower than that of the pasture in 1995.

The overall C content of the ash stand was larger than that of the pasture in 1995 while the content of the oak stand was still lower.

The C content of the old stands is higher than for the young stands, mainly because of the high C content of the soil. The C content in the soil is highest in the top soil layers of the ash stand because ash litter is easily decomposed and the C is mixed with the soil.

The conservation of old forest stands is vital for the restriction of C emission.