

GENERAL INFORMATION

author(s)	Mussche S
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English title	Determination and dynamics of the leaf area index in a mixed deciduous forest (experimental forest Aelmoeseneie)
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MATERIALS & METHODS

study area	5n (scientific zone)
time period	May-December 1996
goal	The determination of the LAI (dynamics) of two mixed forest stands and the comparison of 4 methods for determining LAI.
set-up	6 sample points in the oak-beech forest, 6 sample points in the ash-oak forest <ul style="list-style-type: none"> - Hemispherical photographs & 1 m x 1 m leaf fall traps transects in both study areas <ul style="list-style-type: none"> - LAI-2000 PCA & Sunfleck Ceptometer 4 extra plots of 5 m x 5 m <ul style="list-style-type: none"> - destructive LAI measurement of the shrub layer
data collection	hemispherical photographs <ul style="list-style-type: none"> - 3 photographs per sample point (under, normal, overexposed) - 14 photographs per point between May-December - HEMIPHOT LAI-2000 Plant Canopy Analyzer <ul style="list-style-type: none"> - 3 transects + 1 transect - 11 sample points + 20 sample points - 7 sample dates (September-December) Sunfleck Ceptometer <ul style="list-style-type: none"> - 3 transects + 1 transect - 32 sample points + 21 sample points - 10 measurements per point - July (morning, noon), August (morning, noon, evening) destructive LAI <ul style="list-style-type: none"> - All shrubs with dbh < 7 cm were cut down: height - Per height class (1 m): all leaves harvested, fresh weight - Subsample: fresh mass, leaf area, dry mass leaf fall traps <ul style="list-style-type: none"> - 30 per stand - 6 sample dates (August – December) - Fresh and dry mass (per species)

	- Subsample: leaf area per species
remarks	Stand thinning in the oak-beech plot in 1995: beech and larch. Map with sample points (p 41, 49, and 65)

RESULTS

Underexposed hemispherical photographs gave the best results for the hemispherical photographs. Sunfleck Ceptometer is better suited for measurements on sunny days than on cloudy days.

Beech and ash are the first to lose their leaves. The leaves of the shrub layer and of the lower canopy parts of the trees are the last to fall.

	ash	oak-beech
hemispherical photographs: max LAI	4.05 (24 July)	3.68 (18 September)
LAI-2000: max LAI	4.56	3.98
LAI-2000: start leaf abscission	12 October	25 October
destructive LAI shrub layer: mean LAI	1.58	0.9
leaf traps: max LAI	4.53	5.52
leaf traps: start leaf abscission	10 October	10 October
leaf traps: max LAI shrub layer LAI	0.91	0.21

The LAI measurements with the hemispherical photographs and the LAI-2000 are good for random canopies. If the canopy shows some degree of clumping, both the hemispherical photographs and LAI-2000 give an underestimation of the LAI. The LAI-2000 is easy-to-use and relatively quick, but the weather should be uniformly clouded. Taking hemispherical photographs can go quick (uniformly clouded conditions are also required), but the processing of the film and the (analogue) photos is rather complicated.