

# ECOLOGY AND SILVICULTURE OF SYCAMORE (*ACER PSEUDOPLATANUS* L.) IN EUROPE

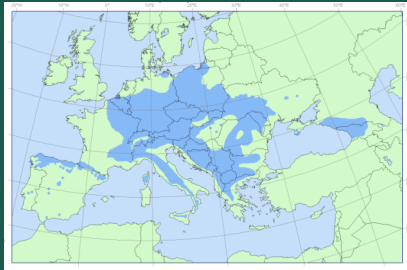
Sebastian HEIN<sup>1</sup>, Catherine COLLET<sup>2</sup>, Christian AMMER<sup>3</sup>, Noël LE GOFF<sup>2</sup>, Jens Peter SKOVSGAARD<sup>4</sup>, Peter SAVILL<sup>5</sup>

<sup>1</sup>Forest Research Institute of Baden-Wuerttemberg, Freiburg & University of Applied Forest Sciences, Rottenburg, Email: [hein@hs-rottenburg.de](mailto:hein@hs-rottenburg.de)

<sup>2</sup>UMR INRA-ENGREF 1092, Champenoux <sup>3</sup>Department of Silviculture and Forest Ecology of the Temperate Zones, Georg August University, Göttingen, <sup>4</sup>Forest and Landscape Denmark, University of Copenhagen, <sup>5</sup>Department of Plant Sciences, University of Oxford.

## Introduction

Sycamore is a widespread but minor species that seldom occupies more than 3% of a forest area. Its natural range includes large parts of Europe. It has become widely naturalized beyond its native range.



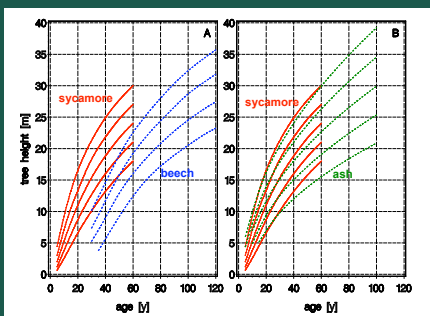
The natural range of Sycamore in Europe (Rusanen & Myking 2003, EUFORGEN)

## Site requirements

For high productivity sycamore requires a deep, moist and freely draining soil. In Central Europe, it is characteristic of constantly moist loamy places on mountain slopes, gentle valley hollows, and narrow fresh valley floors. Sites to avoid are badly drained and waterlogged soils because of top dieback and premature deaths.

## Growth pattern

Height growth curves for sycamore all share the characteristic of rapid early height growth (<20 – 25 years) that then slows. On the best sites sycamore reaches a height of 19.5 m at age 20 years. Compared to beech, sycamore is taller between 20 – 40 and similar to ash. This explains its vigor in mixed stands.



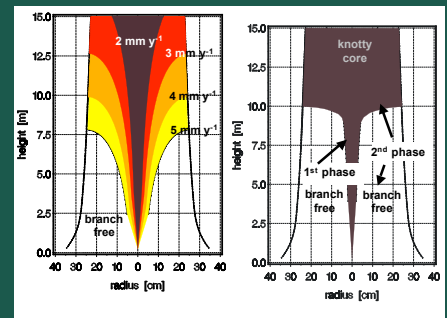
Height growth of sycamore compared to beech and ash.



(Photo S. Hein)

**sycamore target tree:**  
DBH 67 cm,  
clear bole length: 9.8 m,  
tree height: 29.2 m,  
crown diameter: 12.4 m,  
age: 85 yrs, Belgium.

## Crown architecture



Left: Knottiness for a mean rad. increment of 2-5 mm yr<sup>-1</sup>.

Right: Knottiness in a two phase silvicultural system during the tending and thereafter free growth.

## Production objectives

Natural pruning of sycamore is fast due to its rapid early height growth. A two phase silvicultural system is recommended to control and reduce branch development and thus knottiness: slow diameter growth during the first phase (tending) and then free growth until the target diameter is reached.

Production objectives for sycamore:

Target DBH [cm]	Mean radial Increment [mm yr <sup>-1</sup> ]	Prod. time (rotation) [yrs]	Number of crop trees/ha	Length of clear bole (60yrs: H <sub>0</sub> =30 m) [m]
60	3	100	78	14.4
	4	75	72	11.8
	5	60	69	9.7

## Stand dynamics

Sycamore is often a component of mixed broadleaved or conifer-broadleaved stands, where it may be found in small groups or in intimate mixtures with beech, silver fir, ash or oak.

Sycamore regenerates relatively easily although, damage by browsers or bark stripping by grey squirrels may endanger production of valuable timber. Like many other species, light requirements increase as seedlings develop.



Growing Valuable Broadleaved Tree Species

This poster was prepared under the COST action E42 "Growing Valuable Broadleaved species (ValBro)".

This poster is a summary of Hein, S., Collet, C., Ammer, C., Le Goff, N., Skovsgaard, J.P., Savill, P.: A review on growth and stand dynamics of sycamore (*Acer pseudoplatanus* L.) in Europe: implications for silviculture, freely available on [www.valbro.uni-freiburg.de](http://www.valbro.uni-freiburg.de)