

## **A review on the ecology and silviculture of limes (*Tilia cordata* Mill., *Tilia platyphyllos* Scop. and *Tilia tomentosa* Moench.) in Europe.**

Radoglou Kalliopi<sup>1\*</sup>, Dobrowolska Dorota<sup>2</sup>, Spyroglou Gavriil<sup>1</sup> and Nicolescu Valeriu-Norocel<sup>3</sup>

<sup>1</sup> Forest Research Institute, N.A.G.R.F, Thessaloniki, Greece.

<sup>2</sup> Forest Research Institute, Department of Forest Ecology and Wildlife Management, Poland

<sup>3</sup> Faculty of Silviculture and Forest Engineering, Brasov - Romania

*Tilia* is a genus in the family of *Tiliaceae* with about thirty species of trees, native throughout most of the temperate Northern Hemisphere, in Asia, Europe and eastern North America; it is absent in western North America. Lime trees grow on rich soils, mesotrophic or mesoeutrophic, fresh or moderately moist, with mull or moder humus. Such soils have neutral or alkaline pH soil reaction. Lime prefers sites with higher calcium content.

Lime regenerates naturally under the stand canopy during the shelterwood cuttings on rich sites. The sprouting ability is a part of life strategy and gives the competitive capacity to overcome other species. Lime belongs to trees of moderate attraction for animals' diet. In stands heavily populated with deer, limes are continuously subjected to extreme browsing damage. Depending on ecological conditions and geographical location lime species can be mixed either with other broadleaved tree species such as beech, oak, maple, hornbeam, elm, ash, black alder as well as coniferous species such as Norway spruce, Scots pine, yew and silver fir. Compared to beech trees, lime trees grow quicker until the age of 50 years. At the age of 100 years beech stands yield more (about 30 %) than lime stands. Yield tables for *Tilia* species are rare and those available for *Tilia cordata* in Germany show that the growth shape and patterns of *Tilia* are totally different than those for beech stands. Under such circumstances beech yield and volume tables used so far for lime stands should be avoided for management purposes. The early growth culmination as well as the quality development of lime stands requires the application of selective thinning in younger stands and moderate thinning in older stands. Only few scientifically based research concerning *Tilia* species are available and forest managers treat these species either depending on their own experience or on data available for other broadleaved species. Further research on the growth of *Tilia* species will enhance their sustainable forest management in Europe.

Dr. Kalliopi Radoglou  
Forest Research Institute,  
National Agricultural Research Foundation,  
Vassika, 57006, Thessaloniki,  
Greece.  
Tel: +302310461172  
Fax: +302310461341  
e-mail: radoglou@fri.gr