

THE NETHERLANDS

Valuable broadleaved tree species in The Netherlands

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Introduction

Forests cover a low percentage (7 % = 360.000 ha) of the total Dutch area. Since afforestation in the 19th and 20th century took place mainly at the poorer sites, the greatest part of the forest area exists of conifers, especially *Pinus sylvestris*.

But on the clay in the riverdelta of Rhine and Muse, the clay along the coast and on loam(y) soils spread through the country we have nice forests of broadleaves. In our “polders” (new land between dikes) a relative high percentage of the forests have been established with broadleaved tree species.

There is a good potential for broadleaved trees species in The Netherlands: in the developing forests, in new afforestations on arable land and in (line)plantations.

Trees species

Table 1 gives an overview of the types in which the species are used.

Table 1 Appearance of the tree species in The Netherlands

<i>Trees species</i>	<i>Total forest area (ha)</i>	<i>Types</i>			
		forest	plantation	line	agroforestry
Acer spec.	3000	X	X	X	
Betula spec.	10000	X	X	X	
Fraxinus spec.	7000	X	X	X	
Juglans spec.	Small	X	X	X	X
Sorbus spec.	-			X	
Tilia spec.	Small	X	X	X	
Ulmus spec.	small	X	X	X	

Most of the tree species have been used for establishment of forest-stands, plantations or lineplantations in the landscape. Only *Juglans regia* is used in agroforestry. In the forest *Sorbus aucuparia* only exist as a mixture species.

Research

In the past

Until ca. 1970 there has been little attention in forestry research for the mentioned tree species in The Netherlands, except for *Ulmus spec.* due to its disease.

From 1970 on attention has been paid to selection/propagation of *Acer*, *Betula* and *Fraxinus*. For *Acer*, *Betula* and *Fraxinus* trees have been selected for collection of seed. For *Acer* and *Fraxinus* seed orchards have been established. For *Acer* and *Fraxinus* a small number of clones exist.

For all 3 species seedlings of different provenances have been planted in field-trials (Buiteveld et al 2004).

For *Ulmus* research has been focussed on finding a disease-resistant cultivar (De Vries 1996). For *Juglans* research cultivars were selected for nutproduction (Wertheim 1981). No selection research was done on *Sorbus aucuparia*.

Incidentally silvicultural issues have been investigated. Different methods of establishment (plant material, tree distance, with or without Alder) were tried out with *Fraxinus* (Oosterbaan 1994). In young stands of *Acer* and *Fraxinus* selected future crop trees were given varying growing space (Oosterbaan 1994).

The role of *Betula* and *Fraxinus* has been investigated especially in relation to mixtures with conifers (*Betula*) or other broadleaves (*Fraxinus*) (Wijdeven et al. 2000, Oosterbaan et al. 1999).

Some species have also been involved in natural regeneration research (Oosterbaan 2000). *Juglans regia* as a multipurpose tree (nuts and timber) is the main species in an agroforestry project (Oosterbaan 2004).

Growth in relation to site characteristics was investigated for different species by Van den Burg (Van den Burg 1995).

Special attention was paid to the wilt-disease in *Fraxinus* (Hiemstra 1990).

Now and in the future

At the moment research is going on into the following subjects and species:

- agroforestry (*Juglans regia*)
- sustainable landscape (line) plantations (*Alnus glutiosa* with *Fraxinus excelsior*)
- natural regeneration and growth dynamics of tree species in the forest (*Acer pseudoplatanus*, *Betula pendula* and *B. pubescens*, *Fraxinus excelsior*, *Sorbus aucuparia*)
- genetics (*Acer pseudoplatanus*, *Betula pendula* and *B. pubescens*, *Fraxinus excelsior*, *Ulmus cultivars*, *Tilia spec.*).

Last years there is an increased interest for agroforestry. One could expect that this will enhance interest into (research on) other multipurpose tree species, like *Sorbus*.

In the future forest managers will be more and more steering the natural processes. Natural regeneration and the possibilities of managing tree species composition and tree quality in the desired direction will be of importance.

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