FEM GROWTH AND YIELD DATA

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Background

In the past century, hundreds of research plots of 0.1-0.5 ha have been established to study forest growth and productivity. This has led to millions of records on tree height, stem diameter and stem volume of the most important tree species and their growth over time.

The data were gathered by numerous researchers from several institutes. Parts of these data were already digitized, but many remained undisclosed in original field note books (fig. 1). All data were checked, documented and incorporated into easy accessible databases.

The final dataset contains information on the growth of over 300,000 trees in 1643 plots, measured in 8183 records.

In the previous decades, about 60 publications were based on the data from these research plots, including five dissertations.

Figure 1. A small sample of the 6 m of shelves with notebooks incorporated in the database

Objectives

The aim of the project was to make all data from past forest growth and yield studies available to the scientific community. The long period covered by the records enables the study of long term productivity of forest, for instance allowing the study of effects of climate change on forest growth, and to make prognoses on forest yield that enable forest managers to define the sustainable harvest of forest resources.

Application

The dataset was used to develop new growth and yield tables for douglas fir (*Pseudotsuga menziesii*) in the Netherlands [1]. Currently, new yield tables for other tree species are being prepared. Results for douglas fir showed that tree growth has accelerated in the last decades, indicating improved growing conditions that may in part be attributed to climate change and increased N-deposition (fig. 2).
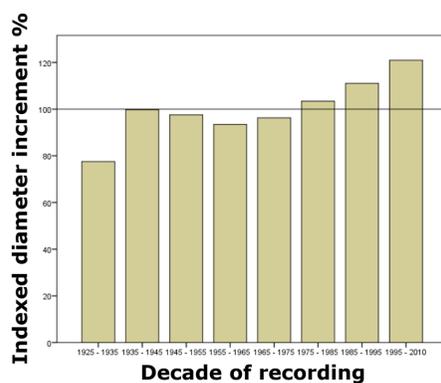
Figure 2. The growth of douglas fir has increased in the last decades.

[1] J.J. Jansen, J.J., H. Schoonderwoerd, G.M.J. Mohren & J. den Ouden. 2016. Groei en productie van douglas in Nederland. Becking's dunningproeven ontsloten. Wageningen Academic Publishers.

Figure 3. The dataset includes studies in typical production forests like douglas fir (left), as well as mixed uneven-aged beech-oak forests (right).

Available Databases

Currently available databases include monoculture (single species) stands of 15 species, as well as several other forest types including poplar road side plantations, two forests where a selection system is used, several mixed-species forests and uneven-aged beech-oak forest. The databases are accessible through DANS at:

http://dx.doi.org/10.17026/dans-zan-sjhm

Species	Common name	Nr. Plots	Record period
Monocultures:			
Abies grandis	Grand fir	18	1949-1999
Acer pseudoplatanus	Sycamore	20	1980-1999
Betula pendula	Silver birch	44	1982-1999
Fagus sylvatica	Beech	43	1960-1999
Fraxinus excelsior	Common ash	32	1980-1999
Larix kaempferi	Japanese larch	151	1933-1999
Picea abies	Norway spruce	128	1947-1999
Pinus nigra subsp. *laricio*	Corsican pine	193	1925-1999
Pinus nigra subsp. *nigra*	Austrian pine	117	1925-1999
Pinus sylvestris	Scots pine	122	1949-1999
Populus sp.	Poplar (div. var.)	203	1950-1999
Pseudotsuga menziesii	Douglas fir	163	1923-2011
Quercus robur	Pedunculate oak	87	1949-2004
Quercus rubra	Red oak	58	1948-1999
Salix alba	White willow	17	1953-1999
	Assorted species	69	1950-1999
Other forest types:			
Poplar roadside plantations		32	1951-1997
Uneven aged beech-oak forest		9	1985-2002
Selection forest - Oude Trekerbos		1	1983-1997
Selection forest – Kolkbos		1	1984-1997
Mixed forests		135	1949-2004

Acknowledgements