

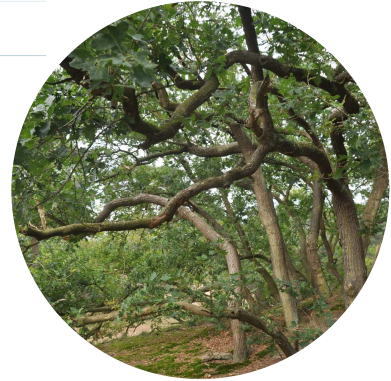
## Native versus non-native species in urban and rural plantings

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## Introduction



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## Problem and motivation

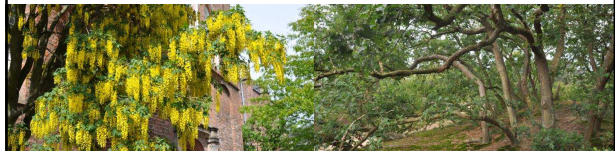
- Relevant in actual discussions, e.g. biodiversity, climate change and sustainability
- Green space managers and landscapers don't know what to choose or they make questionable choices (e.g. only native species in their cities)
- Misunderstanding of the subject or definitions (emotions!)



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## Objectives

- Inform nurserymen, landscapers and green space managers, based on scientific information in non-technical terms
- Help them to find a balance between using native and non-native species
- Give practical guidelines



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## Definitions

### Native species

- Natural origin in your country
- Populations that are established after the last Ice Age and genetically pure are called **Autochthonous provenances**

### Non-native species

- Natural origin not in your country
- Sometimes they can naturalise and become native: **naturalised species**



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## Brochure



Written by Wageningen UR; Edited by Plant Publicity Holland (PPH)

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## Native versus non-native



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## Motivation to use native plants

- Better adapted to local/natural circumstances (selected by evolution)
- Genetically unique (especially autochthonous populations)



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## Motivation to use non-native plants

- Many of them are better adapted to urban circumstances (city climate differs from countryside)
- They bring colour and variation to our environment (many cultivars are selected for high ornamental and urban value)



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## Relation to biodiversity

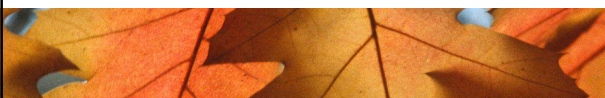
- Government is committed to preserving our native flora (according convention on biological diversity; Rio, 1992)
- Several insects and other fauna depend exclusively on native species
- Non-native species are important as food source for our native fauna (e.g. *Buddleja* or *Amelanchier* and late flowering species like *Aster*, *Solidago* & *Caryopteris*)



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## Two ecological approaches

1. Preserve and protect our native species > Stability
  - Remove non-native species from our natural areas
  - Avoid genetic influence of non-autochthonous populations
2. Accept variability and movability of species > Variability
  - Accept non-native species in our nature (saves money)
  - Accept non-autochthonous provenances or even use them to improve your own populations



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## Relation to climate change

- Fast climate change (higher temperatures, more precipitation, more extremes and longer growing season)
- Natural migration of species north (6-17 km per decade)
- Non-native species and provenances are more and more proving to be better adapted (especially from the south)



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### What do citizens want?

- Colour and diversity in green spaces is appreciated (this significantly improves well-being of citizens)
- Citizens have preference for rarity, harmlessness, usefulness and attractiveness (native or non-native is not important according European research)



### Urban Environment



### Urban climate

- Temperature higher (3-4(-12)°C in summer; less cold in winter)
- Drier (lower humidity; precipitation via pavement to sewer system)
- Unnatural circumstances (salt, pollution, etc.)
- Many southern species are better adapted (many escaped southern species spontaneously grow on city walls and in pavement)



### Functions of green

- Traditional function: decoration (and food)
- New functions: recreation, tourism, biodiversity, nature education, isolation of buildings, water storage, air-pollution removal, etc.
- More integration with architecture

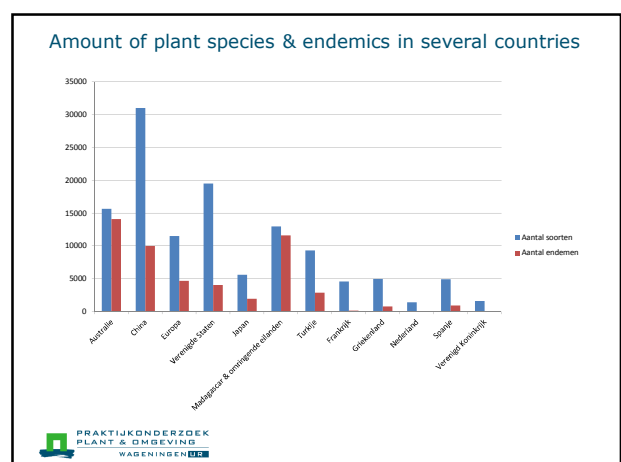
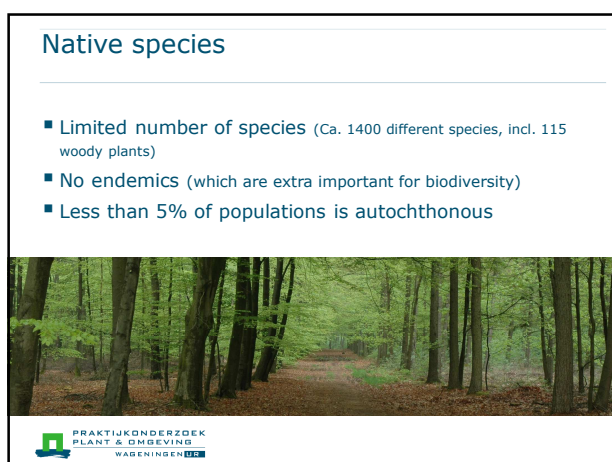
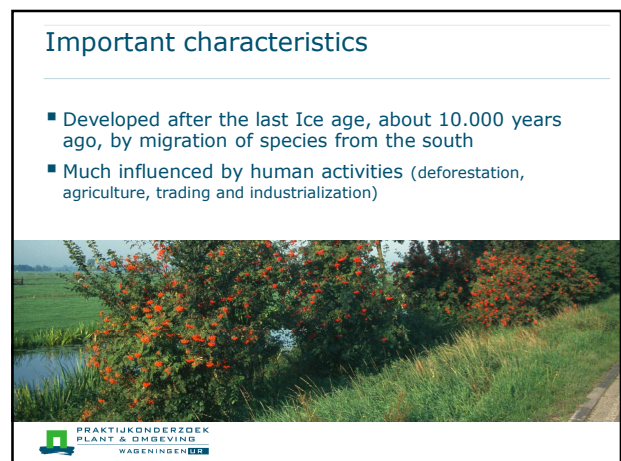


### Recreation



### Education







### Non-native species in Dutch flora

- Most of non-native species don't survive in natural circumstances
- In last two centuries 230 non-native species are naturalised to native species (16%)
- Some species are invasive
  - Ca. 1 of 1000
  - Economical damage; some water plants like *Hydrocotyle ranunculoides*
  - Ecological damage; difficult measurement; e.g. *Prunus serotina*, *Fallopia japonica*



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### Garden culture



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### Collecting and using new plant species

- Since development of agriculture (ca. 4400 BC) man is collecting and moving plant species (from 16<sup>th</sup> century plant hunters)
- 80-90 % of our garden and urban green species is non-native
- Many non-native species are part of our green culture



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### Tulips from Turkey



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### Roses from China



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### Boxwood from Southern Europe



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- Taking care of our (genetically) valuable native flora is important
- Our high quality urban green and gardens are much depending on non-native species
- Function and place of the planting is essential for making good choices:
  - In urban environment focus on non-native species
  - In natural/rural area's focus on native species




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Thanks for your attention

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