What does biodiversity-friendly forestry look like?

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Biodiversity and Climate Neutrality: the role of the EU law
CLOSE-TO-NATURE FORESTRY

Benefits and functions

- I. Conservation of biodiversity
- II. Protection of soil and climate
- III. Production of timber and other goods
- IV. Amenity, recreation and cultural aspects

SUSTAINABILITY
Benefits of close-to-nature forestry on Carbon storage

<table>
<thead>
<tr>
<th>Pinus (Scotland)</th>
<th>Selective Cuttings</th>
<th>Clear-cutting</th>
</tr>
</thead>
<tbody>
<tr>
<td>(biomass + soil + products) $(8.9 + 17.3 + 1.4) = 27.6$</td>
<td>![Graph showing biomass harvested every 20 years]</td>
<td>(biomass + soil + products) $(3.8 + 6.4 + 4.0) = 14.3$</td>
</tr>
</tbody>
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Managing forests for wood yield and carbon storage

J. E. M. Thomsley and M. G. R. Connell
Benefits of close-to-nature forestry on Carbon storage

Changes in forest floor organic matter and nutrient content following clear cutting in northern hardwoods.

Clear-cutting

Clear-cutting Pinus pinaster Aiton, Alvoa Natural Park (PT)
Benefits of close-to-nature forestry on Carbon storage
Forest Adaptation to Climate Change

Adaptation

Compositional, Structural and Functional Characteristics of the Ecosystem

Improvement of Response Ability
Etapas de Degradação
Alterações Climáticas
Forest Microclimate - Regeneration – Climate Change Adaptation

Regeneration *Fagus* and other Broadleaved, Belgium

Regeneration *Abies* and *Fagus*, Slovenia
Tree regeneration under a certain crown cover degree (CCF)

Protection against solar radiation, high air and soil temperatures, air and soil dryness
Study on natural regeneration and adaptation to climate change

### Study Comparison

- Restoration / Regeneration costs
- Restoration / Regeneration success
- Ecological factors
Study on natural regeneration and adaptation to climate change

Natural Regeneration *Quercus suber* L., Romeu (PT)

<table>
<thead>
<tr>
<th>N</th>
<th>dg</th>
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<tbody>
<tr>
<td>333 árv/ha</td>
<td>27,0 cm</td>
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<tr>
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<tr>
<td>19,0 m²/ha</td>
<td>53,3 cm</td>
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<th>FCC</th>
<th>hê</th>
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<tr>
<td>62 %</td>
<td>9,3 m</td>
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Peso fresco coriça: fuste e pernadas (para 9 anos de criação): 5280 kg/ha

Regeneração: 11 plantas /100 m² (Q. suber: 68 %, Outras esp.: 32 %)
Mediterranean and Degraded Ecosystems - Desertification

Areas threatened by desertification
Biodiversity

Birds

- species total
- nesting birds: 44

common species

Ferry and Frochot (1976)
Higher wood production: + 20 – 40%
Higher revenues and profitability: + 20 – 30%
Economics

Wood Production

Forest Development Policy & Transformation Programme

- Val-de-Travers, Switzerland
  > 1950

(Oberson, 1980)
- Progressive transformation to close-to-nature > 1970: 20 → 60% forest area
- Cone and wood production (45 m³/ha/year, rotation 25 years)
- Selective harvesting, periodic and sustainable harvests
Added values to Oak forests ▶ Acorn Association
Why are native oak forests important?

- Climate
- Soil
- Carbon
- Landscape
- Biodiversity
- Water
- Wood Products
- Fire Resistant
- Non-Wood Products
Nature and Economy

Plantation *Eucalyptus globulus* (PT)

Plantations *Eucalyptus globulus* (PT)
Why Are Native Oak Forests Important?

**CLOSE – TO – NATURE FORESTRY**

**BENEFITS**

- Carbon stock (wood & soil)
- Biodiversity
- Soil conservation and clean water
- Fire resistance and resilience
- Wood products
- Non-wood products
- Landscape and recreation

**SUSTAINABILITY**

Ecological  
Economical  
Social
Forest Ecosystem Services

Land use and Landscape mosaic
Unperceived and uninterrupted, the ecosystems provide essential services with much higher economical value.
Higher profitability (wood and non-wood products)

Economía - Biodiversidad - Clima

Better carbon storage
Better climate change adaptation
Higher profitability (wood and non-wood products)
Periodic revenues
Ecosystem maintenance and functioning
Biodiversity conservation
Ecosystem services
EU law needs and challenges

Some Final Notes

- Close-to-nature forestry in EU & National forest development plans (DFP) and law
- Close-to-nature forestry in National Guidelines
- Payment for Forest Ecosystem Services
- Financial instruments to support transformation to close-to-nature forestry
Thank you