

POPFULL

System Analysis of a Bio-Energy Plantation:
Full Greenhouse Gas Balance and Energy Accounting



Advanced Grant of the European Research Council
ERC / 2009-2014

Short rotation coppice (SRC) culture

- Rotation scheme: 2+2 years
- Planting date: 7-10 April 2010
- 1st rotation: 235 ton of woody chips (fresh weight)
- 1st year of 2nd rotation: 10.2 ton per ha (dry mass)
- Operational management of planting and weed control

Site conditions

- Total area: 18.4 ha
- Total planted area: 14.5 ha
- Previous agricultural and pasture land
- Sandy soil texture with a clay enriched deeper soil layer
- No irrigation, no fertilization

Site location

Bosstraat 31
BE-9080 Lochristi, Belgium
Province East of Flanders
51°06' N, 03°51' E; 6.25 m above sea level



Plant materials

- 12 selected poplar (*Populus spp.*) clones
- 3 selected willow (*Salix spp.*) clones
- Hybrids from Europe, North-America, Asia
- Planting density: 8000 plants per ha
- Planting scheme: double-row system

Planting of single-stem cuttings



Establishment year



Coppicing

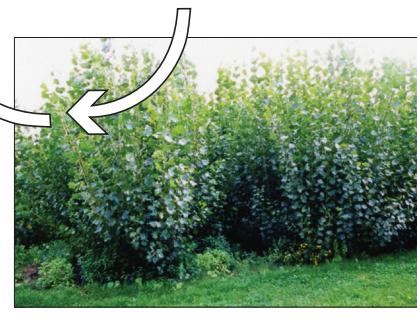


Chipping



Harvest

Regrowth from stump



Bio-energy production
(electricity and heat)

Multi-stem coppice culture

Boomedrijf Mouton
Groep Mouton bvba



www.groepmouton.be

Objectives

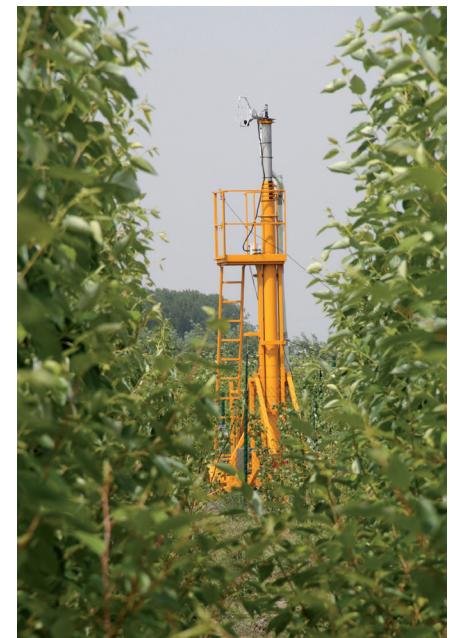
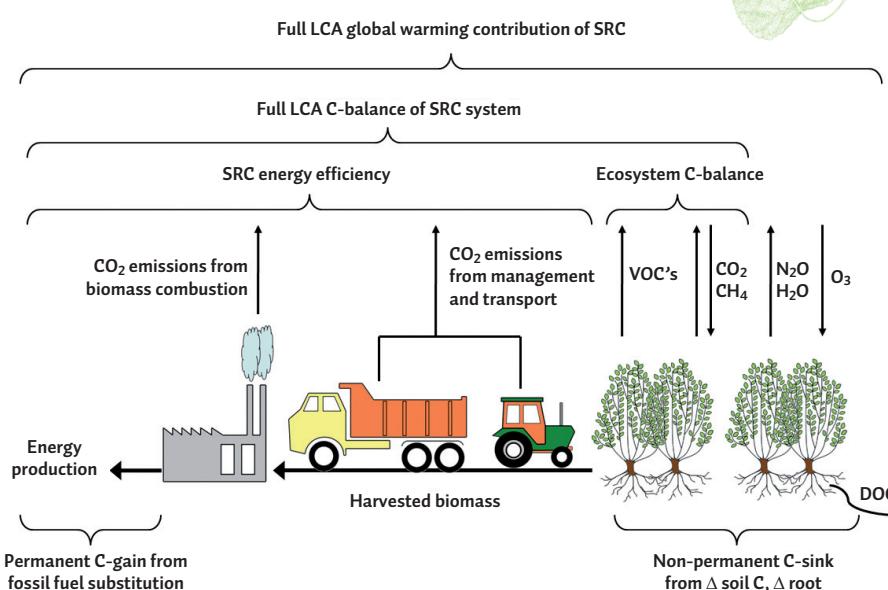
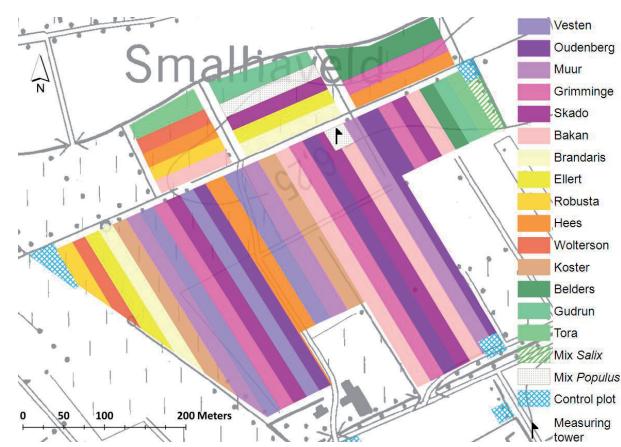
- To make a full balance of greenhouse gases: CO₂, CH₄, N₂O, H₂O, O₃
- To make a full economic and energy balance, including the overall energy efficiency
- To perform a full life cycle analysis (LCA) of the global warming contribution of SRC



POPFULL research team

- Dr. Nicola Arriga (technical support GHG analyses)
- Gonzalo Berhongaray (soil carbon balance)
- Laura Broeckx (biomass and canopy processes)
- Ouafik El Kasmoui (economic and energy balance)
- Dr. Carolyn-Monika Görres (soil GHG fluxes)
- Dr. Sylvestre Njakou Djomo (life cycle assessment)
- Dr. Isabele Sarzi Falchi (growth and leaf area development)
- Stefan Vanbeveren (technical and site management)
- Melanie Verlinden (ecosystem carbon balance)
- Dr. Terenzio Zenone (eddy covariance GHG fluxes)
- Marta Camino Serrano (dissolved organic carbon)
- Toon De Groot (ecosystem modeling)
- Prof. Ivan Janssens (advice on GHG balance)

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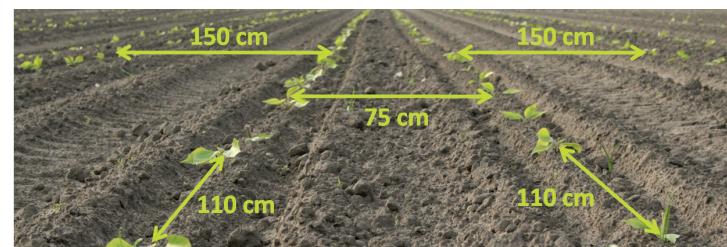


Eddy covariance fluxes of CO₂, N₂O, CH₄, H₂O and O₃ from an extendible meteorological mast

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- Research Institute for Nature and Forest (INBO, Geraardsbergen)

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www.icos-infrastructure.eu



Information and contact

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