

Bio-energy research at Wageningen University and Research Centre

www.biomassandbioenergy.nl

Introduction

Wageningen University and Research Centre has extensive experience in the research field of bio-energy chains and renewable energy. Our expertise in sustainable production, logistics and storage of biomass, and bio-fuel production and fuel utilisation enables us to solve research questions on many aspects of bio-fuel production chains from primary production to the conversion of biomass into solid, liquid and gaseous bio-fuels.

We offer research facilities (e.g. laboratories and a research farm) and expert multidisciplinary research teams to solve fundamental and practical questions concerning the entire bio-fuel production chain. We always take an integrated approach taking into account 'the three P's' (Planet, People and Profit).

Biomass production

- Biomass production as an integrated part of multifunctional land use
- Economics of biomass production
- Development of switchgrass (*Panicum virgatum*) as an energy crop in Europe (www.switchgrass.nl)

- Introduction of energy crops systems like willow, switchgrass, Miscanthus and hemp
- Combination of willow with land farming (www.oostwaardhoeve.nl)
- Utilisation of by-products from agriculture and industry

Logistics and storage

- Development of rapid analysis methods to assess storability, quality and energy yield of biomass
- Development of pre-treatment methods for biomass, like drying, chipping, densification. Simulation and optimisation of the logistics of bio-energy chains (transportation costs and energy consumption)

Bio-fuel production

- Pre-treatment of lignocellulosic biomass fuels fuel production.
- Utilisation of (agricultural) by-products for production of bio-diesel, ethanol, H₂ and ABE.
- Development of fermentation systems for hydrogen production from by-products and wastes (www.biohydrogen.nl)
- Production of solid fuels from energy crops, by-products and wastes.

The biomass chain



