



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, Miscanthus and hemp
- Combination of willow with land farming (www.oostwaardhoeve.nl)

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, de-polymerisation
- Simulation and optimisation of the logistics of bio-energy chains (transportation costs and energy consumption)

Bio-fuel production

- Ethanol production from lignocellulosic biomass
- Utilisation of (agricultural) by-products for production of bio-diesel, ethanol, hydrogen and ABE
- Hydrogen production through fermentation of by-products and waste (www.biohydrogen.nl)
- Life Cycle Analysis of bio-fuel production chains
- Production of solid fuel from verge grass
- Bio-diesel production from by-products

