



## **PROGRASS - Efficient Energy Production and Environmental Protection**

Semi-natural grasslands are the most dominant vegetation in the world but 20-40% of grasslands will be abandoned in the future due to low nutritive value and low yields. As a consequence, bushes and forests will extend with substantially lower biodiversity. The grassland swards of the programme NATURA 2000 are in the focus of the PROGRASS project. These species-rich grasslands that are seriously threatened in many European countries were identified as extraordinary valuable habitats with a high biodiversity by the European Union. For the protection of these areas an extensive grassland management with yearly harvest is necessary. Up to now, the harvested biomass has not been efficiently usable for energy purposes with most of the conventional biogas plants.



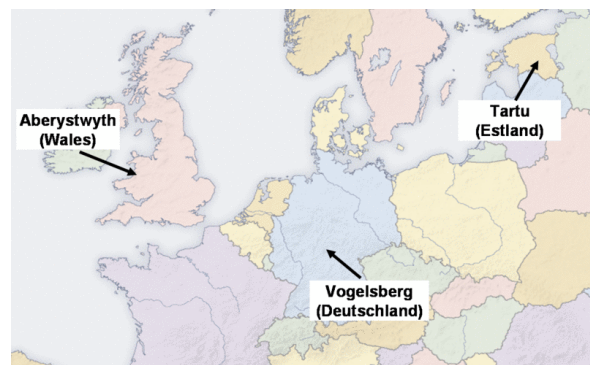
Against the background of a lack of perspective for these grasslands with special focus on NATURA 2000, the University of Kassel developed a technological and process orientated approach (PROGRASS) to produce bio-energy (electricity and solid fuel) also from mature grasslands (protected NATURA habitats).

After harvesting and ensiling the biomass is separated into a liquid and a solid fraction and converted into energetically usable outputs: solid pellets for combustion and electricity.

### **PROGRASS - The Project**

In the framework of the LIFE+ project the approach PROGRASS will be demonstrated in extensive grassland in European NATURA habitats – not only to prove the technical feasibility but also to evidence that the approach may become a cornerstone in the protection of these grasslands biotopes in Europe by developing a sustainable solution consisting of nature protection and socio-economic development of disadvantaged, marginal rural regions.

As demonstration project PROGRASS is introduced in three European model regions designated as protected NATURA habitats: Vogelsbergkreis, Hessa, Germany; Tartu, Estonia and Middle Ceredigion, Wales to prepare the ground for a large scale European-wide transfer. To ensure the quality and comparability of collected data, all main activities in the partner regions are carried out according to a common standardised procedure which provides clear instructions as to site selection, harvest, conservation of biomass, installation and commissioning of the biogas plant and data analysis.



## PROGRASS - First Harvest

The first harvest of selected sites took place in June and July this year in all three partner regions. Before yield the swards had to be analysed in order to determine the botanical composition as well as stage of maturity of major plant species. The harvested biomass was compressed by a round baler and afterwards wrapped with silage film for storage before conversion. Scientific experiments of different silage samples will be conducted to analyse the effects of different silage additives on the silage quality being crucial for the overall economic success of the concept. A second cut will be carried out as late as possible this year in accordance with technical feasibility in the partner regions.



## PROGRASS - Further Activities

In the framework of the project a demonstration plant is being constructed in cooperation with a technical partner. The plant is especially designed to convert the described types of biomass into energetically usable components. The PROGRASS plant will be installed at each site once a year within the two-year test phase. The actual operation period will be three months at each site. The plant will be available in December 2009.

## The PROGRASS-Consortium

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- 🌱 Government of the Vogelsberg Region, Lauterbach, Germany
- 🌱 Institute of Biological, Environmental and Rural Sciences (IBERS), Aberystwyth, Wales
- 🌱 Estonian University of Life Sciences, Tartu, Estonia
- 🌱 Rheinische Friedrich-Wilhelms-Universität, Institute of Animal Science, Bonn, Germany
- 🌱 blended learning institutions' cooperative blinc eG, Göttingen, Germany
- 🌱 MAWERA/Viessmann Werke GmbH & Co. KG, Allendorf, Germany
- 🌱 Hessian Ministry of the Environment, Energy, Agriculture and Consumer Protection, Wiesbaden, Germany

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**U N I K A S S E L**  
**V E R S I T Ä T**



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