Grass factory – from meadow grass to innovative materials

The factory Biowert utilizes meadow grass from the region as a raw material and processes it into innovative materials in a biorefinery process with green electricity generated in an affiliated biogas plant. Biowert has developed a fibre-reinforced thermoplastic AgriPlast for injection molding and extrusion, which input material (granules) contain up to 75% cellulose.

The facility has an annual throughput of about 2,000 t dry matter (equivalent to 8,000 t grass per year). The grass fibre for the biobased-products can be fully recycled without generating waste products or wastewater in an efficient closed-loop process. The integrated biogas plant produces c. 1,340,000m^3 of biogas annually which is used in a CHP plant, which produced 5.2 GWh of electricity in 2012. Digestate from the biogas plant is further processed to a biofertilizer used by local farmers.

Instead of depending on changing market prices of the crops, regional farmers can benefit of the increasing profits from the sale of meadow grass, which provides them a secure income. The output of the cultivation of meadow grass is high because of its low input of labor, machines, fertilizer and several harvests per year. In addition, it does not lead to a depletion of soils like other crops, as biomass residues from the production process are returned to the field as fertilizers.

The innovative bio-based product AgriPlast opens new market sectors for the bioeconomy. The product is light, resistant to abrasion, suitable for injection moulding and extrusion and is nontoxic. The cellulose is embedded in a thermoplastic matrix that can be made out of PP, recyclates, or out of biodegradable plastics. The self-sufficient grass factory substitutes conventional thermoplastics based on crude oil and its product may lead to a lower dependency of oil.

Photo: Biowert Industrie

KEY WORDS

Biobased thermoplastics, meadow grass

COUNTRY

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AUTHORS

Shalaja Weber (DBFZ)
shalaja.weber@dbfz.de
Laura Garcia (DBFZ)
laura.garcia@dbfz.de

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ADDITIONAL INFORMATION

Towards a closed-loop manufacturing process, the company produces bio-based products that avoid wastewater and high amounts of resources. The meadow gras supplied by local farmers ensures resource-efficient logistics and in total the production itself has a low ecological footprint.

The applied technology needs a good network between the actors to sustain the supply chain of the bio-based products; cooperation with local farmers that produce the biomass, partner companies to realize new products and (inter-) national companies to distribute the end products to the end-users. Collaboration with other processing industries that use AgriPlast products as raw material may help to produce a wider range of bio-based plastic products.

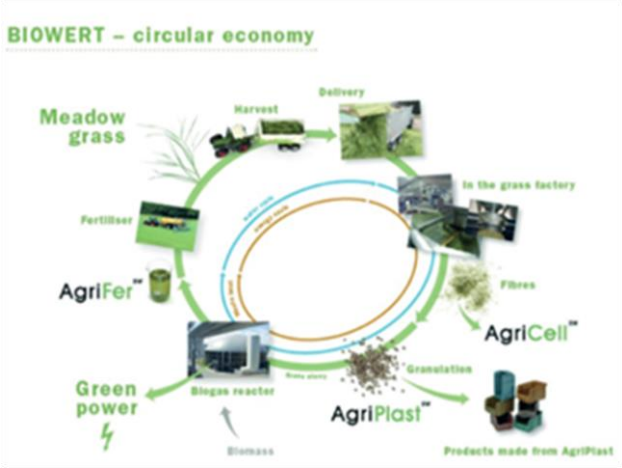

Photo: Biowert Industrie

Coordinator: Johanna Routa - (Luke) johanna.routa@luke.fi
Dissemination: itabia@mclink.it
www.branchesproject.eu

ABOUT BRANCHES

BRANCHES is a H2020 "Coordination Support Action" project, that brings together 12 partners from 5 different countries. The overall objective of **BRANCHES** is to foster knowledge transfer and innovation in rural areas (agriculture and forestry), enhancing the viability and competitiveness of biomass supply chains and promoting innovative technologies, rural bioeconomy solutions and sustainable agricultural and forest management.

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THE PARTNERSHIP

Luke Luonnonvarakeskus · National Research Council of Italy Institute of BioEconomy Department of Biology, Agriculture and Food Science · VTT · University of Warmia and Mazury in Olsztyn · DBFZ · circe Research Centre for Energy Resources and Consumption · ITABIA Italian Biomass Association · MTK · aveBiom Spanish Biomass Association · UFZ · W-M ODR · BioEconomy Cluster