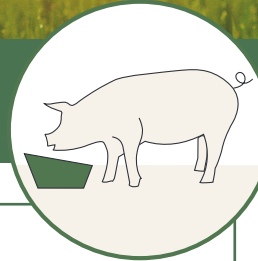


GO-GRASS

Grass-based circular business models
for rural agri-food value chains

PRACTICE ABSTRACT

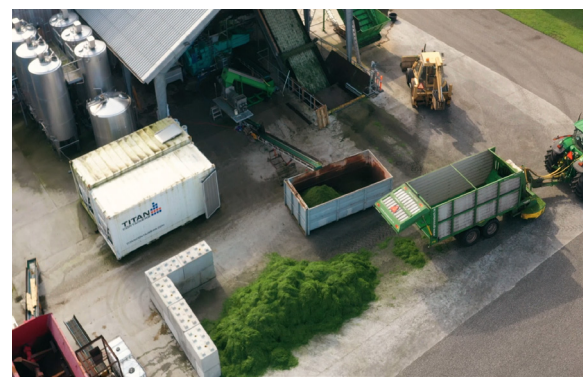


Danish Demo

The objective of the Danish GO-GRASS demo-site is to gain protein of high quality from grass and legumes in a small green biorefinery process. The organic protein concentrate can then be fed to pigs and poultry to enrich their diet, and to dairy cows to increase their milk production. This demo-site is led by Aarhus Universitet (AU) with IFAU, ABP/FBDC and LMO/VELAs participating in its execution.

The process of implementing the EU Water Framework Directive requires significant reductions in nitrate leaching from a large part of Danish farmland and throughout Europe. The conversion of annual crops such as maize, rapeseed and cereals into grassland can significantly reduce nitrate leaching. Cattle farmers are therefore beginning to change some of their silage maize production into grass-clover production in order to reduce nitrate leaching.

The Danish demo-site is cooperating with other biorefineries in Denmark to develop and implement the technology for processing grass and legumes. At first, these biorefineries will produce a protein concentrate to substitute soy, a fibre fraction for cattle feeding and a brown juice that can be used for biogas production. This will open a new market outlet for products from grasslands and contribute to the required reductions in nitrate leaching due to converting annual cropland into permanent grassland. Efficient grassland management is necessary to obtain not only good quality grass for the biorefinery, but also stable low nitrate leaching. If the grassland is renewed through ploughing, there is a high risk of nitrate leaching into a subsequent grain crop. A farming practice tested in the demo is to under-sow the following cereal crop with a grass mixture that will establish during the cropping season and help avoid nitrate leaching after maturation of the cereal crop.



Further information

 www.go-grass.eu  go-grass@atb-potsdam.de
 @GoGrassEU  GO-GRASS  @gograsseu

Partners



CBIO
AARHUS UNIVERSITY CENTRE FOR
CIRCULAR BIOECONOMY

 **velas**



Institut for Fødevarer og
Agrarøkonomi Cirkulær - IFAU

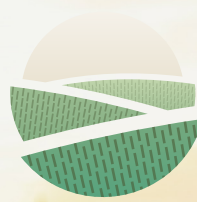


Food & Bio Cluster
Denmark



This research project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°862674.

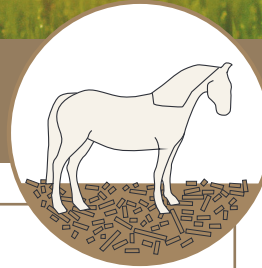




GO-GRASS

Grass-based circular business models
for rural agri-food value chains

PRACTICE ABSTRACT



Swedish Demo

The objective of the Swedish GO-GRASS demo-site is to develop a manufacturing plant to produce reed canary grass-based animal bedding that is profitable at farm level. GME and Väståkra Gård are the business owners developing the business with the support of RISE, that coordinates the support activities for the demo development in the GO-GRASS project.

In Sweden large volumes of wood shavings and sawdust are used as animal bedding in stables and barns. By replacing the wood shavings with straw or reed canary grass in the form of shredded briquettes, there is a range of climate benefits. Since excess straw is only found in certain regions and dependent on good weather, straw usage needs to be supplemented in some regions. Reed canary grass is an energy-efficient alternative as it is a perennial grass able to produce harvests every year, across many different soil types and throughout the different regions of the country, including less productive soils. Sweden has large areas of unused, arable land, especially in the Northern region where reed canary grass grows well. There is also a significant potential for carbon capture and storage. Shredded reed canary grass is also more easily degradable compared to wood shavings and allows for the value of the manure to be increased. At the same time, large volumes of wood materials can instead be refined into more high-quality products that replace fossil raw materials in the transition to a bio-based economy.

The main technology applied in the demo is the briquetting of reed canary grass and shredding of the briquettes at local and small scale. These two main components are the process of converting an agricultural crop into uniform shapes, facilitating its handling and storage. Depending on the customer needs, the bedding material can be delivered in different size packages, from a 20kg bag to bulk deliveries. In order to provide this supply, the briquetting technology needs to be optimized with the other technologies such as grass shredding, briquette shredding and packaging in order to create a new affordable production chain that meets the customers' needs.



Further information

 www.go-grass.eu  go-grass@atb-potsdam.de

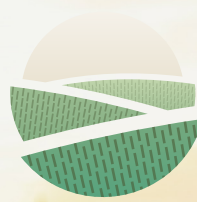
 @GoGrassEU  GO-GRASS  @gograsseu

Partners



This research project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°862674.





PRACTICE ABSTRACT

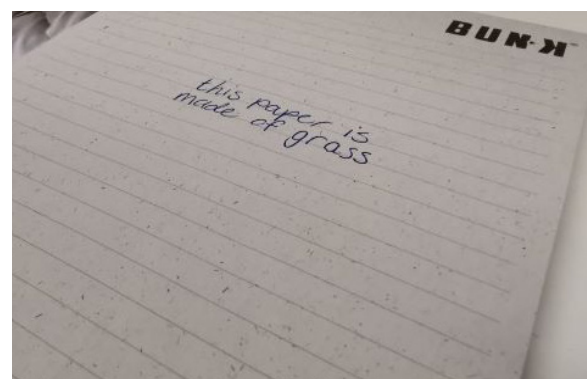


Dutch Demo


The objective of the Dutch GO-GRASS demo-site is to develop a process to extract fibres from roadside and natural grass in order to produce high-quality packaging and paper. ACRRES oversees this DEMO, which is executed in collaboration with HB (substituting VMT in the first year of the project), SCHUT, and NFW.

Currently, low quality natural and roadside grass are used for low added value applications such as compost. In the Dutch demo-site the grass-fibres are separated and isolated through a digestion process and then used for the production of paper and cartons. The process of turning a low value resource into paper generates value and revenues for farmers, other landowners and (regional) governments. The solution reduces the costs previously needed for disposing roadside grass. The environmental benefits are also clear, as less trees have to be cut for the production of paper. Before trees are cut down and processed into paper and packaging, they first have to grow for many years, while grass grows every year anew.

The small-scale production of paper, where a small portion of grass (2%) is added, is a process that already exists. However, liberating the cellulose from the grass and completely substituting all the wood-based cellulose is a breakthrough innovation in the paper industry. An important consequence of the result is that it will also create new business and income for rural areas where the grass can be produced. One challenge is that roadside grass is still considered a waste product in legal regulations. To use this material for high value products instead of composting or burning, will have a positive impact on the current levels of greenhouse gases.



Further information

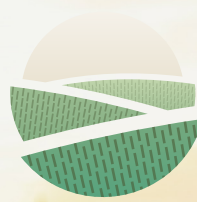
 www.go-grass.eu  go-grass@atb-potsdam.de
 @GoGrassEU  GO-GRASS  @gograsseu

Partners



This research project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°862674.

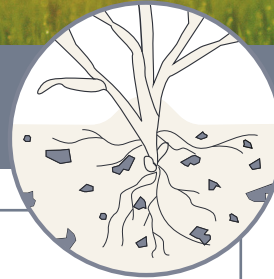




GO-GRASS

Grass-based circular business models
for rural agri-food value chains

PRACTICE ABSTRACT



German Demo

The objective of the German GO-GRASS demo-site is to convert low nutritional quality grass from the Lower Oder Valley National Park wetlands into biochar. The partner NUO is carrying out this DEMO together with farmers from the region and with technical, scientific and business advice from the ATB (Leibniz Institute of Agricultural Engineering and Bioeconomy).

Lower Oder Valley is the only wetland national park in Germany with extensively managed polder grasslands and is an internationally protected area for birds. The grass from these areas can be harvested only after the ground breeding birds have left the region. This happens every year at the end of August. By this time, the grass in the polder meadows is heterogeneous, in parts strongly lignified (rigid) and its nutritional value is too low to be used as animal feed or feedstock for biogas production. The harvested grass is therefore mostly used as bedding material for livestock.

The German demo-site valorises the late-harvested grass into biochar through the process of pyrolysis (thermal decomposition in an inert atmosphere) or hydrothermal carbonisation. The biochar can be applied site-specifically as a soil amendment to agricultural fields outside the National Park. This process increases the fertility and water holding capacity of the soil. The biochar can be mixed with compost, biogas digestate or manure to enrich the char particles with nutrients before it is applied. This conversion of the grass to a stabilised char can contribute to capturing and storing carbon in the soil, therefore increasing its fertility. Once implemented, this innovation can also be used to valorise other types of lignified biomasses e.g. from urban parks, nutrient-poor grasslands and even roadsides.



Further information

 www.go-grass.eu  go-grass@atb-potsdam.de

 @GoGrassEU  GO-GRASS  @gograsseu

Partners



This research project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°862674.

