

## ABSTRACT

### **Sugar beet as a sustainable source of inspiration for innovation in biobased chemicals and materials**

Europe's economy depends on oil and gas for the chemicals and energy sectors and for all kinds of everyday products. However, fossil resources are scarce and their use harms the environment and our climate. Bio-based products can substitute fossil-based materials and bring new functionalities to the market, making the economy more sustainable, circular and reducing its dependence on fossil resources.

Sugar Beet fuels the European bio economy (food, feed, biofuels, biogas, bio products). The key to success is to extract all the value from the sugar beet.

The main strength of sugar beet is its very high land efficiency. No other biomass can produce more fermentable sugar per hectare. High greenhouse gas (GHG) reductions and especially the lowest GHG abatement costs are additional strong points. To get more insight in the environmental performance of the Cosun Beet Company beet sugar, Blonk Consultants performed a comparative Life Cycle Assessment (LCA) study on beet sugar, cane sugar and glucose syrup. Main conclusion is that the production of beet sugar at Cosun Beet Company has in general a lower impact on climate change, fine particulate matter, land use and water consumption, compared to cane sugar production (in Brazil and India) and glucose syrup.

Cosun Beet Company has a long tradition of using every part of the sugar beet to produce a wide range of products in addition to table sugar. Other applications include food ingredients, animal feed, and renewable ethanol and biogas. Cosun Beet Company is also developing biobased based chemicals and materials based on sugar beet. Few of the examples from our new developments are:

#### **Sugar beet Paper**

Together with our strategic partner Crown Van Gelder, sugar beet paper was developed : Crown Native. The agricultural process residue from sugar beet processing, beet pulp, forms a valuable resource for the paper. This innovative paper uses less wood fibres to achieve a reduced impact on the environment of 16% compared to traditional paper.

#### **Sugar beet pulp refining**

Sugar beet pulp accounts for approx. 13 million tonnes in Europe and is a major residual stream from the sugar beet industry, which is currently valorised as feed and/or green gas. Cosun Beet Company is developing an integrated and cost-effective biorefinery system to refine sugar beet pulp and isolate high value products for detergents, personal care, oil & gas, paints & coatings and composites.

e.g. Betafib® MCF : biobased structuring agent

Betafib®MCF is a 100% natural biopolymer (cellulose) and is COSMOS and ECOCERT certified. We've designed it to help stabilize formulations, modify rheology, and suspend (encapsulated) particles.

This makes it the ideal multifunctional ingredient for many microplastic-free home care and personal care formulations, such as body washes, shampoos, creams, scouring agents, and detergents.

Sugar beet can be locally available and is an important source of renewable carbon in the transition towards a fully renewable chemicals and materials sector in Europe.