ReNEW
Resource innovation Network for European Waste

Valuable Products From Tree Bark

Investing in Opportunities
This project has received European Regional Development Funding through INTERREG IV B.
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INTERREG IVB

Transnational Demonstration Process

THE PROBLEM

Up to 60% of felled timber is left in the forest to rot, and nearly 50% of the harvested timber is wasted as sawdust and offcuts, particularly bark, twigs and small branches. Bark and twiggy material from the forestry industry have a low economic value and much of it is left in the forest or burnt. Around 50 megatonnes of bioproducts are produced globally from wood pulping. Much of this material is discarded or used for low tech applications such as low grade fuel and cement binders.

SOLUTIONS

The current solution: An increasing amount of the waste is being pelletised for biofuel but this is still low in percentage terms.

The innovative solution: Bark can be processed by processes using catalysts and acids. These result in production of carbohydrates, fatty acids and other related by-products.

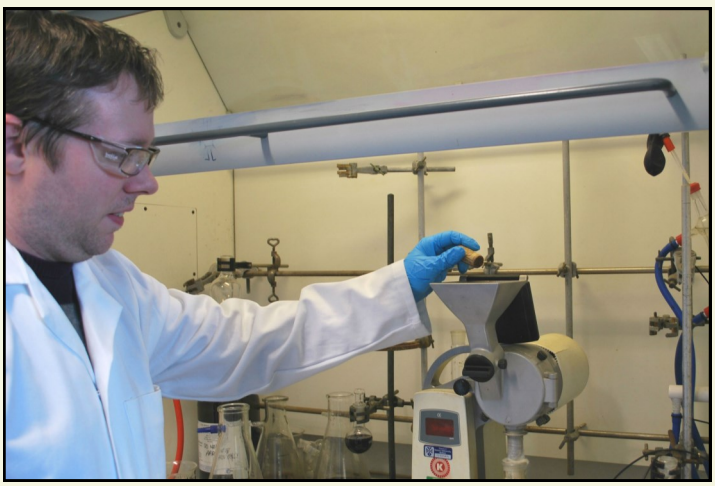
AIM

Valuable products can be obtained from tree bark like flavouring agents and small carbohydrates, amongst others, which will have several applications in different industries such as cosmetics, food and biofuels.

It is important for ReNEW to find technological and economic viable solutions for the production of value-added organic products from waste bark.

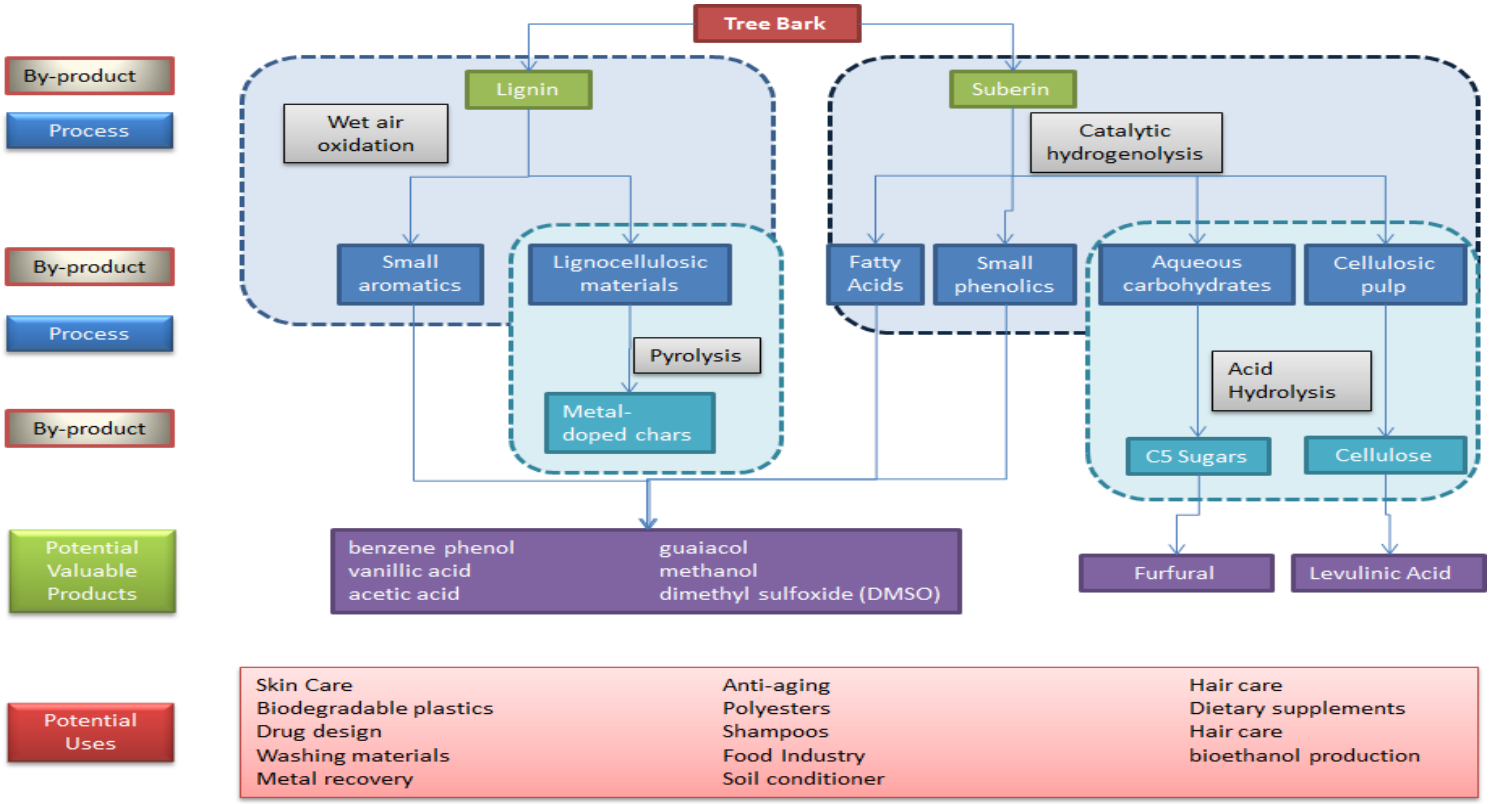
TECHNOLOGICAL APPROACH

Currently wood bark has a low or partial valorisation as low-grade renewable fuel or a limited market as a horticultural mulch. Much of this woody material, however, is disposed of by burning or rotting at the site of operation. The difference in this proposed conversion of wood waste is the sequential and partial processing allowing value-added products to be isolated in controlled and defined steps that will also facilitate the removal of the corrosive components.



ECONOMIC BARRIERS/DRIVERS FOR MARKET INTRODUCTION OF THIS OUTPUT STREAM:

Currently bark waste is only used in low-tech and low value applications such as low-grade fuel and cement binders. The output streams generated by this process are high-value, but the associated costs are higher due to the processes involving difficult operating conditions (temperature, pressure, and/or acid concentration). A balance still needs to be established and the separation and purification of products are poorly defined at this stage.



MAIN TECHNOLOGICAL BARRIERS FOR MARKET INTRODUCTION

The current process leaves a significant fraction (>50%) of the biomass as a waste by-product and the primary objective will be to employ more aggressive processing conditions to transform this resource using advanced oxidation techniques requiring heat, pressure and air. The conversion of the residue from the first stage of the valorisation has yet to be demonstrated to deliver high value-added products. It is still unclear whether it will be possible to develop an integrated process combining the chemical catalytic steps with the advanced oxidation. Alternatively, the raw biomass can be directly converted into value-added organic products in a one-stage process using advanced oxidation.

CONTACTS

For Wet Air Oxidation and/or Super Critical Water Oxidisation:
Dr. Gary Sheldrake
School of Chemistry and Chemical Engineering
Queen's Unversity Belfast
Email: g.sheldrake@qub.ac.uk

For Pyrolysis and Acid Hydrolysis:
Dr. J.J. Leahy
Technology Centre for Biorefining and Bioenergy
Email: j.j.leahy@ul.ie

Case study produced by the ReNEW Project under Action 13 (Demonstration, Promotion and Dissemination Activities) examining how facilities for scale up, testing and training are a vital part of developing processes for resources recovery.

For further information: www.renew-network.eu