A HEALTHY PARTNERSHIP FOR A HEALTHY EARTH

Palm oil is used to produce margarine hardstock which is a critical ingredient in the margarine that we eat every day.

LCA DEFINED

Lifecycle assessment (LCA) is an environmental management tool, which is used to assess environmental impacts of products and services in their entire lifecycle, from "cradle to grave," that is, from raw material extraction, through production and use, to final disposal or recycling.

The palm oil industry has been accused of contributing to deforestation, but there are many ways to make it less of a threat. Unilever is a firm driver of sustainable palm oil sourcing and is working with Novozymes to ensure that the entire margarine hardstock process is environmentally sound.

Around three quarters of the world's oil palm is grown in Indonesia and Malaysia, often on peat land and in tropical rain forest. The clearance and burning of Southeast Asia's peat forests release 2 billion tons of greenhouse gases every year. According to some estimates, deforestation in Indonesia alone accounts for 4% of global greenhouse gas emissions – making it the third highest emitter behind the US and China.

Global consumer goods manufacturer Unilever is committed to sustainable palm oil sourcing according to the Roundtable Sustainable Palm Oil (RSPO) principles and criteria. The company shares the concerns of many organizations and consumers regarding the destruction of rain forest and supports a request for a moratorium against deforestation. But Unilever's concern stretches beyond just the sustainable sourcing of palm oil, into sustainable production of all oils and fats for use in consumer products.

Unilever uses palm oil, often after modification, in many food as well as nonfood products. So sustainability is not just an issue of sourcing, but how the palm oil is used and prepared for incorporation into final products.

"Cooperation with Novozymes started with early research into fat modification which is now being implemented for the production of margarine hardstock," says Gerrit van Duijn, Oil Supply Technology Director at Unilever.

Margarine hardstock is a critical ingredient in margarine, determining the physical properties of the product, such as firmness, spreadability, and mouthfeel.

Improving sustainability together

Novozymes has carried out a number of lifecycle assessments (LCAs) to document the benefits of replacing chemicals with enzymes in various processes. Together with Unilever, Novozymes investigated the environmental benefits realized if margarine hardstock was produced by enzymatic rather than chemical interesterification.

"This process required that the two organizations exchanged information so that a full and accurate LCA could be made," says Jesper Hedal Kløverpris, LCA specialist at Novozymes. "The results showed clear benefits of switching to enzyme technology."

This collaboration was important for a number of reasons. Firstly, an accurate LCA can only be made if correct data are used. While Unilever knew a great deal about chemical interesterification, they did not have as much knowledge about the enzyme production and application. Secondly, the resulting data could be used by Unilever to show its suppliers how they could contribute to Unilever's goals of sustainable production. Not just to improve how they sourced their raw materials but also how they could perform sustainably further down the supply chain as well.

"The success of this collaboration and the use to which Unilever is putting the results are a prime example of how other companies can work with Novozymes to improve the sustainability and efficiency of their own processes," says David Cowan, Customer Solutions Scientist at Novozymes. ■

Oil palm trees supply palm oil for use in manufacturing a wide range of food and nonfood consumer products.

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