



A new analysis has shown that increased use of Novamyl in baking can reduce distribution costs - as well as helping save the planet.

Novamyl® helps drive down bakers' distribution costs

As many bakers already know, Novamyl is a maltogenic amylase that is frequently used in bread-making. It prevents starch from crystallising, thereby extending the shelf life of bread products.

In the USA, where there is a preference for so-called pan loaves, the addition of Novamyl improves the taste and texture of bread and means that delicious, fresh bread with a shelf life extended from 10 to 14 days is widely available. The extended shelf life allows bakers to use their production facilities more efficiently, moving from one type of product to another less frequently and extending production runs.

However, a Life Cycle Assessment has shown that the benefits of Novamyl go far beyond these advantages. It also leads to considerable reductions in energy consumption and greenhouse gas emissions, as well as reducing the cost of getting bread to the shops.

Less waste

The new analysis compared two dosages of Novamyl: 37 and 74 mg Novamyl per kg flour. It was assumed, based on the practical experience of major US bakeries, that the higher concentration of Novamyl would lead to fewer loaves being wasted.

The results of the analysis showed that the higher concentration of Novamyl cut nearly 10% off a range of important results (see Table 1). These results included reductions in energy consumption, global warming potential and acidification of the soil.

TABLE 1. TOTAL CHANGE IN IMPACT POTENTIAL PER 1 KG NOVAMYL®

Impact category	Low enzyme dosage (37 mg/kg)	High enzyme dosage (74 mg/kg)	Change
Energy consumption (MJ LHV)	415,000	377,000	-38,000 (-9.2%)
Global warming (kg CO ₂ -equivalents)	43,100	39,200	-3,870 (-9.2%)
Acidification (kg SO ₂ -equivalents)	211	191	-20 (-9.5%)
Nutrient enrichment (kg PO ₄ -equivalents)	273	249	-24 (-8.9%)
Smog formation (kg ethylene-equivalents)	72.5	66	-6.5 (-9.0%)

Life Cycle Assessment (LCA) is a methodology that enables us to compare the environmental impacts of alternative production technologies providing the same user benefit. LCA provides a holistic view and takes into consideration the whole production system from production of raw materials to disposal of waste - 'from cradle to grave'. ISO guidelines ensure that LCAs are carried out in a standardised and transparent way.

Less production

Christophe Loretan, global marketing manager for Cereal Food at Novozymes, comments: "The savings seen are mainly driven by savings in agricultural production, i.e. because less bread is being wasted, less wheat needs to be produced, which means the use of less fertilisers, reducing acidification in the soil as well as the surrounding areas."

In addition, the reduction in the transportation needed to distribute the bread – because of the extended shelf life made possible by Novamyl – also makes a significant contribution due to fuller distribution trucks, fewer distribution points and an overall increase in distribution efficiency.

"Approximately 45% of the reduction in energy consumption is due to the need for less transportation," he says. "In addition, baking and packaging costs are reduced."

Lessons for Europe

Although the report mainly focuses on the baking industry in the USA, it still has some important messages for the EU industry, despite the preference of most Europeans for crispier breads with a much shorter shelf life such as baguettes.

"It would seem likely that the European Commission will be looking at all industries to see whether any savings can be made in the emissions of greenhouse gases such as carbon dioxide as part of its commitment under the Kyoto Protocol. If Europeans develop a taste for extended shelf life bakery products, then the benefits of Novamyl in terms of energy consumption, global warming and more efficient distribution could be applied here too," says Christophe Loretan.

One of the benefits of enzyme technology is that, even though the use of enzymes itself can have a huge impact in terms of decreased energy consumption and carbon dioxide emissions, the manufacture of enzymes is very energy-efficient; it has been estimated that for every kilogram of enzyme that Novozymes ships, there is a net downstream reduction of more than 100 kg CO₂ emissions. "After all, bacteria and fungi do not require much to grow," concludes Christophe Loretan. ●

FOR MORE INFORMATION
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'Ultra' proteases address concerns over boric acid in liquid detergents

New EU regulations could mean difficulties for enzymatic liquid detergents stabilised with boric acid. Fortunately, Novozymes has the solution.

Three years ago, Novozymes launched two new liquid detergent proteases: Savinase® Ultra and Alcalase® Ultra. These proteases are unique; they contain a built-in stabiliser, which means that detergent manufacturers can take out boric acid and reduce the dosage of expensive polyols such as propylene glycol in liquid detergents. The money saved has allowed manufacturers to increase the type or number of enzymes present.

Now there is another reason to choose one of the 'Ultra' proteases: the European Union proposes to reclassify boric acid as a 'reprotoxic' agent that 'may impair fertility' or 'may cause harm to the unborn child'. Depending on the maximum accepted levels for boric acid, manufacturers of liquid detergents in Europe may