



CHALLENGE

Finding more efficient enzymes for producing biofuels.

SOLUTION

JMP's design of experiment tools, multivariate analysis, the distribution platform, fit Y by X, fit model and the cluster platform.

RESULTS

Novozymes is improving the enzymes that render a more cost-effective and sustainable process for commercially viable biofuels.

MORE INFORMATION

www.novozymes.com

www.jmp.com

Novozymes

Reducing the cost of producing biofuels

Improving processes for their customers with enzyme products—that's the kernel of the issue—and that's Novozymes' business.

"Rethink Tomorrow" is Novozymes' slogan, and one of the areas where it's doing so is in looking for more efficient enzymes for producing biofuels. Novozymes is a Denmark-based world leader in bio-innovation. In cooperation with its customers across a wide range of industries, Novozymes is helping create tomorrow's industrial bio-solutions for a greener planet.

Optimizing enzymes with JMP®

Here in the US—in Novozymes' North American subsidiary in Franklinton, North Carolina—Jesper Frickmann is tasked with supporting customers in implementing and optimizing Novozymes' enzymes for biofuel solutions within their businesses.

JMP statistical discovery software from SAS is an integral tool in Novozymes' research. Frickmann himself began using JMP more than 10 years ago. He's an engineer by training, but before working in customer support, he served as a

statistician, providing statistical help to anyone at Novozymes. He used JMP then and still does.

Frickmann says: "Anytime we run an experiment in R&D to find new and better enzyme candidates or to optimize the reaction conditions, we use JMP to design an experiment and analyze the data.

"Or if a customer wants to try a different enzyme in our line, we'll run the two different enzymes in their application, collect the data—for example, the amount of alcohol produced—and determine if there's a significant difference in the two products."

One of the ongoing objectives of Novozymes' researchers is to consistently improve the enzymes that render a more cost-effective and sustainable process for commercially viable biofuels.

Also within the next-generation cellulosic ethanol are biofuels made from feedstocks such as cobs, stalks and leaves from corn, wood chips, paper, switchgrass, etc. "Today all that is mainly left in the field to rot," says Frickmann. "But it could be collected, and the cellulose from that could be converted. We're trying to make all this happen."

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DISCOVERY.™
FROM SAS.**

