

Set a new standard with Novozymes Avantec® Rev

- Higher ethanol yields than any competitive enzymes
- Significant viscosity reduction, enables increased throughput
- Reduce nitrogen inputs by 70%-90%
- Up to 15% more corn oil yield
- Total removal of stand-alone protease

Novozymes' new advanced liquefaction product, Avantec® Rev, sets a new standard for your plant's performance while simplifying operations.

Revolutionize your liquefaction and fermentation with Novozymes' advanced liquefaction solution that maximizes ethanol yield and throughput, and in addition reduces chemical costs, increases oil yield and simplifies your operations.

Avantec® Rev's unique formulation can significantly increase ethanol yield and corn oil, better than the performance of any competitive enzymes. Avantec® Rev provides unparalleled viscosity reduction in cook at low pH conditions, and the potential for increased throughput, giving your plant the flexibility to run at higher solids or higher run rates.

Avantec® Rev significantly reduces the amount of urea and ammonia added to fermentation, and eliminates the need for protease added to fermentation, thus simplifying the production process.

Avantec® Rev provides robust starch conversion while enhancing yeast health with a consistent and preferred nitrogen source of amino acids and peptides, achieving lower glycerol profiles. This results in highly consistent fermentations.

Benefits

- Significantly higher ethanol yield than competitive products
- Excellent viscosity reduction, which enables increased throughput
- Can be used across a broad pH range in cook
- Significantly reduces urea and ammonia to fermentation – 70% to 90% less by weight – resulting in lower costs, less need for storage and handling, greater safety, reduced risk of errors
- Total removal of stand-alone protease
- Up to 15% increased corn oil yield, even for plants currently using a low-dose protease
- Improved yeast health – lower glycerol profiles

Performance

Use of Avantec® Rev typically delivers 2-3% increased ethanol yield in 10 plant trials.

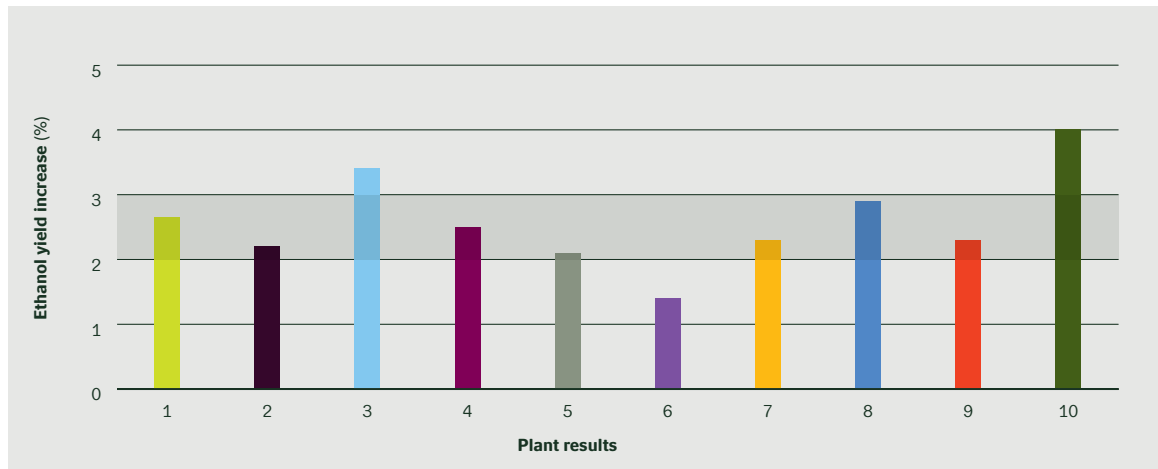


Fig 1.

For a typical 220 MLY plant, a 1% increase in ethanol yield is worth around €220,000 net profit. A 1% increase in throughput is worth around €200,000 net profit.

Chemical savings across 11 plant trials

– Use of Avantec® Rev significantly reduces nitrogen to fermentation required from protease, urea, and ammonia

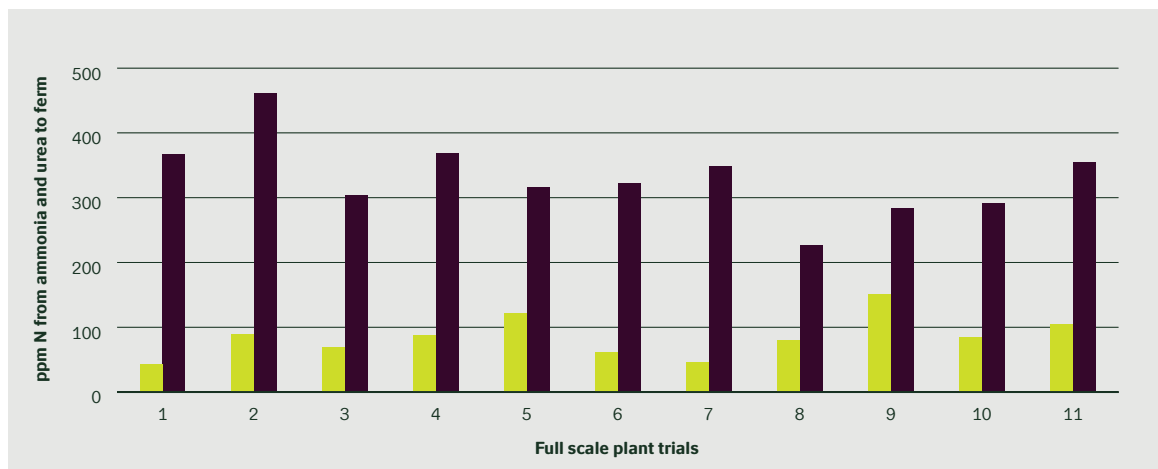


Fig 2.

All plants are low-pH cook. Protease addition to fermentation was eliminated.

Industry-proven

Plant trials with Avantec® Rev demonstrate immediate improvements to operational performance. Plants were able to reduce urea by 70% up to 80% and increase corn oil production even when eliminating protease use. Some plants also reduced oil surfactants by 25% or more.

Revolutionize your process with Avantec® Rev, your plant will enjoy immediate production gains, new operational simplicity, and the potential for increased profits.

Learn more

Learn more about Avantec® Rev by contacting your Novozymes account representative, or at novozymes.com

About Novozymes

Novozymes is the world leader in biological solutions. Together with customers, partners and the global community, we improve industrial performance while preserving the planet's resources and helping to build better lives. As the world's largest provider of enzyme and microbial technologies, our bioinnovation enables higher agricultural yields, low-temperature washing, energy-efficient production, renewable fuel and many other benefits that we rely on today and in the future. We call it Rethink Tomorrow.

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