

Ampliqan®

The new standard to enhance
nitrogen use efficiency



**Stabilize your
fertilizer business**

BASF

We create chemistry



The importance of nitrogen use efficiency

Nitrogen fertilizers are essential for plant growth and maximizing yields, and are required in large quantities. Nitrogen use efficiency (NUE) in agriculture refers to optimizing nitrogen from the application of nitrogen fertilizer to promote crop growth and yield, as well as minimize nitrogen losses into the environment.

On average, only 50% of applied nitrogen is absorbed by plants

Climate change remains one of the most pressing challenges facing the world today, and agriculture is in a unique position to address this challenge. A transformation is underway to adapt farming practices to meaningfully reduce greenhouse gas emissions while providing food for the growing population. Now more than ever, it is vital to prioritize productivity and sustainability in agriculture by adopting climate-smart methods and reliable technologies.

By improving nitrogen use efficiency in agriculture, farmers can optimize fertilizer application, reduce environmental impacts such as nitrogen runoff and greenhouse gas emissions, and enhance crop productivity and profitability.



Optimize nitrogen use efficiency with Ampliqan®

Nitrogen stabilizers, such as Ampliqan® nitrification inhibitor, are effective technologies to improve nitrogen use efficiency by reducing nitrogen losses, keeping it in the soil where it is available to plants when they need it.



Benefits for the environment

- Contributes to climate-smart agriculture practices
- Provides significant reduction of greenhouse gas emissions to help reach sustainability targets
- Significantly reduced nitrate leaching
- Significantly reduced nitrous oxide emissions



Benefits for the fertilizer industry

- Outstanding handling properties
- Ready-to-use formulation under a wide temperature range
- No smell, non-corrosive to metal, and favorable EHS profile
- Flexibility with longer shelf life
- Compatible with all fertilizer types
- Compatible with urease inhibitors
- Differentiation within the market
- Fulfillment of regulatory requirement



Benefits for farmers

- Higher crop yields
- Higher quality of harvested crops
- Fertilizer nitrogen savings
- Less fertilizer applications
- Fulfillment of regulatory requirements





The industry reaps the rewards of Ampliqan®

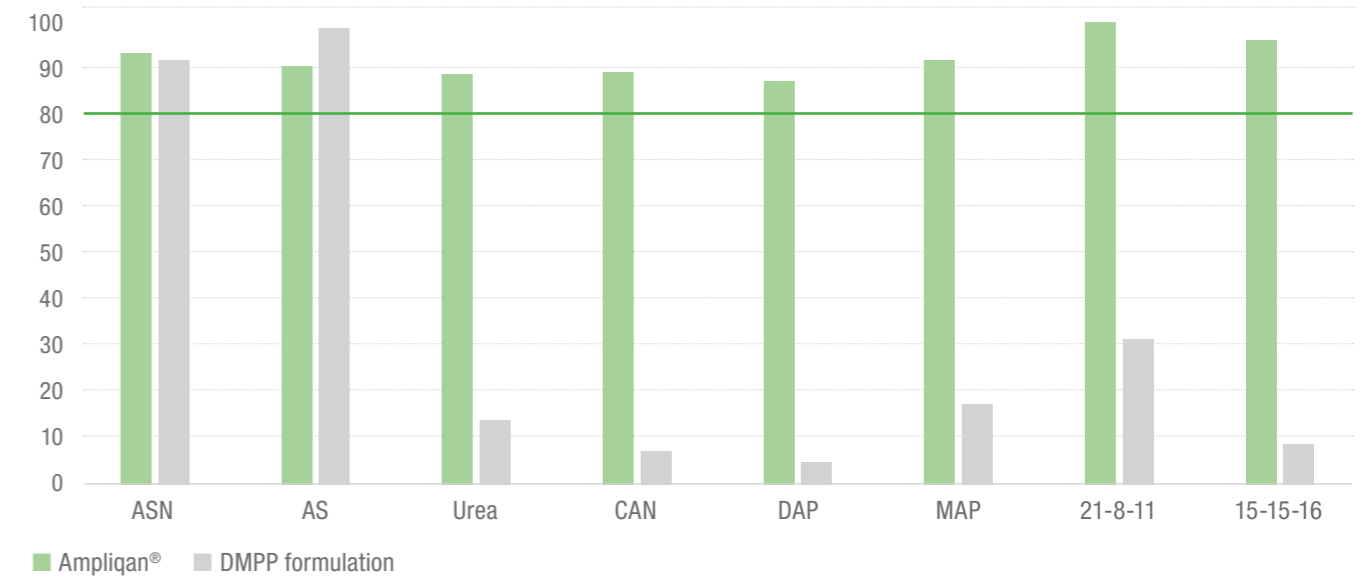
Due to its ready-to-use formulation, the fertilizer industry can conveniently combine Ampliqan® with all fertilizers (such as urea and ammonium-containing fertilizers). Ampliqan® offers further benefits for the fertilizer industry, as it enables them to differentiate their product portfolio and prepare for future changes in regulatory requirements.

High storage stability of fertilizers treated with Ampliqan®

Ampliqan® shows outstanding storage properties on a wide range of urea and ammonium-containing fertilizers.

Ampliqan® enables stabilization of more fertilizer types compared to DMPP-based products.

Storage stability of Ampliqan® and of DMPP formulation on fertilizer (12 months @ 40°C)



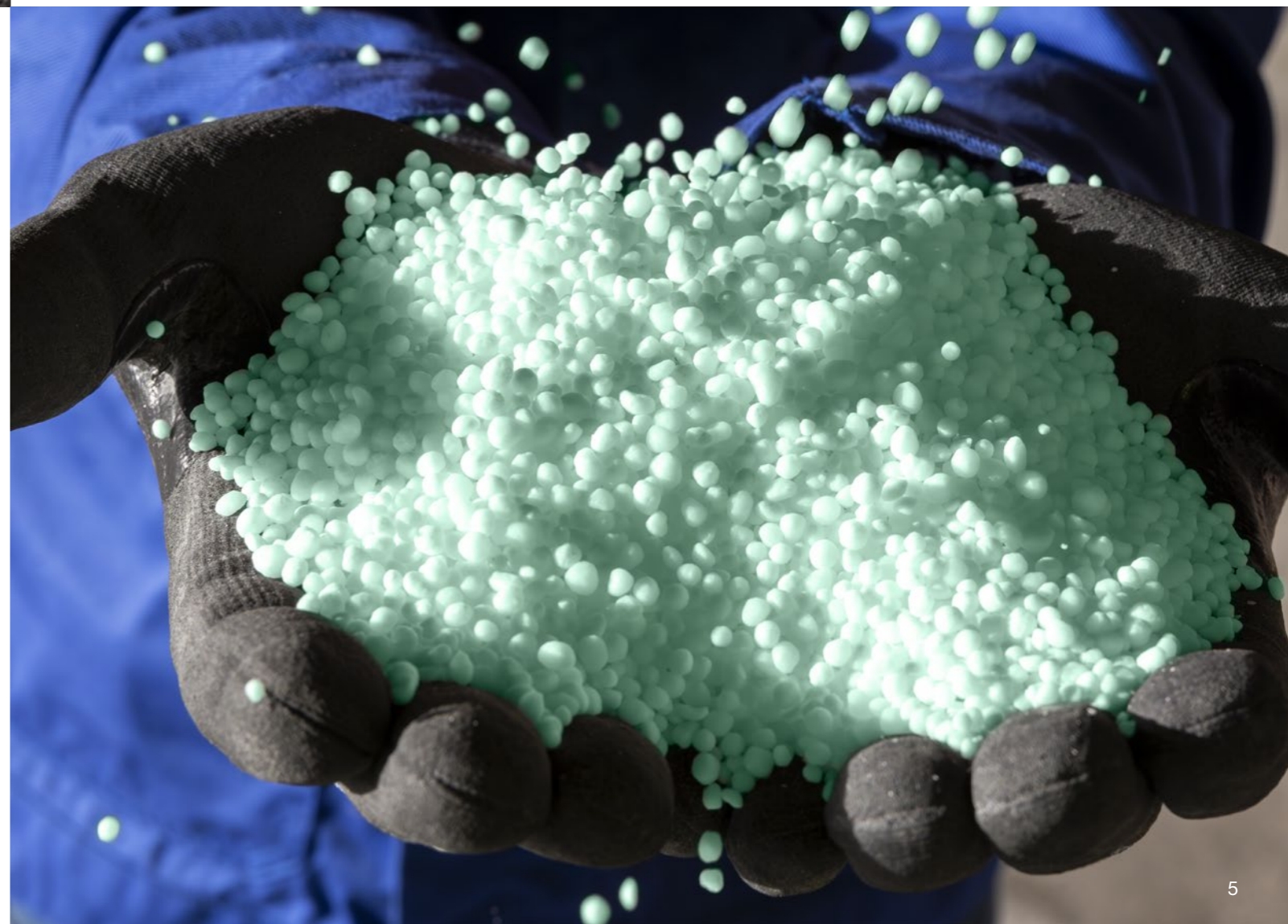
Source: BASF SE Experiments

Ampliqan® offers increased compatibility and flexibility in application

Ampliqan® can be applied at the fertilizer production facility, using standard batch and continuous blending equipment. The formulation can be sprayed onto the fertilizer inside the mixer or on the conveyor belt during

filling of the mixer. The formulation's excellent cold temperature stability allows application on fertilizer even at temperatures around 0°C.

Blender for treating fertilizer with Ampliqan®





Unique expertise in products for nitrogen use efficiency

In agriculture, demands for high profitability are equally as important as addressing current environmental challenges. As a close partner of the fertilizer industry, suppliers, and the agriculture sector, BASF addresses these challenges and the needs of the industry. As a highly-regarded innovator in crop protection and sustainable agriculture, combined with a deep heritage in fertilizers, BASF is an established authority for bringing ongoing innovation and expertise to fertilization and climate-smart agriculture.



Responsibility for sustainability and higher yield

Following through on our responsibility to continually innovate and promote sustainable agricultural practices, BASF reaches new standards for nitrogen use efficiency for fertilizer companies and farmers alike to combat regulatory, economic, and agricultural pressure, while encouraging enhanced yield quality and production for a sustainable future.



BASF services for the fertilizer industry

BASF stands behind Ampliqan® with personal technical advice, service and stewardship for its optimal use and trouble-shooting. Comprehensive, in-depth expertise in application technology and optimizing product benefits helps ensure that the special needs of all customers are fulfilled to a high degree.

Application lab for Ampliqan®

The dedicated application lab at the BASF Agricultural Solutions center in Limburgerhof, Germany, develops tailored customer solutions. Compatibility and storage stability tests with customer specific fertilizer samples can be performed to determine the optimum application rate and storage conditions. This means maximum efficiency from the beginning.



Application advice

A team of qualified specialists from BASF advises manufacturers and blenders of fertilizers on how to best integrate the application of Ampliqan® in their fertilizer production process. Based on the customer specific process conditions and requirements, the best suitable equipment and point of application can be recommended.

Carbon farming expertise

BASF brings expertise on the quantification of emissions from N fertilizer use with the ability to facilitate access to business models from carbon farming.





Benefits of nitrification inhibition with Ampliqan®

Nitrogen stabilizers can help growers improve flexibility and efficiency with their fertilizer programs so they can better protect their investments. Ampliqan® protects the nitrogen against losses due to nitrate leaching and nitrous oxide emissions. More nitrogen is then available to plants. This results in higher yields and better quality of the harvested crops.

Stabilization of ammonium nitrogen with the help of Ampliqan®

The addition of Ampliqan® to urea and/or ammonium-containing fertilizers slows down the conversion rate of ammonium to nitrate considerably. The active ingredient, DMPA-K2, keeps the level of ammonium stable for a longer time by inhibiting the action of the specific bacteria. This prevents the nitrate from leaching out of the soil, meaning it is protected and available to plants just when they need it. In addition, heavy rain results in a much higher risk of nitrate leaching, a scenario in which the performance and benefits of Ampliqan® are particularly important.

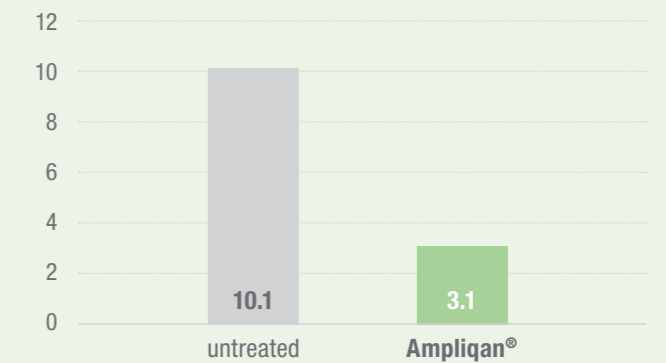
Ampliqan® means benefits for the environment

Alongside economic benefits in the form of higher yields, better quality and labor-related advantages, Ampliqan® also delivers numerous benefits to the environment – such as reduced nitrate leaching and lower greenhouse gas emissions.

Reduced nitrate leaching

Experiments show that DMPA-K2, the active ingredient in Ampliqan®, delays the conversion of ammonium into nitrate. This significantly reduces the risk of nitrate leaching.

NO₃ leaching (mg NO₃-N) 20 days after application of 15 mg N and 2 x 43 mm precipitation (at day 9 and 20)

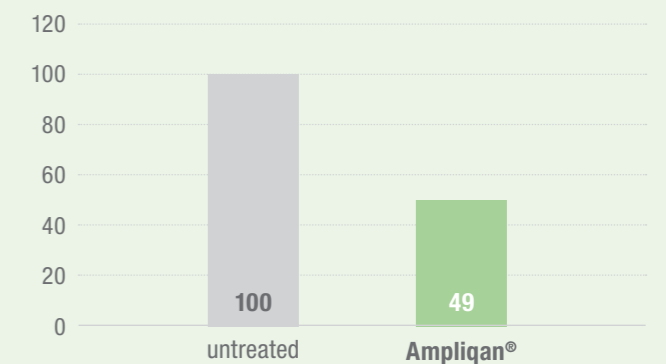


BASF SE Experiments

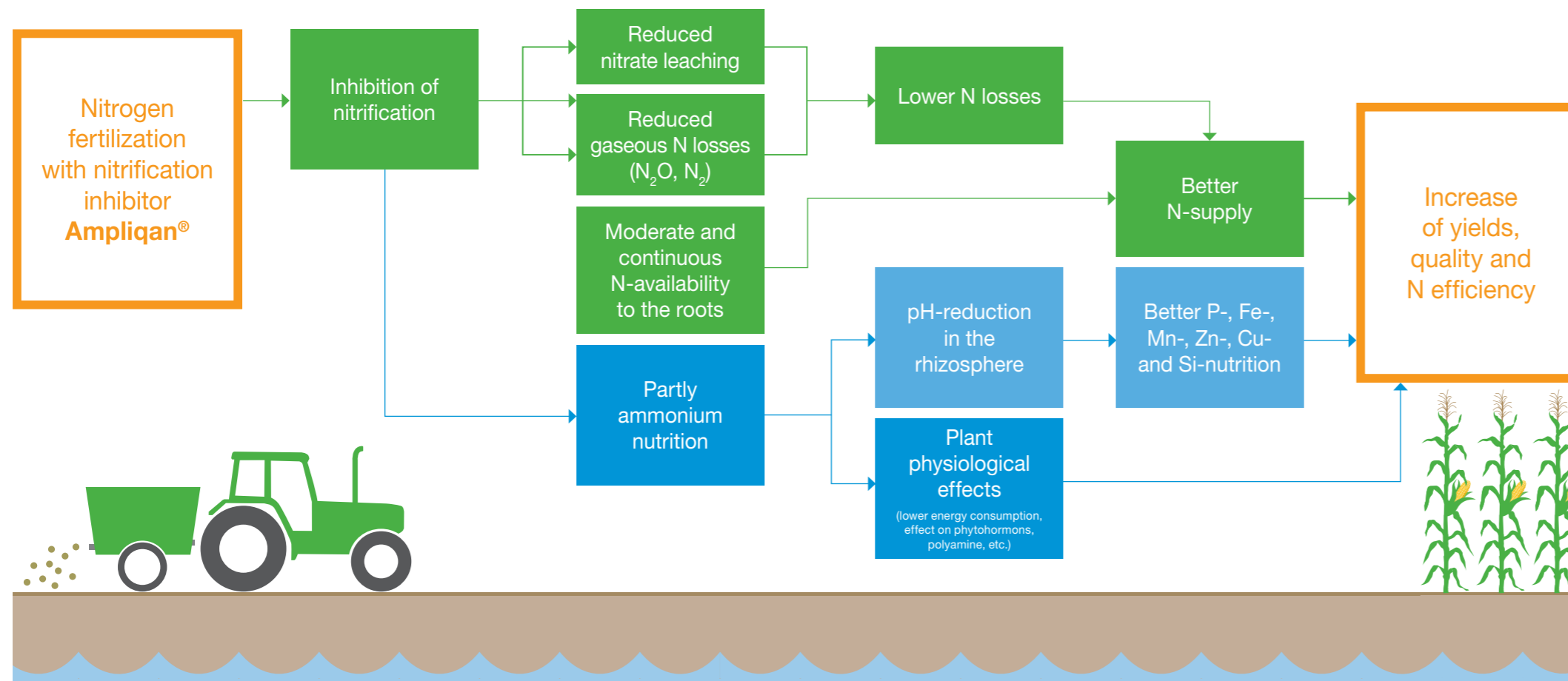
Reduced nitrous oxide emissions

Experiments show that the active ingredient DMPA-K2 effectively reduces N₂O emissions. Ampliqan® reduces N₂O emissions by about 51% compared to untreated fertilizer.

N₂O emissions (%)



MA et al. 2023: Inhibitors mitigate N₂O emissions more effectively than biochar: A global perspective, Science of the Total Environment 859, 160416, n = 19





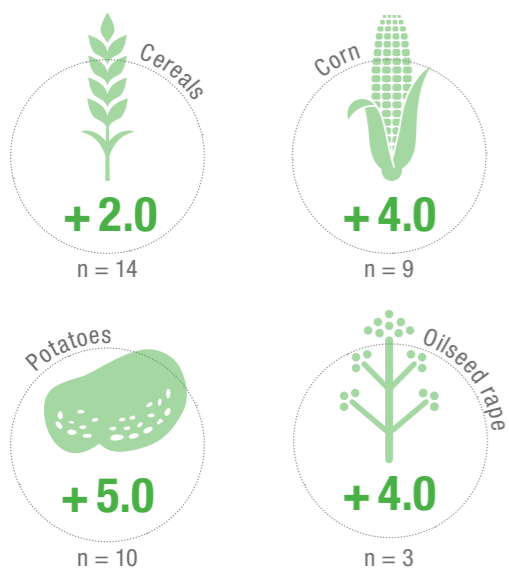
Ampliqan® offers added value for farmers

Ampliqan® can be applied with fertilizers to numerous crops such as corn, cereals, rapeseed, pastures, sugar beets, potatoes and vegetables. The application of fertilizers treated with Ampliqan® reduces nitrogen losses, which can lead to higher crop yields and higher product quality while reducing the environmental impact. With Ampliqan®, farmers can look forward to higher returns on investment and more enhanced operational management.

Higher crop yields

With Ampliqan®, nitrogen remains in the root zone and is available to plants for a longer period of time. The result is a higher crop yield while reducing the environmental impact. Numerous field trials have confirmed the positive effects of Ampliqan® on crop yield.

Yield increase (%) compared to fertilizer without Ampliqan®

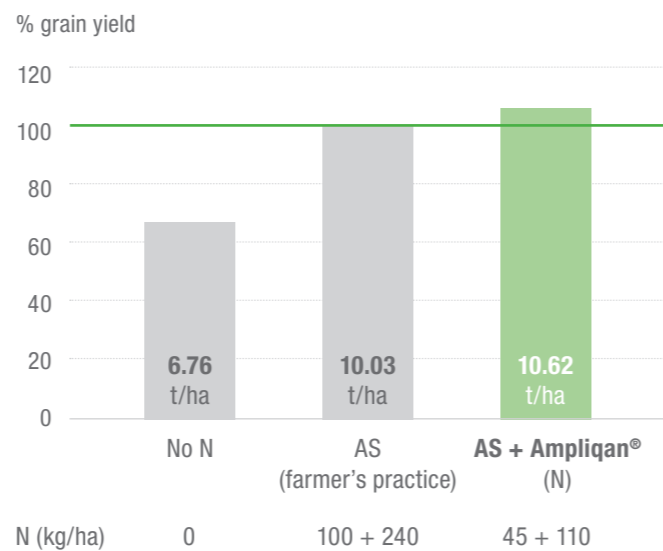


Based on literature in peer-reviewed scientific journals

Nitrogen fertilizer savings

Fertilizer trials on corn showed that the addition of DMPA-K2, the active ingredient in Ampliqan®, can reduce the amount of nitrogen fertilizer otherwise required for crops.

N savings of Ampliqan® in corn (n=2)



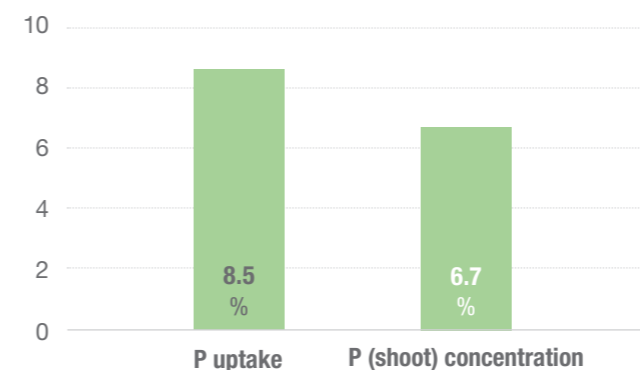
Field experiment, corn, n = 2, 2019, China (Inner Mongolia Agricultural University)

Improved nutrient use efficiency

Due to the reduction of nitrogen losses with Ampliqan®, more nitrogen is available for crops. In addition, partial ammonium nutrition increases plant availability of phosphate and some trace elements. Both actions can increase nutrient use efficiency.

P availability from application of nitrification inhibitors

Increase (%) in P uptake and P (shoot) concentration vs. without nitrification inhibitor

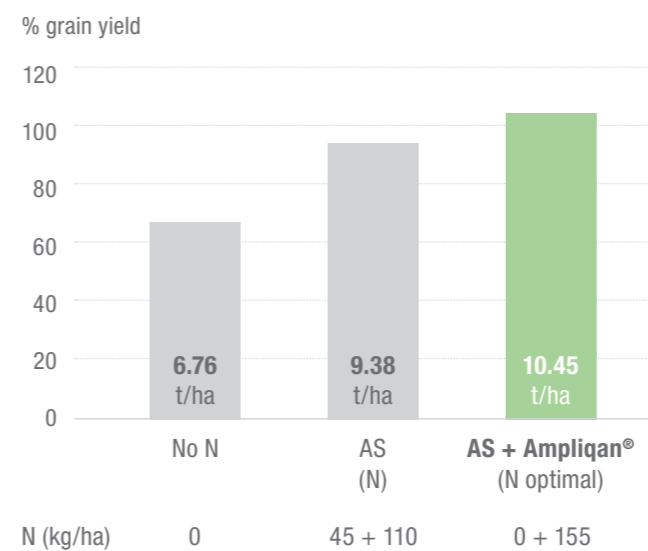


Li et al. 2023: Adding nitrification inhibitors to N fertilisers induces rhizosphere acidification and enhances P acquisition: A meta-analysis, European Journal of Agronomy 151, 126967

Fewer nitrogen applications

With Ampliqan®, the number of N application rounds can be reduced.

Savings of N application rounds with Ampliqan®



Field experiment, corn, n = 2, 2019, China (Inner Mongolia Agricultural University)



Advancing reliable climate-smart agricultural solutions

Climate-smart agriculture is an approach that aims to enhance food security and farmer incomes while building resilience to climate change and reducing greenhouse gas emissions. To help farmers take this approach, BASF has committed to a clear and measurable agricultural emissions target: a 30% reduction in greenhouse gas (CO₂, N₂O, and CH₄) emissions per ton of crop produced by 2030 in wheat, soy, rice, canola and corn compared with standard farming approaches.

To achieve this climate-smart agriculture target, it is crucial to understand the right combination of technologies and practices that bring greater carbon efficiency and resilience to farmers across different agricultural regions.

BASF's Global Carbon Field Trial Program identified nitrogen stabilizers as a key driver toward this target, namely due to effectively limiting emissions associated with fertilizer application.



Calculate your CO₂ emissions and learn how they can be reduced with fertilizers treated with BASF nitrogen stabilizers versus untreated fertilizer

agriculture.basf.com/nitrogen-use-efficiency



Warning: H319 causes serious eye irritation.

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