

HELPING FARMERS REDUCE  
NITRATE LEVELS, MAINTAIN  
STOCKING RATES & PRESERVE  
WATER QUALITY



PSI<sup>®</sup> 362

Precision Technology



# PSI® 362 PRECISION TECHNOLOGY

## WHAT IS THE CHALLENGE?

Nitrogen (N) is the most important macronutrient used in agricultural systems to enhance crop yields. Excessive nitrogen use in farming not only increases costs but also leads to environmental pollution. It is critical to address this issue while still maintaining & maximising crop yields to feed the growing global population.

## WHAT IS PSI®362?

PSI® 362 Precision Technology is a precision engineered *Ascophyllum nodosum* based biostimulant that stimulates both nitrogen (N) uptake and assimilation mechanisms in the plant.

PSI® 362 helps crops utilise nitrogen more effectively, reducing the need for excessive nitrogen fertilisers without compromising yields. This allows farmers to optimise yields while lowering their costs and minimising the environmental impact of farming.

PSI® 362 helps farmers optimise the yield of their grass, wheat, barley, and other crops. This allows for a reduction of up to 25% of nitrogen (N) use without any yield penalty or changes in farmer practice.

## THE BENEFITS

- **Reduce N without compromise**  
Reduction of N by 25% without reduction in yields.
- **More efficient use of applied N**  
Less free N to negatively impact the environment.
- **Maintain stocking rates**  
Derogation farmers can maintain yields & reduce N to specified levels.
- **Preserve water quality**  
Reduction in leaching & runoff reducing the risk of water pollution.
- **Seamless integration on farm**  
Expertly coated onto NPK fertiliser granules.

## PSI® PRECISION TECHNOLOGY

Plant Signal Induction (PSI®) Precision Technology finetunes the bioactivity of biostimulant extracts to create and guide the plants natural response system to target well defined responses in the plant. Through precision biostimulation, plant signalling biomolecules are engineered to target specific crop issues and growing obstacles that farmers face. PSI®362 Precision Technology helps crops take up and utilise nitrogen more effectively.

Brandon Bioscience understands what makes a high performing biostimulant. Our Plant Signal Induction (PSI®) platform means that we validate PSI®362 chemically, biologically and functionally to understand not only what it is but what it does and how it does it.



## MODE OF ACTION



Promotes plant growth & influences nitrogen dynamics by accelerating nitrogen utilisation



Modulates key genes determining N uptake and assimilation



Promotes rapid biomass increase and nitrate uptake

## CO-APPLIED FOR EFFICIENCY

PSI<sup>®</sup>362 is co-applied with NPK fertilisers. It is expertly coated onto NPK fertiliser granules for seamless integration on farm. This provides benefits to fertiliser manufacturers and blenders as it reduces fertiliser input requirements and production costs.

## INDEPENDENTLY VERIFIED

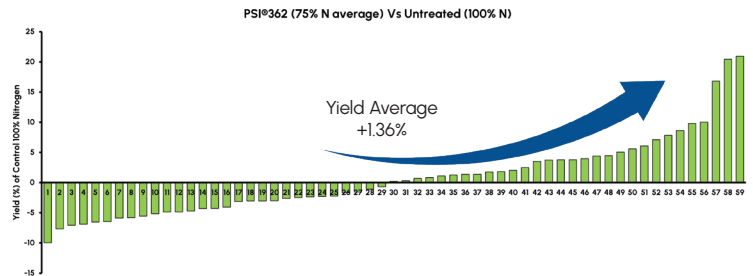
PSI<sup>®</sup>362 has been verified by an independent notifying body to improve nutrient use efficiency of plant nitrogen under EU (FPR) 2019/1009 and carries the CE mark. The markers to prove this claim are:

- Partial Factor Productivity (kg crop/kg N fert)
- Nitrogen uptake efficiency (kg N crop/kg N fert)

This claim is certified for use on broadacre crops when co-applied in the soil with nitrogen containing fertiliser. PSI<sup>®</sup>362 is also approved by the Department of Agriculture, Food & the Marine in Ireland.

## PROVEN IN FIELD

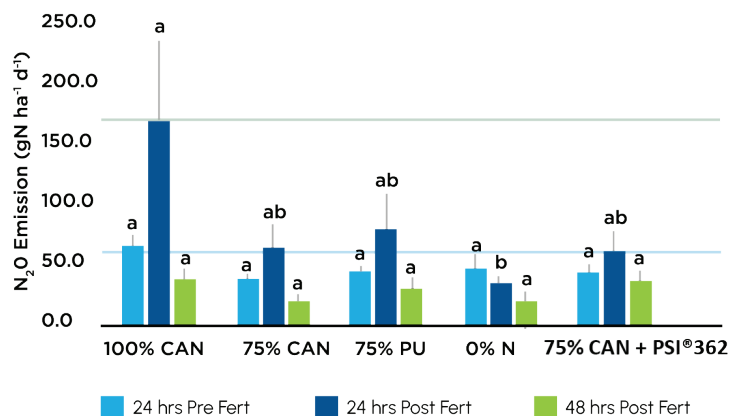
We understand that the most critical factor for our customers is performance. We continue to ensure that we capture and analyse data from every PSI<sup>®</sup>362 trial, allowing us to refine and perfect our products over time. With our proven track record of efficacy and performance, you can trust that our products will deliver the results you need, every time.



PSI<sup>®</sup> 362 has been extensively tested in 59 field trials on cereal and grass crops, with consistent positive results when applied as coating for granular N fertiliser (Goñi et al., 2021; Łangowski et al., 2022; Quille et al., 2022). Across locations, crops, and seasons, PSI<sup>®</sup> 362 treated crops had an average yield increase of 1.36%, despite the 25% N fertiliser reduction. The application of fertilisers coated with PSI<sup>®</sup> 362 significantly improved Nitrogen Use Efficiency (NUE) by 22% to 33% compared to traditional fertilisers at full N rate. This means that farmers can achieve the same or better yield results while using less N fertiliser, resulting in cost savings and reduced environmental impact.

## LOWERING CARBON EMISSIONS

Excessive nitrogen use directly impacts greenhouse gas production. By optimising nitrogen uptake, PSI<sup>®</sup>362 decreases nitrous oxide emissions (N<sub>2</sub>O), a potent greenhouse gas. As PSI<sup>®</sup>362 enhances nitrogen uptake, there is less free nitrogen loss to the environment. This helps growers contribute to climate change efforts by mitigating nitrate leaching and the release of nitrous oxide gas into the atmosphere.



Source: Quille.P et. al., 2023, Published Jan 2024

## VALIDATED IN SCIENTIFIC LITERATURE

There are 4 published peer-reviewed papers on **PSI®362 Precision Technology** across grass, wheat and barley. Working with key institutions & universities ensures our precision biostimulants are backed by credible sources and our customers can trust PSI® Technology backed solutions.



Quille et al. (2024)

*Journal of Applied Phycology*

The role of an *Ascophyllum nodosum* extract in lowering the environmental impact and improving nitrogen use efficiency in pasture systems under a reduced nitrogen regime



Quille et al. (2022)

*Journal of Agronomy*

The effect of an engineered biostimulant derived from *Ascophyllum nodosum* on grass yield under a reduced nitrogen regime in an agronomic setting



Łangowski et al. (2022)

*Plant Physiology and Biochemistry*

Investigation of the direct effect of a precision *Ascophyllum nodosum* biostimulant on nitrogen use efficiency in wheat seedlings



Goñi et al. (2021)

*Frontiers in Plant Science*

Reducing Nitrogen Input in Barley Crops While Maintaining Yields Using an Engineered Biostimulant Derived From *Ascophyllum nodosum* to Enhance Nitrogen Use Efficiency

## ABOUT BRANDON BIOSCIENCE

Brandon Bioscience is a marine biotechnology company based in Kerry, Ireland with further operations on the Hebrides Islands in Scotland. Producing *Ascophyllum nodosum* based biostimulants, Brandon Bioscience is a research-based company bringing products to market with peer-reviewed publications and extensive trial data. By investing 15% of annual turnover into research and development Brandon Bioscience has currently 17 peer-reviewed papers published.

Brandon Bioscience is a community of scientists, farmers, and innovators who share a common goal: to create a more sustainable future for agriculture. Whether you're looking to increase abiotic stress tolerance, nutrient use efficiency, or crop quality, our solutions are designed to meet your specific productivity challenges.

## UNRIVALLED TECHNICAL SUPPORT

With our unrivalled technical support, we help in transferring our agronomic expertise and knowledge to partners so that they can get the most from **PSI®362 Precision Technology**. We employ the right people with the skills and knowledge in the right places to deliver smart & efficient solutions.

Working with strategic partners in key regions, we deliver **PSI®362 Precision Technology** globally. To connect with our team, please do not hesitate to contact us.



**Javier Soto**

Commercial Manager

[jsoto@brandonbioscience.com](mailto:jsoto@brandonbioscience.com)



**Brett Wesley**

Biostimulant Product Manager

[bwesley@brandonbioscience.com](mailto:bwesley@brandonbioscience.com)



**Dr. Oscar Goñi**

Chief Technical Officer

[ogoni@brandonbioscience.com](mailto:ogoni@brandonbioscience.com)