

SUPPORTING GERMINATION,
ESTABLISHMENT
& GROWTH



XTSEED

With PSI® Technology



XTSEED is a biostimulant seed treatment derived from *Ascophyllum nodosum*. XTSEED with PSI® Technology is applied to seeds to enhance germination, promote growth, and increase stress tolerance. It does this by priming the seed with mechanisms such as improved nutrient uptake and the stimulation of plant defence pathways.

THE BEST POSSIBLE START

Seed treatments are an efficient and labour-saving tool to help farmers grow crops to feed a growing population in an ever changing climate. XTSEED gives your crop the best possible start. At the plant's most vulnerable stages of growth, XTSEED provides the mechanisms for optimal health and resilience. XTSEED is compatible with other agricultural products for integrated seed treatment that enhances overall health and productivity.



THE BENEFITS

- Increased germination rates**
 - More rapid germination with higher % of successful germination
- Enhanced root establishment**
 - Speeds up root growth and promotes larger root mass
- Higher survival rate & resilience**
 - Priming for resistance to drought, frost, disease and pests as well as reducing transplant shock
- Promotes plant growth**
 - Enhanced nutrient uptake contributing to seedling emergence, shoot & root length and total biomass
- Increased vigour index for optimal performance**
 - Overall robust plant growth, increased yield, improved stress resistance, better resource utilisation & economic benefits for growers

PSI® TECHNOLOGY

At Brandon Bioscience, we get the best from what nature provides while preserving and concentrating its power. Our approach uniquely balances the chemistry of our raw materials with our production processes and plant biology to achieve unprecedented quality control. The success of our Plant Signal Induction (PSI®) Technology platform is built from 5 interrelated pillars.

- Novel Marine Bioactives**
 - Deep raw material knowledge.
- Proprietary Extraction Processes**
 - Scientifically validated optimized extraction.
- Physicochemical Analysis**
 - Scientifically validated product consistency.
- Bioactivity Analysis**
 - Scientifically validated MOAs in well-known plant models.
- Field Performance**
 - Scientifically validated crop field data.

MODE OF ACTION

Our PSI® platform means that we validate XTSEED chemically, biologically and functionally to understand what it is, what it does and how it does it:



XTSEED coating improves germination rate and seedling development markers (root and shoot) in different vegetable, fruit and broadacre crop species such as tomato, carrot, grass, lettuce, potato, and barley.



XTSEED coating alleviates salinity stress in germinating seeds by enhancing germination rate, shoot and root weight and overall seedling survival.



XTSEED coating in soybean seeds before sowing is characterized by a significant effect on crop yield markers. This application mode is characterized by a minimal initial intervention in the grower program, providing long-term productivity benefits at harvest stage

EFFECT OF SEED COATING ON PLANT DEVELOPMENT IN DIFFERENT CROP SPECIES

Different research studies have shown the positive effects of coating seeds with *Ascophyllum nodosum* extracts (ANEs) in different vegetable, fruit and broadacre crop species (Sivritepe et al., 2008; Carvalho et al., 2013; Saeger et al., 2019; Anjos Neto et al., 2020; Silva et al., 2021). These benefits are related to an improved germination rate, higher shoot and root growth and abiotic stress tolerance. However, the response of seed plants by the priming by ANEs will vary significantly with the extract used, the coating application mode, the crop and variety, and growth conditions during the assessment. To assess the effect of XTSEED on germination rate and plant development parameters on controlled conditions, we have coated seeds of different crop species with a solution of our biostimulant.

Obtained results indicate the strong stimulating effect of XTSEED coating (2.5 mL/kg seed) on germination rate and plant development markers.

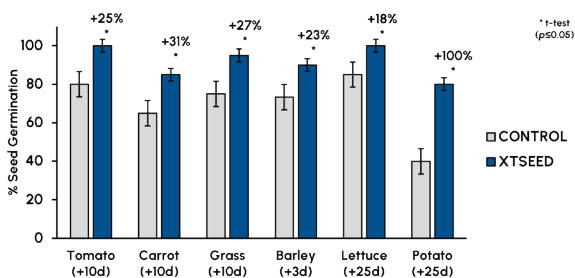
SEED COATING PROTOCOL

Crops: Tomato, Carrot, Grass, Lettuce, Potato, Barley

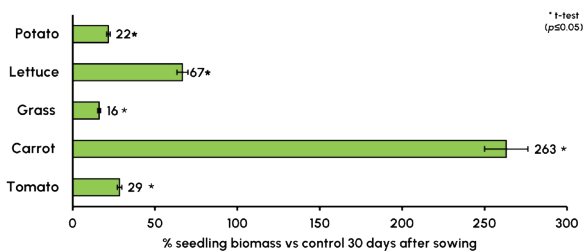
Protocol: Surface sterilized seeds of different crops were soaked for 5 h in XTSEED solution 1:40 v/v (equivalent bioactives to 2.5 mL/kg seed), while water was included as the control. Then, the seeds were incubated at 25 °C with a 16/8 h light and dark regime for 30 days.

Parameters assessed: Seed germination % recorded 3, 10 and 25 days after sowing (depending on the crop); seedling biomass 30 days after sowing in all crops except barley.

GERMINATION RATE

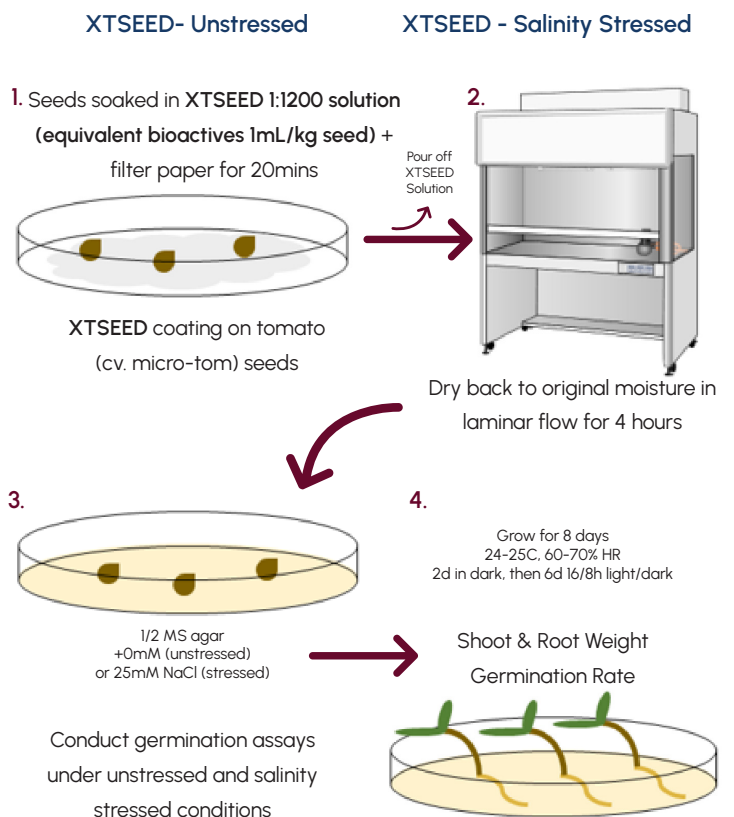
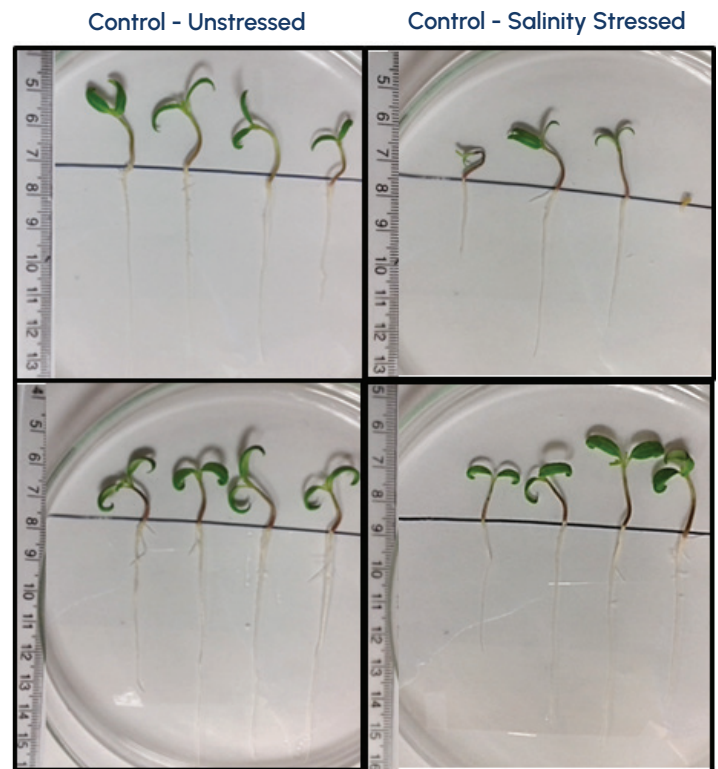


SEEDLING BIOMASS



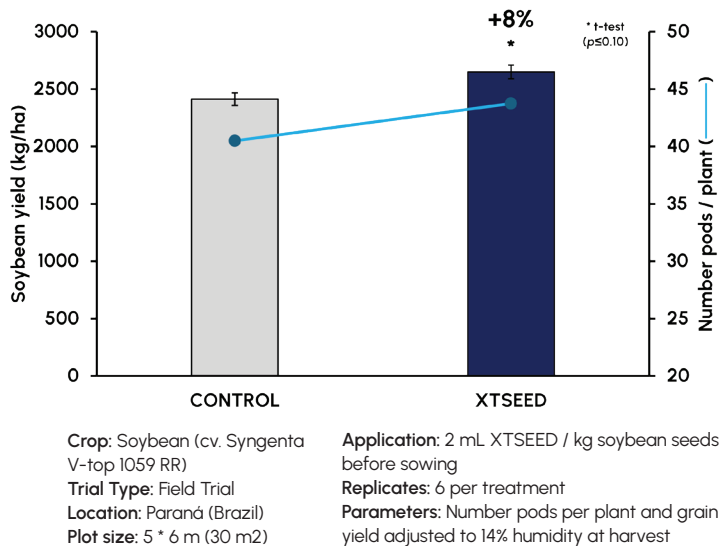
EFFECT OF SEED COATING ON TOMATO DEVELOPMENT UNDER SALINITY STRESS

Seed germination and seedling growth stages are particularly vulnerable to salinity stress. The effect of salinity on seeds can not only decrease their germination rate, but also extend the time required to complete this process (Cuartero and Fernández-Muñoz, 1998; Ibrahim, 2016). XTSEED coating on tomato seeds (1 mL/kg seed) showed a remarkable positive effect on germination rate, seedling viability and shoot and root weight under unstressed and salinity stressed conditions.




INCREASING CROP PRODUCTIVITY IN FIELD CONDITIONS: SOYBEAN

Soybean is a legume crop of great economic importance and major source of income in the agricultural exports of countries like the US, Brazil and Argentina. The requirement to increase soybean productivity has led many producers to seek alternatives and one of them is the use of plant biostimulants. XTSEED applied as seed coating before sowing with the aid of a mixer of seeds (2 mL/kg seed) significantly increased the soybean yield in relation to the control (+8%) through a higher number of harvested pods per plant (+10%) in a field trial in



TAILORED TREATMENT

By collaborating with you to understand your unique process, we can identify the most effective seed treatment to meet your specific needs that optimises an integrated seed treatment for each crop.

Method of Application	Dosage (mls/kg)
 Seed Treatment	1-3

SUITABLE FOR ORGANIC FARMING



Control by ECOCERT
F-32600



Product authorized in organic farming in accordance with the Standard UNE 142500 (CAAE controlled)



Product listed by OMRI for use in organic production

SUITABLE FOR



Broadacre



Vegetables

Working with strategic partners in key regions, we deliver XTSEED globally. To enquire about our distribution partners in a specific country or to connect with our team, please do not hesitate to contact us.



Javier Soto
 Commercial Manager
jsoto@brandonbioscience.com



Cristobal Diaz
 CCO – Americas
cdiaz@brandonbioscience.com



Brett Wesley
 Biostimulant Product Manager
bwesley@brandonbioscience.com