



Bio-semina

THE PRODUCTIVITY STARTS FROM THE SEED



+ safe



+ germination



+ quality



Produce more produce healthy!

Green Path is Agriges' practical response to the challenges of modern agriculture. The focus of the Green Path project is to provide technical means for abundant, environmentally sustainable and food-safe production: produce more, produce healthy. The project involves Agriges working with research institutes, experimental centres, universities, cooperatives and farms to develop products that maximise yields, thereby reducing the use of potentially polluting-chemical substances.



+ safe



+ sustainable



+ production



+ quality



- chemical



- pollution

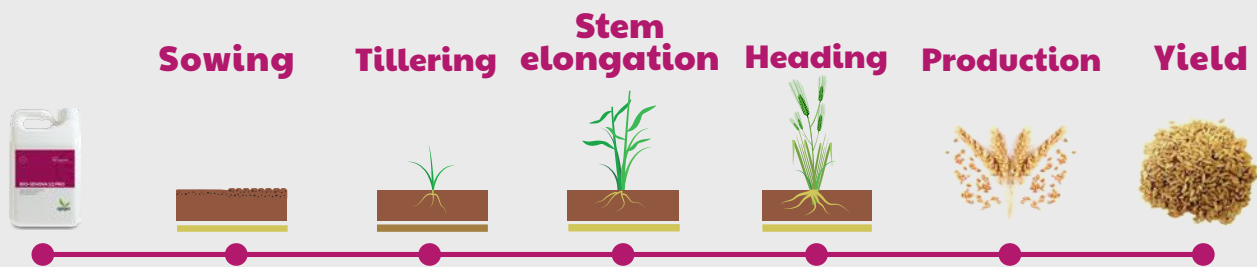
OBJECTIVES

Natural seed treatment with microorganisms that promote microbiological plant growth is now essential for producers in organic farming, but it is also becoming increasingly popular in the integrated farming sector, where the needs of the markets are driving the reduction of chemical products. The natural treatment makes it possible to obtain quality seeds, endowed with greater germinability and resistance to environmental stress. In fact, the products of the BIO-SEMINA line provide mycorrhizae and exclusive microbial strains capable of:



The application of PGPR microorganisms to the seed

Is this a fair investment?



- The productivity of the crop is influenced by several factors, already in the early stages of production: seedbed preparation, number and depth of sowing, **soil organic matter supply and number of roots**.
- Between the end of tillering and the beginning of stem elongation, the ear has already differentiated even if it is not visible; **the plant's production potential has already been determined**. At this point, the plant has reached the maximum number of tillers.
- From **the number of culms per hectare**, it is possible to determine the **quantity of ears per hectare**.
- From the number of caryopses per ear, the **final output per hectare** is determined.

The application of Bio-Semina increases the final production yield due to the **interaction between the selected microbial consortia and the plant** from the seedling stage up to and beyond heading.

The products of the line

The BIO-SEMINA line consists of liquid and powder products, characterised by different concentrations of **mycorrhizae and plant growth-promoting rhizobacteria** that act synergistically on the seed and seedling to promote germination and crop development. **Mycorrhizae** increase the root exploration surface area of the soil, ensuring greater water and nutrient uptake, rhizobacteria fix atmospheric nitrogen and make it available to plants, and increase the solubility of nutrients in the soil, especially phosphorus. Furthermore, **rhizobacteria and fungi** produce phytohormones with a bio-promoting effect on plant metabolism and occupy ecological niches that could be invaded by other microorganisms.

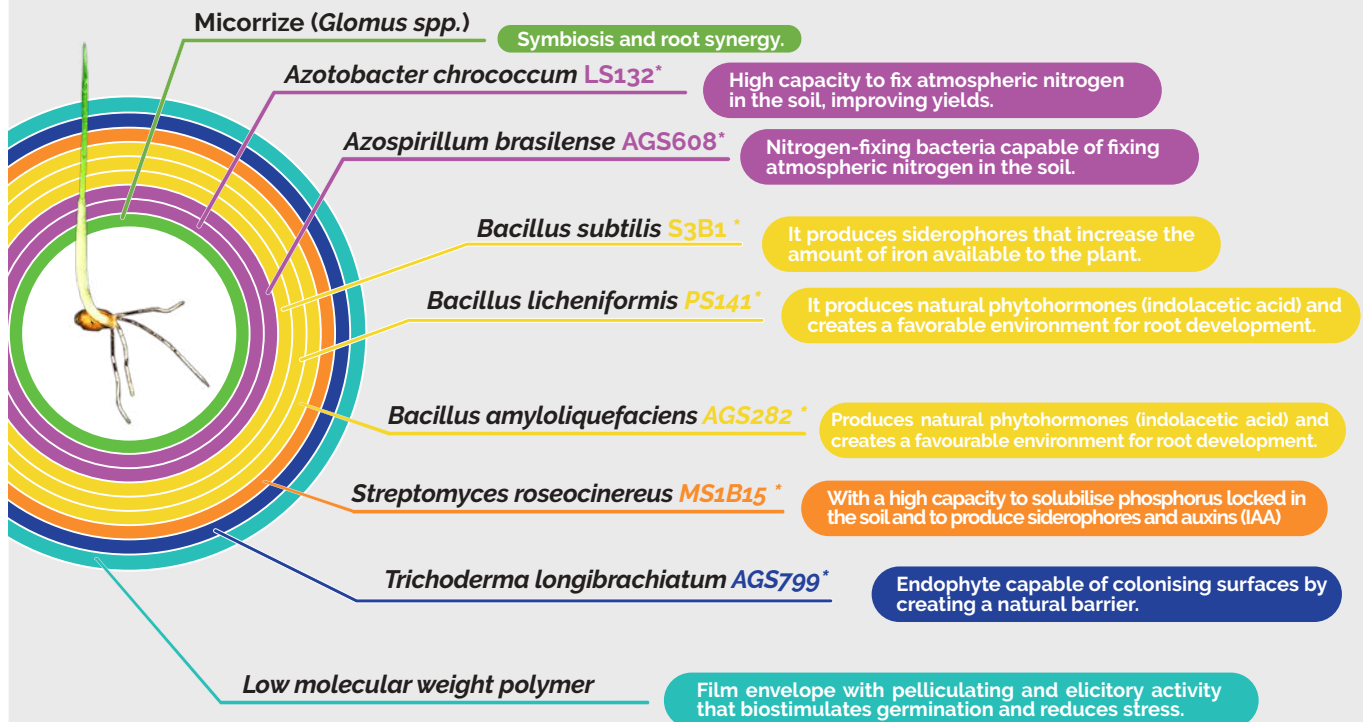


Microorganism	Bio-Semina LQ Plus	Bio-Semina LQ Pro	Bio-Semina PW
Rhizosphere bacteria - <i>Azotobacter chroococcum</i> LS132* - <i>Azospirillum brasilense</i> AGS608* - <i>Bacillus subtilis</i> S3B1* - <i>Bacillus licheniformis</i> PS141* - <i>Bacillus amyloliquefaciens</i> AGS282* - <i>Streptomyces roseocinereus</i> MS1B15*	1,0 x 10 ⁸ CFU/g 1,0 x 10 ⁸ CFU/g 3,3 x 10 ⁷ CFU/g 3,3 x 10 ⁷ CFU/g 3,3 x 10 ⁷ /g -	1,0 x 10 ⁶ CFU/g 1,0 x 10 ⁶ CFU/g 3,3 x 10 ⁵ CFU/g 3,3 x 10 ⁵ CFU/g 3,3 x 10 ⁵ CFU/g -	1,5 x 10 ⁷ CFU/g - 1,3 x 10 ⁸ CFU/g 1,3 x 10 ⁸ CFU/g 1,3 x 10 ⁸ CFU/g 4,0 x 10 ⁸ CFU/g
Mycorrhizae - <i>Glomus</i> spp.	5,0 %	5,0 %	10,0 %
Selection of Fungi - <i>Trichoderma longibrachiatum</i> AGS799*	1,0 x 10 ⁸ CFU/g	1,0 x 10 ⁸ CFU/g	6 x 10 ⁸ CFU/g

*Exclusive strain isolated and deposited by Agriges in an international reference microbial collection.

BIO-SEMINA LINE

Cereal productivity starts from the seed



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EXPERIMENTAL RESULTS



Field Technical Service

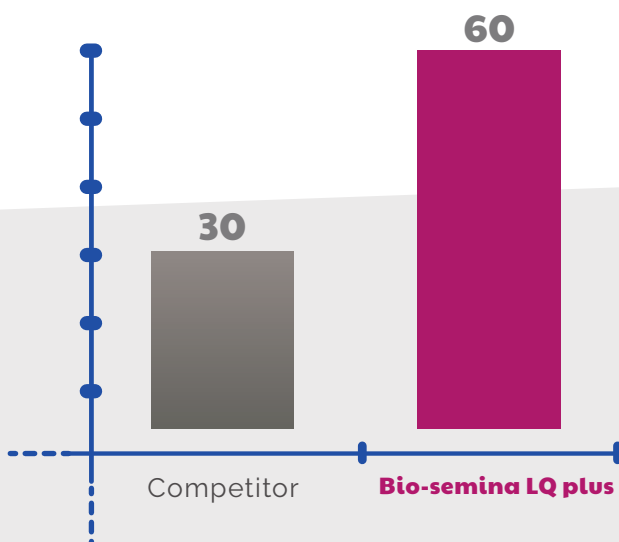


Tests on durum wheat in the laboratory

In collaboration with laboratories of Research and Development Agriges, the FTS (Field Technical Service) group carried out a test to verify the effectiveness of the mycorrhization of the product **Bio-semina LQ Plus** on cereal seeds (durum wheat). The thesis being compared were: a sample treated with a competitor microbiological seed treatment product and a thesis with seeds treated with Bio-semina LQ Plus at a dose of 400 ml/100kg of seeds.

The analysis of the mycorrhization index of the roots of the young plants revealed that, in the thesis treated with **Bio-semina LQ Plus**, it was twice as high as in the thesis treated with the competitor.

MYCORRHIZATION INDEX (%)



MYCORRHIZATION INDEX

The thesis treated with Bio-Semina showed a percentage of mycorrhizae twice as high as that of the competitor.



Competitor
Low mycorrhizal colonisation of roots



Bio-semina LQ plus
High mycorrhizal colonisation of roots

EXPERIMENTAL RESULTS

Tests on barley in Spain

The FTS group conducted, with the technical staff of **Agriges Iberica**, a trial to verify the efficacy of **Bio-semina LQ Plus** as a micro-organic seed treatment. The trials were conducted at Yepes (Toledo, Spain) on barley, variety Comeda, and included a control treated with a microbiological competitor and a thesis with seed treated with **Bio-semina LQ Plus** at doses of 400 ml/100 kg of seed. The following parameters were then analysed: germination index, tillering index, and yield per hectare.

For all parameters examined, the thesis treated with **Bio-seminaLQ Plus** was superior to the competitor.



Competitor



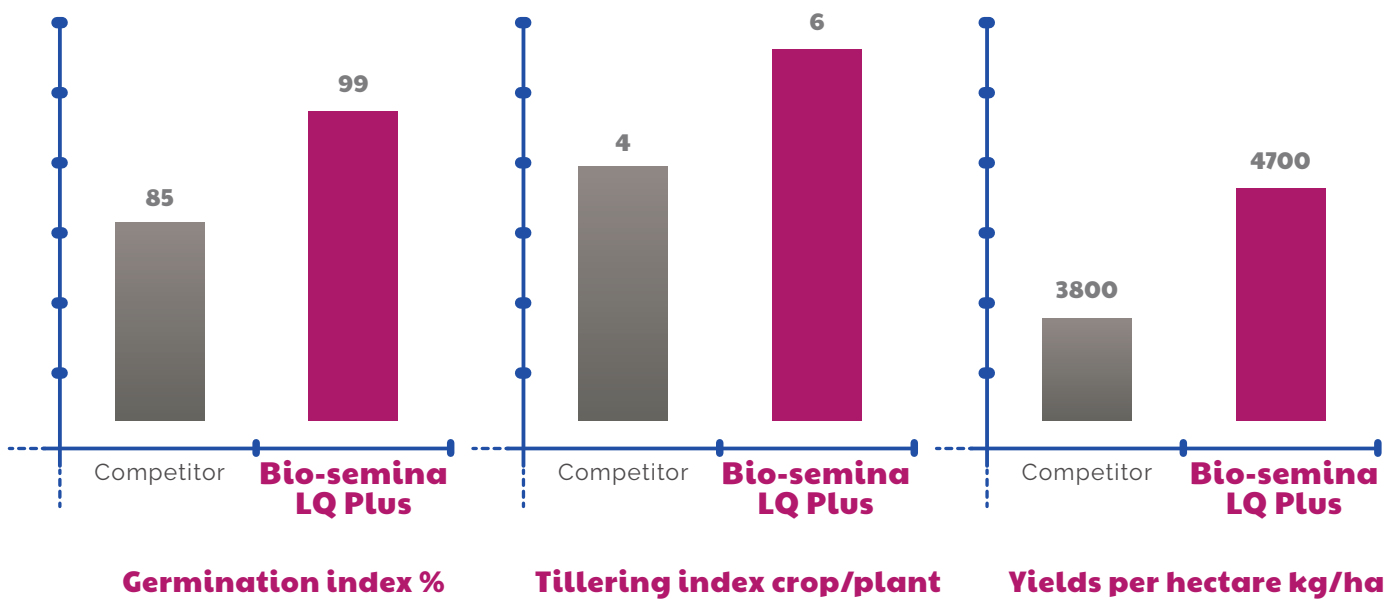
Bio-semina LQ Plus



Competitor



Bio-semina LQ Plus



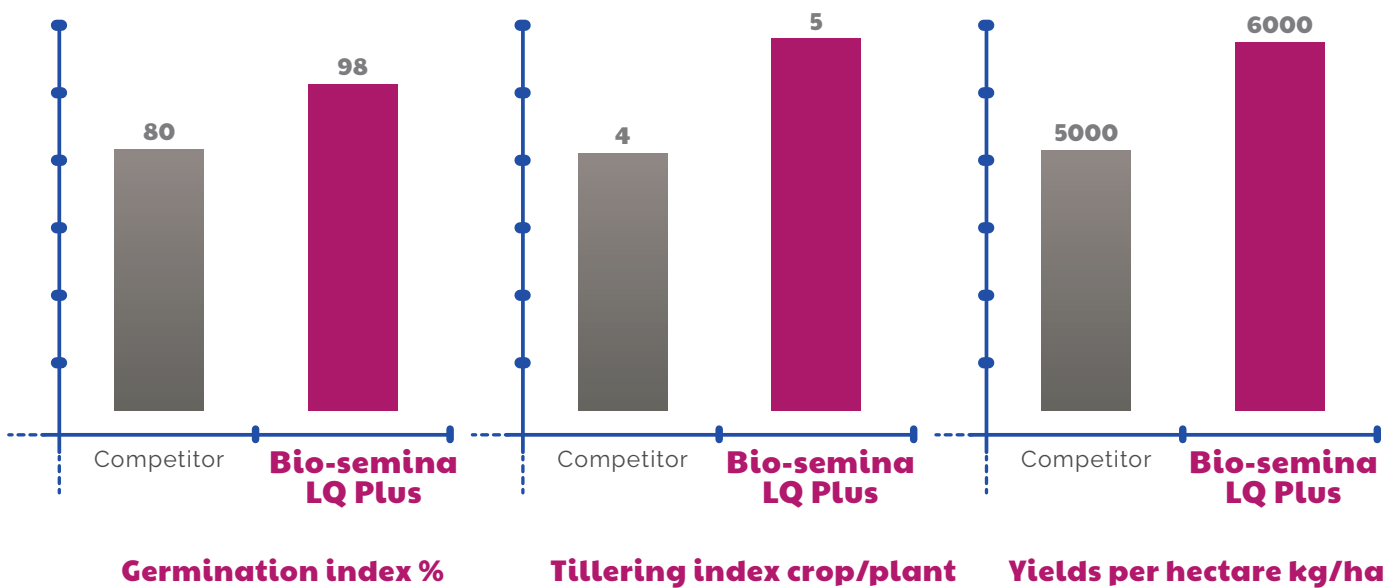
EXPERIMENTAL RESULTS

Tests on durum wheat in Tunisia

Moreover, product **Bio-semina LQ Plus** was tested in several field and laboratory trials in collaboration with the National Agronomic Institute of Tunisia to verify its efficacy as a micr obiological seed tr eatment.

The trials were conducted on durum wheat and included an untreated control and a thesis with seed treated with **Bio-semina LQ Plus** at doses of 4L/1000kg of seed.

The following parameters were then analysed: germination index, tillering index and yield per hectare.



BIO-SEMINA LINEA

FTS test results on durum wheat Tunisia

The application of Bio-semina LQ Plus biostimulated seed germination and resulted in seedlings with more vigorous roots compared to the untreated control and the synthetic competitor.

Non-treated control



Competitor

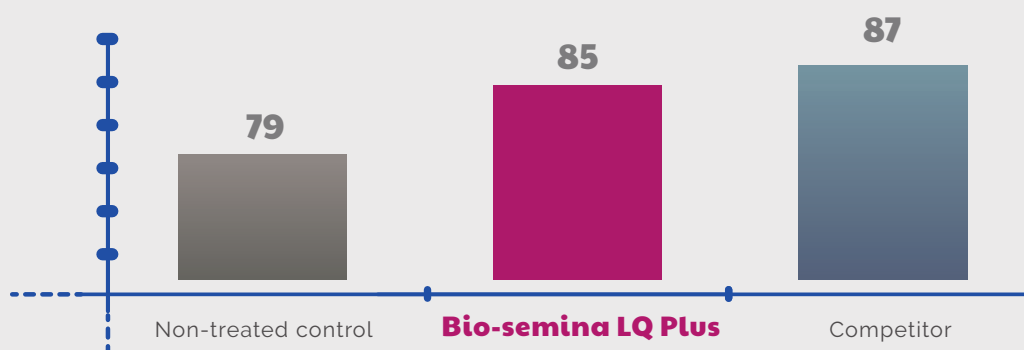


Bio-semina LQ Plus



Coating on agar plates of seeds inoculated with *Fusarium culmorum* (Fc) after 4 days

Germination Index %



DOSES AND METHOD OF USE

Cereal productivity starts from the seed

BIO-SEMINA LQ

Use 400 ml of BIO-SEMINA LQ PLUS/PRO per 100 kg of seed.

Mix the indicated amount of product as is until an even distribution is achieved on the seed. To increase the covering activity of BIO-SEMINA LQ PLUS/PRO to the seed, add approx. 600 ml of water for every 400 ml of formulation per 100 kg of seed.

BIO-SEMINA PW

Mix 500 grams of product per 100 kg of seed to obtain an homogeneous distribution on the seeds.



BIO-SEMINA LINE is ideal for the industrial treatment of cereals



non-treated wheat



wheat treated with
Bio-Semina LQ Plus

WARNINGS

The product contains living microorganisms. Store in unopened packaging in a cool, dry place, away from light and heat sources at a temperature between +8 and +25°C. Avoid the inhalation of powders. Agriges accepts no liability for incorrect storage and/or handling.

Bio-Semina LQ Plus

Formulation

Soluble liquid

Packages

1 - 5 - 20 - 120 - 200 - 1000 l

pH (sol. 6%)

approx. 6,3

Conductivity (sol. 10%)

approx. 1,7 dS/m

Bio-Semina LQ Pro

Formulation

Soluble liquid

Packages

1 - 5 - 20 - 120 - 200 - 1000 l

pH (sol. 6%)

approx. 5,5

Conductivity (sol. 10%)

approx. 1,7 dS/m

Bio-Semina PW

Formulation

Powder

Packages

1 - 5 - 15 kg

pH (sol. 6%)

approx. 7,5

Conductivity (sol. 10%)

-

 Allowed in Organic Farming



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