Sporos®

Geolife® technology

Cereals, Legumes, Beet and Sugar Cane, Aromatic and Medicinal Plants

SWISS MADE

Bioma®

Bioma®

A Swiss company with more than 30 years of international presence.

BIOMA is a company active in the production and marketing of "Chemical free" and "GMO free" solutions for the food industry, oenology, agriculture, environmental bioremediation, zootechnics and animal and human well-being.

Our products optimize all biological processes through indigenous microbiology and make it possible to reach an optimal balance in the targeted biomass. We seek to minimize the environmental impact within each structure.

The purpose of BIOMA solutions is to optimize production while guaranteeing economic sustainability.

GMO-free

Chemical-free

Risk-free

Geolife® technology

An innovative manufacturing and patented process.

Geolife® is a technology for the extraction and stabilization of organic compounds allowing the activation of our products. This technology makes our products unique, easy to use and safe for the user, animals and the environment.

Sporos®

Bioactivation program for field crops

The Sporos® program is integrated into each cultivation system, balancing the soil's indigenous microbiology and using the full potential of the plant.

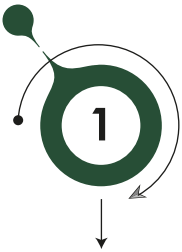
	OBJECTIVES	
On soils	**Making nutrients available**	• Relaunch the nitrification process: correct conversion of nitrogen to its nitric, ammoniacal and organic forms • Solubilizes and mobilizes nutrients into plant-usable organic form • Improves soil fertility year after year
	Activating proper microbiology	• Rapidly catalyze the desired microbiology, naturally available in the soil • Activates the plants bioprotection functions and promotes good soil-plant interactions
	Foster soil structuration	• Restarts the humification–mineralization processes: transformation of organic matter • Improves the colloidal structure and increases the retention of bioavailable nutrients
On the plant	**Restore soil-plant balance**	• Revitalize conductive tissues after a stress • Strengthen the photosynthesis activity • Helps root regeneration • Strengthens the immune system

The Sporos® kit for 1 hectare consists of 2 solutions to be applied on the soil and 1 solution to be applied in foliar form

Soil applications

Sporos® Humificant

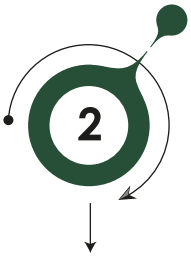
1 solution of
2.25 kg per hectare



It catalyzes the first soil reactions and reawakens beneficial indigenous microorganisms

Sporos® Booster Fertilizer

10 litres per hectare



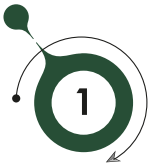
It boosters the development of indigenous microbial communities, it improves soil quality, it increases the bioavailability of nutrients

How to apply?

Water volume: 300 - 600 litres/ha
Max. pression: 5 bar
Application on the floor

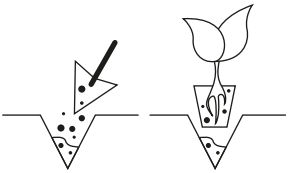
When to apply?

Sporos® Humificant



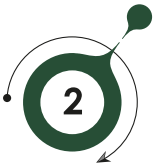
10 days after

sowing or transplanting



5 - 10 days after

Sporos® Booster Fertilizer

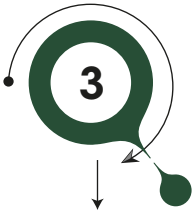


Possibility of integrating in fertilisation or during irrigation

Foliar applications

Fylo®
Leaf Treatment

1 liter per hectare



Particularly suitable for application after cutting.
It enhances photosynthesis and optimizes soil-to-soil and leaf-to-soil lymphatic exchanges.
It helps root regeneration.

One pack is included in Sporos® program. Others can be purchased separately as needed.

How to apply?

Volume of water: 150/200 litres/ha
Foliar application alone or combined with a biological treatment

When to apply?

Contact your technician for more details.

Systematically after growth of 3-4 leaves

→

Fylo® Leaf Treatment

→

It can be bought separately, if needed, and applied **in all phenological phases** in order to **reduce damages produced by stress** like freezing, hailstorm, burns.

Our results:

Organic maize - Occitania, France - 2020

Description

10 ha parcel, with mixed clayey/sandy acid soil.
Sown varieties: 2, Anakin and DKC5065.
Uniform fertilization applied.

Plots with DKC5065 maize:
Sporos® (0,5 ha)
Control (0,5 ha)

Plots with ANAKIN:
Sporos® (0,5 ha)
Control (0,5 ha)

Duration: 17th April 2020 (application of Sporos® Humificant) to 3rd November 2020 (harvest)
Goal: demonstrating Sporos® beneficial effects on the root systems

22nd June: Assessment of root growth and development

Figure 1
Four plant samples: control left (C) and Sporos® right (S)

3rd November: Results at harvest time

Improved stem strenght.
Positive effects on root system are confirmed.

Conventional maize - Nouvelle-Aquitaine, France - 2020

Description

In an area of 2,5 hectares, with black soil (3,5-4% of organic matter), three parcels have been pinpointed. Two parcels of 0,5 ha each have been treated with Sporos®, each one receiving a different fertilizer regime (100%N vs 68%N). The third parcel, 1 ha in size, with 100% N fertilization, has been used as control parcel. Historical soil productivity is 110-140 q/ha with chemical fertilization.

Parcel 1: *0,5 ha, 100% nitrogen fertilization + Sporos®*
Parcel 2: *0,5 ha, 68% nitrogen fertilization + Sporos®*
Parcel 3: *1,0 ha, 100% nitrogen fertilization (control parcel)*

Duration: 8th April 2020 (potassium fertilization) to 3rd November 2020 (harvest)
Goal: evaluating the effects of Sporos® on maize areal productivity with a reduced nitrogen fertilization

13th June: Assessment of root and stem growth

Figure 2
Two control samples. In each one, control is on the left-hand side, and Sporos® is on the right

22nd June: Assessment of roots and aerial parts of the plant

Figure 3
Assessment of aerial parts and roots of the plants. Control is on the left-hand side, and Sporos® on the right

3rd September: Assessment of cobs and grains

	Control (C)			Sporos® (S)			Difference (S-C)
Weight of the aerial part	77 g	79 g	106 g	108 g	141 g	107 g	**+ 31.4 g**
Average	**87.3 g**			**118.7 g**			
Weight of the roots	14 g	17 g	19 g	33 g	16 g	22 g	**+ 7.0 g**
Average	**16.7 g**			**23.7 g**			
Stem diameter	18 mm	18 mm	20 mm	22 mm	22 mm	24 mm	**+ 4 mm**
Average	**19 mm**			**23 mm**			

A 2.6% increase in the total number of grains has been observed as for the two Sporos® parcels, even with a 32% nitrogen reduction in the most demanding stages of maize growth.

20th October: Harvest

	P1 (100%N+Sporos®)	P2 (68%N+Sporos®)	P3 (control 100%N)
Green weight (t)	4,00	3,78	4,12
Moisture (%)	27,9%	27,7%	28,2%
Dry Weight (t)	3,3720	3,187	3,448
Harvested area (ha)	0,2534	0,2394	0,2701
Rdmt dry (q/ha)	**133,07**	**133,1**	**127,7**

In both trials the Sporos® programme resulted in a yield increase of 5,4 q/ha (+4,1%) compared to the control.

The reduction in nitrogen fertilisation (-32% N) during the first year of application of the Sporos® protocol did not lead to any appreciable difference compared to the untreated control.

Organic soy - Occitanie, France - 2020

Description
In an area of 3 hectares, with acidic sandy-clay soil, three adjacent parcels have been pinpointed:

- ***P1:*** 0,5 ha treated with Sporos®
  (Sporos® Humificant sprayed with 150 l/ha)
- ***P2:*** 0,5 ha treated with Sporos®
  (Sporos® Humificant with 300 l/ha)
- ***P3:*** 1,0 ha as control parcel

Duration: 17th April (Sporos® Humificant) to 23rd September (harvest)
Goal: evaluating the effects of Sporos® on soy quality and areal productivity; analyzing the impact on Sporos® effectiveness of halving the volume of water during distribution.

22nd June: Assessment of root growth and development

Figure 4
Control (P3, left) vs. Sporos® (P2, right)

24th September: Harvest

Sporos® has allowed an increase in yield of each treated parcel.

	P1 (Sporos®, 150 l/ha)	P2 (Sporos®, 300 l/ha)	P3 (Control)
Yield (q/ha)	36	38	35
Difference (q/ha)	+ 1 (+2.9%)	+ 3 (+8.6%)	
Proteins (g/100 g)	41.5	41.8	41.6

Plant protein levels have resulted homogeneous in the different modalities. We can therefore conclude that crop yeald increase has not affected the legume protein content.

In order to achieve maximum effectiveness, directions for use (e.g. application with 300 l/ha) should be followed.

Processing and conservation:

Sporos® kit for 1 ha contains:

a) 1 Sporos® Humificant 2,25 kg
b) 1 Sporos® Booster Fertilizer 10 litres
c) 1 Fylo® Leaf Treatment 1 liter

Closed packaging, can be stored for 2 years in a dry and dark room between 10°C and 43°C. Opened packaging, can be stored for 3 months at room temperature and in a dark place (if properly closed and protected from humidity).

Composition:

Sporos® Humificant
Specific purpose product
Mycorrhizal fungi inoculum Mycorrhizae content: 5% of weight, rhizosphere bacteria content: $1x10^{10}$ UFC/g, Trichoderma content: $1x10^{9}$ UFC/g

Sporos® Booster Fertilizer
Fluid yeast extract containing brown algae: organic nitrogen (N) (18.70%), organic carbon (C) of biological origin (28.30%), pH 4.94, organic substance, molecular weight <50 kDa (30%).

Fylo® Leaf Treatment
Fluid yeast extract containing brown algae: organic nitrogen (N) (32.30%), organic carbon (C) of biological origin (41.60%), pH 4.37, organic substance, molecular weight <50 kDa (35%).

Classification and labelling:

Chemicals are classified according to their level of physical, health and environmental hazard. These hazards are indicated by specific labels and safety data sheets (SDS). With the GHS (Globally Harmonized System), hazard statements have been worldwide standardized so that the recipients of the information (production workers, first aiders and consumers) can better understand the hazards of the chemicals used. In the EU, the principles of the GHS are ratified in the EU-1272/2008 (CLP) regulation.

In accordance with this regulation, the Sporos® range does not require classification or labelling according to its physicochemical properties, its effects on the health and safety of the environment and does not require a safety data sheet. The Sporos® range includes only organisms that are naturally present in nature and non-hazardous (WHO Class 1).

Compliance:

All Sporos® products are registered with SIAN (the Italian national agricultural information system) as fertilizers that are suitable for use in organic farming.

- Sporos® Humificant: registration n° 0020535/17
- Sporos® Booster Fertilizer: registration n° 0019838/17
- Fylo® Leaf Treatment: registration n° 009637/17

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I am chemical free