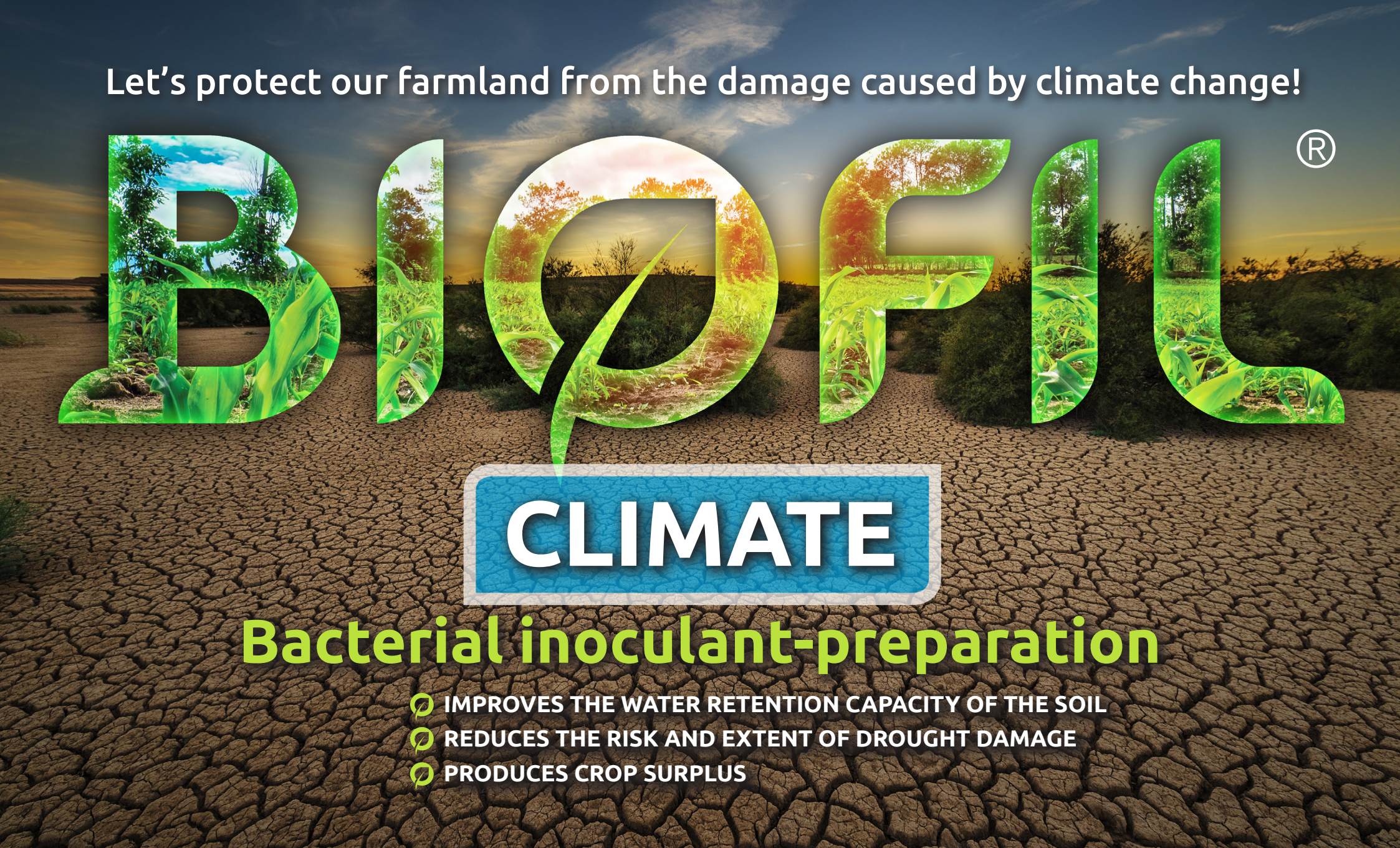

Let’s protect our farmland from the damage caused by climate change!
BIOFIL®
CLIMATE
Bacterial inoculant-preparation
IMPROVES THE WATER RETENTION CAPACITY OF THE SOIL
REDUCES THE RISK AND EXTENT OF DROUGHT DAMAGE
PRODUCES CROP SURPLUS

BIOFIL®

BENEFITS of the Climate product

- water retention capacity of the soil is improved,
- the plant's exposure to drought is reduced, and crop safety is reduced,
- improves degraded soils, prevents dusting and degradation of soils that have not been damaged yet, and a fine-grained soil structure is formed in certain soil types (e.g. sandy soils),
- soil resistance is reduced, making cultivation easier, resulting in less gas consumption,
- easy and flexible to use, also can be used in combination with already well-known and proven BIOFIL products,
- environmentally friendly, can be used in organic farming.

General characteristics of BIOFIL® Climate "A3" preparation and BIOFIL® Extra additive

For sandy soils, sandy loam-like soils, humus-rich sandy soils, or degraded dusty soils. If the soil pH is between 5.0 and 8.0, the product can be used in all arable and horticultural crops, at the time of soil preparation or at latest when sowing. **It stimulates the microbial life of the soil, improves its structure and water balance.**

„A3": Product component containing bacterial strains producing exopoly-saccharide, a mucus-like substance.

Extra Additive - Bacterial Food: A special blend of plant-based carbohydrates, trace elements and vitamins, as well as essential amino acids.

BIOFIL® A3 1–2 l/ha + BIOFIL® EXTRA ADDITIVE 1–2 l/ha = BIOFIL® CLIMATE

IMPROVEMENT OF SOIL STRUCTURE

Exopolysaccharide production → fine-grained soil structure, improved aggregate stability

Increased drought tolerance

The drought tolerance of the plant can increase by up to 2 weeks.

Soil water balance and plant water supply are improved.

There is a high degree of water utilization.

Decrease in soil resistance.

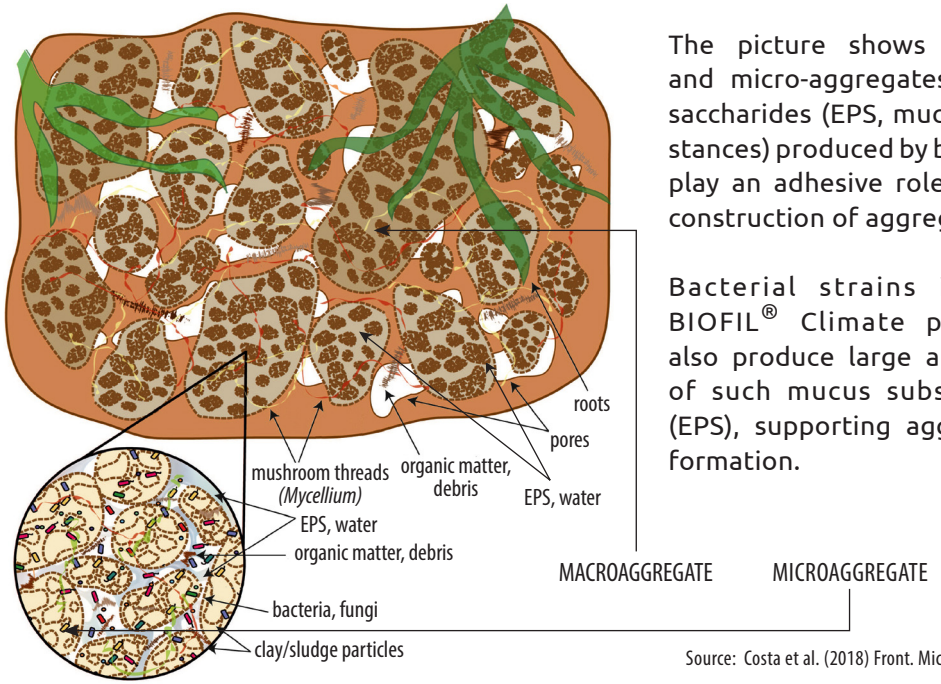
Decreasing diesel consumption.

Other properties of the bacterial species in the preparation

- Nitrogen fixation – supports the supply of nitrogen to the plant.
- Production of plant hormone-like substances – helps the development and growth of roots and shoots.
- Siderophoric effect – prevents the spread of infectious pathogenic fungi in the soil.

Properties of BIOFIL® Extra additive

- A special mixture of stabilized and formulated soil additives, plant-based carbohydrates, trace elements, vitamins and essential amino acids
- Serves as a food for both bacteria in BIOFIL® products and the bacterial community in the soil, promotes biofilm formation
- Increases the effectiveness of microbiological preparations, stimulates microbial soil life, - recommended not only when using BIOFIL® Climate "A3", but also BIOFIL® soil pH-specific (Acidic, Normal, Alkaline) products, such as Soya, Pea and Soil Guard.



Source: Costa et al. (2018) Front. Microbil. 9: 1-14.

The picture shows macro- and micro-aggregates. Polysaccharides (EPS, mucus substances) produced by bacteria play an adhesive role in the construction of aggregates.

Bacterial strains in the BIOFIL® Climate product also produce large amounts of such mucus substances (EPS), supporting aggregate formation.

USAGE:

Regular, annual application of the BIOFIL® Climate product is recommended in order to achieve lasting results!

It is recommended to apply BIOFIL® Climate preparation in an amount of 1–2 l/ha, Extra additive in an amount of 1–2 l/ha. For sandy soils with a humus content below 1.5% at least 2 l/ha Extra additive is the amount to be used. In horticultural crops (vegetables) it is advisable to use an increased amount (2+2 l/ha) of "A3" inoculant and Extra additive.

When applied, the product needs to be mixed with 50–400 l/ha of water, depending on the application equipment and the soil moisture content, then sprayed on the soil and rotated to a depth of 5–10 cm. In case of no-till cultivation or direct sowing in the furrow, 30–40 l of water/ha may be sufficient to dilute the product. Continuous mixing and circulation of the product in the container must be ensured throughout the procedure.

The use of the product is not recommended for strongly bound - clay loam, clay or saline clay soils!

Do not mix with bactericidal and fungicidal preparations!

Source: Julian Zemke (distributed via imaggeo.egu.eu)

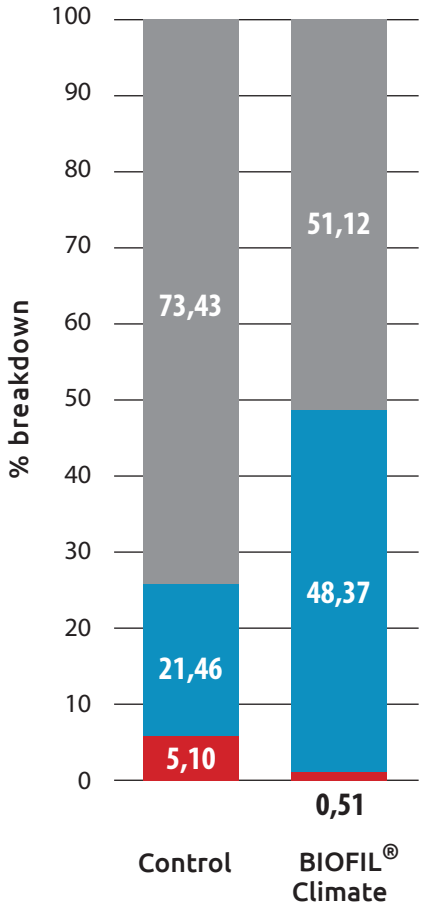
Investigation of soil structure change

In a 2017 field experiment the ratio of topsoil aggregate: dust, crumb, lump fractions and their change under the effect of BIOFIL® Climate "A3" (1 l/ha) + BIOFIL® Extra additive (1 l/ha) was studied on chernozem soil. .

One treatment was enough to more than double the proportion of crumb fractions as a result of which the amount of water stored in the soil increased by a similar proportion.

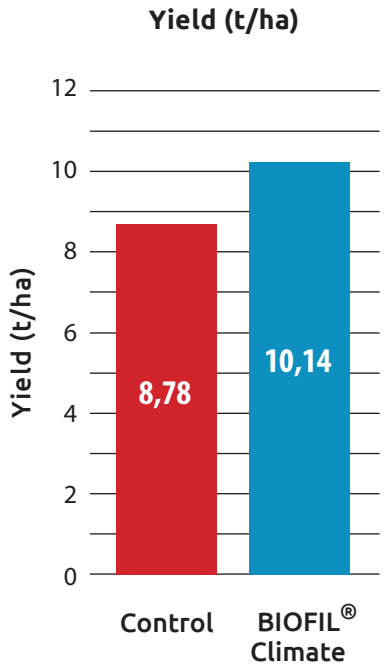
crumb fraction | dust fraction | lump fraction

Topsoil aggregate: change in proportion of dust, crumbs, lump fractions as a result of treatment



BIOFIL® KLÍMA yield-increasing effect

Small-scale maize trial in degraded, deeply carbonated chernozem meadow soil.
In 2019, we set up an independent small-plot trial to measure the yield-increasing effect of BIOFIL® Climate "A3" (treatment: BIOFIL® Climate „A3" 1 l/ha + BIOFIL® Extra additive 1 l/ha) at the experimental site of Szent István University, Faculty of Agricultural and Economic Sciences, Institute of Agricultural Sciences and Rural Development in Szarvas. The figure clearly shows that, as a result of the treatment, the yield increased by 1.36 t/ha, or **15 % on average,** in the four replicates compared to the control!



The following additional studies were performed within the trial:

- **Measurement of soil resistance by penetrometer:** the degree of soil resistance in the treated plots was lower in the cultivated layer compared to the control plots.
- **Development of soil moisture content:** we obtained more favourable soil moisture values in the treatment plots than in the control plot.
- **Measurement of water permeability:** the water permeability of the treated plots (BIOFIL® Climate "A3" + BIOFIL® Extra additive) was improved.

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