

RhizoVital® C5

The next generation bacterial inoculant – ensuring that your plants grow strong and healthy



We are pleased and proud to present you our next generation bacterial inoculant RhizoVital C5. RhizoVital C5 contains the soil-bacteria *Bacillus atrophaeus* strain ABi05 and will be available in ready to use liquid and dry formulations. RhizoVital C5 is the continuation of the well-established and widely used *Bacillus amyloliquefaciens* product RhizoVital 42. Please find here after key-information on RhizoVital C5 in a question and answer form.

What is the reason for change and the introduction of RhizoVital C5?

There are many scientific papers describing the ability of *Bacillus amyloliquefaciens* to produce metabolites with antibiotic properties under laboratory conditions. In some countries, fungicides for foliar application based on *Bacillus amyloliquefaciens* are already on the market. Current discussions on the new EU fertilizer regulation (EU Reg 2003/2003) go towards a more stringent differentiation between pesticidal and biostimulant use of microbials. If a microbial is known to have pesticidal properties, it can't be registered as fertilizer (including biostimulants). As the discussions are on species and not only on strain level, it is very probable that on a short- to mid-term perspective *Bacillus amyloliquefaciens* will be restricted to pesticidal use only.

To ensure that farmers can continue building on their positive experiences made with RhizoVital 42, we have developed in partnership with ABiTEP the next generation bacterial inoculant RhizoVital C5, containing *Bacillus atrophaeus* strain ABi05.

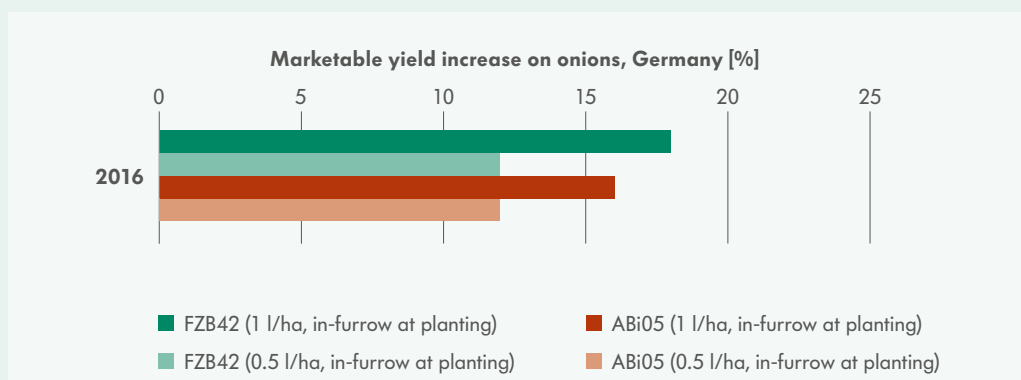
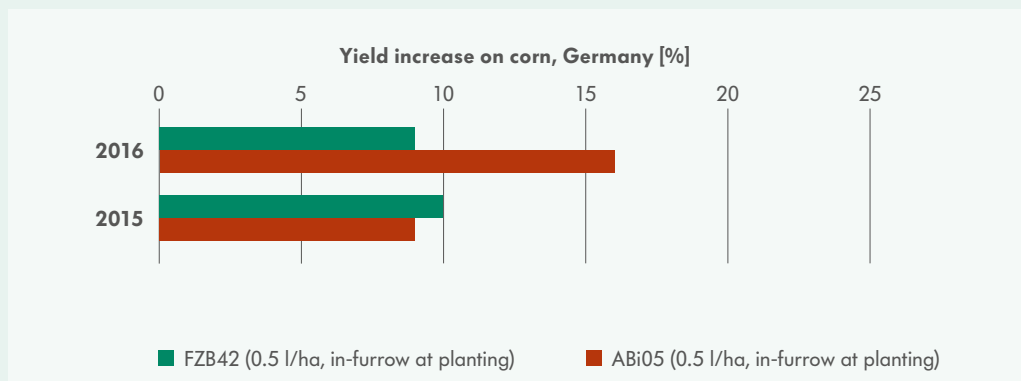
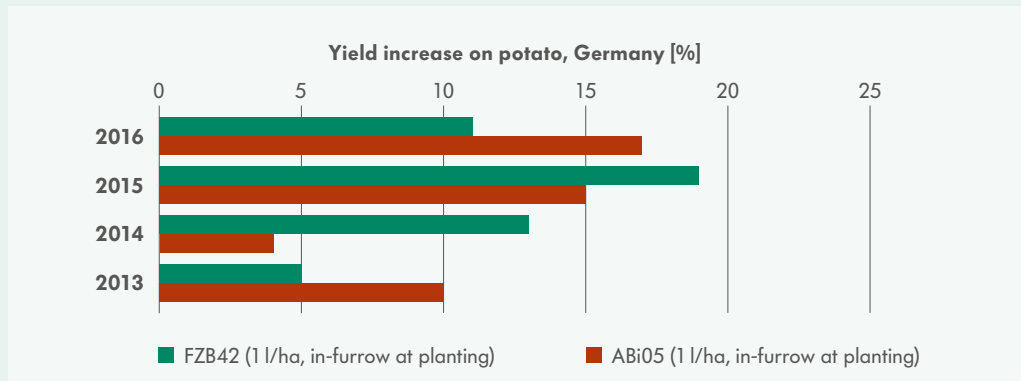
What is the difference between RhizoVital 42 and RhizoVital C5?

Main difference is the selected microbial species. While developing RhizoVital C5, we have ensured to maintain the many valuable properties customers appreciate from RhizoVital 42.

	RhizoVital 42	RhizoVital C5
Bacteria species	<i>Bacillus amyloliquefaciens</i>	<i>Bacillus atrophaeus</i>
Strain	FZB42	ABi05
Temperature range for spore germination	12 – 45 °C	8 – 42 °C
Formulations	<ul style="list-style-type: none">• SC (liquid) 2.5 × 10¹⁰ cfu/ml• TB (talcum based dry powder) 1 × 10⁹ cfu/g• SB (dextrose based dry powder) 1 × 10⁹ cfu/g• WG (starch based wettable granulate) 5 × 10¹⁰ cfu/g	
Shelf-life and storage condition	Store the product in cool and dry environment, protected from sunlight. Avoid temperatures over 30 °C. At room temperature, the product can be stored for a period of at least 2 years.	
Compatibility and mixability	The products contain bacterial endospores, the form for long-term survival under harsh conditions (resistant to UV, desiccation, high temperature, freezing and chemical disinfectants). This allows mixing with most other plant protection (insecticides, fungicides and herbicides) and plant nutrition products. Avoid mixture with copper products, disinfectants and products with antibiotic properties. Do not store tank mixes for more than 8 hours, and ensure the pH remains between 5 and 8.5.	

How does RhizoVital C5 perform?

Field trials with RhizoVital C5 over several years on different crops have shown good results. Yields increased on a comparable level to RhizoVital 42. Key advantage of *Bacillus atropheus* strain ABi05 is its ability to germinate, colonize and already act at temperatures of 8 °C. This may be of special interest for crops sown in early spring or late autumn, when soil temperatures are low.
























What are the application recommendations for RhizoVital C5?






In the product development, we made sure that farmers can continue using the experience they have gained and built up in the past by using RhizoVital 42. RhizoVital C5 can be handled and used exactly the same way as RhizoVital 42. This applies in terms of possible methods of application as well as to the recommended application rates. RhizoVital C5 should be an integral part of any future oriented production strategy.

Method of application

- Seed treatment or in-furrow spray
- Watering or spraying on soil surface
- Injection into fertigation- or hydroponic systems
- In combination with pesticides or fertilisers
- Root dipping
- Mixing into soil and substrates

Crop	Application rate*	Application method
Potato	0.5–1 l/ha or 0.1 l/500 kg tubers	 / 
Tomato, cucumber, others	1–2 l/ha	2 x  / 
Lettuce	0.5 l/ha	 / 
Carrots, turnip, cabbage, others	0.5 l/ha	 + 
Strawberry	1 l/ha	2 x  / 
Cereals (maize, grains, rice)	0.2 l/100 kg seeds	
Seeds (ornamentals, vegetables etc.)	0.2–0.5 l/100 kg seeds	
Herbs	1 l/ha	 / 
Bulbs	1–2 l/ha	 / 
Ornamentals	1–2 l/ha	2 x  / 
Turf	1 l/ha	2 x  / 
In hydroponics	1–2 l/ha	

Depending on the crop, re-application is recommended after 4 to 6 weeks

-  seed treatment
-  dipping
-  watering
-  spraying
-  Hydroponics

* All indications given for liquid formulation

What is the time-line of market introduction?

In 2017 we offer you the possibility to test RhizoVital C5. We are happy to provide you with sample material of all possible formulations upon request, please don't hesitate to contact us. As of 2018 RhizoVital C5 is commercially available and our recommendation is to gradually get your customers used to RhizoVital C5. In order to allow you this gradual switch, we continue offering RhizoVital 42 as biostimulant until the 2020 season (assuming EU Reg 2003/2003 coming into force by 2018/2019 with some period to liquidate stock). There is always the risk that *Bacillus amyloliquefaciens* will be restricted to pesticidal use by European and/or national legislation even before 2020. Therefore we are convinced that it is our common interest to establish RhizoVital C5 as the natural inoculant for any future oriented production strategy already by 2019.

And what happens to RhizoVital 42?

In parallel to the market introduction of RhizoVital C5 we are starting an Annex I registration of *Bacillus amyloliquefaciens* strain FZB42. Current planning foresees an Annex I approval and subsequent national registrations in the course of the next 3–5 years as preventative biofungicide for soil application in selected crop/disease-combinations. Current focus targets Rhizoctonia on potato, lettuce and cucumber. We appreciate your feedback and suggestions for further crop/disease-combinations of relevant market interest. We are going to keep you up-dated on the progress of this project.

In case of any further question or need of additional information, we are glad to assist you.