

bioagri

CERALL

Cerall is a seed treatment product against fungal pathogens in wheat. All other use is unauthorized. Cerall can be used in organic farming. For professional treatment at closed industrial facility. All other use is prohibited unless specifically permitted.

- ◆ EUH401: To avoid risks to human health and the environment, comply with the instructions for use.
- ◆ SB012: Micro-organisms may have the potential to provoke sensitizing reactions.
- ◆ P284 wear respiratory protection.
- ◆ P280: Wear protective gloves.
- ◆ P302+352 In case of skin contact wash affected skin areas thoroughly with soap and water.

Fungicide:	Reg. nr: 4746
Content:	Flowable suspension for seed treatment (FS). 1000 L.
Aktive ingredient:	<i>Pseudomonas chlororaphis</i> , MA 342. 20 weight-%.
Batch nr:	See separate marking.
Use before:	See separate marking.
Empty container:	Dispose of this material and its container to hazardous or special waste collection point. Empty 1000 l packages shall be returned.
Storage:	+4°C till +8°C.

Producer and approval holder

Lantmännen BioAgri AB
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SWEDEN
Phone: + 46 18 67 49 00
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1. Product information

Preparation: Fungicide (FU), seed treatment product

Active ingredient: *Pseudomonas chlororaphis* MA 342. 20% w/w
Formulation: Flowable suspension for seed treatment (FS).
Packages: 1000 L
Storage: +4°C to 8°C

2. Conditions for use

Marking of packages with treated seeds:

Seeds treated with CERALL reg nr 4746

Active ingredient: *Pseudomonas chlororaphis* MA 342. 20 weight-%.

Dispose of this material and its container to hazardous or special waste collection point.

Empty packages shall be returned. Treated seeds shall not be used as food or feed.

- ◆ EUH401: To avoid risks to human health and the environment, comply with the instructions for use.
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3. Restrictions

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4. Instructions for use

Mode of action

Cerall is a biological seed treatment product. The active ingredient *Pseudomonas chlororaphis* compete with the plant pathogens for space and nutrients on the seeds and induce a resistance reaction in the plant. The bacteria also produce small amounts of antifungal substances. The bacterial cells are entering a resting stage on the seeds after treatment and are activated when seed germinates. Treated seeds can be stored with maintained effect against diseases for one year.

Resistance

As the mode of action is based on several mechanisms the risk for resistance is very low. No special actions have to be taken into consideration.

Optimal treatment conditions

Seed treatment shall be done in equipment that allows an even distribution of the product on the seed surface. The seeds shall be of good quality with an even size distribution and free from other materials.

Doses

Crops: wheat
Dose: 1 l/100 kg seed (= 10 L/ ton)

Up to 2 times over exposure has not proved to damage the crop. Make sure that a lower dose than mentioned above is not applied.

Efficacy

Cerall has good effect on these seed-borne diseases:

- Common bunt (*Tilletia caries*)
- Brown Spot Disease (*Stagonospora / Septoria nodorum*)
- *Fusarium spp / Microdochium nivale*

The effect on infection transmitted through the soil is limited. In areas with a risk of soil-borne bunt Cerall is recommended only for treatment of resistant wheat varieties such as SW Stava.

Should not be used on seed with spores of *Tilletia contra versa*.

Should not be used on seeds with more than 1000 spores / g seeds.

Pre-tests of seed

A germination test of Cerall-treated seeds is recommended when the germination of untreated seeds is below 85% or the content of *Fusarium* and *Septoria* exceed 20%. The aim is to examine whether the low germination rate is caused by factors that Cerall cannot influence such as mechanical damage, incorrect storage or deep infections by *Fusarium / Microdochium* or *Stagonospora / Septoria*.

In winter wheat should germination tests be performed in sand or soil during cool and wet conditions. The preferred soil temperature is +6° C to +8° C.

Working instructions

Cerall can be applied with common seed treatment machines designed for continuous wet and batch treaters designed for liquids. A list of machines suitable for Cerall could be provided by Lantmännen BioAgri on request.

The seed treatment machine should be carefully cleaned by rinsing with hot water and detergent, flushed with hot water and calibrated before the seed-treatment takes place. Cerall can be used in temperatures as low as +1 °C.

In order to keep the product free from contaminants, do not put dirty things into the package or let the package stay open longer than necessary.

Cleaning of the seed-dressing machinery

The machine should be flushed with hot water and detergent.

Personal protection equipment

Wear respiratory protection.

Wear protective gloves.

Waste and empty packages

Containers and waste product should be treated in accordance to local regulations. Empty Combo Aseptic Boxes (1000 L only) could be returned to the producer.

Storage

Cerall shall be stored at + 4 °C to + 8 °C. The product may be damaged if it is allowed to freeze. The use-before-date is only valid for packages with unbroken seals. Storage of partially emptied container shall be avoided. In order to keep the product free from contaminants, the equipment for mixing or pumping should be sterilized with ethanol before it is dipped into the product. Partly used product should be stored under refrigerated conditions in its original package and used as soon as possible.

Treated seeds should generally not be stored for periods longer than 1 year before use when storage conditions are optimal. Cerall is a water based product; treatment with the recommended dose, 1 litre/100 kg, will raise the moisture content of the treated seeds up to 1 % (calculated value).

Mixing with other seed treatment products

Contact Lantmännen BioAgri AB for information.

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