

KEEP OUT OF REACH OF CHILDREN

biostart[®]

BioShield[®]

GRASS GRUB



Biological agent for
control of New Zealand
grass grub
(Costelytra giveni)

Active ingredient: Contains a minimum of
 1×10^9 cfu/g *Serratia entomophila*
(strain AGR626) in the form of a granule.

Registered pursuant of the ACVM Act 1997. No.P7112
See www.foodsafety.govt.nz for registration conditions



4436

Store below 20°C
out of direct sunlight

15 kg net
contents



Made in New Zealand

BioStart BioShield® Grass Grub is a biological agent for the control of New Zealand grass grub (*Costelytra giveni*). Use BioShield® Grass Grub to prevent a build-up of grass grub numbers. BioShield® Grass Grub starts a disease cycle in grass grub larvae that leads to a population decline thereby reducing the damage caused by the larvae. It does not affect humans, animals or any other insects.

General Information: BioShield® Grass Grub contains a naturally occurring soil bacterium (*Serratia entomophila*) that causes amber disease in the New Zealand grass grub. When BioShield® Grass Grub is ingested by the grass grub larvae it results in the cessation of feeding within 2-3 days. Death of the infected, non-feeding larvae may take 1-2 months to occur. Diseased larvae are characterised by a clear gut giving them an amber appearance. The dead grass grub larvae will not be visible as they disappear by natural decay processes.

DIRECTIONS FOR USE

Crops & Pest	Timing	Application & Rate
Pasture: New Zealand grass grub larvae.	February to May	Broadcast 30 kg/ha of BioShield Grass Grub on to pasture (grass/plantain/clover mixed swards) when the 2nd and 3rd instar grass grub larvae are actively feeding.

NOTE: Assess grass grub larvae numbers in the area to be treated using standard sampling procedures. BioShield® Grass Grub works best when the **population density is over 100 larvae/m²**. Use BioShield® Grass Grub to prevent populations of grass grub growing above 300 larvae/m². Application to very high larvae populations will not prevent all pasture damage in the season of application. BioShield® Grass Grub will start a cycle of disease in the grass grubs that will lead to a population decline.

Maximising activity of BioShield® Grass Grub

- Soil moisture content must be above 15-20% before BioShield® Grass Grub is applied.
- Ideally apply granules before rain or an irrigation application.
- Do not apply after April as the grass grub larvae may have developed beyond the susceptible stages by this date.

Post treatment management - Do not use;

- Alternative grass grub control practices such as heavy rolling or insecticide treatments after application as this will reduce the effectiveness of BioShield® Grass Grub.
- Mob stocking of the treated paddock within the first six weeks after application of BioShield® Grass Grub to ensure the *Serratia entomophila* become established in the grass grub population, so setting up the long-term cycle of control.

It is an offence to use this product on animals.

BioShield® must not be applied directly onto or into water.

Withholding period: 1 day

Handling Precautions: The granule filler ingredients can be harmful due to the presence of crystalline silicas. Care should be taken not to create dust when working with the granules. A particulate dust mask should be worn to avoid inhalation of any dust that may be generated. (Note: Long-term inhalation of dusts containing crystalline silicas may lead to silicosis).

Expiry:

Date of Manufacture:

Batch Number:

Filler ingredients can cause eye irritation. Where there is potential for dust to be created it is advisable to wear eye protection (e.g. safety goggles).

- Avoid generating and breathing dust.
- Wear protective clothing (gloves, dust mask, safety glasses).
- Use in a well-ventilated area.
- Always wash hands with soap and water after handling.

FIRST AID MEASURES

Eyes: If dust comes into contact with the eyes, wash eyes with fresh water.

Skin: Wash affected areas thoroughly with water (and soap if possible). Seek medical attention in the event of irritation.

Dust Inhalation: Move to fresh air. Blow nose to ensure clear breathing passages and rinse mouth with fresh water. Seek medical attention if breathing becomes difficult.

Disposal of bags: Please dispose of bags in a safe manner. Please do not burn.

Storage: Store in a cool place at below 20°C. Exposure to sunlight or high temperatures will reduce viability. Keep out of each of children.

Resistance management: BioShield Grass Grub contains *Serratia entomophila* strain AGR626 and is part of the FRAC BM 02 group that consists of Biologicals with multiple modes of action (MOA). The BM 02 category was established by FRAC to accommodate a wide range of microbes with multiple modes of action that are not known to produce resistance issues and have a low risk of producing resistance. BioShield Grass Grub will assist in managing biopesticide resistance provided it is used strictly in accordance with the label instructions.

Limit of Warranty and Liability

Read limit of warranty before using. If terms are unacceptable, return at once unopened. BioStart Ltd warrants that this material conforms to the description on the label. To the extent permitted by law all conditions and warranties with respect to fitness for purpose, merchantable quality, conformity with sample or any other matter with respect of the product which are expressed or implied by statute, the common law, equity, trade custom or usage or otherwise howsoever are hereby expressly excluded from every contract of sale of the product whether by BioStart or any immediate seller. BioStart makes no other warranties of any kind, express or implied, with respect to fitness for purpose, merchantable quality or any other matter with respect to the product. This material is sold upon the condition that the buyer and/or user assumes all risks of the use and handling of the material as well as the results obtained from its use. The liability of BioStart, its employees, agents or any intermediate seller in contract, tort (including negligence) or otherwise shall be limited to the replacement of the material involved in an equal quantity of material which conforms to the description on the label. To the extent permitted by law all liability, whether in contract, tort (including negligence) or otherwise for any indirect or consequential loss, injury or damage is hereby expressly excluded from every contract or sale of product whether by BioStart or an intermediate seller. Not for re-packaging or reformation. No licence is granted or implied by purchase of this bag.

Approved pursuant to HSNO Act 1996, Approval code: HSR000001.

See www.epa.govt.nz for approval conditions. Contents are ecotoxic (Class 9).



biostart®

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