

**KEEP OUT OF REACH OF CHILDREN  
READ SAFETY DIRECTIONS BEFORE OPENING OR USING**

# **Botector<sup>®</sup>**

## **Fungicide**



**ACTIVE CONSTITUENT:**

**5 x 10<sup>9</sup> cfu/g *Aureobasidium pullulans*  
(strains DSM 14940 and DSM 14941)**

**(At least 2.5 x 10<sup>9</sup> cfu/g *Aureobasidium pullulans*  
(strains DSM 14940 and DSM 14941) at expiry)**

A biological fungicide to protect grapes, berries and fruiting vegetables from infections by botrytis bunch rot / grey mould (*Botrytis cinerea*) and other diseases as per the Directions for Use Table.



**Nufarm**

**Grow a better tomorrow.**

**DIRECTIONS FOR USE****RESTRAINTS:**

**DO NOT** apply during the hottest part of the day during summer.

**DO NOT** apply if it is likely to rain before the spray is dry.

CROP	DISEASE	RATE	WHP	CRITICAL COMMENTS
Berries, including: Blackberries Blueberries Raspberries Strawberries (field and protected cropping systems)	Botrytis Blight and Fruit Rot / Grey Mould ( <i>Botrytis cinerea</i> )  Suppression of: Anthracnose Fruit Rot ( <i>Colletotrichum</i> spp.) Phomopsis Fruit Rot ( <i>Phomopsis</i> spp.) Rhizopus Fruit Rot ( <i>Rhizopus</i> spp.)	70-100 g/100 L  OR  0.7-1.0 kg/ha	Not required when used as directed	BOTECTOR® should be applied as a preventative treatment from beginning of bloom until harvest.  Apply as part of a spray program, using up to 6 applications at 5-7 day intervals, particularly when weather conditions favour disease infection.  Application should ensure penetration of canopy and thorough, even coverage of plants.
Fruiting vegetables (cucurbits and non-cucurbits, except sweet corn and mushrooms), including: Capsicums Cucumbers Eggplants Tomatoes Zucchini (field and protected cropping systems)	Botrytis Grey Mould ( <i>Botrytis cinerea</i> )  Suppression of: Sclerotinia ( <i>Sclerotinia sclerotiorum</i> )	100 g/100 L  OR  1.0 kg/ha		BOTECTOR® should be applied as a preventative treatment for infections in fruit, stems, foliage and flowers, in-line with climatic conditions that favour infection. Suggested use windows are from flower initiation through to harvest (BBCH 60-89). Re-application should be conducted on 7-10 day spray intervals during periods of infection risk when applying consecutively or as needed through rotational programs for up to 5 applications per crop.  Pre-harvest applications can assist with reducing disease expression during post-harvest storage.
Grapes, including: Dried grapes Table grapes Wine grapes	Botrytis Bunch Rot / Grey Mould ( <i>Botrytis cinerea</i> )	100 g/100 L  OR  0.4-1.0 kg/ha <sup>^</sup>		BOTECTOR® should be applied as a preventative treatment within the recommended growth stages.  Apply as part of a botrytis bunch rot program, using up to 4 applications, particularly when weather conditions favour disease infection. Application should ensure thorough, even coverage of flowers/bunches, between growth stages EL 19-37 (BBCH 60-88).  <sup>^</sup> Select water volume required to achieve adequate coverage of the target area (bunch zone or full canopy). Only use lower rates from 0.4 kg/ha when targeting the bunch zone where canopy structure allows for adequate coverage, otherwise use the 1.0 kg/ha rate.

**NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.**

**WITHHOLDING PERIOD: NOT REQUIRED WHEN USED AS DIRECTED.**

**GENERAL INSTRUCTIONS**

BOTECTOR® should be applied preventatively within the recommended growth stages. BOTECTOR® colonises entry points on the flowers or fruits that are present at the time of application, competing with the pathogen for space and nutrients. BOTECTOR® will not be effective in controlling latent or active infection that has occurred prior to application, but can help reduce secondary spread by protecting uninfected fruit.

Botrytis can be active at different stages in the growing season and this must be taken into account when planning preventative programs.

Monitoring conditions in the crop that are suitable for botrytis activity can help to select ideal preventative timings for BOTECTOR® use.

Colonisation of BOTECTOR® at entry points can be affected by various factors including poor spray coverage, extreme daytime high temperatures, heavy rainfall events within 24 hours after application.

BOTECTOR® is not mobile and as such will not colonise fresh entry points created after the application has occurred, so good coverage is critical. Apply sufficient water to wet all surfaces up to the point of run-off. Air assisted sprayers are recommended for use on crops with dense foliage/canopy to achieve thorough coverage of flowers/bunches/fruits. BOTECTOR® can be applied up to the date of harvest.

Always consider crop stage, environmental conditions and application guidelines when using BOTECTOR® to maximise performance.

**MIXING**

The following steps must be followed when mixing BOTECTOR® for use:

1. Clean the tank to remove chemical residues before using.
2. DO NOT prepare highly concentrated premixtures.
3. Half fill the spray tank with clean water and turn on agitation.
4. Add BOTECTOR® to the spray tank with agitation running.
5. If required, add compatible products and agitate thoroughly whilst filling the tank with clean water.
6. The mixture must be agitated during application and used within 8 hours.

**APPLICATION**

Over summer, BOTECTOR® should be applied in the morning or evening hours (not during the hottest part of the day). Avoid application in very windy conditions or when the temperature and low humidity cause rapid drying.

**DILUTE SPRAYING**

Use a sprayer designed to apply high volumes of water up to the point of run-off and matched to the crop being sprayed. Set up and operate the sprayer to achieve even coverage throughout the crop canopy. Apply sufficient water to cover the crop up to the point of run-off. Avoid excessive run-off. The required water volume may be determined by applying different test volumes, using different settings on the sprayer, from industry guidelines or expert advice. Add the amount of product specified in the Directions for Use table. The required dilute spray volume will change and the sprayer set up and operation may also need to be changed, as the crop grows.

**CONCENTRATE SPRAYING**

Use a sprayer designed and set up for concentrate spraying (i.e. a sprayer which applies water volumes less than those required to reach the point of run-off) and matched to the crop being sprayed. Set up and operate the sprayer to achieve even coverage throughout the crop canopy using a minimum water volume of 400 L. Determine an appropriate dilute spray volume (See Dilute Spraying above) for the crop canopy. This is needed to calculate the concentrate mixing rate. **DO NOT** concentrate more than 2X. The mixing rate for concentrate can then be calculated in the following way:

**EXAMPLE ONLY**

1. Dilute spray volume as determined above: For example 800 L/ha
2. Your chosen concentrate spray volume: For example 400 L/ha
3. The concentration factor in this example is: 2X (i.e. 800 L ÷ 400 L=2)
4. If label rate is 100 g /100 L, so the concentrate rate becomes 2 x 100, i.e. 200 g/100 L of concentrate spray.

The chosen spray volume, amount of product per 100 L of water, and the sprayer set up and operation may need to be changed as the crop grows. For further information on concentrate spraying, users are advised to consult relevant industry guidelines, undertake appropriate competency training and follow Industry Best Practices.

**GRAPES**

*Botrytis* inoculum can infect bunches from early flowering through to completion of harvest, with infection risk and bunch expression strongly linked to weather conditions. BOTECTOR® can play a functional role in protection against *Botrytis* infection throughout this period. This can be achieved through preventative foliar sprays into the bunch zone or the whole canopy. The following phenological stages represent examples of potentially beneficial use windows:

EL	Phenological Stage
19	About 16 leaves separated; beginning of flowering (first flower caps loosening)
25	80% of flower hoods (caps) fallen
31	Beginning of bunch closure
35	Start of berry softening
37	During ripening

Selection of application windows for BOTECTOR® should be done with consideration for potential risk of infection based on growth stage and seasonal conditions. The likelihood for favourable conditions for infection following treatment should also be factored into the selection of spray windows.

BOTECTOR® is not mobile within the canopy so coverage is critical. Apply sufficient water to wet all surfaces up to the point of run-off. Air-blast sprayers are recommended for application to vines with very dense foliage. BOTECTOR® can be applied up to the date of harvest.

**BERRIES**

Depending on weather conditions, *Botrytis* infection starts while flowers are developing and continues throughout the season. To ensure consistent protection against *Botrytis* infection apply as a foliar spray into the whole canopy. In low disease pressure situations, BOTECTOR® can also provide suppression of Anthracnose, Phomopsis and Rhizopus Fruit Rot.

BOTECTOR® is not mobile, so good coverage is critical. Apply sufficient water to wet all surfaces up to the point of run-off. Apply as a MEDIUM spray in a minimum of 400 litres of water per hectare. Air assisted sprayers are recommended for use on crops with dense foliage/canopy to achieve thorough coverage of flowers/bunches/fruits. BOTECTOR® can be applied up to the date of harvest.

**FRUITING VEGETABLES (CUCURBITS AND NON-CUCURBITS)**

*Botrytis* infection can occur throughout crop development, largely based on weather conditions and the susceptibility of growth stages to infection. To ensure consistent protection against *Botrytis* infection apply as a foliar spray into the whole plant canopy. BOTECTOR® can also provide preventative control of *Sclerotinia*. BOTECTOR® is not mobile, so good coverage is critical. Apply sufficient water to wet all surfaces up to the point of run-off. Air assisted sprayers are recommended for use on crops with dense foliage/canopy to achieve thorough coverage of stems/flowers/leaves/fruits. BOTECTOR® can be applied up to the date of harvest. Application close to harvest may lead to a positive fruit storage effect.

**COMPATIBILITY**

BOTECTOR® is compatible with a variety of commercially available fungicides, insecticides and adjuvants. Incompatible products should not be used during a period of 3 days before until 3 days after the BOTECTOR® application. A detailed compatibility list is provided under: [www.bio-ferm.com](http://www.bio-ferm.com). Nufarm conduct compatibility testing for common formulations sold within the Australian market which can vary from international markets. It is recommended that users contact your local Nufarm representative to discuss local compatibility results.

**PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS**

**DO NOT** apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

**PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT**

**DO NOT** contaminate streams, rivers or waterways with the product or used containers.

**STORAGE AND DISPOSAL**

Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. Store (refrigerated) at less than 8°C. **DO NOT** freeze. **The product is stable for 30 months if stored in this way. In the absence of cold storage, products that are stored at room temperature (20°C or below) are stable for 10 months.** Triple-rinse containers before disposal. Add rinsings to spray tank. **DO NOT** dispose of undiluted chemicals on-site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots in compliance with relevant local, state or territory government regulations. **DO NOT** burn empty containers or product.

**SAFETY DIRECTIONS**

Harmful if inhaled. **DO NOT** inhale dust. Repeated exposure may cause allergic disorders. Sensitive workers should wear protective clothing. When opening the container and preparing the spray wear cotton overalls buttoned to the neck and wrist, a washable hat, disposable gloves and disposable dust face mask covering mouth and nose. When using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat. When using the prepared spray in a protected cropping situation, a disposable mist mask should be worn. Wash hands after use. After each day's use wash contaminated clothing.

**FIRST AID**

First aid is not generally required. If in doubt, contact a Poisons Information Centre (e.g. phone Australia 13 11 26, New Zealand 0800 764 766); or a doctor.

**ADDITIONAL STATEMENTS (WHS REGULATIONS 2011)**

**May cause an allergic skin reaction.** Avoid breathing dust. **DO NOT** eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, clothing, eye and face protection. **IF ON SKIN:** Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a **POISON CENTER** or doctor/physician. Wash contaminated clothing before reuse.

**SAFETY DATA SHEET**

For further information refer to the Safety Data Sheet (SDS), which can be obtained from your supplier or from the Nufarm website – [nufarm.com.au](http://nufarm.com.au)

**In case of emergency: Phone 1800 033 498** Ask for shift supervisor. Toll free 24 hours.

**CONDITIONS OF SALE**

"Any provisions or rights under the Competition and Consumer Act 2010 or relevant state legislation which cannot be excluded by those statutes or by law are not intended to be excluded by these conditions of sale. Subject to the foregoing, all warranties, conditions, rights and remedies, expressed or implied under common law, statute or otherwise, in relation to the sale, supply, use or application of this product, are excluded. Nufarm Australia Limited and/or its affiliates ("Nufarm") shall not accept any liability whatsoever (including consequential loss), or howsoever arising (including negligence) for any damage, injury or death connected with the sale, supply, use or application of this product except for liability which cannot be excluded by statute."

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