Techguide
Botrytis

Botector®

Tough on Botrytis. Soft on Grapes. Complementary to the conventional.

Botector biological fungicide is your No.1 choice offering an organic alternative for botrytis control in wine and table grapes.

Australian Organic Registered Farm Input
ALLOWED INPUT 11540

Unique mode of action for effective botrytis control
- Soft on beneficials, it's the organic alternative with no residue or known resistance

Complements most spray programs
- Suitable for the organic market while fitting in with your conventional chemistry spray program

Superior granule formulation
- Easy measurement, handling and mixing

No withholding period or impact on ripening
- Allows for flexible harvest

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The lowdown on Botrytis

Botrytis bunch rot, caused by Botrytis cinerea, is a devastating disease that can cause yield losses of up to 50% or reduce the quality of wines produced by affected grapes, causing issues with colour, odour and flavour.

However, with an effective and well-planned protection program, managing botrytis bunch rot can be effectively and efficiently managed, so that its impact in your vineyard in minimised.

Botrytis cinerea: the disease explained

Botrytis spores are nearly always present in vineyards, with spores present on materials such as cane debris, bunch remnants, tendrils, leaf petioles and leaf blades carried over from the previous season. The spores await the right conditions to germinate and initiate infection on new growth.

Botrytis is an opportunistic 'wound' disease, that enters plant tissues through natural openings or wounds and microscratches created by insects, birds, hail, frost, sunburn, other diseases or rapid growth and rubbing on other plant surfaces. It infects damaged leaves, decaying flower parts (mostly caps) and aborted or rotting berries and then rests in a quiet or latent state and then resumes growth and further infection when developing grapes begin to soften.

Initial infection on soft, young leaves can occur with little or no apparent damage, other than a darkening of the damaged tissue. The resulting leaf tissue lesions can have a light tan or light leathery appearance.

Spread from latent infection from berry to berry as they begin to soften is especially rapid in compact bunches. Spread from bunch to bunch can also be quite rapid in crowded fruit zones, particularly under conducive weather conditions.

Spore germination on berries is stimulated by sugar and amino acids exuded from ripening berries. In turn, the developing botrytis fungi secret enzymes to kill plant tissues in advance of colonisation, to then absorb the nutrients from those dead plant tissues.

Weather conditions for Botrytis infection

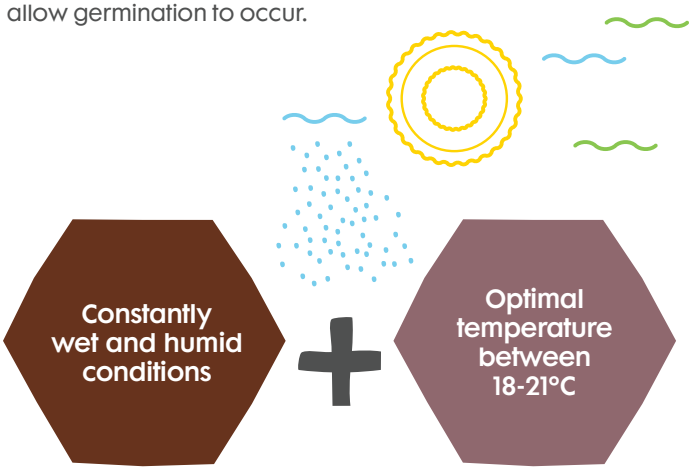
Weather and the dreaded rot

Temperature, relative humidity and wind speed determine how long the surface of grape leaves and berries will stay wet and as a result these factors drive the level of infection in a vineyard.

Botrytis thrives and spreads rapidly in conditions that are consistently wet or humid. Once you have wet or humid conditions, it is temperature that determines how fast infection occurs – the optimum temperature for botrytis spore germination is 18-21°C, however germination can still occur at temperatures lower than 10°C and above 30°C.

A film of free water is essential for spore germination. If the temperature is not in the ideal range than longer periods of wet plant surfaces are required for high levels of germination and infection.

Surface moisture for germination and infection does not come just from rainfall or irrigation – it can result from rain, dew, mist or fog. High humidity may even lead to sufficient condensation within crevices of tissues, such as flowers, to allow germination to occur.



Managing Botrytis in the vineyard

The best practice for managing botrytis starts well before you see the disease. Actions focused around reducing the spore load and volume of infective material ensure that any spray you apply to your crop will be as effective as possible.

Cultural practices, such as those listed to the right, are good for reducing spore load and minimising the risk of massive outbreaks of botrytis. However, in most grape growing areas of Australia, a well-planned fungicide program is necessary to protect both wine and table grapes from devastating losses.

Important preventative measures for limiting botrytis infection include the following techniques:

- Good plant spacing
- Removing or covering dead plant material from previous seasons
- Balanced nutrition
- Needs based irrigations
- Moderate yield loads
- Preservation of a highly productive canopy
- Bunch zone formation to allow sufficient ventilation, rapid dry-off after rain and dew, sun exposure and excellent crop protection product coverage

Incorporating direct control measures with fungicides

As the crop matures and development changes from budding through flowering and on to fruit formation and ripening, there are key timings to apply preventative or protectant fungicides to minimise both primary infection and the impact of development from latent infections.

A key point to consider in planning is that most berry and bunch rots caused by botrytis develop in late summer and early autumn (early to mid-summer in warm/hot areas) as grape berries mature and soften.

All fungicides registered for the control of botrytis in grapes are protectant only, so it is important to target spray programs for application prior to disease expression occurring. The key timings to apply fungicides to maximise the protection of your crop and minimise the impact on your grape yield and quality are:

EL25
80% capfall

Flowering is at its peak, flowers and developing fruit need protection and there are naturally occurring wounds present that are perfect for botrytis infection.

EL29-32
Pre-bunch closure

Berries are set and are growing rapidly, last chance for good coverage inside the bunch.

EL34-35
Berries begin to soften, veraison

Grapes become more susceptible and start to exude sugars and amino acids which stimulate germination; berry growth, insect & bird damage and weather conditions will continue to create microscratches and other openings for infection.

EL37-38
Berries becoming harvest ripe

In high risk areas and in high value crops, continuing protection at this time will be important to ensure crop is at best quality, whether for the table or for wine making.

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Botector – the backbone of your protection program

Since the introduction of Botector to Australia, it has become the backbone of good botrytis protection programs. Botector is a true protector and does not impact any enzymatic pathway, so it complements all other chemistry and adds a different mode of action that reduces selective pressure on other modes of action.

Botector works via 'competitive exclusion', creating a physical barrier, filling in microscratches and other wounds where botrytis can enter plant tissues. It has even been shown to reduce the impact of latent infection. Applying Botector at pre-bunch closure and at veraison is the best way to maximise protection from botrytis at key timings in your crop and allows you the flexibility to incorporate other actives.

It's also worth noting that Botector is certified for use in organic production systems, allowing you to produce the grapes that are preferred by your customers, whether conventional or organic.

As always, please discuss the requirements of your vineyard with your local Nufarm Territory Manager to tailor a program to suit your specific needs.

Nufarm Top Croppers
Collect Points

Botector at a glance

Product type	Biological fungicide
Actives	5 x 10^9 cfu/g (1.000 g/kg) Aureobasidium pullulans
Registered use	To protect grapes from infections by botrytis bunch rot / grey mould (Botrytis cinerea)
Use rate	100g/100L sprayed into the bunch zone
Witholding period	Not required when used as directed
Pack sizes	1.2kg

*The information and recommendations set out in this brochure are no substitute for professional or expert advice and are based on tests and data believed to be reliable at the time of publication. Results may vary, as the use and application of the products is beyond our control and may be subject to climatic, geographical or biological variables, and/or developed resistance. To the maximum extent permitted by law, Nufarm Australia Limited disclaims all warranties of any kind, whether express or implied, including but not limited to any warranty that the information is up-to-date, complete, true, legally compliant, accurate, non-misleading or suitable.

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