Users' guide for vineyards

Controlling weeds without compromising vine safety

Managing the impact of weeds is an essential part of enabling any vineyard to reach its full potential. The limited systemic action of **Basta** makes it the best 'in season' choice for controlling weeds around vines.

basta®

SAFER ALL ROUND FOR 20 YEARS*

BASTA AT A GLANCE

Active Ingredient	Glufosinate-ammonium, 200 g/L (originally isolated from soil-dwelling bacteria). Contains a specifically designed surfactant system. Herbicide mode of action Group N.
Weeds Controlled	Registered to control over 80 species of broadleaf and grass weeds, including clovers, medics, wireweed, willow herb, fat hen, capeweed, caltrop, thistles and a number of annual grasses.
Rates	1.0–5.0 L/ha depending upon weed mix, size and conditions. Many common weeds require 3.0–5.0 L/ha.
Water Rates	Sufficient water to achieve thorough coverage of weeds. Typically this will require 300–500 L/ha.
Adjuvant(s)	The addition of ammonium sulphate may assist under dry conditions or on tough weed species. Oils such as canola oil are not recommended. Non-ionic surfactants may be required when water rates in excess of 500 L/ha are used.
Crop Stage	Can be used throughout the growing season where mature vines have callused bark. Vines less than 2 years old need to be shielded. Avoid contact with foliage.
Compatibility	Compatible with the following residual herbicides: simazine, diuron, oxyfluorfen (Goal®), norfluazuron (Solicam®) and oryzalin (Surflan®). If using CDA equipment, do not mix **Basta** with any other products.
Coverage	Complete coverage of weeds is essential for good control. Ensure that droplet size, water volume and nozzle direction are sufficient to maximise coverage.
Weather Conditions	**Basta** kills weeds more effectively when applied during humid (>50% RH), warm conditions, e.g. 15–33°C.
Rainfastness	6 hours without rain following application.
Poison Schedule	5 (Caution). Not Classified as dangerous goods for transport by road or rail.
Pack Sizes	5, 10, 20 and 110 litres

* When used as directed.

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Basta is taken up by green tissue, with very little translocation away from the site of entry. **Basta** is not taken up through lignified (callused) bark, and so is suitable for use as a directed spray under vines where the trunk is sufficiently lignified.

Basta is not volatile, so no damage from vapour action will occur.

Young vines and trees

It is not recommended to apply **Basta** to trees and vines until they are 2 years old, unless contact with lower canes and trunks can be prevented. Contact can be prevented by placing sleeves or guards around the trunks, or by using shielded nozzles and carefully directing the spray.

HOW BASTA WORKS

Mode of action

Basta has a unique mode of action that is of great benefit to Australian grape growers. Glufosinate-ammonium disrupts the action of glutamine synthetase, an important enzyme which impacts on many reactions, including photosynthesis.

Two key outcomes of glufosinate-ammonium within the plant are:

1. Ammonia levels within plant cells build up rapidly.
2. Glutamine production is slowed, disrupting subsequent reactions and quickly leading to a breakdown in photosynthesis.

Activity in the plant

Studies of uptake conducted with a variety of weed species found that up to 50% of applied glufosinate ammonium penetrates leaf surfaces within 6 hours. After 24 hours, penetration levels reach up to 80%.

Key weeds

Basta is highly effective in maintaining control of several key weed species found throughout Australian vineyards.

Fat hen *Chenopodium album*		✓
Barnyard grass *Echinochloa crus galli*		✓
Willow herb *Epilobium* spp.		✓
Wireweed *Polygonum aviculare*		✓
Milk thistle *Sonchus oleraceus*		✓
White clover *Trifolium repens*		✓

BASTA: WORKING WITH THE ENVIRONMENT

Weeds, waste and worry

Established weeds in the undervine area can deplete the same resources that grape growers have directed to the vines themselves. Water use by a mixed stand of weeds could exceed grapevine water requirements if left unchecked.

Precious soil nutrients will be more available to the vine once competing weeds are controlled.

Dead and dying weeds in an undisturbed situation provide organic matter and enhance soil porosity and water infiltration as well as helping to prevent erosion.

Many Australian vineyard soils are limited in effective root zone depth and subject to wheel traffic compaction, which means the undervine soil health parameters become more important.

Local studies show that beneficial arthropods occur in greater number and diversity under an optimised herbicide regime compared to cultivation.

Hit them when they're down

Smaller weeds are much easier to control and lower **Basta** rates may be applied to weeds which are very young compared to more established plants. Target healthy, active weeds.

From the soil, to the soil.

Glufosinate-ammonium, the active ingredient of **Basta,** was first isolated from cultures of the soil bacteria *Streptomyces viridochromogenes*. This molecule was then reproduced synthetically and a surfactant partnering system was established to produce a unique, robust broad spectrum non-selective post-emergence herbicide.

Once **Basta** has done its job on the weeds in the vineyard it is rapidly degraded by micro-organisms in the soil. Its half-life in soil depends on conditions but it is generally between one and three weeks. **Basta** does not act as a residual herbicide (and is not herbicidally active in the soil).

GETTING THE BEST OUT OF BASTA

Application

Its mode of action and uptake within the plant means that achieving good spray coverage with **Basta** is very important and it may be necessary to adjust equipment to ensure thorough coverage, depending on weed height and density, using fine to medium droplets and assessing the evenness of coverage across the spray swath.

Climatic factors

The speed and effectiveness of **Basta** weed control can be increased by following these simple application parameters.

Air humidity

The speed and total amount of **Basta** uptake is highly dependent on the relative humidity during and immediately after application.

Uptake of **Basta** is most effective when relative humidity is 50% or greater. In most grape-growing regions in Australia during spring and summer, this humidity level is reached during early morning and evening hours. Afternoons are typically below the ideal level of >50% relative humidity.

Temperature

The major impact of temperature is on the speed of activity, which increases as the temperature increases. Avoid application when the temperature exceeds 33°C or during periods of frost.

Rainfall

It is recommended that **Basta** should not be applied if rainfall is likely within 6 hours.

Climatic Factor	Ideal Environment
Air Humidity	>50%
Air Temperature	>5°C <33°C
Rainfastness	6 hours

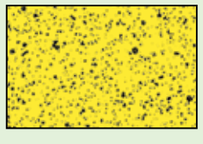
Resistance management

Repeated use of the same herbicide mode of action can lead to the development of resistant populations. Annual ryegrass has become resistant to glyphosate (Group M) in some vineyards, however to date there are no reported cases of resistance to glufosinate-ammonium, the active ingredient of **Basta** (Group N).

Examples of spray coverage using water sensitive paper

Excellent coverage

Use MEDIUM/ FINE droplets



Adequate coverage

Use MEDIUM droplet size

Coverage in these ranges will produce optimal weed control, provided weeds are not stressed. For the most effective control, aim for **adequate coverage** as a minimum.

KEY FACTS

- **Safe to use around trunks with lignified bark, when all use directions are followed.**
- **Registered to control over 80 species of broadleaf and grass weeds.**
- **Registered against several hard-to-control weed species including fat hen, wireweed, milk thistle and clovers.**
- **More effective against small healthy and actively growing weeds.**
- **Rapidly degraded by micro-organisms in the soil.**

Bayer CropScience

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Disclaimer

Always consult the product label for detailed information.

The information and recommendations set out in this brochure 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. Any product referred to in this brochure must be used strictly as directed, and in accordance with all instructions appearing on the label for that product and in other applicable reference material. So far as it is lawfully able to do so, Bayer CropScience Pty Ltd accepts no liability or responsibility for loss or damage arising from failure to follow such directions and instructions.

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