

ALL ABOUT ALMONDS

ORCHARD MANAGEMENT



REDUCING THE RISK OF SPRAY DRIFT - HALOXYFOP

GUIDELINES TO APPLY HERBICIDES TO GRASS WEEDS

KEY POINTS

- ▶ Haloxyfop is a chemical to apply with high caution. The ABA is recommending to not apply this product during the growing season.
- ▶ When applying any herbicide it is important to consider weather conditions, weed growth stage and water quality.

BACKGROUND ON HALOXYFOP IN AUSTRALIAN ALMONDS

HALOXYFOP IS A PRODUCT THAT HAS BEEN USED THROUGHOUT THE ALMOND INDUSTRY TO CONTROL GRASSES FOR MANY YEARS.

Three MRL breaches in grower samples from the 2016 season caused concern and this has continued in 2019 with further breaches detected. The Almond Board of Australia recommend alternative measures for grass control throughout the growing season. Maintaining high standards of chemical compliance enables Australia to continue to maintain their international market branding as 'Clean & Green'. The following are scenarios may have caused the breaches.

- 1) Spraying during winter with mummy nuts on the orchard floor contaminating the new season product,
- 2) A late season application was made without rain to wash the product in and soil contaminated the kernel,
- 3) There was application drift during the growing season.

It is critical that herbicides are applied correctly and a high standard of sanitation is attained. This document will describe some weed management practices to help minimise drift and still get the required kill on weeds.



Infrared Spray Technology. Source: Trimble - Vantage WA Precision AG

MINIMISING DRIFT

A breach of a Maximum Residue Limit (MRL) does not necessarily mean growers have applied a product at an incorrect rate, rather the application of the product has made contact with an off-target object, such as the crop. With this in mind, high caution should be taken when spraying, especially in the months leading up to harvest.

While Haloxyfop does not have a withholding period (WHP) on the label, it is still in breach of the MRL if the crop is exposed. Therefore, if there are windfalls within the orchard, the product should not be sprayed at all due to the possibility of spray drift or off target application. If there is crop on the trees and the product must be sprayed, make sure the conditions are optimal with

a rain event following. To apply the product in this situation there are two major factors to keep in mind.

1) Droplet size is suitable for the spraying apparatus and weather conditions. Figure 1 describes the drift-able droplets that are created through application in relation to spray type. A drift-able droplet can be described as a droplet that you cannot see, therefore being a 'very fine' droplet. Due to their light weight, the droplets are susceptible to drifting and providing off target applications. Therefore, to minimise this, the spraying apparatus must be producing a coarse droplet size which produces less than 10% of drift-able droplets. For herbicide applications, the desired droplet size should be no smaller than a coarse droplet.

SPRAY TYPE	Percentage of Volume released as driftable droplets	DRIFT POTENTIAL
 fine sprays	Aprox 40% +	HIGH 
 Medium	Typically < 20%	MEDIUM 
 Coarse	Typically < 10%	LOW 
 Very Coarse	Typically < 5%	VERY LOW 
 Extremely Coarse	Typically < 3%	ALMOST NEGLIGIBLE 

Figure 1: Driftable Droplets by Spray type. Source: ChemCort Australia Chemical Users Handbook.

CONT. MINIMISING DRIFT.

To achieve the desired droplet size, it is important to check the appropriate nozzle chart. The nozzle chart describes the spray type in respect to pressure and speed to calculate the water rate applied. To further reduce risk, when deciding to purchase a nozzle, the release height specification is important as the lower the release point the better for drift management. If your desired nozzle has a release point that is too high, calculations can be made to reduce the height. These calculations could involve reducing the distance between nozzles and/or adjusting the nozzle orientation.

2) Weather considerations need to be taken into account when applying herbicide. Inversion layers are one of the major causes of accidental drift. An inversion layer is most likely to occur within an hour and a half after sun rise and before the sun sets. As seen in Figure 2, an inversion layer occurs when the rising cool air meets the rising warm air. This inversion layer then has the ability to carry the product large distances. For more information on inversion layers visit https://grdc.com.au/_data/assets/pdf_file/0017/210905/surface-temperature-inversions-and-spraying-fact-sheet.pdf.pdf

GETTING THE MAXIMUM KILL

When applying herbicides, there are many factors to consider to achieve the highest rate of control. When applying herbicide, it is important to apply the chemical in accordance with the label, as this is a legal requirement. Therefore, if the application rate is described per hectare, it is critical to check the application of your sprays in accordance to the appropriate nozzle chart regarding pressure and speed.

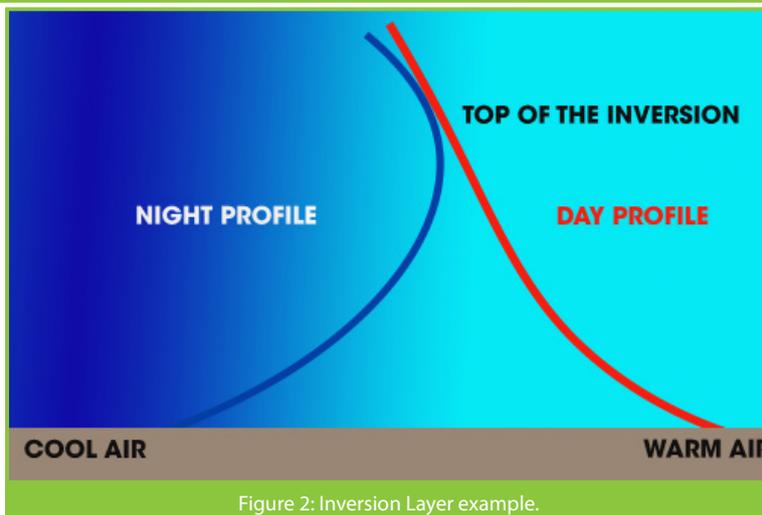


Figure 2: Inversion Layer example.

The nozzle chart is also critical when it comes to applying the desired coverage. For example, a product that is semi-systemic, such as glyphosate, enables a very course droplet to be used as the product enters the vascular system of the plant. However, for a product such using Paraquat/ Diquat, a contact spray will need a course droplet used in order to get the optimal kill. For products like these, application during a cooler time period means that the droplet will have more spread and evaporate slower, therefore increasing cover on the target.

Water quality is another important factor to consider. Different products react differently to different qualities of water. For example, Table 1 illustrates the herbicide tolerances to water qualities. It is important to note that products such as Glyphosate and Paraquat/ Diquat will not be as effective if mixed in muddy water. More information on water quality can be found at: https://grdc.com.au/_data/assets/pdf_file/0028/142597/grdc_fs_spray-water-quality-low-res-pdf.pdf.pdf

THE GRASS ARMORY FOR ALMONDS

For controlling grasses, almonds have options in the actives (Trade Names) of Flumioxazin (Chateau), Oxyfluorfen (Goal), pendimethalin (Stomp), Amitrole (Para-Trooper), Paraquat and Diquat (eg. Spray.Seed) available for use. While there are not a lot of products available specifically for grasses, if used correctly, high levels of control can be achieved. With the constant improvement in infra-red technologies, such as the Greenseeker becoming available, grass spray options can potentially become cheaper through minimising product application. When choosing products to spray ensure they are approved for use by your marketer.

TABLE 1: EFFECT OF WATER QUALITY ON COMMONLY USED PRODUCTS IN THE ALMOND INDUSTRY

Active Constituent	Water Quality				
	Muddy	Saline	Hard	Alkaline (<pH8)	Acidic (<pH 5)
Glyphosate	X	✓	X	✓	
Simazine	✓	X	✓	NR	
Paraquat/Diquat	X	✓	✓	✓	✓
Haloxypop	✓	✓	✓	NR	✓

Key: ✓ = Ok, X = Do not use, NR: Not Recommended, Blank: Untested
Source: Weed control in Winter Crops. 2011 - NSW DPI

USEFUL RESOURCES

Information sourced from ChemCert Australia Users Handbook, 7th Edition September 2015.

ChemCert Chemical Accreditation Courses

ChemCert Australia: 1800 444 228
ChemCert Chemical Accreditation Information:
<http://www.chemcert.com.au/courses/aqf-3-chemical-accreditation>

Reducing Drift by the APVMA using Phenoxo Herbicides as an example

<http://www.chemcert.com.au/pdfs/Resources/P2%20Guide%20to%20using%20APVMA%20Approved%20Phenoxo%20Herbicides%20September%202012.pdf>

MORE INFORMATION

Almond Board of Australia Industry Development Team

(08) 8584 7053

Joshua Fielke

jfielke@australionalmonds.com.au

Ben Wiblin

bwiblin@australionalmonds.com.au

PROJECT CODE

AL16001 - Australian almond industry innovation and adoption program

This project has been funded by Horticulture Innovation Australia Limited using the almond research and development levy and funds from the Australian Government.



Acknowledgements:

The input and suggestions made by Australian almond processors, marketers and growers.

Reducing the Risk of Spray Drift - Haloxypop

Copyright © Horticulture Innovation Australia Limited 2019; all material published in this Fact Sheet is copyright protected and may not be reproduced in any form without written permission.

DISCLAIMER

Any recommendations, suggestions or opinions contained in this publication do not necessarily represent the policy or views of the Almond Board of Australia. No person should act on the basis of the contents of this publication without first obtaining specific, independent, professional advice. The Almond Board of Australia and contributors to this Fact Sheet may identify products by proprietary or trade names to help readers identify particular types of products. We do not endorse or recommend the products of any manufacturer referred to. Other products may perform as well as or better than those specifically referred to.

Horticulture Innovation Australia Limited (Hort Innovation) and the Almond Board of Australia (ABA) makes no representations and expressly disclaims all warranties (to the extent permitted by law) about the accuracy, completeness, or currency of information in AL16001 - Australian almond industry innovation and adoption program. Reliance on any information provided by Hort Innovation and the ABA is entirely at your own risk. Hort Innovation and the ABA is not responsible for, and will not be liable for, any loss, damage, claim, expense, cost (including legal costs) or other liability arising in any way, including from any Hort Innovation or other person's negligence or otherwise from your use or non-use of AL16001 - Australian almond industry innovation and adoption program, or from reliance on information contained in the material or that Hort Innovation provides to you by any other means.