GLOBAL EXTENSION TEAM

Kiwi Tech Bulletin

BEST PRACTICE GUIDE - SPRAYING N39

REVISED JULY 2021

This guide provides best practice advice to agrichemical applicators whose spraying operations can impact the community and/or the environment. It is not intended to cover all the legal requirements of applicators. Where the words "must" or "shall" are used, it implies there is a regulatory requirement. Growers and applicators should be familiar with all relevant legislation, the label and the MSDS of the agrichemical they are using.

Following the recommendations in this guide will help to ensure critical agrichemicals are not withdrawn from use or greater compliance imposed through additional legislation. It should be read in conjunction with;

- **Grower Manual: Agrichemical Management and GAP requirements**
- **Regional Air Plan (Council Specific)**
- **The MSDS and label specific to each product**

Growers and applicators can be liable for significant penalties for poor spraying practices under New Zealand law. Sensible use of agrichemicals is everyone's responsibility. Poor practices should be reported to the KGI Hotline ph 0800 232 505.

Notification

Poor notification and spray drift are major causes of complaints associated with kiwifruit spraying operations.

Neighbours must be notified prior to spraying operations. A neighbour is defined in the Agrichemical Code of Practice as any person who is likely to be affected by the application of agrichemicals, and all neighbours whose property boundary is within 50m of the point of discharge must be notified (even if separated by a public road).

It is recommended to notify all neighbours whose property boundary is within 60 metres from boundary shelter or 80 metres from the orchard boundary if no shelter exists.

Any chemical application can cause community anxiety irrespective of its toxicity. Therefore, notification should occur for all products allowed irrespective of whether they are an agrichemical or fertiliser.

The registered orchard owner has primary responsibility for notification. If the owner transfers this responsibility to a third party (e.g. spray contractor or orchard manager), this should be confirmed in writing and signed by both parties. Legally, notification must occur at least 12 hours before applications commence and no longer than 72 hours prior (notification requirements can vary with region, check your regional council air plan). It is recommended that neighbours are notified of any product application two days prior and again on the morning of the proposed application. If spraying is delayed, the applicator should inform the grower with sufficient notice, so they in turn, can inform neighbours of the change in schedule.

There is a second option to create a notification agreement between the occupier of neighbouring properties and the MSO which requires that notification of every agrichemical spray is not required. Specific details of this agreement must be recorded in writing and signed by all parties.

The person responsible for notification must document the details, including who was

spoken to, the time, what was said and by what method of communication.

Where a neighbour is new, or a grower is aware of any particularly sensitive neighbours, e.g. schools or organic orchards, good communication is essential to prevent unnecessary anxiety. Go the extra mile to make sure your neighbours are aware of and comfortable about your use of agrichemicals.

Consider using a service such as Spraywatch to keep your neighbours notified of applications.

Spray risk management plan

A spray risk management plan including map should be sent to the person responsible for spray applications on your orchard. It must be made available to neighbours and other interested parties on request. It must include:

- The name and contact details of person(s) applying agrichemicals and their relevant qualifications (e.g. GROWSAFE® number and expiry date).
- Crops to be sprayed and likely chemicals to be used.
- Any sensitive areas e.g. schools, houses, other crops, especially organic ones.
- Strategies employed to avoid drift outside of the boundary, particularly onto sensitive areas (e.g. spraying when students have left school, AI nozzles, Driftstop etc.)
- Conditions which may increase drift hazard.
- Indication of chemicals that may present a specific hazard (e.g. bee or animal toxicity).
- Neighbour notification
- A list of all neighbours within 50m including names and contact details.
- Further information can be found in the Grower Manual https://canopy.zespri.com/EN/grow/ZPR/Documents/Property-Spray-Plan-Procedure.pdf

A Spray Plan report can be run from the electronic spray diary system. This will list all **proposed** spray lines that have been entered into the system in a format that can be given out (along with other information attached like an orchard map etc to form a spray plan for the orchard). The Spray Plan report can be accessed from the reports drop down of the e-spray diary once a KPIN has been selected.

A full spray plan template can be found on Canopy here: https://canopy.zespri.com/EN/grow/ZPR/Pages/Grower-Manual-Agrichemical-Management.aspx

A spray plan can also be generated from the Property Spray Plan Manager at http://www.sprayplan.hortplus2.com

Animals

Dogs are particularly prone to hydrogen cyanamide applications. Keep dogs out of treated areas until the re-entry period has elapsed. Remove or empty animal feeding and water sources from areas prone to spray drift.

Puddles in areas to be treated should be drained prior to spraying to avoid possible consumption. Animals should be removed from neighbouring properties where possible e.g. horses.

Calibration

- Sprayers shall be calibrated by a person with sufficient knowledge to minimise the overall risks, while maximising efficacy of the agrichemicals.
- Calibration should take into account the requirements of the chemical applied, vine spacing and the stage of vine growth.
- Nozzle types should be chosen to eliminate fine droplets as much as possible. Air Inclusion (AI) nozzles are very effective at reducing spray drift with dormant spray applications when used in conjunction with DriftStop® (or equivalent) and are compulsory for hydrogen cyanamide and bactericide (e.g. Kasumin/Key Strepto) applications.
- Fan speed should be reduced to ensure there is sufficient air to give

good coverage without excessive surplus spray being applied.

Planning

- Use weather forecasting services to plan application timing.
- Commercial applicators should make use of daily weather station data to plan applications.
- If your existing contractor is unlikely to meet your planning dates consider alternatives including doing your own spraying.
- If you do decide to do your own spraying, make sure your GROWSAFE® certificate is still current, and your sprayer has been calibrated.
- Monitoring of drift into sensitive areas can be undertaken with water sensitive paper. This is available from horticultural supply stores.

Consider the window of application particularly if using a contractor. Not all orchards can be sprayed on the same day, so growers need to consider opportunities that may be earlier or later than the usual window. This particularly relates to bud-break enhancing sprays where the window may be wider than most growers recognise (figure 1).

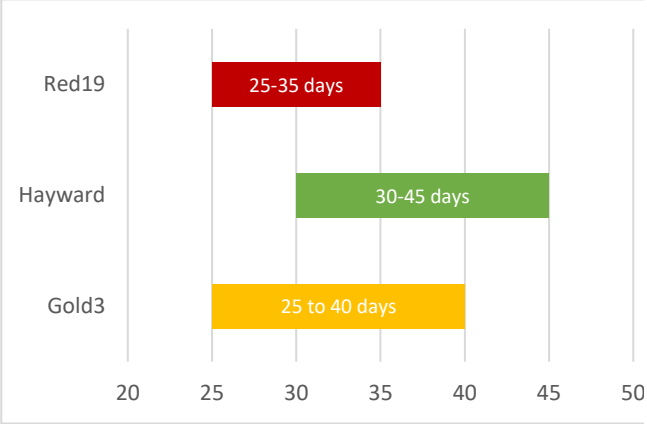

Figure 1: Recommended window of application (days before natural budbreak) for hydrogen cyanamide (HC) for each variety.

Signage

It is the **orchard owner's** responsibility to ensure the legal requirements of signage are met.

Signs must be placed on all normal lines of approach to the area to be treated when land adjoining a public road or place is to be sprayed, even if the area sprayed is not near the property boundary. The signs should be filled in and erected 24 hours before spraying commences and remain in place until the contact re-entry time is elapsed for the agrichemical used.

Signs shall clearly indicate (Figure 4):

- The name and type of agrichemical used (eg insecticide, herbicide etc)
- spray date and time
- name and phone number of applicator
- re-entry date and time.

A "mail-box" concept inside the orchard gate with a hazard log and spray book (that details spray re-entry periods etc) for all orchard visitors and workers is highly recommended and will help with GLOBALGAP compliance.

Having the applicator's contact details printed on the side of the sprayer would allow concerned parties to contact the applicator immediately should a spray hazard occur.

Figure 4. Suitable signage at orchard entrance.

Application

All applicators must have appropriate training and certification (i.e. GROWSAFE® and Approved Handler).

Vines should be winter pruned and tied down prior to any dormant applications. This can reduce the quantity of spray required and reduces drift associated with attempting to cover vertical canes.

For more comprehensive recommendations regarding application refer to the product label and the KiwiTech Spraying Bulletins N55, N56, N57, N58, N79 and N80.

Read the label and the MSDS for specific hazards and guidance on personal protective equipment (PPE), chemical rates and timing, as well as potential impacts on the environment and other relevant information.

Bee safety

Never apply sprays toxic to bees to any flowering plants, including the orchard sward. Be particularly careful when applying pre-flowering insecticides to Hayward while neighbouring Gold3 blocks are flowering and when spraying post flowering insecticides on Gold3 blocks when hives are still located in neighbouring Hayward orchards.

Buffer zones

The buffer zones that should be observed around sensitive areas are:

- 10 metres with shelter (substantial enough to prevent drift)
- 30 metres without shelter.

This means budbreak sprays should not be applied to the outside 30 metres of blocks with no roadside evergreen shelter.
Examples of sensitive areas may include:

- Schools
- public areas including roads
- residential buildings
- parks and sports fields
- waterways and wetlands areas
- where animals are grazing
- organic orchards or other sensitive crops.

N.B. Casuarina shelter belts, lemons, tamarillos and gum trees are particularly susceptible to any hydrogen cyanamide drift.

Drift hazard

Drift hazard is a major cause of complaints and puts the community and environment at risk. Spraying should not be carried out when wind-speed exceeds 6 metres/second (20km/hour or 12 knots). This should be measured by a handheld anemometer (a device used for measuring windspeed (Figure 6), or smoke flares which can be purchased from marine supply stores.

Very low, or no wind can make spray drift unpredictable. Spraying in these conditions is not recommended.

The use of Air Inclusion Nozzles and the inclusion of Driftstop™ or other drift-reducing adjuvants are now compulsory for all applications of hydrogen cyanamide and bactericides (i.e. Kasumin/Key Strepto).

The use of low-drift technology is also recommended for other dormant and early season spray applications. They have been shown to reduce spray drift by up to 90%.

Figure 6. Handheld anemometer

- Particular attention should be paid to minimising drift when exiting rows by promptly turning nozzles off. This is especially relevant with dormant sprays.
- Wind-speed and direction and air temperature should be recorded before, and monitored during, spraying. Higher wind- speed,

temperatures, and humidity increase the risk of spray drift.

- Evergreen shelter should be planted on all boundaries to sensitive areas as this is the most effective shelter type to reduce spray drift (Figure 5). Trimming should be timed to assist with reducing spray hazards.
- Leaf burn on Casuarina shelter belts provide a good indicator of drift associated with hydrogen cyanamide.

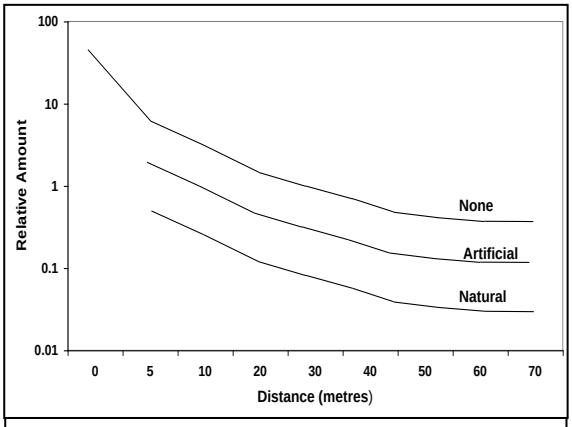

Figure 5. Effect of shelter on reducing spray drift.

Note that some regional councils such as Northland require that nozzles must produce a spray output no finer than "coarse" when spraying is done within 100m of a spray sensitive area. Check your local council Air Plan for more detail.

Record keeping

All spray applications should be accurately and honestly recorded in the spray diary. All products applied to vines except solid fertilisers applied to the orchard floor are considered agrichemicals.

The Zespri Spray Diary is a legal document and the Growsafe number of the applicator must be recorded against each individual application.

Storage and disposal

Agrichemical storage is another important area of risk management for users, who have a clear responsibility to protect the environment and human health.

Most of the requirements regarding storage of agrichemicals (including things such as signage, spill containment and fire control) can be found in the Agrichemical Code of Practice NZS 8409: 2004.

Penalties

Applicators are encouraged to consult the Agrichemical Code of Practice, GROWSAFE® Manual, Regional Council and HSNO regulations as well as any other relevant laws to ensure all legal requirements are met.

The Zespri™ system requires that all fruit submitted for export has been grown in accordance with the Crop Protection Programme, GLOBALGAP and all relevant New Zealand laws.

Penalties can occur under the following legislation:

- Breaching Regional Council Airplans by providing poor notification or creating a spray hazard can result in fines.
- The HSNO Act has provision for fines up to $50,000 for misuse of agrichemicals.
- Breaches to the Zespri Crop Protection Standard and Zespri™ System have provision for financial penalties and the non-export of fruit.

FURTHER READING

- https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/N98.pdf
- https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/N80.pdf
- https://canopy.zespri.com/EN/industry/pubs/kiwitech/Documents/N79.pdf

ZESPRI CONTACT DETAILS

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