COMMENT ON THE APVMA APPROACH TO SPRAY DRIFT MANAGEMENT

AUSTRALIAN VIGNERONS

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Australian Vignerons
Australian Vignerons (AV) is the National Peak body formerly known as Wine Grape Growers Australia, and fulfils national advocacy roles, statutory functions and is the national industry voice on biosecurity. AV welcomes the opportunity to provide comment to the APVMA in regard to the call for public input into the approach to spray drift management.

Australian Vignerons' members experience with spray drift
Many growers across Australia, and in particular in the Riverland and Clare growing regions of South Australia suffer problems with drift from group I herbicides, predominantly 2,4-D applied in grain growing areas and drifting onto vineyards. Wine grapes are extremely susceptible to group I herbicides and chemical trespass can lead to severe growth deformities, even at levels much lower than the maximum residue limit. This is a serious problem for organic producers, where any level of herbicide ingress may lead to a crop being unfit for sale as organic produce and the grower will lose certification for a period of at least three years. Vineyard owners who are training a young vineyard can experience growth deformities at extremely low levels of 2,4-D incidence, and this may lead to a delay to reach an economic break-even point, or in extreme cases death of young vines.

Commonly the spray drift damage originates some distance away from the damage that it causes. This is often due to movement in inversion layers. IT also often takes some time for the symptoms of such damage to be visible, which means that residue testing of affected plants may not yield detectable traces of herbicides. These factors mean that it is often very difficult for a producer suffering economic loss from spray drift to effectively pursue legal action to recover their loss.

General Comment on the APVMA risk management approach
While this is a negative experience with spray drift, reasonable - minded producers from all agricultural sectors recognise that there is a common responsibility to ensure that chemical application does not, as much as is possible, leave the property on which it is applied. Winegrowers acknowledge that they too have a responsibility to ensure that spray drift does not encroach on non-target areas. This submission is therefore not an attack on the grains sector. Previous experience with spray drift meetings in the Riverland region in 2012 led to meetings between grape, grain and vegetable producers. It is apparent that the vast majority of producers of all sectors are attempting to "do the right thing", but despite ongoing awareness and education programs, there are still incidents of chemical trespass, winegrowers are in some seasons are still suffering economic loss from this trespass, and the disturbing issue is that this is not restricted to wine grapes. Many crops are suffering similar issues with chemical trespass. Australian Vignerons is aware that Cotton Australia has recorded 40,000 ha of cotton that has been adversely impacted to some degree by 2,4-D drift this season.

These observations are relevant in the public comment for the APVMA approach to spray drift risk management because despite evidence that this is high quality work, it does not offer confidence that this approach or the associated tools will prevent the above problems with spray drift, and the ongoing losses and associated frustration. This is because this management approach deals heavily with concentrating on buffer zones with linear, predictable influence of wind. There is brief mention of avoiding spray application during conditions where inversion layers are present on the label examples given, but not enough emphasis on the impact that inversions layers may have on spray drift.

During the years of discussions between grape growers and grain producers it appears evident that the majority of chemical trespass issues that are causing most concern result from the influence of inversion layers. Note the following points:

- Some years ago it was thought that the regular symptoms of 2,4-D on grapevines was caused by long distance volatile drift of ester formulations of 2,4-D. The banning of ester formulations from S.A.

regions other than the west coast has not resulted in a reduction of 2,4-D chemical trespass incidents.

- Many growers appears to have a false sense of security about using 2,4-D amine; in that it is less volatile and therefore believe that they will be safe as it is not prone to vapour drift. The influence of droplet drift in inversion layers is widely underestimated and misunderstood.
- As many farms have increased in size in order to gain production efficiencies many apply summer weed control products including tank mixes of 2,4-D and glyphosate at night, [partly in order to apply when delta-T conditions are favourable, and partly due to time constraints. In many regions, including the Clare and Riverland regions mentioned, there are inversion layers present during the period when summer weed control is typically practiced.
- Inversion layers are misunderstood, and many farmers do not appreciate or understand how inversion layers are formed, or the fact that droplet drift can travel many kilometres.
- Many of these modern farms operate large-scale SP spray units, and apply low volumes of water per sprayed hectare. This means that weather conditions can change during the application of a single tank of spray, and while an inversion layer may not have been present or wind direction may have been favourable at the start of spraying, these conditions may change and drift can result.
- In the pursuit of efficiencies some spray applications are travelling at higher speeds than those specified in industry codes of practice. This can result in boom heights being raised, and droplets being emitted from spray nozzles being sheared, resulting in a greater proportion of fines that are prone to drift.
- Biosecurity SA has provided extensive consultation, has provided extensive support material through chemical resellers, has performed a number of audits and offered considerable input to spray applicators for some time, but the problems continue to occur.
- Many of the current chemical training courses that are required for producers to achieve relevant accreditation do little to actively train and educate those who are applying these chemicals. There is a strong view that many are simply a “tick and flick” type of accreditation where knowledge is neither gained nor tested, but simply attendance at these courses allows compliance for five years of chemical application. Farmers attending these courses have passed on this frustration.

So while the work that underpins the spray drift management is extensive, sound and commendable, it does not address the critical concern that has contributed to spray drift management for vineyard owners across the country for many years.

Possible solutions

A range of measures to address the shortcomings that have been found in the current spray application are included below. While some producers has clearly had enough of the ongoing damage and have called for a ban on the sale and use of 2,4-D, in reality this would be unlikely to solve the problem, as it is the application methods that appear to be contributing to problems not the herbicide itself. A ban on 2,4-D is likely to see similar problems being replicated with other herbicides, in the absence of addressing the cause of the problem. The real cause of most of the spray drift damage appears to be the problems listed above rather than lack of adequate buffer zones during the influence of linear and predictable chemical drift.

A number of possible solutions have been discussed with other agricultural sectors, including cotton, grains, wine grape and almond industry representatives. The input of the South Australian Mid North spray drift committee, the Riverland Spray drift committee, Cotton Australia and the input of several private agronomic consultants have been helpful in contributing the following ideas:

- Change the current chemical accreditation to one that imparts knowledge and tests an applicant’s proficiency rather than one that effectively records attendance and collects money. This is especially important for group I herbicides that have such impact and potential to cause damage at long distances from the target zone in the event of drift.
- Part of this training should be education about inversion layers, weather conditions and current drift-reduction technologies. Other issues such as nozzle selection, adjuvants that reduce drift, travel speeds and water rates should all be a complete suite of measures that are routinely utilised by all who apply agricultural sprays in every farming sector.
- Establish reliable information – gathering weather stations that will be capable of providing ongoing updates of the likelihood of inversion conditions. The imminent *Mesonet* weather station network in

the Clare region of S.A. should be supported and treated as a pilot study for possible rollout in other regions where spray drift problems regularly occur.

- Establish regular and seamless communication between the control agencies in each State and the APVMA to gather reliable information about how the spray drift issue is being managed. This includes Biosecurity S.A., the EPA in NSW, Biosecurity Queensland, and so on.
- Before 2,4-D is allowed to be sprayed, an applicant should be required to lodge an intention to spray; possibly on the APVMA website. This application could be linked to an automated weather station network or local BOM input, and if an inversion layer is likely an automated alert could be sent back advising the applicant not to spray. This would address the issue of lack of knowledge of who is spraying where by recording these applications, but also potentially prevent spray drift events by providing warnings about conditions that might lead to drift.

Comment on topics

Methodology used to determine regulatory acceptable levels (RAL's)

- The methodology seems sound, and is very complex. Those applying sprays will not be involved in the use of these calculations and it is noted that this material will often be commercial in confidence. The use of these calculations to aid a case – by case risk management approach is supported.

Standard scenarios and deposition curves that define realistic worst case situations and are used to generate on-label spray drift buffers

- This is supported, similar to above – the use of individual site assessment that takes into account the chemical being used, the nozzle selection and sensitivity of an off-target is a sound approach, and preferable to a "one size fits all" guide.

Spray drift data guidelines to support the generation of custom deposition curves

- This is a sound basis on which to model the likely deposition and drift downwind; assuming the data has rigour.
- Note that for vineyard spraying a wide range of spray application is in use, not just axial fans (vertical spray) as shown above. However, the use of a standard to provide a reference point is a useful approach.

On label spray drift instructions

- While there is emphasis on avoidance of livestock, environmental and bystander damage it would be of benefit to place greater emphasis on avoidance of inflicting economic loss on other agricultural crops via spray drift.
- While there is information about avoidance of wind drift a statement with greater emphasis should be placed on avoidance of spraying during inversion conditions.
- It is noted that mandatory buffer zones are applicable to wind direction.

Spray drift risk assessment tool

- A valuable tool and sound approach. It is good to take into account the factors that contribute to spray drift and adjust the risk assessment accordingly.

Spray drift management tool that allows chemical users to refine these realistic worst-case risk assessments based on their own circumstances and recalculate buffer zone distances accordingly

- Valuable tool and a sound approach (as above).
- This knowledge – based approach encourages the use of drift-reduction technologies and / or delay of spraying operations until favourable conditions are present. This results in smaller buffer zones, which may mean better ease of management.

Interim measures prior to an interactive web based tool being available (stage 2) and legislative requirements to enable off-label spray drift conditions set by the tool to be enforced.

- This is a good idea to encourage uptake and assessment of the tool, and again, encourages a "case by case" assessment of risk rather than a "one size fits all" approach.

Summary
While the spray drift risk assessment plan and associated spreadsheet tools are valuable, the main gap in prevention of spray drift is the lack of understanding and consideration of the influence of inversion layers, as addressed above. A collaborative approach between the APVMA, State control agencies and industry groups at national, State and Regional level offers the best way forward to finally address this expensive, frustrating and ongoing problem. Measures that address these shortcomings are needed as soon as possible.

The Mesonet weather station network at Clare should be supported and treated as a trial for possible wider use.

Andrew Weeks

Chief Executive Officer
Australian Vignerons