NATIONAL WORKING PARTY ON PESTICIDE APPLICATIONS

Chair's Quarterly Report

June 2015

The National Working Party on Pesticide Applications (NWPPA) is working to bring a national, coordinated technical approach to spray drift issues which I believe that has been acknowledged and recognised by stakeholders.

Our vision is that the regulatory system is science based and recognises the use of drift reduction technologies, better education and practice to enable the use of smaller, practical buffer zones.

Report on the 2015 Annual Meeting

The 2015 Annual Meeting of National Working Party on Pesticide Applications was held on Thursday 21 May at the Federal Golf Club in Canberra. Presentations from the meeting are available from the NWPPA website.

Marc Kelly, Director in the Sustainable Agriculture Branch informed the meeting that the Australian Government Department of Agriculture is currently conducting stakeholder engagement on the development of reforms to the regulation of agricultural chemicals and veterinary medicines (agvet chemicals) in Australia.

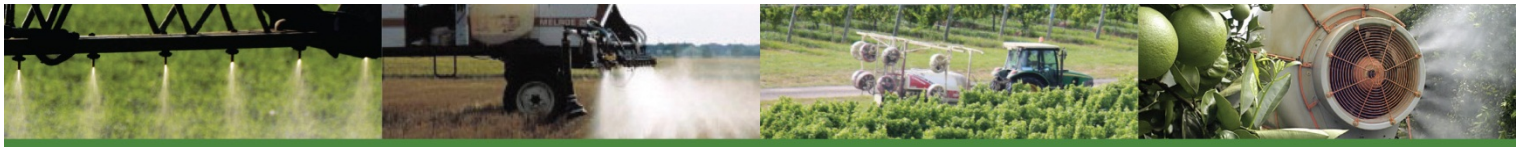
Reform to increase the effectiveness and efficiency of regulation and deliver increased access to chemicals is a priority for the Government. The agvet chemical regulatory system has not kept pace with significant evolutions in the chemicals manufacturing and agricultural industries. We now have the opportunity to explore options to deliver a more contemporary fit-for-purpose regulatory system. An improved regulatory system would deliver faster access to newer, more effective and safer chemicals to users and more predictable, transparent and lower cost regulation for registrants.

Issues and ideas are currently being explored collaboratively with stakeholders. Collaboration will continue as reforms are developed and finalised for consideration by government. Input from stakeholders will be vital to ensure that effective and long lasting improvement can be achieved. More information on the process for engagement and reform development, including a discussion paper prepared by the department, can be found online at www.agriculture.gov.au/agvet.

Stakeholders are encouraged to review this page and contribute to the reform process.

Raj Bhula, Executive Director, Scientific Assessment and Chemical Review and **Dave Rumbold**, Spray Review Officer, Australian Pesticide and Veterinary Medicines Authority (APVMA), provided an update on the spray drift policy review. They informed the meeting that work has been completed on the regulatory science aspects of the spray drift project, including:

- Improving spray drift modelling for ground boom applications through the validation of a model under Australian conditions from the work of the NWPPA. This will be a world first advancement and allows for the consideration of a much greater range of nozzles and other methods of reducing spray drift than has ever been possible.
- Updating the modelling used for aerial application to an improved version already validated and used by overseas agencies.
- Adopting modelling used by the German government for vertical sprayers (typically orchard/vineyard equipment but also may include similar equipment used in trellis tomatoes, forestry and ornamentals) which most significantly has been used as a reference for the approval of almost 300 drift reduction



technologies in Germany which may be relevant for Australian production systems.

- Improving risk assessments through the use of a greater degree of real world data inputs
- Developing more defined labelling instructions with increased clarity to remove uncertainty for chemical users.

They informed the meeting that the APVMA is currently seeking external legal advice regarding the implementation of this work which will be finalised later this year, commencing with public consultation.

Nicholas Woods from the NWPPA Secretariat followed with an update on the research projects endorsed by the NWPPA (Figure 1) and the current work of the Technical Working Group (TWG).

The TWG are considering processes based upon quality wind tunnel data and use of recognised international models that could support a science based assessment of the performance of drift reduction technologies (Figure 2).

The TWG is actively reviewing a number of technical approaches and is compiling a technical paper that will be released on the NWPPA website www.nwppa.net.au early in the new financial year. A successful outcome the this work by the TWG and the NWPPA would see the adoption of a process for

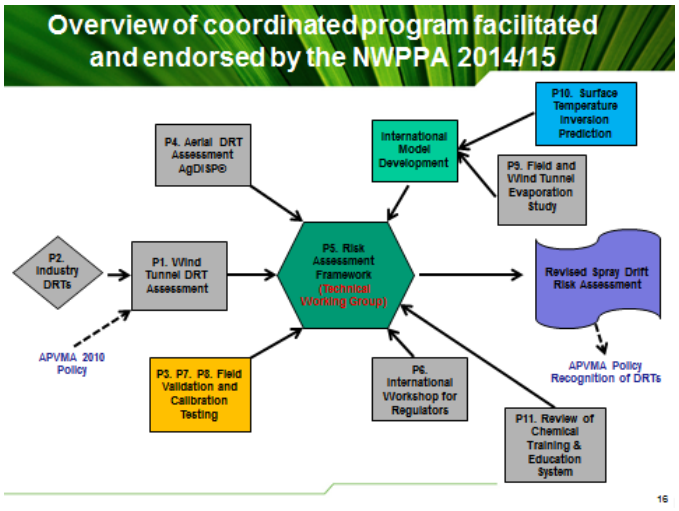


Figure 1. Overview of coordinated program facilitated and endorsed by the NWPPA

the assessment of DRTs that could recognise grower best management practice, facilitate rapid assessment of DRTs by the regulatory system and make use of practical operational downwind buffer distances.

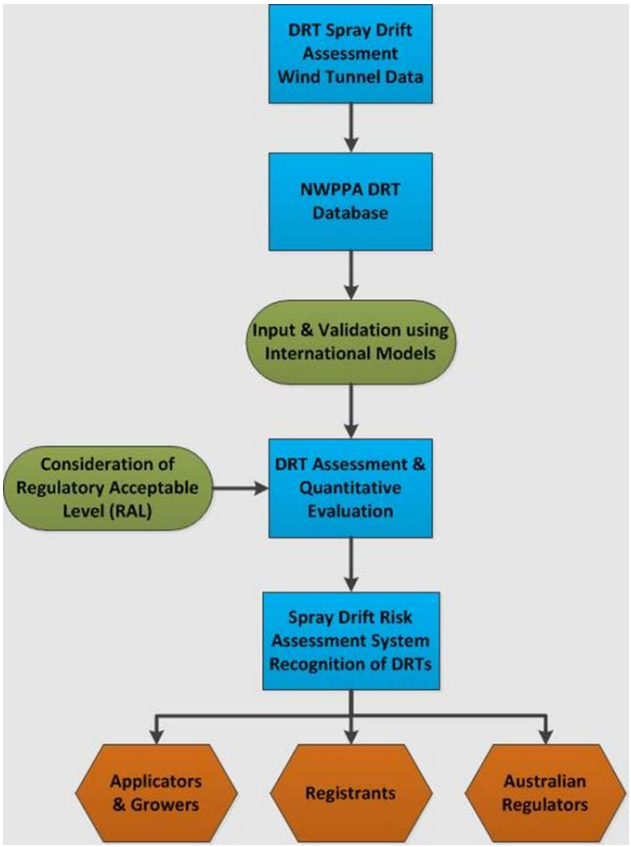
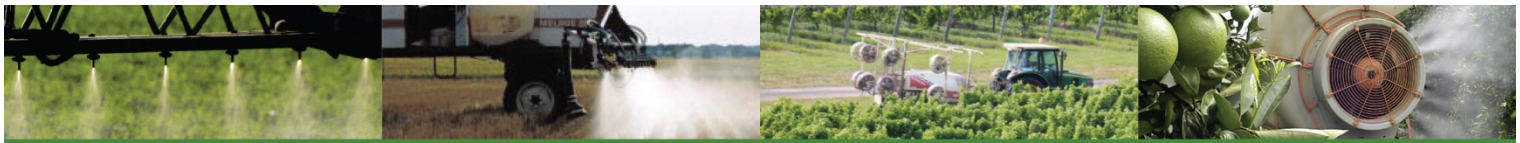


Figure 2. Outline of science-based assessment of the performance of drift reduction technologies

Joe Murrell, Chair of the Australian Groundsprayers Association and Executive Committee Member of the NWPPA provided a short update on the work being done by the Groundsprayers Association to develop a national stewardship program.

Graeme Tepper, who is a consultant and facilitator in weather services for agriculture, aviation and marine, informed the meeting about his work on the management of spray drift through inversion risk awareness.

He informed the meeting that the Katanning Profiling Automatic Weather Stations (PAWS) have been successful in detecting inversion onset, variable lifecycle and cessation. Additionally, PAWS



data has been used to determine the risks that inversion conditions pose to spraying.

Through inversion risk analysis it has been found that not all inversions pose the same risk. Many inversions occur in weakly stable states more akin to neutrally-stable conditions; neutral conditions are considered ideal for spraying. Additionally, inversion risk analysis detects the range of spray risk conditions when an inversion exists from very low risk (possible to spray with certain management techniques) to high risk (do not spray regardless of practices).

Integrating inversion risk-advice into spray planning would lead to greater night-time spray opportunity and drift minimisation than if only complying with 'do not spray when an inversion exists'.

With the establishment of PAWS networks, immediate advice can be sent to operators that an 'inversion exists'. Future opportunity exists for inversion-risk advice to be sent direct to operators. However, such advice is currently under construction and needs to be evaluated and approved by industry before being broadcast.

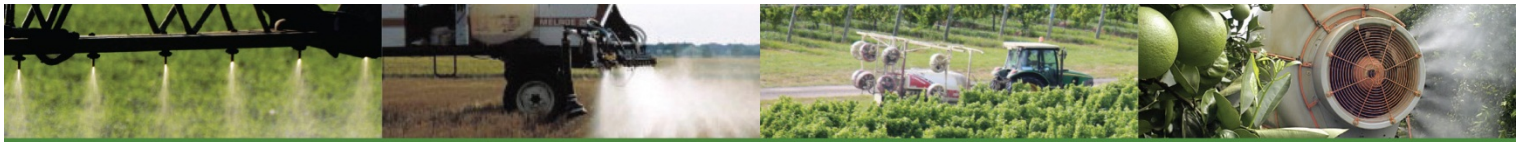
Andrew Hewitt, then provided an update on research currently being undertaken by the University of Queensland using the wind tunnel research facility at Gatton and the work being undertaken on behalf of the Grape and Wine Research and Development Corporation on a Viticulture Field Trial Program investigating the field performance of sprayers. A summary of his presentation is as follows:

- Evaluations of sprayers and adjuvants for deposition throughout the canopies showed that many sprayers are not providing thorough coverage, especially on the important surfaces such as undersides of leaves. The target of greater than 800 droplets/cm^2 was not reached in many cases. Adjustments to sprayers can help improve coverage but some sprayers are simply not good for spray uniformity in vineyards.
- Dosing models based on L/ha are not suitable to varying canopies as shown in the comparison of large versus small vine canopies at a single field site. The approach of dosing based on L/100m/1m (ie spray rate per distance per canopy height) is preferable.
- New laser based systems have been developed and evaluated for spray coverage and droplet size assessments, in comparison with sensitive cards and/or natural foliage and fluorescent tracer dyes.
- The spray drift reduction potential of equipment can be realised through relatively simple adjustments such as avoiding spraying above the canopy top. Some sprayers also can help reduce drift potential compared to the reference axial fan air blast sprayer.

Chris O'Donnell, then provided an update on the Grains Research and Development Corporation (GRDC) funded projects on droplet size calculators, efficacy and drift. He informed the audience that:

- All wind tunnel measurements for the drift reduction technology database have been collated and are now ready for smartphone app.
- The app will use a 'look-up-table'.
- Efficacy work has shown a stubble effect where plants sprayed in the 'no stubble' treatment has significantly better mortality rates than those in the 'with stubble' treatment.
- Work is progressing on whether using coarser sprays, with a subsequent effect being more herbicide deposited within the paddock, has any effect on plant back periods.
- Other herbicide efficacy work continues to support earlier findings which showed that efficacy is maintained with coarse sprays.

Gary Dorr from the University of Queensland provided an update on the field studies, wind tunnel studies and modelling have been undertaken at the University of Queensland Gatton Campus through funding supplied by the GRDC. A range of spray options, ranging from 'fine' to 'very coarse', have been evaluated. He outlined some results from these trials as well as the advantages and disadvantages of each of the three approaches (field, wind tunnel and modelling). He highlighted the need for data from all three approaches when assessing the performance of drift reduction technologies for operational and regulatory purposes.



For example field studies can provide an actual measure of spray drift exposure, but they are time consuming and expensive to conduct. They also only provide information on the sprayer setup and meteorology tested and cannot easily be extrapolate to other situations. Models, on the other hand, can allow comparison of treatments and testing of various options. However, they need to be suitably validated, need to have reliable input data, and be used within their limitations. Wind tunnels provide comparative measurements between treatments, but results are difficult to extrapolate to field exposure. Wind tunnels can however provide a cheaper, reliable screening method for potential technologies that are suitable for further evaluation.

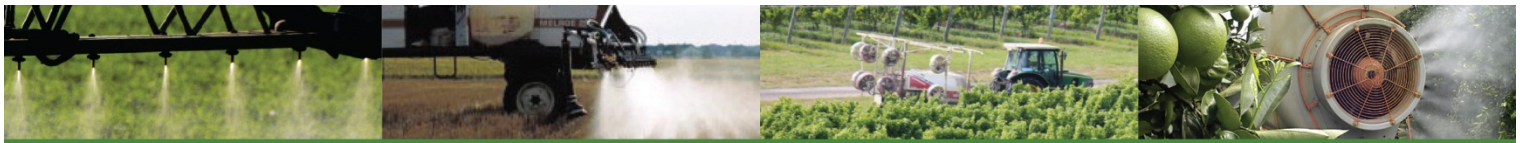
In this study, good agreement was found between the AGDISP ground model predictions and field study results for 'coarse' sprays. However the model tends to over predict the downwind spray deposit for 'fine' sprays and under predict deposit for the 'very coarse' sprays. Results from these trials are being used by the NWPPA to assess the performance of technologies for operational and regulatory purposes.

- Field studies, wind tunnel studies and modelling have been undertaken for sprays ranging from 'fine' to 'very coarse' at the University of Queensland Gatton Campus.
- Field studies provide an actual measure of spray drift exposure, but they are time consuming and expensive to conduct. They also only provide information on the sprayer setup and meteorology tested and cannot easily be extrapolate to other situations.
- Models can allow comparison of treatments and testing of various options, however they need to be suitably validated, need to have reliable input data and be used within their limitations.
- Wind tunnels provide comparative measurements between treatments, but results are difficult to extrapolate to field exposure. Wind tunnels can however provide a cheaper, reliable screening method for potential technologies that are suitable for further evaluation.

J Connor Ferguson, PhD student at the University of Queensland School of Agriculture and Food Sciences, Centre for Pesticide Application and Safety, posed the question: Can spray drift reduction *and* increased efficacy result from the same technologies?

The short answer to the above question is 'yes', but it depends. Research funded by the GRDC at the University of Western Australia along with SARDI, DAFWA and the University of Queensland has explored the effect of drift reduction technologies on the efficacy of pesticides in wheat and canola. Efficacy studies on diamond back moth control in SA canola, net blotch control in WA, and grass weed control in QLD have been conducted using standard technologies compared to drift reducing technologies. Drift reducing technologies selected for these studies are mainly hardware technologies, such as nozzles, sprayer set-up and operating conditions.

In addition to trialling spray drift reduction technologies, work has been conducted to examine new control options for diamond back moth, net blotch and grass weeds in these studies. Initial results found improved control of diamond back moth with an experimental insecticide 'AD-AU 1412' with both contact and ingestion activity when compared against Dipel® or Dipel® + Canopy®. This was across both standard and drift reducing nozzles. Results in the WA net blotch control study from 2014 and QLD weed control studies in 2014 saw no difference in efficacy across nozzle type. All of these studies will be replicated again this year with more nozzles to further explore this result. Control of these difficult pests will be made easier from the new options explored in this research. Results from these studies indicate that you can in fact reduce spray drift *and* increase your efficacy.



NWPPA Work & Executive Committee 2015-16

With most of the research commissioned by the NWPPA either finished or nearing completion, and the delay in the release of the APVMA consultation paper, the Working Party will have a reduced role.

The Executive Committee of the NWPPA will meet shortly after the release of the consultation paper to determine what, if any, actions are required in response. The Executive Committee will develop an action plan if further work is required.

In the interim, the current Executive Committee will continue, that is:

NWPPA Executive Committee	
Gavan Cattanach	Independent Chair
Gerard Barbell	Nufarm
Jolyon Burnett	Australian Macadamia Society
Ross Gillies	HVP Plantations
Melanie Gengos	Adama
Keith Hayes	Australian Grape and Wine Authority
Phil Hurst	AAAA
Alastair James	CropLife Australia
Matt Kealley	Canegrowers
Pete Mailler	Grain Producers of Australia
Joe Murrell	Australian Groundsprayers Association
Jodi Pedrana	Horticulture Innovation Australia Ltd
Trevor Ranford	Pistacho Growers Association
Michael Schaefer	AusChem
Colin Sharpe	Dow Agroscience
Ken Young	GRDC

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