

Minimise spray drift – good farmers manage it!

■ By John Single, Narratigah, Coonamble

THE recent publicity surrounding herbicide damage to cotton crops is just the tip of the iceberg. Phenoxy damage to cotton is dramatic in that it is highly visible and can be hugely detrimental to yield. So cotton receives the publicity, and unfortunately in the eyes of some, cotton growers are seen as the bad guys as they restrict the use of herbicides in cotton growing areas.

What rubbish! We all have a very clear obligation to contain all pesticides to their intended target, legally, morally and most importantly – environmentally.

All too frequently we are seeing herbicide damage to all types of crops and from the various chemical groups – not as obvious as cotton – but it is occurring. We see it in leaf discolouration, irregular plant growth, reduced or a loss of tillers and in worst instances, plant death. How often do we drive through cropping areas and witness the obvious damage to the trees, or drift on to pasture country.

In isolated instances traces of paraquat have been detected in grain. That is frightening. And what is that distortion in my garden plant and why did that garden plant die?

As one of a number of growers who helped develop our current zero till cropping systems in the 1980s and then proudly promoted “maximum sustainable economic yield” through zero till in the early 1990s, it is way past time to speak out about pesticide damage that is occurring in this great industry of ours.

We own the problem – we should fix it!

We own the industry, we are causing the problem and we must fix it.

If we choose to do nothing, there is no doubt that in time the problem will be fixed for us. Look at what is happening on the regulation front in other countries, particularly in the European Union and North America. In some cases farmers wanting to apply a pesticide to a field need to have that field inspected by an agronomist, the agronomist approves, or not, the pesticide

application, the agronomist certifies that the farmer can purchase enough pesticide to apply to that field (and only that field), then the farmer can purchase that pesticide after demonstrating that they are qualified to apply it.

There is no debating that the current situation is unacceptable – it simply must change. The choices are simple, do nothing and watch government cover the agricultural industry with red tape, and/or have certain pesticides banned because of irresponsible use – or we self-regulate.

Self regulation could take many forms, with education being the obvious starting point. But let’s make certain that the information we put out there is complete.

Drift occurs in many different situations and it all needs to be contained.

Inversion layer drift is the killer

But the primary focus is inversion layer drift.

The industry has itself to blame for inadvertently promoting night and early morning spraying, when inversion conditions are most likely to exist.

This has occurred through the promotion of Delta-T conditions under which to operate – ideally of no more than a Delta-T 8 – which in the summer months principally occurs at night and early morning. This has promoted better herbicide efficacy.

Unfortunately, no-one said where to measure Delta-T. As a result we generally rely on various weather stations that record well above ground level.

But it is at ground level in the spraying environment that we should be most interested.

Frequently Delta-T is less at lower heights, so spraying can continue further into the day reducing the need to apply at night.

Weed stress and size have a huge effect on herbicide efficacy, and small rapidly growing weeds are far easier to control than large stressed weeds.

In a fallow spray program it is often better to extend spray hours past Delta-T of 8 in order to apply to small actively growing weeds – again reducing the need to spray at night.

There is good information about how to contain drift – but the age old industry problem is how to beat that information into growers’ heads.

Habits are hard to break, particularly when dollars are involved. Chemical card training should be ramped up to include detailed information on drift control and APVMA needs to look at labelling to include very prominent inversion layer restrictions. A minimum of a three km per hour wind does not mean that there is not an inversion layer.

If your crops suffer drift from neighbours, let them know – they may not realise that they or their operators have caused a problem.

The industry used to have the slogan: “Conservation farming, good farmers manage it.”

It could now be: “Minimise drift, good farmers manage it.”

Let’s hope that we don’t instead resort to “it’s cool to do in a drifter” and need to bring in a further drum levy similar to *Drum Muster* to fund policing of our great and proud industry. 



John Single is calling for proactive change to counter increasing spray drift issues. Industry self-regulation is needed.

SPRAY CONSULTANT COMMENTS...

Mary O'Brien is a spray application consultant based in southern Qld where a wide mix of side-by-side summer and winter crops has made her an experienced authority on spray drift. Mary has been involved in countless field days, seminars and on-farm demonstration sites focussing on safe and effective use of farm pesticides.

We asked Mary to comment on John Single's whole of industry 'wake-up' call when it comes to spray drift (see page 16).



Mary O'Brien.

John is making some very good and valid points, particularly in his call for all crop production sectors to take ownership of the spray drift issue. If there is not a united and effective management approach to stop spray drift damage, pesticide products will be lost with a huge impact on our ability to manage resistance.

Spray drift minimisation should be uniting the crop production sectors, not dividing them.

We often have an unhealthy obsession with Delta-T that in practice, pushes people to spray at night. To flesh out John's comments on Delta-T a bit more, it is widely accepted that a reading of 2 to 8 is in the go range. But unfortunately, many operators don't know that this is for a 'fine' spray quality.

For fallow sprays where Group I products are used, 'coarse' spray quality is the minimum legal requirement. So when using larger droplets we can push that Delta-T out to about 12, or in some instances 14, thereby providing more opportunity for less risky daytime spraying. We refer to Group I chemicals because of their notoriety in summer crop drift issues. But we need to be equally diligent across all chemical groups throughout the year.

There is a great 'Spray Clock' recently released by Nufarm, and developed by my spray application consultant colleague Bill Gordon. The Spray Clock is a very good summation of when and when not to spray.

Bill has always recommended measuring Delta-T both in the air and also at the plant target height. If there is good soil moisture and the plants have not shut down and are transpiring well, the Delta-T will be a better guide if measured at the target plant.

Delta-T should be used as a guide only – it is not the bible as many treat it.

Chemical labels and temperature inversions

John is also suggesting beefing up the industry chemical card training as well as drum labelling, particularly with respect to spray drift – and I couldn't agree more – but we need more focus on technical issues such as temperature inversion identification.

The trainers must also be up to speed on what causes drift and importantly, what the best drift minimisation strategies are across the full range of local environmental conditions.

The trainers must then have the skills to pass this information on to operators who, in turn, are willing to take it on board.

There are instructions on the chemical label stating 'do not

apply during surface temperature inversions'. The problem is that very few operators can tell when there is an inversion.

John rightly makes the point that temperature inversions can still be in place even when there is a wind above 3 km per hour. I have seen many situations where temperature inversions are in place in spite of wind blowing well above 3 km per hour. It is very dangerous to assume a low inversion risk even if there is a 3 to 15 km per hour wind.

We need to also keep in mind that inversions are not just a summer spraying issue. Inversion events in winter can often persist for longer (ie. start earlier in the afternoon and won't break until later the next morning).

Industry-wide responsibility

I often hear farmers and operators blaming the particular chemical, the chemical company, the APVMA or the consultant when spray drift occurs. The best response to this is by way of an analogy:

If I buy a V8 Commodore and I get a speeding ticket, is that Holden's fault or mine? I have bought a product that is capable of doing 5 km hour or up to 260 km per hour. How I use my bought product is my problem.

To apply the analogy, if I buy a Group I herbicide I need to know the capabilities of the chemical and how it is formulated before I can 'drive' it safely.

This season we have seen broadscale drift damage to cotton and other summer crops. While there are some products marketed as low volatile esters, they are still a lot more volatile than the amine formulations.

The issue with low volatile ester formulations is that it doesn't matter how good the conditions are when it is applied, it can volatilise and move off target up to 72 hours after the application – and with the soil temperatures we get in summer, that is a very real problem. When it vaporises into gas form, it can then move during the day or during inversions. That's why these LVE ester products are just not suitable to use in summer.

It is in the best interests of farmers and operators and the industry as a whole to act proactively and do the right thing.

The bottom line is that every single factor that impacts on drift is within the control of the operator – formulation, nozzles, timing, speed, boom height and tank mix.



This smoke test shows air movement during surface temperature inversions.