

# BACKGROUND BRIEFING

## Issue 3 Phenoxy Herbicide Spray Drift October 2009

### Introduction

Phenoxy herbicide spray drift has been a constant issue for cotton growers but recent changes in the use patterns of phenoxy herbicide products to control weeds (e.g. rising fuel and glyphosate costs, shifts in weed species especially Fleabane, and farm machinery guidance equipment technology) have created a greater need for cost effective broad-spectrum weed control applications.

Over the past five cotton seasons, cotton crops in New South Wales and Queensland have suffered damage as a result of the Phenoxy group of herbicides. It is of grave concern to the industry that over this period close to 10% of the Australian crop has been affected by Phenoxy drift. In the 2008/09 season there was widespread crop injury in some areas and in some cases serious crop damage. Data collated by Cotton Australia during the season indicates that the damage to the crop was just under \$10 million. The results show that if a cotton grower is impacted by Phenoxy drift then it is common that the majority of their crop (in excess of 80%) will be affected. In fact, fields totalling 741ha were abandoned in the 2008/09 season due to heavy damage after multiple spray drift events. This indicates that the industry is suffering from a widespread, persistent problem. And whilst not affecting every grower, when it does, it has a huge economic effect on the individual farm business.

### What are phenoxy herbicides?

The phenoxy herbicides (Group I) are known as hormone disrupters of plant cell growth and are considered cost effective for the control of a range of summer and winter growing broad-leaf weeds on fallow paddocks and in certain cereal crops.

Products containing the active constituent 2,4-D are the most well known of the phenoxy group but there are a wide range of products with registrations for use in broadacre crops and fallows (see the table below). In addition there is a wide range of product formulations within the Group I products including high volatile products that can vaporise and spread in warm or hot weather, causing damage to susceptible crops some distance from the spray application site.

Group I Herbicides – disrupters of plant cell growth		
Herbicide subgroup	Active Ingredient	Example Registered Products
Phenoxies	2,4-D	2,4-D amine, 2,4-D ester
	2,4-DB	Legumex, Butoxone, Buticide, Butamine, Buttress
	MCPA	MCPA amine, MCPA ester
Benzoic acids	Dicamba	Banvel, Kamba, Cadence
Pyridines	Clopyralid	Lontrel, Victory, Archer, Transit
	Fluroxypyr	Starane
	Picloram	Tordon
	Picloram / tricloyr	Grazon DS, Access
	Triclopyr	Garlon, Invader



*Cotton plants are very sensitive to the phenoxy group of herbicides and minute quantities may cause typical thickening and elongation of leaf veins as well as spiralling of stems. Plants exposed to off-target spray drift will all exhibit similar symptoms initially but depending on the actual dose of active ingredient could suffer damage which does not manifest itself until later in the development of the crop, when yield potential and fibre quality could be greatly affected.*

## Phenoxy herbicides and cotton

The effectiveness of the phenoxy herbicides is also the reason that off-target spray drift from applications of products in this group can cause serious injury to broadleaf crops, native vegetation and ornamental plants. Cotton plants are very sensitive to the hormonal effects of the phenoxy herbicides. Cotton is the most susceptible of all large-scale summer crops as it is broad-leafed and growing at the same time 2,4-D phenoxy herbicide products are being used to control weeds during the hotter months. Other susceptible crops include sunflowers, grapevines, grain legumes and tomatoes.

Cotton Australia recognises that, as users of 2,4-D in winter rotation crops, cotton growers are keen to ensure the continued availability of this valuable herbicide but that there is room to improve label conditions which address risk assessment issues before and during the spray application.

Cotton Australia is also determined to raise awareness of the hazard which 2,4-D poses to cotton due to the sensitivity of cotton plants to the material and the potential for major crop damage and loss of production. This hazard is compounded by the ability of some formulations of 2,4-D to readily move off target in certain meteorological conditions.

## Neighbour communication

Unfortunately in the decision making process where the focus is on controlling weeds in the most timely and cost effective way some other important considerations such as sensitive crops, native vegetation and water ways can become a secondary consideration. Even reading and complying with the label directions for the registered product of choice can take a back-seat to getting the job done.

Many cotton growers are aware of good neighbour chemical use principles through the Pesticide Application Management Plan (PAMP) for Endosulfan use on cotton. These guidelines can be useful when establishing expectations for chemical use by neighbours. The cotton PAMP outlines an inclusive communication process of the key issues for best practice chemical use for the season with neighbours, their employees, consulting agronomists and spray contractors:

- Pre-season communication – ensure neighbours are aware of the location of any 2,4-D sensitive crop plantings and/or sensitive areas and provide a reminder that farm employees and contractors should also be made aware of this

- In-season communication – request to be notified by your neighbours of spray applications prior to commencement
- Notify your neighbours of any spray applications prior to commencement
- Weather monitoring – many chemicals have label directions regarding weather parameters for spraying (temperature and wind speed) and it is essential to be able to measure and record spray conditions
- Equipment selection and maintenance – many chemical labels also contain guidance on nozzle selections and droplet size to minimise off target spray drift
- Record keeping checklist – keeping records can satisfy legal requirements for spray application and can assist in dispute resolution in the event of a drift problem
- No spray buffer zones - note some chemical labels outline specific buffer requirements. It is the applicators legal responsibility to read (and follow) the label before application. Buffers for fallow sprays may need to be greater than for in-crop applications
- Knowledge and information – there are many resources that provide information on best practice spray application that can not only help prevent spray drift but also improve the effectiveness of the spray operation. There are now training opportunities through professional providers jointly funded by cotton and grains industries. Training can result in more responsible pesticide use but also improved results and value for money.
- Cotton Australia is collaborating with Nufarm, CRDC and GRDC to develop an online 2,4-D susceptible map awareness tool for the 2009/10 season ([www.cottonmap.com.au](http://www.cottonmap.com.au)). This web site builds on the printed version of the Cotton Awareness map from the Gwydir region last season and allows cotton growers to plot their own cotton fields in any industry location. The site will be heavily promoted to those applying phenoxy herbicides over summer as an essential pre-spray planning tool to check on the location of 2,4-D sensitive cotton crops in their location.
- Cotton Australia has provided a template for a neighbour notification letter advising of the presence of 2,4-D sensitive crops in Microsoft WORD format on the website <http://www.cottonaustralia.com.au/toolkit/phenoxyherbicides/> for use this season.

## What to do if an incident occurs?

Cotton Australia will continue to raise phenoxy spray drift issue as a matter of concern with Commonwealth and State regulators; however, direct reporting by growers of adverse incidents is a powerful feedback mechanism that government agencies cannot ignore. Adverse reporting formally alerts regulatory authorities to registered chemical misuse and helps raise preventative action and awareness to avoid future problems.

The early detection of a spray drift event is paramount, the longer it is left undetected the more difficult it will be to identify who is responsible. To have any recourse growers need to pin point the source of the spray drift came from and extent of the crop injury.

### Immediate action if you suspect you have incurred damage

1. Have a qualified independent agronomist inspect the suspected damage as soon as possible to establish that the problem has been caused by 2,4-D (or other phenoxy herbicide) and have this person officially record what they observed. Photographs and samples may be useful. Plant tissue samples may help to confirm the causal agent. There are professional loss adjustment consultants who can be engaged to collect evidence for civil action. If adequate evidence exists to identify the cause and source of the spray drift seek independent legal advice immediately
2. Establish as accurately as possible when the off-target herbicide may have contacted the crop and attempt to obtain accurate weather data for that time and record this data. Damage may appear within 24 hours of contact. If odour has been detected, the time of this occurrence should also be recorded
3. Attempt to establish the source of the herbicide drift. Check the possibility that more than one application has been made in the area at that time. In consultation with your own crop consultant, you should seek independent advice on the extent of crop damage in terms of managing to achieve an economic return. In recent years some fields have been abandoned due to the severity and timing of the spray drift event. In the event of civil action in some cases you may be required to continue to manage a damaged crop to mitigate potential losses of the defendant (most commonly through an insurance company representative)

4. Report the matter to a Cotton Australia Regional Manager
5. If you consider the damage serious or the result of an unlawful act such as use of high volatile ester outside the use window, the matter should be reported to the appropriate regulatory authority in your state ( NSW DECC/EPA or QLD DEEDI QPI&F). This should also be done without delay
6. Lodge an APVMA Adverse Experience Report through departmental web sites (see below).

### Secondary action

1. Ensure that an agronomist examines the crop and damage on a regular basis and maintains a written record of the observations (further photographs). Even if the matter is not pursued further if it becomes evident that the problem is not significant, it is important to collect this information at the time.
2. In the event a claim may be made it is important to reasonably mitigate against any further losses. In other words, the grower cannot be seen to disadvantage the development crop over and above the original herbicide drift damage, e.g. not watering on time etc. It is also important to document what measures are taken to avoid further losses thus enabling a more accurate assessment of the actual loss due to herbicide spray drift.
3. If preliminary investigations indicate an aircraft operator is responsible for the drift, growers in NSW should seek their own legal advice with respect to making a claim against compulsory off-target drift insurance. This claim should be made through a legal representative.
4. If the preliminary investigation indicates that a commercial ground applicator was responsible for the drift / damage growers in NSW & QLD should seek their own legal advice with respect to making a claim. Many commercial ground applicators carry off-target drift insurance, however, it is not a legislative requirement as with aircraft and it is possible that some may not have such insurance.

Even if the source of a drift is covered by insurance, it is essential that accurate records of damage development, meteorology, odour, observations and anything the grower is told in conversations, are accurately recorded. It is possible that an insurer may take the matter to court and you will need to have the correct and accurate information to support your claim.

## Who should you report an incident to?

### Australian Pesticides and Veterinary Medicines Authority (APVMA) - *Adverse Experience Reporting Program*

The APVMA is nationally responsible for ensuring there are no adverse impacts from registered pesticides on human health, the environment and export trade (off-target phenoxy herbicide drift is primarily considered an environmental issue).

The APVMA determines the type of registration for a given product in consultation with the registrant and State government regulatory agencies responsible for pesticide use based on information supplied in the registration application package.

The APVMA conducts the Adverse Experience Reporting Program, encouraging people adversely impacted by pesticide use to provide details of the matter to the APVMA. Cotton growers who have crops affected by herbicides are encouraged to submit a report to this program.

The APVMA issued new 2,4-D product label instructions in 2005 following a product group review to minimise the impact of spray drift. These new instructions are now part of the label:

- This is a **PHENOXY HERBICIDE** that can cause severe damage to susceptible crops such as cotton, grapes, tomatoes, oilseed crops and ornamentals.
- **DO NOT** use unless wind speed is more than three kilometres per hour and less than 15 kilometres per hour as measured at the application site.
- **DO NOT** apply with smaller than coarse to very coarse spray droplets according to the ASAE S572 definition for standard nozzles.

In addition, applications of 2,4-D ethyl ester, butyl ester or isobutyl ester are now banned between **31 August and 1 May** - It is a legal requirement that **NO** high volatile ester applications take place during the cotton season (summer months).

Adverse Experience Reporting data is used to identify recurring problems of specific pesticides. Remedial proposals of product labels are formulated from these reports. To submit an online report go to the APVMA web site and search "adverse reporting"

<http://www.apvma.gov.au/ga/agaerp.shtm1>

Please contact a Cotton Australia staff member for assistance with the submission of an Adverse Experience Report.

### NSW Department of Environment and Climate Change – *Environment Line*

The NSW Department of Environment and Climate Change (DECC) regulates chemical and pesticide use in NSW. They are charged with enforcing user compliance to product label directions such as developing and enforcing chemical control and pesticide use laws under the NSW Pesticides Act 1999. The regulations require adherence to product label conditions and instructions, training and record keeping by pesticide users.

In cases where an officer from DECC is able to collect evidence of chemical misuse this may lead to a fine or prosecution. In NSW, the misuse of pesticides may be subject to large fines - up to \$120,000 for an individual and \$250,000 for a corporation. Penalty notices of up to \$400 for an individual and \$800 for a corporation can also be issued for less serious offences.

The procedure for lodging a formal Incident Report in NSW is by phoning the **Environment Line on telephone 131555** (Note: this should be done as soon as crop damage is observed).

### QLD Department of Primary Industries and Fisheries (QPI&F)

Queensland growers who suffer phenoxy herbicide damage should either:

1) Phone the **QPI&F Business Information Centre on 132523**

or

2) Contact their local Biosecurity Inspector (QPI&F). Biosecurity Inspectors are located in Toowoomba, Rockhampton, Mackay and Townsville.

Once the Department has collected information enter this into an incident register and access whether a case for prosecution under the legislation exists.

## What legal avenues are open to you?

You have two major courses of action in seeking a legal remedy to off-target phenoxy herbicide damage:

(a) Civil Litigation – where you have sufficient evidence to support a court action against the person believed responsible for the damage. In such a case you must be able to prove damage to your crop and also negligence on the part of the person(s) responsible for the application of the herbicide. If the court proves damage and negligence, you can then seek compensation to cover the damage incurred.

(b) Regulatory Action – where the government, via one of its regulatory authorities, applies the provisions of legislation to a person(s) alleged to be responsible for herbicide drift /damage. In this case, the regulatory authority will conduct an investigation using the powers afforded to it under the relevant legislation and determine if the person alleged to be responsible has committed an offence under that legislation. The matter will then be taken to court by the crown. In this situation, the above information collected by you is important and it may be used in evidence. However, if the prosecution is successful, the person(s) responsible for the problem will be fined. There is no compensation paid to you with the damage.

The main advantage of a government prosecution is that this case will have proved negligence and this can be used to advantage by a civil case (or agreed settlement) which may follow.

If you elect to place the matter in the hands of a regulatory authority, it is essential that the matter is reported to the appropriate state regulatory authority promptly. Often state authorities are unable to respond to a report immediately and this is another reason for the cotton grower to collect as much accurate information /evidence immediately.

Should you elect to take this course of action they must be prepared to assist the authorities with their investigation and also be prepared to appear in court as a witness if required to do so.

*Disclaimer: While Cotton Australia outlines these legal avenues for general information to growers, we advise that you should always seek your own personal legal opinion for your particular situation.*

## What action is Cotton Australia taking to address phenoxy herbicide drift?

Cotton Australia has designed a comprehensive strategy in an effort to avoid the devastating damage caused to cotton crops by the irresponsible use of phenoxy herbicides. The strategy includes:

- Continued intensive lobbying of the APVMA, State regulatory agencies and State and Federal politicians
- Communicating to farmers through reseller networks, machinery sales and spray applicator networks
- A targeted advertising, media and awareness campaign across all cotton growing valleys
- Promoting chemical application training available through a jointly funded project of the Cotton and Grains Research and Development Corporations
- Establishing a stronger network with grains industry and agribusiness organisations to ensure continued access to the phenoxy herbicide group through more responsible use
- Immediate follow-up with Federal and State regulatory authorities following drift incidents
- A 'phenoxy herbicide drift' reminder letter and information package posted to 120 agricultural product distribution branches, ground rig operators and aerial applicators in cotton regions

The Cotton Australia web site has a new section with phenoxy herbicide information:

<http://www.cottonaustralia.com.au/toolkit/phenoxy-herbicides/> that includes:

- A notification letter for cotton growers to send to neighbours ahead of the coming season, including information on the potential risks of 2,4-D applications (MS WORD download).
- A template for growers to report spray drift incidents to Cotton Australia Regional Managers
- [Spray Drift Factsheet](#) from the Grains Research and Development Corporation.
- Technical information on best practice for 2,4-D spray applications in northern regions in Summer (Bill Gordon)
- A Grains Research and Development Corporation article entitled "Air Induction Nozzles Are Different".

## **Cotton Australia Contacts**

Cotton Australia is here to help you if you have any further questions or suffer from an incident of phenoxy herbicide drift. It is important that we know if incidents occur in order to make representations on behalf of the industry. Whilst Cotton Australia can't take legal action, provide professional advice or make adverse experience reports we can point growers in the right direction.

**Queensland: Gordon Baker 0408 982 291 or Rob Cairns 0427 707 868**

**New South Wales: James Houlahan 0407 956 586 or Greg Kauter 0429 700 711**

## **Other Contacts**

### **ALM Group**

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