



4FARMERS IS GOING 'GREEN' WITH FARM CHEMICALS!

The idea that pesticide formulations can be 'environmentally friendly' or 'green' may sound like a contradiction. But along with every pesticide comes an assortment of other chemicals that make up the formulation.

Sometimes these chemicals are there to enhance the efficacy of the active (e.g. wetters) or to reduce adverse effects (e.g. safeners).

Mostly, the function of these additives is to make the pesticide work. Once they have delivered the pesticide to its intended destination their work is done.

But they don't just disappear. They are still there. Most additives break down into harmless substances, others are slow to break down or have undesirable effects on the environment or end up as contaminants in the crop.

Nonylphenol ethoxylates, or NPEs are a class of additives widely used in pesticide manufacture. These chemicals are very useful as wetting agents and emulsifiers in many products especially EC's.

DARK SIDE TO NPES

Farmers need to know that there is a dark side to NPEs. They are only slowly biodegradable and they and their degradation products are highly toxic to aquatic life with long lasting effects. In particular, these compounds and their break-down products act as estrogen mimicking compounds causing undesirable

changes to aquatic organisms.

NPEs find their way into human milk and blood. This has led to Europe and New Zealand banning the use of these compounds.

The United States and China are restricting their use and recently Europe placed restrictions on clothing and textiles manufactured using NPEs.

The New Zealand wine industry banned NPEs in the chemicals used in viticulture this year in order to eliminate the risk of these substances finding their way into Kiwi wine. It is surely only a matter of time before the Australian wine industry follows suit.

And how long before your customers demand food produced without NPEs?

OUR PHASE-OUT PROGRAM

Over two years ago 4Farmers began a program of phasing out NPEs from its product range, replacing them with safer alternatives. We're more than half way through this process with the goal of zero NPEs.

The alternatives we have introduced are (as far as has been practicable) readily biodegradable and based on renewable resources.

And we're not stopping there. We are looking closely at all our raw materials and phasing out other undesirable materials to replace them with safer, 'greener' alternatives.



Farm chemicals



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4Farmers Products

with cross reference to similar trade name products

**70%
formulated in
Australia
by 4Farmers**

| Herbicides | Similar Product |
|--------------------------|--|
| 2,4-D Amine 625, 750 | Amicide 625 [®] |
| 2,4-D Ester 680 | Estercide Xtra 680 [®] |
| 2,4-D Ester 800 | Variou |
| 2,4-D plus Picloram | Tordon™ 75-D |
| Amitrole 250 | Amitrole T [®] |
| Atrazine 600SC, 900WG | Gesaprim [®] |
| Bromacil | Uragran [®] |
| Bromox MA | Bromicide MA [®] |
| Bromoxynil 200 | Bromicide 200 [®] |
| Brown Out | Spray.Seed [®] |
| Butoxydim 250 | Factor [®] |
| Carfentrazone 240 | Hammer [®] |
| Chlorsulfuron 750 | Glean [®] |
| Clethodim 240 | Select [®] |
| Clodinafop 240 | Topik [®] |
| Clopyralid 300, 750 | Lontrel [®] |
| Cyanazine 900 | Bladex [®] |
| Dicamba 500 | Dicer 500 [®] |
| Diclofop-Methyl 500 | Hoegrass [®] |
| Diflufenican 500 | Brodal [®] |
| Diflufenican/Bromoxynil | Jaguar [®] |
| Diquat 200 | Reglone [®] |
| Diuron 900 | Variou |
| Fluazifop 212 | Fusilade [®] |
| Flumetsulam 800 | Broadstrike [®] |
| Fluroxypyr 200 | Starane™ |
| Glufosinate-Ammonium 200 | Basta [®] |
| Glyphosate 450, 470, 540 | Roundup [®] |
| Glyphosate 875 | Roundup Dry [®] |
| Haloxypop 520 | Verdict [®] |
| Ipac 240 | Flame [®] |
| Imazamox 700 | Raptor [®] |
| Imazethapyr 700 | Spinnaker [®] |
| I-PYR 750 | Arsenal [®] |
| Linuron 450 | Linurex [®] |
| LV MCPA 570 | LVE Agritone [®] |
| LVE MCPA/ Diflufenican | Tigrex [®] |
| MCPA 750 | Agritone [®] |
| Metolachlor 960 | Dual [®] |
| s-Metolachlor 960 | Dual Gold [®] |
| Metribuzin 750 | Lexone [®] , Sencor [®] |
| Metsulfuron Methyl 600 | Ally [®] |
| Oryzalin 500 | Surflan [®] |
| Oxyfluorfen 240 | Goal [®] , Striker [®] |
| Paraquat 250 | Gramoxone [®] |
| Pendimethalin 330, 440 | Stomp [®] , Argo [®] |
| Picolinafen 750 | Sniper [®] |
| Propyzamide 500 | Kerb [®] , Edge [®] , Rustler [®] |
| Prosulfocarb 800 | Arcade [®] , part Boxer Gold [®] |
| Quizalofop-p-ethyl 100 | Targa [®] |
| Simazine 900 | Gesatop [®] |
| Sulfometuron 750 | Oust [®] |
| Sulfosulfuron 750 | Monza [®] |
| Terbuthylazine 750 | Terbyne 750 [®] |
| Terbutryn 500 | Igran [®] |
| Tralkoxydim 400 | Achieve [®] |
| Tri-allate 500 | Avadex [®] |
| Triasulfuron 750 | Logran [®] |
| Tribenuron Methyl 750 | Express [®] |
| Triclopyr 600, 755 | Garlon [®] |
| Trifluralin 480 | Treflan [®] |
| Tri-pick | Grazon [®] |
| Turf Control | Spearhead [®] |

| Seed Dressings | Similar Product |
|--------------------------------|--|
| Fluquinconazole | Jockey Stayer [®] |
| Imidacloprid 600 | Gaicho [®] , Emerge [®] |
| Imid-Triadimenol | Zorro [®] |
| Iprodione 500 | Rovral [®] |
| Metalaxyl-M 350 | Apron XL [®] |
| Procymidone 500 | Sumislex [®] |
| Tebuconazole 25T | Raxil [®] |
| Triadimenol liquid/WP150 | Baytan C [®] |
| Triticonazole 200 | Real [®] |
| Fungicides | Similar Product |
| Azoxystrobin 500 | Amistar WG [®] |
| Azoxy Cypro | Amistar Xtra [®] |
| Carbendazim 500 | Bavistin [®] , Spin [®] |
| Chlorothaloril 720 | Bravo [®] |
| Epoxiconazole 125 | Opus 125 [®] |
| Flutriafol 500 | Impact [®] , Intake [®] |
| Iprodione 500 | Iprodione Aquaflo [®] |
| Mancozeb 750 | Penncozeb 750 DF [®] |
| Procymidone 500 | Sumislex [®] |
| Propiconazole 500 | Tilt [®] , Throttle [®] |
| Tebuconazole 430 | Folicur [®] |
| Tebuconazole 800 | Turbulence [®] |
| Triadimefon 125 | Triad [®] , Slingshot [®] |
| Triadimefon 500 Dry | Unique to 4Farmers |
| Triadimenol 250 | Bayfidan [®] , Shavit [®] |
| Insecticides | Similar Product |
| Alpha-Cyber 100EC, 250SC | Dominex [®] |
| Al Phosphide tablets, blankets | Phostoxin [®] |
| Bifenthrin 100 | Talstar [®] |
| Chlorpyrifos 500 | Lorsban [®] |
| Dimethoate 400 | Rogor [®] |
| Fenamiphos 400 | Nemacur [®] |
| Fipronil 800 | Regal [®] |
| Imidacloprid 200 | Confidor [®] |
| Lambda-Cyhalothrin 250 | Karate Zeon [®] |
| Omethoate 290 | Le-mat [®] |
| Pirimicarb 500 | Aphidex [®] , Pirimor [®] |
| Rodenticides | Similar Product |
| Zinc Phosphide Mouse Bait | MouseOff [®] |
| Strychnine Alkaloid Crystals | |
| 1080 Vermin Baits | |
| Other Products | Similar Product |
| Boom Cleaner | |
| Foam marker | |
| Metaldehyde Snail/Slug Bait | |
| Adjuvants | Similar Product |
| Ammonium Sulphate | LI 700 [®] |
| Citric Acid | |
| Farm Pro 700 | |
| Penetrator | Pulse Penetrant [®] |
| Speedy Spray Adjuvant | Hasten [®] |
| Sunshade Spray Adjuvant | AntiEvap [®] |
| Take Up | Uptake [®] |
| Turbo Charge | Supercharge [®] , Uptake [®] |
| Trace Elements | |
| Zn Chelate EDTA 14.5% | |
| Cu Chelate EDTA 14.5% | |
| Mn Chelate EDTA 14.5% | |

*RP – Registration pending

STRATEGIES TO BEAT RED LEGGED EARTH MITE RESISTANCE

Red Legged Earth Mite (RLEM) resistance, caused by repeated usage of the same insecticide groups, especially the synthetic pyrethroids (SPs), is increasing.

The resistance to SPs has been confirmed as heritable and once established the resistance is persistent for many years.

The Grain Research & Development Corporation (GRDC) has made free testing for RLEM resistance available. It found that the resistance profile in WA up to 2019 was;

- Over 80 properties found with RLEM, SP resistance from Dandaragan to the Stirlings and Esperance.
- 4 properties with RLEM resistant to omethoate onl, though susceptible to other Organophosphates (OPs)
- 3 properties having RLEM resistant to omethoate and SPs.
- 2 properties with RLEM resistant to chlorpyrifos

It is expected that it will only be a matter of time before populations of RLEM will be found that are resistant to all OP's and SP's.

Resistant RLEM populations are for the most part localised to particular properties, but of course these critters can move through fence lines on weeds. It's also possible for eggs to move long distances via summer winds, livestock or fodder.

STRATEGIES TO BEAT RLEM RESISTANCE

To keep on top of RLEM resistance, it is important, that like weeds, farmers need to keep on top of populations and not let numbers blow out.

This is best achieved by implementing a combination of strategies.

- Probably the most important is implement **TIMERITE®** spraying in all crops and pastures by applying RLEM control at the optimal time in their lifecycle.
- Be cautious about using SPs and favour using an OPs or other effective insecticides.
- Don't use the same chemical group within a season, so for example if an SP has been used earlier in the season then use a OP at **TIMERITE®**.
- Use seed dressings that allow rotation to different insecticide groups.

- Avoid consecutive RLEM susceptible crops eg pasture/canola
- Grazing pastures hard in spring to at least 1400 FOO.
- Good paddock hygiene by reducing or eliminating weeds along fence and bush lines.
- If controlling insects other than RLEM consider using alternatives to SPs and OPs eg Pirimicarb (Group 1A) for aphids.

| Insecticide Sub Group | Example Product | Registered Usage for Use on RLEM | |
|-----------------------|-----------------------------|----------------------------------|--|
| 1B | Organophosphates (OPs) | Chlorpyrifos 500 | 140ml/ha cereals and pasture |
| | | Dimethoate 400 | 85ml/ha cereals, oilseeds and pasture |
| | | Omethoate 290 | 300ml/ha barrier spray |
| 2B | Phenylpyrazoles | Fipronil 500 seed dressing | 4L/tonne seed dressing on Canola. 800g/kg product has 1.5g/ha registration for locusts in pasture. No RLEM spray registration. |
| | | | |
| 3A | Synthetic Pyrethroids (SPs) | Alpha-cypermethrin 250 | 40ml/ha cereals, oilseeds and pasture |
| | | Bifenthrin 100 | 100ml/ha bare earth; cereals, oilseeds and pasture |
| 4A | Neonicotinoids | Imidacloprid 600 seed dressing | 4L/tonne seed dressing on canola and pasture seed. No RLEM spray registration for 200g/l insecticide. |

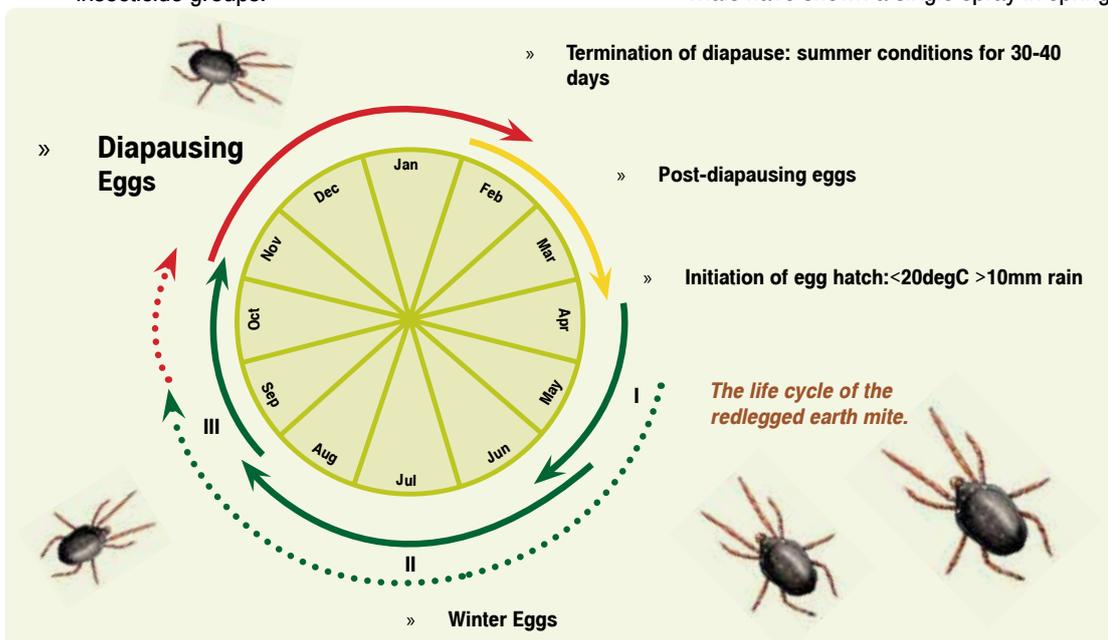
TIMERITE®

TIMERITE® is a package developed by the CSIRO around an understanding of RLEM lifecycle. It predicts the time RLEM have stopped laying normal winter eggs and just before the diapause eggs are produced. Diapause eggs are those that can survive the hot dry summer protected inside the dead cadavers of the adult female mites.

Chemical sprays will kill active mites but not their eggs. Therefore it is important to spray when most of the population are present in an active stage.

Trials have shown a single spray in spring at the recommended date resulted in up to 97% control in autumn 8 months later.

Spraying two weeks earlier than the optimal date still achieves very good results. The effectiveness of the single spray rapidly diminishes after the optimum date to little value if two weeks late.



Source Life Cycle Diagram – Victorian Dept Environment and Primary Industry



Red legged eath mite and Blue oat mite - it is important to tell the difference

SNAILS AN INCREASING PROBLEM - ACTION NEEDED TO MEET RECEIVAL STANDARDS

With grain receival standards being considerably tightened for snail contamination, growers in snail prone areas need to take serious action otherwise they will fail to meet the required receival standards.

Some top-grade standards for wheat, barley and canola grades are down to 1 snail in ½ litre, but others like malt barley are nil.

There are several strategies that can be considered for snail control including;

- Cabling stubbles in hot summer temperatures where snails are knocked to the ground and dehydrate and die. The strategy does not work well with small pointed snails.
- Burning of windrows
- Burning paddocks pre sowing
- Tight grazing of stubbles and pastures
- Tillage
- Good weed hygiene in and around paddocks
- Carbendazim fungicide: This is claimed to kill snails but there are no registrations for this, and results are reported to be variable. Carbendazim only has registration on certain pulse crops and is not registered on any other crops

While the preceding strategies can be of use, the main strategy for managing snails where there is a significant problem is likely be the use of pellet baits

OPTIMAL BAITING TIME

The optimal time window to bait is in the autumn period, as soon as snails become active and start feeding, but before they lay their eggs.

Killing the adults before they lay eggs, breaks the life-cycle.

Snails tend to be more active in autumn when there is more rainfall, dew events and when the humidity increases.

Most reproduction occurs between April and July. Control is difficult in winter and spring when there is an abundance of alternate food ie green plants as the snails are less likely to encounter baits.

As it becomes dryer from spring onwards, snails become less active and stop feeding until it rains.

The chances of snails encountering the baits reduces with the presence of chaff lines, stubble, and weeds so the efficiency of baiting with pellets in autumn is enhanced with good weed control.

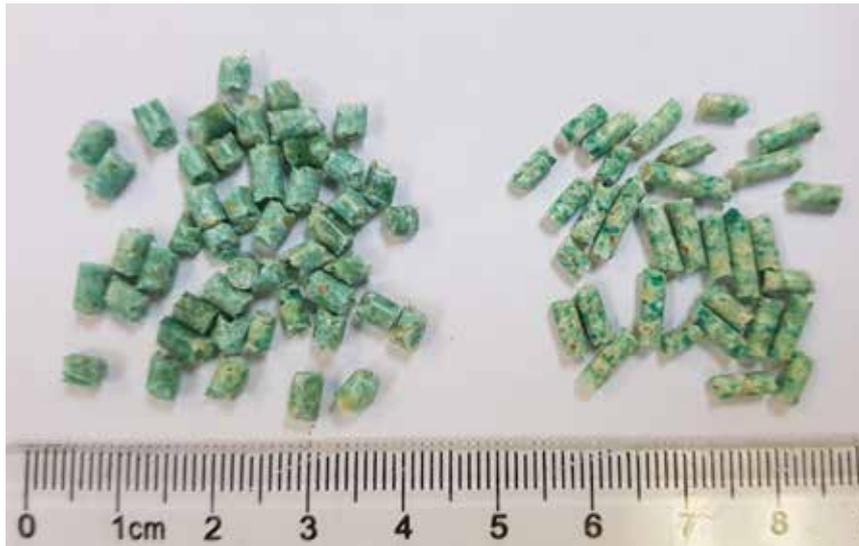
The less alternative food available, the better!

Monitoring snail activity in autumn can be done by putting the bait out in a small area after a rain event and observing the incidence of dead snails on the baits.

In areas where snails are worst, a second application of bait is recommended at seeding, especially along the edges of paddocks where there is possible movement of snails from weed refuges outside the paddock.

IMPORTANT POINTS REGARDING BAITS

Stirlings to Coast Farmer (SCF) trials demonstrated Metaldehyde and Iron pellets caused similar mortalities in small pointed snails. Between various formulations of pellets



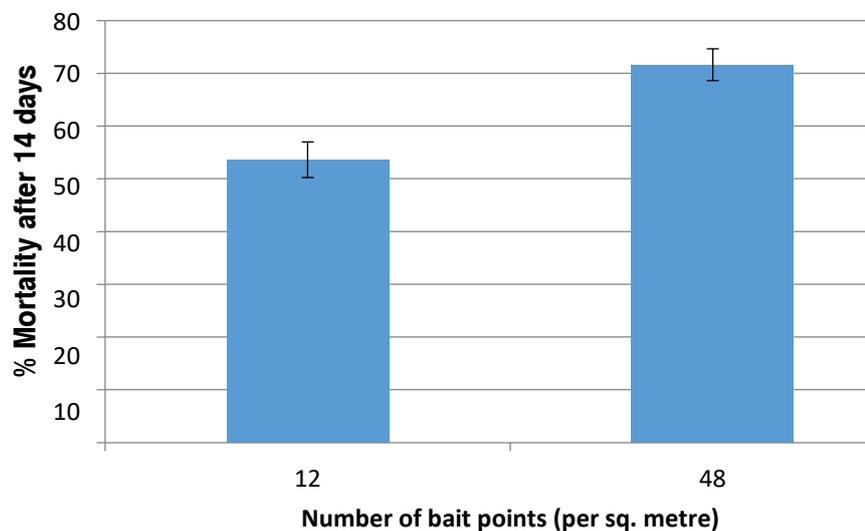
4Farmers Snail Pellets (left) are short stubby hard pellets that are expected to be resilient to handling but as small as practical to be discovered by snails over paddock. Another similar brand left.

the mortality was also similar.

Rain fast pellets are claimed to hold their integrity better, however glasshouse trials have shown that within 7 days all feeding snails are killed anyway. This is consistent with SCF results that found little difference in mortality after 14 days between baits claimed rain fast and those non rain fast.

Consequently, it is likely to be more cost effective to use cheaper baits and re-apply again later at seeding.

The most important factor found by the SCF trials was that the more bait



points, the better, as bait encounter by snails is random. The more bait points, the greater chance of a high kill rate.

HITTING BAIT POINT TARGETS

Regardless of the product used, SARDI research suggests that farmers should aim for at least 30 pellets/m².

Sticking to a non rainfast low analysis 15g/kg Metaldehyde pallet keeps the unit cost down. This affords more product and more bait points to be laid down for the same money.

4Farmers has 15g/kg Metaldehyde Snail Baits that offer an ideal niche of a low-cost pellet. They're available in bulk bags, and there is a registration pending for broad acre spreading.

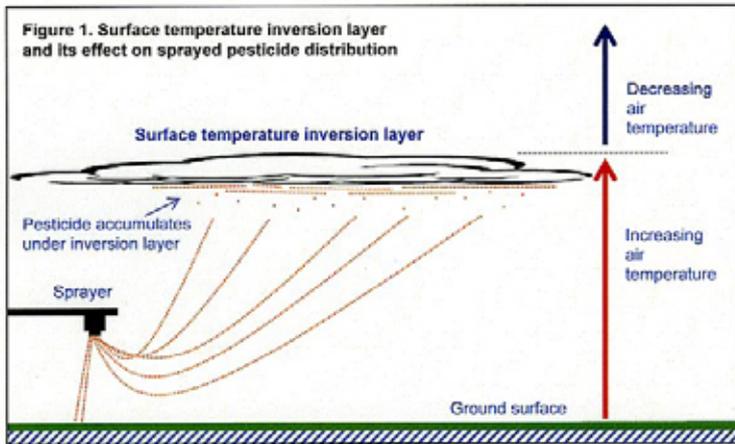
References; Stirling to Coast Farmers, GRDC, PIRSA, DPIRD

NEW 2,4-D SPRAY DRIFT CONDITIONS – IMPORTANT TO KNOW!

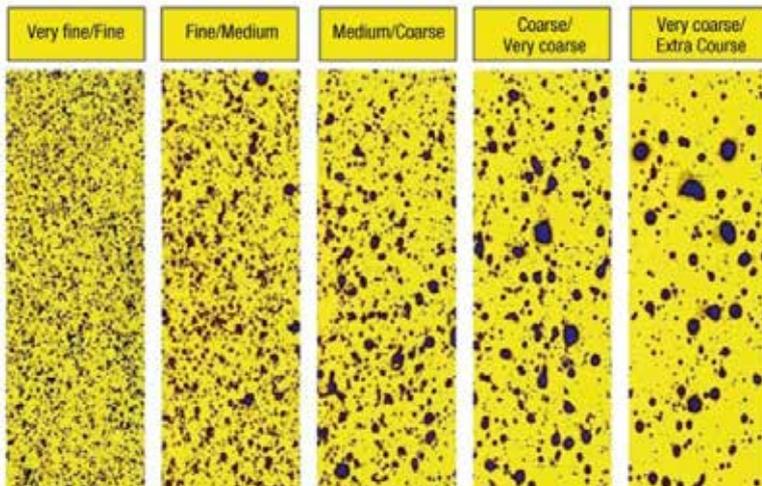
As of October 3 2018, the Australian Pesticides and Veterinary Medicines Authority (APVMA) introduced new 2,4-D label instructions.

It is important for farmers to know that users of 2,4-D must comply with the new label instructions, even if you're using products with the old labels.

In summary the new instructions for use include:



“ DO NOT SPRAY WHEN A SURFACE TEMPERATURE INVERSION IS PRESENT ”



“ APPLICATORS MUST NOW USE AT LEAST A VERY COARSE (VC) SPRAY QUALITY ”



To help better understand good spray practices and the practical steps required for working with 2,4-D under the new label requirements it is worth watching the six part Spray Application Series developed by spray consultant, Bill Gordon.

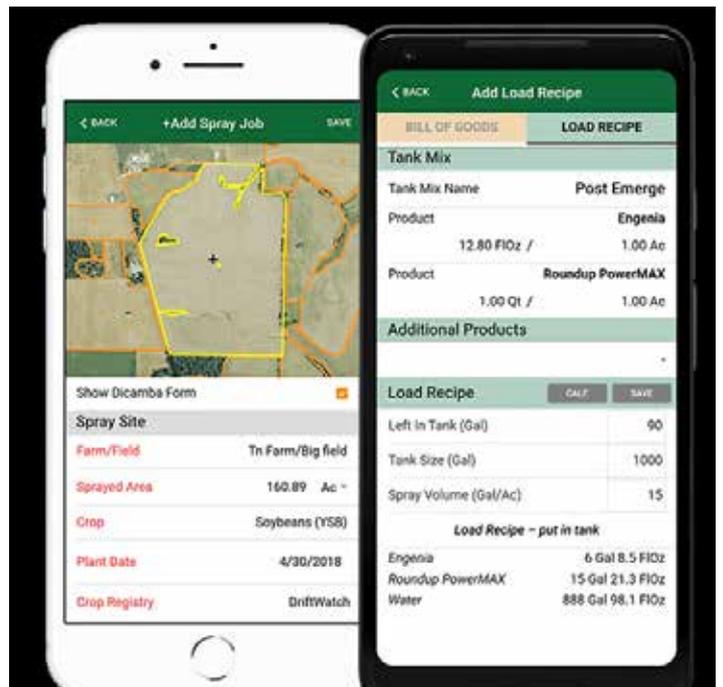
To find these go to YouTube, search for “GRDC spray drift” and you will find a tab that will play all six short videos.



“ WHEN USING A BOOM SPRAYER, BOOM HEIGHTS MUST BE 0.5M OR LOWER ABOVE THE TARGET CANOPY ”



“ DOWNWIND BUFFERS NOW APPLY (TYPICALLY LESS THAN 50M, SUBJECT TO RATE AND PRODUCT BEING APPLIED) BETWEEN APPLICATION SITES, DOWNWIND SENSITIVE CROPS AND ENVIRONMENTALLY SENSITIVE AQUATIC AREAS ”



“ ADDITIONAL RECORD KEEPING IS REQUIRED. OPERATORS NEED TO UPDATE SPRAY RECORDS, WITH GREATER DETAIL, WITHIN 24 HOURS OF APPLICATION AND KEEP THESE RECORDS FOR A MINIMUM OF TWO YEARS. ”

Active ingredient testing fits a range, not an exact number

Imagine two points on the ground a fixed distance apart. Give 20 people a tape measure and ask them to measure the distance between the two points as accurately as possible.

Will they all come up with the exact same answer? Unlikely! There will be 20 different answers. Some will hold the tape tight, some loose, some have better eyesight than others.

Typically, the results are grouped around the true value unless the tape itself is stretched, shrunk or incorrectly marked in which case all the results are skewed accordingly.

The same problems confront the chemist when measuring the active content of chemicals. In this case the ruler is a chemical standard and the human eye is replaced by a machine.

To get the sample and the standard into the machine, there are many steps involved. At each step there is scope for error and these 'errors' add up – they do not conveniently cancel each other.

The end result is a degree of uncertainty in the measurement of active content.

The APVMA acknowledges this by allowing the reported results for active content to lie within a range either side of the nominal active ingredient content

If two separate laboratories test the same product with a nominal active content of 480g/L and one reports 475g/L and the other reports 485g/L you could be forgiven for thinking one of them is wrong.

But if the true value is 480g/L and the uncertainty for both labs is plus or minus 10g/L, then both labs are correct within

| Nominal Active Content (g/kg or g/L) | Allowable Variation |
|--------------------------------------|--|
| Up to 25 | ±15% for EC, SC, SL or ±25% for GR, WG, etc. |
| >25 to 100 | ±10% |
| >100 to 250 | ±6% |
| >250 to 500 | ±5% |
| >500 | ±25 g/kg or g/L |

the limit of experimental error.

The allowable range is not a mechanism to short-change the farmer, it is to allow for the variations that occur in manufacture and active ingredient analysis.

4FARMERS TESTS EVERYTHING

4Farmers lab tests every formulated product before it is sold. Not just the of course the products it formulates on site, but also every one it imports to make sure it is comfortably within the required range. Often the active ingredient tested in 4Farmers product is on the high end.

We want clients to always have 100% confidence in the quality of 4Farmers products.

If you every have any queries about the quality of a 4Farmers product, or would like any product tested in lab, don't hesitate to call us.

If you haven't phoned 4Farmers for your chemicals you haven't been trying to get the best deal!

Next time you want value for money chemicals talk to 4Farmers.

- Good quality product at a good price
- Readily available or delivered on farm
- Australian made product
- Technical advice

Call now 1800 038 445
www.4farmers.com.au



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