

W.A. CASE-STUDY

“You don’t have to be clever to manage glyphosate resistance, just vigilant.”



While many growers are coming to terms with the prospect of developing glyphosate resistance on their property, one grower in the Esperance region of WA purchased a property which already had resistance on it.

Chris Reichstein purchased ‘Warekila’ in late 2008. It is a 860 hectare property, 45 kilometres north-east of Esperance (420 mm annual rainfall, 290 mm growing season rainfall) with soil types that are typical of the area (2/3 duplex soil and 1/3 Esperance sandplain).

Test for resistance and know what works

Chris was aware that the property had herbicide resistance prior to purchase, although no resistance testing had been done. Chris believes that the best thing to do is to regularly test for resistance and has been sending samples from this property every year since purchase.

His motto is ‘Make sure you are measuring - if you can’t measure it you can’t manage it’.

In the first year (2008-09), Chris did some summer knockdowns on the sand-plain soils with glyphosate and some annual ryegrass survived. He did a Quicktest™ for glyphosate resistance which came back positive. He also left one hectare unsprayed and ran some in-crop selective herbicides over it. This one hectare showed developing resistance to clethodim and full resistance to the Group A fops. He then commercially tested each paddock.

As well as glyphosate, the property has annual ryegrass resistant to:

- Group A fops - 100%
- Axial® - 55%
- Select® - 40%
- Factor® - 0%

Chris also tested his wild radish and found Logran® to be 85% effective, Brodal® 65% effective but Spinnaker® only 45% effective.

This shows the value of testing for resistance. By knowing what his resistance status was Chris could pick out what chemicals he could use, for example, in the lupin and pea phases, he could use Factor® (butroxydim 250 g/kg) rather than clethodim and save clethodim for the canola phase. As he knew his glyphosate resistance status, he could manage for it.

Understanding and Management of Resistance to Group M, Group L and Group I Herbicides GRDC UA00124

Use robust rates in good conditions

By testing, Chris knew that he had glyphosate resistance in small areas across the property (some of them were in old fencelines). He adopted a strategy to spray with high rates glyphosate in optimum conditions with high rates of water (100 L/ha) and then come back with high rates of Gramoxone®. He makes sure there are no survivors to set seed.

Use rotations

To increase his IWM options, Chris used a rotation of two broadleaf crops in a row. In the lighter country he grew canola then lupins then back to canola again and in the heavier country, canola then peas. In the TT canola, he used atrazine and clethodim, swathed at the end of the season then burned windrows in March. He used Factor® in the pea and lupin rotations. He believes that two consecutive broadleaf crops pay off because he can change the herbicide mode-of-actions and optimise the effectiveness of remaining Group A herbicides while giving him the opportunity to crop-top in either the lupins or the peas. This strategy has given a fantastic result driving his annual ryegrass numbers down.

Due to the presence of glyphosate resistance, Chris will not grow Roundup Ready® canola on this property.

Use different Mode-of-Action herbicide groups

In 2011, the annual ryegrass numbers were so low that Chris grew wheat in 2011 and used 1.8 L/ha trifluralin. In 2012 he used Boxer Gold® with fabulous results. This was partially due to a fear of trifluralin resistance but also so he could get a better result on the gravel soils due to less volatilisation. Boxer Gold® is also another MOA (Groups J + K) rather than trifluralin (Group D). Chris may also incorporate Sakura® (Group K) into the cereal phase and trifluralin with Boxer Gold® into the double broadleaf rotation.

In 2010 (2nd year of managing the new farm) Chris planted canola and because of concerns to resistance to clethodim, delayed sowing and used trifluralin and atrazine. However, there was heavy rain prior to crop emergence which gave a poor establishment of canola and a good germination of annual ryegrass. Due to concerns of resistance, the paddock was then sprayed with 1.5 L/ha gramoxone to reduce numbers and then the paddock was resown. This was considered a short term cost for a long term gain.

In 2011, 70 ha of wheat was infested with annual ryegrass. This was sprayed with Axial® giving a reasonable 70% control. Although there was some resistance to Axial®, Chris thought it was better to control numbers and then windrow burn before going into barley (delayed sowing) with high sowing rates (90 kg/ha seed) and Boxer Gold®.

Chris may purchase a WeedSeeker® so he can use other herbicides strategically in his fallows.

Harvest weed management

Chris narrow windrow burns his canola, barley and wheat phases and also swaths his canola. Even before he purchased the property, he worked with the vendor to swath the canola. He wants to use chaff carts (mulch) in preference to windrow burning and has ordered 2 chaff carts for 2013. Chaff cart dumps burn less organic matter, help maintain soil health and reduce the concentration of potassium compared to windrow burning.

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Farm Hygiene

Chris is vigilant about keeping the annual ryegrass numbers low in all areas of his property. He concentrates on keeping the old fencelines clean as this is the most probable source of his glyphosate resistance.

He is also very particular about machinery hygiene. Any machinery used on this property gets a thorough clean before moving it to the home farm. All grain from that farm also goes to CBH (WA's grain receival, storage and handling group) and is not saved for seed.

Be vigilant

Chris believes that getting the glyphosate resistant annual ryegrass numbers down may have cost him more money due to his crop choices and robust herbicide rates but that it will pay off in the long run. When he first saw those survivors of the first summer knockdown, he was worried about what he could do. He now reckons it is easy, a short term economic cost driving the weed seedbank down makes him a long way ahead in the future.

It all about keeping annual ryegrass numbers low.

In 2012, Chris has not sprayed any post-emergent grass herbicides in cereal crops across all his properties due to the extremely low numbers (less than two plants per m²) of annual ryegrass.

Chris now uses all these techniques on his other properties to drive down weed numbers and keep ahead of herbicide resistance.

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Farm name: Trades as Mt Burdett Farming Co. but property in question is 'Warekila' purchased in 2008

Location: – 45 kms NE Esperance, WA

Size of operation (ha): 860 ha

Enterprises/rotation: wheat/peas/lupins/barley/TT canola

Climate (rainfall pattern, GSR, AAR): 420 mm rainfall – 290 mm growing season

Soil types: 2/3 duplex, 1/3 Esperance sandplain

Interview and case study developed by Sally Peltzer, DAFWA.