

Beating multi-resistant weeds in northern NSW

DRYLAND cotton and grains farmer Paul Slack is battling weeds that have high levels of resistance to several important herbicide modes of action.

Managing 4850 hectares of cropping land within 30 km radius of his home farm at Gurley, east of Moree, Paul is using summer and winter cropping, strategic tillage and a long fallow spray program to get on top of resistant annual ryegrass and black oats populations.

A few years ago Paul was faced with a blow-out situation of 90–100 annual ryegrass plants per square metre in a Clearfield canola crop, along with some black oats and barley grass.

The ryegrass present was tested for resistance, revealing an alarming profile of resistance to five herbicide mode of action groups. Groups A, B, M and two others, where the lowest level of resistance was to mesosulfuron-methyl (Atlantis, Group B) at 15 per cent.

With stubble cover required for the fallow ahead of a dryland cotton crop, Paul and his agronomist Tony Lockrey, AMPS Moree decided to run down the weed seed bank, starting with a double knock application to treat the first germination in autumn.

Residual herbicides were incorporated using a Kelly chain through the canola stubble prior to sowing a short season wheat crop.

“Sakura plus Avadex Xtra provided over 80 per cent control of ryegrass, but it must be used wisely in the rotation — we would try not to use this combination more than twice every four years,” said Tony. “In our experience, Group K herbicide Sakura is more robust in a variety of conditions, proving more stable than other residuals in dry conditions following planting, which often occurs in this region.”

An in-crop application of the selective herbicide (Group B Atlantis) in wheat followed by a long fallow and a dryland cotton crop resulted in a huge reduction in weed numbers. Paul said annual ryegrass is now confined to a few isolated patches near waterways.

“Using the Kelly chains in canola stubble represented some challenges but it was much easier than in other crop stubbles,” said Paul. “Now that the chain is worn-in I think it could be used in a chickpea crop to incorporate pre-emergent herbicides

without damaging the crop. Mostly though we use it to chop chickpea stubble and to control weeds on the headlands.”

Having had success with this regime to control multi-resistant annual ryegrass Paul decided to use a similar program to rein in Group A resistant black oats that had spread over about 100 hectares.

Black oats has been a problem for the last 15 years or so after gaining Group A resistance from the short wheat/chickpea/wheat rotation commonly used at the time, where there was heavy use of Group A products such as Verdict and Topik.

Paul has used a long fallow period to regain control of resistant black oats, bringing the problem back to a very small area. “We did a long fallow after wheat then back to cotton followed by chickpea and then a short fallow and back to wheat,” he said. “This meant we could apply glyphosate in the fallow and two fop plus dim mixes in the following chickpea crop. The addition of dim chemistry (Group A) in the chickpeas has helped extend the life of Group A chemistry, even though there is 50 to 60 per cent resistance to Verdict (a Group A ‘fop’) in the black oats population.

“We might repeat this clean-up program to really run down the black oats seed bank before returning to our normal program, which now features both summer and winter crops and a broader range of herbicide tactics,” said Paul.

“We know that zero-tillage farming led to a 30 per cent yield improvement in this environment,” says Paul. “We can’t afford to be forced back to a full tillage system to control weeds.”

The current rotation of corn and cotton in the summer and wheat and chickpea in winter has helped bring all resistant weeds back to a manageable level. Bringing Group B chemistry into the herbicide program has been an effective tool in reducing the number of multi-resistant grass weeds and adding a Clearfield wheat into the rotation is another option for the future.

For more information about managing multi-resistant weeds, visit the Weedsmart website: www.weedsmart.org.au

WeedSmart is an industry-led initiative aimed at enhancing on-farm practices and promoting the long term sustainability of herbicide use in Australian agriculture. Australian research partners, commercial entities, Government, advisers and growers have joined forces to ensure weed management remains at the forefront of global farming practice. Viable herbicide use will help secure the weed control productivity gains made by the current generation of Australian farmers.



Tony Lockrey (AMPS Agribusiness agronomist), Paul Slack (Moree farmer) and Caleb Torrance (AMPS trainee agronomist) inspecting Paul's corn crop, which is adding diversity to his cropping and herbicide program.



Black oats pressure is clearly seen in this area where the crop was not sown. The addition of dim chemistry (Group A) in the chickpeas has helped extend the life of Group A chemistry, even though there is 50 to 60 per cent resistance to Verdict (a Group A ‘fop’) in the black oats population.