Genetically Modified Canola Agronomy

PROJECT DETAILS

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Summary
This project increased the knowledge and skills of growers and advisers in the southern grains region in the key area of Genetically Modified Canola Agronomy (GMCA). The southern grains region, including the Victorian Wimmera and Mallee regions, was the key target area of delivery, linking in with other established networks. This project contributed to growers adopting best practice specifically related to GM canola technology use.

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Conclusions

While the adoption of genetically modified canola has been less widespread than originally anticipated by Australia’s oilseed industry, Roundup Ready® (RR) canola has been highlighted in this project as a very useful tool for integrated weed management (IWM).

Project conclusions include:

1. RR canola is very useful if annual ryegrass (ARG) numbers are low e.g. after a long fallow or hay phase, to almost eliminate ARG by the third year. RR canola is an ideal crop for newly acquired land. For weeds with longer seed survival, a longer term approach is needed, but GM canola can play a part.
2. Despite inherently lower yield potential, triazine® tolerant (TT) canola continues to have an important place in farming systems for Brassica-type weeds and silvergrass, and inclusion of a different herbicide group.
3. RR canola alone is insufficient if ARG numbers are high. Herbicide tolerant (HT) canola should not be used in the first year if ARG numbers are very high.
4. The current RR technology appears most useful in medium to low rainfall environments or dry years where there are less late germinations of weeds. Late germinations will limit the effectiveness of RR canola.
5. Pre-emergent herbicides in the RR canola system are critical. Trifluralin® is recommended to be saved only for the canola phase of a rotation to reduce the chance of trifluralin resistance.
6. It is believed that not enough growers test for herbicide resistance.
7. Due to adventitious presence (AP), volunteer canola of other HT types (e.g. Clearfield®) may contain a low proportion of GM canola and will need to be properly controlled.
8. Silvergrass is an emerging issue in RR canola in parts of southern NSW.
9. The onus is on growers if spraying beyond the six leaf stage where some yields may potentially be sacrificed to prevent weed seed set.
10. Herbicide costs in subsequent seasons can be much lower after RR canola.
11. Lower prices may be received for GM canola and receival sites are limited, especially for weather-damaged grain.
12. Excellent gross margins can be achieved.
13. New RR varieties are at least as high yielding as non GM canola.
14. Some advisers are strongly against RR canola due to either prices or perception of risk of glyphosate® resistance.
15. Any herbicide resistance increases the risk to other groups.
16. The current Monsanto Crop Management Plan will be changed in 2013.
17. The new best practice guide will provide broader practical information to growers in a whole farming system context, rather than the GM crop in isolation.

Recommendations

It is recommended that:

1. RR canola continues to be promoted as a very useful tool as part of an integrated weed management (IWM) package in the Southern and Western regions, to reduce weed numbers and allow a broader rotation of herbicide groups.
2. Literature about RR points out that any herbicide tolerant canola system can fail if weed numbers are very high. RR canola should not be used in the first year of a very weedy paddock.
3. Industry promotes best practices for volunteer canola control, with respect to adventitious presence of GM material in non-GM varieties (the Australian Oilseeds Federation (AOF) intends to produce a code before the 2013 season).

4. The new guide be published on the GRDC and the Birchip Cropping Group (BCG) websites and printed copies available in Victoria (VIC), New South Wales (NSW) and Western Australia (WA).

Outcomes

Evaluation of workshops run at Dookie and Corowa revealed they had a direct impact on grower understanding of a range of IWM tactics, the ecology of certain weeds, selection pressure for resistance, the benefits of sound crop and herbicide rotations and the usefulness of Roundup Ready® canola as an IWM tool. The workshops also included other canola issues relevant for the 2012 season, such as blackleg and nutrition, and these were also highlighted in grower feedback.

A number of growers attending the workshops, who had not considered planting GM canola, changed their minds since learning it can be a useful tool. The workshops also contributed to the understanding of current (at the time) resistance status of weeds in the Wimmera, Mallee, North East Victoria and southern New South Wales.

The diagnostic school also created a better understanding and more confidence amongst attending growers of IWM through herbicide rotation, importance of monitoring after spraying, the usefulness of Clearfield®, TT and RR canola and a longer term approach to weed control.

The Hausler case study, published in Ground Cover, has shown readers the potential of GM canola as a useful IWM tool to drive down weed numbers, so long as weed seed numbers are not high at sowing time. Similarly, another Ground Cover article based on the Corowa and Dookie workshops highlighted weed control tactics and how herbicide tolerant canola can play an important role.

The Best Practice Guide and four grower case studies will be printed this year after feedback from Monsanto and Dupont Pioneer. It will provide useful, practical advice on growing herbicide tolerant canola and a range of IWM strategies. It will also provide information on stewardship (requirements are changing in 2013) including management of AP volunteers in non GM types. The guide will be available through the BCG and GRDC websites and hard copies printed as a resource for growers and advisers. Although specifically targeted at VIC and NSW, it will also be useful for relatively new growers and advisers in Western Australia.

Another important outcome of the project was a demonstration of how farming systems groups can work effectively together on a project. BCG subcontracted Riverine Plains and Pritchard Agricultural Consulting and Extension (PACE) to organise the Corowa and Dookie workshops and provided a good platform for future collaborative projects.

Achievements/Benefits

The project has:

1. Promoted the use of GM canola as a tool in integrated weed management (IWM) to reduce weed burdens and manage herbicide resistance.
2. Educated growers (and advisers) on IWM, with a much broader emphasis than the original Monsanto accreditation training.
3. Educated growers and advisers on different fits for Clearfield®, RR and TT canola.
4. Educated growers on practical best weed control tactics in herbicide tolerant canola as a part of an IWM package.
5. Educated growers and advisers on the effects of herbicides on HT canola.
6. Demonstrated that BCG and Riverine Plains Inc. can work effectively together on projects.
7. Brought together researchers, seed company representatives, growers and chemical industry representatives to develop a plan and for detailed discussions on the positives and negatives of GM canola growing.
8. Undertaken new case studies of GM canola, with new experiences following wet seasons.
9. Liaised and shared information with Western Australian researchers and developed stronger working relationships with advisers, chemical company researchers, scientists and the Riverine Plains group.

On publication of the GM canola agronomy guide, the project will:
1. Provide practical information for growers about growing GM canola as part of a farming system. It is broader than current industry recommendations, which focus largely on the risk of glyphosate resistance in ryegrass. The new guide focuses on all herbicide groups and a broader range of weed species. It also covers issues such as volunteer control in more depth than currently available.

2. Provide case studies of growers who successfully use GM canola as an IWM tool as one component in a system to eliminate resistant weeds.

Other research
1. Inclusion of RR canola as an option (where available) as an IWM tactic.
2. Factsheet and Ground Cover article about best practice for managing volunteer Clearfield® (and TT) canola with GM adventitious presence.
3. A similar, smaller scale project in Western Australia would be worthwhile in major canola-growing areas, with particular emphasis on the grower case studies and classroom workshops targeting advisers as well as growers.

Additional information


