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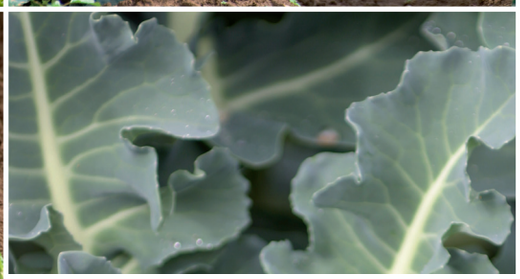
Project no: VG09137

Alternatives for later post-emergence weed control in cauliflower, broccoli and Brussels sprouts.



Development of residue management strategies and action plans for export vegetables

Project no: VG08112

New risk management options designed to avoid potential residue violations in vegetable exports.

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Integrated weed management in vegetable brassicas

Introduction

The brassica industry has developed an integrated approach to weed control using cultural and herbicide methods that enable the growth of economic crops, however, the options are fairly limited. Project VG09137 was completed by Les Mitchell from Agrisearch and it evaluates possible alternatives for later post-emergence weed control in cauliflower, broccoli and Brussels sprouts.

Project components

1 – Herbicide Strategies

Eight field trials were conducted in each of the major brassica growing areas within Australia to evaluate the use of BARON WP (oxyfluorfen) as an option for later post-emergence weed control when applied as a broadcast spray. In addition, the previously identified selective herbicide FRONTIER-P (dimethenamid-P) was included at some sites to evaluate efficacy and selectivity.

2 – Knockdown Shielded Herbicide Program

The efficacy and safety of several different herbicides when applied through protected spraying equipment was evaluated at five locations. Shrouded booms were constructed to simulate commercial application and glufosinate-ammonium, paraquat, carfentrazone-ethyl and oxyfluorfen was applied. A full residue program was also completed including each of the above actives. Eight sites were established and each of the herbicides applied using the shrouded boom equipment at around five weeks following transplanting. Crop samples were harvested and analysed for each of the actives evaluated.

3 – Irrigation Incorporation Demonstration

The importance of incorporating BARON WP when applied as an early post-transplant treatment was demonstrated at five locations by maintaining incorporated and non-incorporated herbicide plots.

4 – Grower Resource Pack

In addition to a series of field days, a grower resource pack featuring a poster on sprayer hygiene, and the document 'A Guide to Effective Weed Control in Australian Brassicas' was developed to provide options for integrated weed management using three key steps:

Step 1: Rotations and Planning

Plan your strategy for crop rotation, weed control stages, and the herbicides and methods required.The use of rotation crops in which problem weeds can be more easily controlled will help to reduce seed banks prior to planting. Good weed control between crops is easy to achieve and can be done using knockdown herbicides such as glyphosate or paraquat and through cultivation. The use of cover or green manure crops will also aid in reducing weed seed banks and is an essential part of a ong-term integrated weed management system.

Step 2: Identify Your Weeds

Broadleaf weeds and grass weeds are the two main groups of weeds that cause problems in vegetable brassicas and it is important to establish which varieties are present in crops as herbicides and control methods will vary accordingly. With this knowledge, a weed control plan can be developed which should give the best possible outcomes for that weed or weed spectrum.

Step 3: Develop Your Weed Management Strategy

There are various stages in which weed control will be most effective and each stage features several options depending on your strategy and the density and diversity of the weed population.

Major findings

- The project confirmed that BARON WP is a very effective broadcast treatment when applied within three days of transplanting as per the label recommendations in a program with a suitable pre-emergence herbicide such as DUAL GOLD (S-metolachlor).
- The application of BARON WP 3-4 weeks after transplanting demonstrated no difference over and above accurate applications immediately after transplanting.
- The need to control broadleaf weeds which 'escape'early weed control strategies can be further addressed through the use of the non-selective knockdown herbicides glufosinateammonium (BASTA), carfentrazone-ethyl (SPOTLIGHT PLUS) and paraquat (GRAMOXONE 250) as well as BARON WP through shrouded sprayers. BARON WP applied through a shrouded sprayer as an alternative to applying the treatment 'over the top' would be effective, however there are concerns that spray drift could escape from the unit and cause damage to the off-target crop.
- A level of crop phytotoxicity was seen in all trials, and was particularly severe at some locations. The level of precision required may be beyond current capabilities of available shrouded spraying equipment. The use of non-selective herbicides through this method of application however will offer growers a practical alternative to cultivation later in the crop cycle but effective shrouded sprayers for vegetable brassicas need to be developed.
- The use of BASTA (glufosinate-ammonium) applied via shrouded sprayers gave effective weed control and will offer an alternative to residual herbicides or cultivation. Further development of this form of weed control is recommended.
- GRAMOXONE 250 currently has a registration for use via shielded equipment in vegetables and could be used as a salvage treatment where equipment is available.
- SPOTLIGHT PLUS (carfentrazone-ethyl) is not recommended for further development via this application technique.
- Sprayer hygiene and accurate calibration will ensure better pesticide efficiency with improved crop safety.

Conclusion

The major outcome of this project is that speculation over the use of BARON WP as a later post-emergence product in vegetable brassicas has been clarified. The study results demonstrate that when used according to label recommendations in conjunction with a registered transplant herbicide, excellent weed control can be achieved. Later application uses will offer no significant benefit to the current registered practices and may lead to herbicide soil residue issues which are also addressed on the product label. Sufficient data has been generated to support the registration application of BASTA for use as a salvage product and has shown that GRAMOXONE 250 can also be applied; however any such commercial usage is contingent upon the development and availability of an effective shrouded sprayer.

The Bottom Line:VG09137

- Broadleaf rather than grass weeds represent the largest threat to brassica growers.
- The application of BARON WP herbicide as a broadcast treatment is a very effective tool for broadleaf weed control.
- Best results are obtained using a combination of cultural and chemical methods.

Acknowledgements

This project has been funded by HAL using the Vegetable levy and matched funds from the Australian government.

Development of residue management strategies and action plans for export vegetables

Introduction

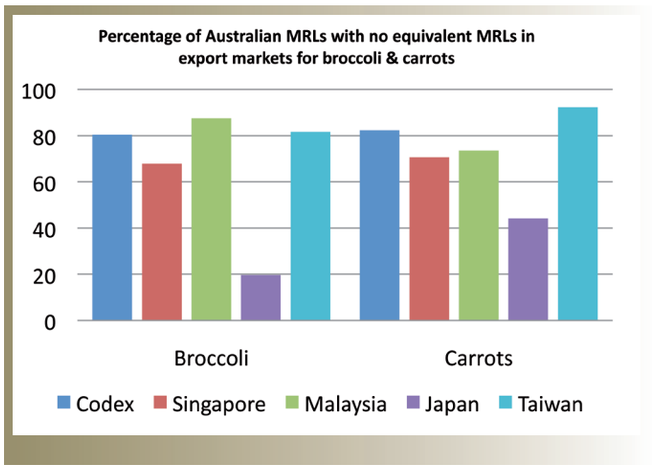
Project VG08112 was completed by Kevin Bodnaruk from AKC Consulting and the aim of the project was to help reduce the risk to industry by collating information that allows growers and/or exporters to minimise chances of non-compliance. This was achieved through the provision of information on current pesticide-related standards and the identification of alternative chemical control methods that could aid export compliance in those markets where disparities existed.

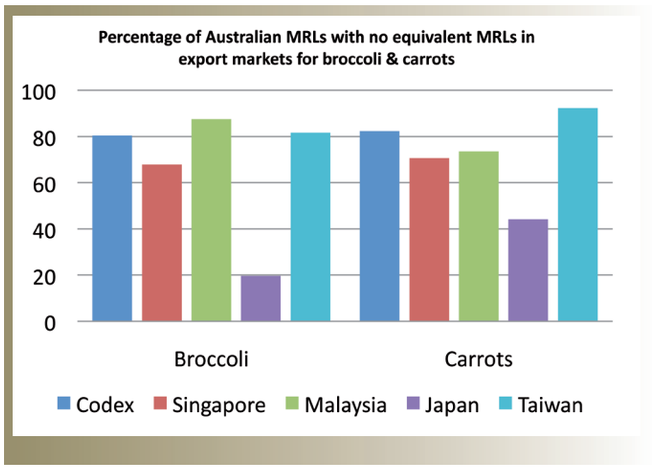
About the Project

The aim of the project was to help reduce the risk to industry by collating information that allows growers and/or exporters to minimise chances of non-compliance. This was achieved through the provision of information on current pesticide-related standards and the identification of alternative chemical control methods that could aid export compliance in those markets where disparities existed.

MRL Listings

Chemical manufacturers and international and domestic regulatory organisations were consulted in order to collate MRL listings for the nominated export markets of 11 crops: beans, beetroot, broccoli, cabbages, capsicums, carrots, cauliflower, celery, leeks, lettuce and sweet corn. These listings helped to determine the degree of potential exposure to MRL violations via a residue risk analysis which compares Australian MRLs with those of a range of importing countries. They also enable growers to make comparisons between different vegetable commodities and comparisons between different importing countries.





Residue Risk Mitigation Options

The residue risk mitigation options identified to address the MRL gaps found in export markets were collated by formulating MRL tables for export destinations for each commodity then developing management option guidelines on the basis of any identified MRL disparities. The guidelines were based on available residue trial data and MRLs existing either at Codex or other international jurisdictions. Input was sought from relevant chemical manufacturers and options were amended where necessary. In total, more than 150 pesticide-commodity risk mitigation combinations were identified for the 11 crops.

In addition to this information being made available to industry for consideration and feedback, the MRL tables and mitigation options were supplied to the Peak Industry Body and to the Pesticide Minor Use Co-ordinator for consideration and potential implementation within the Minor Use program.

Recommendations

Industries and government need to place greater emphasis on MRLs when negotiating access to new markets. At present, the issue of MRL compliance appears to only be considered after a problem has been identified. It is recommended that consideration of MRLs becomes an integral part of the market access process.

Currently, the industry has no means of verifying whether good agricultural practice is being followed in domestic or export markets. A number of state-based monitoring programs exist, but these are usually rolling or targeted at individual commodities. Wholesalers have implemented their own program called FreshTest, but this is not structured with producers in mind. A mechanism for either collecting existing residue monitoring data or implementing industry owned residue monitoring programs would provide the industry with a measure to identify potentially problematic pesticides, for which risk mitigation options are required. In addition, the compilation of the monitoring data would provide a historical record of successful compliance with which to respond to importing countries in the event of an MRL breach.

Conclusion

The MRL tables and mitigation options developed as a result of the project are expected to help the vegetable industry mitigate risk of MRL breaches in export markets. They also provide a platform from which to build export markets and increase returns. But there is still some way to go. The prospect of not using certain chemicals is logical, but impractical, so high compliance risk pesticides need to be identified and the vegetable industry may need to explore coordinated residue monitoring or pursuing domestic regulatory approvals for alternatives based on standards established elsewhere.

The Bottom Line: VG08112

- Domestic compliance of chemical control methods do not guarantee international compliance.
- Export trade of Australian vegetables can be damaged by unwanted pesticide residues which fail to meet importing country standards.
- Alternative pest management options need to be explored in order to avoid potential problems at export destinations.

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Photo & Graph Credits:
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- Kevin Bodnaruk

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