



L-R: Donna Lucas and Clinton Muller from RM Consulting Group.

# VEGETABLE BIZCHECK OFFERS OPPORTUNITIES FOR GROWER-FOCUSED BENCHMARKING

A two-year pilot project that aims to develop a comprehensive benchmarking tool for Australian vegetable growers began in December 2017. Facilitated by RM Consulting Group, it will ultimately allow growers to compare their business processes and performance with typical industry figures and best practices from similar businesses.

Victoria’s new vegetable business benchmarking project is well underway and will demonstrate the benefits of undertaking benchmarking to growers. Participants will easily identify business strengths and weaknesses, enabling them to make management decisions to optimise profit.

This project will pilot the RM Consulting Group (RMCG) BizCheck benchmarking approach across Victoria. The learnings from the pilot project delivered in Victoria will be used to understand the requirements for developing a benchmarking system that could be used in other states.

## PROJECT BACKGROUND

Vegetable growers have identified that increasing farm productivity and reducing costs are an industry priority. Despite a plethora of information available to growers about farm management, the diversity of vegetable industries and the lack of consistent farm information systems can make it challenging for growers to find what is relevant to them, and which practices or processes to implement (and how).

The benchmarking project will allow growers to connect the dots between their own business, and identify activities, practices or innovations that may be potential opportunities for their business.

*Vegetable business benchmarking – VIC (VG17000)* is a strategic levy investment under the Hort Innovation Vegetable Fund.

Vegetable farms were, and will continue to be, surveyed by the Australian Bureau of Agricultural and Resource Economics and Sciences regarding farm financial performance (Project VG15077), with the outputs from this work providing high level oversight into the national performance of the vegetable industry. This activity is distinguished from the new VG17000 project, which aims to provide actionable insights at the farm level for participating growers.

## IDENTIFYING BUSINESS STRENGTHS AND WEAKNESSES

There are two main aspects to the information that will be produced for growers who participate in the benchmarking project. The first is comparative business analysis, which analyses whole farm physical and financial performance and compares business data to typical industry figures. The other factor is benchmarking, which focuses on individual vegetable lines as well as the processes used on-farm.

Participating growers will have access to tools and support from the project that will allow them to know and understand their business productivity and profit drivers. Participants will be able to easily see where the opportunities are for their business, enabling them to make management decisions to optimise profit.

The benchmarking approach is designed so that data collection is straightforward and efficient – data collection will be gathered through a short meeting on the farm. Each participant will then receive a customised, concise report and support is available from the project team to interpret and discuss the findings.

All data will remain strictly confidential and individual businesses will not be identifiable in group or industry reports.

Project Manager and RMCG Senior Consultant Donna Lucas said that generating the numbers is not the main focus of this project.

“Interpreting the data and understanding ‘why’ is key to effective benchmarking. The focus is on using the results to make management decisions,” she said.

## A POTENTIALLY SCALABLE SYSTEM

The project will also identify the demand for, and requirements of, a vegetable benchmarking system that can be scaled to other states as required.

The project will generate information that enables the industry to understand how it is performing as a whole. It will also generate information that enables:

- Increased access to relevant information for vegetable growers.
- Increased access to data and information to inform targeted research and development (R&D).
- Increased awareness and understanding of key profit drivers for vegetable production systems.

### INFO

For further information or to express interest in participating in the project, please contact Donna Lucas from RMCG at donnal@rmcg.com.au or 0459 047 478.

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Project Number: VG17000



Ladybeetles can build up on weeds beside a field. This amber spotted ladybeetle was attacking carrot aphid in weeds beside a brassica field. Carrot aphid is not a pest of brassicas but the ladybeetle could readily move into the crop and attack cabbage or green peach aphid.

# BOOSTING BENEFICIAL INSECTS ON VEGETABLE FARMS

A new levy-funded project involving research and horticultural industry groups is now underway, with a focus on promoting beneficial insects in vegetable crops. *Vegetables Australia* shares an update on what the project will involve, how it will work with growers and what it aims to achieve over the next three years.

Parts of the Australian horticulture industry have embraced the use of beneficial insects to control crop pests, but this has mostly been in the form of purchasing large numbers of beneficials for on-farm release. While this ‘clean and green’ approach is effective, it tends to be more costly than using insecticides. But what if there was a way to get beneficials working for you in your crops and controlling pests, virtually for free?

Internationally, farmers are exploiting recent research that shows what types of vegetation are useful as ‘breeding grounds’ for beneficial insects, mites and spiders, and from which the beneficials can be attracted into crops. Other farmers are manipulating the vegetation within and around crop fields to encourage beneficials to ‘move-in’ and act as guardians, ready to attack pests as soon as they arrive.

This form of biological control based on habitat management tends to be inexpensive because it avoids the need for growers to purchase beneficials and can be more effective than spraying insecticides. An example is the use of strips of flowering crops like sesame in the borders of Asian rice fields. This simple approach has proven so effective at boosting beneficials and suppressing pests that farmers are able to reduce insecticide use by two thirds, while grain yields have increased by five per cent. An overall 7.5 per cent economic advantage of this innovative approach has led to its adoption across wide areas of East Asia.

This project by the Graham Centre for Agricultural Innovation

and led by Geoff Gurr at Charles Sturt University, including researchers from The University of Queensland, New South Wales Department of Primary Industries and IPM Technologies, is now developing equivalent approaches for Australian vegetable growers. The teams are working with carrot, sweet corn, capsicum, bean and brassica growers across Australia for this levy-funded project to determine what types of habitat management are best suited to local conditions.

The project *Field and landscape management to support beneficial arthropods for IPM on vegetable farms* (VG16062) is a strategic levy investment under the Hort Innovation Vegetable Fund.

## USING HABITAT MANAGEMENT ON-FARM

Natural pest suppression can be achieved by managing vegetation around the farm to harbour and support beneficial insects. An easy way to plan this is to remember that the key things beneficials need are: Shelter, Nectar, Alternative prey and Pollen (also known as ‘SNAP’).

**Shelter** can be provided by bushland or riparian strips and is especially important during periods of extreme weather (hot or cold) or as refuge when spraying is necessary in crops. **Nectar** can be provided by sowing narrow strips of plants in field margins; potentially these can be a secondary crop. **Alternative prey** are important to feed beneficials during periods when there are no →



Caterpillar parasitoid.



Ladybeetle larvae. All images courtesy of S. Rizvi, CSU.

pests present and can be provided by strategies such as a strip of wheat beside the crop. The wheat can support cereal aphids that do not constitute a risk to vegetable crops but are great tucker for beneficials such as ladybeetles and lacewings. Finally, **pollen** is a protein-rich food that is especially important for hoverflies and, unless they are able to access this from patches of shrubs or herbaceous vegetation, they cannot reproduce.

While promoting beneficials using these ‘SNAP’ resources is potentially straightforward, there is a need for careful research. It is crucial to avoid using certain types of vegetation that might encourage pests.

An obvious example is that a cabbage grower will need to avoid brassica-family weeds that can support pest build-up. The research being conducted in this new project will also work closely with growers to identify habitat management strategies that are cheap and practical to adopt, and don’t occupy too much valuable crop-growing area.

Other strategies to be considered include sequential planting so that beneficials can progressively move across a field from older to younger sections of crop, and mixing areas of crop species so that one provides SNAP resources to the second. Lucerne is potentially useful as a companion to vegetables because it supports many beneficials, but very few vegetable pests use it.

HABITAT MANAGEMENT IN OVERSEAS VEGETABLES

Around the world there has been a groundswell of interest in the use of habitat management strategies to promote biological control of vegetable pests. In California, lettuce farmers plant strips of nectar-rich alyssum plants to encourage hoverflies, which provide control of currant lettuce aphids.

Elsewhere, lucerne stands near crops have been used to provide shelter to beneficial insects and also lure mirid bugs and other pests away from protected crops. In many studies, a mix of natural vegetation, shrubs and trees near fields provide shelter and food to beneficial insects. In Japan, many okra growers now use sorghum strips to provide alternative prey in the form of aphids to beneficials.

NEXT STEPS

The research team is currently working with vegetable growers in New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania, gathering information on the best options for habitat management. Starting later in 2018, the researchers will be conducting on-farm evaluations of the most promising approaches. In 2019, the team will move into promoting the superior forms of habitat management for each crop type and region.

Early results show evidence of ‘edge effects’, such that the abundance of pests and beneficials in vegetable fields is strongly affected by the nature of the neighbouring vegetation. This is promising. Encouraging vegetation that encourages beneficials, and removing or managing vegetation that supports pests, can deliver major benefits to growers. Surveys will continue to add information to the evidence base so that crop- and region-specific guidelines can be developed and promoted.

The research team will also be interviewing growers to better understand their needs and how current pest management strategies can be complemented by habitat management tools. This will ensure that the future guidelines are practical and easy to use.

INFO 

This article was supplied by Geoff Gurr, Anne Johnson, Olivia Reynolds, Jianhau Mo, Syed Rizvi, Ahsanul Haque, Mike Furlong, Jessica Page, Scott Munro and Terry Osbourne. For more information, please contact Geoff Gurr at ggurr@csu.edu.au or 02 6365 7551.

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Project Number: VG16062



KEY BENEFICIAL INSECTS IN AUSTRALIAN VEGETABLES

Ladybeetles, lacewings and hoverflies will be familiar to many growers, but remember that the larvae (‘grubs’) look very different to the adults. It’s worth becoming familiar with their appearance as they are voracious predators of pests such as aphids and small caterpillars.

The adults of all these beneficials feed on nectar and pollen, so providing flowering strips can be a powerful way of attracting them to your fields. The presence of these beneficials can keep aphid numbers from exploding in a crop – for instance, the common spotted ladybeetle can eat up to 2,400 aphids in its lifetime.

One particular aphid parasitoid *Aphidius colemani* lays its eggs inside the aphids including the green peach and cabbage aphid. A parasitised aphid (mummy) will have a darker colour and look balloon-like.

There are also a range of caterpillar parasitoids that will parasitise eggs (*Trichogramma*), larvae or pupae (*Diagama*).

Australian studies have shown that by using Integrated Pest Management (IPM), beneficial insects can kill 70 per cent of pests in the field and leave a marketable crop with no yield loss.

FLOWER POWER!

When given access to buckwheat flowers:

- Aphid parasitoids lived 4-5 times longer.
- Lacewings laid up to 500 more eggs.
- Hoverflies lived up to 30 days longer.
- Caterpillar parasitoid wasps survived longer and parasitised up to 180 extra caterpillars.
- Orius bugs lived longer and laid more eggs.

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