



Rye grass cover crop in Tasmania. Image courtesy of RMCG.

## SOIL WEALTH AND CROP HEALTH: VITAL COMPONENTS TO POTATO AND VEGETABLE CROPS

The Soil Wealth and Integrated Crop Protection (ICP) projects have assisted vegetable growers over the past three years, providing extension and outreach services on soil health, crop nutrition and crop health management. It is not surprising that a great deal of lessons learned and project outputs can be applied across horticulture, including the potato industry.

Much has been written about the Soil Wealth and Integrated Crop Protection (ICP) projects in our sister publication, *Vegetables Australia*. The projects *Soil condition management – Extension and capacity building* (VG13076, Soil Wealth) and *Extension of Integrated Crop Protection information* (VG13078, ICP) are strategic levy investments under the Hort Innovation Vegetable Fund. However, many of the activities and learnings from these projects facilitated by RMCG and Applied Horticultural Research (AHR) can apply to potato crops as well.

Over the past three years, RMCG and AHR have been conducting a wide range of extension activities as part of the Soil Wealth/ICP projects, including soil borne disease masterclasses, farm walks located at the 15 demonstration sites around Australia, online webinars and the production of fact sheets and guides for growers.

As phase 1 of both projects will conclude in November 2017, *Potatoes Australia* spoke to RMCG soil and crop management scientist Dr Doris Blaesing and agricultural consultant Donna Lucas about how the research can benefit the wider horticulture industry, particularly potato growers.

### FOCUS ON POTATOES

The consulting groups worked with a range of vegetable growers (some of whom also grow potatoes) and Dr Blaesing said many findings were relevant to the potato industry.

“Every industry likes to run its own soil health project, however the soil doesn’t mind what’s growing in there – the principles of

keeping soil healthy are all the same. The trick is to apply these to different production systems,” she said.

“Growers are keen to look after their soil – it’s their main asset – and they’re keen to look at new ways to do things. We help the understanding of how new practices fit into a specific system and business; for example, if a solution is to use cover crops, how does that fit into the management of your cash crops?”

“You can put together a checklist of things you need to think about to manage soil and crop health and it would be the same, whether it’s for potatoes or vegetables. The main things to think about are how to improve soil organic matter and manage soil structure.”

Mrs Lucas said that the main project outputs were relevant to both potato and vegetable growing operations.

“The key areas are cover cropping, including biofumigation crops, reduced tillage management (looking after soil structure), site-specific crop nutrition and management of soil borne diseases. Whether you talk to potato or vegetable growers, their priorities are the same, even though the specific crop diseases will be different.

“I think potato growers have a challenge because they put a lot of pressure on the soil. Maintaining minimum tillage is a challenge because when you’re harvesting and planting, you’re actually tilling the soil. Many growers have found a solution of just reducing the amount of time they move the soil such as one pass planting which is now used in Tasmania. People aren’t aware of the fact that every time they move the soil and leave it without anything growing on it, it’s going to lose organic matter and it’s going to decline, if nothing is done about it.”

Mrs Lucas added that soil and crop health in potato and vegetable crops also comes down to rotation, and the Soil Wealth/ICP projects demonstrate what can be done.

“This is about considering what other crops you might have in the rotation as well, and looking after the soil for the long-term apart from thinking about short-term inputs. Where rotation is not possible, other ways of leaving at least 4-5 year breaks between commercial potato crops have to be explored.”

### FORWARD THINKING

One of the positives for Dr Blaesing and the Soil Wealth/ICP team has been the willingness of participating growers to be open to change in their farming operations. The team is grateful that the 15 demonstration site growers were happy to try new things and share their experiences with the industry via the Soil Wealth website and farm walks.

“This is because of what they’ve been thinking and trying already and seeing overseas. We basically share our ideas, talk about what we have learned and together we sort out new management practices such as reducing tillage, using compost or cover crops,” Dr Blaesing said.

The most encouraging aspect that the team has learnt since conducting the Soil Wealth/ICP soil borne disease masterclasses and other activities is that, according to Dr Blaesing, growers are looking for solutions that are not solely based on products – they want to look after the soil and make decisions that keep the soil and crops healthy.

“The best thing is to keep the soil covered and minimise tillage. That sounds simple, but it isn’t; ways to achieve this are somewhat different for each farm,” she said.

“Many producers now use cover or biofumigation crops regularly as part of their system. Other growers try to bring in organic matter if they can. Compost used to be for the home gardener but there are some large scale producers now who are using compost and other organic amendments. We are finding that there are challenges like getting the right machinery, the costs of soil amendments, or the best use of new technologies such as precision ag. We still need to do more work on the longer-term cost/benefits of some practices in different systems.

“There are a lot of opportunities to do things differently and many growers want to bounce ideas off others – growers, agronomists or researchers. We’re the ears and eyes out there trying to find and evaluate information and I believe that’s really important. We are keeping our ears to the ground to have responses to new challenges brought on by climate variability and opportunities emerging with the development of new technologies.”

### NEXT PHASE

While the first Soil Wealth/ICP projects are coming to an end, there is still plenty of work to be done in this space for both potato and vegetable growers.

“What we hear is that growers would like to have more advice on nutrition management, especially on site-specific nutrition management and the use of different fertilisers and about minimum tillage and how to fit summer or winter cover crops into their system, as well as precision agriculture,” Dr Blaesing explained.

“It would be nice if we could work with all growers who produce annual crops. Ideally, we would like to see a Soil Wealth project for all horticulture crops. The Soil Wealth principles apply to perennial crops even though management solutions will differ.”

### INFO

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More information and resources are also available from the Soil Wealth/ICP website at [soilwealth.com.au](http://soilwealth.com.au) or [integratedcropprotection.com.au](http://integratedcropprotection.com.au). Project achievements to date can be viewed at: [youtu.be/gkRsEL6O6ZE](https://youtu.be/gkRsEL6O6ZE).

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