A change in attitude – seeing pests from a different perspective

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Abstract

This paper outlines a history of Integrated Pest Management (IPM) in Brassica vegetables from a grower’s perspective. In the early 1990s, it had become very difficult to produce quality Brassica vegetables because of problems controlling diamondback moth (DBM) and exiting the Brassica industry all together was a definite possibility.

I was approached by an extension officer from the local DPI research station to try out IPM. This involved a lot of trial and error on farm over several years and this work continues today. It was lucky that we had good success in the first year, so that I could see that IPM could work, because the second year of trial work proved to be more difficult. We reviewed the season with other growers, ran a field day and planned our approach for the next season. Reviewing the past season and planning for the next season, what new strategies to try and how to improve our pest management program, has become a habit. We are continually trialing new methods that we can incorporate.

In February 1998, we had the inaugural meeting of the Brassica Improvement Group (B.I.G.) This group was formed to disseminate and share information that we had developed over the previous 5 years with other growers, industry and researchers. IPM level that we have reached today could not have happened without the team effort of people from all parts of the industry, from researchers to chemical companies, through to consultants and growers.

Why I changed to Integrated Pest Management

I need to take you back to where the problems started that made me look to IPM as an alternative pest management system. I started working on the family farm with my father on leaving school in the late sixties. At that time he grew potatoes, onions, pumpkins, lucerne, grain and ran a small dairy. Pests weren’t a real problem then. My father didn’t own a boom spray until the mid sixties when he built his own, which by today’s standards is totally unworkable. It was a 200-litre fuel drum on the back of the tractor, a boom, and the calibration was to fill the drum and see how far it went. He then used chemicals like DDT which killed everything. This we believed at the time was the answer to all pest problems. I remember the abundance of birds, (finches and Willy Wagtails) which slowly disappeared over the next few years. We were ignorant of the damage that we were causing to the environment.

I took the farm over in 1973 and continued a similar pest management program until DDT was finally banned. I would say I was one of the greatest critics of this action at the time, later to learn how wrong I was. In the early eighties I began to grow Brassicas. This went OK for a few years until DBM become uncontrollable due to chemical resistance. Our attitude at the time was, farm today for today. If we saw one grub we felt we’d missed a hundred, if it wriggled or flew we’d spray. We used new chemicals, as they became available with no consideration to the environment. If they worked we used them and when they didn’t, we poured in another chemical. A new chemical might last 2 seasons. There was no thought to resistance management. I would mix two or three chemicals together and was spraying every second day, the moths were as thick as ever, harvest was about a 60% cut out and then the quality was poor, by today’s standard unmarketable. I’d ask the chemical salesman why do we need to use mixtures? And the answer was, one won’t work with out the other. Weren’t we gullible?

In the late eighties, the DPI developed the 3-V strategy. The idea was to rotate the chemical families and to only use certain families at one time, thus having a period of time where each chemical family was not used. Unfortunately this strategy failed due to the ignorance and unwillingness of growers to cooperate. A summer production break was introduced and accepted by growers, only because it became uneconomical to grow brassicas due to the high costs of pest control and poor unmarketable produce.

Flowing on from this came the IPM trials. At this time I was seriously considering exiting the industry due to viability problems and the difficulty in producing a quality product. I became involved in IPM in the early nineties when an extension officer from the local DPI approached me to do commercial trials. As I had
nothing to lose, I said yes. Another grower from a different area in the district was also approached. He also agreed to run the trials. This proved to be a valuable decision as we were able to make comparisons between the two areas. So started a positive relationship between researcher and grower that still exists today.

It was lucky I had success in the first year. The second year proved to be more difficult while it was the opposite for the other grower. At the end of the second season we sat down with DPI to review the previous two years on the two farms involved. The interesting factor in this review was the approach that each farmer had taken. I started the successful first season with a soft approach, finding the second season more difficult when starting with heavy chemicals. The other grower did the opposite finding the first season difficult when starting with heavy chemicals, while having success in the second year when he took the soft approach to start that season.

It became obvious to me that a soft approach at the start of each season seemed to be a move in the right direction. I began to realise that the beneficials, although low in numbers after the summer break, were the breeding stock for that season. My season starts in February, planting every week for sixteen weeks with a double plant for two or three weeks in the middle of the season. To alleviate my lack of confidence I employed a professional consultant. I still use and recommend that all growers use a consultant. He is moving around the district and can be aware of pest pressures developing before the grower sees it on his own farm.

Having the advantage of advice and continual support from DPI and with an experienced consultant to monitor my crop, I decided to reduce the size of my first planting in the third year, take a soft approach, and if necessary sacrifice that planting. This I hoped would increase the numbers of predators for later in the season. This strategy, although we felt was very risky at the time, did work with no less in cut out than in previous years, and it did make pest control easier later in the season. This showed me that there was an alternative. We set out pheromone traps for DBM monitoring and numbers caught were consistently around the 240 moths per trap per week. Today DBM is no longer a major problem with moth counts reduced to an average of 7 per trap per week. All this was done in an intensive cropping area, with neighbours still using conventional style chemical technology and growing practices.

**Farming for tomorrow today**

I had gone through three years of criticism from my neighbours who told me I’m a nut, that this can’t be done. The fourth year we were starting to put things together and now other growers were asking, how can we do it? How do we get started?

Changing from a purely chemical control program to a biological program does not happen overnight. The important step to getting weaned off chemicals was to learn to recognise pest damage symptoms and the correct identification of pests, predators and parasites. This we learnt by DPI holding pest ID Workshops for growers. We started to learn the principles of IPM. Step by step we learnt that we could tolerate higher pest numbers than previously thought possible. Because I sprayed only when needed, the number of sprays was reduced.

We saw the need to change to softer pesticides such as Bt which is more selective. We became aware that pest management with the use of predators and parasitoids is not only about controlling pests, but also about preventing them. Under a conventional program you create a sterile environment. With IPM, the grower is closely involved with all pest control actions, and because he knows better what’s going on in his crop in terms of pest populations, the results with softer chemicals will be improved. Time is needed to build up the beneficial populations. An IPM program should be started at the beginning of the season. It may take one or two seasons before you see results, but it does become easier each year. A summer production break must be encouraged in our area.

We no longer spray with an ovicide. We carefully monitor the maturity of eggs to see if they have been parasitised and then spray at hatching to kill the larvae that come through, preferring to use Bt so as not to kill the parasitic wasp. Timing of this spray is critical and learning this was a major step forward. I now add molasses to the spray to encourage feeding. By doing this I have achieved good control of centre grub (*Hellula*). This draws the grub out onto the leaf to feed where the spray has been placed. I plant alyssum randomly throughout the crop. This encourages hover flies and parasitic wasps by giving them a nectar source needed to survive.
When spraying today, I consider what I don’t want to kill, as well as what I need to kill. If I have to use a heavy chemical I spray the hot spots earlier so as to avoid spraying the whole crop. One spray with a heavy insecticide doesn’t seem to have a large effect on beneficial numbers, but a second spray in succession can have a significant effect on these numbers.

Problems that we have encountered are that the secondary pests that were never a problem when using heavy chemicals are now coming through as primary pests. Spodoptera (cluster caterpillar) is one that we have found difficult to control. One area that I am trialing in the control of Spodoptera is root dipping of plants in a systemic insecticide before planting. Although showing promise this year, more work is needed before I could be certain that this is successful. Thrips have also become a problem towards the end of the season. The critical period for thrips in cabbage seems to be about fifty to sixty days after transplant, just as the leaf is starting to close over. We are controlling them by spraying dimethoate. This is hard on beneficials, but at the end of the season is not so critical. I would prefer to use a softer approach. I have trialed neem oil and soap sprays, but they showed little control. We still needed a dimethoate for control.

To enhance the efficiency of an IPM strategy you need to have a maximum of growers practising IPM. Those of us involved in this program saw a need to disseminate this information to other growers. In February 1998, the Brassica Improvement Group (BIG) was formed. This group meets once a month during the growing season to share and exchange information with researchers, industry and other growers. BIG has achieved industry and media recognition with widespread grower support.

Biological IPM has changed my whole approach to farming. I find I need to work with the environment, rather than think that I can control it. Be prepared for a change of attitude, this is most important. It is a change you will prefer in time. Those birds that I saw disappear in the sixties and seventies are starting to make a comeback. I watch with great delight as they swoop over my crops feeding on moths. I see small green frogs living at the bottom of cabbages feeding on small larvae. All this helps reduce pest pressures and significantly reduces the risk of chemical residue in the produce leaving my farm.

The healthier we can get our soils the healthier we can get our plants. By having healthier plants we have a better resistance to pest damage. Today I look at soil management rather than soil preparation. I’m using a yeoman plough rather than a mouldboard plough because a yeoman breaks the hard pan without soil inversion. A mouldboard inverts the soil and buries the microbes which live in the top two inches of soil.

Success of this IPM program can be measured on my farm by the fact that I was spraying cabbage every second day before starting IPM. Today, I average 5 sprays per planting for the season and most of these are with biological sprays. It is my dream before I finish farming, to grow a planting of cabbage without spraying an insecticide at all. I have achieved this in broccoli over the last 5 years. Now, I farm for tomorrow today.

The success of this program could not have been achieved without the team effort of researchers, the chemical companies, through to consultants and growers. To those who played a role in this program over the last ten years, you saved our industry. For this I am truly grateful, and on behalf of our industry in the Lockyer and further afield a big thank you. And to the organisers of this conference for allowing me the time to tell my story, also thank you.