



*Horticulture Australia*

InnoVeg

Horticulture Australia Limited



BUSINESS CASE

IPM in Lettuce





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## Business Case

# IPM IN LETTUCE

## What is a business case?

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*A business case is a formal process of planning to provide the decision-maker with useful information to help them make a decision. You will have greater confidence in your decision, if you use a formal process and make sure you count the right things the right way, whilst also considering the things that cannot be counted.*

*This business case has been developed as an example. You can use the method described here to help you with your own decisions by inserting your figures into the 'How to calculate it?' tool.*

### Introduction

A lettuce grower near Sydney has been reading about the benefits of Integrated Pest Management (IPM) and wondering what effect it would have on the level of crop damage and if the increased costs of higher priced chemicals and the use of a crop scout are worth it. The grower is also keen to reduce the number of sprays that are applied.

### What is the decision?

The decision for this grower is “how much do I need to reduce crop damage to justify the extra costs of higher priced chemicals and a crop scout?”

### What do you have to count?

#### *Seasonal differences*

It is important to recognise that the threat to your crop from pests and diseases differs between seasons. Therefore, you need to examine the **seasonal differences in income and costs**, and recognise that the benefits might differ between seasons. Once you implement an IPM system it will cover the entire year, thus it is the overall annual benefit that is important.

#### *The effect of crop damage on yield*

Firstly, **the difference in expected crop damage** between a non-IPM and an IPM system need to be estimated from your own experience and those of

growers who have implemented IPM systems. You know the costs will be different for a different system, but the income will be different too. Obviously, this is a pretty hard thing to estimate and the concern is, “what if I get it wrong?”, so you need to test the impact of different levels of crop damage in your proposed new IPM system.

#### *Chemical costs*

The key benefit of an IPM system is that you use fewer chemicals to control pests and diseases, but you will need different chemicals too. Thus, you need to examine the different chemicals needed, their recommended application rates, cost and number of applications required to estimate your **chemical costs** under each system.

#### *Application costs*

If you are using fewer chemicals, then you should be spraying less frequently. Thus, you also need to estimate the number of applications required throughout the season and your **application costs**.

#### *Crop scouting*

The whole idea of IPM is to scout your crop for pests and diseases and accurately identify infestation or infection levels before taking action to manage the threat posed to your crop. This way you minimise damage to friendly bugs and use the right chemical for the right job at the right time. Therefore, crop scouts need a high level of skill and knowledge of the potential pest and disease threats to your crop. **Crop scouting costs** will either involve using trained staff or a crop consultant.



## The scenario

Here are the scenarios involving a non-IPM and IPM system to be considered:

What do you count?	Non-IPM system	IPM system
Seasonal differences	Pest and disease threats differ greatly between Summer/Autumn and Winter/Spring. Thus, there are different chemicals and more applications used.	Pest and disease threats differ greatly between Summer/Autumn and Winter/Spring. Thus, there are different chemicals and more applications used.
Crop damage	The grower currently produces 2,200 cartons in each of two seasons, each year. Average price is \$12.50 per carton. Despite best efforts, the grower budgets on losing about 10% of the crop to pest and disease damage each Winter/Spring. However, the Summer/Autumn crop is almost clean and the grower expects that the current spray program will keep it at 0% damage.	The grower currently produces 2,200 cartons in each of two seasons, each year. Average price is \$12.50 per carton. The best knowledge and experience available informs the grower that good quality scouting and timely applications can half the losses due to crop damage (5%) in Winter/Spring. The grower should also be able to maintain 0% damage in Summer/Autumn crop.
Chemical costs	Currently uses Fastac Duo, Monitor, Dithane (twice), Rovral and Ridomil+ at their recommended rates in Summer/Autumn. The number of applications of these increases in Winter/Spring, plus the grower also uses a broad spectrum insecticide and Success 2.	The grower will continue to use Rovral, but change to Success 2, Avatar and Acrobat in Summer/Autumn. Similarly, the grower will continue with Rovral and Success 2 (twice) in Winter/Spring, but also use Avatar, Acrobat, Gemstar and Xentari / DiPel ES.
Application costs	Each chemical application costs \$20.75/ha. The grower usually does 4 applications in Summer/Autumn and 8 in Winter/Spring	Each chemical application costs \$20.75/ha. The grower expects to reduce the number of applications to 3 in Summer/Autumn and 5 in Winter/Spring
Crop scouting	The grower currently does not use a crop scout.	A highly regarded local crop scout, who charges \$89/ha, has been recommended.



...key variables that will alter the outcome of this calculation are the difference in the crop damage incurred under each system, the cost of each chemical and the price of the lettuce.

The calculations in Figure 1 show that the IPM system is \$1,113 more profitable than the non-IPM system, even though the total chemical cost is greater. However, it is a near thing, i.e. a margin of ~\$1,000 for a ~\$50,000 crop. Thus, other non-financial considerations might become really important in the final decision, not to mention testing the key variables in the calculations.

The key variables that will alter the outcome of this calculation are the difference in the crop damage incurred under each system, the cost of each chemical and the price of the lettuce. The latter is very important, as the value of any reduction in crop damage is directly related to both the amount of damage and the price of the product saved from damage.

The numbers presented in Figure 2 are the extra profit (or loss) that can be achieved by implementing the IPM system in the grower's lettuce crop. If the crop damage experienced in the IPM system is the same as before (10%), then there will be a loss from the change, however, based on the scenario presented profit can start to increase (\$288) with relatively small reductions in crop damage (from 10% down to 7.5%) even at a lower price of \$10 per carton.

Use the "How do you calculate it?" tool provided at [www.ausveg.com.au/businesscases](http://www.ausveg.com.au/businesscases) to test your own numbers.

## Figure 2:

Effect of % damage and price per carton on increased profit.

		PRICE PER CARTON		
		\$15.00	\$12.50	\$10.00
% loss with IPM	5.0%	\$1,388	\$1,113	\$838
	7.5%	\$563	\$425	\$288
	10.0%	-\$262	-\$262	-\$262



## What are the risks?

What is the risk?	Why is this a risk?	How can this risk be managed?
Availability of crop scouts	There may not be a locally available person with the required skills to provide this service. Also, they may already be fully committed and, if they leave the district, are there other suitably trained people to fill the gap?	Ask around to see whom others use and make sure you train your own staff or self to at least fulfil part of the role.
Building knowledge	IPM involves substituting products with knowledge about pests and diseases, their biology and ecology, management options and impact of agronomic practices on them.	It will take time to build this knowledge. Invest in training, but be prepared to make the shift gradually and do not feel you have failed if you have to resort to some old methods to get through in the interim.
Level of damage	There may not be a quick fix if pest populations increase rapidly, or if you get the timing wrong.	Develop a plan B!
Transitioning at the wrong time	Changing to IPM at a time of high pest problems, or when conditions are pest promoting will make it far harder, e.g. double cropping, or previous high infestations.	Consider starting with a crop that is more isolated from other crops, or is going into clean ground. If weather conditions look unfavourable, you may want to delay changing.
Partial adoption	Relying on beneficials to manage insect pests, but not adopting good sanitation to limit arrival of pest or spread through the crop.	IPM is a whole system – you need to implement it all to gain the full benefits – sanitation is critical.

## What else is important?

### *Unmeasurable benefits and costs*

Every decision involves changes (benefits and costs) in your business, some of which can be measured and some that cannot. The calculation above demonstrates how to count the things that should be counted, but it is also important to consider those things that cannot be calculated.

When the calculation shows a clear benefit, it is a “no brainer”! Similarly, if there were a clear cost disadvantage from making the change, it would be obvious. However, it may well be the unmeasurable benefits and costs that swing your decision when the calculation is a “close thing”.

### *Occupational Health and Safety (OH&S)*

At a minimum you must comply with the relevant OH&S legislation to ensure the health and safety of

your employees, your family and yourself. If in doubt, a few extra dollars invested in quality safety equipment might save you heaps in medical bills, fines and, more importantly, the welfare of everyone who works in your business. Reduced chemical use, especially nasty ones, is a plus!

### *Timeliness*

Timeliness of monitoring and taking action will be critical to gaining the full benefits of IPM and making sure you spray the right bugs, with the right chemical at the right time. At the same time, if you are spending less time on the spray rig, then you will have more time to devote to other business decisions, like marketing or staff management. It might even create a little more leisure time!





### *Acknowledgement*

The information for this business case was sourced from a more detailed “business case” for the adoption of IPM in lettuce, which was prepared by Sandra McDougall and Leanne Orr, NSW Department of Primary Industries, as part of the National Vegetable IPM Co-ordination project (VG09191) – dated May 2011.

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#### *Disclaimer*

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