



# Use a partial budget to assess practice change on vegetable farms

Will a potential change to soil management increase profit?

How do we assess whether a change we've already made was profitable?

One way to answer these questions is to use a 'partial budget'. A partial budget assesses:

- Additional revenue and reduced revenue
- Additional costs and reduced costs

to work out the net change in profit.

A partial budget only includes items that change.

## Some things to consider in assessment of changing soil management

- Post-harvest costs can change as a result of practice change. For example, if produce quality is improved, labour costs can potentially be reduced e.g. to remove outer leaves; or packing and grading costs may potentially be reduced. Consider if post-harvest losses have/will change and how this may affect costs (e.g. storage costs) or income (sales) in your business.
- Machinery costs may either increase or decrease depending on our situation. If you need to purchase additional equipment e.g. a roller or mulcher, then work out the additional cost (see example later). Some producers have found that using cover crops, compost or other 'Soil Wealth' practices result in improved soil structure and therefore smaller tractors can be used for tillage or the number of tillage passes can be reduced. This represents a potential cost saving i.e. lower purchase price for smaller tractors, in addition to the savings from fewer tillage passes, fuel usage etc.
- Unpaid labour (your time) may also change. If the reduced (or increased) work load impacts your life, value this increase or decrease to your work schedule on an hourly rate basis.
- Multi-year gross margin assessment may be the most appropriate way to estimate the net change in profit. In this case, estimate the changes in costs and revenue over a whole rotation.

## Market considerations

Consider any benefits such as keeping customers happy through delivering consistently good quality produce or being able to supply earlier or later in the season.



Figure 1: Post-harvest sorting of produce



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### How does it fit with your farm and business objectives?

You also need to think about non-economic factors. Consider how changes fit for you, your farm and farming system. Will you enjoy it? Does it make life easier?

### What are the risks? How can they be managed?

Are there any risks associated with making this change? For example, if we are thinking about using cover crops, what if there are delays in terminating the cover crop? Do we need to mow or mulch the cover crop so that there is not too much bulk at termination? How long will we need to allow between cover crop termination and sowing/planting the cash crop? Do we know the pest and disease risks for our situation? It can be helpful to talk to other growers in a similar situation.

### Consider longer term benefits

Longer term benefits can be difficult to estimate. They still need to be considered though. For example, if soil structure will be improved, this could provide risk management benefits as well as cost savings. If a soil is well structured, it is less likely to erode during high rainfall or flood events; and it will not remain waterlogged for long. Costs saved might be costs of re-forming beds and you may avoid complete loss of a crop. Consider how often these events occur in your region e.g. is it a one-year-in-ten event? Experience from growers has shown that changing soil management or using cover crops can reduce fertiliser and irrigation costs. Often pest and disease management needs to change.

### Consider saleable yields over the longer term

Will they be maintained or increased over the longer term? How does this compare to your current yield trends and expectations?

### Sensitivity analysis

It is often worthwhile repeating the calculation using different assumptions and scenarios.

### Limitations of partial budgets

- Partial budgets are suitable for small or incremental changes. They are not suitable for large or complex changes that require more detailed analysis such as a full gross margin assessment.
- A partial budget is useful for estimating the profit, but it does not guarantee the results. The correct management still needs to occur in the paddock.
- Partial budgets do not tell us the cash flow implications of making a change.
- Results are not additive. For example, if you evaluate two or more potential practice changes (e.g. cover crops, compost and minimum tillage), and implement more than one of these changes, the result will often be less than the sum of the individual results.





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### Using cover crops – an example partial budget

This example considers using a cover crop instead of a fallow. In the cash crop (that follows the cover crop), saleable yield is improved and post-harvest labour costs are reduced due to improved crop quality. Additional equipment (a mulcher) is purchased. The figures are calculated per hectare.

Note that the profit will vary with each situation and will depend on a range of factors including, but not limited to: soil type and soil condition, climate, crop type/variety, current yield, potential yield, current practices, fluctuations in market prices and crop health factors (e.g. disease pressure).

An excel calculator is available on the Soil Wealth – Integrated Crop Protection website:  
<http://www.soilwealth.com.au/resources/fact-sheets/crop-management/use-a-partial-budget-to-assess-practice-change-on-vegetable-farms/>.

This includes a printable blank worksheet for calculating by hand.

				\$/ha
<b>ADDITIONAL REVENUE</b>				
Additional revenue (after packaging costs) per ha				\$1,500
				\$
				\$
				\$
A. Sub-total				\$1,500
<b>Less REDUCED REVENUE</b>				
e.g. if a cover crop replaces a cash crop				\$
				\$
				\$
				\$
B. Sub-total				\$0
Net change in revenue				\$1,500
<b>Less ADDITIONAL COSTS</b>				
e.g. cover crop seed, sowing				\$150
e.g. termination costs				\$50
Depreciation on additional equipment (see note below)				\$19
				\$
				\$
C. Sub-total				\$219
<b>Add REDUCED COSTS</b>				
e.g. post-harvest labour saved (5 hours / ha @ \$28/hr)		5.00	28.00	\$140
				\$
				\$
				\$
D. Sub-total				\$140
Net change in costs				\$79
<b>Net change in profit (A-B-C+D)</b>				<b>\$1,421</b>

\*Depreciation in this example was calculated as follows:

Additional machinery \$10,000 market value  
x 15% depreciation rate  
= \$1,500 depreciation for the year  
divided by 80ha  
= \$19/ha



Figure 2: Roller-crimping a ryecorn cover crop and direct seeding in one pass. Photo courtesy of Rodale Institute.