



Horticulture Australia

InnoVeg

Horticulture Australia Limited



BUSINESS CASE

Capsicum Grader



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Business Case

CAPSICUM GRADER

What is a business case?

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.

A new capsicum grader

A grower, near Stanthorpe in south-east Queensland, grows fresh market capsicums. The production of fresh capsicums has expanded in recent years, although the family has grown the crop for many years. The grading of different categories of product has increased and the quality of grading has become more important as market requirements have changed. The family considered the purchase of a new automated grader three years ago.

What is the decision?

The decision for this grower is whether "it's worth buying a new automated capsicum grader"? The new grader would make packing and grading a much more automated process and reduce the amount of labour required. Thus, what they are really asking is "will the automated machine reduce the cost of grading compared to the current manual system?" That is, will the labour savings outweigh the machinery costs? There is also a secondary question about whether the new grader will meet the market requirements better and whether there is a financial benefit connected to this.

What do you have to count?

Depreciation

An investment in new machinery will increase the grower's **depreciation**. This is not a cash cost, but a critical allowance to make when calculating profit. If you do not account for depreciation, then you will not have any money available to replace the machinery when needed.

Cost of capital

An investment in new machinery also means that the grower will need to use spare cash or increase borrowings to pay for the machines, thus they need to consider the **cost of capital**. The cost of borrowed capital is obvious (i.e. the interest cost), but the cost of your own capital is less so. Why should you value it any less? Money spent on a new capsicum grader, means less money to spend elsewhere, e.g. increase marketing, pay less overdraft interest, improve irrigation systems. Thus, your own capital has a value too, it is known as an 'opportunity cost'.

Productivity benefits

Why does the grower want to buy the new capsicum grader? If the grower is keen on expanding the business, or improving its profitability, then the answer must be that they expect to achieve some **productivity benefits**. What may they be? Reduced labour costs, faster pack-outs to meet certain markets, less time in cool storage, and/or less product handling. Thus, these benefits need to be defined and quantified.

Operating costs

The grower is comparing two different grading processes, so they will have different operating costs. The grower needs to quantify the cost to run the grader, any changes in material costs, repairs and maintenance, and of course, labour.

Contracting income

Finally, upgrading to a new grading machine may provide the opportunity to grade capsicums of neighbours. Like any new machinery, the more you can use it, the further you can spread the costs. Thus, you need to count the extra income as a benefit of the new grader.

The scenario

Here are the two scenarios describing the current situation and a possible future situation:

What do you count?	Current situation <i>(Grading the old way)</i>	Possible future situation <i>(The new grader)</i>
Depreciation	The plant currently used for grading is fully depreciated and has little clearing sale value. Its only value is as a back-up in case the new grader breaks down.	<p>The new grader will cost \$200,000 and is estimated to be worth \$50,000 in 10 years time.</p> <p>The salvage value of a capsicum grader is hard to work out, but the grower believes they will hold their value pretty well because they are scarce in Australia.</p> <p>A washer will also be required at a cost of \$30,000, with an estimated salvage value of \$5,000 in 10 years time.</p> <p>An extension to the shed will be required at a cost of \$55,000, with a salvage value of \$5,000 in 25 years time.</p>
Cost of capital	With a bit of debt to repay, the grower values any spare cash at 8%.	The grower's capital is still worth 8%, whether borrowed or not.
Productivity benefits	<p>14 people are employed for 8 hours a day for 75 days to grade the crop.</p> <p>The cost of the labour is \$22 per hour, including on costs such as workcover and superannuation.</p>	<p>Only 7 people will be needed on the new grader for 8 hours a day for 75 days.</p> <p>The cost of this labour will remain at \$22 per hour, including on costs such as workcover and superannuation.</p>
Operating costs	Base cost	The new grader will require an increase in running costs of around \$8,000 per year for electricity and maintenance.
Contracting income	nil	It is estimated that the grader can be used for contracting at a margin of \$1,000 per day for about 3 weeks (21 days) after the grower has finished grading their own crop.

How do you calculate it?

Figure 1:
Cost of grading with old and new grader

ASSUMPTION	NOW	NEW GRADER	CALCULATION	NOW	NEW GRADER
Capital Costs - Grader			Costs		
Current value	n.a.	\$200,000	Depreciation - grader	\$0	\$15,000
Salvage value	n.a.	\$50,000	Depreciation - washer	\$0	\$2,500
Expected life (years)	n.a.	10	Depreciation - shed	\$0	\$2,000
Capital Costs - Washer			Interest / opportunity cost	\$0	\$22,800
Current value	n.a.	\$30,000	Labour costs	\$184,800	\$92,400
Salvage value	n.a.	\$5,000	Repairs & maintenance	\$0	\$8,000
Expected life (years)	n.a.	10	Total Costs	\$184,800	\$142,700
Capital Costs - Shed			Contracting income	\$0	-\$21,000
Shed extension	n.a.	\$55,000	Net Cost	\$184,800	\$121,700
Salvage value	n.a.	\$5,000			
Expected life (years)	n.a.	25			
Interest rate / opportunity cost	n.a.	8.0%			
Labour Costs					
Number of days to grade	75	75			
Number of staff	14	7			
Hours worked per day	8	8			
Staff costs (incl. on costs)	\$22	\$22			
Repairs & Maintenance					
Repairs & Maintenance (\$/hr)	\$0	\$8,000	Is it more profitable?		YES
Contracting Income			by how much?		\$63,100
Days contracted	0	21	Return on capital		22%
Margin per day	\$0	\$1,000	Payback period (years)		4.5

NB: Refer to the appendix for a more detailed example of how these numbers were calculated.

... the most important variables in this calculation are the amount of depreciation and the number of staff...

The grower was able to save half his labour costs, i.e. save \$92,400 by purchasing the new grader. The annual cost of the capital invested in new machinery and shedding was about \$50,000 (depreciation, interest and repairs & maintenance), which was more than offset by the savings in labour costs.

The return on the capital invested (i.e. the total savings of \$63,100 divided by the total capital invested of \$285,000) was 22% and it could be paid back in 4.5 years.

The calculation in Figure 1 works fine if we are sure about the assumptions we make, but we all know that these assumptions can change in reality. The most important variables in this calculation are the amount of depreciation (how much and how quickly we write-off the new machinery) and the number of staff (labour costs).

Two different scenarios are presented in Figure 2, which shows the effect on the cost savings achieved by

the investment if you have to write-off the new machinery faster, or need more staff to complete grading than you originally thought.

1. A cost saving of \$13,600 will still be achieved, even if the new machinery is written-off to \$0 in 5 years and there is no contracting income.
2. It takes all of the above (faster depreciation and no contracting income), plus reducing your staff to just 9 before there is no cost saving. The new grader becomes non-profitable (-\$12,800) when staff numbers are reduced by 5 or less from the current situation, there is no salvage value after 5 years and no external contracting. This is similar to a worst case scenario.

Use the “How do you calculate it?” tool provided at www.ausveg.com.au/businesscases to test your own numbers.

Figure 2:

Effect of faster depreciation and work hours on cost saving achieved

Variable	Scenario 1 <i>faster depreciation</i>	Scenario 2 <i>faster depreciation & more work hours</i>
Salvage value of grader and washer	\$0	\$0
Expected life (years) of grader and washer	5	5
Number of staff	7	9
Days contracted	0	0
Cost saving achieved	\$13,600	-\$12,800

What are the risks and how can they be managed?

What is the risk?	Why is this a risk?	How can this risk be managed?
It takes a while to “get it right”	One of the big risks with buying new automated equipment to reduce labour is that it takes you longer than you think to “get it right”. New machinery may look great in the showroom, or on the web, but it can be a difficult beast to get your head around in the shed. It may need calibrating or adjusting to your specific situation.	Make sure you have access to decent after sales service and have enough time to “ play with it ” before you really need to use it. This will increase the probability of successfully operating the new grader.
It might break down easier or damage your product	Part of “getting it right” might be learning how to keep it fully maintained so it works when you need it and works the way you need it to work, i.e. it doesn’t damage the product or sort the product incorrectly.	It might be worth holding onto the old machine until you are sure that everything is working well with the new one.
Staff error	Getting used to using a new machine can take a while, especially if you or your staff have been using the old ones for a long time. The automated systems will be more sensitive, so it might need a little bit of extra care when operating it.	Staff training is essential. Not just when you first buy the equipment, but throughout the season to ensure you learn while you use it and maximise the benefit to your business.

What else is important?

Unmeasurable benefits and costs

Every decision involves changes (benefits and costs) in your business, some that can be measured and those 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 like that above, 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”.

Quality

The impact of using automated machinery on the quality of your product will be critical to the decision. You need to beware of gaining productivity benefits, only to see losses in price because of quality downgrades! The new grader must ensure also that there are improvements in the grading of fruit into different quality categories.

Labour savings, lifestyle and timeliness

In this situation, the new grader means some labour is freed up to do other things. This means other jobs can be done on time. Also, remember we have valued all the labour as a saving and family members may be able to have more time off rather than spending all their time grading capsicums.



Appendix – Detailed calculation

ASSUMPTION	NOW	NEW GRADER	CALCULATION	NOW	NEW GRADER
Capital Costs - Grader			Interest / Opportunity Cost		
Current value	n.a.	\$200,000	current value - grader	n.a.	\$200,000
Salvage value	n.a.	\$50,000	plus current value - washer	n.a.	\$30,000
Expected life (years)	n.a.	10	plus current value - shed	n.a.	\$55,000
Capital Costs - Washer			equals total investment	n.a.	\$285,000
Current value	n.a.	\$30,000	multiplied by interest rate	n.a.	8.0%
Salvage value	n.a.	\$5,000	Equals interest / opportunity cost		
Expected life (years)	n.a.	10		n.a.	\$22,800
Capital Costs - Shed			Labour Costs		
Shed extension	n.a.	\$55,000	number of days to grade	75	75
Salvage value	n.a.	\$5,000	multiplied by number of staff	14	7
Expected life (years)	n.a.	25	equals total staff days	1,050	525
Interest rate / opportunity cost	n.a.	8.0%	multiplied by hours worked/day	8	8
Labour Costs			equals total staff hours	8,400	4,200
Number of days to grade	75	75	multiplied by staff costs/hour	22	22
Number of staff	14	7	Equals labour costs		
Hours worked per day	8	8		\$184,800	\$92,400
Staff costs (incl. on costs)	\$22	\$22	Repairs & Maintenance		
Repairs & Maintenance			repairs & maintenance	\$0	\$8,000
Repairs & maintenance	\$0	\$8,000	Equals repairs & maintenance		
Contracting Income				\$0	\$8,000
Days contracted	0	21	Total Cost		
Margin per day	\$0	\$1,000	Depreciation - grader	n.a.	\$15,000
Depreciation - Grader			Depreciation - washer	n.a.	\$2,500
current value	n.a.	\$200,000	Depreciation - shed	n.a.	\$2,000
less salvage value	n.a.	\$50,000	Interest / opportunity cost	n.a.	\$22,800
equals amount to depreciate	n.a.	\$150,000	Labour costs	\$184,800	\$92,400
divided by expected life	n.a.	10	Repairs & maintenance	\$0	\$8,000
Equals depreciation			Total cost	\$184,800	\$142,700
	n.a.	\$15,000	Contracting Income		
Depreciation - Washer			number of days contracted	\$0	\$21
current value	n.a.	\$30,000	multiplied by margin per day	\$0	\$1,000
less salvage value	n.a.	\$5,000	Equals contracting income		
equals amount to depreciate	n.a.	\$25,000		\$0	-\$21,000
divided by expected life	n.a.	10	Net Cost		
Equals depreciation			Total Costs	\$184,800	\$142,700
	n.a.	\$2,500	plus Contracting income	\$0	-\$21,000
Depreciation - Shed			Equals net cost	\$184,800	\$121,700
current value	n.a.	\$55,000	Is it more profitable?		
less salvage value	n.a.	\$5,000		YES	
equals amount to depreciate	n.a.	\$50,000	by how much?		
divided by expected life	n.a.	25	net cost of now		\$184,800
Equals depreciation			less net cost of new grader		\$121,700
	n.a.	\$2,000	Equals by how much?		
Return on Capital					\$63,100
How much profit?			Return on Capital		
divided by total investment			Equals net cost		22%
Payback Period (years)			Payback Period (years)		
Total investment			Total investment		\$285,000
divided by How much profit?			divided by How much profit?		\$63,100
Equals payback period (years)			Equals payback period (years)		4.5

Disclaimer

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