

Step by Step Guide to the Apple Netting Financial Analysis Tool



Guide prepared by the Apple & Pear Growers Association of SA
Tool developed by NaturalLogic (Australia) Pty Ltd and EconSearch Pty Ltd

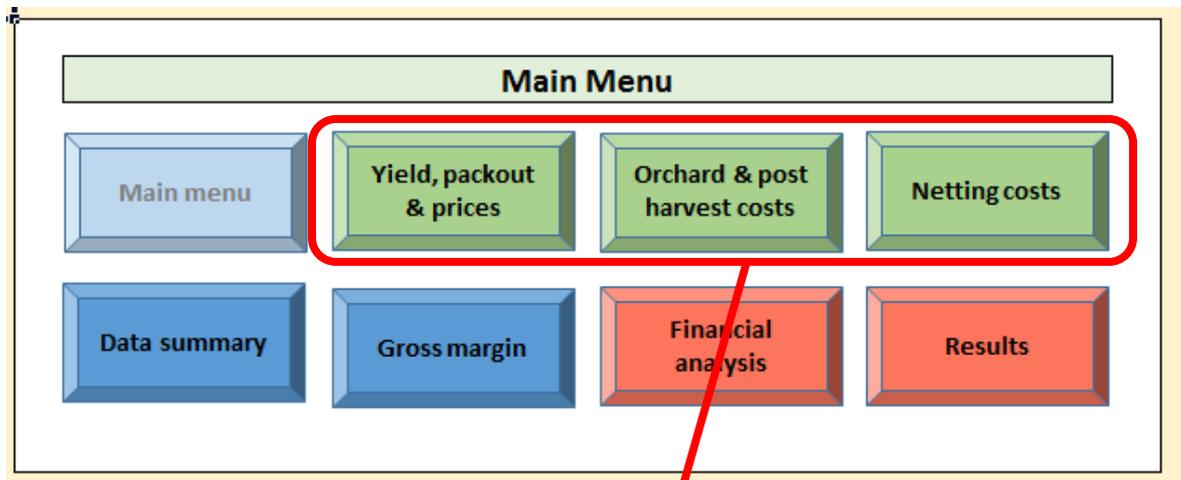
Funding provided by the Adelaide & Mt Lofty Ranges Natural Resources Management Board

Overview

- The Netting Financial Analysis Tool is developed to enable growers to make a more informed investment decision on permanent netting, based on costs & benefits
- It is developed specifically for the Adelaide Hills region of South Australia over a 20 year forward projection

What is involved?

- Open the Excel Spreadsheet and go to the Main Menu. Click on File and Save As, and give the file a new name.



- There are 3 pages where you must input data, shown by the green tabs

- Yield, packout & prices,
- Orchard & post harvest costs
- Netting costs

Yield, packout & prices

D83

Please insert or revise data in the
Model workings are presented in the

green	cells
yellow	cells

Block information

Block name/identifier	
Area (ha)	
Variety	
Current age of trees (yrs)	
Age of trees (yrs) when mature yield achieved	
Replacement age of trees (yrs)	

Harvested yield

Harvested yield: this is the yield that is sent to the packhouse/processing/juicing.
Input the average harvested yield when the trees are at mature yield and in a year with no hail damage.

	t/ha	Block (t)
Harvested yield		0.0

Orchard culls

Orchard culls: this is fruit that is dropped in the orchard or left on the tree due to faults or is 'eaten' by birds/wildlife, i.e. this is fruit that at the beginning of the growing season could have been harvested and sent to the packhouse had the faults not occurred.
Input the average culls when the trees are at mature yield and in a year with no hail

	t/ha	Block (t)
Orchard culls		0.0

Introduction Main menu **Yield, packout & prices** Orchard & post harvest costs Netting c

Ready

- Click on the green tab on the main menu or at the bottom of the page to go to the “Yield, packout & prices page”
- Enter data into ALL of the green cells
- When entering data, use **averages** based on block history

Yield, packout & prices

Block information

Block name/identifier	
Area (ha)	
Variety	
Current age of trees (yrs)	
Age of trees (yrs) when mature yield achieved	
Replacement age of trees (yrs)	

Replacement age of trees is important if you are considering replanting during the next 20 years

Orchard culls

Orchard culls: this is fruit that is dropped in the orchard or left on the tree due to faults or is 'eaten' by birds/wildlife, i.e. this is fruit that at the beginning of the growing season could have been harvested and sent to the packhouse had the faults not occurred.

Input the average culls when the trees are at mature yield and in a year with no hail

	t/ha	Block (t)
Orchard culls		0.0

Damage other than hail

Cull fruit can have a number of faults, however in practice there will be a particular fault that is the main reason for the fruit being culled.

Please indicate the main reasons for culling fruit, in a year with no hail damage.

Main reason for cull	%	t/ha	Block (t)
Sunburn		0.0	0.0
Bird/bat damage		0.0	0.0
Wind rub		0.0	0.0
Other		0.0	0.0
Total	0%		

Must add up to 100%

Orchard culls takes into account the amount of mature fruit that is left in the orchard due to damage or other reasons.

This allows the model to estimate the total potential yield when damage is reduced by netting.

In this section, for all the culled fruit, allocate the proportion of fruit culled for each reason. This must add up to 100%.

Yield, packout & prices

Hail damage

In the past 20 years on this block, please describe the hail damage history.

	No. of seasons	% of hail damaged fruit culled	% of hail damaged fruit sent to juice
No hail storm/ no damage		N/A	N/A
Hail Storm: 1 - 10% Damage			
Hail Storm: 11 - 30% Damage			
Hail Storm: 31 - 60% Damage			
Hail Storm: 61 - 100% Damage			
Total	0	Must add up to 20	

	t/ha	Block (t)
Average annual culls due to hail	0.0	0.0

Hail damage can be very seasonal. Therefore, the model looks at the trends on this site over the past 20 years to determine a likelihood of future damage.

Input the trends for the past 20 years and if damage occurred, how much fruit was culled or sent to juice.

Note: Total No of Seasons must add up to 20.

Packout

Please provide typical packout percentages for mature yield, no net.

	%	t/ha	Block (t)
Export/1st Class		0.0	0.0
2nd Class		0.0	0.0
Juice/Process		0.0	0.0
Total	0%	0.0	0.0

Must add up to 100%

Gross prices

Please provide typical range of gross prices received.

	Low	Average	High
Export/1st Class (\$/kg)			
2nd Class (\$/kg)			
Juice/Process (\$/kg)			

As prices fluctuate so much, provide low, average and high prices ranges for each category. The model is very sensitive to price, so give your best estimate using current day returns

Orchard & postharvest costs

To navigate to the Orchard & postharvest costs page, scroll to the top of the page and click on the green tab, or click on the tab at the bottom of the page. Once again, fill in the green cells.

If you know your total orchard costs, fill in the tab on the top right hand side only (in \$/ha). Otherwise, fill in the more detailed section on the left hand side.

Regardless of which option you choose, you must also fill in your marketing, grading and packing costs.

Filling in your orchard costs enables the model to calculate a total gross margin for the area to be netted.

Once you have entered all your orchard & postharvest costs, click on the Netting Costs tab.

Netting Costs

Site details

Area (ha)

Site shape

Slope

Netting details

Type of structure

Flat
Sloping
Strongly sloping

Slope
from the drop
down list

Please do not choose a netting mesh size

Netting mesh size

Will the netting have sides?

Netting installation costs

Do you have a quote for netting this block?

For the first section of this page, there are a series of multiple-choice selections.

Click in the green box, then on the arrow to the right hand side. A drop down list of the different options will appear. Click on the option most applicable or closest to situation.

If you have already received a quotation from a netting supplier, select “Yes” and input the figures you have received from them. If you have not yet sought a quotation, the model will give some indicative costs based on average figures provided by netting companies in 2015.

Netting Costs

Netting installation costs

Do you have a quote for netting this block?	Yes
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Please fill out Quote details section

Quote details

Please provide a cost breakdown for the whole block. Use prices exclusive of GST.

Structure materials	
Netting materials	
Structure labour	
Netting labour	
Site preparations	
Development approval	
Total	\$0.00

If using own labour, please estimate cost
If using own labour, please estimate cost
If using own labour/machinery, please estimate cost

Enter these figures if you have received a quote

Estimated cost - without quote

Structure materials	\$0.00
Netting materials	\$0.00
Structure labour	\$0.00
Netting labour	\$0.00
Site preparations	\$0.00
Development approval	\$0.00
Total	\$0.00

Indicative costs will be provided if you haven't received a quote

Netting Costs

Netting life expectancy

Colour of net	
Netting (yrs)	14
Structure (yrs)	40

Netting maintenance costs

	Block (\$/yr)
Structure maintenance	
Netting maintenance	
Netting Insurance	

Other ongoing netting costs

	Block (\$/yr)
Hive hire	

Residual value of project capital

Structure	\$0.00
Netting	\$0.00
Total	\$0.00

Finally, provide some information on the colour of the net, along with an estimate of ongoing maintenance costs, insurance and any extra costs associated with hire of bee hives.

Once all the information is entered, click on the Data Summary tab.

Data Summary

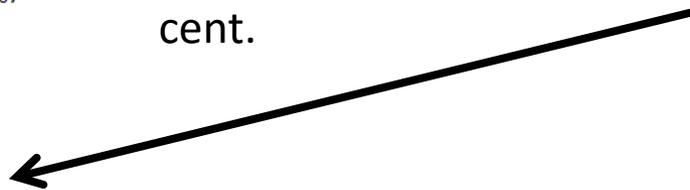
Average annual culls			
Sunburn	3.1%	2.0	4.2
Bird/bat damage	9.2%	6.0	12.6
Wind rub	1.5%	1.0	2.1
Hail	0.6%	0.2	0.8
Other	1.5%	1.0	2.1
Packout			
	%	t/ha	Block (t)
Export/1st Class	85%	46.6	97.5
2nd Class	5%	2.7	5.7
Juice/Process	10%	5.5	11.5
Total	100%	54.8	114.7
Prices			
	Low	Average	High
Export/1st Class (\$/kg)	\$1.20	\$1.30	\$1.50
2nd Class (\$/kg)	\$0.80	\$1.00	\$1.10
Juice/Process (\$/kg)	\$0.30	\$0.30	\$0.30
Gross margin			
		\$/ha	Block (\$)
Gross income		\$65,713.60	\$137,998.57
Less			
Marketing costs		\$24,839.61	\$52,163.17
Grading and packing		\$20,838.25	\$43,760.33
Orchard costs		\$19,000.00	\$39,900.00
Gross margin		\$1,035.75	\$2,175.07

The data summary page provides an overview of all the information entered. It enables you to make a quick check over to ensure the data is correct and that nothing is missing.

Note: Costs and benefits are specified in real terms (i.e. constant 2015 dollars). Past and future values are converted to present values by applying a discount rate of 8 per cent.

Discount rate

8%



Gross Margin

A1		fx						
B	C	D	E	F	G	H	I	
Block name		Demo						
Area (ha)		2.1						
Variety		Royal Gala						
Harvested yield (t/ha)		54.8375						
Income					\$/ha	Block (\$)		
Export/1st Class		46.6 t/ha @	\$1.32 /kg	\$61,372.30	\$128,881.8			
2nd Class		2.7 t/ha @	\$0.98 /kg	\$2,696.18	\$5,661.5			
Juice/Process		5.5 t/ha @	\$0.30 /kg	\$1,645.13	\$3,454.7			
Total income				\$65,713.60	\$137,998.5			
Marketing costs					\$/ha	Block (\$)		
Freight (to market)		54.8 t/ha @	\$0.40 /kg	\$21,935.00	\$46,063.5			
Commission		65,714 \$ @	3.0%	\$1,971.41	\$4,139.5			
Levies								
Export/1st Class		46.6 t/ha @	\$0.02 /kg	\$859.99	\$1,805.9			
2nd Class		2.7 t/ha @	\$0.02 /kg	\$50.59	\$106.2			
Juice/Process		5.5 t/ha @	\$0.00 /kg	\$22.62	\$47.5			
Total marketing costs				\$24,839.61	\$52,163.1			
Grading and packing costs					\$/ha	Block (\$)		
Grading		54.8 t/ha @	\$0.20 /kg	\$10,967.50	\$23,031.7			
Packing								
Export/1st Class		46.6 t/ha @	\$0.20 /kg	\$9,322.38	\$19,576.5			
2nd Class		2.7 t/ha @	\$0.20 /kg	\$548.38	\$1,151.5			

The Gross Margin page shows the calculated gross margin for the block of interest in more detail.

It enables more detailed checking of the information entered.

Financial Analysis

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	Demo	PV (\$)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	Base case (without netting)																					
	Packout (t)																					
	Export/1st Class		96.5	95.5	94.5	93.5	92.5	91.5	90.5	89.5	88.5	87.5	86.6	85.6	84.6	83.6	82.6	0.0	13.4	26.5	39.3	51.7
	2nd Class		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	0.0	1.0	1.9	2.9	3.8
	Juice/Process		11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	0.0	1.9	3.8	5.7	7.6
	Total packout (t)		113.7	112.7	111.7	110.7	109.7	108.7	107.7	106.7	105.7	104.7	103.8	102.8	101.8	100.8	99.8	0.0	16.3	32.3	47.9	63.2
	Benefits (\$)																					
	Export/1st Class sales	1,150,091	127,046	125,737	124,428	123,119	121,811	120,502	119,193	117,884	116,576	115,267	113,958	112,649	111,340	110,032	108,723	0	17,684	34,932	51,744	68,119
	2nd Class sales	54,485	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	5,639	0	940	1,880	2,819	3,759
	Juice/Process sales	33,245	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	3,441	0	573	1,147	1,720	2,294
	Total benefits (\$)	1,237,822	136,125	134,816	133,508	132,199	130,890	129,581	128,272	126,964	125,655	124,346	123,037	121,729	120,420	119,111	117,802	0	19,197	37,959	56,284	74,172
	Costs (\$)																					
	Marketing costs	470,615	51,495	51,039	50,584	50,129	49,674	49,218	48,763	48,308	47,853	47,398	46,942	46,487	46,032	45,577	45,122	0	7,369	14,585	21,650	28,564
	Grading and packing costs	393,722	43,184	42,786	42,388	41,991	41,593	41,196	40,798	40,400	40,003	39,605	39,208	38,810	38,412	38,015	37,617	0	6,137	12,141	18,013	23,753
	Orchard costs	399,523	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	39,900	9,975	9,975	19,950	39,900	39,900
	Total Costs (\$)	1,263,860	134,578	133,725	132,873	132,020	131,167	130,314	129,461	128,609	127,756	126,903	126,050	125,197	124,345	123,492	122,639	9,975	23,481	46,677	79,564	92,217
	Option 1 (with netting)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Packout (t)																					
	Export/1st Class		134.7	133.8	132.9	132.0	131.0	130.1	129.2	128.2	127.3	126.4	125.4	124.5	123.6	122.7	121.7	0.0	20.0	39.6	59.0	78.0
	2nd Class		2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	0.0	0.5	1.0	1.4	1.9
	Juice/Process		4.3	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.0	4.0	4.0	3.9	3.9	3.9	3.9	0.0	0.6	1.3	1.9	2.5
	Total packout (t)		141.9	140.9	140.0	139.0	138.0	137.1	136.1	135.2	134.2	133.2	132.3	131.3	130.4	129.4	128.4	0.0	21.1	41.9	62.3	82.4
	Benefits (\$)																					
	Export/1st Class sales	1,641,757	177,415	176,190	174,965	173,740	172,515	171,291	170,066	168,841	167,616	166,391	165,167	163,942	162,717	161,492	160,267	0	26,303	52,198	77,684	102,762
	2nd Class sales	27,243	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	2,819	0	470	940	1,410	1,880
	Juice/Process sales	11,826	1,277	1,268	1,260	1,251	1,242	1,234	1,225	1,216	1,208	1,199	1,191	1,182	1,173	1,165	1,156	0	190	377	561	742
	Residual value of project capital	12,452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53,740
	Total benefits (\$)	1,693,278	181,511	180,277	179,044	177,811	176,577	175,344	174,110	172,877	171,643	170,410	169,176	167,943	166,710	165,476	164,243	0	26,963	53,514	79,654	159,124
	Costs (\$)																					
	Netting installation costs	141,110	123,125	0	0	0	0	0	0	0	0	0	0	0	41,934	0	0	0	0	0	0	0
	Netting operating costs	40,294	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800	3,800

The Financial Analysis page shows the complete Cost / Benefit breakdown over a 20 year time period. Note in this example, the trees were replanted in Year 16.

Financial Analysis

Orchard costs	399,523	39,5
Total Costs (\$)	1,698,743	287,4
Incremental benefits (\$)	455,456	45,5
Incremental costs (\$)	434,883	152,8
Net benefits (NPV) (\$)	20,573	-107,5
Discounted net benefits (\$) - Total	20,573	-107,5
Cumulative discounted net benefits (\$)	20,573	-107,5
Estimated payback period (years)	15	
Benefit Cost Ratio	1.05	
Internal Rate of Return	11%	
Equivalent Annual Return (\$)	2,095	
Equivalent Annual Return (\$/ha)	998	

Internal rate of return (IRR)

Discount rate at which the NPV is equal to zero. Netting is worthwhile if the IRR is greater than the discount rate.

Equivalent annualised return

Is the NPV presented as an annual figure

Scroll to the bottom of the page to see the key financial indicators.

Net present value (NPV)

Value of the netting to the grower taking into account future flows of costs and benefits. Netting is worthwhile if the NPV is > 0 .

Benefit cost ratio (BCR)

Ratio of incremental benefits of netting to the incremental costs of netting. Netting is worthwhile if the BCR is > 1 .

Payback period

The time that will elapse before netting has paid for itself in additional profit on the basis of discount flows of costs and benefits.

Results

All the key information from the Financial Analysis is presented in the Results page.

Key

Model results are presented in the purple cells

Information for the business case

	%	t/yr	\$/t
Increase in total packout	27%	28.5	N/A
Increase in premium packout	45%	38.9	\$1,316.67

	\$/yr
Increase in revenue	\$46,101.38
Increase in production costs	\$30,119.44
Increase in gross margin	\$15,981.94

Benefit-cost ratio	1.05
Internal rate of return	11%
Payback period (yrs)	15

Summary

- Information is indicative only and intended to act as a guide for decision making processes. It is based on 2015 figures.
- The report “Netting Calculator and Business Case” provides detailed information on all the calculations and assumptions used in the model
- Information from the Financial Analysis can be readily imported in the Business Case Template developed specifically to accompany this tool.
- Any information entered can be readily changed to run different scenarios
- If you are starting a new analysis, ensure that all green cells are blank. It is recommended that you keep the original calculator as a clean file and save any analyses as new file names.
- To access the report and business case template go to <http://apgasa.com/industry-news-and-resources/communication-and-publications/> or contact Apple & Pear Growers Association of SA on aplpear@ozemail.com.au or 08 8389 8453