NSW DEPARTMENT OF
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Macadamia costs and returns for northern NSW

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There has been considerable interest in growing macadamias due to strong international demand for kernel and the short supply of kernel due to the drought conditions of the past two seasons. Plantings have been estimated to be growing by 500 ha per year and the wait for grafted trees can be up to two years.

Due to this strong interest, it is appropriate to look at the potential costs and returns from a macadamia enterprise. In this study we have used an 'average' farm based in the Northern Rivers region and the following details are provided:

- gross margin analysis for three tree ages: 3 years, 7 years, and 15 years old
- sensitivity analysis for a range of prices and yields.

This information is intended as an example only to provide an indication of potential costs and returns from the crop; it does not reflect any profitability of macadamias at any site. It is recommended that individuals seek professional financial advice and develop a business plan (including a full cash flow analysis) for their specific circumstances.

THE GROSS MARGIN BUDGET

A gross margin is the gross income from an enterprise less the variable costs incurred in achieving it.

Variable costs are those that are directly attributable to an enterprise, which vary in proportion to the size of an enterprise. For example, if the area of macadamias grown doubles, then the variable costs associated with growing it will roughly double. Variable costs include crop operations, harvesting, and marketing costs.

The gross margin is not gross profit because it does not take into account overhead or fixed costs such as depreciation, interest payments, rates, power, water, insurance or mortgage costs.

These costs need to be taken into account when completing whole farm budgets.

Gross margins are a convenient way of comparing one farm enterprise with another. They can only be compared when using the same fixed resources such as machinery, land, labour, buildings and equipment. It is therefore suggested that when comparing different horticultural crops it is best to complete a whole farm budget.

ASSUMPTIONS

The following assumptions have been made in preparing this example.

- Macadamias are the only crop grown.
- The orchard is 20 ha in size.
- The orchard is planted at 8 x 4 m (312 trees per hectare).
- The orchard is not irrigated.
- Labour is paid at the appropriate award rate*. Super is 9%, workers compensation premium 6.9% and no payroll tax**. A total labour cost of $18.00 per hour is used in this example.
- Machinery running costs include fuel and oil only. Maintenance costs are treated as a fixed cost, along with labour for repairs.

*The appropriate award rate needs to be used in calculating the hourly rate for your staff. The hourly rate you use is based on the level at which the farm employee is employed.

**Under NSW legislation, you are liable for payroll tax if you are an individual employer, or one of a group of employers, whose total wages throughout Australia, including NSW, exceeds $600,000 for the payroll tax year.

- The price received is assumed to be $2.50 per kilogram of Nut in Shell. This is based on an assumed kernel recovery of 33%. All nuts are consigned to a local processor.
- All fixed costs are excluded, such as the purchase and maintenance of dehusking, sorting and storage equipment.

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Macadamia gross margin budget for 1 ha, 3 year old trees

Description	20 ha macadamia orchard			Variety: mixed				
Location	North Coast NSW			Planting density 312 trees/ha				
	Yield: 0 t/ha of nut in shell @ $2.50 per kg (33% SKR)						**Total income (A)**	**$ nil**
VARIABLE COSTS								
Machinery costs								
	Operation		**Rate**	**Unit cost**			**Applications**	**$/ha**
	Mowing & slashing	3	hrs/ha	$15.00	per hour	6	applications	$270.00
	Pesticide application	2.5	hrs/ha	$15.00	per hour	1	applications	$37.50
	Herbicide application	2	hrs/ha	$15.00	per hour	6	applications	$180.00
	Fertilising	1	hr/ha	$15.00	per hour	4	applications	$60.00
Labour costs								
	Mowing & slashing	2	hrs/ha	$18.00	per hour	6	applications	$216.00
	Pesticide application	3	hrs/ha	$18.00	per hour	1	applications	$54.00
	Herbicide application	2	hrs/ha	$18.00	per hour	6	applications	$216.00
	Orchard maintenance	4	hrs/ha	$18.00	per hour	1	applications	$72.00
	Fertilising	1	hrs/ha	$18.00	per hour	4	applications	$72.00
Fertiliser and mulch								
	North coast macadamia mix	50	kg/ha	$0.54	per kg	4	applications	$108.00
	Mulch supplied by farm	4	hrs/ha	$18.00	per hour	1	applications	$72.00
	Soil test			$85.00	per test		(average)	$25.50
Plant protection								
Insect control	Methidathion	1.25	L/ha	$32.29	per L	1	applications	$40.36
	Insect and disease monitoring							$25.00
Weed control	Glyphosate	2.5	L/ha	$7.50	per litre	6	applications	$112.50
							Total variable costs (B)	**$1,560.86**
							Gross margin (A – B)	**– $1,560.86**

Macadamia gross margin budget for 1 ha, 7 year old trees

Description	20 ha macadamia orchard	Variety: mixed	
Location	North Coast NSW 2000	Planting density: 312 trees/ha	

	Yield: 1.2 t/ha of nut in shell @ $2.50 per kg (33% SKR)						**Total income (A)**	**$3,000.00**
VARIABLE COSTS								
Machinery costs								
	Operation		**Rate**	**Unit cost**		**Applications**		**$/ha**
	Mowing & slashing	1.5	hrs/ha	$15.00	per hour	6	applications	$135.00
	Pesticide application	2	hrs/ha	$15.00	per hour	4	applications	$120.00
	Herbicide application	2	hrs/ha	$15.00	per hour	4	applications	$120.00
	Fertilising	1	hr/ha	$15.00	per hour	6	applications	$90.00
	Mechanical harvesting	2	hrs/ha	$25.00	per hour	3	applications	$150.00
	Mulch application	3	hrs/ha	$25.00	per hour	1	applications	$75.00
Labour costs								
	Mowing & slashing	2	hrs/ha	$18.00	per hour	6	applications	$216.00
	Pesticide application	3	hrs/ha	$18.00	per hour	4	applications	$216.00
	Herbicide application	2	hrs/ha	$18.00	per hour	4	applications	$144.00
	Orchard maintenance	4	hrs/ha	$18.00	per hour	1	applications	$72.00
	Fertilising	1	hrs/ha	$18.00	per hour	4	applications	$72.00
	Mechanical harvesting	2	hrs/ha	$18.00	per hour	3	applications	$108.00
	Hand Harvest	3	hrs/ha	$18.00	per hour	2	applications	$108.00
	Dehusk, sort and handle	2	hrs/ha	$18.00	per hour	3	applications	$108.00
	Mulch application	3	hrs/ha	$18.00	per hour	1	applications	$54.00
Fertiliser and mulch								
	N coast macadamia mix	200	kg/ha	$0.54	per kg	4	applications	$432.00
	Boron	2	kg/ha	$3.00	per kg	2	applications	$12.00
	Mulch supplied by farm	2	hrs/ha	$18.00	per hour	1	applications	$36.00
	Soil test			$85.00	per test		(average)	$25.50
	Leaf test			$85.00	per test		(average)	$25.50
Plant protection								
Disease control	Carbendazim	0.5	L/ha	$29.50	per L	2	applications	$29.50
	Phosphorous acid	3	L/ha	$3.95	per L	1	applications	$11.85
	Copper oxychloride	4	kg/ha	$4.00	per kg	1	applications	$16.00
Insect control	Petroleum oil spray additive	8	L/ha	$2.35	per L	1	applications	$18.80
	endosulfan	1.5	L/ha	$11.00	per L	2	applications	$33.00
	beta-cyfluthrin	0.5	L/ha	$33.50	per L	2	applications	$33.50
	Insect and disease monitoring							$70.00
Rat control								
	Coumatetralyl (Racumin) farm	5	Kg	$101.20	per 5kg	1	applications	$30.00
Weed control								
	Glyphosate	2.5	L/ha	$7.50	per litre	3	applications	$56.25
Harvesting and Marketing								
	Levies			$0.08	per kg			$96.00
	Freight			$50.00	per tonne			$60.00
				Total Variable costs (B)				**$2858.90**
				Gross margin (A-B)				**$141.10**

Macadamia gross margin budget for 1 ha, 15 year old trees

Description	20 ha macadamia orchard	Variety: mixed	
Location	North Coast NSW 2003	Planting density: 312 trees/ha	
	Yield: 3.5 t/ha of nut in shell @ $2.50 per kg (33% SKR)	**Total income(A)**	**$8,750.00**

VARIABLE COSTS

Machinery costs

	Operation		Rate	Unit cost		Applications		$/ha
	Mowing & slashing	1.5	hrs/ha	$15.00	per hour	6	applications	$135.00
	Pesticide application	2	hrs/ha	$15.00	per hour	4	applications	$120.00
	Herbicide application	2	hrs/ha	$15.00	per hour	3	applications	$90.00
	Fertilising	1	hrs/ha	$15.00	per hour	4	applications	$60.00
	Litter and husk application (contract)							$200.00
	Mechanical harvesting	3	hrs/ha	$25.00	per hour	5	applications	$375.00
	Canopy management (contract)	1.3	hrs/ha	$90.00	per hour	1	applications	$117.00
	Mulch application	3	hrs/ha	$25.00	per hour	1	applications	$75.00
Labour								
	Mowing & slashing	1.5	hrs/ha	$18.00	per hour	6	applications	$162.00
	Pesticide application	2	hrs/ha	$18.00	per hour	4	applications	$144.00
	Herbicide application	2	hrs/ha	$18.00	per hour	3	applications	$108.00
	Orchard maintenance	2	hrs/ha	$18.00	per hour	1	applications	$36.00
	Fertilising	1	hrs/ha	$18.00	per hour	4	applications	$72.00
	Mechanical harvesting	3	hrs/ha	$18.00	per hour	5	applications	$270.00
	Hand harvest	3	hrs/ha	$18.00	per hour	4	applications	$216.00
	Dehusk, sort and handle	4	hrs/ha	$18.00	per hour	5	applications	$360.00
	Mulch application	3	hrs/ha	$18.00	per hour	1	applications	$54.00
Fertiliser and mulch								
	North Coast macadamia mix	320	kg/ha	$0.54	per kg	4	applications	$691.20
	Boron	2	kg/ha	$4.00	per kg	2	applications	$16.00
	Lime**	2.5	t/ha	$100.00	per tonne	1	applications	$250.00
	Leaf test			$85.00	per test		(average)	$25.50
	Soil test			$85.00	per test		(average)	$25.50
Disease control								
	Carbendazim	1.25	L/ha	$29.50	per L	2	applications	$73.75
	Phosphorous acid	9.35	L/ha	$3.95	per L	1	applications	$36.93
	Copper oxychloride	4	kg/ha	$4.00	per kg	1	applications	$16.00
Insect control								
	Petroleum oil (spray additive)	8	L/ha	$2.35	per L	1	applications	$18.80
	Endosulfan	2.25	L/ha	$11.00	per L	2	applications	$49.50
	Beta-cyfluthrin	1	L/ha	$33.50	per L	2	applications	$67.00
	Insect and disease monitoring							$70.00
Rat control	Coumatetralyl		(average)	$101.20	per 5kg	as needed		$30.00
Weed control	Glyphosate	2.5	L/ha	$7.50	per L	3	applications	$56.25
Harvesting and marketing								
	Levies			$0.08	per kg			$280.00
	Freight			$50.00	per tonne			$175.00
				Total variable costs (B)				**$4,475.43**
				Gross margin (A-B)				**$4,274.57**

*** Lime is applied only as necessary to correct pH imbalance, typically once every 3 years*

Sensitivity analysis: Effect of price of NIS and yield on gross margin in 15 year old macadamias

	Yield (t/ha)				
Price NIS $/kg	**2.5**	**3**	**3.5**	**4**	**4.5**
$1.50	–$595	$90	$775	$1,460	$2,145
$1.80	$155	$990	$1,825	$2,660	$3,495
$2.00	$655	$1,590	$2,525	$3,460	$4,395
$2.10	$905	$1,890	$2,875	$3,860	$4,845
$2.20	$1,155	$2,190	$3,225	$4,260	$5,295
$2.30	$1,405	$2,490	$3,575	$4,660	$5,745
$2.40	$1,655	$2,790	$3,925	$5,060	$6,195
$2.50	$1,905	$3,090	$4,275	$5,460	$6,645
$2.60	$2,155	$3,390	$4,625	$5,860	$7,095
$2.70	$2,405	$3,690	$4,975	$6,260	$7,545
$3.00	$3,155	$4,590	$6,025	$7,460	$8,895

Edited by William E Smith

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