



BAY OF PLENTY KIWIFRUIT

KEY POINTS

- There was a tenfold increase in the number of kiwifruit orchards infected by *Pseudomonas syringae* pv. *actinidiae* (Psa) in 2011, despite measures to slow its spread. The predominant gold kiwifruit cultivar, Hort16A, is particularly susceptible to the disease. This has led to significant areas of Hort16A canopy being partially and fully cut out in the Bay of Plenty region, particularly in Te Puke.
- The kiwifruit industry has implemented a recovery strategy focused on replacing Hort16A with cultivars less susceptible to Psa, such as Gold3 and Green14. The new variety allocation held in May–June 2012 resulted in a total allocation of 2279 hectares of new variety licences, with 1778 hectares to replace Hort16A (65 percent of the national area of Hort16A). The majority is expected to be grafted onto existing rootstocks.
- Record production per hectare occurred across the Bay of Plenty in 2011/12, helping to lift orchard profit before tax in the model 21 percent to \$66 100.
- Climatic conditions were only fair for the 2012 green and gold

Key results from the Ministry for Primary Industries 2012 kiwifruit monitoring programme

kiwifruit crops, and gold production was impacted by Psa. As a result, production is expected to decline in 2012/13, to 8300 trays per hectare for green (down 10 percent) and 8800 trays per hectare for gold kiwifruit (down 27 percent).

- Despite an anticipated increase in grower returns for both green and gold kiwifruit in 2012/13, the profitability of the model is expected to fall 33 percent to around \$44 000. The model has budgeted on transitioning half of the planted area in Hort16A cultivar to the Gold3 cultivar in winter 2012.
- There are a number of growers, particularly in Te Puke, who will have significantly different budgets for 2012/13, compared with the MPI kiwifruit model. Analysis shows that removing gold (Hort16A) production from the model because of Psa will result in a cash operating deficit, a pre-tax loss and a negative net cash position. In this scenario, the model would require additional cash sources to cover operational expenses and the costs to transition from the Hort16A to Gold3 cultivar.

Table 1: Key parameters, financial results and budget for the Bay of Plenty kiwifruit orchard model

Year ended 31 March	2008/09	2009/10	2010/11	2011/12	2012/13 budget
Total effective area (ha) ¹	5.0	5.0	5.0	5.0	5.0
ZESPRI® GREEN					
Production (export trays/ha) ²	8 520	8 350	8 100	9 250	8 300
Total production (export trays)	34 080	33 400	32 400	37 000	33 200
Total revenue (OGR ³ \$/tray)	3.68	3.75	4.24	3.82	4.00
Revenue before 31 March ⁴ (\$/tray)	3.40	3.41	3.91	3.53	3.70
Revenue after 31 March (\$/tray)	0.28	0.34	0.33	0.29	0.30
Total crop revenue (OGR \$/ha)	31 350	31 310	34 340	35 335	33 200
ZESPRI® GOLD					
Production (export trays/ha)	11 260	10 730	9 900	12 100	8 800
Total production (export trays)	11 260	10 730	9 900	12 100	8 800
Total revenue (OGR \$/tray)	5.41	7.41	8.57	7.61	9.00
Revenue before 31 March (\$/tray)	5.00	7.06	8.25	7.37	8.70
Revenue after 31 March (\$/tray)	0.41	0.35	0.32	0.24	0.30
Total crop revenue (OGR \$/ha)	60 920	79 510	81 480	92 080	79 200
Net cash income (\$)	189 400	208 580	228 770	238 820	215 380
Orchard working expenses (\$)	139 500	141 800	148 050	148 820	147 780
Orchard profit before tax (\$)	15 200	37 120	54 840	66 100	44 050
Orchard surplus for reinvestment ⁵ (\$)	-33 580	-13 080	-1 760	9 100	-7 300

Notes

The Bay of Plenty kiwifruit orchard model is based on an owner-operator business structure and representative of grower suppliers.

Figures may not add to the totals due to rounding.

1The model orchard is a mature Bay of Plenty orchard planted with 4 hectares of Hayward (ZESPRI® GREEN) and 1 hectare of Hort16A (ZESPRI® GOLD). The orchard is not organic.

2The kiwifruit crop is harvested from April to June, so the 2011 crop is recorded in the 2011/12 year. A tray contains approximately 3.6 kilograms of kiwifruit.

3Orchard gate return. This equals the fruit return paid by ZESPRI less fruit loss and post-harvest

costs plus Class 2 income and rebates.

4Financial data relates to the year ending 31 March. Kiwifruit income spans two financial years, with the residual payment for each crop occurring in the next financial year.

5Orchard surplus for reinvestment is the cash available from the orchard business, after meeting living costs, which is available for investment on the orchard or for principal repayments. It is calculated as orchard profit after tax plus depreciation less drawings/living expenses.

Table 2: Bay of Plenty kiwifruit orchard model budget

	2010/11	2011/12			2012/13 budget		
	Whole orchard (\$)	Whole orchard (\$)	Per hectare (\$)	Per class 1 tray (\$)	Whole orchard (\$)	Per hectare (\$)	Per class 1 tray (\$)
Revenue							
Green - OGR ¹ progress	126 684	130 610	32 653	3.53	122 840	30 710	3.70
- previous crop final	11 356	10 692	2 673	0.33	10 730	2 683	0.29
Gold - OGR progress	81 675	89 177	89 177	7.37	76 560	76 560	8.70
- previous crop final	3 756	3 168	3 168	0.32	2 904	2 904	0.24
Other orchard income	5 300	5 170	1 034	0.11	2 350	470	0.06
Net cash income	228 770	238 820	47 764	4.86	215 380	43 076	5.13
Orchard working expenses	148 050	148 820	29 764	3.03	147 780	29 556	3.52
Cash operating surplus	80 720	90 000	18 000	1.83	67 600	13 520	1.61
Interest	15 780	15 200	3 040	0.31	14 900	2 980	0.35
Rent and/or leases	0	0	0	0.00	0	0	0.00
Depreciation	10 100	8 700	1 740	0.18	8 650	1 730	0.21
Net non-fruit cash income	0	0	0	0.00	0	0	0.00
Orchard profit before tax	54 840	66 100	13 220	1.35	44 050	8 810	1.05
Tax	10 300	10 300	2 060	0.21	5 600	1 120	0.13
Orchard profit after tax	44 540	55 800	11 160	1.14	38 450	7 690	0.92
Allocation of funds							
Add back depreciation	10 100	8 700	1 740	0.18	8 650	1 730	0.21
Drawings/living expenses	56 400	55 400	11 080	1.13	54 400	10 880	1.30
Orchard surplus for reinvestment²	-1 760	9 100	1 820	0.19	-7 300	-1 460	-0.17
Reinvestment							
Net capital purchases	5 000	5 500	1 100	0.11	3 000	600	0.07
Development	0	0	0	0.00	5 750	1 150	0.14
Principal repayments	5 000	5 000	1 000	0.10	0	0	0.00
Orchard cash surplus/deficit	-11 760	-1 400	-280	-0.03	-16 050	-3 210	-0.38
Other cash sources							
Off-orchard cash income	26 000	28 000	5 600	0.57	28 000	5 600	0.67
Zespri dividends (net of tax)	7 510	3 220	644	0.07	5 360	1 072	0.13
New borrowings	0	0	0	0.00	0	0	0.00
Introduced funds	0	0	0	0.00	0	0	0.00
Net cash position	21 750	29 820	5 964	0.61	17 310	3 462	0.41
Assets and liabilities							
Land and building (opening) ³	1 435 000	1 314 000	262 800	26.76	1 054 400	210 880	25.10
Plant and machinery (opening)	56 950	52 650	10 530	1.07	49 450	9 890	1.18
Orchard related investments (opening)	67 500	42 250	8 450	0.86	32 500	6 500	0.77
Total orchard assets (opening)	1 559 450	1 408 900	281 780	28.69	1 136 350	227 270	27.06
Total liabilities (opening)	235 460	230 460	46 092	4.69	225 460	45 092	5.37
Total equity	1 323 990	1 178 440	235 688	24.00	910 890	182 178	21.69

Notes

Figures may not add to the totals due to rounding.

1 Orchard gate return.

2 Orchard surplus for reinvestment is the cash available from the orchard business, after meeting living costs, which is available for investment on the orchard or for principal repayments. It is calculated as orchard profit after tax plus depreciation less drawings/living expenses.

3 Land and building asset value includes the value of owned land, vines and supports, other improvements, orchard buildings and dwellings on the property.

Table 3: Bay of Plenty kiwifruit orchard model expenditure

	2010/11	2011/12			2012/13 budget		
	Whole orchard (\$)	Whole orchard (\$)	Per hectare (\$)	Per class 1 tray (\$)	Whole orchard (\$)	Per hectare (\$)	Per class 1 tray (\$)
Orchard working expenses							
Pruning wages	49 000	48 500	9 700	0.99	43 200	8 640	1.03
Thinning wages	12 250	8 000	1 600	0.16	8 000	1 600	0.19
Picking wages	16 290	19 610	3 922	0.40	16 020	3 204	0.38
Other wages	3 000	4 350	870	0.09	9 910	1 982	0.24
ACC - employees	0	0	0	0.00	0	0	0.00
Total labour expenses	80 540	80 460	16 092	1.64	77 130	15 426	1.84
Weed and pest control	9 000	9 000	1 800	0.18	9 000	1 800	0.21
Psa management	0	2 720	544	0.06	5 000	1 000	0.12
Pollination	6 800	7 000	1 400	0.14	6 300	1 260	0.15
Fertiliser and lime	9 650	6 800	1 360	0.14	7 000	1 400	0.17
Electricity	1 300	1 150	230	0.02	1 200	240	0.03
Vehicle (including fuel)	7 300	8 400	1 680	0.17	8 500	1 700	0.20
Repairs and maintenance	9 900	9 450	1 890	0.19	8 000	1 600	0.19
General	2 650	2 600	520	0.05	3 100	620	0.07
Frost protection	0	0	0	0.00	0	0	0.00
Freight to packhouse	2 960	2 950	590	0.06	3 000	600	0.07
Contract machine work	750	700	140	0.01	350	70	0.01
Total other working expenses	50 310	50 770	10 154	1.03	51 450	10 290	1.23
Rates	4 500	4 500	900	0.09	4 500	900	0.11
Insurance	2 100	2 300	460	0.05	3 000	600	0.07
ACC - owners	1 750	2 300	460	0.05	2 750	550	0.07
Communication	2 250	1 900	380	0.04	2 000	400	0.05
Accountancy	3 600	3 500	700	0.07	3 700	740	0.09
Legal and consultancy	1 050	1 150	230	0.02	1 350	270	0.03
Levies and subscriptions	600	720	144	0.01	700	140	0.02
Other administration	1 350	1 220	244	0.02	1 200	240	0.03
Total overhead expenses	17 200	17 590	3 518	0.36	19 200	3 840	0.46
Total orchard working expenses	148 050	148 820	29 764	3.03	147 780	29 556	3.52

Calculated ratios

Economic orchard surplus (EOS) ¹	50 040	62 200	12 440	1.27	42 580	8 516	1.01
Orchard working expenses/NCI ²	64.7%	62.3%			68.6%		
EOS/total orchard assets	3.2%	4.4%			3.7%		
EOS less interest and lease/equity	2.6%	4.0%			3.0%		
Interest+rent+lease/NCI	6.9%	6.4%			6.9%		
EOS/NCI	21.9%	26.0%			19.8%		
Wages of management	20 580	19 089	3 818	0.39	16 363	3 273	0.39

Notes

Figures may not add to totals due to rounding.

1 EOS is calculated as follows: net cash income less orchard working expenses less depreciation less wages of management (WOM). WOM is calculated as follows: \$5000 allowance for labour input plus 1 percent of opening total orchard assets to a maximum of \$75 000. The allowance for labour input was decreased from \$31 000 to \$5000 for the kiwifruit model from 2010/11 to better match labour and management inputs with an orchard size of 5 hectares. Because of this revision, care needs to be taken in making comparisons with prior years.

2 Net cash income.

FINANCIAL PERFORMANCE OF THE BAY OF PLENTY KIWIFRUIT ORCHARD MODEL IN 2011/12

The Bay of Plenty kiwifruit orchard model's net trading profit before tax increased 21 percent in 2011/12 to \$66 100, driven by record yields for both green and gold kiwifruit at the 2011 harvest. Most orchards in the Bay of Plenty region escaped any yield impacts from the bacterial vine disease, Psa, in 2011; the impact was more apparent in 2012.

RECORD YIELDS LIFT REVENUE

Net cash income on the model increased 4 percent in 2011/12 to \$238 820, driven by record yields that outweighed the fall in prices.

The 2011 growing season was characterised by high summer rainfall and above average temperatures. This drove vegetative growth and increased fruit size, resulting in generally lower dry matter levels. Fruit matured more slowly than usual and picking was disrupted by rain.

Growers throughout the Bay of Plenty region obtained record yields. Green kiwifruit production increased 14 percent to 9250 trays per hectare and gold kiwifruit production increased 22 percent to 12 100 trays per hectare, compared with the previous year.

While some orchards were impacted by Psa, overall yields in the Bay of Plenty region were not significantly reduced by the bacterial vine disease in 2011.

Grower prices weakened

The orchard gate return (OGR) is the price growers receive for their fruit after deduction of all post-harvest costs, such as marketing, packing, coolstorage, fruit loss and shipping costs. The average OGR per tray for both green and gold kiwifruit in 2011/12 dropped due to less favourable exchange rates and larger volumes of kiwifruit being exported from New Zealand.

National average industry OGR per tray for 2011 kiwifruit crops were:

- green: \$3.80 per tray (10 percent lower than the previous season);
- organic green: \$5.53 per tray (9 percent lower);
- gold and organic gold: \$7.66 per tray (14 percent lower).

The model is using a Bay of Plenty derived green OGR of \$3.82 per tray (10 percent lower than the previous season) and gold OGR of \$7.61 per tray

(11 percent lower).

Individual grower's OGR per tray varies considerably around the average OGR due to individual incentive payments for fruit size, fruit taste, fruit keeping quality, market access and early season harvest.

Revenue per hectare was higher than the previous year as the higher yields offset the lower returns per tray. Green OGR per hectare increased 3 percent to \$35 335 and gold OGR per hectare increased 13 percent to \$92 080.

Post-harvest costs

The cost of grading, packing, packaging and storing kiwifruit is deducted before growers receive their kiwifruit return. Most of the costs are fixed expenses, with only small variations amongst monitored orchards. There were marginal changes in some post-harvest costs in 2011/12. The most significant of these were the costs of condition checking, repacking and extended coolstorage, due to the record crop extending the selling season. Overall post-harvest costs increased between 9 cents and 11 cents per tray.

Average on-shore fruit loss percentages were expected to increase for all fruit types, due to the longer storage period required for the significantly higher volumes of fruit harvested in 2011. An increase in fruit loss did occur, but by less than had been expected. Fruit loss percentages for the 2011 national crop were:

- green: 5.0 percent (4.3 percent in 2010/11);
- organic green: 4.3 percent (3.0 percent);
- gold: 2.7 percent (2.4 percent).

Other income

Income from other fruit crops, for example, from a small area of avocados, and sundry income such as renting out tractors during harvest contributed \$5170 to the model's revenue in 2011/12. A portion of this, \$1900, was received from Kiwifruit Vine Health (KVH) through the Psa spray subsidy programme. There were several spray subsidy rounds in 2011 that provided \$100–\$150 per application. Some rounds limited the subsidy that could be claimed to a single application and others required two or three applications to obtain the subsidy. In total, KVH spent \$3.9 million on spray subsidies in the year ended 31 March 2012¹.

1 Source: Kiwifruit Vine Health.

Industry commentators were of the opinion that the KVH spray subsidy did not create a significant incentive to apply Psa mitigating spray programmes during 2011/12. However, the industry considered it a good tool for encouraging the take-up of spray programmes, particularly for growers who may otherwise have refrained from trialling new practices.

EXPENDITURE INCREASED

Orchard working expenses in the model remained stable overall in 2011/12 at \$148 820. However, significant changes occurred in some items; thinning wages and fertiliser expenditure decreased while harvesting and Psa management expenses increased. On a per tray basis, working expenses decreased 14 percent to \$3.03 per tray, driven by the efficiencies afforded by higher yields.

Thinning wages for the 2012 crop decreased 35 percent in 2011/12 to \$8000. There was less seasonal requirement for thinning, combined with growers' strategy of reducing production expenditure. Some growers undertook less pruning to reduce wounds that could provide entry for Psa into the vines.

Picking expenses in 2011/12 increased slightly, averaging \$0.36 per tray for green and \$0.52 per tray for gold kiwifruit. The increase in yield drove the total picking wages up 20 percent to \$19 610.

Growers invested in Psa management programmes in 2011/12 – averaging \$544 per hectare.

An economic impact report on Psa² commissioned by KVH estimated growers in Te Puke spent \$1700 and \$670 per hectare on Psa management for gold and green kiwifruit, respectively. Growers

in the rest of the Bay of Plenty and Auckland were estimated to have spent \$650 and \$189 per hectare on Psa management for gold and green kiwifruit, respectively. This expenditure was much less than had been budgeted for by the MPI kiwifruit model in the 2011/12 budget.

Feedback from industry suggests that, in some instances, growers skipped crop protection products they would normally have applied as they couldn't fit them into the intervals between applications of Psa protectant materials.

Growers reduced fertiliser applications to help reduce vine vigour and contain overall expenses. This is reflected in the 30 percent reduction in fertiliser expenditure in the model for 2011/12 to \$6800.

Most growers have not returned to using supplementary pollen since the detection of Psa. This is because of fears that pollen is a vector of the disease and the lack of available pollen verified to be clear of Psa.

Hive costs increased 3 percent in 2011/12 to \$175 per hive (8 hives per hectare) due to increased costs to beekeepers as a result of Psa. Increased costs resulted from hive movement controls, vehicle sanitising and testing of honey for residues from orchard spray programmes. Some beekeepers required growers to move and service the hives themselves, while others withdrew from providing pollination services altogether. New and existing suppliers met pollination demands, and there were no reported problems with shortages.

Expenditure on electricity fell 12 percent in 2011/12 due to little requirement for irrigation or frost protection. Vehicle costs increased 15 percent in 2011/12 due to the Psa spray programmes and travel to attend numerous industry meetings relating to the disease.

2 Greer, G; Saunders, C (2012) *The costs of Psa-V to the New Zealand kiwifruit industry and the wider community: Report to Kiwifruit Vine Health*. Agribusiness and Economics Research Unit, Lincoln University; Canterbury, New Zealand.

Table 4: Bay of Plenty kiwifruit orchard model post-harvest costs

	2010/11 Per class 1 tray (\$)		2011/12 Per class 1 tray (\$)	
	GREEN	GOLD	GREEN	GOLD
Year ended 31 March				
Packing and packaging	1.70	2.23	1.70	2.21
Pack differential	0.21	0.79	0.21	0.79
Base coolstorage	0.73		0.75	
Condition checking, repacking, and extended coolstorage	0.35		0.43	
Logistics	0.13		0.14	
Administration	0.02		0.02	
Total post-harvest costs	3.14	4.25	3.25	4.34

Overhead expenses were relatively stable, at nearly \$17 600 in 2011/12, with small changes on some line items. Industry commentators note that some accountants have not been charging for extra work provided to growers, such as cash flow analysis, to plan orchard recovery strategies from the impact of Psa.

NET RESULT IMPROVES

The cash operating surplus in the model increased 12 percent in 2011/12 to \$90 000. Net cash income increased 4 percent while orchard working expenses remained stable overall.

The orchard profit before tax increased 21 percent in 2011/12 to \$66 100. The economic orchard surplus on the model increased 24 percent to \$62 200 in 2011/12, or \$12 440 per hectare, returning 4.4 percent on total orchard assets.

Off-orchard income contributes significantly to meeting growers' living expenses and is sourced from investment income, dividends from post-harvest entities, wages and salaries. It contributed \$28 000 (8 percent higher than 2010/11) to the model in 2011/12.

The ZESPRI shares began the 2011/12 year with a value of 65 cents per share and ended the year valued at 50 cents per share, based on traded prices. A dividend of 6 cents per ZESPRI share was paid during the 2011/12 year, with the 65 000 shares in the model contributing \$3220 in additional income (net of tax). Dividends were

reduced due to ZESPRI investing in research and development programmes to assist the industry respond to and recover from Psa.

Accountants advise that a lot of the growers with gold kiwifruit that has succumbed to Psa are likely to use Inland Revenue's income equalisation scheme. This allows growers to transfer earnings from the 2010/11 and/or 2011/12 financial year to future years to smooth out earnings and subsequent taxation liabilities.

Much uncertainty remains around the value of kiwifruit orchards and orchard sales have been limited in the Bay of Plenty since the detection of Psa. Industry commentators are of the opinion that orchard values have fallen during 2012, although there have not been many orchard sales to provide indicative values. The model reflects this view, with a 20 percent reduction in the value of land and buildings between 1 April 2011 and 1 April 2012. This drop accounts for an average value per canopy hectare of \$141 000 and \$263 000 for green and gold kiwifruit, respectively.

Bankers report conservative lending ratios to kiwifruit growers. The equity ratio on the orchard model reduced to 80 percent (from 84 percent) at the end of 2011/12 as a result of reduced orchard values.

Industry commentators suggest that growers are making principal repayments on their term debts, where they are able to. This is reflected in the model with a \$5000 principal repayment in 2011/12.

Table 5: Bay of Plenty weather data

Month	Rainfall (mm)			Growing degree days ¹ (GDD)		
	2010/11	2011/12	Long-term average	2010/11	2011/12	Long-term average
June	283	234	143	31	48	29
July	68	93	164	17	30	20
August	413	79	158	49	24	25
September	225	36	126	79	36	61
October	36	256	143	103	130	104
November	61	37	110	169	176	146
December	189	413	129	272	221	214
January	425	119	106	290	255	257
February	87	116	110	299	237	246
March	173	182	132	236	200	219
April	273	63	142	146	171	139
May	283	225	138	132	64	77
Total	2 515	1 852	1 600	1 823	1 593	1 538

Note

¹ GDD – growing degree days. GDD are a temperature index, calculated by taking the average of the daily high and low temperatures each day compared with a baseline (usually 10 degrees centigrade). They help to predict the date that a flower will bloom or a crop reach maturity.

Source

NIWA (Te Puke).

VARIABILITY IN THE PERFORMANCE OF GREEN AND GOLD KIWIFRUIT ORCHARDS IN 2011/12

Returns from growing kiwifruit vary significantly between orchards in the Bay of Plenty region, depending on the yield and individual OGR per tray. Table 6 and Table 7 present data showing the variability of net orchard surplus per hectare amongst Bay of Plenty kiwifruit orchards in 2011/12. The net orchard surplus measures the difference between on-orchard income and on-orchard expenditure. The quartile yield and OGR per tray are interdependent as they are derived from the distribution of OGR per hectare across the Bay of Plenty.

The model produced a net orchard surplus

of \$9700 per hectare for green kiwifruit and \$63 500 per hectare for gold kiwifruit in 2011/12.

The difference in performance between upper and lower quartiles is more influenced by yield than OGR per tray. Orchards in the upper performance quartile have 42 percent higher yields for green kiwifruit and 48 percent higher yields for gold kiwifruit, compared with the lower performance quartile. The OGR per tray is less influential; there is a 21 percent difference in OGR per tray between the upper and lower quartiles for green kiwifruit and 16 percent for gold kiwifruit.

Table 6: Variability of ZESPRI® GREEN net orchard surplus¹ per hectare in the Bay of Plenty in 2011/12

Year ended 31 March			OGR ² \$/tray			
			Mean	Upper quartile	Median	Lower quartile
			3.82	4.04	3.83	3.33
Trays produced per hectare	Mean	9 250	9 681			
	Upper quartile	10 684		16 993	14 749	9 407
	Median	9 118		11 230	9 315	4 756
	Lower quartile	7 538		5 416	3 833	64

Notes

1 Net orchard surplus is calculated as follows: total OGR per hectare less on orchard costs (pruning, thinning, other wages, picking costs per tray and other working expenses). The cost of picking is the only dynamic variable in this calculation.

2 Orchard gate return equals the fruit return paid by ZESPRI less fruit loss and post-harvest costs plus Class 2 income and rebates.

Sources

MPI and Zespri International Limited.

Table 7: Variability of ZESPRI® GOLD net orchard surplus¹ per hectare in the Bay of Plenty in 2011/12

Year ended 31 March			OGR ² \$/tray			
			Mean	Upper quartile	Median	Lower quartile
			7.61	7.88	7.43	6.8
Trays produced per hectare	Mean	12 100	63 465			
	Upper quartile	15 005		88 113	81 361	71 907
	Median	12 523		69 845	64 210	56 320
	Lower quartile	10 150		52 380	47 813	41 418

Notes

1 Net orchard surplus is calculated as follows: total OGR per hectare less on orchard costs (pruning, thinning, other wages, picking costs per tray and other working expenses). The cost of picking is the only dynamic variable in this calculation.

2 Orchard gate return equals the fruit return paid by ZESPRI less fruit loss and post-harvest costs plus Class 2 income and rebates.

Sources

MPI and Zespri International Limited.

BUDGET FINANCIAL PERFORMANCE OF THE BAY OF PLENTY KIWIFRUIT ORCHARD MODEL IN 2012/13

Orchard profit before tax for the Bay of Plenty kiwifruit orchard model is expected to reduce 33 percent in 2012/13 to \$44 050 due largely to a return to more normal production levels and the impact of Psa on gold kiwifruit production.

GOLD KIWIFRUIT YIELDS IMPACTED BY PSA

Net cash income for the model is budgeted to decrease 10 percent in 2012/13 to \$215 380 driven by reduced yields.

The Bay of Plenty had a fair but not fantastic growing season leading up to the 2012 harvest. Winter was warmer than normal, which reduced bud break. A cool August and September delayed spring growth and flowering, but there were no damaging frosts. Conditions were favourable at flowering in October and November. Rainfall throughout the season was slightly above average, well-spaced and much less than in the previous growing season.

Growing degree days were around normal levels but much lower than the 2011 growing season. Fruit maturity was delayed, following on from the late flowering. Weather during harvest was favourable, with long sequences of fine weather interrupted by distinct short periods of rain. This enabled good progression of harvest, even though it started slightly late.

Leaf condition on kiwifruit vines overall was not good, particularly early in the season. This was due to a combination of adverse effects of materials applied to counter Psa, the disease itself, wind and the carry-over effect of the high water tables in some areas from the past growing season.

Harvest was near completion at the time of compiling this report in early June 2012; thus, figures reported here are tentative. Green kiwifruit production is expected to decrease 10 percent in 2012/13 to 8300 trays per hectare. Gold kiwifruit production is expected to decrease 27 percent to 8800 trays per hectare.

Yields from gold kiwifruit orchards in 2012/13 are variable, particularly in Te Puke. Here, commentators have noted that yields of harvested orchards vary from 15 to 85 percent of pre-Psa levels. In the model budget for 2012/13, it is assumed Te Puke gold kiwifruit yields average

60 percent of usual levels, and that Te Puke accounts for half the gold kiwifruit producing area in the Bay of Plenty.

Returns expected to increase

Growers expect OGR per tray to be higher for both green and gold kiwifruit varieties in 2012/13. However, returns to growers are unlikely to be high enough to offset the drop in yields. Hence, revenue per hectare is budgeted to fall, with a significant reduction for gold kiwifruit.

Growers anticipate green kiwifruit OGR will increase to \$4.00 per tray, largely because of a decrease in post-harvest charges due to strong competition and lower fruit loss due to lower crop volume.

Growers anticipate gold kiwifruit OGR will increase to over \$9.00 per tray, largely as a result of reduced crop. Some commentators are hopeful that gold kiwifruit returns will surpass \$10.00 per tray.

EXPENDITURE INFLUENCED BY TRANSITION TO GOLD3 CULTIVAR

Orchard working expenses for the model are expected to fall slightly in 2012/13 to \$147 780. The model has budgeted to transition 0.5 hectares of the Psa susceptible Hort16A cultivar to the Gold3 cultivar, which is less susceptible to Psa, during winter 2012. This has reduced some budgeted operational expenses and increased others, with the changes balancing out overall.

Growers in the Bay of Plenty continue to budget for Psa management. Industry commentators indicate that growers are likely to spend between \$500 to \$1000 per hectare on Psa management for green kiwifruit and between \$2000 to \$3000 per hectare on gold kiwifruit. The model has budgeted for \$750 per hectare on Psa management for green kiwifruit and \$2000 per hectare for gold kiwifruit.

Growers are making significant investments in transitioning to Gold3 and will invest in mitigating the impact of Psa on new plantings of Gold3. Young kiwifruit plants and/or grafts require more protectant spray applications, but spray volumes can be reduced because of the smaller canopy.

The expected reduction in pruning and picking

wages, due to the reduced cropping area, will be spent on wages to transition from Hort16A to Gold3, such as stringing and vine training (further details below). Hence, overall labour expenses in 2012/13 are budgeted to decline only 4 percent.

The orchard areas that transition to Gold3 are likely to experience lower levels of pests but higher levels of weeds, resulting in no change to overall expenditure on pest and weed control in 2012/13.

NET RESULT TO DROP IN 2012/13 BUT REMAINS POSITIVE

The model's profitability in 2012/13 is expected to decline but should still achieve a better financial outcome compared with the years before 2010/11. The cash operating surplus is budgeted to reduce 25 percent to \$67 600. Orchard profit before tax is budgeted to reduce 33 percent to \$44 050.

Transition to Gold3 cultivar

The model has budgeted to transition 0.5 hectares of the Psa susceptible Hort16A cultivar to the less susceptible Gold3 cultivar, via grafting, during winter 2012. Detailed costs are provided below. Most growers with Hort16A on the Bruno rootstock are likely to replace Hort16A via grafting over. Bruno is relatively tolerant to Psa and a commonly used rootstock.

The Income Tax Act 2007 (subpart DO 6) provides for capital costs involved in the cultivar transition to be deducted as immediate expenses for replacement plantings for listed horticultural crops. This can apply to a maximum of 15 percent of the orchard planting over any three year period, with a maximum of 7.5 percent of the planting in any income year.

The orchard model is transitioning 10 percent of the planted area in a single year (2012/13) so subpart DO 6 cannot be applied in this circumstance.

Development costs of \$5750 are budgeted in 2012/13. This includes costs of the Gold3 licence, vine removal, grafting and 20 percent of the stringing costs. The remaining transition costs are treated as operational expenditure.

The Gold3 licence released by ZESPRI cost \$8000 per hectare including goods and services tax (GST). This required a 20 percent deposit of \$1400 plus GST with the licence application. In recognition of the financial impact of Psa, ZESPRI offered all growers wishing to transfer from Hort16A to Gold3 the option to take up a Deferred Payment Agreement. This deferred the payment of the licence cost, interest free, over four years commencing in 2014. Eighty percent of applicants took up this deferred payment option, and 123 growers were also approved Hardship, which resulted in a nil deposit on their licence and an additional year in which to pay for it. The remainder of the payment is able to be deferred progressively between 2014 and 2016.

The kiwifruit orchard model is able to fund the transition of 0.5 hectares of the Hort16A to Gold3 cultivar in 2012 using profits from the orchard business and other cash sources listed in the model. Not all growers will be able to do this on their orchards, and some will require substantial financing. Industry commentators recommend that growers with orchards impacted significantly by Psa seek advice of accountants and financial advocates in formulating their business plans

THE COSTS OF TRANSITIONING TO NEW KIWIFRUIT CULTIVARS

The transition from the Hort16A to Gold3 cultivar will require significant investment by growers in their orchards. Indicative transition costs, per hectare, to graft to Gold3 are provided below:

- » \$5500 vine removal costs to remove the upper parts of the vine in winter before grafting;
- » \$2900 grafting the new cultivar onto the mature rootstock of retained stumps;
- » \$1200 poles;
- » \$8400 stringing; and
- » \$7100 vine training;
- » **Total: \$25 100.**

Expenses for poles, stringing and vine training are to support and train the new growth from the newly grafted cultivar in year one.

Some of these items are capital expenditure; others are recurring annual operational costs.

These costs are indicative; some growers may invest significantly more than this. Other orchard operational and overhead expenses will be in addition to these transition costs.

Source: ZESPRI International Limited.

and budgets to transition to Gold3 in preparation for discussions with financial institutions.

VARIATION LIKELY IN BUDGETED FINANCIAL OUTCOMES FOR 2012/13

While the MPI kiwifruit orchard model reflects the average outcome across the Bay of Plenty region, there are a number of kiwifruit businesses, particularly in Te Puke, that will have significantly different budgets from the MPI model for 2012/13. This is because of the substantial impact Psa has had on Hort16A orchards in the Te Puke district and, in some instances, spillover impacts on production in green kiwifruit orchards. In other parts of the Bay of Plenty region, there are orchards not infected with Psa or that have not suffered any material impact on production.

Several scenarios have been modelled (see Table 8) under the parameters of the kiwifruit orchard model for the 2012/13 year. These scenarios try to mimic the range of circumstances that kiwifruit businesses might be facing across the Bay of Plenty region:

- scenario 1 – no gold kiwifruit produced for the

2012 harvest and the transition of 1 hectare of Hort16A to Gold3 in winter 2012;

- scenario 2 – no gold kiwifruit produced for the 2012 harvest, green kiwifruit production reduced by one-third and the transition of 1 hectare of Hort16A to Gold3 in winter 2012;
- scenario 3 – a full crop (that is, no Psa impact) of both gold and green kiwifruit for the 2012 harvest and no transition of Hort16A to Gold3 in winter 2012.

Expenditure items in the budget were adjusted for the amount of producing canopy area and the costs of the transition from Hort16A to Gold3.

The results show that, with no gold kiwifruit production, the model would yield a cash operating deficit, a pre-tax loss and a negative net cash position in 2012/13. To cover operational and transitional costs, the model would require additional cash sources from outside the business, be they from off-orchard income, investments, other businesses or new borrowings.

Table 8: Bay of Plenty kiwifruit model, alternate scenarios for the 2012/13 budget

Year ended 31 March	2012/13 Budget	2012/13 Budget Scenario 1 ¹	2012/13 Budget Scenario 2 ²	2012/13 Budget Scenario 3 ³
Total effective area (ha)	5.0	5.0	5.0	5.0
ZESPRI[®] GREEN				
Production (export trays/ha)	8 300	8 300	5 500	8 300
Total production (export trays)	33 200	33 200	22 000	33 200
Total revenue (OGR ⁴ \$/tray)	4.00	4.00	4.00	4.00
ZESPRI[®] GOLD				
Production (export trays/ha)	8 800	0	0	11 000
Total production (export trays)	8 800	0	0	11 000
Total revenue (OGR \$/tray)	9.00	9.00	9.00	9.00
Net cash income (\$)	215 380	138 820	97 400	234 520
Orchard working expenses (\$)	147 780	140 950	123 350	146 520
Cash Operating Surplus (\$)	67 600	-2 130	-25 970	88 000
Orchard profit before tax (\$)	44 050	-25 690	-49 540	64 440
Orchard surplus for reinvestment (\$)	-7 300	-71 430	-95 270	8 700
Orchard cash surplus/deficit	-16 050	-85 200	-109 050	5 700
Net cash position	17 310	-51 840	-75 690	39 060

Notes

1 No gold kiwifruit produced for the 2012 harvest and the transition of 1 hectare of Hort16A to Gold3 in winter 2012.

2 No gold kiwifruit produced for the 2012 harvest, green kiwifruit production reduced by one third and the transition of 1 hectare of Hort16A to Gold3 in winter 2012.

3 A full crop (i.e. no Psa impact) of both gold and green kiwifruit for the 2012 harvest and no transition of Hort16A to Gold3 in winter 2012.

4 Orchard gate return. This equals the fruit return paid by ZESPRI less fruit loss and post-harvest costs plus Class 2 income and rebates.

POTENTIAL IMPACT OF PSA AND THE RECOVERY STRATEGY ON THE BAY OF PLENTY KIWIFRUIT ORCHARD MODEL, 2012/13 TO 2015/16

The 2012/13 budget for the Bay of Plenty kiwifruit orchard model is based on:

- a 20 percent reduction in yield of Hort16A due to Psa;
- normal regional yields of green kiwifruit with no yield impacts from Psa; and
- a transition of 0.5 hectares of Hort16A to Gold3 over winter 2012.

The model can be used to assess the future financial impact of Psa and the implementation of the recovery strategy by extending the 2012/13 budget out a further three years to 2015/16. In 2015/16, the model would still have 4 hectares of green kiwifruit. The one hectare of Hort16A in the model would have transitioned to Gold3 by winter 2013 and be producing 65 percent of a mature crop on that canopy hectare in 2015/16.

The analysis shows that overall orchard working expenses are expected to remain relatively stable. Some line items were increased slightly over time to accommodate inflationary pressures. Net cash income falls 14 percent in 2013/14 and a further 17 percent in 2014/15 (or 28 percent down on 2012/13). It is expected that, by 2015/16, net cash income will return to a level similar to 2012/13 budget, along with pre-tax profit and other bottom-line measures.

The model would likely require cash sources from outside the kiwifruit business to help keep it in a cash positive position for the two years following the 2012 harvest (2013/14 and 2014/15). This would have to come from additional investments, off-orchard income, other businesses, or new borrowings.

Table 9: Bay of Plenty kiwifruit model budget projections, 2012/13 to 2015/16

Year ended 31 March	2012/13 Budget ¹	2013/14 Budget ²	2014/15 Budget ³	2015/16 Budget ³
ZESPRI^(R) GREEN				
Effective area (ha)	4.0	4.0	4.0	4.0
Production (export trays/ha)	8 300	8 300	8 300	8 300
Total production (export trays)	33 200	33 200	33 200	33 200
Total revenue (OGR ⁵ \$/tray)	4.00	4.00	4.00	4.00
ZESPRI^(R) GOLD				
Effective area in Hort16A (ha)	1.0	0.5	0.0	0.0
Effective area in Gold3(ha)	0.0	0.5	1.0	1.0
Total production (export trays)	8 800	5 000	1 800	7 800
Total revenue (OGR \$/tray)	9.00	10.00	10.00	10.00
Net cash income (\$)	215 380	186 290	154 110	211 350
Orchard working expenses (\$)	147 780	147 530	140 240	145 270
Cash Operating Surplus (\$)	67 600	38 760	13 870	66 080
Orchard profit before tax (\$)	44 050	15 260	-9 630	42 580
Orchard surplus for reinvestment (\$)	-7 300	-32 940	-56 130	-3 920
Orchard cash surplus/deficit	-16 050	-42 340	-60 530	-8 320
Net cash position	17 310	-8 980	-27 170	25 040

Notes

1 Transition 0.5 hectare of the 1 hectare of Hort16A to Gold3 in winter 2012 by grafting, following harvest of 2012 Hort16A crop.

2 Half hectare of Hort16A at full production for 2013 crop. No fruit harvested from winter 2012 grafted Gold3. Transition remaining 0.5 hectare of Hort16A to Gold3 in winter 2013.

3 The 0.5 hectare of Gold3 grafted in winter 2012 produces 30 percent of full production. No production from 0.5 hectare of Gold3 grafted in winter 2013.

4 Half hectare of Gold3 grafted in winter 2012 at full production; 0.5 hectare of Gold3 grafted in winter 2013 at 30 percent of full production.

5 Orchard gate return. This equals the fruit return paid by ZESPRI less fruit loss and post-harvest costs plus Class 2 income and rebates.

INDUSTRY ISSUES AND DEVELOPMENTS

PSA DISEASE

The bacterial vine-killing disease Psa, confirmed in New Zealand in November 2010, is having a significant impact on the kiwifruit industry, particularly the Bay of Plenty region. Psa is specific to kiwifruit vines and does not affect human or animal health.

Despite measures to slow the spread of Psa, the New Zealand climate is favourable to its progression and there was a tenfold increase over 2011 in the number of kiwifruit orchards infected by the virulent strain of Psa (termed Psa-V). Affected orchards are spread across the Bay of Plenty region, with the Te Puke district, the centre of the kiwifruit industry, particularly impacted. There are also Psa-V affected orchards in the Franklin district south of Auckland, and as of 5 September 2012, in the Waikato and the Coromandel.

Concern about Psa escalated in spring 2011, with a significant increase in numbers of infected Hort16A orchards and widespread leaf spotting symptoms appearing on Hayward green kiwifruit orchards. There was concern at the time that green orchards would succumb to the same fate as Hort16A.

Growers responded to the crisis in many ways. Some attended the industry meetings scheduled to discuss issues and present progress on research into the disease and its potential management. Others hunkered down, doing extra work on their orchards to reduce costs and staying close by to ensure the hygiene measures introduced were upheld.

The outlook improved later in 2011 when it became apparent that both the Hayward and common Bruno rootstock varieties were relatively tolerant to Psa, along with several of ZESPRI's recently commercialised varieties, particularly the Gold3 and Green14 cultivars. This provided a basis for the industry recovery strategy, which was developed over the summer for implementation from winter 2012.

The devastation that Psa has caused to kiwifruit orchards in the Bay of Plenty region, plus the detection of a Queensland fruit fly in Auckland in May 2012, has made the sector seek further assurances from the Minister for Primary Industries and MPI about the robustness of New Zealand's border protection programme. The Minister and MPI have provided these assurances.

Industry recovery strategy

The recovery strategy makes the ZESPRI owned cultivar Gold3 available to growers who have a licence for the Hort16A cultivar, with favourable licence payment terms available for those most affected by Psa.

The recovery strategy is to remove the Hort16A upper parts of vines, retain the mature Bruno rootstocks, which are relatively common, as stumps that are then grafted with the new Gold3 cultivar. This is a fairly rapid way of resuming production, with many growers expected to reach mature production levels by their third harvest after grafting. No kiwifruit variety has been found to be resistant to Psa, so it is necessary to manage all varieties to reduce their risk of impairment due to Psa.

Growers with rootstocks that are not tolerant to Psa are faced with replanting new vines and a slower return to orchard production. There is limited supply of new rootstock plants so replanting by some growers may be delayed until winter 2013.

The new variety allocation held in May–June 2012 provided all kiwifruit growers with an opportunity to purchase licences for Gold3, Gold9 and Green14 cultivars. Hort16 growers purchased 1759 hectares of Gold3 and 19 hectares of Green14. Other growers purchased 257 hectares of Gold3, 11 hectares of Gold9 and 32 hectares of Green14. Overall, growers purchased licences that covered 2279 hectares. The previous largest transition to a new variety was in 2000, with the release of 1200 hectares of Hort16A.

There are also other propriety kiwifruit varieties available to growers.

Retaining skilled employees in the kiwifruit industry

New Zealand Kiwifruit Growers Incorporated (NZKGI) has been concerned about the loss of skilled employees within the kiwifruit industry as a result of Psa impacting on kiwifruit production. Using a grant from the Ministry of Social Development, NZKGI established a role to link displaced kiwifruit industry workers with available positions, and to evaluate the need for training to increase human capability in the industry while it transitions from the Hort16A to Gold3 cultivar.

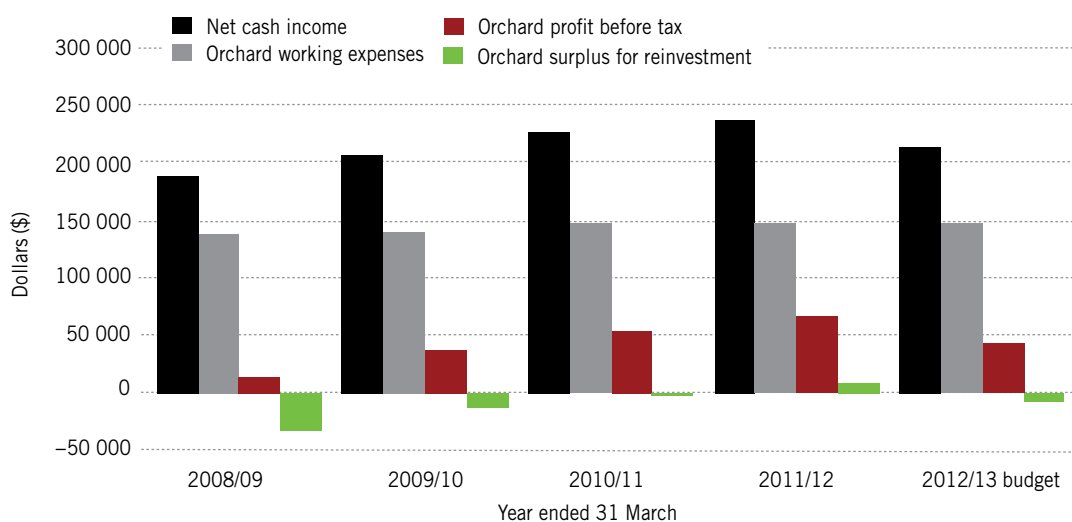
GROWER ORGANISATION IMPLEMENTS A LEVY TO FUND OPERATIONS

In 2011, NZKGI consulted with growers on a proposal to change the way the organisation was funded, from the ZESPRI fruit revenue pools to a commodity levy under the Commodity Levies Act 1990.

The referendum, conducted in August–September 2011, obtained the support

of 87 percent of growers who returned their voting papers; 43 percent of growers returned voting papers covering 85 percent of kiwifruit production. Growers accepted the proposal in support of the organisation's role in the industry structure on the understanding that it was a levy to change the funding source rather than an additional cost.

Figure 1: Bay of Plenty kiwifruit orchard model profitability trends



INFORMATION ABOUT THE MODEL

The kiwifruit orchard model represents kiwifruit orchards in the Bay of Plenty, the growing region that produces around 80 percent of the New Zealand kiwifruit crop. The model budget represents an established owner-operator orchard. The model has 4 hectares of Hayward (ZESPRI® GREEN) and 1 hectare of Hort16A (ZESPRI® GOLD) at the 2012 harvest. The model is created using data collected from 17 orchards located from Opotiki to north of Katikati, and information from a wide cross-section of agribusiness representatives.

Financial data relates to the year ending 31 March. Kiwifruit income spans two financial years, with the residual payment for each crop occurring in the next

financial year. For example, final payments on the crop harvested in May 2011 occur in the 2012/13 budget year.

The aim of the model is to typify an average kiwifruit orchard for the region. Budget figures are averaged from the contributing orchards and adjusted to represent a real orchard. Income figures include income from kiwifruit, off-orchard income, new borrowing and other cash income. Expenditure figures include costs of production, debt, leasing, drawings, capital purchases, and development.

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