

*“Achieving Outcomes by Building Capability”*

The  
**AgriBusiness  
Group™**

# **He Waka Eke Noa**

## **Pricing regimes impact on the Horticultural sector**

**Prepared for HortNZ**  
**Prepared by The AgriBusiness Group**  
**January 2022**

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## **Please Read**

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## 1 Background

This report is written in order to demonstrate the impact of a new price regime on the Horticultural sector and the impact of a range of discounts on the carbon price.

The five land uses modelled are:

- Pipfruit
- Kiwifruit
- Vegetable Production (Pukekohe)
- Vegetable Production (Canterbury)

It should be noted that the four land uses do not include any calculations of methane emissions. The modelling is entirely focused on the long lived emissions which are entirely related to the use of Urea. While there are some animals in some of the Vegetable and Arable rotations the amount of methane emissions are very low and we do not have sufficient information to determine just how many of the farms incorporate animals nor how much of a contribution they make to the total emissions at present.

The request was to model the range of land uses using a carbon price in 2025 of \$85 / t co2 equivalent and \$138 / t co2 equivalent at the following discount rates.

**Table 1: Discount rates used in the scenario modeling (%).**

Scenario	2025	2030
One	0	0
Two	95	90
Three	75	70

The request was to model the unique price for the processor at both dates at a 90% discount.

## 2 Description of the models.

The data which was used to calculate the emissions of each land use were taken from a range of sources as shown in **Table 2**. All of these files were created by The AgriBusiness Group.

**Table 2: Sources of the core representative models which were used in the HWEN calculation.**

Land Use	Data Source	Created for.
Pipfruit	Hawkes Bay Horticultural Nutrient and Financial Benchmarking Results.	HortNZ
Kiwifruit	Pers Comm J Bengé for Zespri	
Vegetable Production (Pukekohe)	Nutrient Performance and Financial Analysis of Upper Waikato Horticulture Growers.	HortNZ
Vegetable Production (Canterbury)	Overseer nutrient modelling of commercial vegetable production.	ECan

The Pukekohe and the Canterbury representative models are the average of the root and the green rotations.

The area of each farm and average amount of Nitrogen fertilisers applied and the annual emissions are shown in **Table 3**.

**Table 3: Area, amount of N applied (kg / ha) and emissions per ha expressed as Tonnes of CO<sub>2</sub> e.**

Land Use	Area	Average amount of N applied. (kg / ha)	Total Emissions (tonnes CO <sub>2</sub> e)
Pipfruit	33	43	0.22
Kiwifruit	31	115	0.77
Vegetable Production (Pukekohe)	100	183	1.03
Vegetable Production (Canterbury)	100	125	0.71

It is assumed that each of the models are already at Good Management Practice which means that they are already compliant with ETS, the Freshwater NES and existing plan limits. These legislative documents require that the land uses are already at or above Good Management Practice and have achieved the targets set for discharges to water.

### 3 Data used in the modelling.

The CO<sub>2</sub>-e emissions have been calculated by use of the Emissions Calculation\_V2<sup>1</sup> spreadsheet from the use of Urea and lime<sup>2</sup>.

It is assumed that the representative models do not have any method of sequestration to offset against their emissions.

<sup>1</sup> Model supplied by M Sands HortNZ.

<sup>2</sup> Instructions from T Denne coordinator of the price exposure modelling.

The area of each industry has been taken from the FreshFacts 2020 and the FAR website. The areas used are shown in **Table 4**.

**Table 4: Industry areas used in the modelling.**

Land Use	Industry Area
Pipfruit	10,396
Kiwifruit	12,905
Vegetable Production (Pukekohe)	31,000
Vegetable Production (Canterbury)	13,220

## 4 Results

### 4.1 Farm Level

The cost / ha of each scenario is shown in **Table 5**.

**Table 5: Farm level cost (\$/ha).**

Scenario	2025			2030		
	1	2	3	1	2	3
Apple	18.70	0.94	4.68	30.36	3.04	9.11
Kiwifruit	65.45	3.27	16.36	106.26	10.63	31.88
Auckland Vegie	87.89	4.39	21.97	142.69	14.27	42.81
Canterbury Vegie	60.01	3.00	15.00	97.43	9.74	29.23

#### 4.1.1 Total Industry Cost

The cost on an industry basis is shown in **Table 6**.

**Table 6: Industry level cost (\$m).**

Scenario	2025			2030		
	1	2	3	1	2	3
Apple	0.194	0.010	0.049	0.316	0.032	0.095
Kiwifruit	0.845	0.042	0.211	1.371	0.137	0.411
Auckland Vegie	2.725	0.136	0.681	4.423	0.442	1.327
Canterbury Vegie	0.793	0.040	0.198	1.288	0.129	0.386

#### 4.1.2 Significance

The significance of the cost is shown by comparison with Operating Expenditure (OE) and the Cash Operating Surplus (COS) of each model.

**Table 7: The significance of the cost expressed in relation to the Operating Expenditure (%).**

Scenario	2025			2030		
	1	2	3	1	2	3
Apple	0.07%	0.00%	0.02%	0.11%	0.01%	0.03%
Kiwifruit	0.25%	0.01%	0.06%	0.40%	0.04%	0.12%
Auckland Vegie	0.67%	0.03%	0.17%	1.08%	0.11%	0.32%
Canterbury Vegie	0.41%	0.02%	0.10%	0.67%	0.07%	0.20%

**Table 8: The significance of the cost expressed in relation to the Cash Operating Surplus (%).**

Scenario	2025			2030		
	1	2	3	1	2	3
Apple	0.03%	0.00%	0.01%	0.05%	0.00%	0.01%
Kiwifruit	0.07%	0.00%	0.02%	0.11%	0.01%	0.03%
Auckland Vegie	1.00%	0.05%	0.25%	1.62%	0.16%	0.48%
Canterbury Vegie	0.62%	0.03%	0.16%	1.01%	0.10%	0.30%

## 4.2 Processor

The processor option is displayed as the total cost by each sector to the processor. It is unclear whether they would absorb that cost internally or pass it on to the purchaser through the price.

**Table 9: Industry level cost (\$m).**

Scenario	2025	2030
Apple	0.010	0.032
Kiwifruit	0.042	0.137
Auckland Vegie	0.136	0.442
Canterbury Vegie	0.040	0.129

## 5 Discussion

It is obvious from this modelling that for the Horticultural sectors modeled that the cost of full exposure is insignificant when compared against the financial performance of the total enterprise. The percentage impact of the price exposure on the total performance of the Horticultural models means that there will be no incentive from the full price exposure to encourage the growers to mitigate their emissions in any way.