



# 2023/24 SUMMER CROP SURVEY

Gisborne District Council



## ABSTRACT

The 2023/24 Summer Crop Survey report details the ninth survey of the summer crops grown throughout the Gisborne District.

*Genna Robertson and Suzannah Press*

Summer Students – Environmental  
Science Team

# Table of Contents

Executive Summary .....	3
1.0 Introduction .....	4
1.1 Relationship to the Tairāwhiti Resource Management Plan (TRMP) .....	4
2.0 Methods.....	5
2.1 Survey Area.....	6
2.2 Crop Types .....	7
3.0 Results.....	8
3.1 Major Crop Types.....	10
3.1.1 Maize/Sweetcorn .....	11
3.1.2 Grapes .....	12
3.1.3 Citrus.....	12
3.1.4 Kiwifruit .....	13
3.1.5 Chicory.....	14
3.1.6 Apples and Pears .....	15
3.1.7 Squash .....	16
3.1.8 Not visible.....	17
3.2 Location .....	18
3.2.1 The Poverty Bay Flats .....	18
3.2.2 East Cape/Ruatoria.....	19
3.2.3 East/Tolaga/Tokomaru.....	20
3.2.4 Mōtū/Mātāwai .....	21
3.2.5 Te Karaka/Whatatutu.....	22
3.3 Taruheru Catchment.....	24
4.0 Water Threats.....	26
5.0 Limitations .....	29
5.1 Survey Area.....	29
5.2 Survey Method .....	29
6.0 Conclusion.....	30
7.0 Appendices .....	31
Appendix 1 – Full results from the Summer Crop Survey 2023/24 .....	31
Appendix 2 – Full results from the Taruheru Catchment over time.....	32
Appendix 3 - Tairāwhiti Resource Management Plan .....	34
Appendix 4 - Definitions .....	36

# Executive Summary

The 2023/24 Summer Crop Survey is the ninth survey to detail the type, location and total area of different summer crops in the Gisborne district. A total of 24,376.2 hectares was surveyed, of which 11,970.1 hectares were recorded as summer crops. Summer crops are all crops excluding pasture/unused, not-visible and to-be-planted/tilled land.

The Tairāwhiti Resource Management Plan (TRMP) rules for protecting freshwater relate directly to intensively farmed stock, winter intensive grazing and commercial vegetable growing. Rules around cropping and intensive farming came into effect on the 1<sup>st</sup> of May 2021. Areas posing a threat to water quality were identified across the region and were classified under each rule in the Freshwater Chapter C6 of the TRMP.

## Dominant summer crops

- Maize and sweetcorn were the most dominant crop types (5, 248.8 ha), followed by grapes (1,544.8 ha), citrus (1,475.1 ha), kiwifruit (822.2 ha), chicory (743.4 ha), apples and pears (653.3 ha), and squash (482.3 ha).

## Crops by location

- Poverty Bay Flats had the largest area of summer cropped land (8,940.3 ha) (excluding pasture, not visible and to be planted) with the most diverse summer crop varieties.
- Te Karaka/Whatatutu had the second largest area (1,422.0 ha), followed by East/Tolaga/Tokomaru (1,240.5 ha), East Cape/Ruatoria (349.4 ha), and Mōtū/Mātāwai (18.0 ha).

## Taruheru Catchment

- Recent reports by the council such as the State of Environment and Freshwater Accounting reports have identified the Taruheru River as having low water quality.
- The Summer Crop Survey 2023/24 looks at long term trends in commercial cropping in the Taruheru Catchment.
- Trends found that the total area of cropping (excluding pasture, not visible and to-be-planted/tilled land) fluctuated over time but an overall decrease from 2624.5 hectares in 2007/08 to 2236.6 hectares in this years (2023/24) survey.
- Maize and sweetcorn had the greatest cropping area in both 2007/08 and the 2023/24 summer crop survey, Kiwifruit has shown the largest increase since 2007/08 increasing from 136.7 hectares to 322.1 hectares in 2023/24, Tomatoes have shown the largest decrease dropping from 257.1 hectares in 2007/08 to 6.2 hectares in 2023/24, and Squash has shown a large change decreasing from 306.6 hectares in 2007/08 to 110.3 hectares this year (2023/24).

## Water Threat

- Crops surveyed in the Gisborne region were categorised as having a water threat if they triggered any of the applicable rules for cropping in the Freshwater Chapter C6 of the TRMP.
- Areas that pose a threat to waterways are all crops excluding pasture and permanent crops.
- 3,580.3 hectares of land in the Gisborne region has been recognised as having a threat to water, this was 14.7% of total surveyed area, and 45.3% of the cropped area which has a potential threat to water (excluding pasture and permanent crop area). Another 21% of area was “not-visible” and therefore the water threat potential cannot be determined.

# 1.0 Introduction

The Gisborne District Council's Environmental Science team has completed a survey of the commercial summer crops grown throughout the Gisborne district for the 2023/24 summer season. This is the ninth year that the summer crop survey has been completed. The purpose of the survey is to identify the different types of summer crops being grown throughout the region that are intended for human and/or animal consumption. The survey outlines the area that each type of crop covers, and proximity to waterbodies.

The data from the survey is utilised in the management of the region's physical resources. It will be used to monitor waterways, help develop farm environment plans, and inform the farming community and general public on crop types and trends.

The Environmental Science Team aims to gain a better understanding of the adherence of intensive farming operations to the setback rules in the Freshwater Chapter C6 of the TRMP. This is of particular interest as there are new rules that relate directly to intensively farmed stock, and commercial vegetable growing.

## 1.1 Relationship to the Tairāwhiti Resource Management Plan

The TRMP has new rules for protecting freshwater that relate directly to intensively farmed stock, and commercial vegetable growing. The Plan also contains rules regarding setbacks for commercial cropping from waterways. These new rules come under Section C6.2.9 of the Plan which relates to water quality and discharges to water and land. The rules have been applied to ensure that any permanently flowing stream, modified water course, lake, wetland or "Regionally Significant Wetland" identified in G17 and "Outstanding Waterbody identified" in G18 of the Plan, are protected for their values.

Rules regarding commercial vegetable growing came into effect on the 1<sup>st</sup> of May 2021. The rules are included in **Appendix 3**.

### Definitions of the TRMP

**Intensive farming** is defined as:

1. 'Intensively farmed stock, commercial vegetable growing or **cropping activities**'.

**Cropping** is further defined as:

1. 'Using an area of land in excess of 1 hectare to grow **annual crops** other than commercial vegetable crops. This definition does not include crops grazed on by animals from the same property'.

**Commercial Vegetable growing** is defined as:

1. 'Using an area of land greater than 1 ha for producing **vegetable crops** for human consumption'
2. 'This may be undertaken on a rotational basis, but managed as a single operation'
3. 'It does not include perennial crops'

**Farming** is defined as:

1. 'A land-based activity for the production of livestock or plants and includes':
  - 'Plantation forestry, horticultural produce and **cropping**'.

## 2.0 Methods

The 2023/24 Summer Crop Survey began on the 8<sup>th</sup> of January 2024 and finished on the 23<sup>rd</sup> of January 2024. The survey took 10 working days to complete. Consequently, the survey was not conducted on consecutive days due to the weekends. This year's survey took less time than last years (2022/23) which was completed in 15 working days, as this year there was only one day of heavy rain and 2022/23 had many severe weather days due to ex-cyclone Hale.

The Te Karaka/Whatatutu area was surveyed first, followed by Mōtū/Mātāwai, Poverty Bay Flats, East/Tolaga/Tokomaru and East cape/Ruatoria. The more northern coastal areas that were surveyed included the area around Ruatoria and Te Araroa, which was the furthest point north (Figure 1).

The data was gathered on a handheld tablet which utilised an ArcGIS (Geographic Information System) software called Field Maps. The data was entered systematically while driving throughout the region, noting crop type, and activity (e.g. to-be-planted/tilled or planted). The proximity of the crop to a waterway was recorded based on the setback rules in the Freshwater Chapter C6 of the TRMP. The regions waterways have been included in the ArcGIS aerial base layer with the significant waterways highlighted in blue. This assisted in determining if waterways were present and/or significant.

A significant portion of waterways in relation to the crop were out of view. In these cases, 'not-visible' was chosen as the cultivated cropping option. In some cases where waterways were involved but not visible, the Aerial base layer on ArcGIS was utilised. If cultivation appeared to be breaching the relevant rules stated in the freshwater chapter C6 of the TRMP then the aerial base layer was used to estimate distance and a note was taken for this to be confirmed.

Similarly, only a small proportion of the crops were not identified as they were either out of viewing range, or a hybrid/unidentifiable species.

If the crop was not able to be identified, the crop was categorised as 'not-visible'. If the crop could be seen but not identified, it was categorised as 'other/unknown'.

This year (2023/24), like last year (2022/23) the survey began in the first two weeks of January and was completed by the last week of the month. Therefore, the crop survey was fulfilled within the same cropping period to enable crop identification to be maximised and to allow for accuracy when comparing past crop surveys.

This specific method where data was collected using Field Maps software, has been used for the summer crop surveys for a total of six years now. It was also utilised during the 2018 winter crop survey. Prior to this, surveys were carried out by recording the crop types onto printed aerial maps and then digitizing this data onto an interactive map available online using ArcMap software.

## 2.1 Survey Area

The same areas as the previous year's survey (2022/23) were surveyed to ensure accuracy when comparing results between years; this practice should remain consistent for future summer crop surveys. The surveyed area is shown in Figure 1, divided into five different areas in order to compare data between locations. These areas are:

1. Mōtū/ Mātāwai
2. East/ Tolaga/ Tokomaru
3. East Cape/ Ruatoria
4. Te Karaka/ Whatatutu
5. Poverty Bay Flats

### Crop Survey Area

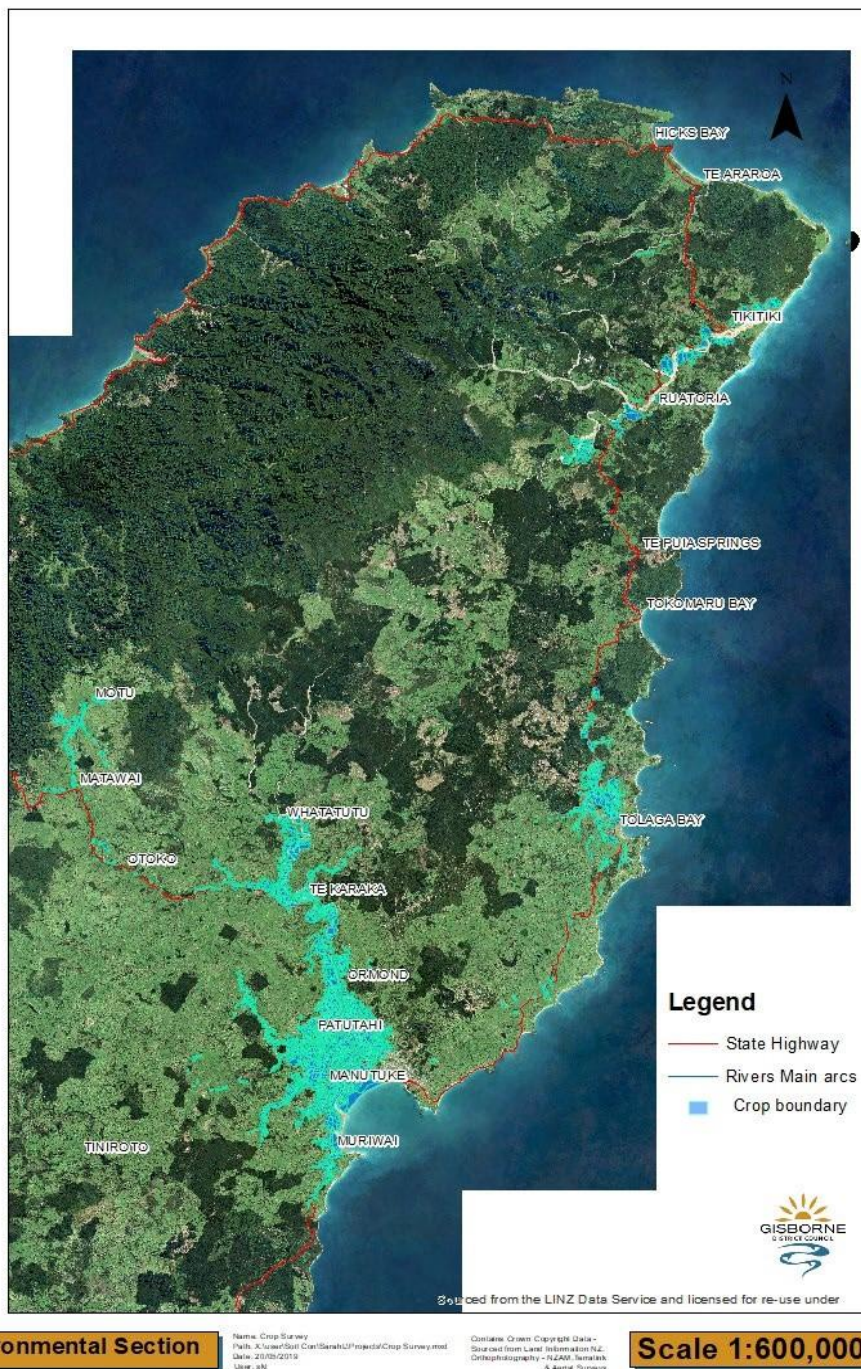


Figure 1. Aerial imagery (2017) showing average extent of area surveyed in the summer crop survey.

## 2.2 Crop Types

This survey used a similar format for crop types as previous years. A full list of summer crop types that were recorded are shown in Table 1.

Pasture was recorded if it was in an area that had been cropped in the past, however this land was not categorised as a crop, it was categorised as 'pasture/unused'. Crops that were difficult to identify due to them being a hybrid/unidentifiable species were recorded as 'other/unknown', see Table 1. Crops that could not be seen were identified as 'not-visible'. Crops that were not recorded in the 2022/23 Summer Crop Survey were added as a new area. Previously cropped areas now converted into properties/industrial buildings have been removed from the 2023/24 crop survey.

**Table 1.** Crop types surveyed in the Gisborne region

Crop types surveyed	
Apples and pears	Oats
Avocados	Olives
Baleage	Other/unknown
Cauliflower/broccoli	Pasture/unused
Chamomile	Persimmon
Chicory	Pine nursery
Citrus	Pinenuts
Clover	Plantain
Courgettes	Plantain/chicory
Feijoa	Plantain/clover
Flowers	Pomegranate
Grape Nursey	Poplar/willow nursery
Grapes	Squash
Kiwifruit	Stonefruit
Leafy turnip	Swedes
Lettuce/cabbage	Tamarillo
Lucerne	To-be-planted/tilled
Maize/sweetcorn	Tomatoes
Melons	Yarrow
Not visible	

# 3.0 Results

The results and discussion section compares trends and observations of major crop types. The same areas have been surveyed throughout all past summer crop surveys allowing accurate conclusions to be drawn when discussing any changes or trends in crop types throughout the region. Appendix 1 contains all the data from the 2023/24 Summer Crop Survey.

This year (2023/24) the Gisborne region’s area of summer crops excluding pasture/unused land, not-visible and to-be planted/tilled land was 11,970.1 hectares. The total area surveyed including pasture/unused land (9,739.0 ha), not-visible (1,886.6 ha), and to-be planted/tilled land (780.5 ha) was 24,376.2 hectares.

It is important to recognise the overall area of our region’s summer crops excluding these variables as this is the area most likely to have negative impacts on the soil and nearby waterways. Commercial crops are often subject to irrigation, fertilisers and/or pesticides of which can impact the soil and waterways within a close proximity.

Pasture/unused land is less likely to experience irrigation, fertilisers and/or pesticides compared to commercial crops. Land which was not-visible was excluded as the potential impacts on soil and/or waterways cannot be determined. To be planted/tilled land can pose some short-term risks such as bare soil eroding into waterways, and seeds/seedlings being intensively irrigated, and/or fertilized. However, these crops and their potential future impacts are currently unknown and therefore are excluded.

The 2023/24 survey had a reduced total area of summer crops 11,970.1 (ha) compared to the previous two years, the 2022/23 survey (13,252.5 ha) and the 2021/22 survey (13,360.5 ha) of summer crops. This reduction may be explained by some cropped land being converted into ‘pasture/unused’ land due to the flooding effects from Cyclone Gabrielle and ex-cyclone Hale, no access to private properties and heavy rain restricting visibility resulting in crops being classified as ‘not visible’. This could explain the reduction in total area of summer crops as ‘pasture/unused’ and ‘not-visible’ are not included in the area of summer crops statistic.

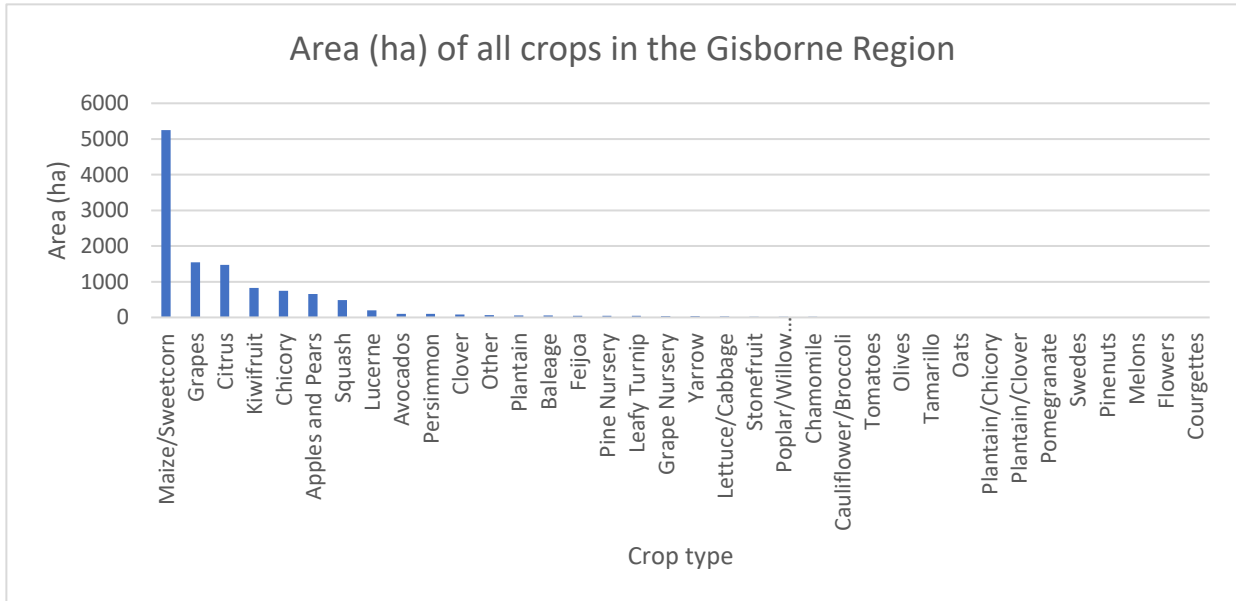
The total area in hectares (ha) of each crop type surveyed in the Gisborne region can be seen in Table 2 and summer crops (excluding pasture, not visible and to be planted/tilled land) can be seen in Figure 2.

**Table 2.** Total area in hectares (ha) of each crop type identified in the 2022/23 summer crop survey

Crop	Area (ha)	Crop	Area (ha)
Apples and pears	653.3	Oats	7.4
Avocados	104.3	Olives	7.6
Baleage	52.1	Other/unknown	61.6
Cauliflower	10.7	Pasture/unused	9739.0
Chamomile	15.1	Persimmons	96
Chicory	743.4	Pine nursery	50.2
Citrus	1475.1	Pinenuts	1.3
Clover	81.3	Plantain	57.1
Courgettes	0.2	Plantain/chicory	2.3
Feijoa	50.4	Plantain/clover	1.9
Flowers	0.7	Pomegranate	1.7
Grape nursey	37.9	Poplar/willow nursery	15.7



Grapes	1544.8	Squash	482.3
Kiwifruit	822.2	Stonefruit	19.6
Leafy Turnip	45	Swede	1.4
Lettuce/cabbage	29.9	Tamarillo	7.5
Lucerne	197.3	To-be-planted/tilled	780.5
Maize/sweetcorn	5248.8	Tomatoes	9.2
Melons	0.9	Yarrow	34.2
Not-visible	1886.6	<b>TOTAL AREA</b>	<b>24,376.2</b>



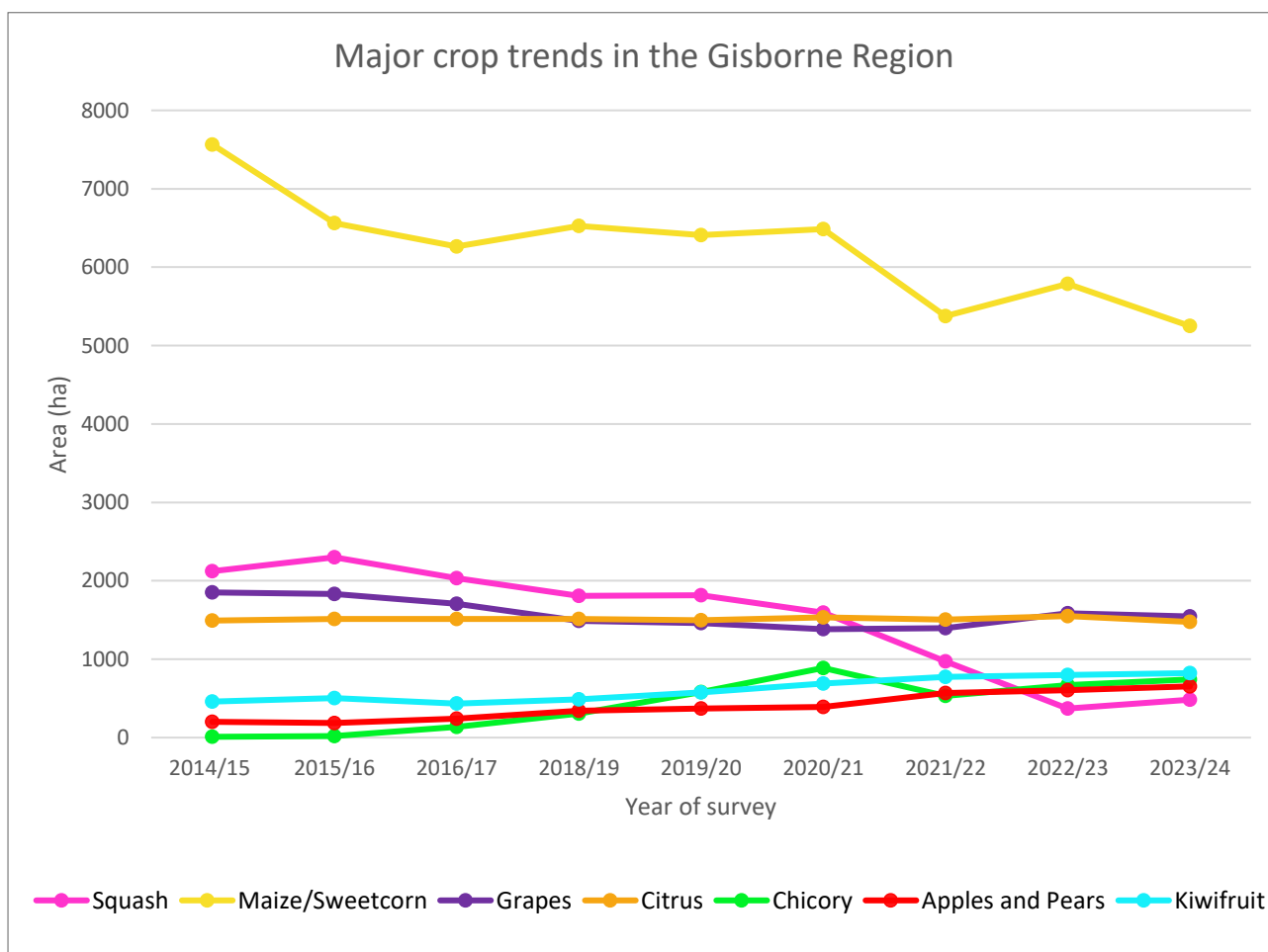
**Figure 2.** Total area (ha) of crop types identified in the 2023/24 Summer Crop Survey

### 3.1 Major Crop Types

The results section shows observations and trends of major crop types. The major crop types were determined by the total area in hectares that they covered. Major crops from this year’s summer crop survey (2023/24) can be seen in Table 3. The seven major crop types (highlighted in green) were analysed to test if there were any long-term trends over the nine summers of sampling, these trends can be seen in Figure 3. Pasture/unused, not-visible and to-be-planted/tilled land have not been highlighted as they were excluded in the summer crop total for reasons stated in Section 3.0 Results above.

**Table 3.** Major crop types in the Gisborne region (2022/23)

Crop type	Hectares (ha) total
Pasture/unused	9739.0
Maize/sweetcorn	5248.8
Not visible	1886.6
Grapes	1544.8
Citrus	1475.1
Kiwifruit	822.2
To Be Planted	780.5
Chicory	743.4
Apples and Pears	653.3
Squash	482.3



**Figure 3.** Nine-year trend of major summer crops in the Gisborne region

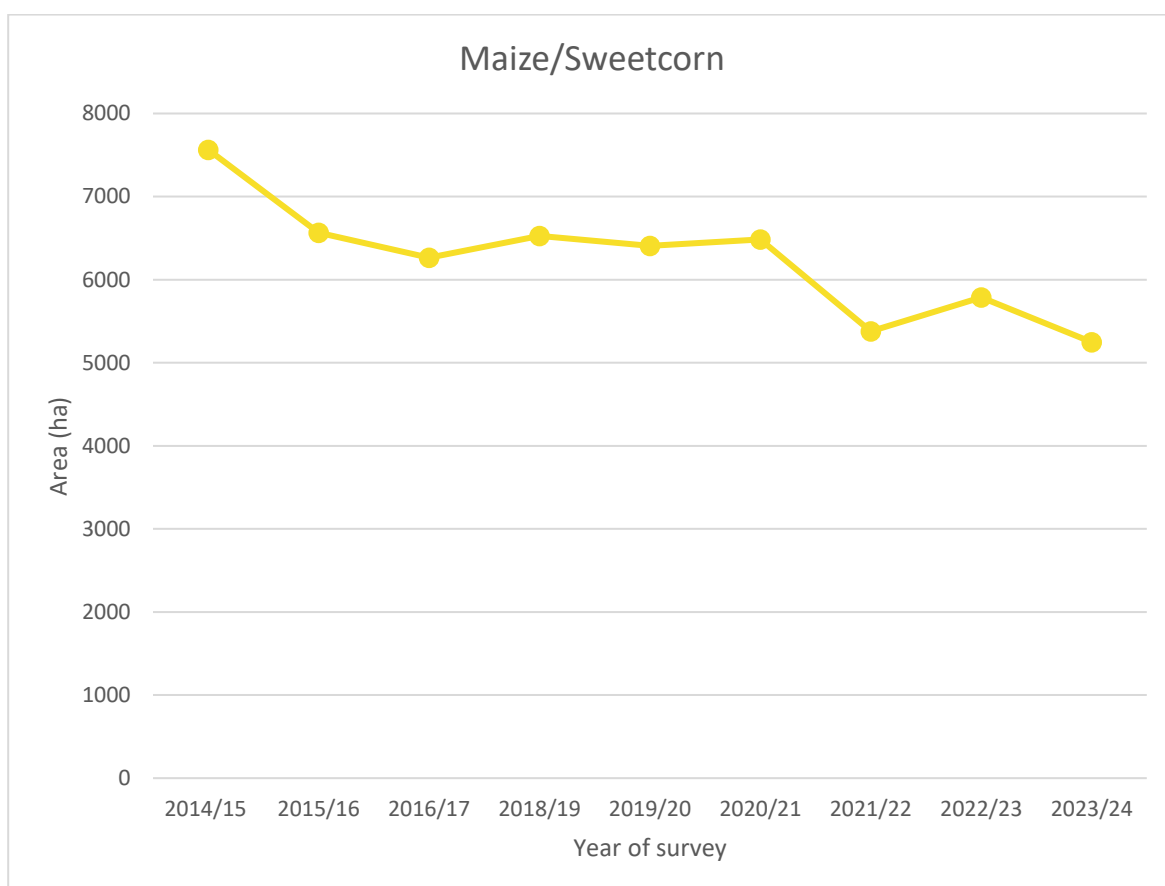
### 3.1.1 Maize/Sweetcorn

Maize and sweetcorn were the most abundant crops in the Gisborne region. Maize and sweetcorn accounted for 43.9% of all crops recorded in the Gisborne region (excluding pasture/unused, not visible and to be planted/tilled land), covering 5248.8 hectares of land. Maize and sweetcorn were grouped together for the purpose of analysis as they were difficult to identify separately in juvenile form and pose very similar impacts on the environment and waterways.

#### Observations and trends:

Over time there has been a decreasing trend in the area of maize and sweetcorn as seen in Figure 4, with a major drop from 2014/15 to 2015/16, then the area of maize and sweetcorn remains reasonably consistent until a second drop in area in 2021/22. Although in last years survey (2022/23) there was an increase to 5785.5 hectares. The most recent summer crop survey (2023/24) shows another decrease in area to 5248.8 hectares, encompassing a fall of 536.7 hectares of maize/sweetcorn in the Gisborne region.

This year's decrease suggests a recent transition of land from maize and sweetcorn to other crops/pasture and potentially current 'to be planted' areas to be used for maize and sweetcorn. Although it is also possible that some land that was maize/Sweetcorn was destroyed by Cyclone Gabrielle and ex-cyclone Hale and has not been replanted.



**Figure 4.** Nine-year trend of the total area in hectares (ha) of maize/sweetcorn in the Gisborne region (2014/15 – 2023/24)

### 3.1.2 Grapes

Grapes are another common crop identified in the Gisborne region. The area of grapes covered 1544.8 hectares making it the second most abundant summer crop in the region, accounting for 12.9% of the total summer crops surveyed in the region.

#### Observations and trends:

Grapes have shown a steady decreasing trend since the survey began in 2014/15 up until the (2021/22) survey as seen in Figure 5. Last year there was an observed increase in area of grapes of 188.2 hectares, although this year (2023/24) there has been a slight decrease of 39.4 hectares from 1584.2 hectares in 2022/23 to 1544.8 hectares in 2023/24. This change may be attributed to cyclones destroying crop land and a transition of land from grapes to other crops/pasture.

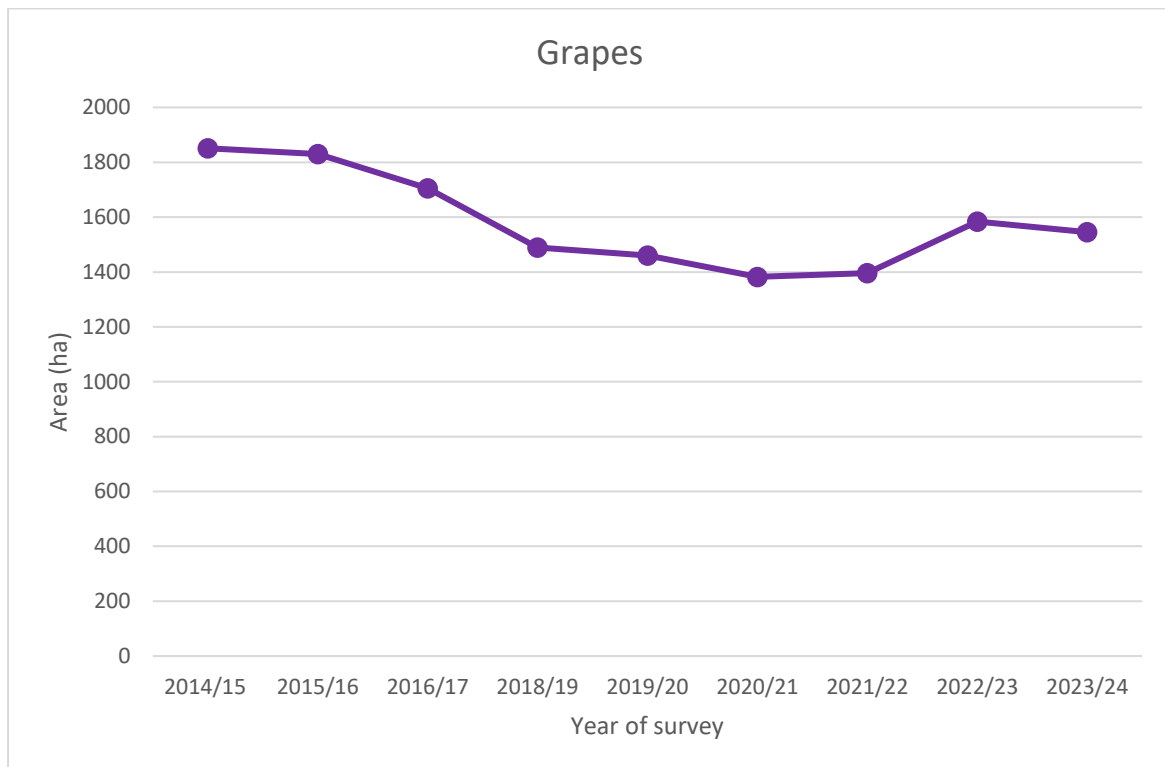


Figure 5. Nine-year trend of the total area in hectares (ha) of grapes in the Gisborne region (2014/15 – 2023/24)

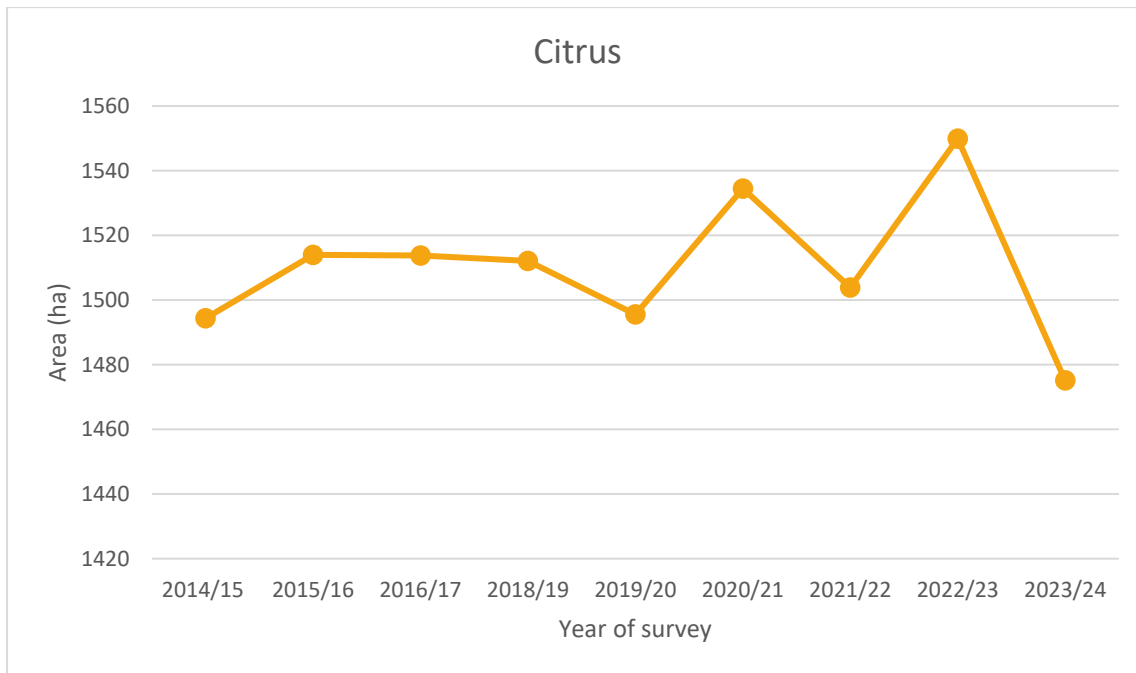
### 3.1.3 Citrus

The total area of citrus crop for 2023/24 was 1475.1 hectares. The citrus category encompasses oranges, lemons, mandarins, limes and grapefruits. They are grouped together due to their similarity in appearance and management. The citrus crop contributes to 12.3% of the total summer crops recorded in the region (excluding pasture/unused, not visible and to be planted/tilled land) making it the third most abundant crop.

#### Observations and trends:

The citrus crop has shown multiple changes over time as seen in Figure 6. Between 2014/15 and 2019/20 the citrus crop area remained reasonably consistent between 1494.3 and 1513.9 hectares. Fluctuations began in 2019/20 where area increased by 38.9 hectares into 2020/21, following this there was a decrease of 30.6 hectares recorded in 2021/22, and last year (2022/23) the area increased to its highest value so far of 1549.9 hectares. This year the largest drop occurred with a decrease of

74.78 hectares. This decrease may be due to the conversion of citrus to other crops/pasture as suggested by some of the dug up citrus trees seen in this year’s survey. Additionally, it could be due to the flooding effects of cyclone Gabrielle and ex-cyclone Hale.



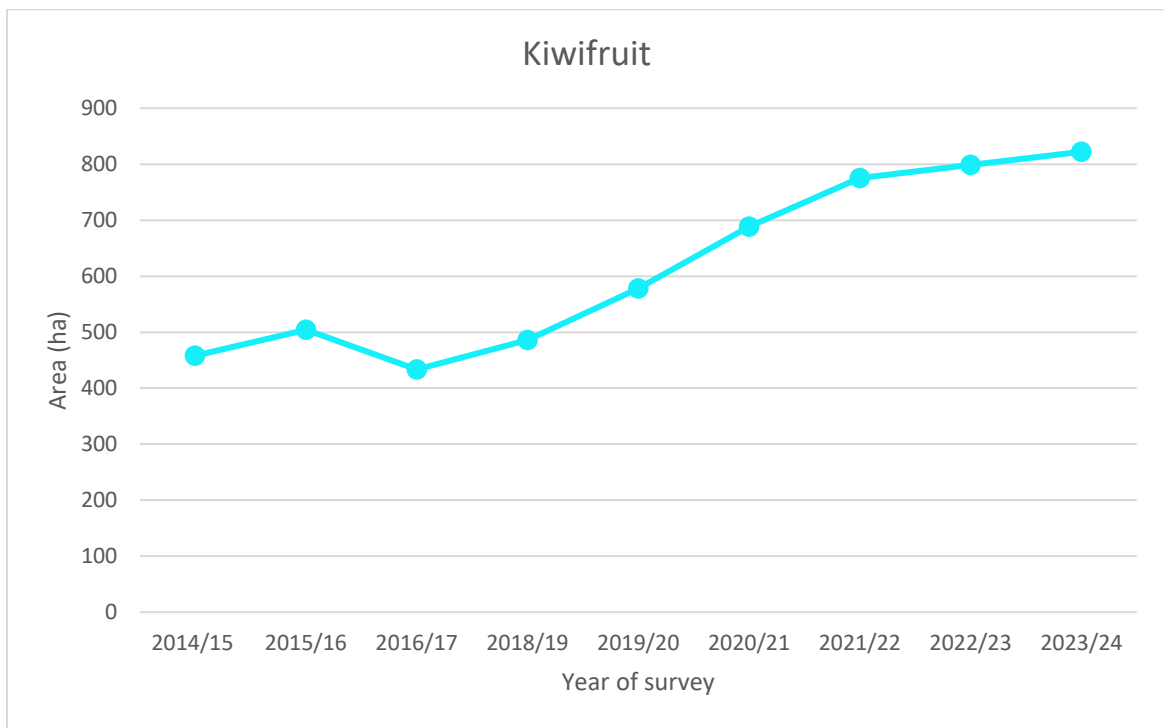
**Figure 6.** Nine-year trend of the total area in hectares (ha) of Citrus in the Gisborne region (2014/15 – 2023/24)

### 3.1.4 Kiwifruit

The area of kiwifruit recorded in this summer’s (2023/24) crop survey was 822.2 hectares. It was the fourth most abundant crop in the region, contributing to 6.9% of the summer crops recorded (excluding pasture, not-visible and to-be-planted/tilled land).

#### Observations and trends:

The area of kiwifruit has been compared to the previous summer crop surveys as seen in Figure 7. There has been an observed rise in the area of kiwifruit in the region since the 2016/17 crop survey. The previous crop survey in 2021/22 noted installation of kiwifruit infrastructure and as the kiwifruit had not been planted yet it was not recorded in the total area, thereby suggesting a continued increasing trend in future surveys. The increasing trend continued as expected in last year’s survey (2022/23) with the area of kiwifruit in the Gisborne region rising to 798.6 hectares and continued rising this year to 822.2 hectares. Kiwifruit infrastructure was observed again during the survey suggesting this trend will continue.



**Figure 7.** Nine-year trend of the total area in hectares (ha) of kiwifruit in the Gisborne region (2014/15 – 2023/24)

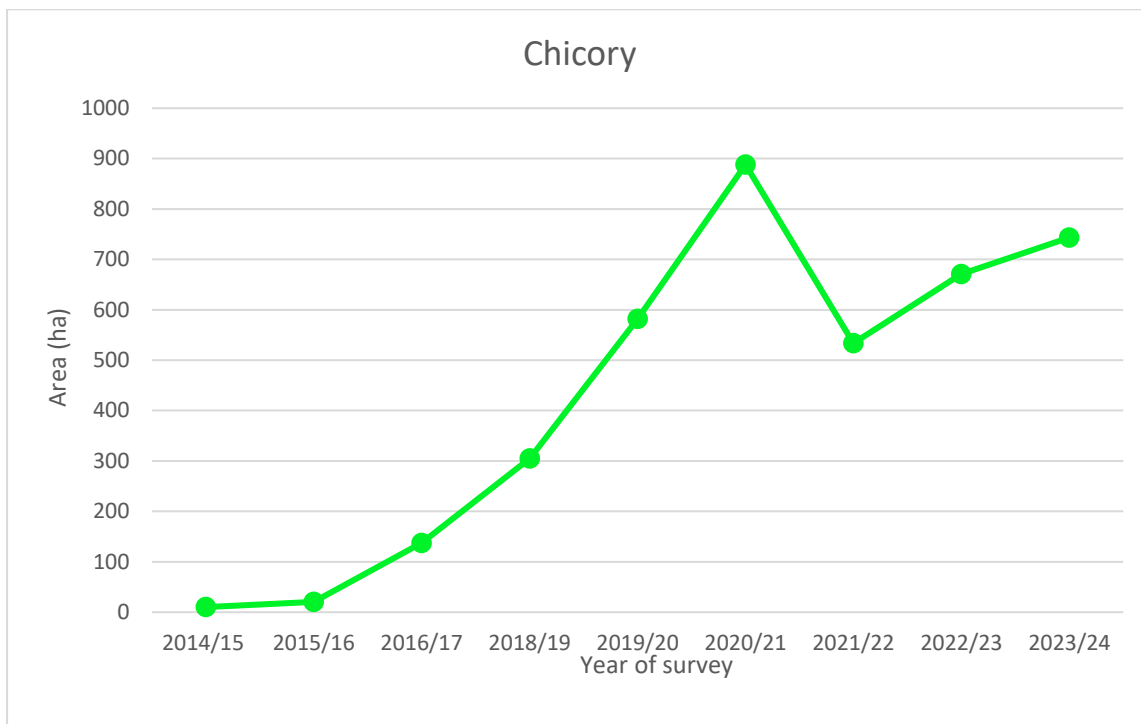
### 3.1.5 Chicory

Chicory is the fifth most abundant crop in the Gisborne region covering 743.4 hectares, contributing to 6.2% of summer crops recorded (excluding pasture, not-visible and to-be-planted/tilled land).

#### Observations and trends:

The area of chicory has shown an increasing trend from 2014/15 up until the year (2021/22) survey when a major drop in the cropped area of chicory occurred, as seen in Figure 8. In 2021/22 the cropped area of chicory decreased by 137.1 hectares from 888 hectares in 2020/21 to 533.9 hectares, displaying the first decline since the surveys began in 2014/15. Last year (2022/23) the area of chicory once again increased to 671 hectares and continued to increase this year to 743.4 hectares.

Chicory is a common summer crop in the region as it provides a high feed value, aiding in the growth of stock. The recent increase may be attributed to an increase in demand for chicory or/and due to other cropped land being converted to chicory.



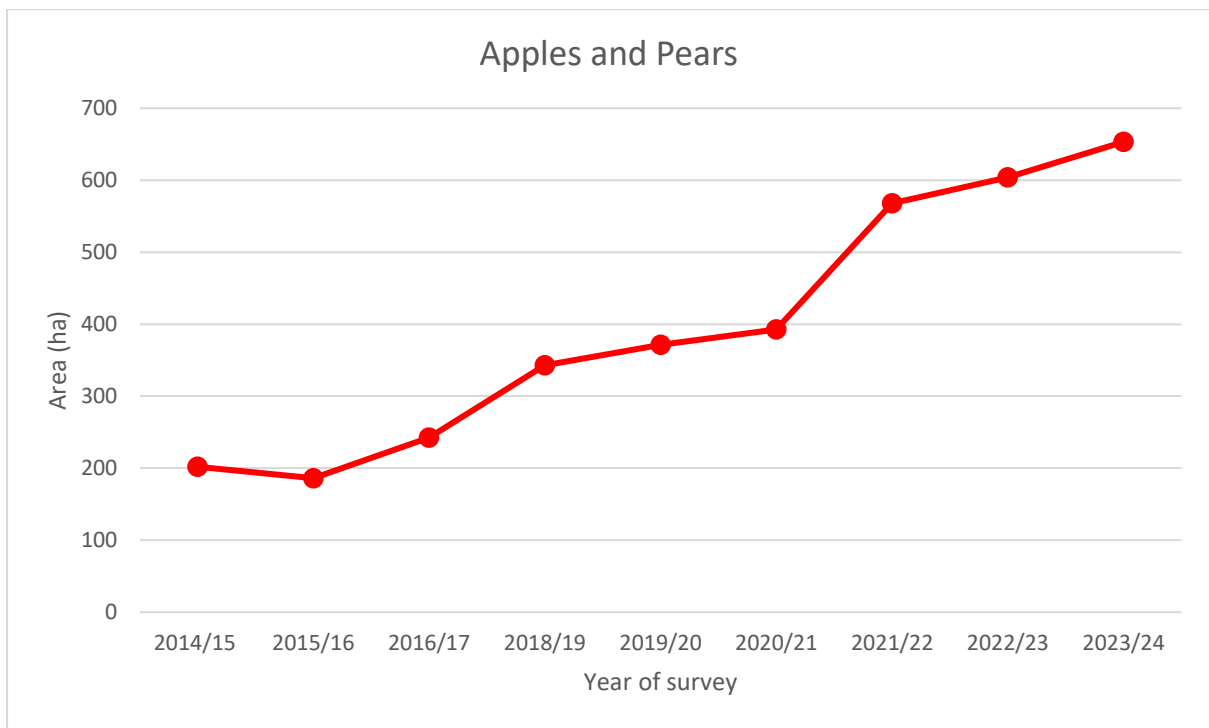
**Figure 8.** Nine year trend of the total area in hectares (ha) of Chicory in the Gisborne region (2014/15- 2023/24)

### 3.1.6 Apples and Pears

Apples and pears are another common crop identified in the Gisborne region. The area of apples and pears recorded for 2023/24 was 653.3 hectares. The crop contributed to 5.5% of the summer crops recorded (excluding pasture, not visible and to be planted/tilled land), making it the sixth most abundant crop in the region. Apples and pears have been grouped together due to them having the same infrastructure and a similar appearance as young trees.

#### Observations and trends:

The area of apples and pears has been compared to previous summer crop surveys and as seen in Figure 9, the crop area of apples and pears has increased annually since the 2015/16 summer crop survey. This trend continued in last year's summer crop survey (2022/23) and again this year with an area increase of 49.6 hectares. In the past eight years we have seen a large change in the area of apples and pears in the Gisborne region with an increase of 467.2 hectares, and this increasing trend is expected to continue with the observed installation of apple and pear infrastructure during this year's survey (2023/24).



**Figure 9.** Nine year trend of the total area in hectares (ha) of Apples and Pears in the Gisborne region (2014/15 – 2023/24)

### 3.1.7 Squash

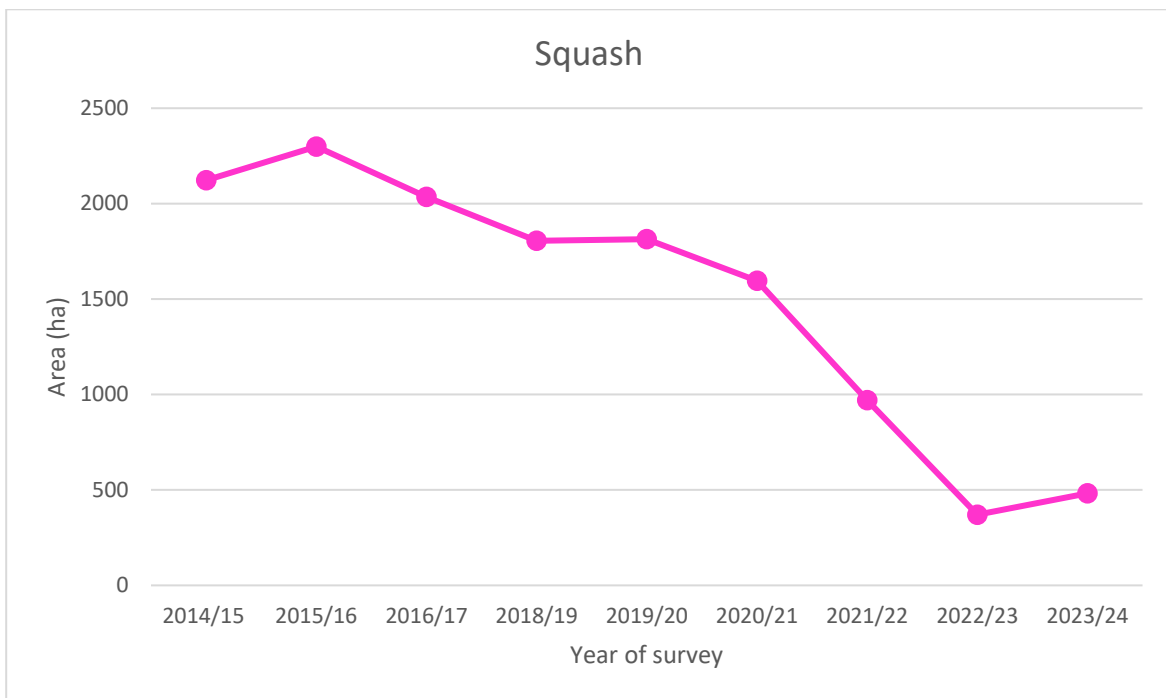
Squash was the seventh most abundant crop type identified in the Gisborne region, covering an area of 482.3 hectares and accounting for 4.0% of all crops recorded in the Gisborne region (excluding pasture, not visible and to be planted/tilled land). The squash category encompasses butternut squash and pumpkin crops.

#### Observations and trends:

The area in hectares (ha) of squash crops has been compared to the previous summer crop surveys and trends have been observed as seen in Figure 10. The cropped area of squash peaked in 2015/16 at 2,299.2 hectares, it has since been quickly declining, reaching an all-time low last year (2022/23) of 370.3 hectares. Although in this year's survey (2023/24) it increased for the first time since 2019/20 by 112.0 hectares.

The long-term decreasing trend may be associated with the increase in crops classified as 'not visible' resulting from lack of access to private properties. In addition, it may be attributed to the diversification of what is grown in the region. Although the increase this year (2023/24) could be due to squash being a weather resistant crop as it needs lots of water and could handle the region's large amounts of rain better than some other crops. It is also a fast growing and producing crop, so with the unpredictable weather in the region it could be less of a risk to plant compared to other crops. Additionally, it could be due to squash and maize which are sometimes planted as an intercropping system.





**Figure 10:** Nine year trend of the total area in hectares (ha) of squash in the Gisborne region (2014/15 – 2023/24)

### 3.1.8 Not visible

Not visible had a total crop area of 1886.6 hectares. The reason for this high area of not-visible land is likely due to the access restrictions into private properties. This resulted in many crops being out of view due to physical barriers including wind breakers, houses, hills, and distance. In addition, the rain caused low visibility at times.

## 3.2 Location

### 3.2.1 The Poverty Bay Flats

The total surveyed area for the Poverty Bay Flats region was 14,501.1 hectares. The total area of pasture (4019.4 ha), not visible (932.0 ha) and to be planted/tilled land (609.4 ha) was excluded to calculate the total area of summer crops, which was 8,940.3 hectares. This area had the largest variety of crops in the district.

Maize and sweetcorn were the largest contributing crop type in the area, making up 40.1% of the total summer crops in the Poverty Bay flats (2023/24). In this year's survey (2023/24) maize and sweetcorn covered a total area of 3588.4 hectares in the Poverty Bay flats, decreasing by 213.0 hectares since last year's survey (2022/23). Grapes were the second most abundant crop in this area covering 1463.5 hectares, closely followed by citrus at 1426.5 hectares, both crops have decreased in area (ha) within the Poverty Bay flats area compared to last year's survey (2022/23). Kiwifruit was the fourth most abundant crop in the Poverty Bay flats at 796.7 hectares, followed by apples and pears with 566.7 hectares, squash with 363.6 hectares, chicory with 157.8 hectares, avocados with 102.8 hectares, lucerne with 95.5 hectares and persimmon with 94.0 hectares. The remaining crops were found at much lower quantities and grouped together as 'various' in Figure 11 and expanded in Figure 12.

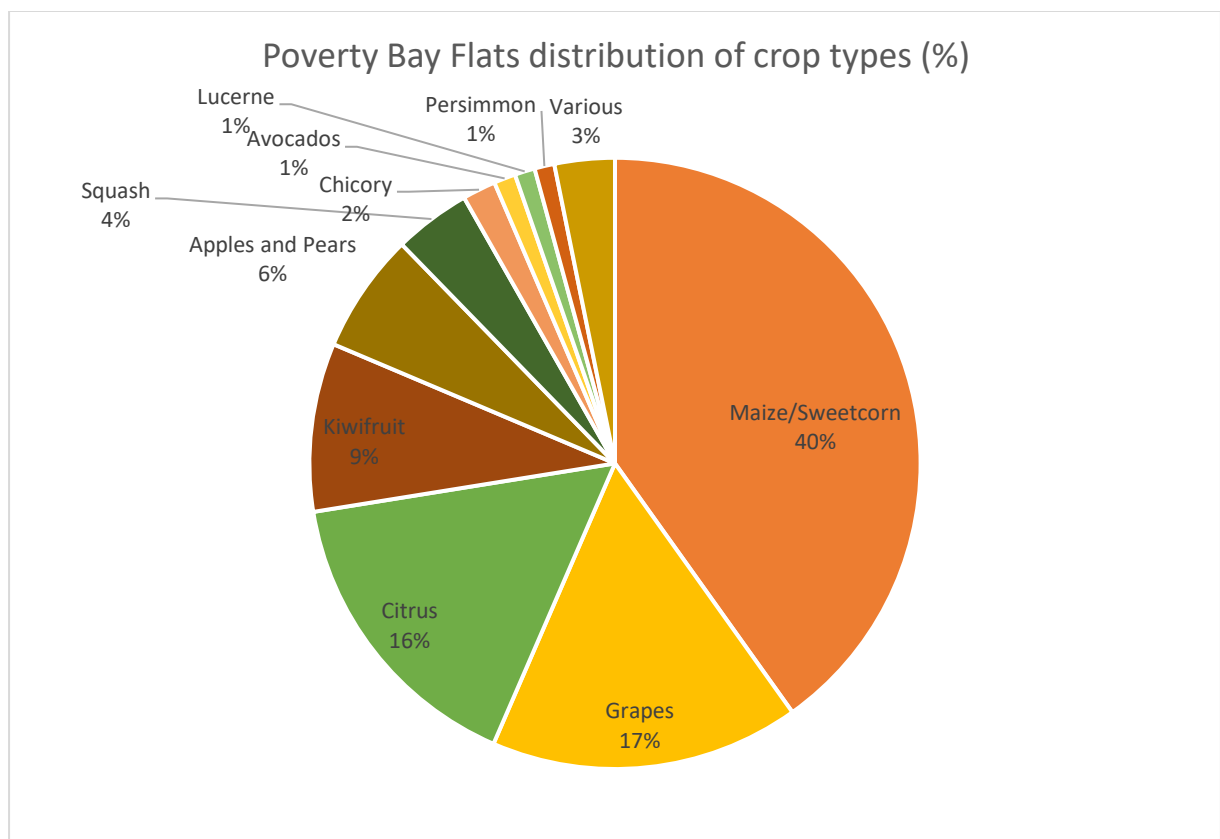
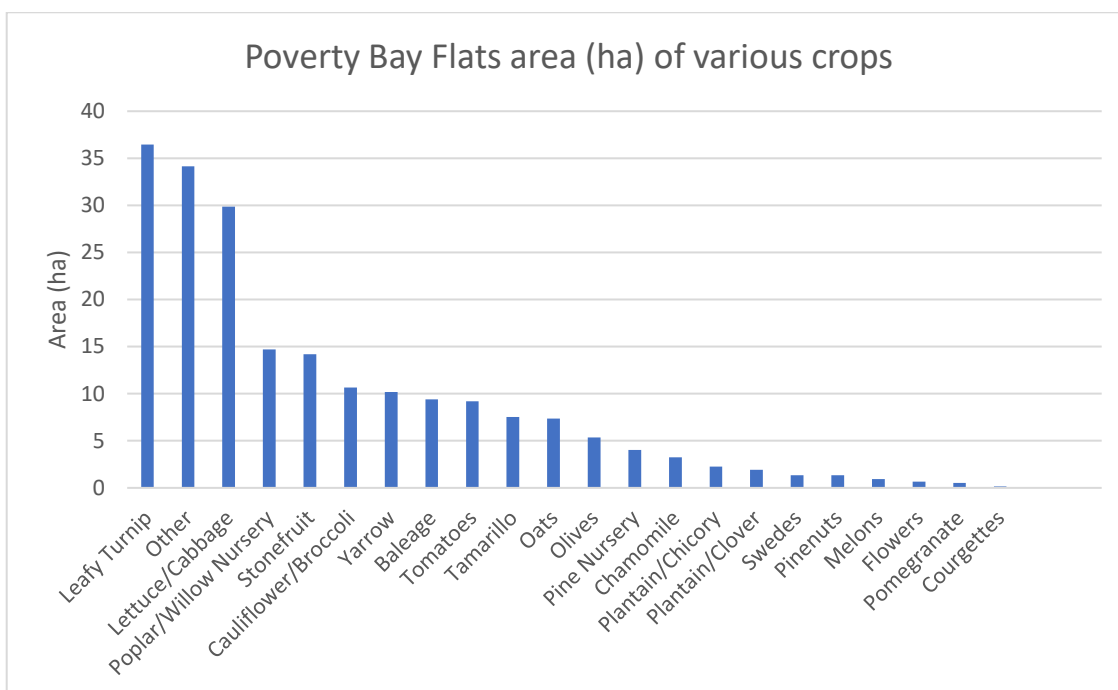


Figure 11. Crop Types recorded on the Poverty Bay Flats in % value by area (ha)



**Figure 12.** Various crop types in the Poverty Bay Flats breakdown

### 3.2.2 East Cape/Ruatoria

The total surveyed area for the East Cape/Ruatoria region was 2,660.3 hectares. The area of pasture (2,261.1 ha), not visible (49.9 ha), and to be planted/ tilled land (0 ha) were excluded to calculate the total area of summer crops, which was 349.4 hectares. The crop types found in this area can be seen in Figure 13. Crops with an area percentage contributing to less than 1% of the total crop area in the Poverty Bay Flats have been grouped together in the ‘various’ category in Figure 13 and expanded in Figure 14.

The most common crop in the area was chicory with 183.0 hectares, followed by lucerne with 73.8 hectares. Chicory has increased in area compared to last year’s survey (2022/23) where it was the second most abundant and lucerne has decreased as it was the most abundant. The third most abundant crop in the East Cape/Ruatoria area was baleage with 27.7 hectares, followed by yarrow with 24.0 hectares, plantain with 15.8 hectares, clover with 11.2 hectares, citrus with 9.6 hectares and olives with 2.3 hectares. The remaining crops including avocados, poplar/willow nursery and other/unknown were found at much lower quantities and grouped together as ‘various’ in Figure 13 and expanded in Figure 14.

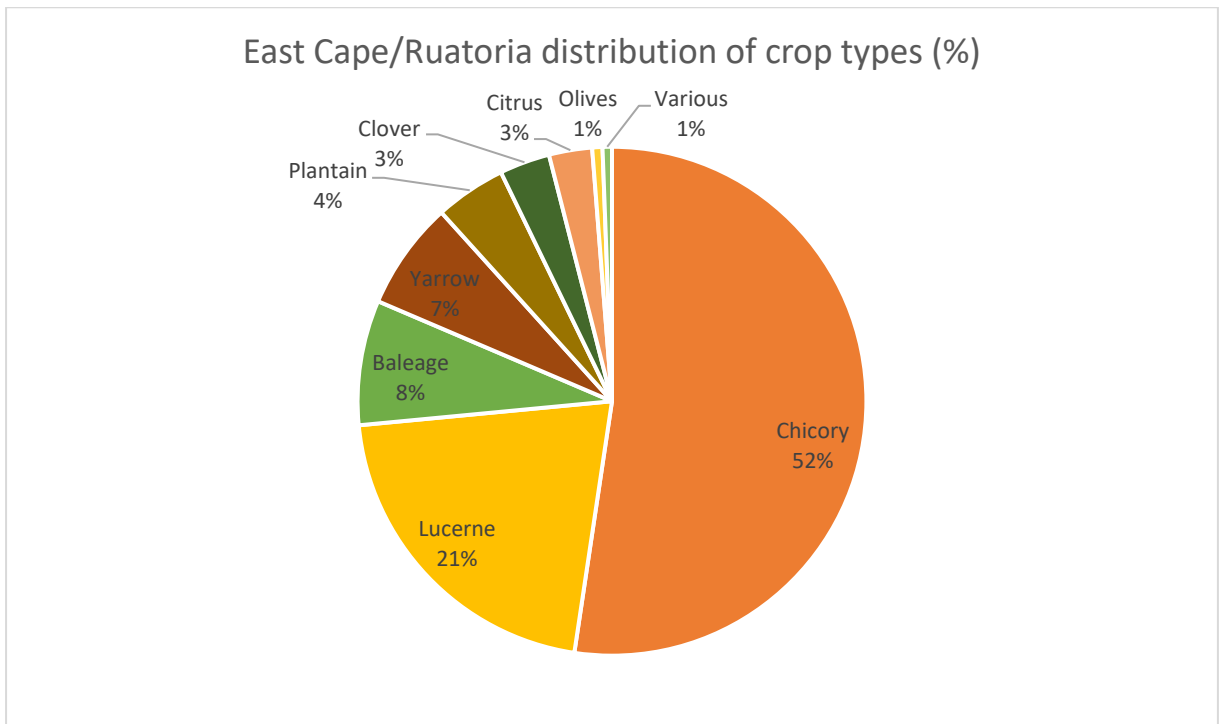


Figure 13. Crop Types recorded in the East Cape/ Ruatoria area in % value by area (ha).

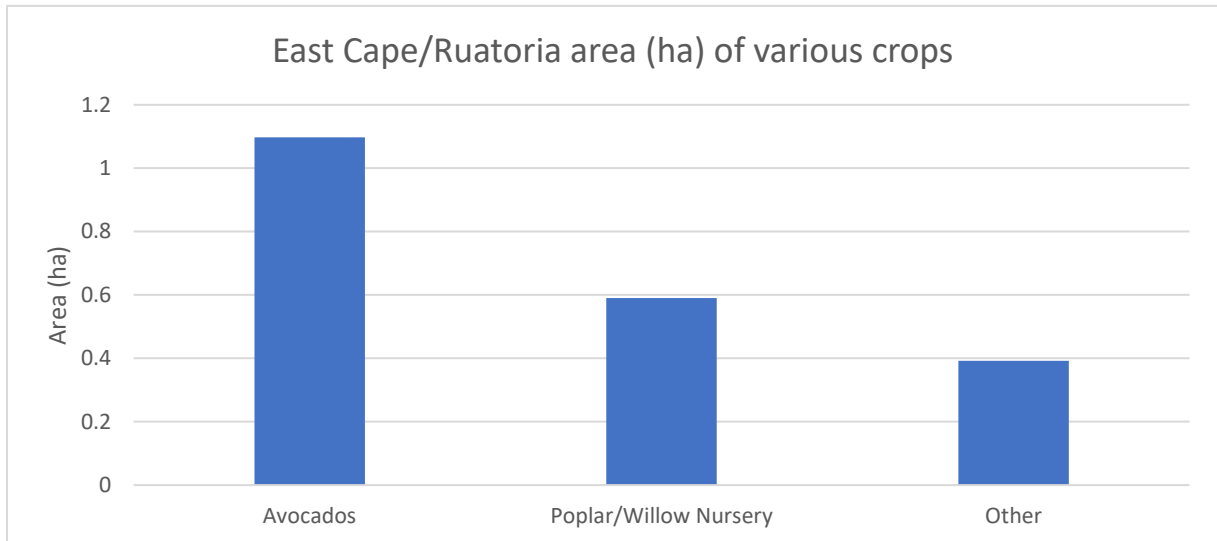


Figure 14. Various crop types in the East Cape/Ruatoria breakdown

### 3.2.3 East/Tolaga/Tokomaru

The total area surveyed for the East/Tolaga/Tokomaru area was 3,099.5 hectares. The area of pasture (1,665.0 ha), not visible (184.8 ha), and to be planted/tilled land (9.3 ha) was excluded to calculate the total area of summer crops, which was 1,240.5 hectares.

The most common crop found in this region was maize/sweetcorn contributing to 67.8% of the total summer crops in East/Tolaga/Tokomaru, with a total area of 841.6 hectares. Chicory was the second most abundant crop with 201.3 hectares followed by squash with 51.0 hectares, plantain with 41.3 hectares, clover with 31.0 hectares, citrus with 24.3 hectares and kiwifruit with 16.4 hectares. The remaining crops including chamomile, feijoa, grapes, leafy turnip, lucerne. Other/unknown and poplar/willow nursery were found at much lower quantities and grouped together as 'various' in Figure 15 and expanded in Figure 16.

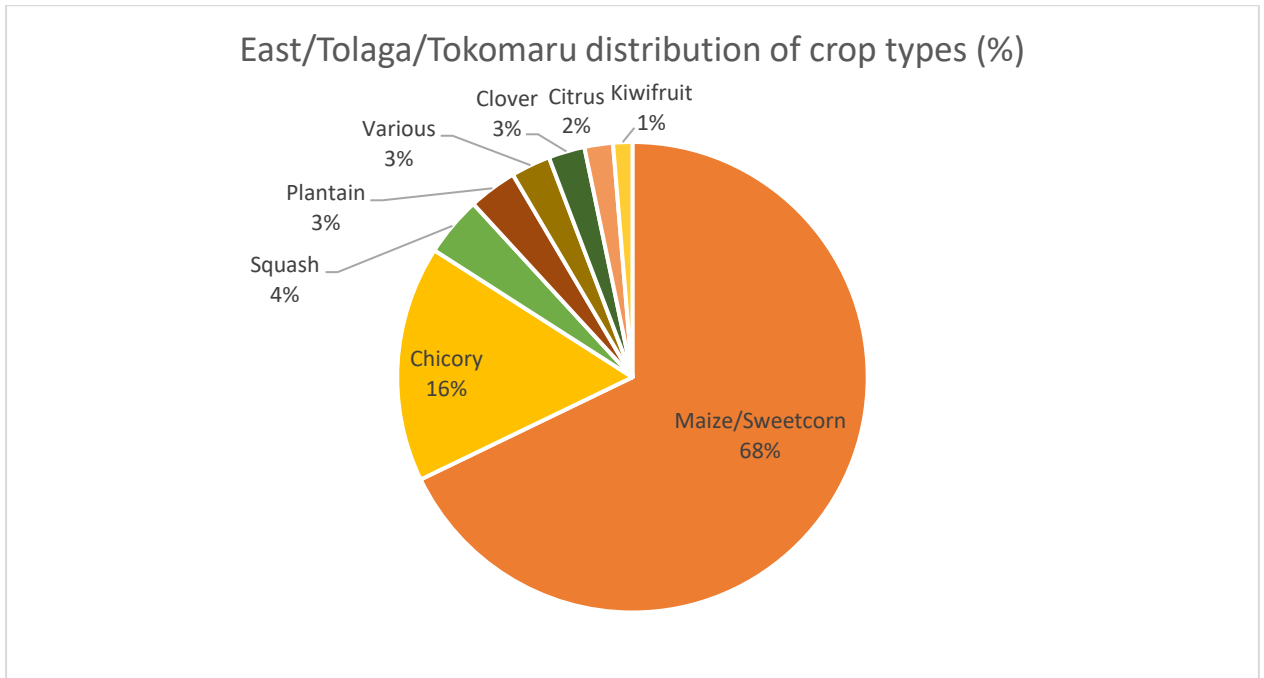


Figure 15. Crop Types recorded in the East/Tolaga/Tokomaru area in % value by area (ha).

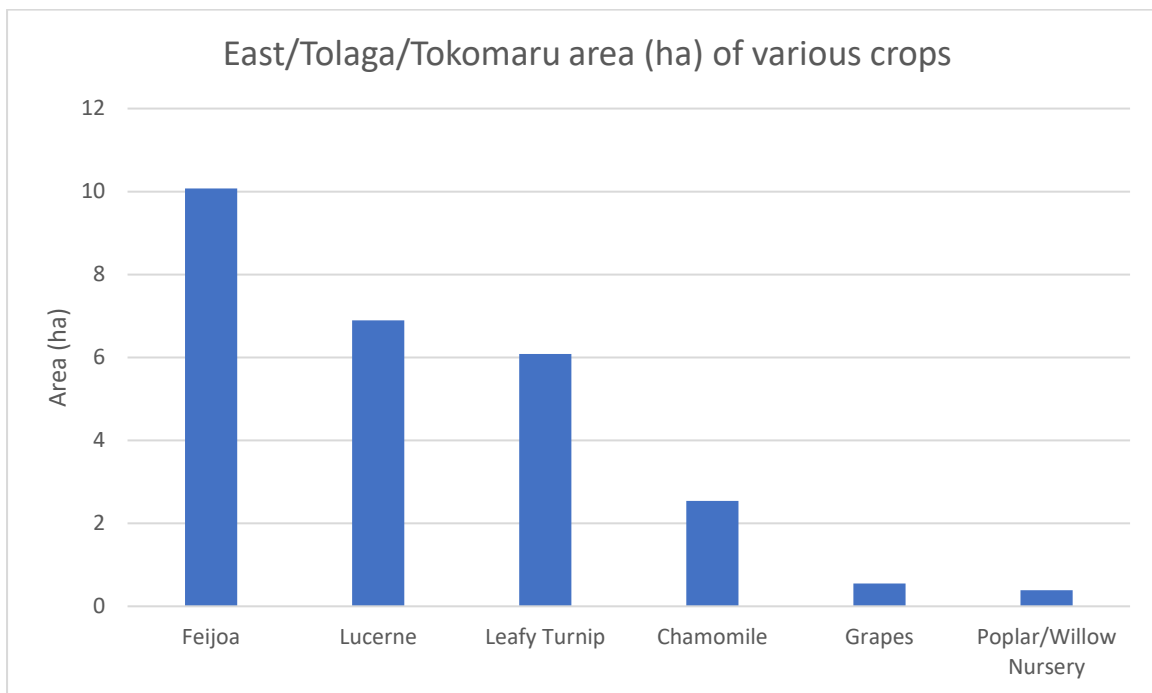


Figure 16. Various crop types in the East/Tolaga/Tokomaru breakdown.

### 3.2.4 Mōtū/Mātāwai

The total area surveyed for the Mōtū/Mātāwai area was 838.5 hectares. The area of pasture (702.8 ha), not visible (117.7 ha) and to be planted/tilled land (0 ha) was excluded to calculate the total area of summer crops which was 18.0 hectares. The most abundant crop in the area was baleage with 9.8 hectares, covering 54.2% of the areas cropped land. Other crops found in the region were other/unknown with 5.8 hectares, and leafy turnip with 2.4 hectares as shown in Figure 17.

### Motu/Matawai distribution of crop types (%)

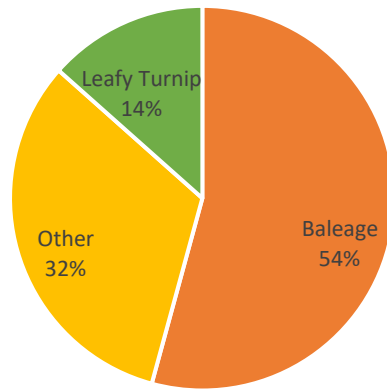
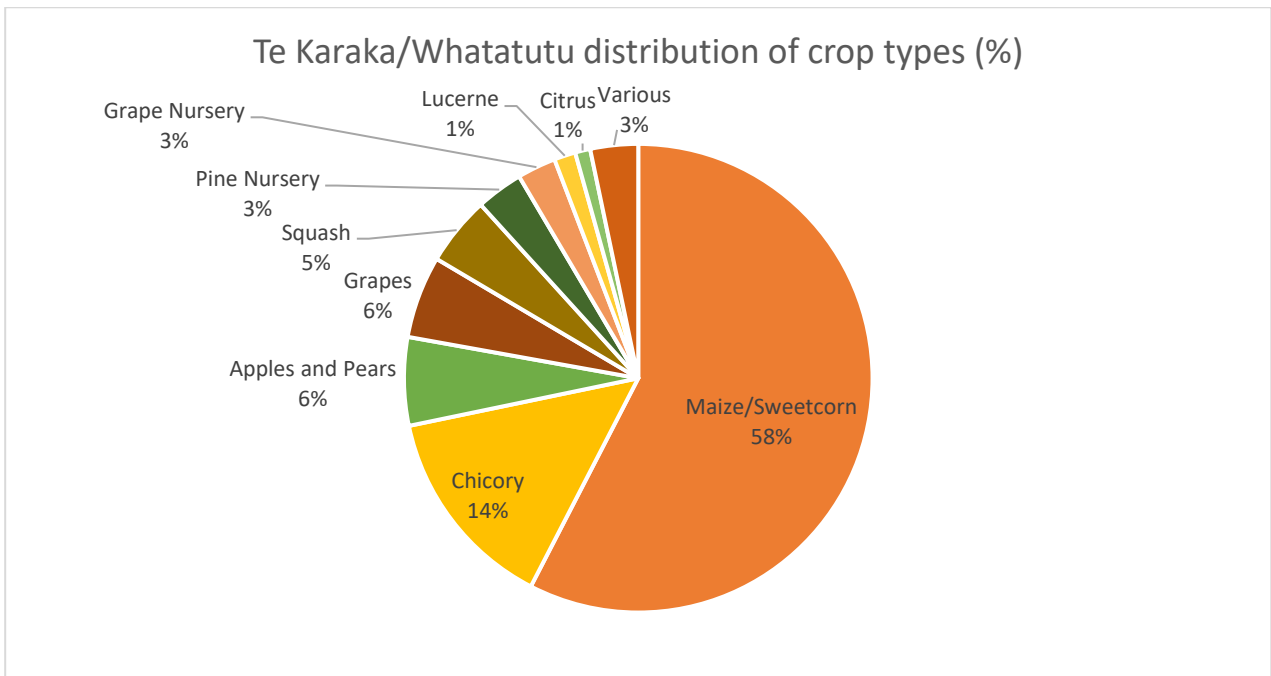


Figure 17: Crop types recorded in Mōtū/Mātāwai area in % value by area (ha).

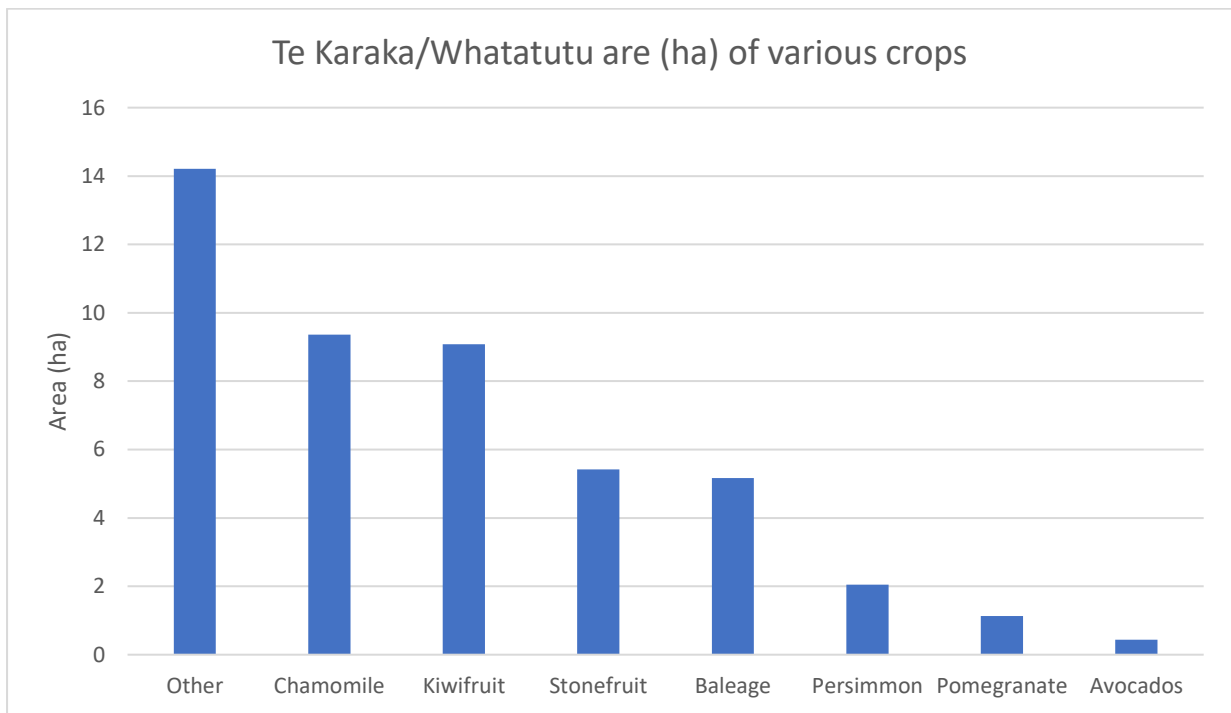
### 3.2.5 Te Karaka/Whatatutu

The total area surveyed for the Te Karaka/Whatatutu area was 3,276.7 hectares. The area of pasture (1,090.7 ha), not-visible (602.3 ha), and to be planted land (161.7 ha) were excluded to calculate the total area of summer crops, which was 1,422.0 hectares.

The most abundant crop in the area was maize/sweetcorn with 818.8 hectares, followed by chicory with 201.3 hectares, apples and pears made up 86.6 hectares, squash with 67.7 hectares, pine nurse with 46.2 hectares, grape nurse with 37.9 hectares, lucerne with 21.1 hectares and citrus with 14.8 hectares. The remaining crops including avocados, baleage, chamomile, kiwifruit, other/unknown, persimmon, pomegranate and stonefruit were found at much lower quantities and grouped together as 'various' in Figure 18 and expanded in Figure 19.



**Figure 18:** Crop types recorded in Te Karaka/Whatatutu area in % value by area (ha)



**Figure 19.** Various crop types in Te Karaka/Whatatutu breakdown.

### 3.3 Taruheru Catchment

The Taruheru Catchment covers the area between Waihirere and Gisborne city, from the surrounding hills to the Waipaoa River. The Taruheru River runs from the Waihirere Stream to the Turanganui River and is surrounded by fertile land and thus has been intensively cropped for many years. State of the Environment monitoring has found that nitrate, ammonia, phosphorus and e.coli levels are all above national bands and do not meet the freshwater objectives set in the Tairāwhiti Resource Management Plan. The Gisborne District Council State of the Environment Report 2022 states that the high nutrient levels in the Taruheru River are primarily related to the intensive horticultural lands. This section covers the long-term trends in commercial cropping in the Taruheru Catchment.

Data from the summer crop surveys from 2008 to 2024 (excluding 2013-2015 as summer crop surveys were not conducted in these years) has been compiled to help identify trends in land use in the Taruheru Catchment. The full table of the data can be found in Appendix 2 of this report and is summarised below in Figure 20.

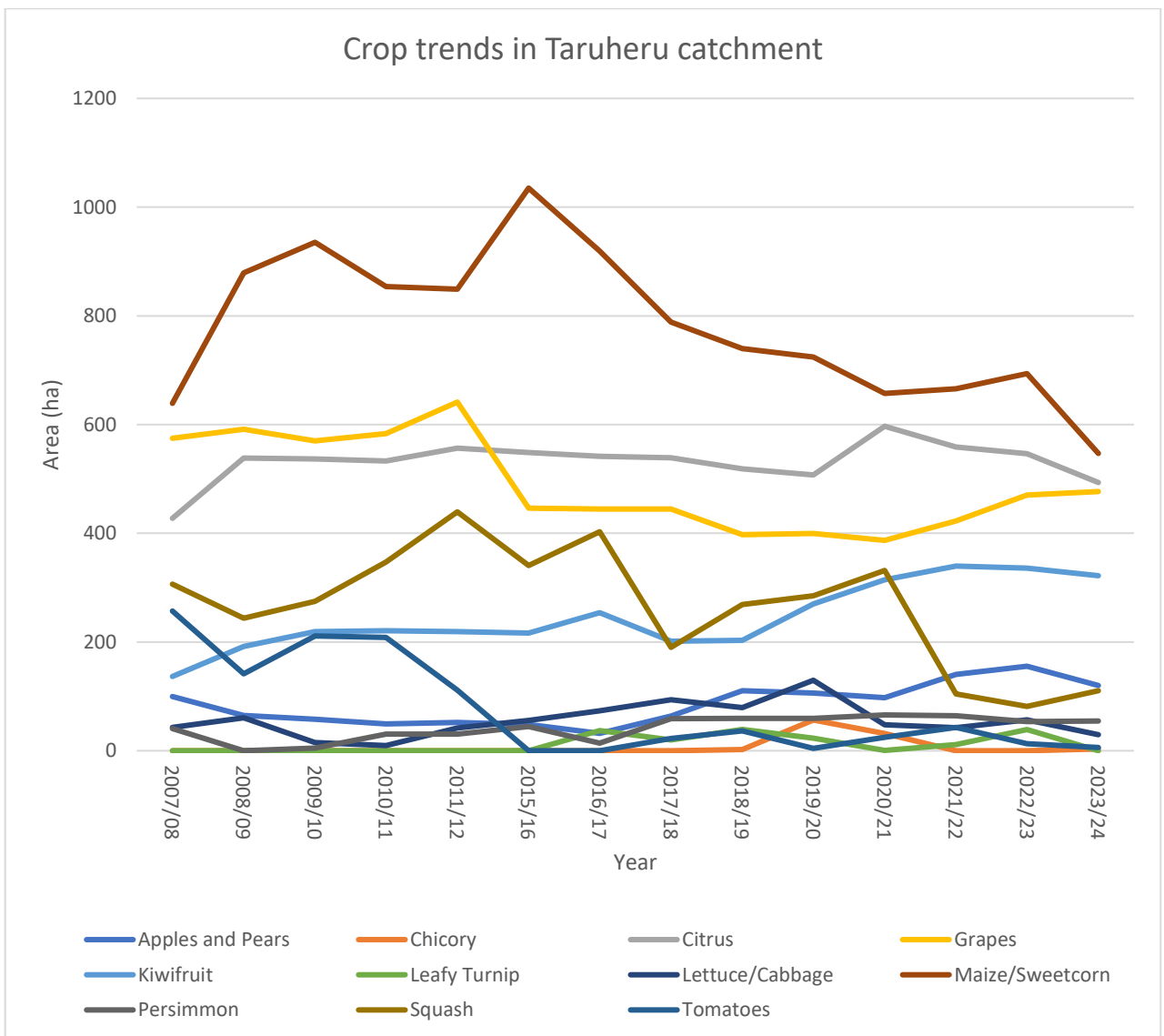
Trends show that from the first survey in 2007/08 to the most recent survey in 2023/24 the area of cropped land in the Taruheru catchment (excluding pasture, not visible, and to be planted/tilled land) has decreased by 387.9 hectares, from 2,624.5 hectares (2007/08) to 2,236.6 hectares (2023/24). This year there has been a major decrease from 3,645 hectares in 2022/23 to 2,236.6 hectares in 2023/24. This may be attributed to the conversion of cropped land to pasture/unused land in the Taruheru catchment, suspected due to the increase of pasture/unused land in this year's survey compared to last years survey (2022/23). It may also be due to lots of land being 'not visible' due to close gates and private property.

Maize and sweetcorn remain the most abundant crop with an area of 546.9 hectares. Citrus is the second most abundant crop with 493.3 hectares, followed closely by grapes with 476.7 hectares, kiwifruit with 322.1 hectares, apples and pears with 120.3 hectares, squash with 110.3 hectares, persimmon with 54.7 hectares, lettuce/cabbage with 29.7 hectares. Leafy turnip had 0 hectares until 2016/17 where it has 36.9 hectares and then fluctuated over the years and is now at 39.0 hectares. Tomatoes peaked in 2007/08 with 257.1 hectares and has an all-time low in 2015/16-2016/17 with 0 hectares. It has since increased again in 2017/18 with 22.4 hectares and has declined again this year with only 13.2 hectares.

Squash have shown the largest increase in area since last year (2022/23), increasing by 28.8 hectares, followed by grapes increasing by 6.2 hectares. Chicory and persimmon also experienced increases since last year. Maize/sweetcorn have shown the largest decrease in area since last year, decreasing by 146.8 hectares, followed by citrus which decreased by 53.4 hectares. Apples and pears, kiwifruit, leafy turnip, lettuce/cabbage and tomatoes have also decreased since last year.

Since the first survey in 2007/08 there have been some major changes in crop area. Kiwifruit showed the largest increase, increasing from 136.7 hectares in 2007/08, to 322.1 hectares in 2023/24, resulting in a total change of 185.4 hectares. Tomatoes have shown the largest decrease, decreasing from 257.1 hectares in 2007/08 to 6.2 in 2023/24, displaying a total change of 250.9 hectares. Squash has shown many fluctuations over the years, with its highest value being recorded in 2011/12 with 439.5 hectares and last year (2022/23) showed an all-time low of 81.6 hectares. This year's survey (2023/24) showed it increasing for the first time again since 2011/12 with 110.3 hectares.





**Figure 20.** Long Term Crop Trends in the Taruheru Catchment, summer periods from 2007/08 to 2022/23

## 4.0 Water Threats

Crops were identified as having a threat to water if they triggered any of the relevant rules for cropping in the Freshwater Chapter (section 6) of the TRMP. The water threat relates to rules 6.2.9(2), 6.2.9(3), and 6.2.9(4) of the TRMP, see Appendix 3. Crops that were listed with no water threat did not trigger any of the rules of the TRMP. Cropped areas where the water ways were not visible, the “not-visible” category was used.

Paddock drains were considered a water threat in this survey as they come under the category of being a modified watercourse in the TRMP definitions, see Appendix 4. Modified watercourses will be influenced by the setback requirements under rule 6.2.9 (3) which came into place on the 1<sup>st</sup> of May 2021, where no cultivation is to be undertaken within 5 metres of the edge of any modified watercourse, permanent or intermittent stream. Crops are only exempt from these rules if they have a farm environment plan demonstrating that a smaller setback of at least 1 meter can occur without adversely impacting on the quality of the receiving waterbody.

The total area that was classed as having a water threat was 3,580.3 hectares. Comprising 14.7% of the total area surveyed in the Gisborne region, and 45.3% of cropped area relevant to having a water threat (not including pasture and permanent crops). Each of the categories and the percentage value of land (ha) identified within each category is shown in Figure 20. The categories included; cultivation <5m of a roadside drain, cultivation <5m of the edge of a modified water course or stream, cultivation <10m significant waterway, cultivation <5m of a significant water way, and not visible. Cropped land that did comply with regulations were noted in the abide by rules category. These categories excluding not visible and abide by rules, are included in a separate graph showing the area of land (ha) identified in each category, as seen in Figure 21.

Permanent crops e.g. grapes, kiwifruit, citrus, apples and pears, were excluded from the relevant rules as soil loss is minimal and therefore they do not pose a significant threat to water. Pasture/unused land was also excluded as it is difficult to determine when cultivation may have taken place. All other crops were seen as a water threat. If cropping did not comply with the rules it was noted in the survey what rule was not being followed based on the relevant cropping in the freshwater chapter C6 of the TRMP.

The 2023/24 summer crop survey showed the most common water threat was cultivation <5m of a roadside drain, with 2,692.5 hectares of land identified within the category. This was followed by cultivation <5m of the edge of a modified water course or stream with 718.9 hectares, cultivation <10m of a significant waterway with 126.1 hectares, and cultivation <5m of a significant waterway with 42.8 hectares.

It is important to note an amendment to the previous year’s survey (2021/22) in regard to the incorrect interpretation of rule 6.2.9 (4) in the freshwater chapter C6 of the TRMP. This rule, specifically section b, refers to dairy farming and intensively farmed stock activities and is thereby irrelevant to cropping. As a result of the misinterpretation in last year’s survey all crops identified to be within 10 meters of a significant water way were recorded as breaching the TRMP rules. This amendment means that the category ‘cultivation <10m of a significant waterway’ is now only applied to stock feed crops in relation to significant waterways identified in schedule G17 or G18 of the TRMP, which comes under rule 6.2.9 (2). Other crops in relation to significant waterways cannot be cultivated within 5 meters under the TRMP. This error means that comparisons between surveys in relation to water threats to significant waterways cannot be made.

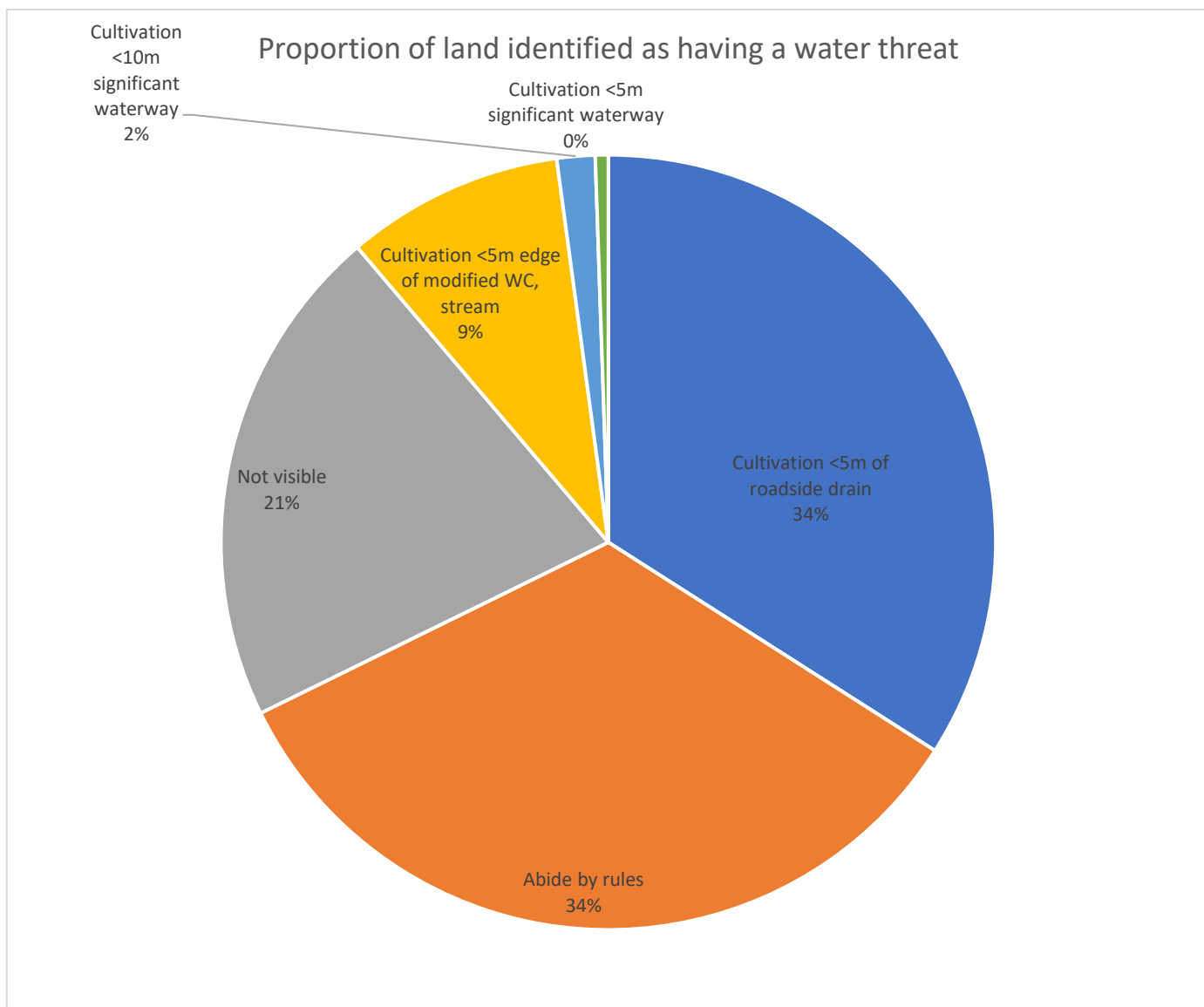
In addition, there is potential for misinterpretation of rule 6.2.9 (3) due to the unrefined definition of an *intermittent stream*. The category that suggests cultivation within 5 meters of a roadside drain is in

breach of the TRMP rules by assuming all roadside drains will come under the definition of an *intermittent stream*. In order for a roadside drain to come under the *intermittent stream* definition outlined in the TRMP Part E: Definitions, it must have:

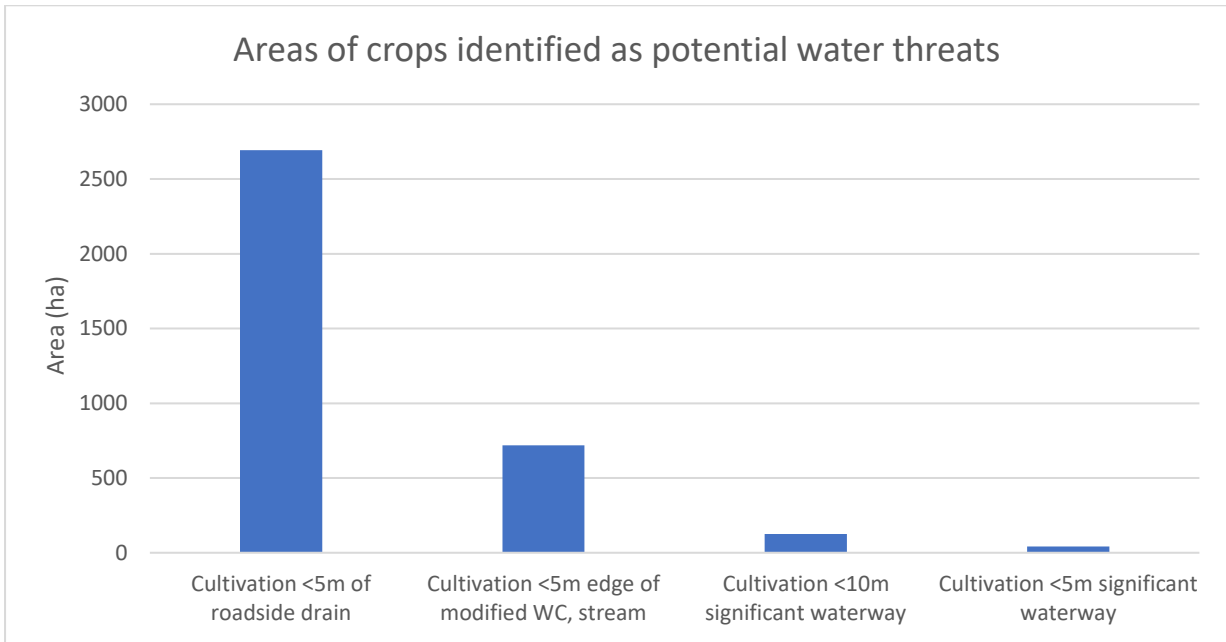
- a defined water channel and banks; and
- connects with a permanently flowing surface water body; and
- provides habitat for aquatic flora and/or fauna species

Therefore, there is a strong likelihood that many of the roadside drains noted within the current, and previously conducted surveys, as breaching this restriction may, in fact, be in compliance of this regulation. Moving forward greater understanding and clarification of these rules and restrictions will be needed to create more accurate data in surveys undertaken in the future. However, given the impact that potential contaminants can have on the health of freshwater systems whilst still in accordance with the rules and regulations of the TRMP, the data collected still provides value.

Rule 6.2.9 (3) and rule 6.2.9 (4) in chapter C6 of the TRMP states “no cultivation is undertaken within 5 meters of the edge of any modified watercourse, permanent or intermittent stream”. This year (2023/24) the rule was triggered by 718.9 hectares of land, showing a decrease of 492.8 hectares compared to last years survey (2022/23). The area (ha) of land identified in the category of cultivation <5m of a roadside drain has also decreased from 2,784.6 hectares in 2022/23 to 2,692.5 hectares this year in 2023/24.



**Figure 21.** Proportion of land (ha) in the Gisborne region triggering rules in the freshwater chapter of the TRMP and identified as a water threat.



**Figure 22.** Proportion of land triggering rules within the Freshwater Chapter of the Tairāwhiti Resource Management Plan and identified as a water threat.



Possible non-compliant cropping area.

# 5.0 Limitations

## 5.1 Survey Area

The survey area for the Gisborne region is outlined in Figure 1 in Section 2.1. These cover all visible cropping areas that can be seen by the road throughout the region.

The main limitation for this survey was a lack of visibility of crops and waterways from the road. This poor visibility was caused by lack of access into private properties, physical barriers obstructing view (wind breakers, buildings, hills, etc), and at times, poor weather conditions.

To improve our visibility of crops and waterways remote sensing, or the Council's drone could be used, however this would cause the survey to be more expensive, more time consuming, and permission from landowners would be required. If there is a large area of land not visible, then the landowners should be contacted to confirm the crops in the area. If crops can be identified but their distance from a waterway is not visible, then aerial photography can be used to estimate the distance and 'TBC' can be noted in the comments.

There was heavy rain on the 17<sup>th</sup>-22<sup>nd</sup> of January during the surveying period, causing low visibility and meant that it was hard to identify crops not on the roadside and therefore were classed as not visible. The 22<sup>nd</sup> of January had a heavy rain warning for the region and we did not go out due to the uncertainty of the coastal roads.

## 5.2 Survey Method

As stated in Section 2.0, this was the sixth year that the summer crop survey was done using a handheld tablet rather than recording the information on aerial maps. Two people conduct the surveying with one person entering the information on the tablet, whilst the other person drives. Densely cropped areas such as the Poverty Bay Flats require more pulling over, while coastal areas tend to require longer periods of driving between cropped land. Having two people conducting the survey allowed for data collection to be efficient. It is recommended that the same two people do the crop survey to maintain consistency in identification.

The software used to collect the crop data was Arc Collector, with the app Field Maps. Using Field Maps, the team was able to edit the GIS layer from the previous crop survey. Editing the previous layer allowed the survey to be completed more efficiently as most crop areas and crop type remained the same as the previous year. This method also reduced the time of the survey as the digitising was done in the field.

Digitising the data not only reduced the time of the survey, but it also increased the accuracy of the results. The ability to use a smaller scale allowed a detailed description of crop boundaries, by increasing the view of the paddocks and removing obstructions such as patches of bush, houses, sheds, shelter belts, and river edges.

The survey time could be reduced by excluding non-summer crops, such as pasture and to-be planted/tilled land which covered a large portion of the land surveyed (10,519.5 ha). Pasture was only recorded if the land area had previously been documented as having summer crops present. To-be planted/tilled land is important to record due to the implications of bare land exposure on water quality, where there is an increase in the likelihood of sediment running off the paddocks into nearby waterways.

The 2023/24 Summer Crop Survey began on the 8<sup>th</sup> of January 2024 and finished on the 23<sup>rd</sup> of January 2024, around the same dates as the previous surveys. In previous years, the summer crop survey has always begun on a date within the first two weeks of January and has been completed by the last week of that month. The timing of the summer crop survey varies the results each year, as only the crops present during the time of the survey are recorded.

## 6.0 Conclusion

In summary, the 2023/24 Summer Crop Survey covered a total of 24,376.2 hectares. 11,970.1 hectares were recorded as summer crops, with pasture, not-visible and to-be-planted/tilled land being excluded. Maize and sweetcorn were the most dominant crop types covering 5,248.8 hectares, followed by grapes covering 1,544.8 hectares, citrus covering 1,475.1 hectares, kiwifruit covering 822.2 hectares, chicory covering 743.4 hectares, apples and pears covering 653.3 hectares, and squash covering 482.3 hectares. These values show that a large area of land is being utilised during the summer period for cropping practices. A focus on the Taruheru Catchment showed long term trends in commercial cropping which may be partially responsible for the deteriorating trends in water quality observed in the Taruheru River.

Water threatened areas were identified that did not comply with the Freshwater Rules in Chapter C6 of the TRMP that came into effect on the 1<sup>st</sup> of May 2021. The total area classed as having a water threat went from 4,530.8 hectares in 2022/23 to 3580.3 hectares this year. This amounts to 14.7% of the total land surveyed in the Gisborne region. There has been a decline in the area classed as having a water threat in this year's survey compared to the previous year's survey (2022/23), decreasing by 950.5 hectares.

The purpose of this survey has been to outline the land use patterns within the Gisborne region and to promote sustainable land use practices. This can be achieved through the identification of cropping activities and water threatened areas, which will enable the Environmental Science Team to promote water and land quality management actions in the future.

# 7.0 Appendices

## Appendix 1 – Full results from the Summer Crop Survey 2023/24

Sum of Area (ha)	Locality					
Crop	East Cape/Ruatoria	East/Tolaga/Tokomaru	Mōtū/Mātāwai	Poverty Bay Flats	Te Karaka/Whatatutu	Total (ha)
Apples and Pears				566.68	86.59	603.7
Avocados	1.10			102.76	0.44	78.8
Baleage	27.73		9.77	9.41	5.17	212.5
Cauliflower/Broccoli				10.65		18.3
Chamomile		2.54		3.32	9.36	
Chicory	182.95	201.32		157.79	201.31	671.0
Citrus	9.57	24.28		1426.46	14.81	1549.9
Clover	11.19	30.97		39.13		176.4
Courgettes				0.15		31.0
Feijoa				40.35		45.3
Flowers				0.66		1.7
Grape Nursey					37.93	
Grapes		0.55		1463.54	80.72	1584.3
Kiwifruit		16.43		796.66	9.08	798.6
Leafy Turnip		6.08	2.42	36.47		123.0
Lettuce/Cabbage				29.87		56.7
Lucerne	73.80	6.90		95.46	21.09	360.6
Maize/Sweetcorn		841.57		3588.44	818.83	5785.5
Melons				0.92		17.7
Not Visible	49.85	184.80	117.66	931.98	602.28	1618.9
Oats				7.36		5.4
Olives	2.27			5.35		7.7
Other/Unknown	0.39	7.07	5.82	34.14	14.22	175.0
Pasture/Unused	2261.13	1664.96	702.82	4019.44	1090.67	9065.0
Persimmon				93.95	2.05	91.5
Pine Nursery				4.04	46.15	47.5
Pinenuts				1.33		1.5
Plantain	15.75	41.33				104.9
Plantain/Chicory				2.27		64.8
Plantain/Clover				1.91		39.0
Pomegranate				0.53	1.13	1.7
Poplar/Willow Nursery	0.59	0.39		14.72		11.4
Squash		50.95		363.59	67.73]	370.3
Stonefruit				14.20	5.42	20.1
Swedes				1.36		1.4
Tamarillo				7.51		6.0
To Be Planted		9.30		609.43	161.74	417.7
Tomatoes				9.20		120.6
Yarrow	24.02			10.18		59.1
<b>Grand Total (ha)</b>	<b>2660.34</b>	<b>3099.53</b>	<b>838.47</b>	<b>14501.12</b>	<b>3276.73</b>	<b>24354.1</b>
<b>Crop Total (ha)</b>	<b>349.36</b>	<b>1240.47</b>	<b>18.0</b>	<b>8940.27</b>	<b>1422.03</b>	<b>13252.5</b>

## Appendix 2 – Full results from the Taruheru Catchment over time

Crop (ha)	2007/08	2008/09	2009/10	2010/11	2011/12	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Apples and Pears	99.5	64.8	58.2	49.3	52	48.3	32	64	110.3	105.9	97.7	140.4	155.5	120.3
Avocados	18.4	11.4	13.7	29.2	35.2	13.6	16.5	16	20.2	20	33.6	31.7	35.3	27.6
Baleage									1.8	1.8	7.6	19.8	9.9	
Cauliflower/Broccoli	10.4	60.9	6.9	12.2	41.3	19.2	33.3	14.2	15.5	16.7	49	43.2		7.1
Chicory									2.1	56.6	31.5			3.5
Citrus	427.6	538.2	537	533	556.4	548.5	541.7	539.1	518.8	507.2	596.9	558.9	546.7	493.2
Clover									13.6	10.6	25.6	6.8	6.8	
Courgettes							1.3	1.4				60.2	31	
Feijoa						9.7	21.7	24.2	24.8	25.4	27.9	18.1	16.6	14.9
Flowers								0.6	0.6	0.6	0.6	0.6	0.6	0.3
Fodder Beet									7.8					
Forage rape									19.7				24.1	
Grapes	574.7	591.3	569.8	583.7	641.4	446.3	444.6	444.5	397.4	399.4	387	422.5	470.5	476.7
Kiwifruit	136.7	191.8	219.2	220.8	219.3	216.6	254.1	201.3	202.9	269.9	314.5	339.7	336.1	322.1
Leafy Turnip							36.9	20.1	39	23	0.7	11.3	39	
Lettuce/Cabbage	42.8	60.6	15.2	9.5	42.1	55.9	73.6	94.1	79.4	129.7	47.7	42.3	56.7	29.7
Lucerne			7.9	27.3		4.6	12.9	7.2	2.9		23	15.7	28	
Maize/Sweetcorn	639.3	879	935.5	853.8	848.9	1035.1	919.5	788.8	739.7	724.1	657.4	665.8	693.7	546.9
Melons	54.4	4.9	17.8	30.9	18.2	3.1	1.5	31.6	3	0.1	0.8		17.7	
Olives						0.4	0.7	1.7	1.3	1.3	1.2	1.2	1.2	1.2
Onions			1.7											
Other								30.8	15.8	39.1	70.5	10.6	17.4	1.3
Peas/Beans	1.3				51.1									
Persimmon	40.7		4.9	30.7	30.7	44.7	13.9	59.1	59.5	59.5	66	64.6	53.9	54.7
Pine Nursery								0.1	0.5	0.5	1.4	1.4	1.4	1
Plantain						27.9	10.8	5.9	5.2					
Plantain/Chicory									0.9	4.8	4.8	3.4	2.3	2.3
Plantain/Clover								49.5	5.6					
Pomegranate							1.2	1.5	1.6	0.6	0.2			
Squash	306.6	243.9	274.9	347.3	439.5	340.6	403	190.4	269.2	284.8	331.8	104.4	81.6	110.3
Stock Feed/Baleage							0.3							
Stonefruit	8.6	35.8	35.2	36.1	40	21	44.3	33.8	18.6	23.1	12.2	12.9	13.3	12.4
Strawberries			5.5	0.8	1.5		0.3	0.3	0.1					
Tamarillo	6.4		29.5	11.8	11.8	0.7	3	5.1	7	7.3	8.4	6.0	4.3	4.4
Tomatoes	257.1	141.3	211.2	208.2	111.6			22.3	36.3	4.3	24.6	42.9	13.2	6.2
Yarrow													1.8	0.2
<b>Grand Total (ha)</b>	<b>2624.5</b>	<b>2823.9</b>	<b>2944.1</b>	<b>2984.6</b>	<b>3141</b>	<b>2836.2</b>	<b>2867.1</b>	<b>2647.6</b>	<b>2621.1</b>	<b>2716.3</b>	<b>2822.6</b>	<b>2624.4</b>	<b>3645</b>	<b>2236.6</b>





## Appendix 3 - Tairāwhiti Resource Management Plan

### Rule 6.2.9(2)

- a) From **1 May 2021**, intensively farmed stock activities shall have prepared and submitted to the Consent Authority a Farm Environment Plan which has been certified by the Consent Authority as meeting the requirements outlined in Appendix H20. All dairy farming and intensively farmed stock activities shall be carried out in accordance with the actions and timeframes specified in the certified Farm Environment Plan. An annual report will be provided to the Consent Authority on the implementation of the Farm Environment Plan; except that
- b) Where the area of dairy farming or intensively farmed stock is less than 5 hectares, a Farm Environment Plan is not required provided that the activity complies with the following standards:
- i. Where the land slope is less than 15 degrees, no establishment of feed crops or irrigation of pasture is undertaken within 5 metres of the top of the bank of any permanently flowing stream, lake or wetland and within 10 metres of the top of the bank or edge of any Outstanding Waterbody identified in Schedule G18 or Regionally Significant Wetland identified in Schedule G17 A smaller setback of at least 1 metre can only occur where a Farm Environment Plan is prepared that demonstrates that this smaller setback will not adversely impact on the quality of receiving waterbody and this is certified by the Consent Authority;
  - ii. Where the land slope is between 15 and 25 degrees, no establishment of feed crops or irrigation of pasture is undertaken within 10m of any permanently flowing stream, lake or wetland. A smaller setback of at least 1 metre can only occur where a Farm Environment Plan is prepared that demonstrates that this smaller setback will not adversely impact on the quality of receiving waterbody and this is certified by the Consent Authority;
  - iii. No feed crops are established on land with a slope greater than 25 degrees;
  - iv. No cultivation occurs within 1 metre of open surface water drains.

#### **Advisory Note:**

Farm Environment Plans will be assessed by the Consent Authority for compliance with the information requirements in Appendix H20. If a Farm Environment Plan which meets the Appendix H20 requirements is not produced by the **1 May 2021** then existing intensively farmed stock activities will require a resource consent to continue.

### Rule 6.2.9(3)

Diffuse discharges from commercial vegetable growing and cropping activities lawfully established prior to 14 October 2015.

Classification: Permitted Activity

From **1 May 2021** onwards all commercial vegetable growing and cropping activities shall have prepared and submitted to the Consent Authority a Farm Environment Plan which has been certified by the Consent Authority as meeting the requirements outlined in Appendix H20. All commercial vegetable growing and cropping activities shall be carried out in accordance with the actions and timeframes specified in the certified Farm Environment Plan. An annual report shall be provided to the Consent Authority on the implementation of the Farm Environment Plan;

- b) From **1 July 2021**, no cultivation is undertaken within 5 metres of the edge of any modified watercourse, permanent or intermittent stream, except where the Farm Environment Plan can demonstrate that a smaller setback of at least 1 metre can occur without adversely impacting on the quality of receiving waterbody and this is certified by the Consent Authority.

**Advisory Note:** Farm Environment Plans will be assessed by the Consent Authority for compliance with the information requirements in Appendix H20. If a Farm Environment Plan which meets the Appendix H20 requirements is not produced by the **1 May 2021** then existing commercial vegetable growing and cropping activities will require a resource consent to continue.

**Advisory Note:** Refer to the definitions of Intermittent Stream and Modified Watercourse as many “drains” are likely to meet these definitions and the requirements of the rule.

#### **Rule 6.2.9(4)**

*Diffuse discharges from new commercial vegetable growing, cropping, dairy farming and intensively farmed stock activities established after 14 October 2015 except where they are within 20 metres of an Outstanding Waterbody identified in Schedule G18.*

*Classification: Permitted Activity*

- a) *A Farm Environment Plan which has been certified by the Consent Authority as meeting the requirements outlined in Appendix H20 must be prepared and submitted to the Consent Authority prior to the commencement of the activity. All commercial vegetable growing, cropping, dairy farming and intensively farmed stock activities must be carried out in accordance with the actions and timeframes specified in the certified. An annual report shall be provided to the Consent Authority on the implementation of the Farm Environment Plan;*
- b) *Where dairy farming or intensively farmed stock activities are within a paddock adjoining a waterbody, all livestock shall be excluded from 5 metres from the top of the bank or edge of any permanently flowing stream, or the edge of any lake or wetland, or within 10 metres of the top of the bank or edge of any Aquatic Ecosystem Waterbody identified in Schedule G15, or any Regionally Significant Wetland identified in Schedule G17, or within 20 metres of any Outstanding Waterbody identified in Schedule G18;*
- c) *All permanent and intermittent streams and rivers that are crossed by formed stock crossings as part of the intensively farmed stock unit shall be bridged or culverted. This must be done by 1 July 2019 or when the activity is established if after this date. However, cattle, deer and pigs are able to enter waterbodies for the purpose of crossing from one side to the other provided:*
  - i. *They are being supervised and are actively driven across the water body in one continuous movement; and*
  - ii. *This occurs less frequently than once per week;*
- d) *No cultivation is undertaken within 5 metres of the edge of any modified watercourse, permanent or intermittent stream, unless the Farm Environment Plan can demonstrate that a smaller setback of at least 1 metre can occur without adversely impacting on the quality of receiving waterbody and this is certified by the Consent Authority.*

#### **Rule 6.2.9(4)**

*Classification: Discretionary*

*Diffuse discharges that do not meet the permitted activity standards for the rules in section C6.2 or is not provided for by another rule in this Plan.*

## Appendix 4 - Definitions

### Definitions:

**Modified watercourse:** *A watercourse that meets any of following criteria:*

- *Is a river or stream that has been channelled or diverted.*
- *Is a drain (as defined in this Plan) constructed through a wetland or swamp that generally follows the path of a historic natural watercourse or reasonably defined natural drainage channel?*
- *Is a watercourse that has a natural headwater of either a channel or spring, and generally follows the path of a historic natural watercourse or reasonably defined natural drainage channel is the oxbow of a diverted river.*

**Intermittent stream:** *A stream that flows seasonally when the water table is high, such as during and after periods of heavy or steady rain. An intermittent stream has:*

- a defined water channel and banks; and
- connects with a permanently flowing surface water body; and
- provides habitat for aquatic flora and/or fauna species.

**Drain:** *Any natural channel which has been modified to lower the water table or divert water.*