NEW ZEALAND SURVEY OF MAIZE AREAS AND VOLUMES: OCTOBER 31, 2021

AIMI
Arable Industry Marketing Initiative

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The objective of this AIMI survey of maize growers in New Zealand (NZ) was to determine:

- *final figures for the 2021 harvest of maize grain and silage*
- *sales of the 2021 harvest of maize grain since June 1, 2021*
- *levels of unsold maize grain from the 2021 harvest*
- *sowings and sowing intentions for the current season for maize grown for grain and silage*

Survey details

The data from 91 NZ survey farms who completed all of the last three maize surveys (October 2020 and June and October 2021), as at October 31, 2021, were scaled up to the national level using the most recent, 2020, final NZ Agricultural Production Statistics (APS) for maize grain and maize silage. As with all surveys, there is a margin of error which needs to be considered in relation to this report. These figures reflect the position at the 31st October 2021 and there will have been changes since this time.

Key Points as at 31 October 2021 (figures have been rounded to nearest 100):

- Final average yield of maize grain (11.7 t/ha) for the 2021 NZ harvest was similar to that obtained last season (11.8 t/ha), whereas final average yield of maize silage (21.1 t dry matter (DM)/ha) was slightly up on the 20.3 t DM/ha obtained last season.
- The estimated final total tonnage of 215,000 tonnes for the **maize grain** 2021 NZ harvest was 13% up on last season's harvest tonnage (190,100 t), as the result of a similar yield and an increased harvest area (up 14%). An estimated 100% of the total crop had been sold as at October 31, 2021 (as compared to 99.7%, or 700 tonnes, unsold on June 1, 2021). This was identical to the unsold tonnage (also zero) on 31 October, 2020 (note that stocks held by merchants were not considered here).
- For **maize silage**, the estimated final total tonnage of 1,163,800 tonnes DM for the 2021 NZ harvest was down 5% compared to last season's harvest tonnage (1,222,600 t DM). This was a result of an increased yield (up 4%) and a reduced harvest area (down 8%).
- Spring 2021 sowings and sowing intentions for **maize grain** as at 31 October 2021, were estimated to be down 10% on the area harvested last season. Sowing was 77% complete and an estimated 60% of the 2022 maize grain harvest had been forward sold. For **maize silage**, spring 2021 sowings and sowing intentions were estimated to be up 2% on the area harvested last season. Sowing was 59% complete and an estimated 89% of the 2022 maize silage harvest had been forward sold.
- Sowings of both crops had been held up by wet weather in several regions. Some crops had been flooded and there was uncertainty whether these would recover or need to be re-sown, and if these delayed sowings would incur yield penalties.

Note: This survey only accounts for sales off farm and not what may be held by merchants.

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Table 1. Final estimated national NZ figures for the 2021 harvest of maize grain and maize silage crops, plus sold and unsold tonnages of maize grain, as at October 31, 2021.

	Units	Maize grain	Maize silage
Number of farmers in the survey who harvested this crop in 2021		25	72
2020 harvest			
Estimated NZ total hectares, 2020 harvest	ha	16,100	60,110
Estimated NZ total tonnes, 2020 harvest	tonnes	190,100	1,222,580
2021 harvest			
Estimated NZ total hectares, 2021 final harvest figures	ha	18,358	55,241
Estimated NZ total tonnes, 2021 final harvest figures	tonnes	215,010	1,163,817
Sold under pre-harvest contract by October 31, 2021	tonnes	209,588	-
Sold at spot/free price by October 31, 2021	tonnes	4,499	
Used on own farm by October 31, 2021	tonnes	923	-
Unsold stocks on hand (2021 harvest only) on October 31, 2021	tonnes	0	-
Total sales (2021 harvest)			
Sold (grand total) by October 31, 2021 (includes used on farm)	tonnes	215,010	-
Unsold stocks on hand (from 2021 harvest) on October 31, 2021	tonnes	0	-
Comparison of hectares and tonnages between the last two harvests			
Estimated % change in hectares, 2020 to 2021 harvest	%	14.0	-8.1
Estimated % change in tonnes, 2020 to 2021 harvest	%	13.1	-4.8
Comparison of final yields (t/ha) between the last two harvests			
NZ-wide estimated yield, 2020 harvest	t/ha	11.8	20.3
NZ-wide estimated yield, 2021 harvest	t/ha	11.7	21.1
Unsold stocks on hand on June 1, 2021, the last survey date (based upon matched data)			
Unsold stocks on hand (from 2021 harvest) on June 1, 2021 (of total crop)	tonnes	671	-
2020 harvest sales at same time last year, October 31, 2020 (based upon matched data)			
Sold under pre-harvest contract by October 31, 2020 (2020 harvest)	tonnes	188,455	-
Sold at spot/free price by October 31, 2020 (2020 harvest)	tonnes	755	
Used on own farm by October 31, 2020 (2020 harvest)	tonnes	890	-
Unsold stocks on hand (from 2020 harvest) on October 31, 2020	tonnes	0	-

Note: The matched comparisons in the last two sections were based upon scaling up data from the exact same survey farms for the last three AIMI maize surveys. Statistics NZ is gratefully acknowledged for supplying final 2020 NZ Agricultural Production Statistics data on total hectares and tonnes for maize grain, and total hectares for maize silage.

In Table 1, the unsold tonnage of the 2021 harvest of maize grain was at a very low level at the time of the AIMI survey dated June 1, 2021, and has reduced to zero as at October 31, 2021. This compares to zero tonnes of unsold tonnage at the same time last year.

Table 2. Estimated NZ sowings, sowing intentions and forward sales of maize grain and maize silage as at October 31, 2021.

	Maize grain (ha)	Maize silage (ha)
Number of farmers in survey who have sown or intend to sow this crop as at October 31, 2021	**23**	**69**
Estimated NZ total hectares, 2020 harvest	16,100	60,110
Estimated NZ total hectares, 2021 harvest	18,358	55,241
Sowings and intentions, 2021/2022 season (hectares, for harvest in 2022)		
Estimated NZ total hectares already sown by October 31, 2021	12,693	33,106
Estimated NZ total hectares intending to sow after October 31, 2021	3,744	23,460
Estimated NZ total hectares (sowings and intentions), 2022 harvest	16,437	56,566
% of predicted NZ hectares which had already been sown by October 31, 2021	77%	59%
"Forward sales" of 2021/2022 crop (including "for own use")		
Predicted NZ total hectares that are "forward sold", as at 31 October, 2021	9,829	50,088
Estimated percentage of NZ total hectares that are "forward sold", as at 31 October, 2021	60%	89%
Comparison of hectares between the 2020, 2021 and 2022 (predicted) harvests		
Estimated % change in NZ total sowings, 2020 to 2021 harvest	14.0	-8.1
Estimated % change in NZ total sowings, 2021 to 2022 (predicted) harvest	-10.5	2.4
Comparison of sowing intentions as at June 1, 2021 with sowings plus intentions as at Oct 31, 2021 (based upon matched data)		
Estimated NZ total 2021 sowing intentions as at June 1, 2021 (hectares, for harvest in 2022)	18,273	55,177
Change in estimated NZ total 2021 sowings & intentions between June 1, 2021 and Oct 31, 2021 (hectares, for harvest in 2022)	-1,836	1,388

Note: The matched comparisons in the last two sections were based upon scaling up data from the exact same survey farms for the last three AIMI surveys.

In Table 2, the estimated area sown plus sowing intentions for maize grown for grain was down 10% this season as compared to what was harvested last season (2021 harvest). The estimated sowings plus intentions for maize grown for silage was up 2% on what was harvested last season (2021 harvest). As at 31 October 2021, maize grain sowing was 77% complete, although this included some crops which need to be re-sown since they had been flooded out. Maize silage crops were 59% sown, with wet weather holding up sowing in several regions. Firmer estimates for area will be determined in the June 2022 survey.

The 2022 maize grain harvest was estimated to be 60% forward sold to other parties; this left 40% as free grain, unspoken for as at 31 October, 2021. The 2022 maize silage harvest was estimated to be 89% forward sold as at 31 October, 2021, including 49% of the harvest which was estimated to be for the “own use” of the growers.

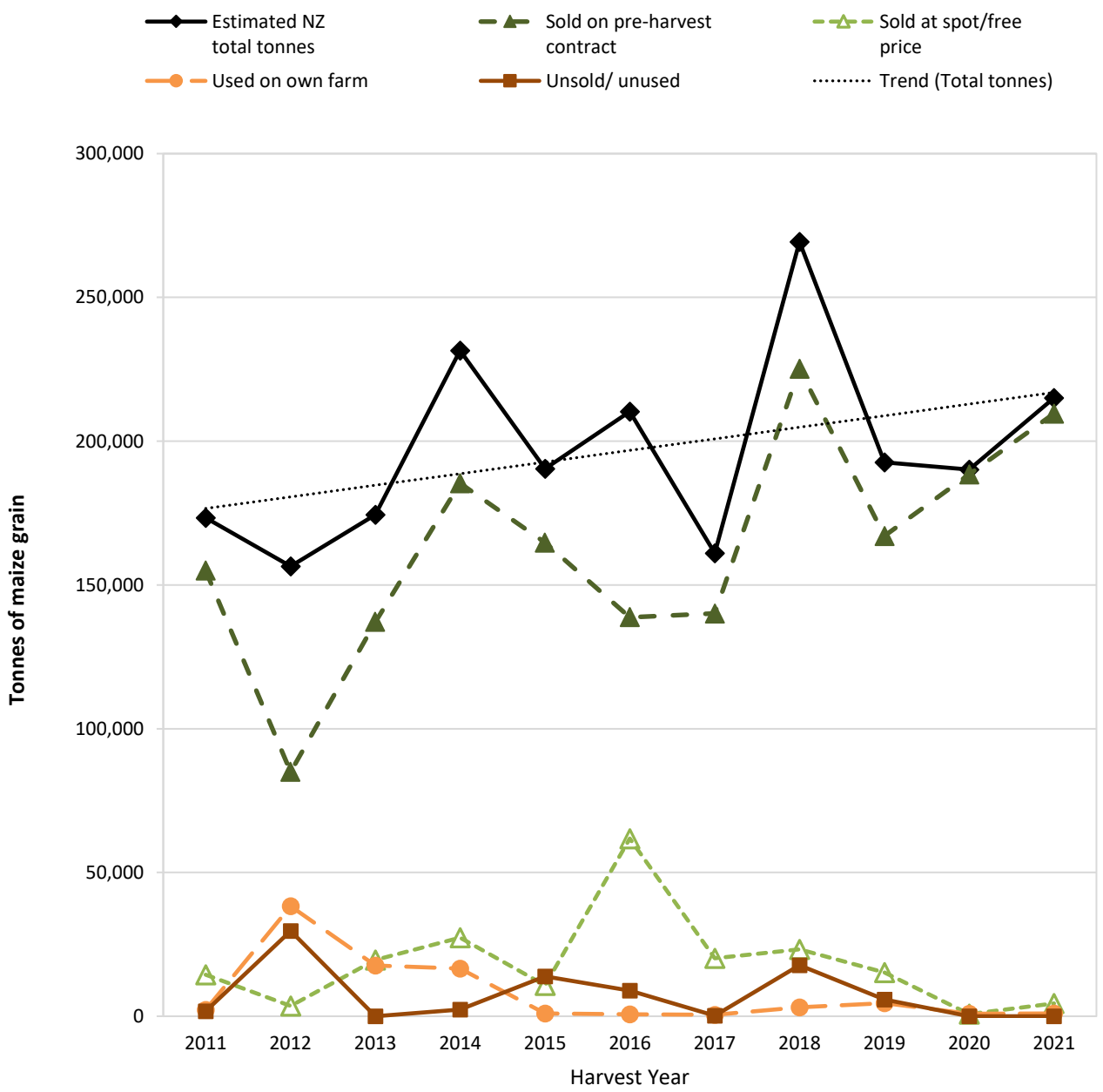

Figure 1. Maize grain final NZ harvest tonnages and sales as estimated in October each year.
Trend line for total estimated tonnes is shown as a dotted line.
Note: Historical data for 2011 to 2019 are from October AIMI Maize Reports for 2019 and earlier, while data for 2020 and 2021 are matched data from the current report.

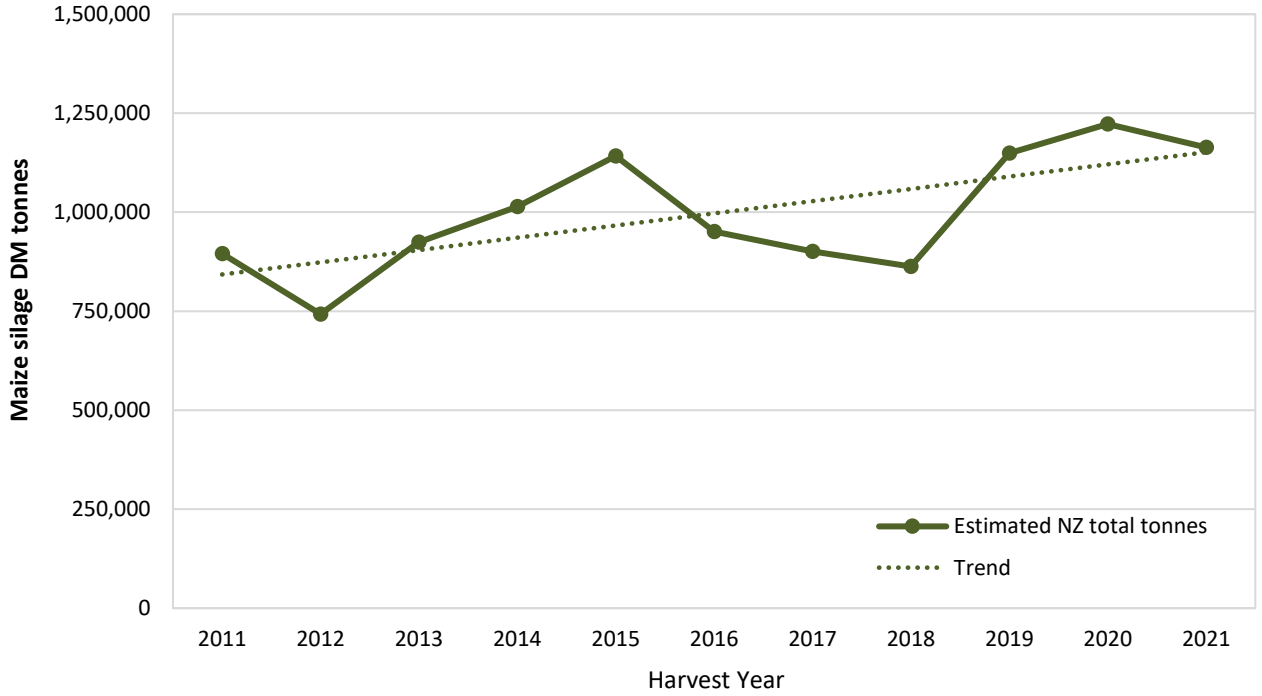

Figure 2. NZ maize silage harvest tonnages (dry matter) estimated in October each year.
Trend line for total estimated tonnes is shown as a dotted line.
Note: Historical data for 2011 to 2019 are from the annual October AIMI Maize Reports, except that estimates for 2011 to 2014 have been retrospectively adjusted in the light of recently obtained APS hectare estimates for each preceding year. Data for 2020 and 2021 are matched data from the current report.

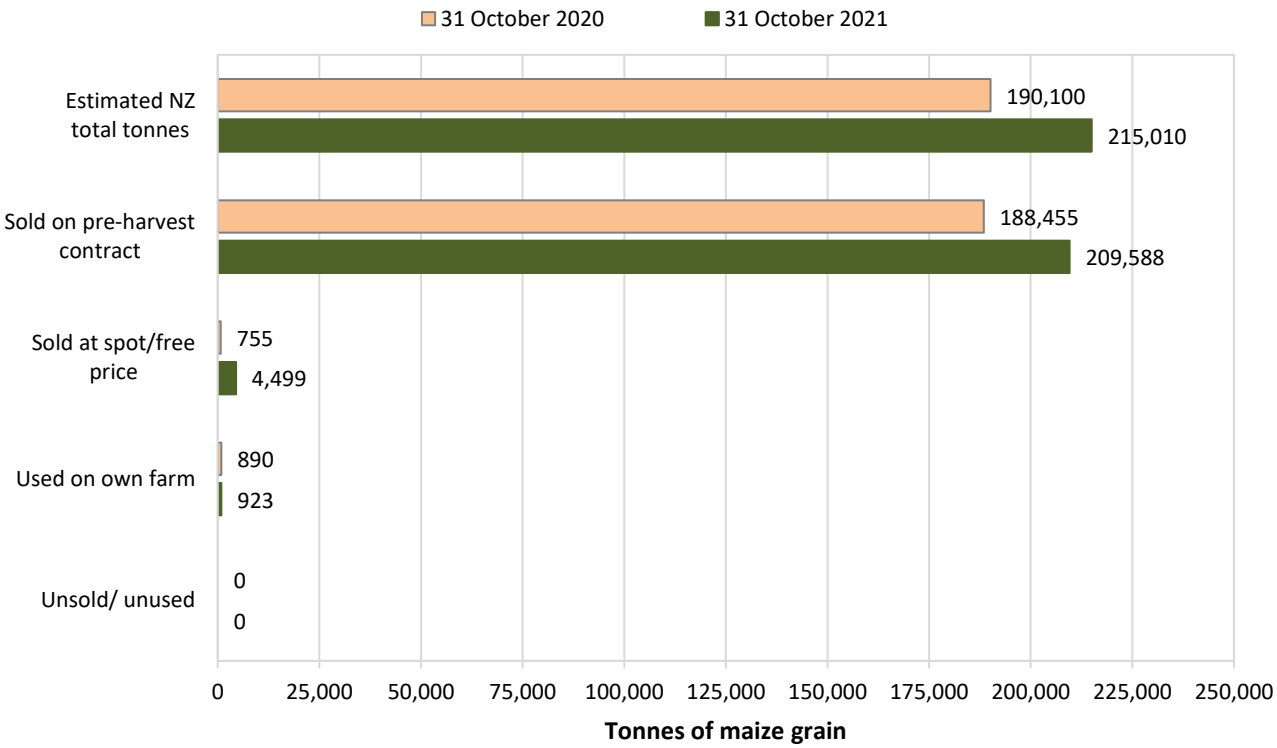

Figure 3. Comparison of maize grain tonnages and sales for NZ harvest between October 31, 2020 and October 31, 2021. These data are also reported in Table 1. All estimates are based upon scaling up data from growers in the current survey sample, so provide a more precise matched comparison.

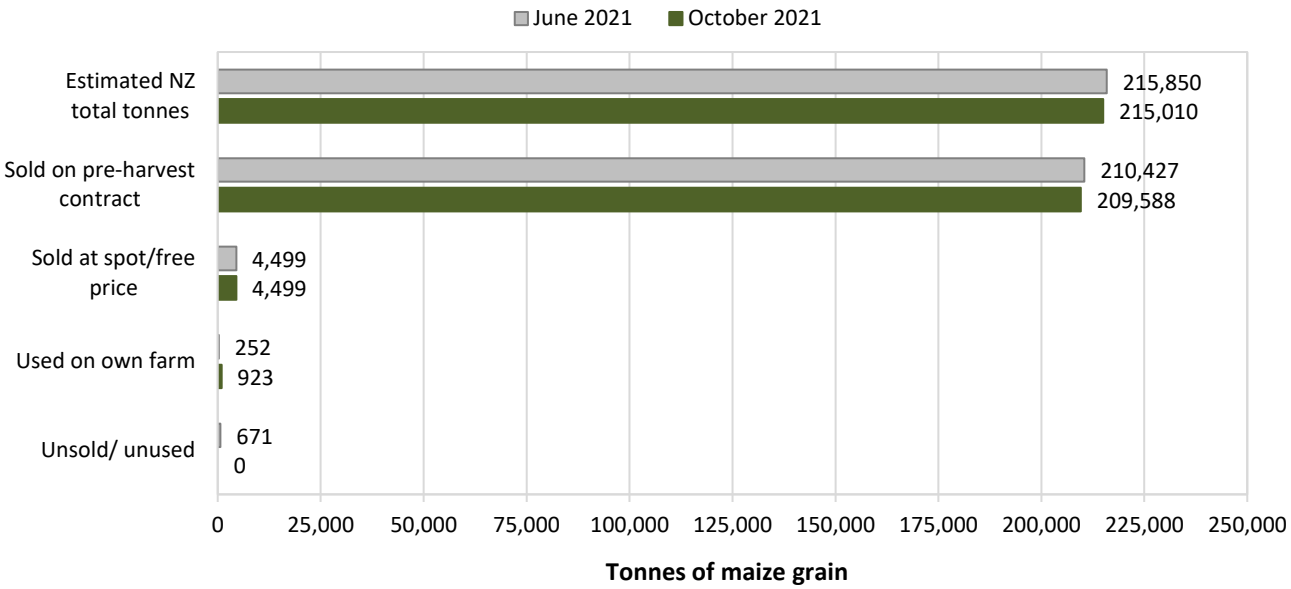

Figure 4. Comparison of maize grain tonnages and sales for the 2021 NZ harvest between June 1 and October 31, 2021.
Note: June estimates contain estimates from unharvested crop. All estimates are based upon scaling up data from growers in the current survey sample, so provide a more precise matched comparison.

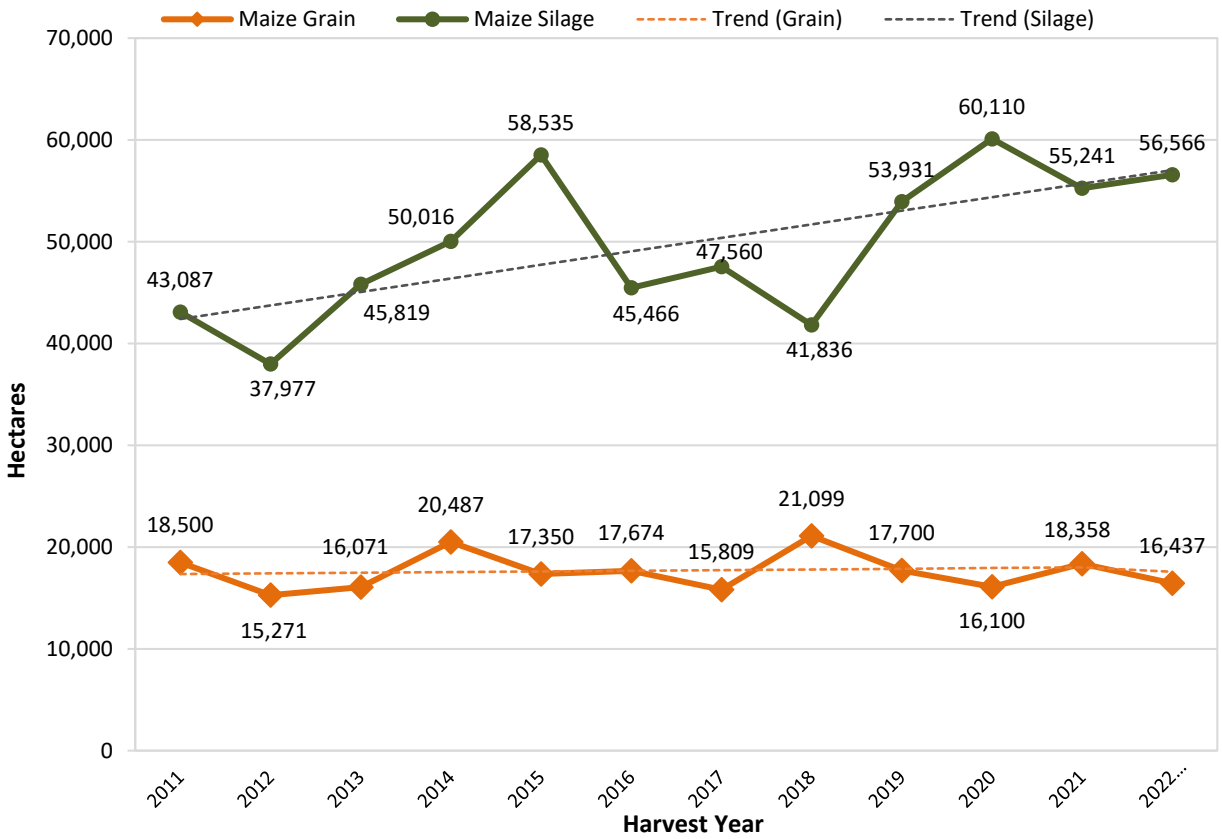

Figure 5. NZ harvest hectares estimated in October each year, from 2011 to 2021, and predicted hectares for harvest in 2022. Trend lines are shown as dotted lines.
Note: Figures for 2020, 2021 and 2022 (predicted) are matched data from the current report (Table 2). Other figures are sourced from previous October AIMI Maize Reports except that for maize silage, estimates for 2011 to 2014 have been retrospectively adjusted in the light of recently obtained APS hectare estimates for each preceding year.

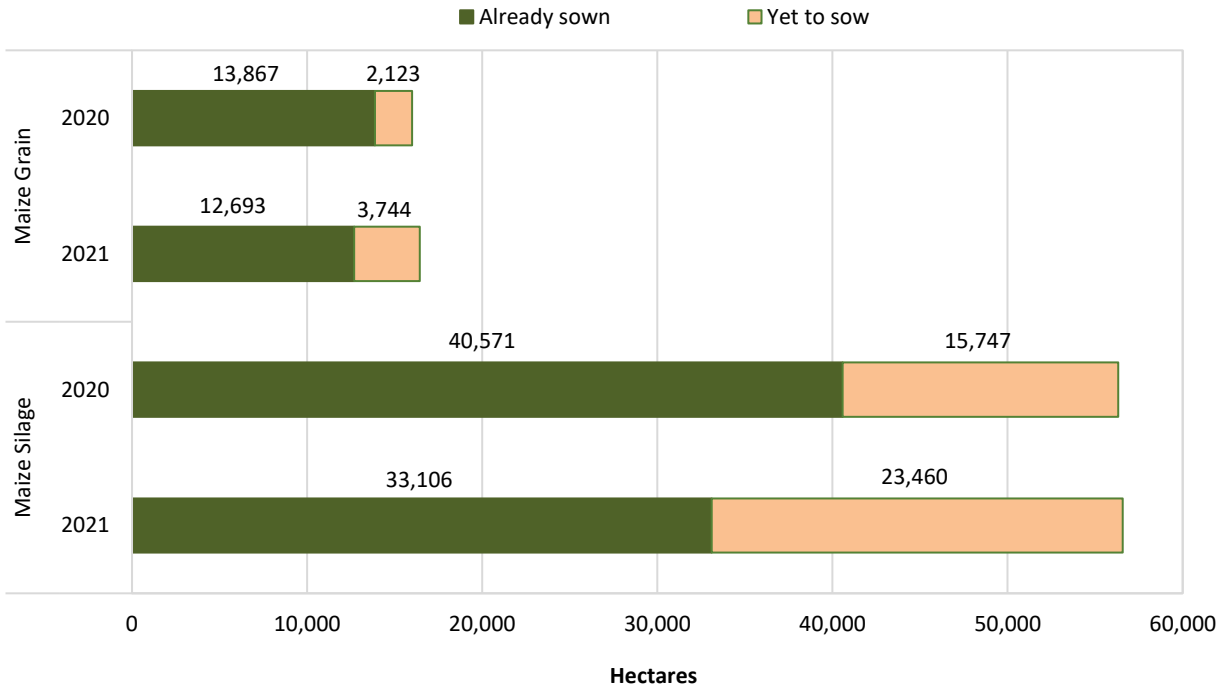

Figure 6. Estimated NZ hectares of maize already sown in spring 2021, together with NZ hectares yet to sow (spring intentions) for harvest in 2022, based on data collected on October 31, 2021. For comparison, the corresponding 2020 estimates (for harvest in 2021) are also given, based on data collected on October 31, 2020. As in Figures 3 and 4, the latter estimates are based upon scaling up October 31, 2020 data from growers in the current survey sample, so provide a more precise matched comparison.

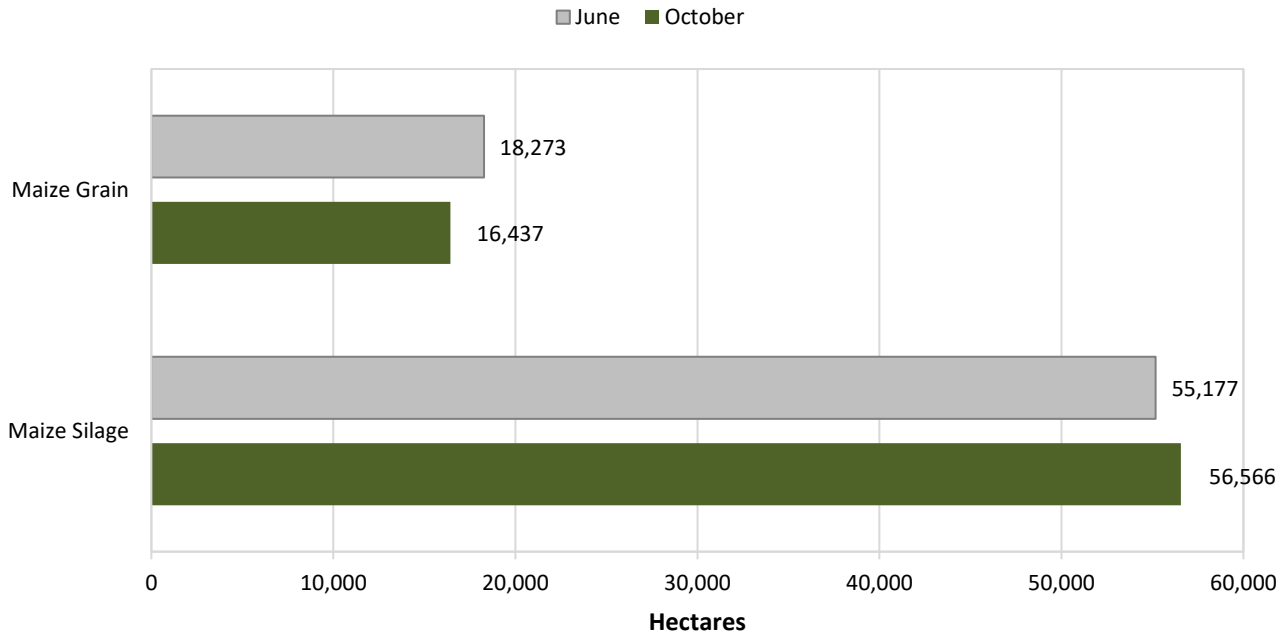

Figure 7. Comparison of NZ spring maize sowing intentions as at June 1, 2021 with actual sowings plus intentions as at October 31, 2021. These data are also reported in Table 2. As in Figures 3, 4 and 6, this is a matched comparison.

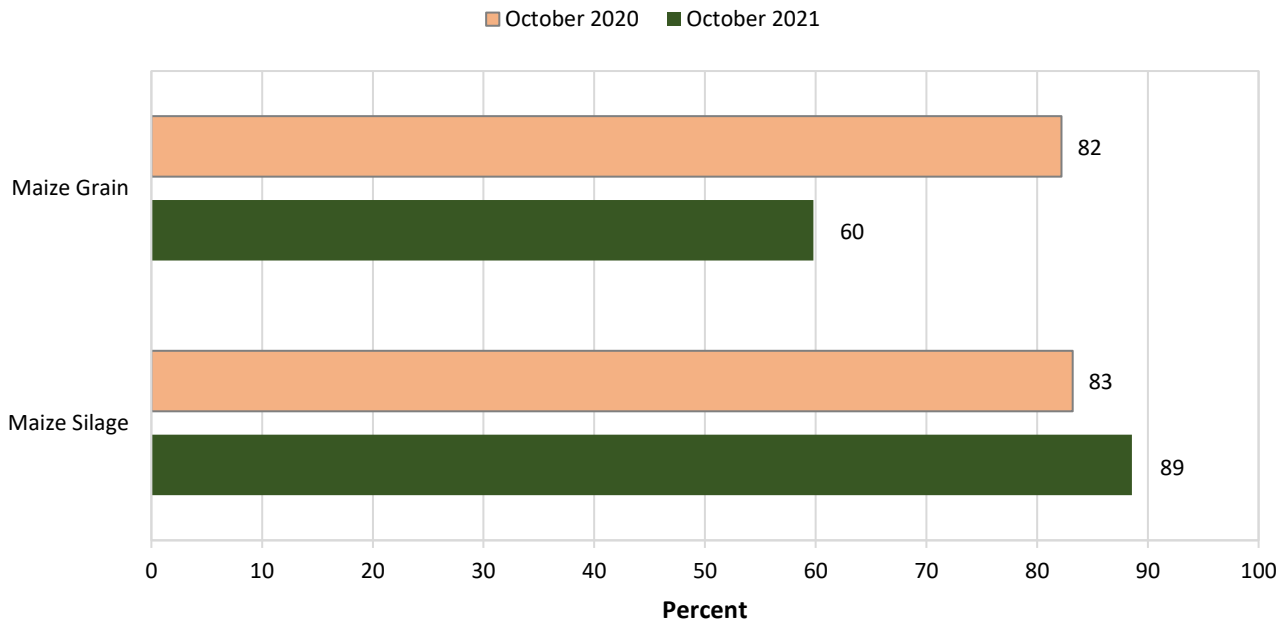

Figure 8. Percentage of total NZ maize crop (spring sowings plus spring intentions) that had been forward sold as at October 31, 2020 (for predicted 2021 harvest) and October 31, 2021 (for predicted 2022 harvest). (Includes silage crops grown for use on own farm.) As in Figures 3, 4, 6 and 7, this is a matched comparison.

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FOR AIMI COMMITTEE ONLY: APPENDIX & REGIONAL DATA

NEW ZEALAND SURVEY OF MAIZE
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Maize survey panel	110
Number completing October survey	108
Report group (must complete Oct 20, June 21 & current survey)	**91**

NNI	Northern North Island
ENI	Eastern North Island
SWNI	South & West North Island
NSI	Northern South Island
MC	Mid Canterbury
SCNO	South Canterbury, North Otago

Regional Breakdown

Maize Grain 2021 Harvest (data scaled up to NZ figures):

MAIZE GRAIN	Number harvesting	Ha's harvested	Tonnes harvested	% of total tonnage	t/ha	Number sowing	Sowings & Intentions (ha)
NNI	9	5,466	63,668	30	11.6	7	5,400
ENI	9	9,497	112,040	52	11.8	10	7,798
SWNI	6	2,804	32,321	15	11.5	5	2,422
NSI	-	-	-	-	-	-	-
MC	1	591	6,983	3	11.8	1	816
SCNO	-	-	-	-	-	-	-
Total	**25**	**18,358**	**215,010**	**100**	**11.7**	**23**	**16,437**

Maize Silage 2021 Harvest (data scaled up to NZ figures):

MAIZE SILAGE	Number harvesting	Ha's harvested	Tonnes harvested	% of total tonnage	t/ha	Number sowing	Sowings & Intentions (ha)
NNI	41	33,073	711,295	61	21.5	40	34,364
ENI	6	4,193	82,602	7	19.7	6	4,096
SWNI	19	14,337	289,524	25	20.2	17	14,196
NSI	2	1,851	39,533	3	21.4	2	2,042
MC	3	1,545	35,055	3	22.7	3	1,568
SCNO	1	242	5,807	0	24.0	1	300
Total	**72**	**55,241**	**1,163,817**	**100**	**21.1**	**69**	**56,566**

Grower comments:

Mostly around sowing conditions and the season ahead –Wet conditions and flooding had affected some crops: 6 reports of having to redrill grain crops after flooding/drowning in ENI and NNI. The wet also delaying sowing of silage crops. SWNI reporting good conditions compared to last year.

Comments about big jump in the cost of fuel and fertiliser, seed and other inputs going up, returns are getting lower. Demand for maize due to good dairy payout

Totals over 91 survey responses

In Table A.1, the average yield per hectare of maize grain on the survey farms was very similar between the 2020 and 2021 harvests. For maize silage, the average yield per hectare on the survey farms was up 0.7 t DM/ha between the 2020 and 2021 harvests.

Table A.1 Maize grain and silage data totalled over all survey respondents			
	Units	Maize grain	Maize silage
Number of farmers in the survey who harvested this crop in 2021		25	72
2020 harvest			
Total hectares on survey farms, 2020 harvest	ha	1,716	3,105
Total tonnes on survey farms, 2020 harvest	tonnes	22,651	63,161
2021 harvest			
Total hectares on survey farms, 2021 final harvest figures	ha	1,956	2,854
Total tonnes on survey farms, 2021 final harvest figures	tonnes	25,620	60,125
Sold under pre-harvest contract by October 31, 2021	tonnes	24,973	-
Sold at spot/free price by October 31, 2021	tonnes	536	-
Used on own farm by October 31, 2021	tonnes	110	-
Unsold stocks on hand (2021 harvest only) on October 31, 2021	tonnes	0	-
Comparison of yield (tonnes per ha) on survey farms between harvests			
Survey farms, 2020 harvest	t/ha	13.2	20.3
Survey farms, 2021 harvest	t/ha	13.1	21.1
Unsold grain on June 1, 2021 (last survey) on these SAME survey farms			
Unsold (from 2021 harvest) on June 1, 2021 (of total crop)	tonnes	80	-
2020 harvest sales at same time last year, October 31, 2020, on these SAME survey farms (for a matched comparison)			
Sold under pre-harvest contract by October 31, 2020 (2020 harvest)	tonnes	22,455	-
Sold at spot/free price by October 31, 2020 (2020 harvest)	tonnes	90	-
Used on own farm by October 31, 2020 (2020 harvest)	tonnes	106	-
Unsold stocks on hand (2020 harvest only) on October 31, 2020	tonnes	0	-

In Table A.2, the data on sales of the maize grain crop in Table A.1 are expressed as percentages.

Table A.2 Fate of 2021 maize grain crop, in percentages (by tonnes)		
		Maize grain
Number of farmers in the survey who harvested this crop in 2021		25
2021 harvest		
% Sold under pre-harvest contract by October 31, 2021		97.5
% Sold at spot/free price by October 31, 2021		2.1
% Used on own farm by October 31, 2021		0.4
% Unsold stocks on hand on October 31, 2021		0.0
Total sales (2021 harvest)		
% Sold (of total crop) by October 31, 2021 (includes used on own farm)		100.0
% Unsold (of total crop) on October 31, 2021		0.0

In Table A.3, the 2021 spring sowings and sowing intentions as at October 31, 2021 for maize grain and maize silage are given as hectares totalled over the survey farms. For comparison, the total hectares harvested in 2020 and 2021 are given for the exact same set of farms. For maize grain, sowings and sowing intentions as at October 31, 2021 on the survey farms are down 10% on what was harvested last season. For maize silage, sowings and sowing intentions as at October 31, 2021 on the survey farms are up 2% on what was harvested last season.

The 2022 maize grain harvest is estimated to be 60% forward sold, while the 2022 maize silage harvest is estimated to be 89% forward sold. The latter included 49% of the silage which was destined for the own use of the grower.

Table A.3 Maize grain and silage sowings and intentions (totalled over all survey respondents)		
	Maize grain (ha)	Maize silage (ha)
Number of farmers in survey who have sown or intend to sow this crop as at October 31, 2021	**23**	**69**
Number of farmers in survey who have sown this crop by Oct 31, 2021	**20**	**44**
Number of farmers in survey who intend to sow this crop after Oct 31, 2021	**9**	**38**
Total hectares on survey farms, 2020 harvest	1,716	3,105
Total hectares on survey farms, 2021 harvest	1,956	2,854
Sowings and intentions, 2021/2022 season (hectares, for harvest in 2022)		
Hectares already sown on survey farms by October 31, 2021	1,353	1,710
Hectares intending to sow on survey farms after October 31, 2021	399	1,212
Total hectares (sowings and intentions) on survey farms for harvest in 2022	1,752	2,922
Estimated % change in sowings on survey farms, 2021 to 2022 (pred) harvest	-10.5	2.4
"Forward sales" of 2021/2022 crop (including "for own use")		
Total hectares on survey farms that are "forward sold", as at Oct 31, 2021	1,047	2,588
Percentage of hectares on survey farms that are "forward sold", as at Oct 31, 2021	60	89

Calculation of scale-up factors

To scale the 91-farmer survey totals up to NZ national totals, Final 2020 APS statistics for maize grain and maize silage were used (Table A.4).

For maize grain, the 2020 harvest yields in tonnes/ha are also included in the table, to give an indication of how the survey farms compared with the APS figures; overall, survey farm yields were higher than APS yields (13.2 versus 11.8 tonnes/ ha). For maize silage, the average 2020 harvest dry matter (DM) yield on the survey farms was 20.3 tonnes DM/ ha.

From the scale-up factors, we can see what percentage of the area of each 2020 harvest crop was on the survey farms. For maize grain, it was 100/ 9.384 = 10.7%, while for maize silage it was 100/ 19.357 = 5.2%. That is, for maize grain about 1/9th of hectares were sampled in the survey, while for maize silage about 1/19th of hectares were sampled. That is, a higher percentage of the maize grain area was sampled than for maize silage. Part of the reason may be that maize grain growers are better represented in the FAR levy list than maize silage growers, so a higher percentage of the population of maize grain growers was selected for the survey than of the population of maize silage growers.

Table A.4 Scaling up from survey totals to NZ-wide totals using Final 2020 Agricultural Production Statistics (APS)			
	Units	Maize grain	Maize silage
Total hectares on survey farms, 2020 harvest	ha	1,716	3,105
Total tonnes on survey farms, 2020 harvest	tonnes	22,651	63,161
Total hectares for 2020 harvest (Final APS statistics for silage and grain)	ha	16,100	60,110
Total tonnes for 2020 harvest (Final APS statistics for maize grain only)	tonnes	190,100	-
Multiplier for scaling up from survey farms to APS statistics			
Hectares		9.384	19.357
Tonnes		8.392	19.357
Comparison of yields between survey and APS statistics			
Survey farms, 2020 harvest	t/ha	13.2	20.3
APS statistics, 2020 harvest	t/ha	11.8	-

Statistics New Zealand is gratefully acknowledged for supplying final 2020 NZ Agricultural Production Statistics data on total hectares and tonnes for maize grain, and total hectares for maize silage.