

Update on Tasmanian Maize crop, Sept 2020.

Prepared by Ian Herbert, Southern Farming Systems, Tasmania

Summary

For those who ventured into growing maize over the 2019/20 summer it has certainly been a learning experience with a difficult season delivering less than expected yields of around 10t/ha of grain which did not meet grain delivery specifications.

In the coming season growers are again planning to plant maize and will aim to sow earlier and include shorter season varieties in the plantings where possible.

Season summary

The growing season was a difficult one which included issues such as irrigation water shortages, a very windy dry spring with cooler conditions. This was then followed by one of the wettest autumns on record delaying dry down and the harvesting of crops. Many crops were unable to reach the required grain test weight specifications, creating uncertain about the sale of the grain. Some crops remain unharvested and are unlikely to be harvested until late September 2020.

A number of crops remain un-harvested, so final yield results are not all available and given the fast-approaching Spring period I have summarised some yield information to help growers make decisions. Thank you to all who have provided this information and to those who are assisting in growing the crops. A summary of yields is tabulated below.

Table 1 : Trial strips and surveyed maize crop results from 2019/20 season.

Location	Variety	t/ha @ 14%	Harvest moisture	Moisture above 14%	Cobs/m row
Ormley	Asterix	9.2	23.9	9.9	6.9
Ormley	Obelix	9.0	22.7	8.7	5.8
Ormley	Obelix-twin row	8.5	22.4	8.4	8.2
Ormley	9400	10.7	22.2	8.2	6.3
Ormley	9911	9.4	32	18	7.2
Ormley	Pd yield (mostly 9400)	9.5			
Pisa	Obelix	9.0			
Sisters Crk	9400	11.04			
Sisters Crk	9911	10.08			

Ormley variety strips

With the assistance of the crew at 'Ormley' and Terry Horan from Nutrien, strips of 4 varieties of maize were planted on the 7 November 2019 and harvested through June and July in 2020. The majority of the paddock was sown to Pioneer's 9400, with the paddock taken through to grain harvest with a small area being chopped for silage. Including the trial strips a total of 210t of grain was harvested from 22ha, giving an average yield, (including the chopped area) of 9.5t/ha, not quite the yield that was desired.

Like many growers, harvesting of the maize at Ormley was difficult given the weather conditions, fortunately Ormley have a smaller capacity grain dryer so were able to chip away at harvest, drying

and delivering small batches of grain as conditions allowed. The paddock had some slope and as a result bogging of machinery was only an issue in some areas, rather than the whole circle.

Also like many growers the test weight of the maize grain was lower than the contract requirement of 65. The consensus is that the crop did not have enough time to finish grain fill before the season turned. Perhaps this is due to the tough windy and dry spring that was experienced which did not provide suitable conditions, particularly enough heat for the crop to grow well through the vegetative and then reproductive stages. Then the very wet autumn conditions did not allow the crop to finish maturing as normally expected.



Figure 1 Ormley harvesting equipment

The strips were harvested using a John Deere harvester fitted with a 6-row corn front and the grain weighed in a mixing wagon with scales, (normally used in the on-farm field lot). The trial was not replicated so the data being presented is an average of each treatment. Harvesting was completed during the first week of July and was a slow process interrupted by harvester bogging events.

Grain moisture data was also collected to try and identify if some varieties had a quicker dry down time than others. This data should also be considered as an indication as strips were harvested at different times of the day given their location within the circle, i.e. daily variation in moisture levels was not accounted for. In addition, the wet weather may have also reduced the potential grain moisture difference between the varieties at a certain point in time.



Figure 2 Harvesting individual variety strips at Ormley and damage to stems following strong wind event

The highest average grain yield of 10.7t/ha at a moisture of 14% was achieved by the Pioneer variety 9400. The longer season Pioneer variety 9911 yielded around 9.4t/ha and as expected was much slower maturing than the others and was harvested with a high moisture level of 32%, visually it was much greener for longer than the other varieties as the growing season neared completion.

The HSR variety Asterix yielded around 9.2t/ha compared to the other HSR variety Obelix which yielded around 9.0t/ha. The trial area was impacted by abnormally severe winds late in the season with damage being evident in all varieties, in particular, the variety Obelix was impacted severely with small areas where the wind was strongest causing the majority of plant stalks to fracture and lodge about 60cm from the ground(see picture). This made harvesting difficult and perhaps is reflected in the lower yields of Obelix.

In Northern America some growers are planting their maize in 2 rows adjacent to each other, by nudging the GPS at planting and adjusting the seeding rate down, the Ormley trial area also had a twin row treatment. This treatment had the highest number of cobs per meter of row. However, we also noted that it had much smaller cobs, with the treatment being the lowest yielding strips at an average of 8.5t/ha.

To help the grain dry down the cob as it ripens will droop towards the ground, with the help of gravity this ensure moisture is not trapped by the leaves around the cob. All varieties exhibited good cob droop similar to the picture below.



Figure 3 Maize cob droop demonstration.

Pisa Estate crop

The crop grown near Cressy by Pisa Estate was the HSR variety Obelix and planted on 20 November 2019. It yielded 9t/ha with a disappointing test weight of 55. The grower feels that his planting date was too late and then given the difficult season the plants were unable to complete grain fill.

A standard harvester front normally used for harvesting cereals was used to harvest the crop and it was noted that large numbers of cobs were on the ground following the harvest operations. If maize becomes part of the cropping programme a destined corn front will be purchased.

North West coast

At Sisters Creek on the North West Coast, Michael Nichols successfully harvested his maize in July also obtaining less than desired yields. He has an on-farm dryer so was able to harvest his grain at high moisture percentages of up to 35% and then dry it down. He had the Pioneer varieties 9400 and 9911 sown. The variety 9400 yielded just over 11.0t/ha at 14% moisture and the longer season 9911 yielded 10.0t/ha at 14% moisture and was noticeably greener and damper at harvest time.

Both varieties also had a low-test weight and a feed test was conducted with the results showing the grain had a ME value of 13.4MJ, 9% protein and digestibility of 91.5. His dairy farmer clients have advised that at these numbers the maize grain is suitable for inclusion in their cow rations.

Michael has noted each of his cobs had about 400 grains per cob which is 50 to 100 less than he expected, suggesting individual plants reduced yield potential due to seasonal conditions. The reduced number of grains in combination with the lighter grain weight Michael feels has had large impact on the final yield he achieved.

His crop was planted on 500mm rows and he thinks a wider row spacing of 750mm is more desirable. This would let more light into the crop when it is growing and allow more air to circulate

when it is drying down. In the coming season he will also reduce his sowing rates to around 95,000 seeds/ha with the aim of establishing between 85,000 to 90,000 plants/ha.

Discussion

This year's maize crops did not return the results that many had hope for, with the season including a very wet autumn and with lower than normal heat units contribute in not allowing the crop to reach yield potential.

The crops surveyed yielded an average around 10t/ha at 14% moisture, commonly with poor grain quality and losses occurring either; prior to or during harvest operations. The consensus is that had the grain produced been of a size and quality to meet specification and the crop had been in a condition to allow efficient harvesting with appropriate harvester fronts then average yields may have been closer to 12t/ha.

For the production of grain maize to become common place in Tasmanian farming systems these production issues need to be resolved. Experience elsewhere in the world, for example Ashburton in New Zealand, shows that profitable production of maize grain in our environment is possible.

This years' experience has shown that to advance growing the crop we will need to demonstrate in an average year that the crop will grow, develop, and deliver grain quality specs at profitable yields. To achieve this, we will need to consider.

- Planting shorter season varieties
- Planning for an earlier planting date, conditions allowing
- With the aim to ensure grain fill is complete and grain moisture is at a harvestable level earlier in autumn.

In this past season the varieties Asterix and Obelix from HSR and 9400 and 9911 from Pioneer were grown with results tabulated in Table 1 : Trial strips and surveyed maize crop results from 2019/20 season. To ascertain how these varieties, perform in a normal season both Jamie Loane and Michael Nichols are going to again sow strips of various varieties this coming growing season. They are also both aiming to plant earlier in the planting window. Both HSR and Pioneer are going to provide some shorter season varieties than will also be planted and evaluated.

In discussion with the John Auer (HSR) and Tim Lovell (Pioneer) they encourage growers to make use of those with experience including agronomist, growers and the seed company representatives and to consider the following.

- Plant when soil temp is 10 degrees and rising over 3 consecutive days
- Have planting activities organised well before target date
- Consider strip till, or similar, to improve planting timeliness
- For grain production use varieties which have a CRM of 94 or less.
- Use short season grain hybrids, discuss selection options with HSR and Pioneer seed reps.

Acknowledgments

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