

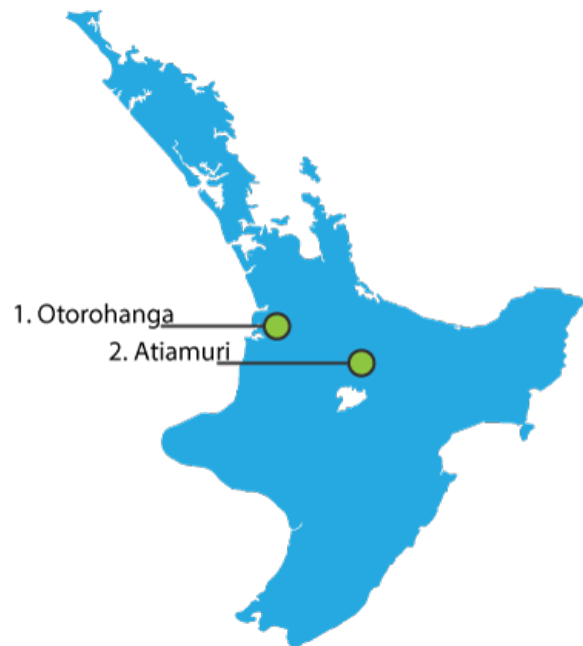
## Case Study: Waikato Dairy Farms, 2020/2021 Milk Production

### Introduction

Zest Biotech tracked the milk production data from two Waikato dairy farms that are using Biozest across the whole farm. The data reported within this case study is derived from the dairy company reports.

Farm 1 is an organic dairy farm located near Otorohanga, Waikato. This is the first season this farm has used Biozest. This farm is also newly certified as organic. The first Biozest application was on 11 September 2020.

Farm 2 is a conventional dairy farm located in Atiamuri, South Waikato. This is the second season that Biozest has been used across this farm.



## Farm 1: Otorohanga Organic Dairy Farm

This is the first season this farm has operated under organic certification, so the farm is carrying 20 less cows as a precautionary measure. This reduction in numbers explains why early season (pre-Biozest) production to 13<sup>th</sup> September 2020 was 1341 Kg less than last season.

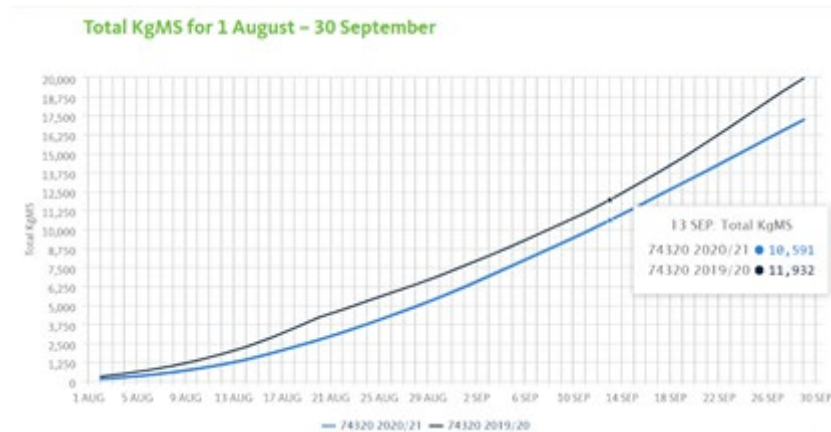
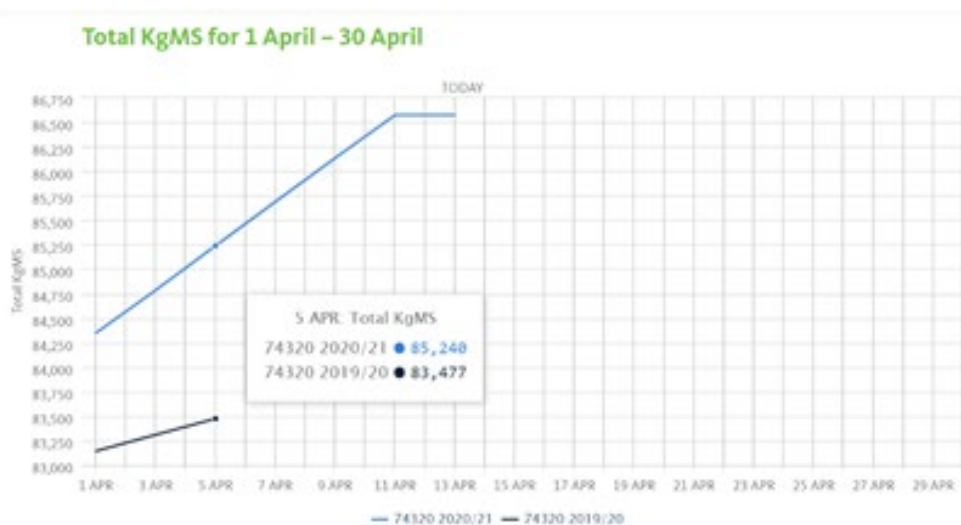


Figure 1. Early season production prior to Biozest application.

The Biozest starter pack was applied on 09 September 2020 and repeated on 11 September 2020.

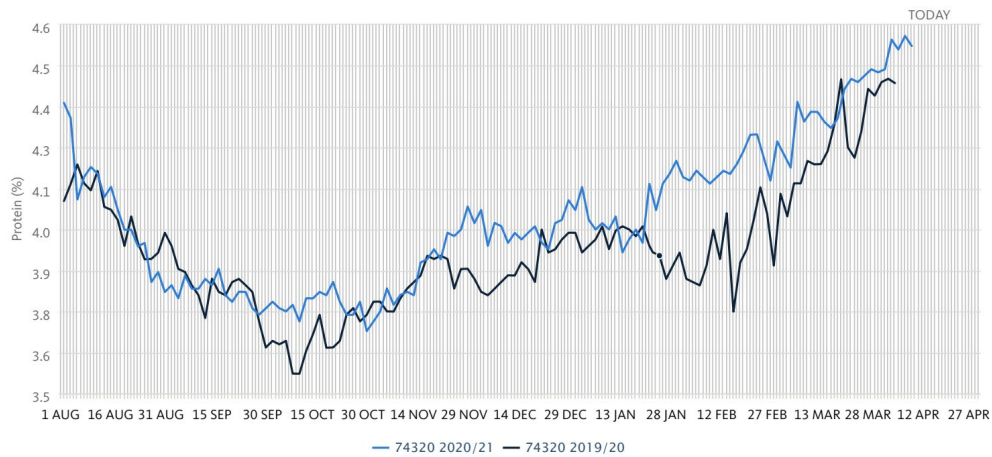
By 05 April 2021 MS production was up by 1763 Kg MS compared to last year.



This is a net increase of 3104 Kg MS production since the application of Biozest.

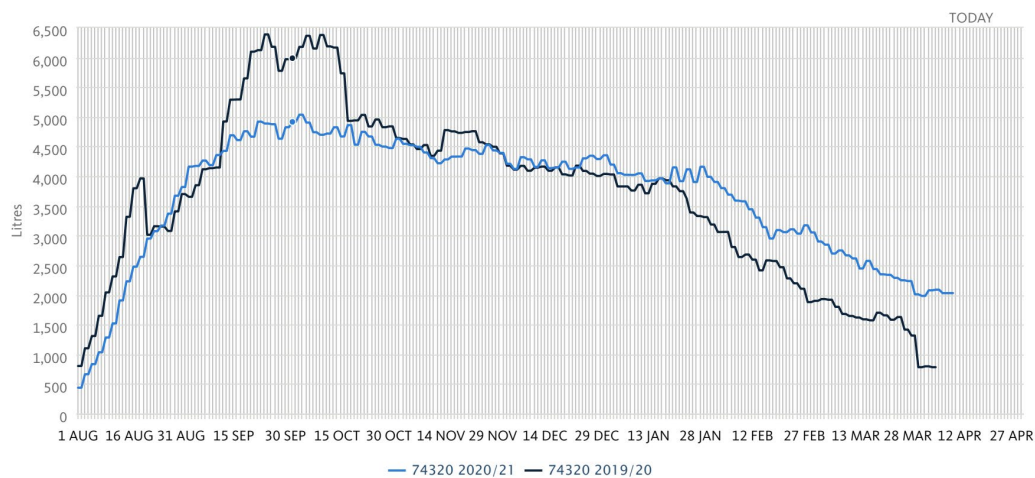
Soon after application of Biozest (11 September) the % protein in milk increased compared to last season. This confirms that more pasture protein is being converted to milk and meat protein, meaning less is wasted as urea, methane and nitrous oxide.

### Protein(%) for 1 August – 30 April



Although 20 less cows were milked this season, the volume of milk production also increased to match the 2019 season, confirming both milk volume and milk quality improves when cows consume Biozest treated pasture.

### Litres for 1 August – 30 April



## Farm 2. Conventional Dairy Farm, Atiamuri, South Waikato

A case study on a conventional farm that has been using Biozest for the last two seasons confirmed that productivity is sustainable.

In this case study the farm was outperforming last season's productivity (4661KG MS) to end of October.

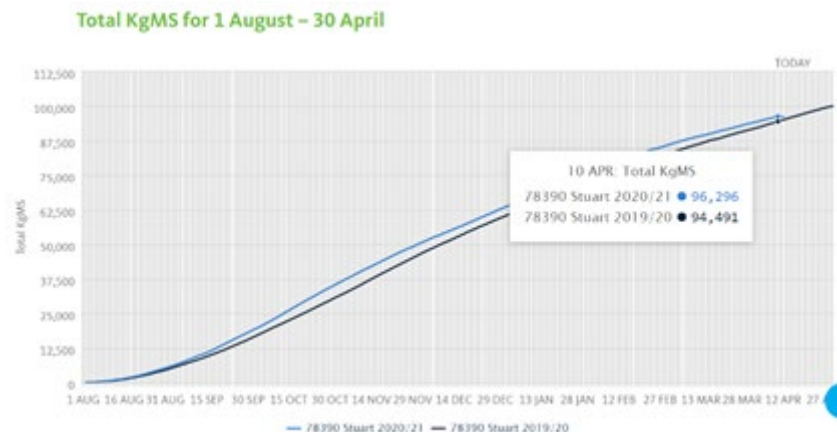


The farmer, worried that the increased pasture production could deplete soil fertility, sprayed nitrogen on 1<sup>st</sup> of November. This may have improved pasture productivity, but it had an immediate negative impact on milk productivity.

Milk Solids (MS) production immediately dipped below the 2019 season.



However, despite this setback, the total production for the season remained above last season (1805 Kg MS) confirming that the productivity improvements are sustainable.



This study also confirms the claim that extra fertilisers are not required to support the increase in pasture productivity resulting from Biozest applications. Farmers should rely on soil and pasture nutrient test results and only correct deficiencies.

This case study clearly demonstrates that the findings of David Pacheco Garry Waghorn <https://doi.org/10.33584/jnzg.2008.70.2738> hold true: “New Zealand pasture contains a higher concentration of nitrogen (N) than required by ruminants. Excess dietary nitrogen (N) has negative implications for environmental sustainability and animal production”.

## Conclusion

Both milk volume and milk quality improve when cows consume Biozest treated pasture.

The increase in production is sustainable.

Biozest increases the protein in milk. This confirms that more pasture protein is being converted to milk and meat protein, meaning less is wasted as urea, methane and nitrous oxide.

Excess nitrate fertiliser application is detrimental to milk production. Farmers must rely on soil and pasture nutrient tests and not simply apply more fertiliser because production has increased.