



CORSA REGAL KALE

COMPARING DRY MATTER YIELD OUTCOMES USING SUPERZYME BIOLOGICAL TREATMENT

By Catalyst Performance Agronomy
Manakura Farms and Canterbury Feed Assessment

Biological organism use is common practice in other industries and in other parts of the world. However they have not been explored here in New Zealand on fodder crops to increase the dry matter yield whilst alleviating soil borne pathogens. These biological organisms produce humic substances that improve soil structure and are good for the environment. This trial was designed to gauge their potential.



BACKGROUND

Kale is normally used as a winter feed crop, with a deep root system providing good dry matter yields.

Kale is often used as a second brassica crop because it is not so susceptible to Club Root and Dry Rot particularly following crops like swede. Regal kale can be planted in both the Spring and Summer for grazing seasons during Autumn and Winter. The Regal Kale has soft stems that provide excellent crop utilisation. Maximum yield is reached between 150-220 days with a potential yield expectancy around 16,000 kgDM/ Ha.

Winter forage crop grazing can cause pugging and compaction and long-term soil degradation if not managed properly.

This can decrease paddock productivity, allowing nutrients and sediment to enter waterways. Careful management of paddocks and the use of biological products, can reduce damage to soil structure and loss in productivity.

TRIAL DESIGN

Manakura Farms selected ground. 48 Ha was utilised as a Control block. 10 Ha was utilised for Superzyme™, which contains beneficial bacteria and fungi (*Trichoderma koningii*, *Trichoderma harzianum*, *Bacillus subtilis* and *Pseudomonas putida*) supplied by Roots, Shoots & Fruits Ltd. Superzyme™ was mixed dry with seed into drill at 200g/ha and applied to 10 hectares.

Both plots were planted with insecticide treated Corsa Regal Kale @ 5kg / Ha. Drill date was 4th November 2022.

RESULTS

Blocks	Seed Treatment	Product Rate	Total Product Used	Seed Rate Corsa Royal Kale
Control - 48 Ha	Insecticide treated ONLY.	Nil	Nil	5kg/ha
T1 - Superzyme Biological Treated 10 Ha	Powered Superzyme mixed with seed & direct drilled	200g/Ha	2kg	5kg/Ha



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RESULTS

On 28th December 2022, a plant population count was undertaken by Holly Mallinson from Lincoln University on six square metre plots from each block.

On 1st June 2022, six by one square metre plots were cut on a grid basis and wet samples weighed for each block by Canterbury Feed assessment.

Table 1 - Plant Counts

	AVERAGE PLANTS/SQ.	PLANTS/SQ. RANGE
Control	57.3	36
T1- Superzyme	75.3	39

Dry Matter yield assessments were taken on the 1st June 2022 and samples for each block sent to CFA laboratory.

Table 2 - Total Dry Matter Per Hectare Assessment

	WET WEIGHTS/HA	DM%	DM YIELD /HA
Control	72,416 kg	15.31	11,087 kg
T1- Superzyme	80,583 kg	18.64	15,021 kg

Superzyme showed an increase in kg DM/ Ha over the control by **35.48 %**.



CONCLUSION

Based on Beef and Lamb New Zealand supplementary feed guide, kale at 16% DM costs 31 cents a kg to purchase as supplementary feed.

Dry matter difference between Control and T1 – Superzyme treated is 3,934 kg per hectare equating to an added value of supplementary feed of \$1,219.54 per hectare over the control.

Superzyme was applied at 200 grams per hectare at a cost of \$35.85, which provided the grower an additional **\$1,183.69 per hectare of supplementary feed** after input cost or an additional **\$11,836.90 over the 10Ha block**.

These cost projections are based on the price of Kale from May 2020, so the increased profitability to the Manakura Farms would be more, assuming the price of Kale has increased over time. The added and possibly more significant benefit over and above the profitability is the improvement to the soil over time.

[Click here](#) to read the full trial paper.

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