Seasol Kale Evaluation Report

June 2023

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Introduction

One small plot replicated field trial was conducted between December 2022 and June 2023 to evaluate the effect of Seasol Trilogy and Seasol + Calcium on kale yield.

This report contains the experimental methods used and presents the results obtained.

Experimental Details

Trial location Details

AgResearch, Boundary Road, Lincoln, Canterbury
-43.631173, 172.472950

Trial Design

Table 1: Trial design	
Design:	Complete randomised block design
Replicates:	Eight
Plot Size:	10 m x 2m
Sowing Date:	
Buffer details:	No buffer between replicates

Treatments

Two applications of the treatments were made (Table 2). Application A was applied prior to canopy closure on 19 December 2022 and Application B was applied after canopy closure on 19 January 2023. Liquid applications were applied using a CO_2 powered backpack sprayer with four Hardi MD02 air induction flat fan nozzles. Pressure was 280 kPa and the water rate applied was 200L/ha.

Table 2: Treatments and rates		
Trt no.	Product	Rate (L/ha)
1:	Control	-
2:	Trilogy	10
3:	Seasol + Calcium	10

Table 3: Treatment application details for Application A and B		
Application timing:	A	B
Date:	19 December 2022	19 January 2023
Time Start:	4.15 pm	2.20 pm
Time End:	4.30 pm	2.35 pm
Wind speed (km/h):	0-5	5-10
Wind direction:	NE	NE
Temperature (^{o}C):	18	23
Relative humidity (%):	74	78
Cloud cover (%):	50	10
Soil wetness:	Dry	Dry
Crop stage	6-8 leaf	10-12 leaf

3.6 Assessments

A fresh weight yield assessment was taken on 8 June 2023. Two randomly placed 0.5m^2 quadrats were taken from each plot.

Leaf samples for foliage analysis were taken from the plots on 14 June 2023.

3.7 Statistical analysis

Data generated in this trial was managed and statistically analysed within ARM (Agriculture Research Manager), a data management package used for planning, recording, evaluation and retrieval of trial data.

Data was analysed using Analysis of Variance, using Duncan's New MRT multiple range comparison test.

LSD (P=.05) Least significant difference at the 95% confidence level.

4. RESULTS

Trilogy had a higher yield with ~700 kg DM/ha more than the control and Seasol + Calcium which both had just over 11200 kg DM/ha. However, this result was not statistically significant.

Table 4: Kale yield (kg DM/ha) - 8/06/2023

Trt. No.	Treatment	Rate (L/ha)	Appl Code	Yield Kg DM/ha
1	Untreated Check	-		11217
2	Trilogy	10	AB	11943
3	Seasol + Calcium	10	AB	11241
LSD P=0.05				1757
Standard Deviation				2463
CV %				9.60
F Prob				0.640

Both Trilogy and Seasol + Calcium had higher foliage nitrogen levels, with 3.6% and 3.7% N respectively, compared to the control with 3.0% N (Table 5). Phosphorus, sulphur, zinc, and chloride were also higher in the two treatments than the control. Sodium % was higher in Seasol + Calcium (0.075% Na) compared to Trilogy (0.057% Na) and the control (0.055% Na). Seasol + Calcium also had the highest iron content.

Crude protein was higher in Seasol + Calcium (24.5% DM) and Trilogy (23.7% DM) than the control (19.8% DM). Seasol + Calcium and Trilogy also had slightly higher metabolizable energy, with 13.5 MJ/kg DM and 13.6 MJ/kgDM respectively, compared to the control (13.4 MJ/kg DM).

Table 5: Kale foliage analysis – 14/06/2023			
Analysis	1 – Control	2 – Trilogy	3 – Seasol + Calcium
Nitrogen %	3.0	3.6	3.7
Nitrogen %DM	3.2	3.8	3.9
Phosphorus %	0.36	0.41	0.44
Potassium %	3.4	3.1	3.4
Sulhpur %	0.91	1.03	0.93
Calcium %	1.72	1.47	1.48
Magnesium %	0.13	0.16	0.14
Sodium %	0.055	0.057	0.075
Iron mg/kg	76	71	89
Manganese mg/kg	24	18	27
Zinc mg/kg	20	26	23
Copper mg/kg	3	3	3
Boron mg/kg	26	24	26
Molybdenum mg/kg	1.05	0.95	1.18
Cobalt mg/kg	0.02	0.02	0.03
Selenium mg/kg	<0.02	<0.02	0.02
Chloride %	0.77	0.86	0.98
Crude Protein %DM	19.8	23.7	24.5
DOMD* %	83.7	85.0	84.5
Metabolisable Energy MJ/kgDM	13.4	13.6	13.5

5.0 IMAGES

Application 1 – 19 December 2022

Application 2 – 19 January 2023

Kale at harvest – 8 June 2023