



**Levity**  
CROP SCIENCE

# TRIAL REPORT: EVALUATION OF A MACADAMIA TRIAL



28% yield increase which equates to a  
profit increase of approximately  
R40 000.00 per ha.

Featured Products:

Lono K

Sulis

Albina

## Contents

Introduction: .....	2
Material and Methods: .....	2
General Remarks:.....	4
Graphs.....	5
Facts & Figures.....	7
Pictures.....	9
Conclusion .....	10

## Introduction:

The Macadamia industry in Southern Africa is considered an important crop for a number of reasons due to the many purposes that the nuts are used for. Macadamias are enjoyed as a snack, they are used in the confectionary, baking, oil and ice cream industries as well. In 2018 it was estimated that there was a total area of 19 500 Ha of macadamias under cultivation in South Africa, with over 700 growers, which are producing a quantity of 50,000 tons of macadamias every year. The main market destination of these quantities is for the export market where South Africa exports 95% of the annual crop with China as the largest importer of the countries stock. Macadamia nuts make up less than 1% of global tree nut production and growth in the Chinese market is expected to continue for the foreseeable future with the increase in demand for them.

At Levity Crop Science, we work closely with our farmers in an advisory role insofar as their crops are concerned in order to improve farmers productivity and enhance the quality of their final produce. All this whilst trying to solve the physiological disorders of the fruits if any and tailor making a solution that best suits the farmer's needs.

A trial was conducted in the Tzaneen area (RSA), in order to evaluate the effect of different Levity products on Beaumont cuttings, planted in 2016. Conventional farm practises were followed and the products were applied as foliar applications.

## Material and Methods:

The trial evaluations were recorded on the Beaumont variety on the 29<sup>th</sup> of March 2021.

The products that were used in the trial was:

1. *Lono K*: 15-0-7 Nitrogen (N) 15%w/w, Potassium (K2O) 7%w/w.
2. *Lono plus*: 15-0-0-7. (Ca). Nitrogen (N) 9%w/w, Calcium (Ca) 9% w/w (121g/L), Zinc (Zn) 0.1% w/w (1.3g/L) Amino Acid 8% w/w (108g/L)
3. *Indra Plus*: 5-18-2+ micros Nitrogen (N) 5% w/w 65g/L, Phosphorous (P2O5) 18% w/w 234g/L, Potassium (K2O) 2%w/w 26g/L, Copper (Cu) 0.1% w/w 1.3g/L, Magnesium (Mn) 0.3% w/w 3.9g/L, Iron (Fe) 0.3% w/w 3.9g/L, Zinc (Zn) 0.3% w/w 3.9g/L, Magnesium 0.3% w/w 3.9g/L.
4. *Albina*: 10% Nitrogen (N) (10%) Nitrate N) 12% Calcium (Ca) 17% (CaO) 1% Zinc (Zn) w/w

The data of the trial was collected from five trees on the control and five trees that were treated with Levity products. Fruit that was used to measure fruit diameter and weight of the fruits was picked randomly on the day of harvest.

## Product Application

The products were applied as foliar sprays

The products were applied as below:5 Lined (1/2 Ha)

Harvest date of the trial and control – 29/03/21

### Lono Plus

Litres per hectare	Date of application
5 ℓ/Ha	3 <sup>rd</sup> week May
5 ℓ/Ha	2 <sup>nd</sup> week June
5 ℓ/ Ha	4 <sup>th</sup> week July
5 ℓ/ Ha	4 <sup>th</sup> week November

### Lono K

Litres per hectare	Date of application
10 ℓ/ Ha	2 <sup>nd</sup> week June
10 ℓ/ Ha	1 <sup>st</sup> week September
10 ℓ/ Ha	1 <sup>st</sup> week October
10 ℓ/ Ha	1 <sup>st</sup> week November
10 ℓ/ Ha	1 <sup>st</sup> week December

### Albina

Litres per hectare	Date of application
1ℓ/ Ha	1 <sup>st</sup> week June
1 ℓ/ Ha	3 <sup>rd</sup> week July
1 ℓ/ Ha	2 <sup>nd</sup> week September
1 ℓ/ Ha	3 <sup>rd</sup> week October
1 ℓ/ Ha	2 <sup>nd</sup> week November

### Indra

Litres per hectare	Date of application
1ℓ/ Ha	1 <sup>st</sup> week June
1 ℓ/ Ha	3 <sup>rd</sup> week July
1 ℓ/ Ha	3 <sup>rd</sup> week August
1 ℓ/ Ha	4 <sup>th</sup> week September
1 ℓ/ Ha	1 <sup>st</sup> week November
1 ℓ/ Ha	2 <sup>nd</sup> week December

## General Remarks:

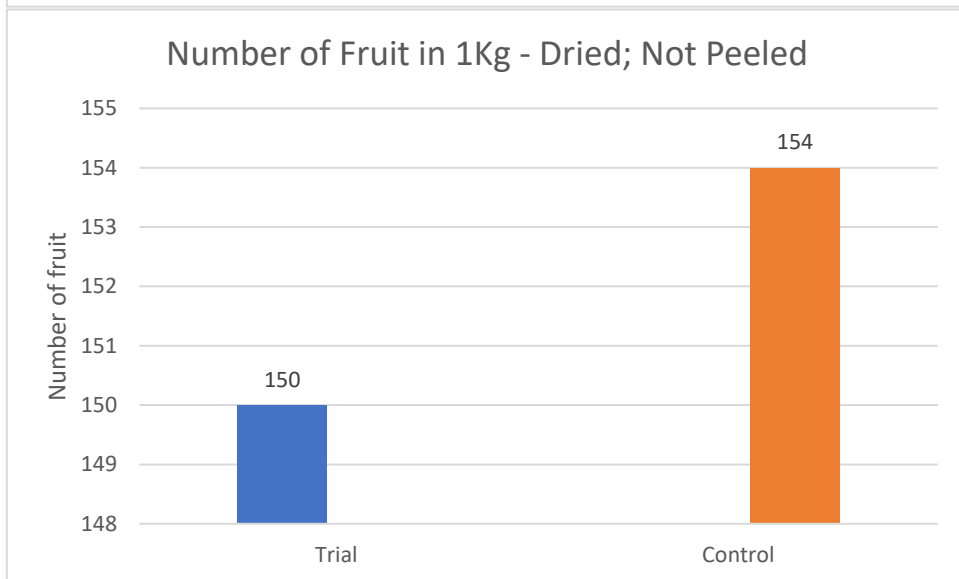
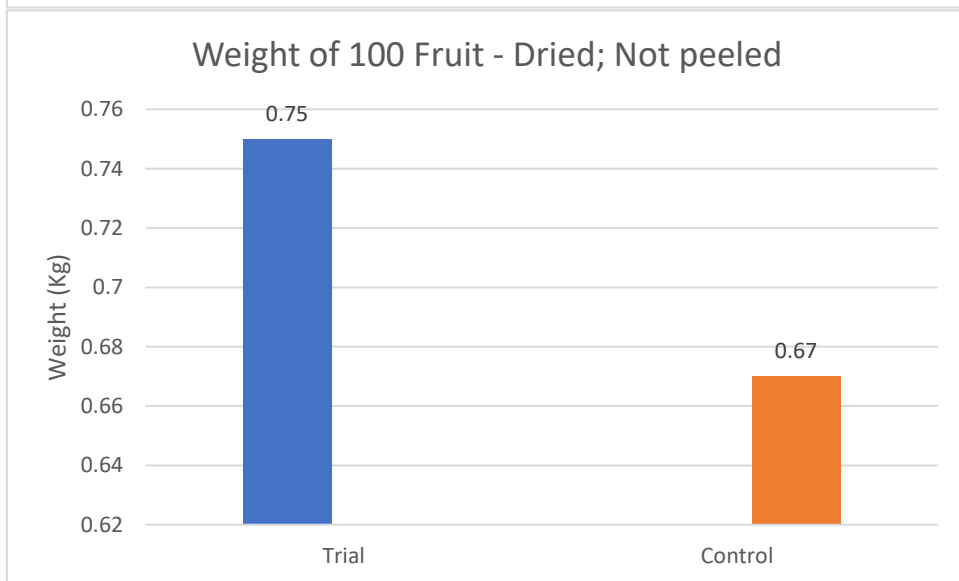
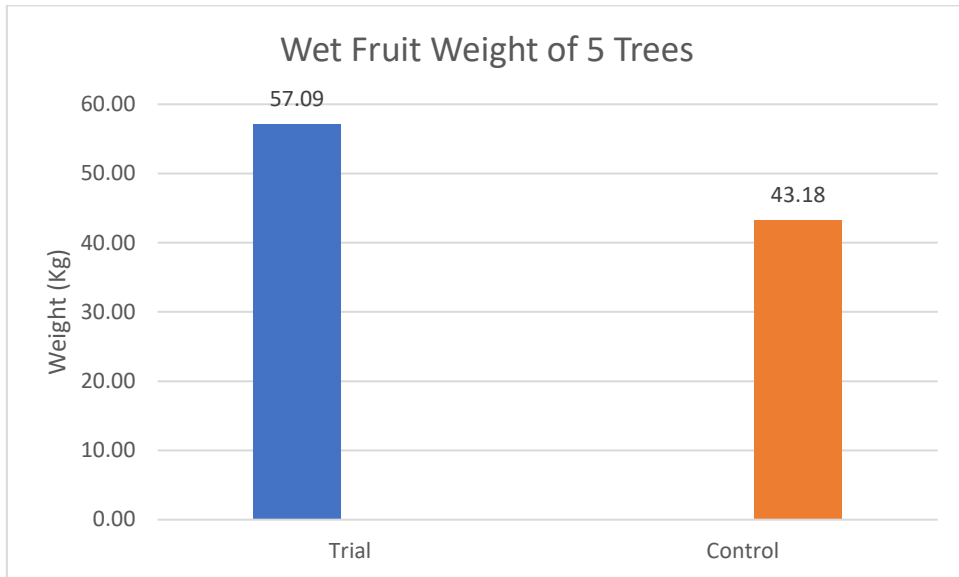
There was better fruit production on the treated trees than on the control trees. Therefore, the amount of fruit harvested from the treated trees was more than the amount of fruit harvested from the control trees; this means that the weight of the fruit from the treated trees was heavier than the weight of the fruit from the control's trees.

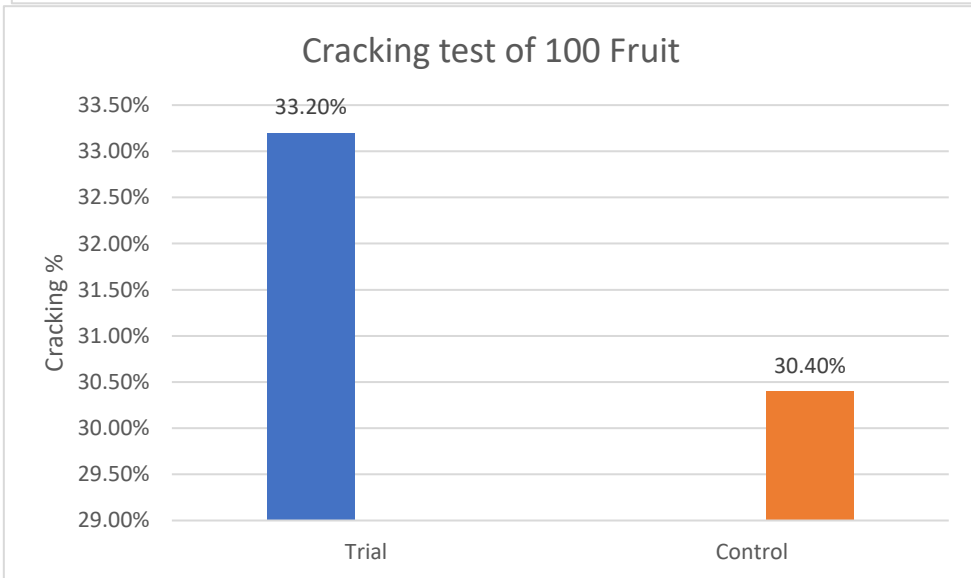
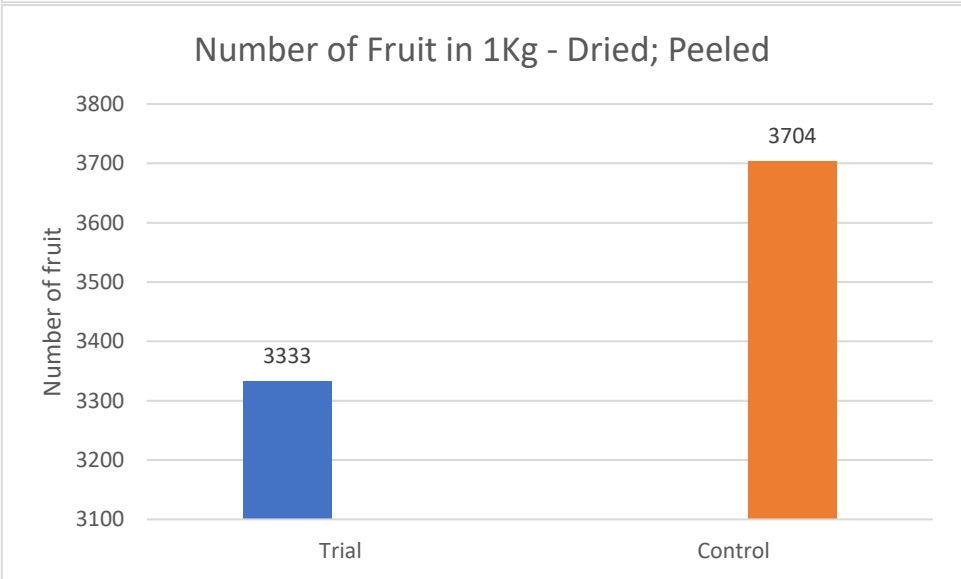
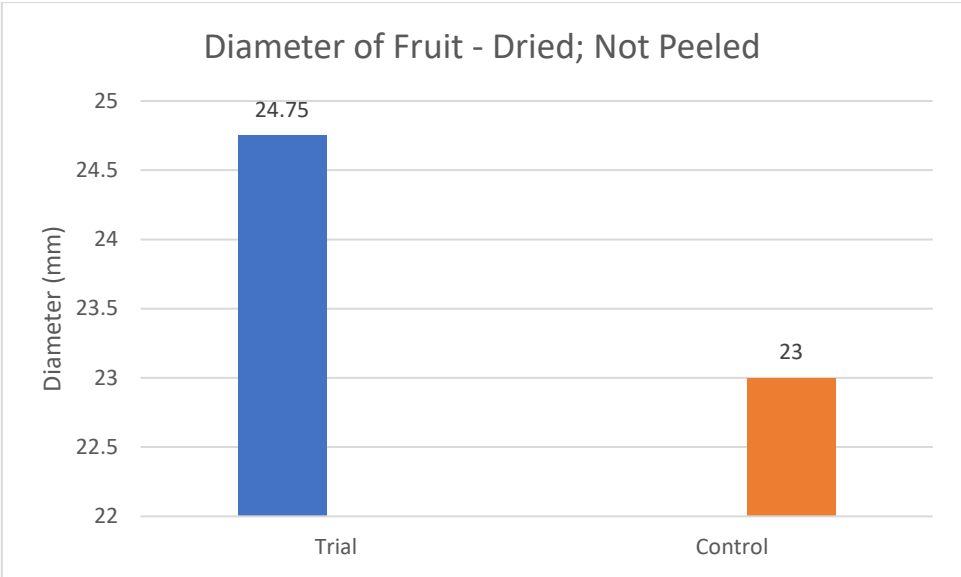
In order to get a better result, the nuts were dried. After de-husking, one hundred fruits from the treated trees and one hundred fruits from the control trees was compared. The weight of the fruit from the trial was heavier than the fruit of the control.

In addition to the above, there was less fruit required in totalling 1Kg of the trial in comparison to the control.

There was an increase in the diameter of the nuts, meaning that there was bigger and a larger number of nuts on the treated trees.

# Graphs





# Facts & Figures



Fruit Triats	Control	Treated	Description - Units
<b>Wet weight</b>			
Fruit production from trees	43,18	57,09	Total wet weight of 5 trees
<b>Dried fruit - not peeld</b>			
Weight of 100 fruit	0,67	0,75	Fruit randomly picked from previous 5 trees
Number of fruit in 1 Kg	154	150	Fruit randomly picked from previous 5 trees
Diameter of nuts	23	24,75	Average diameter of 10 nuts (mm)
<b>Dried fruit - peeld</b>			
Weight of 100 fruit	0,27	0,3	Fruit randomly picked from previous 5 trees
Number of fruit in 1 Kg			Fruit randomly picked from previous 5 trees
Weight of 100 fruit shells	0,51	0,45	Weight of the nut shells of the precious 100 fruits (Kg)
Cracking test on 100 fruits	30,40%	33,20%	External test done

<b>Levity Crop Science - Macadamia Trial</b>			
Variety Beaumont Cuttings			
Block 22			
Age: 6 years old			
<b>Fruit Traits</b>			
Trial			
<b>Number of Trees</b>		<b>Wet Weight (Kg)</b>	
▼		▼	
1		11.96	
2		9.64	
3		12.28	
4		14.01	
5		9.2	
Total		57.09	
Average per tree		11.42	

<b>Dried - Not Peeled</b>	
<b>Weight of 100 Fruit (kg)</b>	<b>Number of fruit in 1Kg</b>
0,75	150
<b>Average diameter of 10 nuts (mm)</b>	
24,75	



Dried - Peeled	
<b>Weight of 100 Fruit (kg)</b>	<b>Number of fruit in 1Kg</b>
0,3	3333
<b>Total kernel recovery of WNIS = D/A</b>	
33,20%	
<b>Unsound kernel % of total kernel = C/D</b>	
2,70%	
<b>Weight of 100 fruits shells (Kg)</b>	
0,45	

Control	
<b>Number of Trees</b>	<b>Wet Weight (Kg)</b>
1	9,87
2	7,89
3	5,18
4	10,97
5	9,27
Total	43,18
Average per tree	8,64

Dried - Not Peeled	
<b>Weight of 100 Fruit (kg)</b>	<b>Number of fruit in 1Kg</b>
0,67	154
<b>Average diameter of 10 nuts (mm)</b>	
23	

Dried - Peeled	
<b>Weight of 100 Fruit (kg)</b>	<b>Number of fruit in 1Kg</b>
0,27	3704
<b>Total kernel recovery of WNIS = D/A</b>	
30,40%	
<b>Unsound kernel % of total kernel = C/D</b>	
4,60%	
<b>Weight of 100 fruits shells (Kg)</b>	
0,51	

## Pictures



*Figure 1 – Lugboxes picked from 5 Treated trees*



*Figure 2 – Lugboxes picked from 5 Control trees*



*Figure 3 – Lugboxes picked from Treated trees*



*Figure 4 – Lugboxes picked from Control trees*

## Conclusion

- There was a 32.18% increase in weight of the fruit per block on the Beaumont Macadamia variety. When one subtracts the cost of the program in order to allow for the increase in yield, we have a net yield increase of 28% which equates to an estimated R40 000.00 per hectare profit increase.
- There was a weight increase of 11.11% on 100 fruit, that was dried and peeled.
- There was a 7.61% increase of fruit diameter, thus the fruit from the treated trees were bigger.
- There was a 2.8% increase in the cracking percentage of the nuts.

<b>Increase in yield per block (Kg) :</b>	<b>32,18 %</b>
<b>Increase in weight of 100 fruit - dried &amp; peeled:</b>	<b>11,11 %</b>
<b>Increase in diameter of 10 nuts:</b>	<b>7,61 %</b>
<b>Increase in cracking of nuts:</b>	<b>2,8 %</b>