



HALOGEN GREENS



# RESEARCH REPORT 2026

Magtassium Preliminary  
Trial Results: Citrus

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*Reviewed by*

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# FOREWORD



## WHAT THIS MEANS FOR YOUR FARM: KEY TAKEAWAYS

- **The Test:** We asked an independent expert, Prof. Wayne Truter, to grow citrus trees in pots with and without Magtasium and then in combination with a fertilizer. Other trees only received clean water or only fertilizer without Magtasium.
- **The Bottom Line:** The trees that got Magtasium were consistently healthier, greener, and grew better.
- **The Big Finding:** Even trees that got **NO FERTILIZER** but did get Magtasium outperformed the trees that received fertilizer only.
- **An Interesting Observation:** Trees treated with Magtasium had much less aphid damage, suggesting healthier trees can resist aphids.
- **What's Next:** This controlled pot trial shows a clear positive effect. The next step is to prove it in large-scale field trials in orchards like yours.



# GLOSSARY

## QUICK GUIDE TO THE TERMS USED



Treatment (T1, T2, etc.)	Just a label for a different test group of plants.
NC (Negative Control)	The "baseline" group - gets nothing extra.
PC (Positive Control)	The "ideal" group - gets full fertilizer.
Foliar / Drench	How it's applied - sprayed on leaves or poured on soil.
Physiological Status	The overall health and function of the plant.
Replicated	Done multiple times to ensure the result is real and not chance.

## RESEARCH QUESTION

What is the true plant growth response to **MAGTASIUM** without the use of pesticides (*insecticides and fungicides*) and an intensive nutrient management programme?

## BASIC METHODOLOGY

### Treatments:

<b>T1</b>	Negative Control (NC) - No treatment
<b>T2</b>	Positive Control (PC) - Non nutrient limiting
<b>T3</b>	PC + A
<b>T4</b>	NC + A
<b>T5</b>	PC + B
<b>T6</b>	NC + B

### TREATMENT A:

- 20 ml per litre water (foliar) weekly
- 5 ml per litre (drench) weekly

### TREATMENT B:

- 40 ml per litre water (foliar) weekly
- 10 ml per litre (drench) weekly

### In Simple Terms:

We set up a tough but fair test. We compared trees with everything, trees with nothing, and trees with just Magtasium to see its true effect.

**Moisture:** Non-limiting

**Soil:** Two soil types

- Sandy loam
- Clay

### Measurements:

- SPAD (Soil Plant Analysis Development) - refers to a non-destructive method, estimating leaf chlorophyll content and, by extension, Nitrogen (N) status, by measuring the greenness of a leaf.
- Plant growth rate (%) - Change in plant growth parameters i.e. correlation of plant height change, leaf amount and canopy density over time.

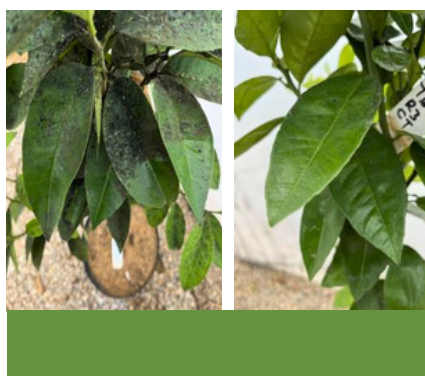
### Leaf Greenness (SPAD):

A meter measures how green and "active" the leaves are. Greener leaves generally mean a healthier, more efficient plant.

## OBSERVATIONS

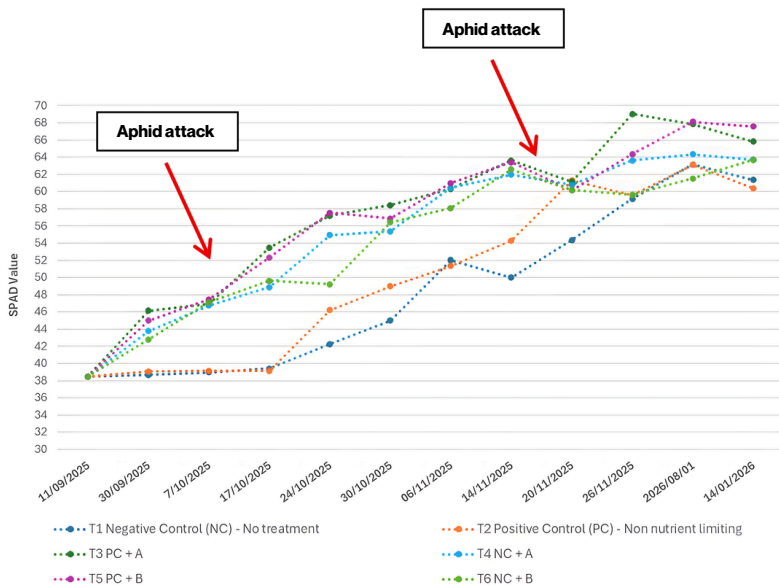


**Figure 1:**  
Treatment effects after 4 months in comparison to Negative Control (NC) - No treatment (**T1**)



**Figure 2:**  
Aphids impact on T1 vs T6 (with minimal impact on plants treated with **MAGTASIUM**)

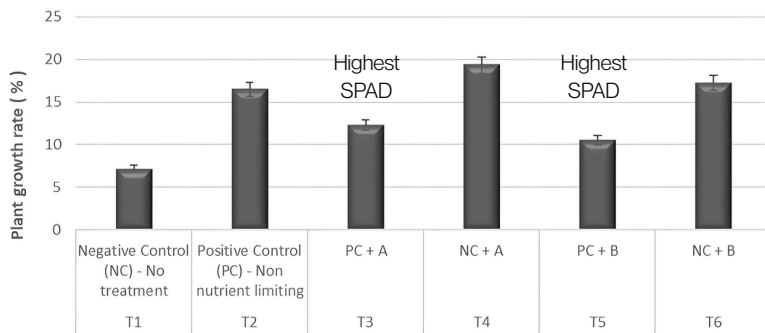
**PRELIMINARY RESULTS**



**Figure 3: Treatment effects after 4 months**

**Interpretation:**

- All treatments increased SPAD over time, indicating improving chlorophyll content and plant physiological status.
- Negative control (T1) showed the slowest and lowest SPAD response throughout the trial.
- Positive control (T2) increased steadily but was matched or exceeded by **MAGTASIUM** treatments later in the season.
- **MAGTASIUM**-treated plants (A & B) showed earlier, steeper SPAD increases and higher final values.
- **NC + MAGTASIUM** (T4, T6) rapidly diverged from the untreated control (T1), demonstrating improved nitrogen-use efficiency under nutrient limitation.
- Treatment B (T5, T6) achieved the highest and most stable SPAD values, suggesting a stronger physiological response.
- Results confirm a true plant performance effect, not solely a nutrient availability response.



**Figure 4: Treatment effects after 4 months on plant growth rate**

**Interpretation:**

- All treatments increased plant growth rate relative to the negative control (T1).
- Negative control (T1) showed the lowest growth response, confirming treatment-driven effects.
- Positive control (T2) performed as expected under non-nutrient-limiting conditions.
- **NC + MAGTASIUM** (T4) achieved the highest growth rate, exceeding the positive control.
- **PC + MAGTASIUM** (T3, T5) showed variable but positive growth responses, indicating interaction with existing nutrient status.
- **NC + MAGTASIUM** (T6) produced strong growth gains, approaching or matching the positive control.
- Results confirm **MAGTASIUM**'s ability to enhance growth under nutrient-limited conditions, not merely supplement adequate

**Reading the Graph:** (T5PC + B) (T3PC + A)  
 The lines for the pots getting Magtasium (especially the purple and dark green ones) are consistently higher. Higher = better growth and greener leaves.

# CONCLUSIONS



## PRELIMINARY CONCLUSIONS

<u>Scientific Conclusion</u>	<u>Translation for Your Orchard</u>
<b>MAGTASIUM improved citrus plant growth and physiological status under controlled conditions, even without pesticides or intensive nutrient management.</b>	<b>Citrus trees grew stronger and healthier with MAGTASIUM</b> - even without heavy chemical sprays or extra fertilizers.
<b>Enhanced SPAD values and growth rates indicate improved plant vigour and nutrient-use efficiency.</b>	<b>Leaves were greener and trees grew faster</b> , meaning the plants were using nutrients more effectively and were overall more vigorous.
<b>Reduced aphid damage was observed on treated plants, suggesting indirect plant resilience benefits.</b>	Trees treated with MAGTASIUM had fewer aphid problems, suggesting <b>the plants were naturally more resistant to pests.</b>
<b>Positive responses were consistent across sandy and clayey soils, supporting broad applicability.</b>	MAGTASIUM worked well in both sandy and clay soils, so it <b>can be used in different orchard soil types.</b>
<b>Findings support MAGTASIUM's positioning as a supportive plant performance enhancer, justifying progression to replicated field-scale validation and commercial optimisation.</b>	The results show <b>MAGTASIUM can help improve tree performance</b> , and it's ready to be tested on larger orchards for commercial use.

# SUMMARY



- In **figure 3**, notice the plateau for the first 4 weeks where there was no SPAD level increase for **T1 NC** and **T2 PC** versus an immediate increase in SPAD levels from the first week of Magtasium application with an almost linear increase in SPAD levels over the 11 weeks.
  
- In **figure 4** note these comparisons:
  - **T1** and **T2** consistently had the lowest SPAD levels. (**figure 3**)
  - **T4** had the highest plant growth rate but 3<sup>rd</sup> lowest SPAD level together with **T6**.
  - **T5** had 2<sup>nd</sup> lowest plant growth rate but highest SPAD level.
  - **T3** had the 3<sup>rd</sup> lowest plant growth rate but the 2<sup>nd</sup> highest SPAD level.
  - **T2** had 2<sup>nd</sup> highest plant growth rate but the lowest SPAD reading.
  - **T1** had the lowest plant growth rate and second/lowest SPAD level.
    - **From this we can gather that plant growth rate is not necessarily indicative of plant health.**

# TOUCH BASE WITH US

## ● Head Office

- Roodepoort - Gauteng

## ● Manufacturing Plants

- Tarlton - Gauteng
- Citrusdal - Western Cape

## ● Depots

- George - Western Cape
- Groblersdal - Limpopo
- Nelspruit - Mpumalanga
- Kirkwood - Eastern Cape
- Polokwane - Limpopo



# CORPORATE IDENTITY



**HALOGEN GREENS**

ELEVATING CROP PROTECTION, NATURALLY

## SPECIALIZATION

Group 3 Bio Stimulant  
(Trials Underway for Registration)

## STATUS

- Pending Worldwide Patent
- Conducting Trials



# CONTACT INFORMATION



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