



HALOGEN GREENS



RESEARCH REPORT 2026

Magtasium Preliminary Trial Results: Tomatoes

Reviewed by

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 **FPLRI**
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SUMMARY



The Effect of MAGTASIUM on Tomato Production

A Message for Tomato Growers

This document summarizes independent research conducted to understand the true effect of MAGTASIUM on tomato plant growth. The goal was to separate the product's impact from other factors like pesticides and intensive fertilizer programs, to see what it can really do. Inside, you will find the plain, scientifically backed truth about how MAGTASIUM can help you grow healthier plants and produce a better tomato crop.

The Research at a Glance

The Core Question: Does MAGTASIUM, on its own, improve tomato plant growth and fruit production?

How It Was Tested:

To get a clear answer, researchers set up a fair trial. Tomato plants were grown under six different treatment plans, allowing for direct comparison:

- **T1: Negative Control** - No treatment at all.
- **T2: Positive Control** - A standard nutrient (fertilizer) program.
- **T3:** Standard Program + MAGTASIUM (Treatment A)
- **T4:** No Treatment + MAGTASIUM (Treatment A)
- **T5:** Standard Program + MAGTASIUM (Treatment B)
- **T6:** No Treatment + MAGTASIUM (Treatment B)

The MAGTASIUM Strengths Tested:

- **Treatment A:** 20 ml per litre water (foliar spray) + 5 ml per litre (soil drench) weekly.
- **Treatment B:** 40 ml per litre water (foliar spray) + 10 ml per litre (soil drench) weekly.
(This is twice the strength of Treatment A).

Plants were grown in two different soil types (sandy loam and clay) with non-limiting moisture.

What Was Measured:

- **Chlorophyll Content (SPAD):** A measure of leaf "greenness," indicating plant health and nitrogen status.
- **Plant Growth Rate:** The speed of plant development over time.
- **Fruit Number, Size, and Mass:** The ultimate indicators of yield and quality.



The Results: What MAGTASIUM Delivered

The evidence is clear and consistent. MAGTASIUM made a positive difference in every single area measured.

1. Healthier, More Vigorous Plants

- **Greener Leaves:** Plants treated with MAGTASIUM showed higher chlorophyll content. They were visibly greener, which is a direct sign of a healthy plant with good nitrogen status.
- **Faster Growth:** The growth rate of MAGTASIUM-treated plants was noticeably higher. They simply grew faster and were bushier than untreated plants.

What This Means for You: Healthier plants from the start are better equipped to handle stress and reach their full yield potential.

2. The Power of MAGTASIUM Alone (T6)

This is one of the most striking findings in the entire study.

T6 received no standard fertilizer and no pesticides. It received only MAGTASIUM at the higher concentration (Treatment B).

And the results were remarkable:

- **Growth Rate (Figure 4):** T6 plants grew as fast as or faster than nearly every other treatment, including those receiving full fertilization.
- **Fruit Number (Figure 5):** T6 produced a strong number of fruits, significantly outperforming the lower-concentration MAGTASIUM treatment (T4).
- **Fruit Size and Mass (Figures 6 & 7):** This is where T6 truly excelled. The tomatoes from T6 were among the largest and heaviest in the entire trial, rivalling and in some cases exceeding the fully fertilized plants (T2).

What This Means for You: MAGTASIUM is not just a supplement. On its own, at the right concentration, it can drive impressive growth and produce large, high-quality fruit. This proves that MAGTASIUM has real, intrinsic power to improve plant performance.



3. MAGTASIUM + Fertilizer: The Ultimate Combination (T3 & T5)

For growers already using a fertility program, the news gets even better.

When MAGTASIUM was added to the standard fertilizer program:

- **High Fruit Numbers Were Maintained:** The strong fruit count achieved by fertilizer alone (T2) was not lost. T3 and T5 kept yields high.
- **Fruit Quality Was Enhanced:** In many cases, the combination of fertilizer and MAGTASIUM produced fruit that was larger and heavier than fertilizer alone.
- **Treatment B (higher concentration) delivered the strongest results.**

What This Means for You: If you are already using a good fertility program, adding MAGTASIUM helps you upgrade your crop. You keep your high yields, but you grow bigger, heavier, more marketable fruit.

4. The Dosage Effect: More MAGTASIUM, More Results

Across every measurement, one pattern was clear:

- **Treatment B (higher concentration) consistently outperformed Treatment A (lower concentration).**

This was true whether MAGTASIUM was used alone (compare T6 vs T4) or with fertilizer (compare T5 vs T3).

What This Means for You: MAGTASIUM gives you control. You can choose the application rate that matches your goals. For maximum impact on fruit size and quality, the higher rate delivers.

How MAGTASIUM Works: The Science Made Simple

The research points to a few keyways MAGTASIUM delivers these results:

- **A Standalone Growth Stimulant:** Even with no other inputs, MAGTASIUM drives plant growth and development (as seen in T6).
- **A Nutrient-Use Efficiency Enhancer:** When used with fertilizer, it helps plants take up and use nutrients more effectively, getting more value from every Rand spent on nutrition.
- **A Quality Enhancer:** It directs energy toward the fruit, resulting in larger, heavier tomatoes without sacrificing the number of fruits produced.
- **A Stress Mitigator:** Healthier plants with better color and growth are naturally better equipped to handle environmental stress.



The Bottom Line for Your Operation

This independent research provides strong, scientific evidence that MAGTASIUM is a powerful tool for tomato production. Whether you are looking for a standalone solution or a way to upgrade your existing program, the results speak for themselves.

Here is the plain truth you can take to the field:

- **Used alone (T6), MAGTASIUM at the higher concentration drives strong growth and produces large, heavy fruit that rivals fully fertilized plants.** This proves MAGTASIUM has real, independent power.
- **Added to your existing fertilizer program (T3 & T5), MAGTASIUM maintains your high yields while making each fruit bigger and heavier.**
- **The higher concentration (Treatment B) consistently delivers the strongest results.** You get what you pay for.
- **Healthier plants, faster growth, and better-quality fruit -** MAGTASIUM delivers across the board.

The evidence is in. With your fertility program, MAGTASIUM delivers more and better fruit.

REPORT



MAGTASIUM PRELIMINARY TRIAL RESULTS: TOMATOES

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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:

T1	Negative Control (NC) - No treatment
T2	Positive Control (PC) – Standard nutrient treatment
T3	PC + A
T4	NC + A
T5	PC + B
T6	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

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. Indirect measure of stress
- **Plant growth rate (%)** – Change in plant growth parameters i.e. correlation of plant height change, leaf amount and canopy density over time.

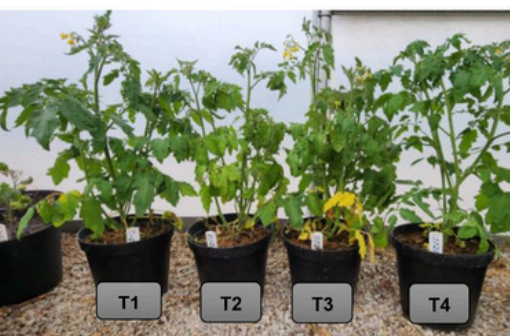


Figure 1: Treatment effects after 4 months in comparison to Negative Control (NC) - No treatment (T1) and Positive Control (PC) – Standard nutrient treatment (T2)

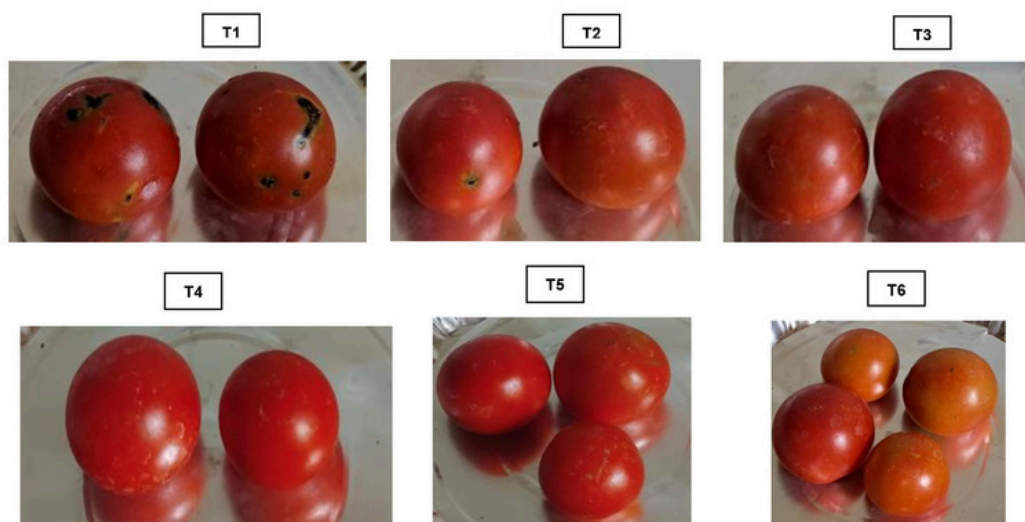


Figure 2: Fruit production from plants treated with **MAGTASIUM (T3-T6)** in comparison to treatment **T1 (no treatment)** and **T2 (Standard Nutrient Treatment)**

PRELIMINARY RESULTS

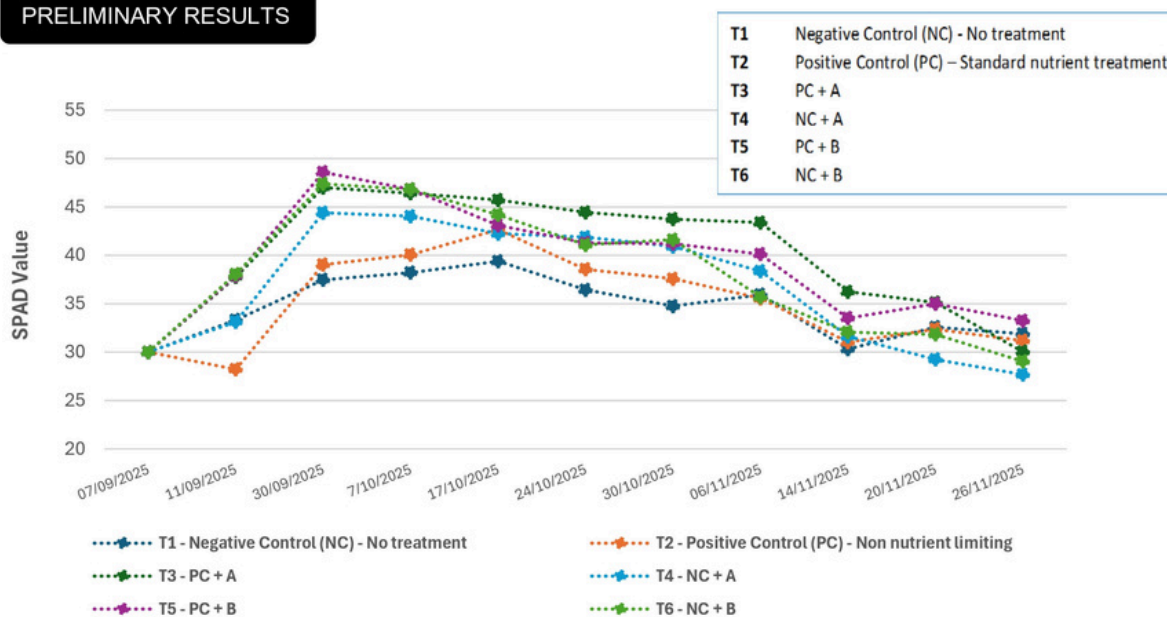
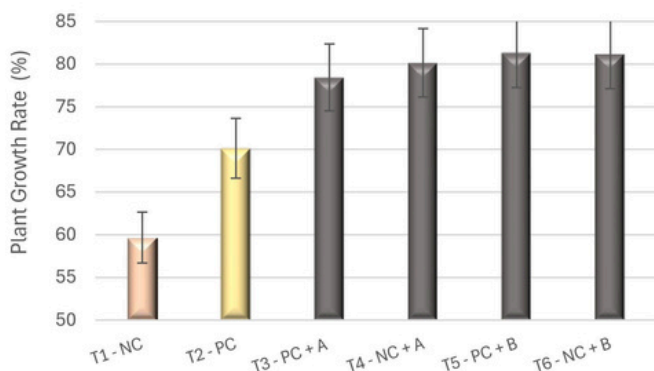


Figure 3: Treatment effects after 4 months on plant SPAD values

Interpretation (Figure 3):

- T2 displayed higher SPAD values than T1, confirming improved nitrogen status with fertilisation.
- T3 and T5 maintained or exceeded T2 SPAD values.
- T4 and T6 improved SPAD relative to T1.
- Treatment B showed slightly higher SPAD enhancement than Treatment A.

MAGTASIUM increases chlorophyll content and apparent nitrogen-use efficiency. The improvement across both nutrient regimes suggests enhanced nutrient uptake, improved internal nutrient cycling, or stimulation of root activity and plant metabolism.



Interpretation (Figure 4):

- T1 exhibited the slowest growth rate.
- T2 significantly increased growth rate.
- T3 and T5 accelerated growth beyond T2.
- T4 and T6 improved growth compared to T1.
- A dose-response pattern (B > A) is evident.

MAGTASIUM stimulates vegetative growth dynamics. Growth enhancement under fertilised conditions indicates physiological optimisation rather than simple nutrient correction.

Figure 4: Treatment effects after 4 months plant growth rate

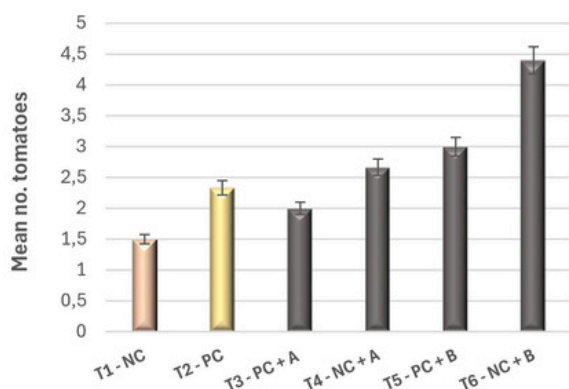


Figure 5: Treatment effects no. on the mean no. of tomatoes produced

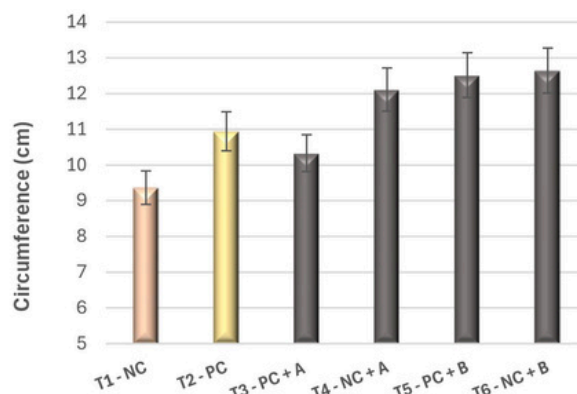


Figure 6: Treatment effects on the mean circumference of tomatoes

Interpretation (Figure 5-7):

- T1 recorded the lowest fruit number, size, and mass.
- T2 improved yield components through nutrient supply.
- T3 and T5 achieved the highest fruit number and fruit size.
- T4 and T6 showed moderate improvements compared to T1.
- **Treatment B** produced the strongest improvements in fruit mass and circumference.

MAGTASIUM improves both yield quantity (fruit number) and yield quality (size and mass). Enhanced assimilate partitioning and nutrient translocation to reproductive sinks are likely contributing factors. The stronger response under **Treatment B** suggests concentration-driven physiological stimulation.

T1	Negative Control (NC) - No treatment
T2	Positive Control (PC) - Standard nutrient treatment
T3	PC + A
T4	NC + A
T5	PC + B
T6	NC + B

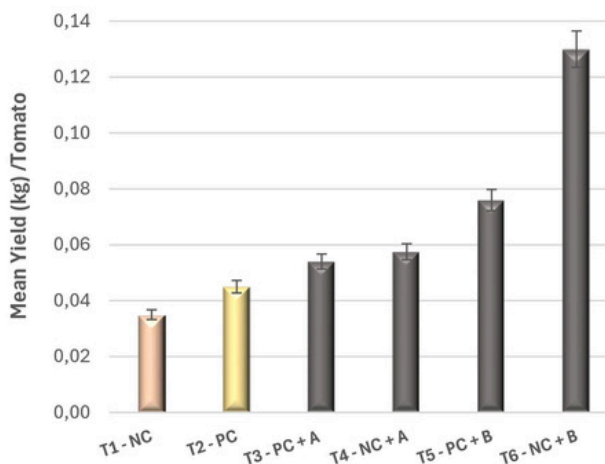


Figure 7: Treatment effects on the mean mass of tomatoes

PRELIMINARY CONCLUSIONS

This preliminary tomato trial clearly confirms that baseline nutrient availability significantly influences vegetative growth, chlorophyll status, and fruit production. The **Positive Control (T2)** established the production benchmark under standard fertilisation, while the **Negative Control (T1)** demonstrated nutrient limitation in untreated plants.

MAGTASIUM Treatments A and B consistently improved:

- Chlorophyll status (SPAD),
- Vegetative growth rate,
- Fruit number,
- Fruit size and mass.

Under nutrient-limiting conditions (**T4, T6**), **MAGTASIUM** partially compensated for absence of fertiliser, indicating enhanced nutrient availability, mobilisation, or uptake efficiency. Under fertilised conditions (**T3, T5**), performance improvements beyond T2 demonstrate synergistic physiological enhancement and improved nutrient-use efficiency. **Treatment B** produced the strongest and most consistent responses, supporting a dose-response mechanism. Overall, the data indicates that **MAGTASIUM** functions primarily as:

- A nutrient-use efficiency enhancer,
- A physiological growth stimulant,
- A stress mitigator,
- And a synergistic yield enhancer when integrated with fertilisation.

The responses were influenced by inherent soil fertility and texture, suggesting soil-specific optimisation strategies may further enhance performance.

*Note: These trials were conducted to compare the true effect of **MAGTASIUM** on plant growth parameters. Only T2 received conventional fertiliser inputs. Therefore, results should be interpreted within the context of evaluating **MAGTASIUM's** intrinsic biological and physiological effects rather than as a reflection of commercial production yields.*

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CORPORATE IDENTITY



HALOGEN GREENS

ELEVATING CROP PROTECTION, NATURALLY

SPECIALIZATION

Group 3 Bio Stimulant

(Trials Underway for Registration)

STATUS

- Pending Worldwide Patent
- Conducting Trials



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