HALOGEN GREENS

AGRIVITALITY



RESEARCH REPORT 2026

Magtasium™ Preliminary Trial Results: Broccoli

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Magtasium™ broccoli pot trial

Magtasium™ is a liquid, Group-3, Bio-Stimulant. Magtasium™ improved leaf readings and head development in selected broccoli programmes, giving growers a practical reason to evaluate it alongside fertiliser.

1. What was tested

The aim was to test Magtasium™ as a Bio-Stimulant through leaf greenness, growth and head mass. Greenhouse pot trials used sandy-loam and clay soils in 2025, followed by application comparisons in 2026. Feeding water for fertilised treatments had a reported **EC of 0.87**. EC describes the level of dissolved salts in the feeding water.

2. What the trials showed

What was measured	Magtasium™ programme	Comparison	% increase / decrease
Average leaf reading in sandy loam	51.82-53.01 SPAD with fertiliser	46.27 with fertiliser alone	+12.0% to +14.6%
Head mass in sandy loam	32 g with dose B and fertiliser	14 g with fertiliser alone	+128.6%
Head mass in clay	22.7% more with dose A and fertiliser	Matching fertiliser-only control	+22.7%
Head mass in 2026	325 g with weekly leaf spray and drench	247.5 g with weekly leaf spray only	+31.3%

SPAD is a meter reading linked to chlorophyll, the green material leaves use to capture sunlight. The first three rows compare Magtasium™ with matching fertiliser-only controls. Both programmes in the last row received Magtasium™ and fertiliser.

3. What this means for your farm

The results show a useful plant response in both soil types. Leaf condition and head growth give the farmer two clear ways to judge the value of Magtasium™.

Test weekly leaf spraying plus a root-area drench alongside your feeding programme. Keep a matching group without Magtasium™, use the same nutrition, and compare head weight and leaf readings. Select the dose for your soil rather than assuming a higher dose is always better.

Trial context and 2025 treatments

The pre-feasibility programme began in 2025, with some measurements and harvests continuing into early 2026. The experimental layout was a randomised block design with five replicates. Soil 1 was sandy loam and Soil 2 was clay. Moisture was maintained as non-limiting. The recorded cultivar for the 2026 trial was Parthenon.

Code	Nutrition and product programme
T1	Negative control: no product treatment; no designated fertilisation
T2	Positive control: non-nutrient-limiting fertilisation; no product treatment
T3	Positive control plus Magtasium™ dose A
T4	Negative control plus Magtasium™ dose A
T5	Positive control plus Magtasium™ dose B
T6	Negative control plus Magtasium™ dose B
Dose A	20 mL/L water foliar application weekly plus 5 mL/L drench weekly
Dose B	40 mL/L water foliar application weekly plus 10 mL/L drench weekly

The most informative product contrasts are T3 versus T2 and T5 versus T2 within the fertilised setting, and T4 versus T1 and T6 versus T1 within the unfertilised setting.

2026 Broccoli treatment programme

Code	Interval	Foliar mL/L	Drench mL/L	NPK plus trace
T1	Weekly	20	-	Yes
T2	Weekly	20	2.5	Yes
T3	Every 2 weeks	20	2.5	Yes
T4	Every 4 weeks	20	2.5	Yes
T5	Daily	-	7	No

Treatment codes are used consistently within each phase; they are not interchangeable between the 2025 screening and 2026 application trial.

Source schedule discrepancy

The source methodology table lists the daily T5 drench as 7 mL/L. The legends on the broccoli graphs list it as 2.5 mL/L. Both source values are retained here; the original trial records are needed to resolve this difference.

Measurements and interpretation

SPAD (Soil Plant Analysis Development) is a non-destructive meter-based index of relative leaf greenness. It supports comparisons of chlorophyll-related physiological status within a crop and programme; it is not a direct measurement of leaf nitrogen or photosynthetic rate.

Application rates above are formulation volumes per litre of application water. They cannot be converted to hectare rates without spray or drench volume, plant density and application-frequency records. Only treatments explicitly designated NPK plus trace received the complete nutrient programme.

The source report presents descriptive comparisons. Where numerical means are stated, percentages are calculated from the recorded values. Graphs and photographs are reproduced as complete images. The source states that statistical significance could not be independently assessed from the available report material. Pot-scale harvest masses must not be read as estimates of commercial field yield.

Reading the results

The following pages retain the source figure numbers and scientific findings. The 2025 and 2026 programmes are presented separately, followed by the broccoli conclusion and visual observations.

2025 pre feasibility results

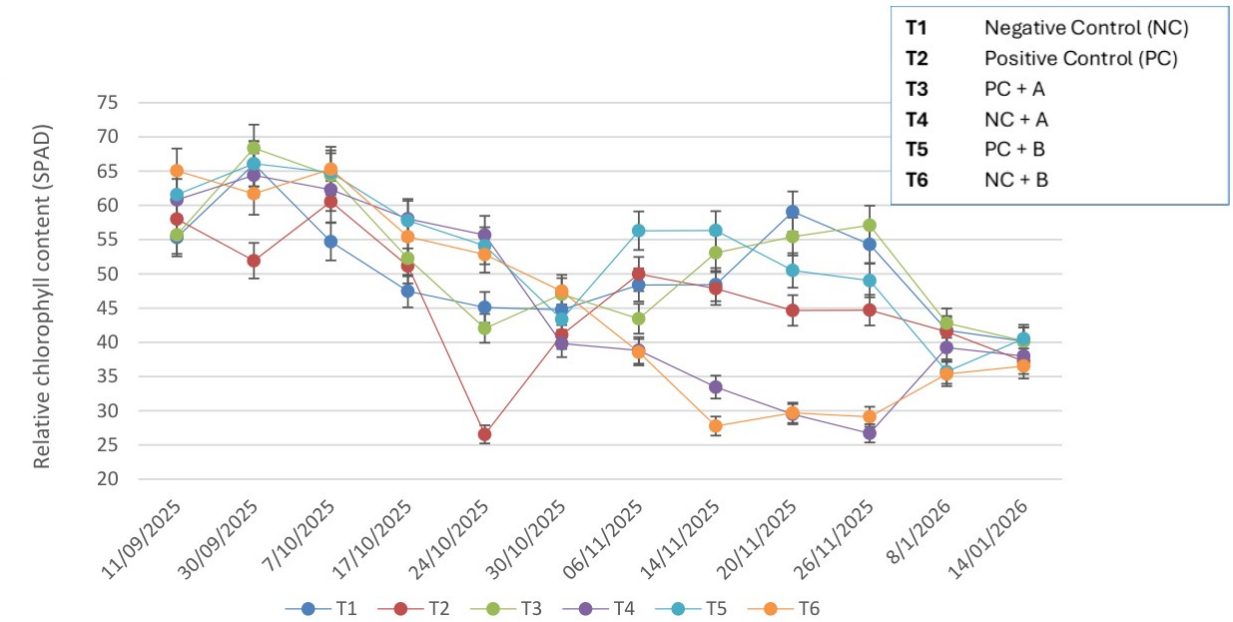

Figure 3.2.12: Relative chlorophyll content (SPAD) of broccoli in soil 1 in a pre-feasibility trial

The descriptive mean SPAD was 51.82 for T3 and 53.01 for T5, compared with 46.27 for T2. T4 and T6 averaged 45.56 and 45.40, below T1 at 50.46.

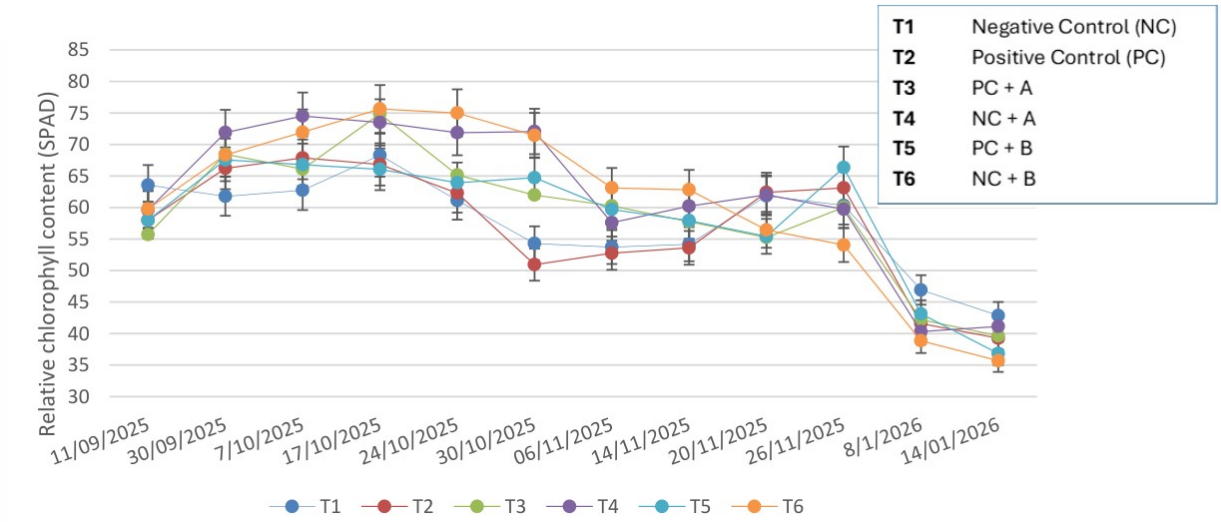

Figure 3.2.13: Relative chlorophyll content (SPAD) of broccoli in soil 2 in a pre-feasibility trial

The descriptive mean SPAD was 62.04 in T4 and 61.10 in T6, compared with 57.64 in T1. T3 and T5 averaged 58.95 and 58.87, compared with 57.08 in T2.

2025 pre feasibility results

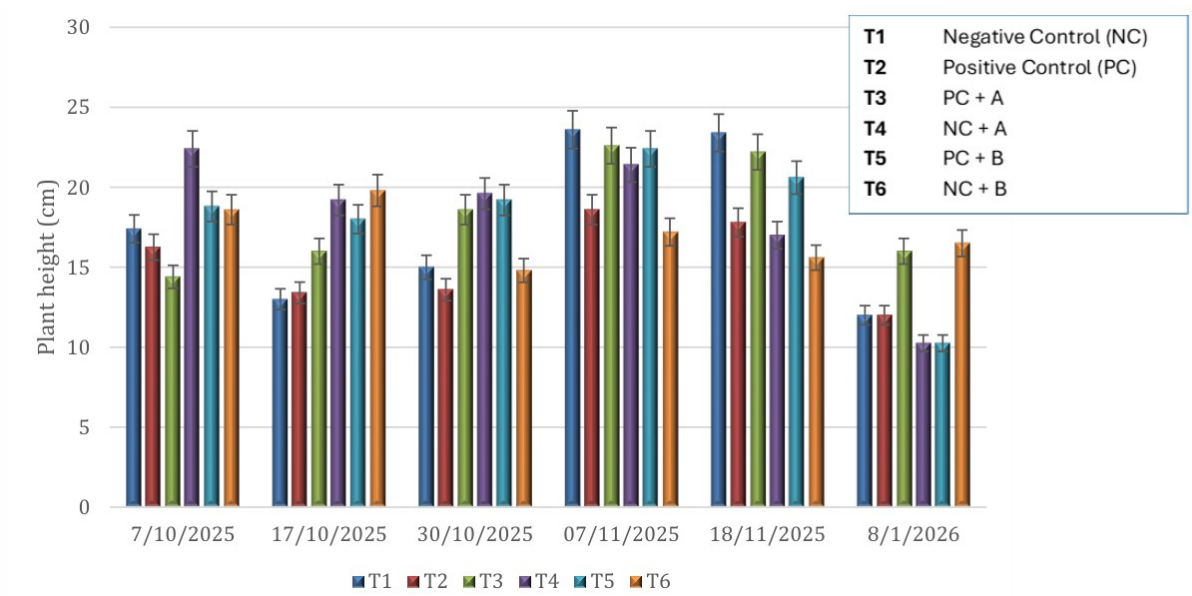

Figure 3.2.14: Plant height (cm) of broccoli in soil 1 in a pre-feasibility trial

T3 finished at 16.0 cm compared with 12.0 cm in T2; T6 finished at 16.5 cm compared with 12.0 cm in T1. T4 and T5 finished at 10.25 cm. This panel repeats the numerical series of the earlier broccoli Figure 3 in section 4.1.1. Its caption and legend are retained for completeness; it represents the same biological observation and is counted once in the synthesis.

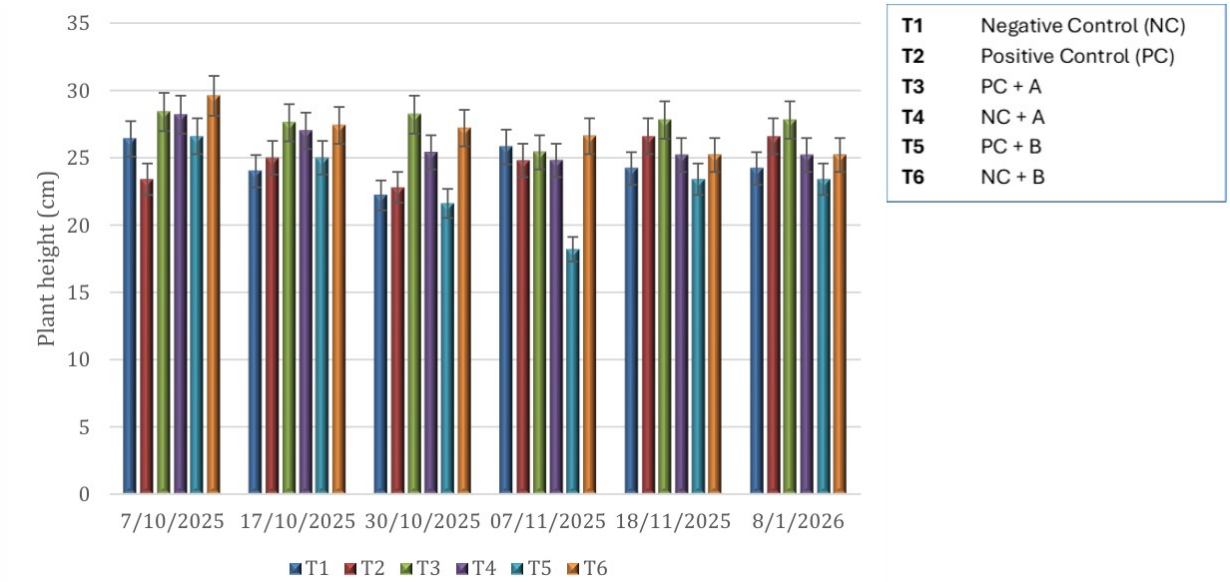

Figure 3.2.15: Plant height (cm) of broccoli in soil 2 in a pre-feasibility trial

T3 maintained the highest descriptive mean height at 27.53 cm, compared with 24.87 in T2. Final heights were 27.8 and 26.6 cm, respectively; T5 finished at 23.4 cm. This panel repeats the numerical series of the earlier broccoli Figure 4 in section 4.1.1. Its caption and legend are retained for completeness; it represents the same biological observation and is counted once in the synthesis.

2025 pre feasibility results

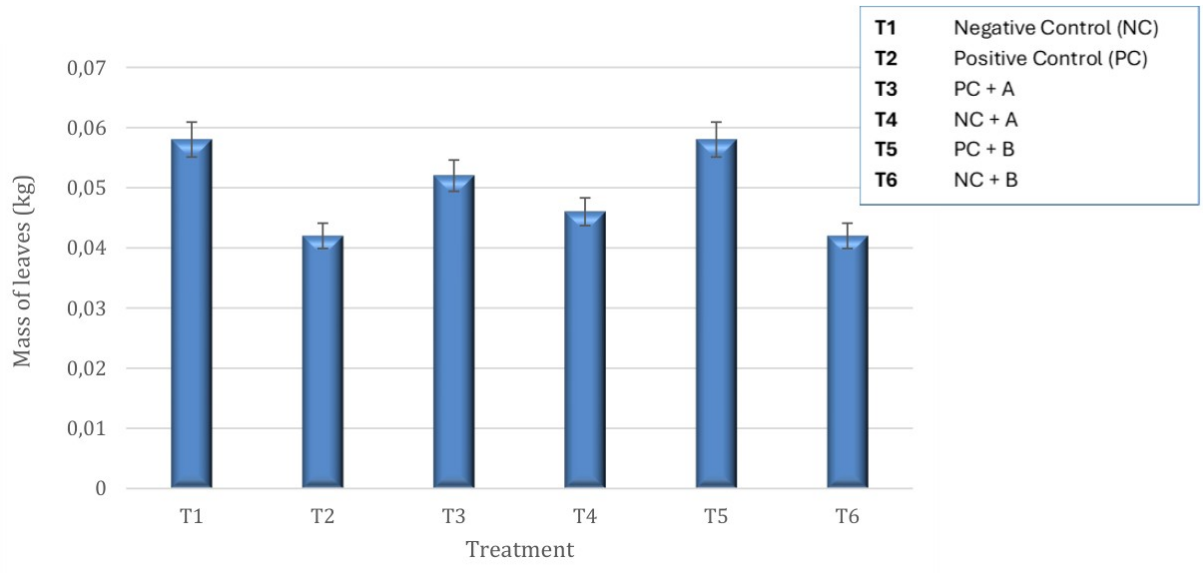

Figure 3.2.16: Mass (kg) of broccoli leaves in soil 1 in a pre-feasibility trial

Leaf mass was 0.052 kg in T3 and 0.058 in T5, compared with 0.042 in T2. T4 and T6 were 0.046 and 0.042 kg, compared with 0.058 in T1. This panel repeats the numerical series of the earlier broccoli Figure 5 in section 4.1.1. Its caption and legend are retained for completeness; it represents the same biological observation and is counted once in the synthesis.

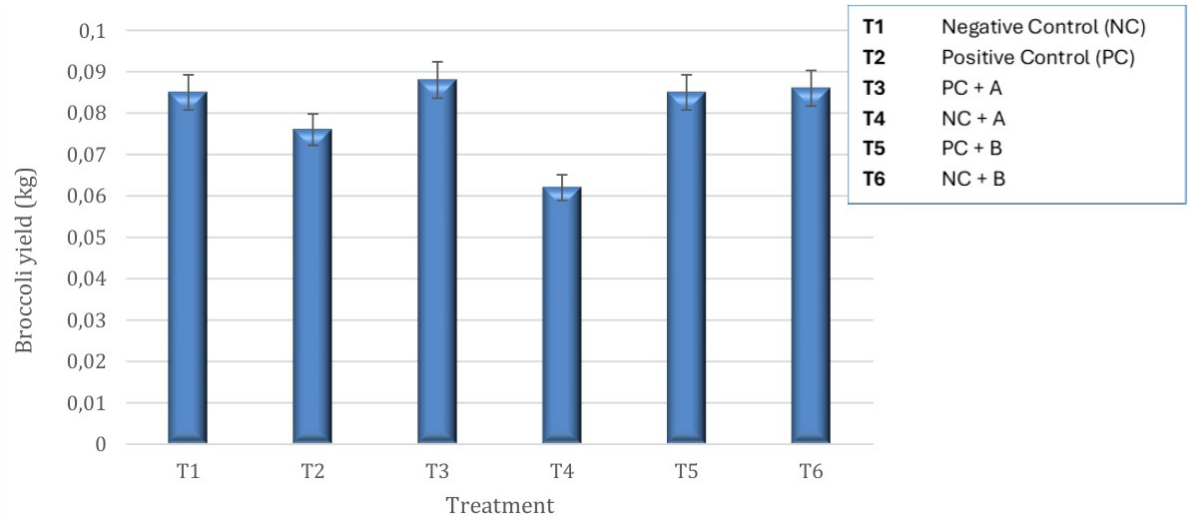

Figure 3.2.17: Mass (kg) of broccoli leaves in soil 2 in a pre-feasibility trial

Leaf mass was highest in T3 at 0.088 kg; T5 was 0.085 and T2 0.076. T6 reached 0.086 kg compared with 0.085 in T1, while T4 was 0.062 kg. This panel repeats the numerical series of the earlier broccoli Figure 6 in section 4.1.1. Its caption and legend are retained for completeness; it represents the same biological observation and is counted once in the synthesis.

2025 pre feasibility results

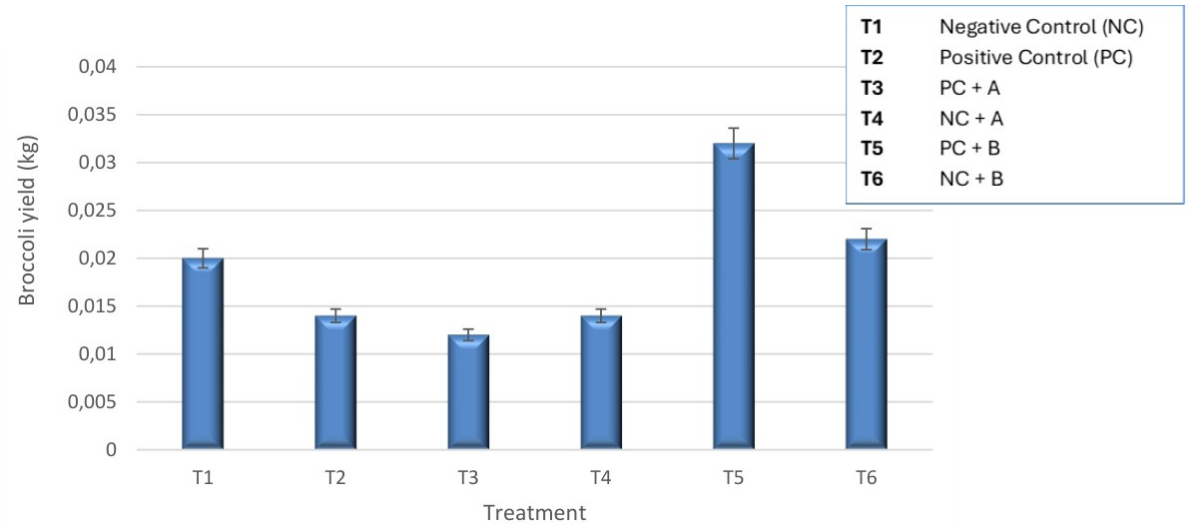

Figure 3.2.18: Broccoli yield (kg) in soil 1 in a pre-feasibility trial

Head mass was 0.032 kg in T5 compared with 0.014 kg in T2, an increase of 128.6%. T6 reached 0.022 kg compared with 0.020 in T1; T3 and T4 were 0.012 and 0.014 kg. This panel repeats the numerical series of the earlier broccoli Figure 7 in section 4.1.1. Its caption and legend are retained for completeness; it represents the same biological observation and is counted once in the synthesis.

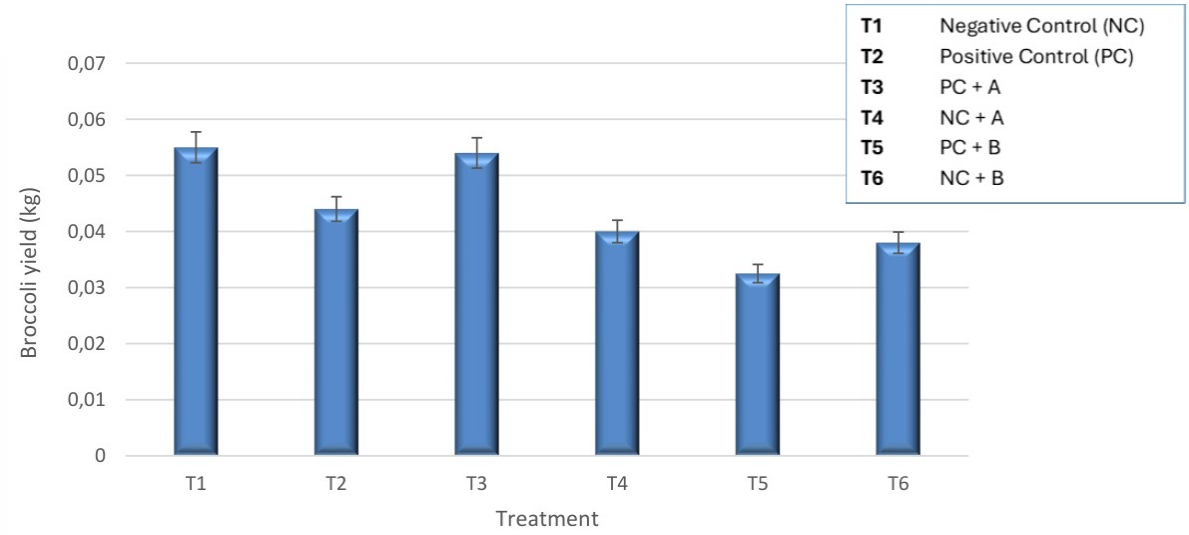

Figure 3.2.19: Broccoli yield (kg) of broccoli head in

2026 trial results

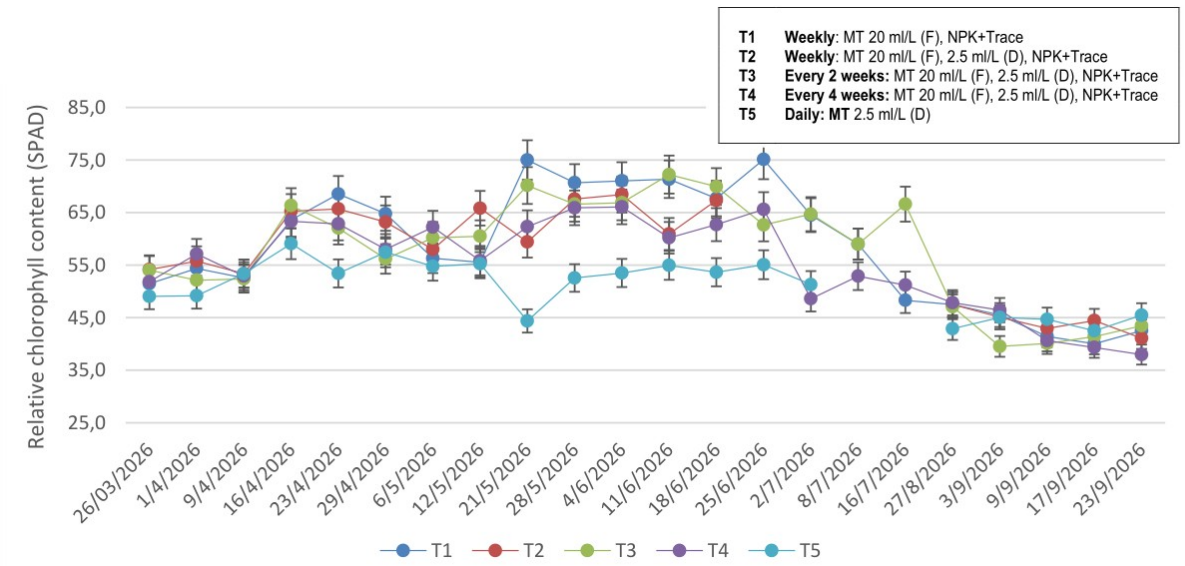

Figure 3.2.20: Relative chlorophyll content (SPAD) of broccoli

Peak SPAD reached 75.10 in T1, 72.22 in T3 and 66.07 in T4. T5 peaked at 59.08 but had the highest final reading at 45.48; the series contains unequal numbers of observations. The fertilised foliar and combined programmes supported strong mid-cycle greenness. The highest final reading in T5 does not overturn the broader growth-cycle pattern or establish greater yield.

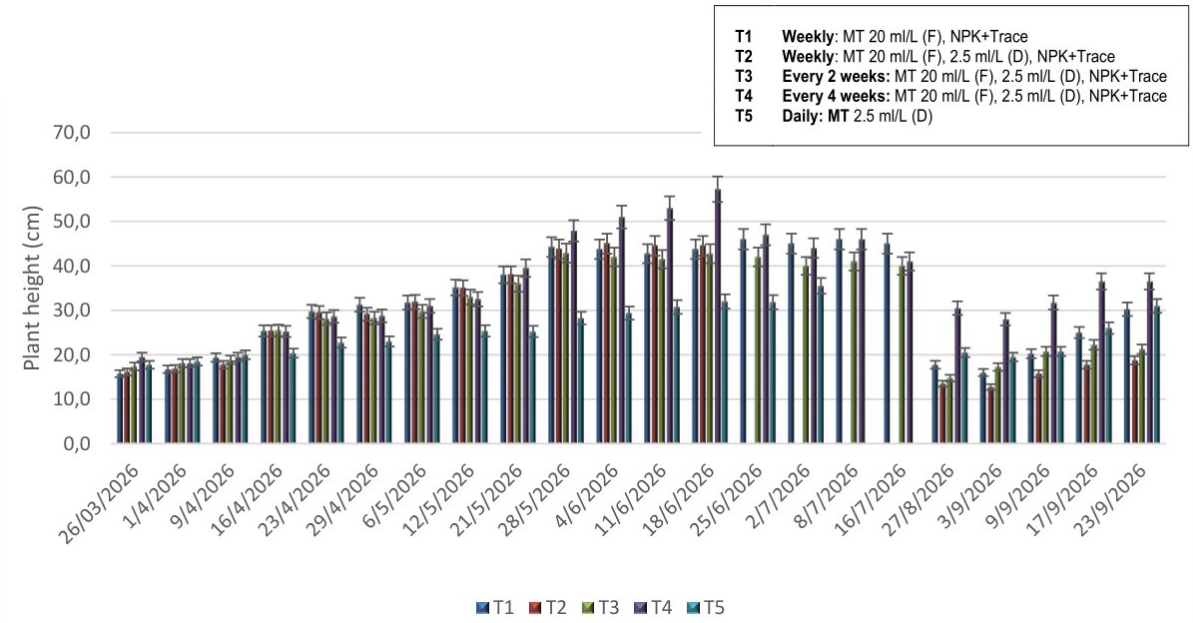

Figure 3.2.21: Plant height (cm) of broccoli

T4 had the largest peak height at 57.25 cm and a final height of 36.50 cm. T1 finished at 30.25 cm, while T2 and T3 finished at 18.75 and 21.25 cm. The tallest plants were not the highest head-yielding programme. Shoot elongation and marketable head development describe different components of broccoli performance.

2026 trial results

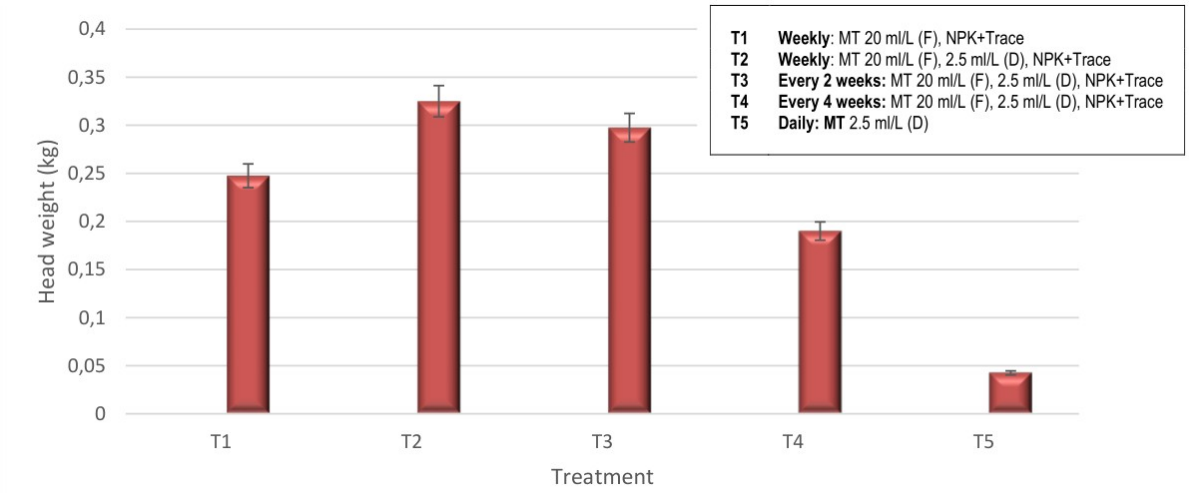

Figure 3.2.22: Head weight (kg) of broccoli at harvest

Head mass was 0.3250 kg in T2 and 0.2975 in T3, compared with 0.2475 in T1. T2 exceeded the weekly foliar-only programme by 31.3%; T5 produced 0.0425 kg. The weekly combined programme supported greater head production under fertilisation. The fortnightly programme also performed favourably, supporting flexibility in product application scheduling.

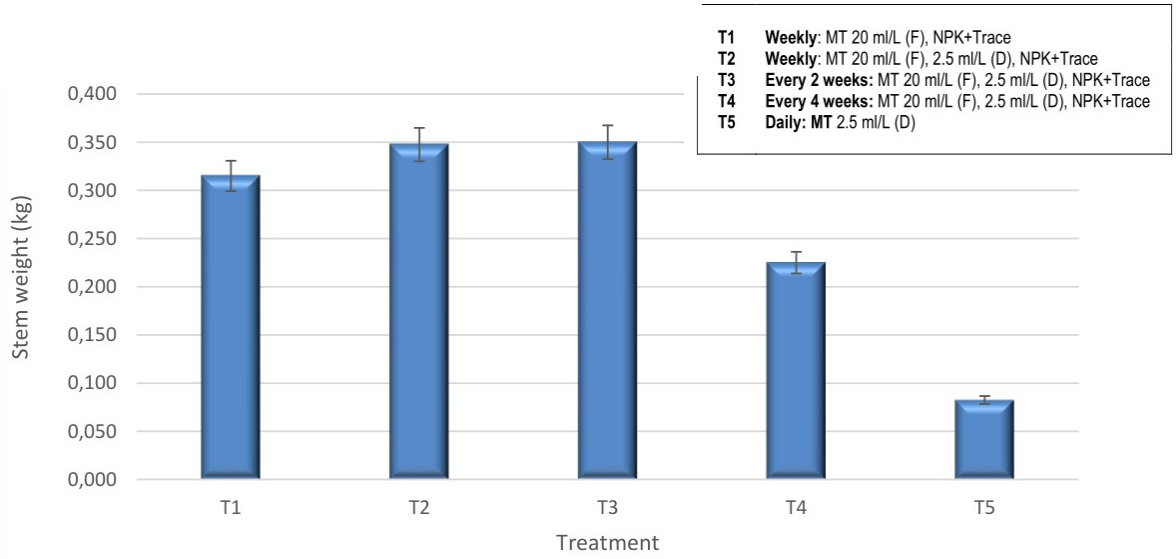

Figure 3.2.23: Stem weight (kg) of broccoli at harvest

Stem mass was 0.3500 kg in T3 and 0.3475 in T2, compared with 0.3150 in T1. T4 and T5 produced 0.2250 and 0.0825 kg. The combined programmes supported both vegetative structure and marketable head production. The lowest biomass under unfertilised T5 is consistent with its restricted nutrient supply.

Broccoli growth performance conclusion

Broccoli showed favourable but soil-dependent responses. Dose B with fertilisation increased head mass by 128.6% relative to the fertilised control in sandy loam, whereas dose A with fertilisation increased head mass by 22.7% in clay soil. The 2026 weekly combined programme produced 0.325 kg/head, 31.3% above the fertilised foliar-only programme. These results support crop performance enhancement with an application programme matched to soil and nutritional conditions. The repeated pre-feasibility panels in sections 4.1.1 and 4.2.1 represent the same observations and are not additional trials.

Visual observations



Figure A: Randomised block design of broccoli trial



Figure B: Common visual effects of different treatments

CORPORATE IDENTITY

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SPECIALIZATION

Group 3 Bio Stimulant
(Trials Underway for Registration)

STATUS

- Pending Worldwide Patent
- Conducting Trials

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