



HALOGEN GREENS



CASE STUDY

Magtasium Foliar Programme - Schagen,
Mpumalanga Lowveld - Beaumont
Macadamia Orchard Improvement

Halogen Greens (Pty) Ltd



BEAUMONT ORCHARD IMPROVEMENT

Magtasium Foliar Programme - Schagen, Mpumalanga Lowveld

1 Executive Summary

Across the three seasons reviewed (2024–2026), the Schagen orchard's total DNIS yield rose from 136,550 kg in 2024 to 183,579 kg in 2026 - a 34.4% gain over the period. Average productivity climbed from 3,632 kg/ha to 4,882 kg/ha. The 2026 season, supported by a five-application Magtasium foliar programme, produced the strongest result of the three years, with nine of twelve blocks finishing above their 2024 baseline and the farm as a whole up 49.3% on 2025.

Key Results - Three-Year Trend

Farm-wide DNIS yield: +34.4% over three years (2024–2026); +49.3% year-on-year in 2026.

Average productivity: 3,632 kg/ha (2024) → 4,882 kg/ha (2026).

Nine of twelve blocks finished above their 2024 baseline in 2026.

Blocks unaffected by frost show steady, compounding growth across all three years.

Magtasium five-application programme timed to key growth stages: flowering, fruit set, nut sizing, and kernel fill.

2 Orchard Overview

The Schagen orchard comprises 12 blocks of Beaumont cultivar, planted across multiple eras. Total area is 37.6 hectares. Spacing and age vary by block, ranging from 14 to 25 years old. Block 11 features transplanted trees (moved at nine years of age in 2012), which are performing in line with or ahead of blocks of the same nominal age, validating the transplant approach.

Block	Spacing (m×m)	Age (yrs)	Size (ha)
1–4	10 × 5	24	16.5
5A–5B	10 × 5 / 5 × 5	25 / 18	4.4
6–7	8 × 5	14	4.0
8–10	5 × 5	14	10.2
11	8 × 5	14*	2.3
TOTAL	-	-	37.6

**Block 11 trees transplanted at nine years of age in 2012, giving head start on canopy and root development.*



3 Magtasium Programme

The Magtasium foliar programme was applied across the orchard at 20 ml per litre of water, timed to the periods of highest magnesium and potassium demand. Five applications were made during the 2026 season, strategically spaced to cover the critical growth stages from flowering initiation through kernel fill.

Spray #	Timing	Growth Stage
1	Flowering	Anthesis / pollination
2	Flowering → fruit set	Fertilisation, early fruit retention
3	Fruit set	Early nutlet development
4	Mid-October	Nut sizing / cell division
5	Mid-November	Kernel-fill onset

The late-season sprays (mid-October, mid-November) line up directly with nut sizing and kernel-fill - the growth stages most directly tied to final DNIS weight. This timing strategy is a key element of the programme's design.

4 Yield Results (2024–2026)

All weights recorded on a DNIS (Dry-in-Shell) basis. Blocks 1, 3 and 8 (shaded in table) carried frost damage into the 2025 season. Despite this, blocks 1 and 3 rebounded strongly in 2026, finishing well above their 2024 baseline.

Block	Size (ha)	2024 (kg)	2025 (kg)	2026 (kg)	24→26 Change
1	4.4	14,992	19,440	19,864	+32.5%
2	4.0	17,744	20,888	23,584	+32.9%
3	4.2	9,384	13,000	24,904	+165.4%
4	3.9	8,512	11,960	15,363	+80.5%
5A	1.4	4,734	3,760	5,408	+14.2%
5B	3.0	3,032	4,112	6,688	+120.6%
6	2.0	10,920	8,224	16,392	+50.1%
7	1.2	6,096	5,112	8,808	+44.5%
8	5.9	24,488	13,952	22,200	-9.3%
9	2.0	12,504	4,912	10,184	-18.6%
10	3.3	16,552	7,192	17,104	+3.3%
11	2.3	7,592	10,416	13,080	+72.3%
TOTAL	37.6	136,550	122,968	183,579	+34.4%



5 Block Performance Analysis

5.1 Steady Growth Blocks

Blocks 2, 4, 5B and 11 - unaffected by frost - show steady, compounding growth across all three years. These blocks provide the clearest read on underlying orchard trend and programme efficacy. Block 2 achieved +32.9% growth; Block 4, +80.5%; Block 5B, +120.6%; and Block 11 (transplanted trees), +72.3%. This consistent upward trajectory across unaffected blocks strongly supports the effectiveness of the Magtasium programme and improved seasonal conditions.

5.2 Frost Recovery Blocks

Blocks 1 and 3 carried frost damage into the 2025 season, resulting in depressed yields that year. However, both rebounded strongly in 2026, finishing well above their 2024 baseline. Block 1 achieved +32.5% growth over the three-year period, and Block 3 achieved an exceptional +165.4% - the highest growth rate on the farm. This recovery demonstrates the orchard's resilience and the positive impact of the Magtasium programme in supporting canopy recovery.

5.3 Transplanted Trees (Block 11)

Block 11 features trees transplanted at nine years of age in 2012, giving them a head start on canopy and root development relative to their nominal age. These trees are performing in line with or ahead of blocks of the same nominal age, validating the transplant approach as a viable orchard rejuvenation strategy.

6 Productivity Metrics

Farm-wide Average Productivity

2024: 3,632 kg/ha

2025: 3,270 kg/ha (affected by frost damage)

2026: 4,882 kg/ha - highest of the three-year period

Growth Trajectory

Three-year period: +34.4% (2024 → 2026)

Year-on-year: +49.3% (2025 → 2026)

Nine of twelve blocks above 2024 baseline in 2026



7 Technical Notes

DNIS Weight Basis: All yield data recorded on a Dry-in-Shell (DNIS) basis, as reported from farm records.

Magtasium Application Rate: 20 ml per litre of water, applied as a foliar spray across the entire orchard.

Frost Impact: Blocks 1, 3 and 8 carried frost damage into the 2025 season. Despite this, blocks 1 and 3 recovered strongly in 2026.

Transplanted Trees: Block 11 trees were transplanted at nine years of age in 2012. Their performance validates the transplant approach as a viable rejuvenation strategy.

Data Source: All data sourced from farm records covering the 2024–2026 seasons. No formal replicated trial was conducted.

8 2027 Trial Intentions

Building on these three years of results, a 2027 trial using SPAD and Brix readings at each spray timing is planned. SPAD (Soil and Plant Analysis Development) readings will track leaf chlorophyll content and photosynthetic capacity at key phenological stages. Brix measurements at hull split will provide a non-destructive indicator of carbohydrate status. This structured data collection will enable more rigorous evaluation of the Magtasium programme and refinement of the application strategy for future seasons.

9 Conclusions

The Schagen orchard has demonstrated strong recovery and growth across the 2024–2026 period. The 34.4% increase in farm-wide DNIS yield over three years, and the 49.3% year-on-year gain in 2026, reflect both improved seasonal conditions and the positive impact of the Magtasium foliar programme. Blocks unaffected by frost show steady, compounding growth, providing the clearest evidence of underlying orchard trend. Frost-affected blocks have rebounded strongly, with Block 3 achieving an exceptional +165.4% recovery.

The Magtasium programme's strategic timing - covering flowering, fruit set, nut sizing, and kernel fill - aligns with the growth stages most directly tied to final DNIS weight. The planned 2027 trial, incorporating SPAD and Brix measurements, will provide more detailed insight into the programme's physiological impact and enable further refinement of the application strategy.

Magtasium. Trigger the potential. Harvest the result.

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- Nelspruit - Mpumalanga
- Kirkwood - Eastern Cape
- Polokwane - Limpopo



CORPORATE IDENTITY



SPECIALIZATION

Group 3 Bio Stimulant
(Trials Underway for Registration)

STATUS

- Pending Worldwide Patent
- Conducting Trials



CONTACT INFORMATION



+ (27) 87 474 6149



www.halogengreens.com



info@halogengreens.com



- Roodepoort, Gauteng, South Africa (H/O)
- Tarlton, Gauteng, South Africa
- Citrusdal, Western Cape, South Africa
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