

MicrobeBio Coconut

5-Year Per-Hectare Nutrition + Protection Program

Planning basis: approximately 175 palms/ha, corresponding to 7.5×7.5 m spacing (ICAR-CPCRI)

Program Basis & Philosophy

A five-year biological + conventional integration plan for mature coconut production

Planning Basis

175 palms/ha

at 7.5 m × 7.5 m spacing (ICAR-CPCRI)

Not published coconut efficacy claims

Rates shown are proposed MicrobeBio field-development rates.

Registration matters

X1 / X3 / X5 should only be used against pests/diseases permitted by the applicable label in the country of use.

Year 1

Establishment

Root establishment & microbial colonization — not fertilizer reduction yet

Year 2

Root Expansion

Expand MicrobeBio coverage; trial 90% conventional NPK

Year 3

Pre-Bearing

Nutrient-use efficiency & canopy development; target 85–90%

Year 4

Bearing Coconut

Shift to production maintenance; IPM-triggered protection

Year 5+

Full Production

Standard mature coconut program, four applications/year

5-Year Program at a Glance

Annual MicrobeBio product rates per hectare

Product	Year 1	Year 2	Year 3	Year 4	Year 5+
Rhizo Activator 4-4-4	100 kg/ha	150 kg/ha	200 kg/ha	250 kg/ha	300 kg/ha
Nature Vigor	5 kg/ha	7.5 kg/ha	10 kg/ha	10 kg/ha	10 kg/ha
Aqua Activator	1.5 kg/ha	2 kg/ha	2 kg/ha	2 kg/ha	2 kg/ha
Hydro Activator	30 L/ha	30 L/ha	40 L/ha	40 L/ha	40 L/ha
Foliar	1 L/ha	1.5 L/ha	1.5 L/ha	1.5 L/ha	1.5 L/ha
Nano Precision S9	0.75 L/ha	1 L/ha	1 L/ha	1 L/ha	1 L/ha
X1	1.5 kg/ha	2 kg/ha	2 kg/ha	2 kg/ha	2 kg/ha
X5	1.5 kg/ha	2 kg/ha	2 kg/ha	2 kg/ha	2 kg/ha
X3	As needed	As needed	As needed	As needed	As needed

X3 use is IPM-triggered by scouting, not applied on a fixed schedule.

Year 1 — Establishment

Emphasize root establishment, microbial colonization & transplant recovery

Four Applications (per hectare)

1. Planting / Establishment

- Rhizo Activator 25 kg • Nature Vigor 2.5 kg
- Aqua Activator 500 g • Hydro Activator 10 L
- X1 500 g • Water 500–750 L

2. 60–90 Days

- Rhizo Activator 25 kg • Aqua Activator 500 g
- Hydro Activator 10 L • X1 500 g • Water 500–750 L

3. ≈ Month 6

- Rhizo Activator 25 kg • Nature Vigor 2.5 kg
- Aqua Activator 500 g • Hydro Activator 10 L
- X1 500 g • X5 500 g (where appropriate) • Water 750 L

4. ≈ Month 9

- Rhizo Activator 25 kg • Foliar 250 mL
- Nano Precision S9 250 mL • X5 500 g (if indicated)
- Foliar water 300–500 L

143 g/palm

Rhizo Activator at planting (175 palms/ha)

Conventional fertilizer: start at ~100% of the local recommendation unless soil/leaf analysis or a controlled trial supports reduction. Apply to moist soil around the root zone — never place concentrated fertilizer or microbial powder against the stem.

Year 2 — Root Expansion

Increase MicrobeBio coverage as the coconut root system expands

Soil & Foliar Program

Soil — 4 applications/year (each)

- Rhizo Activator 37.5 kg/ha • Aqua Activator 500 g/ha
- Hydro Activator 7.5 L/ha • X1 500 g/ha
- Water 750–1,000 L/ha

Nature Vigor

- 3.75 kg/ha added to 2 of the 4 applications

Foliar — 3 applications/year (each)

- Foliar 500 mL/ha • Nano Precision S9 ≈330 mL/ha
- Water 400–600 L/ha

150 kg

Rhizo Activator total per hectare/year

90%

Trial conventional NPK rate if Year 1 results are satisfactory

Annual totals: 150 kg Rhizo + 7.5 kg Nature Vigor + 2 kg Aqua + 30 L Hydro + 2 kg X1 per hectare. Keep a 100% control block for comparison.

Year 3 — Pre-Bearing / Early Production

Shift toward nutrient-use efficiency, canopy development & fruiting prep

Soil & Foliar Program

Soil — 4 applications/year (each)

- Rhizo Activator 50 kg/ha • Nature Vigor 2.5 kg/ha
- Aqua Activator 500 g/ha • Hydro Activator 10 L/ha
- X1 500 g/ha • Water 1,000 L/ha

Annual soil totals

- 200 kg Rhizo • 10 kg Nature Vigor • 2 kg Aqua
- 40 L Hydro • 2 kg X1

Foliar — 3 applications/year (each)

- Foliar 500 mL/ha • Nano Precision S9 ≈330 mL/ha
- Water 500–750 L/ha

85–90%

Fertilizer target if analysis & growth remain satisfactory

Be conservative reducing potassium (K) and magnesium (Mg). Coconut nutrition guidance emphasizes K, and Mg/boron deficiencies can also be significant (Coconut Board).

Year 4 — Bearing Coconut

Program shifts from establishment to production maintenance

Root Zone, Foliar & Protection

Root zone — 4 applications/year (each)

- Rhizo Activator 62.5 kg/ha • Nature Vigor 2.5 kg/ha
- Aqua Activator 500 g/ha • Hydro Activator 10 L/ha
- X1 500 g/ha • Water 1,000–1,500 L/ha

Foliar — 3 applications/year (each)

- Foliar 500 mL/ha • Nano Precision S9 330 mL/ha
- Water 500–750 L/ha

X5 disease program

- $500 \text{ g/ha} \times 4 \text{ applications/year} = 2 \text{ kg/ha/year}$
- Concentrate around high disease-risk periods

IPM

X3 insect control is scouting-triggered, not calendar-based

X3 starting field rate: 500 g/ha/application — apply only when scouting indicates a registered target pest. Timing is especially important for biological insect control.

Year 5+ — Full Production Program

The standard mature coconut program

A

Application A

Beginning of major growth/rain period

Rhizo 75 kg • Nature Vigor 2.5 kg • Aqua 500 g • Hydro 10 L • X1 500 g

B

Application B

8–12 weeks later

Rhizo 75 kg • Nature Vigor 2.5 kg • Aqua 500 g • Hydro 10 L • X5 500 g

C

Application C

Repeat Application A

Same as Application A

D

Application D

Repeat Application B

Same as Application B

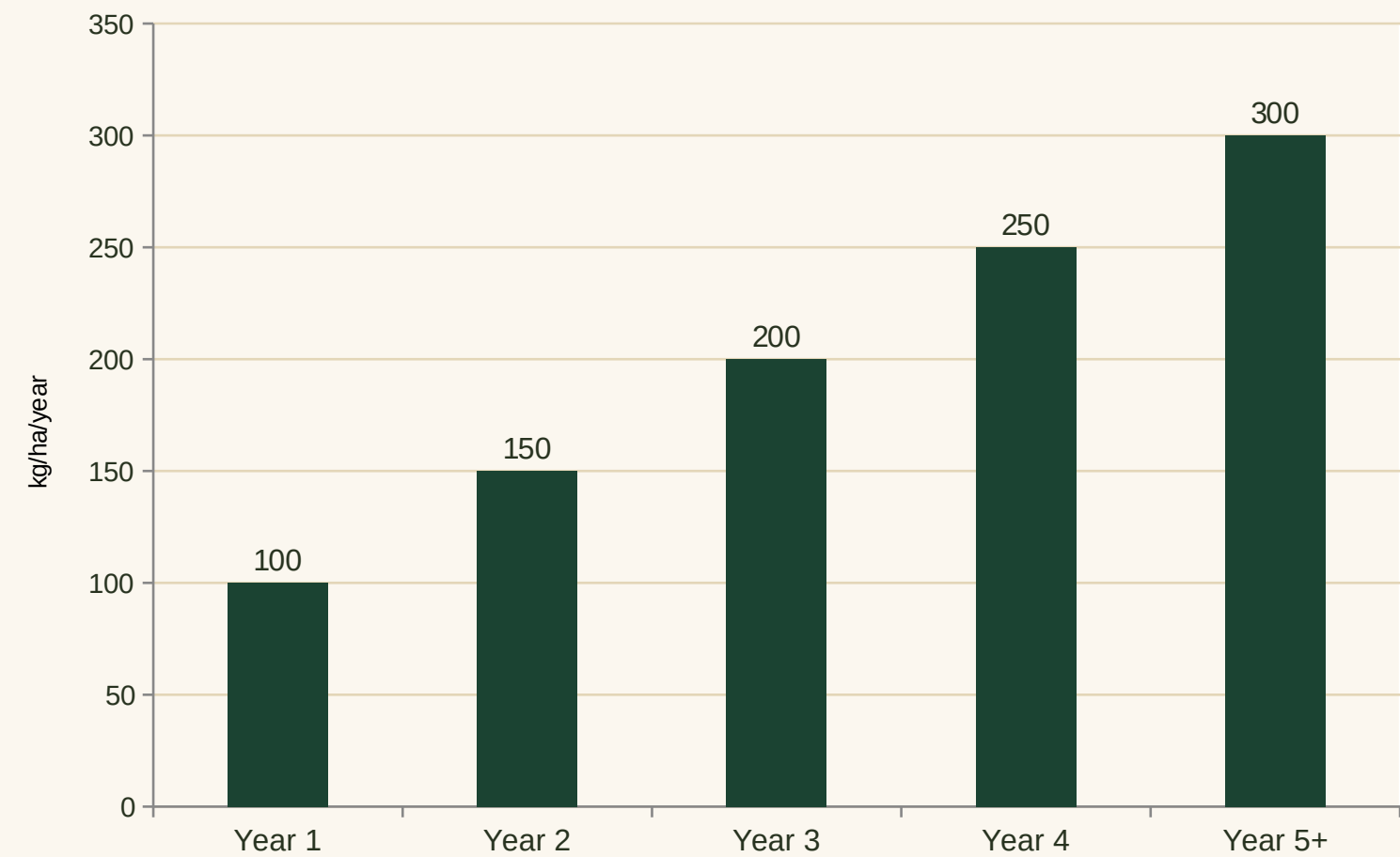
Annual Mature Program (per hectare)

300 kg/ha	10 kg/ha	2 kg/ha	40 L/ha	1–2 kg/ha	1–2 kg/ha
Rhizo Activator	Nature Vigor	Aqua Activator	Hydro Activator	X1	X5

Mature-palm equivalent: at 175 palms/ha, 300 kg/ha Rhizo Activator ≈ 1.71 kg/palm/year, split into four applications of ≈430 g/palm.

Rhizo Activator Ramp-Up

Progressive increase in soil biological input across the 5-year program (kg/ha/year)



Conventional Fertilizer Trajectory

Year 1 ~100%

Establish system first

Year 2 90% (trial)

Keep 100% control block

Year 3 85–90%

Conservative on K & Mg

Year 4+ Maintenance

Production-focused

Water & Application Method

Carrier water volumes and delivery guidance by growth stage



Young Coconut (Years 1-2)

- 500–1,000 L carrier water/ha
- ≈ 3–6 L of solution/palm at 175 palms/ha
- Apply around the developing root zone



Years 3-5+

- 1,000–1,500 L/ha for targeted soil drenches
- ≈ 6–9 L/palm at 175 palms/ha
- Goal: good root-zone distribution, not deep leaching



Drip Irrigation

- Aqua Activator, Hydro Activator & compatible solubles can be fertigated where labels permit
- Flush system with clean water after application

Caution

Do not automatically tank-mix living microbial products with conventional fungicides, bactericides, strong oxidizers, concentrated fertilizer salts, or other products that could reduce microbial viability.

Recommended Monitoring

Establish MicrobeBio treatment and conventional-control blocks and measure:

1 Soil pH, EC, organic matter, N, P, K, Ca, Mg & micronutrients	2 Coconut leaf/tissue analysis	3 Root mass and root health
4 Palm height/girth and canopy development (Years 1–3)	5 Time to flowering	6 Nuts/palm/year
7 Average nut weight	8 Copra or coconut-water yield/quality	9 Pest and disease incidence
10 Fertilizer cost/ha	11 Irrigation use	12 Total production cost per nut/ton

Soil and leaf testing is particularly important for coconut; fertilizer recommendations based on these diagnostic tools have long been used for maintenance and corrective fertilization.

Build the Biological System First.

Prove Fertilizer Reduction Second.

Use soil/leaf analysis and paired control blocks every year before reducing conventional fertilizer inputs.