

MICROBEBIO AVOCADO PROGRAM

Application & Protection

A 5-Year Field Program for Soil Biology, Root Development,
Precision Nutrition, and Biological Crop Protection

Establishment → Root & Canopy Growth → Early Production → Commercial Production

Program Structure

Five integrated pillars support the avocado tree from establishment through commercial production.

1

Soil & Root Development

Rhizo Activator™ · Nature
Vigor™
Aqua Activator™ · Hydro
Activator™

2

Precision Nutrition

Nano P™ · Nano Elements™
MicrobeBio Foliar™

3

Root Protection

X1™

4

Insect Protection

X3™ · Green Fury™

5

Disease Protection

X5™ · Nature Venom™

Y1

YEAR 1 — TREE ESTABLISHMENT

Establishing feeder roots and a biologically active rhizosphere while avoiding excessive fertilizer or salt around young roots.

Product	Rate / ha	Frequency	Method
Rhizo Activator™	25 kg	2×/year	Soil/root zone
Nature Vigor™	5 kg	2×/year	Soil/root zone
Aqua Activator™	500 g	3×/year	Root-zone drench
Hydro Activator™	10 L	3×/year	Root-zone drench
Nano P™	250 mL	2×/year*	Foliar/root program
Nano Elements™	250 mL	3×/year	Foliar
MicrobeBio Foliar™	250 mL	3×/year	Foliar
X1™	500 g	3×/year	Root-zone drench
X3™	500 g	Scout/IPM	Targeted spray
Green Fury™	500 mL	Pest pressure	Targeted spray
X5™	500 g	Preventive/IPM	Root/foliar per target
Nature Venom™	500 mL	Disease pressure	Targeted spray

Year objective: Root establishment, transplant recovery, healthy new growth, and prevention of root stress.

Y2

YEAR 2 — ROOT & CANOPY DEVELOPMENT

Applications expand as the feeder-root zone and canopy increase.

Product	Rate / ha	Frequency	Method
Rhizo Activator™	50 kg	2×/year	Soil/root zone
Nature Vigor™	5 kg	2×/year	Soil/root zone
Aqua Activator™	500 g	3×/year	Root-zone drench
Hydro Activator™	10 L	3×/year	Root-zone drench
Nano P™	250 mL	1–2×/year*	Foliar/root program
Nano Elements™	250 mL	3×/year	Foliar
MicrobeBio Foliar™	250 mL	3×/year	Foliar
X1™	500 g	3×/year	Root-zone drench
X3™	500 g	Scout/IPM	Targeted spray
Green Fury™	500 mL	Pest pressure	Targeted spray
X5™	500 g	Preventive/IPM	Targeted application
Nature Venom™	500 mL	Disease pressure	Targeted spray

Year objective: Expand feeder roots, canopy, soil biology, and tree resilience.

Y3

YEAR 3 — EARLY PRODUCTION

As trees begin carrying fruit, the program shifts toward root health while supporting flowering, fruit set, and fruit development.

Product	Rate / ha	Frequency	Method
Rhizo Activator™	50 kg	3×/year	Soil/root zone
Nature Vigor™	5 kg	2×/year	Soil/root zone
Aqua Activator™	500 g	3×/year	Root-zone drench
Hydro Activator™	10 L	3×/year	Root-zone drench
Nano P™	250 mL	As needed*	Foliar/root program
Nano Elements™	250 mL	3–4×/year	Foliar
MicrobeBio Foliar™	250 mL	3–4×/year	Foliar
X1™	500 g	3×/year	Root-zone drench
X3™	500 g	Scout/IPM	Targeted spray
Green Fury™	500 mL	Pest pressure	Targeted spray
X5™	500 g	Preventive/IPM	Targeted application
Nature Venom™	500 mL	Disease pressure	Targeted spray

Year objective: Support flowering, fruit set, early yield, feeder-root health, and balanced canopy growth.

Y4

YEAR 4 — PRODUCTION

Sustained applications support a fully productive canopy and fruit load.

Product	Rate / ha	Frequency	Method
Rhizo Activator™	50 kg	4×/year	Soil/root zone
Nature Vigor™	5 kg	2×/year	Soil/root zone
Aqua Activator™	500 g	3–4×/year	Root-zone drench
Hydro Activator™	10 L	3–4×/year	Root-zone drench
Nano P™	250 mL	As needed*	Foliar/root program
Nano Elements™	250 mL	4×/year	Foliar
MicrobeBio Foliar™	250 mL	4×/year	Foliar
X1™	500 g	3×/year	Root-zone drench
X3™	500 g	Scout/IPM	Targeted spray
Green Fury™	500 mL	Pest pressure	Targeted spray
X5™	500 g	Preventive/IPM	Targeted application
Nature Venom™	500 mL	Disease pressure	Targeted spray

Year objective: Maintain productive canopy, root activity, fruit development, and consistent biological protection.

Y5

YEAR 5 — COMMERCIAL PRODUCTION

The mature program sustains yield, fruit quality, and long-term orchard performance.

Product	Rate / ha	Frequency	Method
Rhizo Activator™	50 kg	4×/year	Soil/root zone
Nature Vigor™	5 kg	2×/year	Soil/root zone
Aqua Activator™	500 g	3–4×/year	Root-zone drench
Hydro Activator™	10 L	3–4×/year	Root-zone drench
Nano P™	250 mL	As needed*	Foliar/root program
Nano Elements™	250 mL	4×/year	Foliar
MicrobeBio Foliar™	250 mL	4×/year	Foliar
X1™	500 g	3×/year	Root-zone drench
X3™	500 g	Scout/IPM	Targeted spray
Green Fury™	500 mL	Pest pressure	Targeted spray
X5™	500 g	Preventive/IPM	Targeted application
Nature Venom™	500 mL	Disease pressure	Targeted spray

Year objective: Maintain yield, fruit quality, feeder-root health, productive canopy, and long-term orchard performance.

5-Year Summary

Cumulative product quantities per hectare across the five-year program.

Product	Year 1	Year 2	Year 3	Year 4	Year 5
Rhizo Activator™	50 kg	100 kg	150 kg	200 kg	200 kg
Nature Vigor™	10 kg	10 kg	10 kg	10 kg	10 kg
Aqua Activator™	1.5 kg	1.5 kg	1.5 kg	1.5–2 kg	1.5–2 kg
Hydro Activator™	30 L	30 L	30 L	30–40 L	30–40 L
Nano P™	500 mL	250–500 mL*	As needed	As needed	As needed
Nano Elements™	750 mL	750 mL	750 mL–1 L	1 L	1 L
Foliar™	750 mL	750 mL	750 mL–1 L	1 L	1 L
X1™	1.5 kg	1.5 kg	1.5 kg	1.5 kg	1.5 kg

**Use Nano P according to soil/tissue analysis and the actual Nano P product specification.*

X1™ — Root & Soil Protection

500 g/ha

per application

3× /year

frequency

500–1,000 L

water per ha

Apply throughout the active feeder-root zone rather than directly against the trunk. X1 should form part of the orchard's preventive root-health program.

Phytophthora Root Rot — Integrated Prevention

- Excellent drainage
- Correct irrigation
- Healthy planting material
- Orchard sanitation
- Organic mulch
- Avoidance of waterlogging
- Appropriate registered disease-control measures where required

Note: X1 or X5 should not be represented as a stand-alone cure for an established Phytophthora infection without avocado-specific efficacy data.

Insect Protection Strategy

X3™

Biological Insect Protection

Rate: 500 g/ha/application · Applied according to scouting and registered target pests.

Potential IPM targets:

- Thrips
- Mites (where formulation/target supports use)
- Caterpillars
- Scales
- Whiteflies
- Other susceptible pests

Green Fury™

Corrective Botanical Protection

Rate: 500 mL/ha + 300 L water/ha

Used as the corrective layer during elevated pest pressure, applied according to registered targets.

Repeat approximately every 7–14 days during active pest pressure, per label directions and field conditions.

Strategy: X3™ (biological, preventive) → Green Fury™ (botanical, corrective under pressure)

Pollinator note: avoid unnecessary insect-control sprays during avocado bloom; where treatment is required, follow label restrictions and minimize exposure to bees and beneficial insects.

Disease Protection Strategy

X5™

Biological Disease Protection — Foundation

Rate: 500 g/ha/application • Use preventively according to disease risk and registered use.

The disease program should emphasize the root zone, since avocado is particularly vulnerable to root and crown diseases. Integrate X5 with good drainage, irrigation management, sanitation, mulch management, and disease monitoring.

Nature Venom™

Additional Botanical Protection

Rate: 500 mL/ha + 300 L water/ha

Used during elevated disease pressure where the registered target and label permit.

Repeat approximately every 7–14 days during elevated disease pressure, as required and permitted.

Strategy: X5™ (biological foundation) → Nature Venom™ (additional botanical protection under pressure)

Phytophthora cinnamomi is considered the most serious avocado disease worldwide — drainage and irrigation management remain fundamental to control alongside biological protection.

Application Guidelines

Water volume and root-zone coverage scale up as trees mature.

Years 1–2

YOUNG TREES

300–500 L/ha

water / ha — root-zone applications

Concentrate treatment around the developing feeder-root zone. Avoid concentrating fertilizer or biological products immediately against the trunk.

Year 3

DEVELOPING TREES

500–750 L/ha

water / ha — root-zone applications

Increase root-zone coverage as the canopy and root system expand.

Years 4–5

PRODUCING TREES

750–1,000 L/ha

water / ha — root-zone applications

Root-zone applications sized for adequate distribution; foliar volume adjusted to canopy size.

Botanical sprays (Green Fury™, Nature Venom™): 500 mL/ha + 300 L water/ha, applied as targeted foliar sprays.

Important Avocado Management Points

1

Protect the feeder roots

Avocado has a shallow, sensitive feeder-root system. Avoid waterlogging, excessive fertilizer concentration, high salinity, and soil compaction.

2

Prioritize drainage

MicrobeBio biological products cannot compensate for chronically saturated soil. Good drainage and irrigation management are fundamental to reducing Phytophthora pressure.

3

Use Nano P selectively

Most valuable during establishment or where analysis indicates inadequate phosphorus. Do not automatically continue phosphorus through Years 3–5 if soil and tissue levels are already adequate.

4

Increase micronutrients as trees mature

Time Nano Elements and Foliar around new flush → pre-flowering → fruit set → early fruit development, based on tissue results.

5

Protect pollinators

Avoid unnecessary insect-control sprays during bloom. Where treatment is required, follow label restrictions and minimize exposure to bees and beneficial insects.

Protection System at a Glance



The five-year avocado program builds a healthy biological root environment during establishment and progressively expands as trees develop into commercial production.

Compliance

All crop-protection uses, pests, diseases, rates, intervals, and application methods must comply with the applicable product registration and label in the country and state where the products are sold and applied.

Sources: UC Statewide IPM Program (UC IPM) · CDFA FREP Fertilization Guidelines — Avocado