NETAFIM™
GROW MORE WITH LESS

PRINCIPLES FOR PLANNING A MACADAMIA IRRIGATION SYSTEM

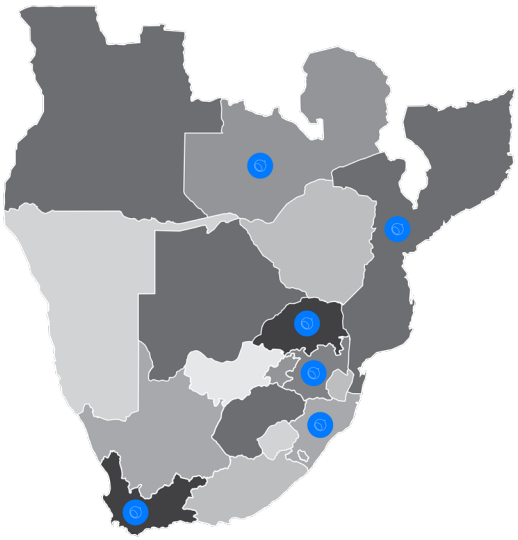
NETAFIM AGRONOMY

ABOUT MACADAMIAS

The Macadamia industry is one of the fastest growing tree crop industries in South Africa, with around 6 000 additional hectares planted annually. Local growth is supported by the financial viability of macadamia nut production in comparison to other crops as well as increased global demand for macadamia nuts.

Experience in macadamia production has shown that proper soil preparation and ridging creates a larger soil volume to exploit and decreases reliance on rainfall. A resulting larger and healthier root zone ensures consistently high production. Recent research and experience suggest that macadamia trees use water quite sparingly when compared to other tree crops.

/ MACADAMIA
- Mpumalanga
- KZN
- Limpopo
- Zambia
- Mozambique
- Western Cape



Macadamia production areas.

IRRIGATION

Irrigation of macadamia trees is particularly important during flowering, from the time of nut set, during nut filling and during the vegetative growth period in midsummer. Prevailing climatic conditions in combination with factors such as soil depth and fertility, availability of water for irrigation and more will influence the irrigation strategy.

Both drip irrigation and micro-sprinkler systems are used in macadamia tree irrigation across Southern Africa. These systems cater for different conditions, preferences and approaches to production. Approaches range from highly intensive daily irrigation and fertigation to an extensive approach where irrigation events are adapted to the most important phenological growth stages, the climatic conditions and available resources. Recently, a lot of focus has been placed on water-use efficiency with a shift to drip irrigation.

Macadamia trees planted in ridges.

A profile pits shows the root zone within the ridge.

IRRIGATION APPROACHES

Centralised Low Flow Drip Fertigation
Water and nutrients are supplied as the trees use it. The expected outcomes are earlier production, higher yield and faster return on investment. Although these systems are easily managed it requires high capital and expertise investment. NOTE: This approach requires that we adhere to very strict design parameters.

Traditional micro irrigation
Micro-sprinklers or multiple dripperlines are used to wet a certain soil volume. A reservoir approach is followed.

Extensive approach
A single dripperline is installed and irrigation is only applied during critical phenological stages. Medium to good soil fertility and a deep, well-developed root system are prerequisites towards the success of this practice.

DRIP PRODUCT

	UniRam™ (Pressure-compensated multi-season drip)
	
Number of driplines	Row width 8–10 m: Up to 4 per tree row. Row width 7–8 m: Up to 3 per tree row. Row width <7 m: 2 per tree row (Depending on soil properties).
Dripline spacing	2 laterals: 0.5 m–1 m from trunk on each side 3 laterals: 1 line on tree row; 2 lines 0.5m–1 m from trunk on each side 4 laterals: Laterals 0.75–1 m apart with 2 lines on each side of the trunk
Available flow rates (ℓ/h)	Uniram™: 0.7, 1.0, 1.6, 2.3
Emitter spacing	Good soils: ≤ 1 m; Medium soils: 0.6 – 0.75 m; Sandy soils: ≤ 0.5 m

MICRO-SPRINKLER PRODUCTS

NOTE: A modular approach to sprinkler irrigation is possible, adjusting the irrigation system as tree needs changes. Speak to your Netafim representative for more information.

	SuperNet™ (PC)	GyroSA (Non-PC) + Optional Flow Regulator	GyroNet™ Turbo (Non-PC)
			
Models	050, 058, 070,110	040, 050, 060, 070	200, 250
Emitter flow rate & nozzle	50 ℓ/h – Green 58 ℓ/h – Grey 70 ℓ/h – Black 110 ℓ/h – Red	40 ℓ/h – Green 50 ℓ/h – Yellow 60 ℓ/h – Red 70 ℓ/h – Orange	200 ℓ/h - Yellow 250 ℓ/h - Purple
Swivel and diameter (20 cm height)	SR – Blue 4.5 – 5 m (not for 110 ℓ/h) LR – Black 8m	Black Swivel 3.9 – 4.4 m	Purple Swivel 10 m
Optimal design pressure (m)	20 - 35 m	10 – 15 m	20 m
Height off the ground	28cm	28cm	50 cm
Emitter spacing based on 8 x 4 m planting*	1/tree: 4 m 2/tree: 2 m	1/tree: 4 m 2/tree: 2 m	1 sprinkler between 2 trees

*When SR (short radius): For SuperNet™ and GyroSA < 70 ℓ/h sprinklers (2 sprinklers per tree)
*When LR (long radius): For SuperNet™ and GyroSA ≥ 70 ℓ/h sprinklers (1 or 2 sprinklers per tree)

ABOUT NETAFIM

Netafim is the global leader in smart irrigation solutions. Our offer includes a wide range of leading irrigation and complementary solutions across all crops, conditions and terrains. This includes drippers and dripperlines, micro and macro sprinklers, valves, filters, water meters, crop management technology (CMT) and ever-developing digital farming solutions. We offer quality products, supported by both technical and agronomic knowledge.

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