NETAFIM™
GROW MORE WITH LESS

PRECISION MACADAMIA IRRIGATION

NETAFIM AGRONOMY

Recent research suggests that macadamia trees are more water-conserving than previously believed. This creates an opportunity to reduce irrigation volumes through precision irrigation, which enables more targeted water delivery, without compromising production. Improved water use efficiency translates directly into lower energy input, reduced operational costs, and increased profitability - crucial advantages in the current economic climate.

While overall water requirements may be less, irrigation remains critical during key phenological stages such as flowering, nut set, nut filling and mid-summer vegetative growth. The optimal irrigation strategy should integrate phenology with climate, soil conditions, and water availability.

Macadamia trees are commonly irrigated by drip irrigation or micro-sprinkler systems. These systems support a range of production approaches, from highly intensive daily irrigation and fertigation to more extensive strategies where irrigation is applied only during critical growth stages.

Drip irrigation is one of the most effective ways to reduce input costs by increasing water- and fertilizer-use efficiency. Table 1 below illustrates Kc values for drip and micro-sprinkler irrigated orchards, emphasising the efficiency of drip irrigation. These numbers show an approximately 40% lower water requirement. This can be attributed to significant reductions in evaporative losses, truly helping you grow more with less.

Table 1: Theoretical maximum monthly crop coefficients for mature macadamia orchards, with 80% canopy

	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
Drip	0.49	0.51	0.59	0.57	0.63	0.61	0.57	0.60	0.66	0.64	0.53	0.50
Micro-sprinkler	0.97	0.99	1.07	1.05	1.11	1.09	1.05	1.08	1.14	1.12	1.01	0.98

Irrigation Approaches

Centralised Low Flow Drip Irrigation: This approach allows water and nutrients to be supplied directly to the root zone, in line with tree demand. Advantages include earlier production, improved yield consistency, and faster return on investment. These systems are easy to manage but require precise design and higher upfront capital.

Traditional Micro-irrigation: Micro-sprinklers or multiple driplines are used to wet a certain soil volume, following a reservoir approach. This strategy is applied where water availability is not limiting, but it is associated with high energy requirements.

Extensive Approach: a single dripline is installed, and irrigation is applied only during critical phenological stages. This approach is best suited to orchards with medium to high soil fertility and a deep, well-developed root system. When correctly implemented, it offers significant savings in water, energy, and operational costs while maintaining sustainable production.

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orbia Precision Agriculture

Product Recommendations

Precision irrigation requires an irrigation system that is **designed and installed with all resources and production goals in mind**, to ensure optimal production. Without the correct selection of driplines and other irrigation equipment, as well as correct operation, management and maintenance of the system, precision success cannot be achieved. **Approach the planning process with the right experts by your side.** Netafim offers a wide product range to answer in the specific needs of every farm. From filters, flexible pipes, and driplines all the way to advanced fertigation and automation solutions. Be sure to connect with **Netafim's technical, agronomy and automation experts**, as well as our trusted dealer network for support in product selection.

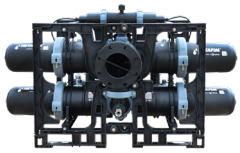
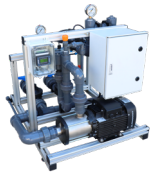
DRIP IRRIGATION

UniRam™ (Pressure-compensated multi-season drip)	
	In the planning process of a drip irrigation system, one of the crucial steps is to determine the correct **flow rate** and **dripper spacing** that will be required for optimal irrigation for your conditions. Netafim driplines can be manufactured at any spacing suitable to your needs. Other factors to consider is the row width, plant spacing, as well as the number of laterals and lateral spacing.

SPRINKLER IRRIGATION

SuperNet™ (Pressure-compensated)	For sprinkler selection you must consider the flow rate (nozzle colour), diameter (swivel), height off the ground and emitter spacing. For each approach and the specific conditions, a different combination will be optimal.
	
GyroSA (Non-pressure compensated)	
	

COMPLEMENTARY PRODUCTS

AlphaDisc™ Automatic Disc Filters	
	Suitable filtration is a key factor in precision irrigation success. AlphaDisc™ offers optimal system protection across a wide range of products. It is modular, durable, cost-effective and offers high filtration efficiency with unparalleled simplicity.
ScreenGuard™ Screen Filters	
	Screen filtration may be suitable for certain water conditions. ScreenGuard™ offers an extra-large filtration area and incorporates the most effective self-cleaning mechanism.
GrowSphere™ MAX Controller	
	GrowSphere™ MAX regulates water and fertilizer delivery in a precision irrigation system, activating local and remote devices such as pumps, valves, filters, dosing pumps, and other hydraulic components. Manage up to four irrigation mainlines with one controller and access all controllers on one platform.
NutriDoser Dosing Unit Range	
	The NutriDoser range makes fertigation easy and accessible to all conditions. This modular range of dosing units can be combined into a single dosing system. The versatility of this product, combined with the fact that it is manufactured locally, makes it a very economical solution.

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