



# PRINCIPLES FOR PRECISION SUGAR CANE IRRIGATION

## NETAFIM KNOWLEDGE

### PRECISION PRODUCTION

Drip irrigation has been a proven sugar cane irrigation practice for several decades. Given the harvesting practices employed in sugar cane production, subsurface drip irrigation has become the preferred method. Burying driplines makes it possible for a farmer implement drip irrigation to support the crop in all growth stages, without the lines being damaged at harvesting. It also enables a drip irrigation installations to be used season after season.

In sugar cane production, experience has shown that proper soil preparation before planting creates an ideal soil condition for healthy root development in the top 30 – 50 cm and effective water distribution. This leads to larger and healthier root zones and ensure consistently high crop production. It is important to ensure that the correct amounts of water and nutrients are delivered to the root zone at the right time to ensure that the crop is never under stress. Well-planned and informed scheduling is required to prevent over or under irrigation.

### BENEFITS OF DRIP IRRIGATION

With the country's sugar cane industry under immense pressure, farmers have no choice but to farm as efficiently as possible. Drip irrigation is a crucial tool to achieve this.

The key benefits are:

- Overall higher yield and stable yield in any climate.
- Better plant quality, with higher sucrose content.
- More ratoons from each planting cycle.
- Considerably lower water use.
- Optimal use of odd-shaped or steeply sloping land.
- Reduced labour costs.
- Lower required pressures and lower flow rates that enable reduced energy costs.
- A system that can deliver plant protection and fertilizer directly to the root zone.

It boils down to a single truth: drip irrigation can help sugar cane farmers grow more cane with fewer inputs, effectively helping to make the industry as a whole more sustainable.

### GROW MORE WITH NETAFIM

Netafim is the global leader in smart irrigation solutions. Netafim's experience in sugar cane irrigation allows it to offer a high level of support to the industry. Our product offer includes a wide range of leading irrigation and complementary solutions to solve challenges in the field.

We offer expertise around:

- Agronomic decisions and scheduling recommendations.
- Soil preparation and water analysis.
- Drip delivery and spacing requirements.
- Correct product selection related to cultivation practices and soil type.
- Maintenance recommendations and installation support.

### DRIPLINE SELECTION

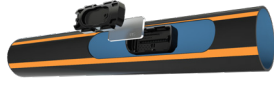
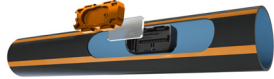
The following selection parameters must be considered. (Recommendations included). Each irrigation system will differ depending on the environmental conditions and system requirements at hand.

- Wall thickness: Medium (0.4 – 1 mm) Thicker wall driplines may be proposed, but replanting practices generally mean that a medium wall dripper offers the best ROI.
- Diameter: 16 mm, and 22 mm for longer haulage runs.

- The availability of lower flow rates enables irrigation of a larger area at once.
- Shorter spacing between drippers will have higher costs but will be more effective. Decisions around dripper spacing must be based on soil texture and water holding capacity.
- PC vs Non-PC: (PC: Pressure compensated) PC drip costs more per meter but will lead to more uniform delivery. This is especially a requirement when fields are sloped, and longer laterals are used.
- AS (anti siphon): (Flap over drip outlet or built-in anti-siphon technology) This prevents dirt suction and is especially important in subsurface installations.
- XR (Extra Root Resistance): Embedded copper-oxide additive with extra protection against root intrusion.

**Netafim generally recommends DripNet™ PC AS with 16 mm diameter and 0.63 mm wall thickness.**

## DRIP PRODUCT

Recommended Products	DripNet™ PC				
	DripNet™ PC AS XR				
	DripNet™ PC AS				
	DripNet™ PC AS XR				
Available flow rates (ℓ/h) and spacing					
DripNet™ PC		DripNet™ PC AS		DripNet™ PC AS XR:	
1 mm wall thickness 16 mm diameter		0.63 mm wall thickness 16 mm diameter (not available in 1 mm)		0.63mm wall thickness 16 mm diameter	
0.60 ℓ/h x 0.50 m	Sandy/ Medium soils	1.00 ℓ/h x 0.50 m	Sandy/Medium soils	1.60 ℓ/h x 0.50 m	Sandy/Medium soils
1.00 ℓ/h x 0.50 m		0.60 ℓ/h x 0.60 m	Medium soils	0.60 ℓ/h x 0.60 m	Medium soils
1.60 ℓ/h X 0.50 m	Medium soils	1.00 ℓ/h x 0.60 m	Medium soils	1.00 ℓ/h x 0.60 m	Medium soils
1.60 ℓ/h x 0.75 m		1.60 ℓ/h x 0.60 m	Medium soils	1.00 ℓ/h x 0.75 m	Heavy soils
1.60 ℓ/h x 0.80 m		Heavy soils			

## DRIP INSTALLATION

The dripline is buried 15 – 20 cm below the soil surface. This means that it is 5 – 8 cm below the planted cane (cuttings) between two rows when dual rows are planted.

Special drip installation machines are used for this purpose. It is important that the machine is used correctly, and that installation is done correctly to prevent dripline damage and installation at the incorrect depth. Tractor speed, for example, is very important as going too fast will stretch the pipe. Speak to Netafim for expert installation advice.

Take care when covering the seedcane in the furrow. Rather offset the disc slightly further out, so that the cane does not get pushed on top of the dripline, and that it remains in a dual row (tramline).

### Dripline locations for different planting spacings

Specification	Single row	Intensive dual row	Wide dual row
Cane row spacing (centre – centre)	1.4 – 1.8 m	1.8 – 2.0 m	2.1 – 2.5 m
Dual row spacing	-	0.4 – 0.6 m	0.5 – 0.7 m (0.9 m)
Subsurface dripline location	5 cm below the set 10 cm to the side	5 cm below the set at the centre	Between 0.5 – 0.7 m: 5 cm, below the set at the centre Between 0.8 – 0.9 m 1 dripline/row
Onsurface dripline location	10 cm – 15 cm on side	In the centre	Centre or 10 cm aside

### Illustration of dripline position in the field

