

Tavlit solutions for Oil Palm Tree Irrigation

Oil Palm Tree Cultivation

There are several varieties of oil palm trees, the most common variety is *Elaeis Guineensis*. This variety comes originally from West Africa.

The oil palm tree is perennial. It grows in tropical areas in Africa, Asia and Central & South America. This is a very important crop since 25% of the world vegetable oil production comes from this crop. The oil palm tree gives 10 times more oil than any other crop.



Cultivation conditions

- Ideal temperature: 25-28 C°.
- Yearly rain fall- 1,800-2,000 mm per year (distributed evenly)
- Relative humidity: 70-90%
- Max altitude: 500 m'.
- Slope: up to 25%.
- Day light: 1,500-2,000 hours per year.
- Optimal soil: Silt.
- PH of water used for irrigation:4.5-7.5.



Production and planting of the tree

Trees are grown in several stages:

1. In a nursery : This is where the seed is germinated and the young plant is held for 2-3 months until they are big enough to the next phase.
2. Open area: The plants are grown in bags or buckets in an open area for 6-8 months until they reach the height of 1-1.2 meters.
3. In the field: At this stage the young trees are ready for the field. They are planted in distances of 9mX9m (triangular spacing), 140-150 trees per hectare.



Information about the Crop

- 18-24 months are required until the tree bears fruits.
The tree gives 12-14 bunches of nuts every year. Each bunch weights 20 - 30 kg.
- Each tree gives 240-420 kg of nuts.
- After 5 years the production per hectare
Varies between 15-25 tons of nuts.
- Oil production – 15-25% of the nut weight.
- 4 tons of oil is produced from every hectare.
- Price of 1 kg of raw oil =1USD/kg.
- Each hectare gives approx. 4,000USD to the grower.
- Price of 1kg of purified oil =3USD/kg.



TAVLIT irrigation solutions for stage I (nursery)

At this stage the plants are grown in small containers spaced 75 cm from one another. Water requirements are quite low but distribution has to be very uniform.

For this stage we recommend the 86X model.

The specific model and flow rate will be determined according to the local conditions.



Micro sprinklers model 861/2/3/6

- Firm construction without a bridge-Uniform water distribution.
- Anti-insect design –Swivel seals the nozzle once the water is shut off.
- Integral nozzle filter – Protects the nozzle from debris in the water.
- Special engineering raw materials for long life and durability.
- Large drops for added wind resistance.
- The 86X series can be supplied as pressure compensated emitters (PC).
- Available flow rates: 20 – 160 liters per hour.

86X wetting diameter at 2.0 bars (29 PSI)													
Nozzle Diameter		Nozzle Color	Flow Rate		861		862		863		866		
mm	inch		lph	gpm	m	Ft	m	Ft	m	Ft	m	Ft	
0.9*	0.031*	●	20	0.09						3.8	12		
0.8	0.035	●	35	0.15	5.5	18	3.8	12				5.5	18
0.9	0.039	●	40	0.18	5.5	18	4.6	15	4.6	15	5.5	18	
1.0	0.043	●	50	0.22	6.3	21	5.5	18			6.3	21	
1.2*	0.050*	●	50	0.22					5.0	18			
1.1	0.047	●	60	0.26	6.9	23	5.7	19			6.9	23	
1.2	0.050	●	70	0.31	7.0	23	6.0	20			7.0	23	
1.3	0.055	●	90	0.39	7.0	23	6.5	21			7.0	23	
1.4	0.058	●	105	0.46	7.5	25	6.5	21			7.5	25	
1.5	0.066	●	120	0.53	8.1	27	6.5	21			8.1	27	
1.7	0.070	●	140	0.62	8.5	28	7.0	23			8.5	28	
1.8	0.071	●	160	0.70	9.0	30	7.2	24			9.0	30	

*with NFR

Mister model 4191

For dry areas, where additional humidity is required, we recommend to use The 4191 misters. The emitter can be installed inverted and Tavlit recommends to add the ani- leak device (NVD 530) to prevent dripping and keep the laterals full of water. This enables to shorten misting cycles and saves water.



Features:

- Available flow rates: 20-180 lph.
- Fine droplets 0.15 mm at 3 bar The size of the droplets become smaller when the pressure increases
- Wetting diameter: up to 3.2 m
- Integral Nozzle Filter: Protects the nozzle from debris and clogging.
- Used for reducing high temperature and creating micro climate conditions in greenhouses.
- Excellent performance when emitters are spaced at distances of 1-1.5 m' (single lateral).

Technical Data				
Nozzle Marking	Nozzle size		Wetting diameter	
			4191	
	(mm)	(inch)	(m)	(Ft)
20	0.6	0.023	2.2	7
35	0.8	0.035	2.5	8
50	1.0	0.043	2.8	9
70	1.2	0.050	3.0	10
90	1.3	0.055	3.2	10
160	1.8	0.070		
180	2.0	0.078		
Spreader Head Color			●	
Irrigated Section			🌀 320° LDE	
Operating Pressure			1.0-5.0 bar (14.5-72.0 psi)	

At 2.0 bar (29 psi) and 200 c"m (7Ft) height
 All Nozzles are Black – Flow rate is imprinted on the bridge.

TAVLIT Solutions for mature Oil Palm Trees

TAVLIT offers various products applicable for irrigation oil palm trees after they are planted in the field.

Irrigation with sprinklers enable full coverage of the field .They are easy to install and service and fertilizers can be distributed through the irrigation system.

Full coverage sprinklers system enables the grower to use the area between the trees to grow more crops.

BIJET, TRIJET, QUADJET

For the first stage after planting the trees in the field TAVLIT offers a unique solution designed to implement the water directly to the root zone of the young plantation.

- The company offers emitters with 2, 3 and 4 outlets.
- Ideal for oil palm trees, citrus and other fruits.
- Adjustable nozzles that can be locked at the right position in order to guarantee that the water jet will direct the water to the root zone and the nozzle will not change its position during irrigation.
- The emitters are equipped with bayonet connection for easy installation and cleaning.
- The Bayonet connection enable the grower to change quickly ,easily ,without cutting the riser and at a reasonable cost, to the 920 series which enable full coverage of the area.
- The emitter adaptor is a $\frac{3}{4}$ " (20 mm) female adaptor that can be glued to the riser and has a bayonet connector on the other side where the emitter is connected.
- Recommended filtration – 60 – 100 mesh depends on the flowrate.



BIJET



TRIJET



QUADJET

Technical data BIJET, TRIJET, QUADJET

BIJET

Operating Pressure	0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar
Flow rate (l/h)	135	165	205	235	309
Wetting radius (at 0°) (m')	7 m	7.5 m	8 m	13 m	13 m
Wetting radius (at 30°) (m')	11.5 m	12 m	12 m	8.5 m	9 m



TRIJET

Operating Pressure	0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar
Flow rate (l/h)	200	245	306	360	400
Wetting radius (at 0°) (m')	7.5 m	8 m	8 m	9 m	9 m
Wetting radius (at 30°) (m')	11 m	11 m	11.5 m	12 m	12 m



QUADJET

Operating Pressure	0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar
Flow rate (l/h)	220	330	410	480	530
Wetting radius (at 0°) (m')	7 m	7 m	7 m	8 m	8 m
Wetting radius (at 30°) (m')	12 m	12 m	12 m	12.5 m	12.5 m



TAVLIT 920 Sprinklers

TAVLIT 920 sprinkler is most suitable for the stage when the oil palm trees are mature and a full cover of the area is needed.

This sprinkler offers a large wetting diameter and high uniformity at spacing of up to 10X10. The 920 sprinkler is equipped with bayonet connector which enables the grower to replace the tri jet with the 920 easily and quickly. No need to cut the riser and glue a new adaptor.



- Turbine mechanism and double jet sprinkler- smooth and balanced operation.
- Available flow rates: 180, 200, 300, 400, 450 liter per hour.
- Insect protected – sprinkler shuts off after irrigation.
- Integral Inlet Filter

920-300 @ 2.0 Atm (300 l/h), Height 70 Cm

