



# POMEGRANATE

**NAANDANJAIN**

A JAIN IRRIGATION COMPANY

## INTRODUCTION

The Pomegranate (*Punica granatum*) is a fruit-bearing deciduous shrub or small tree that grows to a height of 5-8 m. The pomegranate is native to Iran and the Himalayas in northern India. It has been cultivated since ancient times throughout the Mediterranean and Africa.

### CLIMATE

Pomegranates are drought tolerant and can be grown in dry areas with either a Mediterranean winter rainfall climate or in summer rainfall climates. In wetter areas, they are prone to root decay from fungal diseases. They are tolerant of moderate frost and temperatures of up to about -10°C.

### SOIL

Pomegranates produce best on deep, heavy loams, but adapt to many soil types, from pure sand to heavy clay. They do well in alkaline soils (with up to 15% active lime). Yields are usually low on sands, while fruit color is poor on clays. PH range is 5.5-7.0.

### PLANTING AND SPACING

In heavy soil, where soil suitability is not known or there are drainage problems, it is best to plant on raised beds.

Row orientation should be north-west, south-east (in the northern hemisphere) for optimal light exposure.

Organic manure or compost can be applied to improve the soil: 100-150 m<sup>3</sup>/ha. If the compost is spread along the planting line only, 50-70 cube/ha is applied, and then buried.

Planting distance: 5-6 m between rows

4-5 m between trees

These are defined according to variety and local conditions.



## IRRIGATION

Mature pomegranate trees can tolerate considerable drought, but for good fruit production, they must be irrigated. The plants are tolerant of moderately saline water and soil conditions.

### **New Plantation—Establishment Stage**

Immediately after planting, the tree is given a large irrigation dosage so that the wetted area is wider than the planting hole.

The dripper should be attached to the tree trunk.

During the first month after planting, irrigation is once a day, or once every two days, with small volumes of 2-4 liters per plant a day.

If all the drippers along the row are open (there is an option to temporarily seal some of the drippers between the two trees and to leave only 1-2 open), this volume is multiplied by the number of drippers per tree

(For example : 8 drippers at 50 cm spacing x 2 liters = 16 liters a day).

About one month after planting, when the young tree is established and there is new growth, it is recommended to increase irrigation volume and intervals.

### **Young Orchard**

First irrigation should occur when the moisture drops to an unsatisfactory level at a depth of 20-30 cm (root zone).

Water dosage for the first irrigation is 50 m<sup>3</sup>/ha.



## IRRIGATION MANAGEMENT AND TENSIO METERS

Use of tensiometers is recommended from the third year onwards. Tensiometer depth should be 30, 60 cm in each station.

### Irrigation Scheduling Guidelines with Tensiometer

Guideline for Soil Water Tension (centibars) to Start Irrigation

	Light Soil	Heavy Soil	Irrigation Quantity to be Applied
<b>First Irrigation</b> After winter rains	<b>20</b>	<b>50-60</b> at 60 cm depth	*100 m <sup>3</sup> /ha
<b>Regular Irrigation</b> Starts one week after the first irrigation		<b>20</b> at 30 cm <b>30-40</b> at 60 cm	According to ET
<b>Irrigation Intervals</b>	2-3 times a week	1-2 times a week	

\* If, after one day, the water tension does not drop to 10-15 centibars at the 60 cm tensiometer, apply again with a 100 m<sup>3</sup>/ha dosage.

## IRRIGATION MANAGEMENT SCHEDULE

Evaporation is measured using the pan evaporation method, or calculated according to Penman's equation.

Transition to daily irrigation is made when the soil (very shallow or very light) does not retain the daily dosage, and a significant amount of the water percolates below the root zone. For example, in light soil the tension in the tensiometers drops during irrigation, but it is again too high before irrigation (this rise in tension does NOT result from insufficient daily dosage).



Plastic mulch improves soil moisture and prevents weeds

## IRRIGATION CROP COEFFICIENT\*

	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
<b>Crop Factor</b>	0.35	0.4	0.5	0.55-0.6	0.6	0.5-0.6	0.35 certain varieties - 0.6	0.2 certain varieties - 0.4

\*To calculating the water quantity to be applied, multiple the daily ET by the crop factor.

Total water requirement (for the Mediterranean climate) is 550–750 mm, according to variety, yield and soil.

### FERTILIZATION AND FERTIGATION

	<b>N</b>	<b>P</b> P <sub>2</sub> O <sub>5</sub>	<b>K</b> K <sub>2</sub> O
Kg/ha	150-200	60-100	350-400
Application Time	Throughout the irrigation season First dose of about 3 units in the spring At bud break time: For early varieties, apply 3 units after harvest. Stop N application about 3 weeks before harvest.	Throughout the irrigation season Alternatively: As phosphoric acid At the beginning and end of the season	Throughout the irrigation season

### ISRAELI VARIETIES—YIELD AND FRUIT SIZE CONTROL

Number of fruit left on each tree, according to variety

Variety	Average Yield ( ton/ha)	Fruit Weight (gr)	No. of Fruit (ha)	No. of Fruit per Tree 4x6 m (ha)
Shami	20	350	60000	150
Mule's Head	30	350	85000	200
Wonderful	30	500	60000	150
Hershkowitz	30	400	75000	180



## IRRIGATION SOLUTIONS

### DRIP SYSTEM

The drip system is the most common and efficient solution for pomegranate irrigation.

Design guidelines:

One drip lateral per row

1.6–2.2 l/h dripper every 50 cm

The dripper is placed close to the young tree in the first year.

### NAANDANJAIN RANGE OF SOLUTIONS

#### Amnon PC

Thick-walled, pressure-compensating for maximum accuracy at variable topography, pressure fluctuation and long laterals.

High clog resistance due to Cascade labyrinth and strong self-cleaning mechanism.

Anti-syphon (AS) feature available.

Diameter: 16, 20 mm

Flow rate: 1.6, 2.2 l/hr



AmnonDrip PC

#### TopDrip HD

Cost-effective PC dripper

Accurate performances at variable topography and pressure fluctuations.

High clog resistance due to Cascade labyrinth.

Available with anti-syphon (AS).

Diameter: 16, 17, 20 mm

Flow rate: 1.6 l/hr



PC & AS

PC



## MICRO SPRINKLERS

Micro-sprinklers/sprayers offer controlled limited wetted area. The selection of micro-system vs. drip depends on local experience and practices. One micro-sprinkler or sprayer is required per tree. Generally placed between two trees.

### Aqua Smart 2002

Flow-regulated unit  
Insect-proof  
Flow rate: 30–70 l/hr  
Diameter: 3.5–7.0 m



### Dan Jet PC

Flow-regulated micro-jet  
Easy supervision and maintenance  
Strip or circle wetted area configuration  
Flow rate: 19–76 l/hr  
Diameter: 2.4–5.0 m





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NaanDanJain is committed to finding the ideal solution for your pomegranate crop, tailored to your local climatic conditions, soil, water properties and budget. Contact our office or your local dealer for further information.

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All information should be used only as a guideline.  
For specific recommendations contact your local agronomist.

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