Pomegranate

Pomegranate cultivation has seen significant expansion in recent times in India due to its high economic value. The fruit owing to its huge health benefits is gaining popularity amongst the growers as well as the end consumers. However, there is limited information on its required nutrient schedule in the important stages like reproductive, flowering & fruit set. Pomegranate plants require a systematic fertilizer schedule to assure their best performance for a high-quality yield & better financial returns on the investment. Major states growing pomegranate are Maharashtra, Karnataka Gujarat, Andhra Pradesh, and Tamil Nadu.

SOIL AND CLIMATE: Pomegranate can be grown in a wide variety of soils ranging from sandy to sandy loam soil. Light soil with a pH range of 6.5 to 7.0 is highly suitable for its cultivation; however, it can also tolerate pH up to 8.5 under proper management practices. Fruit quality and color development is better in light soils. The tree requires a warm and dry climate during fruit development and ripening.

LAND PREPARATION: The land for pomegranate cultivation is prepared by ploughing 3-4 times to break the soil clods. This helps in removing the debris and bringing the subsoil to the surface. Soil materials like rocks, stones, pebbles, etc. are removed during this process to promote air circulation in the soil. Once ploughing is completed the land is leveled and prepared for plantation.

PLANTING METHOD IN POMEGRANATE CULTIVATION: There are two methods of planting followed in pomegranate cultivation; the Square method and the Rectangular method. The square method is more commonly followed cultivation method in which the inter-plant distance of 4-5 meters is maintained and pits of dimensions 60X60X60 cm are dug a month before the actual cultivation and then left open for solarization for a period of two weeks. To protect from termite invasion, the sides and the bottom of the pits are dusted with 5% carbaryl dust. After two weeks the pits are filled with topsoil which is mixed with farmyard manure and phosphate. Once the pits are filled with soil, they are watered so that the soil settles down. The air layers or cuttings are then planted and staked. The first irrigation is done immediately after this planting step.

CANOPY MANAGEMENT: The training and pruning process starts after 6-8 months to develop a structural framework. In this, the lowest branch should be allowed to develop at 30-40 cm above the ground with single stem training or multi-stem training. In an arid region, multiple stem training (3-5 stems) system is preferred to avoid losses of stems/plants by termite attack which is a severe problem in the hot arid region in the initial stage of orchard development. Pruning is done twice a year to remove dried twigs, branches and to maintain a balance between vegetative and reproductive growth. Major pruning is practiced just after harvest in winter and light pruning is done at flower regulation during May-June. In severe bacterial blight infected orchards, heavy pruning is done after harvest by removing possible diseased portions.

IRRIGATION: Pomegranate requires regular irrigation to get optimal yield and fruit quality. Irrigation should be scheduled as per the requirement of the crop growth stage like during pollination, fruit setting and development.

The drip irrigation system is generally recommended for pomegranate. Two drippers for one to three-year-old plant is enough to provide required irrigation, whereas from the fourth year onwards 4 drippers per plant are required. In general, for nonbearing trees, about 5-25 liters/plant/day and 20-65 liters/plant/day for bearing trees are needed. Excess irrigation should be avoided which may increase wilt and nematode problems in the orchards. Therefore, judicious irrigation should be provided to the plants. Covering the soil with inorganic or organic mulches during dry months after the rainy season is recommended as it conserves soil moisture which creates favorable conditions for plant growth and development.

FERTILIZER SCHEDULE OF MOSAIC PRODUCTS

New Sprout & Leaf Development

0-30 DAYS

Mosaic DAP @ 275 g (per plant)

Mosaic MOP @ 350 g (per plant)

Mosaic K-Mag @ 170 g (per plant)

Flowering & Fruit Setting

30-60 DAYS

Liquid Zinc @ 250ml/acre + Seaweed extract @ 2.5ml/l

Liquid Boron @ 250 ml/acre 2 sprays (at 30-35 days & 45-50 days)

Fruit Initiation

60-90 DAYS

Mosaic DAP @ 275 g (per plant)

Mosaic MOP @ 350 g (per plant)

Mosaic K-Mag @ 170 g (per plant)

Fruit Development (Size increase)

90-120 DAYS

Seaweed extract @ 2.5ml/l,

Liquid Boron @ 250 ml/acre

Liquid calcium 5ml/acre before 60 days of harvesting

Fruit Development (Size, Color & Taste)

120-150 DAYS

Liquid calcium 5ml/acre before 40 & 20 days of harvesting

BENEFITS

Root & shoot development,	Better root & shoot growth,	Improves flower & setting,	Improves flower & fruit setting	Improves TSS	
Improves chlorophyll content & photosynthesis,	Improves leaf area,	Number of flowers & fruits per shoot.	Fruit development	TSS/TA ratio	
healthy and greener leaves	Chlorophyll content		Provide strength to stem	juice content of arils	
Initiating new growth			Maintain water balance	avoids fruit cracking	
			Translocation of sugar	improves fruit yield & quality	
			Tolerant to pest and diseases		
			Improves fruit size		
			Fruit juice content		
			Yield and produce quality.		

Above dosages are applicable for Maharashtra.

NUTRIENT DEFICIENCY

Nutrients	Deficiency Symptoms	Affected Area	Nutrition Required
Phosphorus	Leaf tips look burnt, followed by older leaves turning dark green or reddish-purple.	Retarded growth, premature dropping of fruits, less number of white roots.	 Apply recommended dose of Mosaic DAP.
Potassium	Under extreme cases of potassium deficiency, the leaves dry up leading to shedding of all fruits and death of the twigs.	poor fruit retention, reduced fruit size, with scorched leaves, reduction in yield.	 Apply recommended dose of Mosaic MOP and Mosaic K-Mag.
Magnesium	Interveinal chlorosis in leaves.	Reduction in growth and premature defoliation.	 Apply recommended dose of Mosaic K-Mag.
Sulphur	Leaf tips remain green and in severe cases whole leaf turns yellow.	Growth is stunted, compromised fruit quality & Sweetness.	 Apply Mosaic K-Mag at 170 g/plant at the time of pruning and fruit initiation.
Zinc	Small irregular drooping spots on leaves, twigs dieback.	Reduced leaf and shoot growth, reduction in flowering and fruit setting.	 Foliar spray of Liquid Zinc at pre-flowering, flowering, and fruit development stage.
Boron	Smaller fruits, abnormal and prone to cracking. Scattered yellow spots on the leaf surface and the leaf tip shows burn symptom. Leaves become thick and brittle.	Poor development of roots, premature shedding of male flowers leading to poor fruit setting.	 Foliar spray of Liquid Boron at flowering, fruiting, and fruit development stage.

Reference: .http://nhb.gov.in/report_files/pomegranate/POMEGRANATE.htm https://ciah.icar.gov.in/publication/Technical_bulletin/2018/pomegranate.pdf https://ariesagro.com/pomegranate/ https://ciah.icar.gov.in/publication/Technical_bulletin/2018/pomegranate.pdf