

Center for Smart Agriculture Hi Tech Fruit Culture



Module 2: High Density Planting **Session 2:** High Density Planting in Mango



• High Density Planting in Mango

• High density planting (HDP) (5 x 5 m) or ultra-high density planting (UHDP) system (3 x 2 m) aims to make maximum use of land to achieve high yields in the early periods of orchard along with ease in its management.



• This system warrants adoption of certain important technologies like formative pruning in the initial years so as to have desirable plant architecture, proper canopy management annually to encourage vegetative growth immediate after harvest, stopping of the vegetative growth during September to favour fruit bud initiation and differentiation.



High Density Planting System

- Recently, mango orchards are being established at closer than conventional spacing in many parts of India.
- After 10-11 years, ³/₄ of the canopy of trees in the high density orchard needs to be dehorned to present interlocking of branches.
- Under North Indian conditions, Dashehari was planted at a spacing of 3.0 x 2.5 m accommodating 1333 plants ha-1 where the yield was 10-14 times higher than normal spacing.
- In the case of cv. Amrapali, a close spacing of 2.5 x 2.5 m is recommended under North Indian condition.





High density plantations





High density plantations

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S. No	Year	Spacing (m)	Plant population (plants ha-1)
1.	Before 1980s	12 x 12	69
2.	After 1980s	10 x 10 5 x 5	100 400
3.	2005 onwards	10 x 5 x 5	200

Spacings and planting densities followed in India over time



- Benefits of UHDP and associated technologies
- Increases productivity upto 2-3 times, 10 year old UHDP yielded upto 18-20 MT ha⁻¹.
- Reduces orchard gestation period to three years as compared to conventional orchards.
- Makes orchard crops as profitable as other cash crops.

- Problems faced in certain HDP mango orchards
- Once HDP is adopted, all the recommended practices are to be followed scrupulously, otherwise, it would result in failure only.



- The success of high density planting depends upon certain factors which are dealt here.
- Canopy Management
- Canopy management is essential in high density planting system to control size of the tree and also to strike a balance between vigour and productivity.
- It starts from early months from planting





Canopy Management



- Training
 - When the plant height reaches 45-60 cm, the terminal bud should be pinched at 5-6 cm below the apex to encourage growth of auxiliary buds.
- After the growth from auxiliary buds 2-3 vigorous shoots are to be retained in different directions at 15-20cm interval which will develop as primary branches
- After 4-6 months growth of primary branches, they should be headed back at 45-60 cm length to allow further growth of 4-5 secondary shoots on each branch, which in turn will form tertiary shoots in due course.
- Ultimately the tree row will form a dome shaped hedge.



Pruning

- Pruning is very essential and critical operation of HDP to maintain fruiting shoots.
- Tertiary branches have to be headed back in such a way that the plant height can be maintained at 1.5 m and having 10-15 tertiary shoots.
- About one month after pruning, thinning of newly emerged shoots is essential to avoid excess shoots and overcrowding.
- On each tertiary shoots 3-4 new shoots are to be maintained.





Training and pruning in mango

