

Mango Planting

Mangoes are planted either from seedlings or grafts (Fig. 26). Both ways planting materials should be ascertained to be healthy, disease free and have been raised under full sunlight to harden them for field establishment. At the time of planting seedlings or grafts are usually are at the height of 20 to 40 cm. The fields for establishment are usually cleared of other vegetation, better still if it is deep ploughed for water to percolate. In a ploughed field, farmers usually prepare holes slightly bigger than plant container, and then add fertilizer in small doses of 10 to 50 g and a good amount of animal manure, which are mixed thoroughly with top soil before planting. The container is then removed and the ball of soil is broken a bit to loosen and straiten the coiled roots for them to have close contact with soil. Long roots are trimmed to size before planting. The soil mixture is returned to cover the roots and the young seedling is watered. The hole is usually $\frac{3}{4}$ filled to leave a basin for watering or to hold some rain water around the roots.

Where field has been cleared but not ploughed, larger holes of about 50 cm diameter and 50 cm depth are prepared, and then the top soil is returned after mixing with manure and fertilizer before planting. After filling the hole with mixed soil, the procedure of planting remains the same. Some farmers who plant their orchards with seedlings sometimes convert them to grafts once the rootstocks are well established and are happily growing.



Figure 26: A mixture of seedlings and grafted mangoes hardened for planting in a nursery

Spacing of mango trees

Seedlings and grafts that are fully hardened in sunlight and are free from pest and diseases are used when planting mangoes. Planting is done at the onset of the rainy season, which is in March or April in Kilifi, while in Mbeere and Makueni it is done in October- November. Those with water for irrigation do plant at any time of the year, but this must be closer to the start of rainy season to lower the cost. Spacing of the mango trees depends on site, climatic conditions and variety selected for planting.

Sites which are poor in soil fertility, rocky or dry are appropriate for closer spacing of 6 to 10 meters. Trees can also be managed in closer spacing within the row and wider between rows. Such espacement are used with intensive regular pruning to keep the mango trees within reachable heights for spraying against diseases and pests, and ease of harvesting. The low yield due to tree sizes is compensated by the large number planted per unit area. Mango trees in sites with high rainfall (above 900 mm mean annual) and deep fertile soil require wide spacing of 10 to 15 meters between trees and rows. This is done to minimize early closer of canopy and frequent pruning. The type of mango variety to be planted must also be taken into consideration. Some mango varieties such as Tommy Atkins, Harden, Dodo and Sabine can grow tall with dense crown so they require wide spacing whilst those with less dense crown and slow growth such as Apple, Ngowe, Kent, Keitt and Van Dyke tolerate close spacing. Spacing can also vary depending whether the farmer has established mangoes in an agroforestry system where agricultural crops are planted between mango trees. In that case, the spacing depends on the type of agricultural crops being grown.

Crown formation

Mango trees normally require pruning to shape the crown in a suitable form for flowering, chemical sprays, harvesting and to reduce height growth. Dense canopy is avoided to encourage light penetration, aeration and to reduce conditions for disease hibernation. Formative pruning is done in the early stages of growth. Inverted funnel shape is the most preferred as it allows the centre of the tree to be free and flowering occurs on the branches radiating from the main stem (Figure 27). There are some varieties such as keitt and kent that do not fit this formation well since they have scattered branching habit. The young mango trees are first topped at a height of about one meter to produce a spreading framework of branches. In the following years some branches are removed leaving 4 to 6 strong well spaced branches until the canopy is funnel shaped (Figure 27).

Structural pruning is done after fruit harvest. The lower branches of canopy are kept at height of at least one meter above the ground. All dead branches and all sucker branches from the main structural branches are removed. The canopy is pruned to allow sunlight to penetrate and reach the ground under the tree. When such pruning is applied correctly, the orchard is planted with other short crops such as beans, cow peas etc to encourage weeding and increase productivity. Trees gradually become old and tall that they require rejuvenation (Figure 28). Pruning (pollarding) that time is done on the big branches then the trees are allowed to produce new young branches, which are singled to leave the strong well positioned ones to grow.



Figure 27: Funnel shape to allow light penetration



Fig. 28 Rejuvenation and height reduction by heavy pollarding