

## Cultural practices

There are two wide practices for mango management in the three regions. The local non-commercial mango varieties are usually grown from seeds and maintained that way without pruning or grafting. These types of mango trees are left to grow wild and much often form tall trees with huge branches and diameter. The commercial varieties are often grafted and pruned thus they are usually retained within reasonable heights for spraying and fruit harvesting. However, in Kilifi and Coast province in general, both local and commercial varieties of mangoes are rarely pruned or grafted that they grow to huge tall trees. Spraying for pests, diseases and yield enhancement is hardly practiced and can be quite challenging. Harvesting is usually done by people climbing and reaching the fruits with long sticks.

In some regions where the farmers have realized the benefits of commercial varieties, pruning and spraying, the tall mango trees are being reduced in height and top worked with desired varieties (Figure 18). This approach sometimes allows a farmer to have two or more varieties on one single stem (Figure 19).



Figure 18: Replacing the initial variety with another due to market demand (Sensation to Tommy Atkins)



Figure 19: Local mango variety showing top-working with various varieties on an old stump

### **Sites for mango planting**

Various niches within the farmland are used for growing mangoes. The trees can be planted in large plantations as a single crop, in large orchards but mixed with agricultural crops or with other horticultural trees or as shade/ornamental trees within the homesteads.

In the first instance, the trees are grown in large estates where grass is rarely completely weeded out (Figure 20). Other bushes of shrubs and lianas are not allowed to grow. The herbs and grasses assist to control soil erosion while the land is also used for controlled grazing at certain times of the year or the grass is cut for zero-grazing cattle (Fig. 20). This serves as agro-silvi-pastoral system of management.

On the second approach, the mango plantation is completely ploughed and the land between the rows is used for short term agricultural crops such as maize, cassava, beans and peas (Fig. 21). This approach enhances the hygiene of the orchard and recycling of the fallen leaves while increasing water percolation and use of excess agricultural fertilizer by the trees. This agroforestry system increases the potential income from the farm and serves as a food security back-up. An observation from the field is that in the years of low rainfall for the agricultural crops, mango trees tend to over produce. Physiologically, mangoes require long dry spells (optimum three months) to flower well whilst high rainfall increase the chances of infection of flowers by fungal diseases lowering the yield.

The third system is that where mangoes are grown together with other horticultural crops. In Coastal region, the mango-coconut-cashew nut system is widely practiced (Fig. 22). While the mango and cashew are highly seasonal, the coconut is almost an all-year-round producer. That kind of a system guarantees a farmer some income when mangoes and cashew nuts are off season. The value chain of the coconut crop is also so large that there is always a product on demand at any time of the year for food, beauty, construction and ornaments. In semi-arid areas of Makueni and Mbeere, the horticultural trees that are grown together with mangoes include papaya, citrus and guavas. The other system popular at the Coast and in some sites in Embu, mangoes have been left to grow to their maximum height with well closed canopy. Other plants including grass cannot survive under shade of the closed canopy (Fig. 23). In the wetter areas of Mbeere, bananas are frequently included between the mango trees (Fig 24). The intercropping of mangoes with other crops helps to increase the productivity of the land, especially during that time when fruits are off season.

Mangoes are also grown within homesteads where they provide families with fruits and shade while they also act as ornamentals. These shades also serve as places for welcoming visitors especially during the dry hot months when people find it highly uncomfortable to stay indoors (Fig. 25).



Fig.20: Mango orchard with grass covers in between. Fig. 21: Mango in agroforestry system clean weeded



Fig 22: Mango-Coconut-Cashew system



Fig. 23: Tree stand of mango with tall closed canopy



Figure 24: Mango-Banana system



Fig. 25: Mango as a shade and ornamental tree