

## Tree Management Improves Prospects for Agroforestry in Kenya

*Simple pruning methods reduce competition between trees and crops on farms. Agencies promoting tree planting should ensure that farmers understand that trees compete with crops both above and below ground and how this can be controlled by pruning. KEFRI has initiated an extensive training and dissemination programme to help meet these needs.*

*These simple management methods enable policy makers and development agencies to take a new look at the components of farming systems as farmers can now manipulate trees to suit their farming objectives. This will assist the Republic of Kenya meet the objectives of their National Development Plan to reduce reliance on forests for timber and woodfuel.*

### Background:

Trees are competitive with crops, and crop yields are often halved close to trees. While farmers understand the problems of shading, they ignore root competition because roots are 'invisible'. Competition on farm boundaries causes neighbour disputes, resulting in reduced planting and in uprooting of stock. These problems have limited the practical and policy support that National Agricultural and Forestry Research Centres (NARs) give to tree planting on farms.

Pruning reduces these problems and makes integrating trees with crops on farms a more attractive option which diversifies farm production, reduces dependence on unreliable annual crops, and provides environmental benefits. It provides valuable tree products and reduces reliance on forests for domestic wood fuel.

### Findings:

Currently, only Embu farmers practice crown pruning (pollarding) in a way which is effective in reducing competition. Root pruning is not practiced in Kenya.

However, trials in areas with 650 - 1500 mm rainfall show that simple pollarding and root pruning methods can reduce or eliminate competition from both young and mature trees of many species. As well as reducing competition, farmers benefit from using the prunings as fuel, stakes and fodder, and careful pruning improves timber quality.

Where rainfall is > 1000 mm, this project has now collected much data, over several cropping seasons. Studies at drier sites (650 mm) are fewer and require follow-up before firm recommendations can be given. However, two seasons' work on the important dryland species, *Melia volkensii* (Mukau), showed that competition close to trees was almost eliminated when trees were pollarded and root pruned. Root pruning was most effective. The results indicated that a farmer can double on-farm tree planting without compromising maize yield.

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## Development and Policy Implications

Pruning increases the flexibility of agroforestry systems, and enables farmers to balance their individual needs for tree and crop products. Reduced tree growth is off-set by the benefits provided by regular harvests of woody biomass for firewood, leafy biomass for mulch and fodder, and the increased yields from the understorey crops. With the added bonus of pruning improving timber quality, there are strong incentives for farmers to integrate trees on their farmlands. Both women and men can participate in pruning and adapt it to their needs.

## New Guidelines for On-farm Tree Resource Management in Drylands

KEFRI's Strategic Plan highlighted the lack of clear management guidelines for dryland resource management and conservation. These new pruning technologies enhance integration of trees on farms and improve resources in ASALs.

## Training of farmers is essential

Farmers' knowledge of competition needs extending and they require training in effective, safe, crown pruning and root pruning. KEFRI has already initiated training workshops for farmers, targeting those participating in ARIDSAK, SOFEM (Social Forestry) and NARP (National Agroforestry Research Project, Embu, by KARI) projects. Other agencies such as the Forest Department, Development Projects and NGO's will also be trained as trainers by KEFRI so as to transfer the technology to a wider mandate beyond the project target area.

## Meeting Future Overstretched National Demands for Timber and Woodfuel from ASAL Farmlands

The National Development Plan of the Republic of Kenya 2002 - 2008 highlights the heavy reliance of many local communities on forests for wood, fuel, and non-wood products. Forests contribute about 95% of rural domestic energy. It is projected that timber and woodfuel will in future be produced on farm, mainly in the drylands. Furthermore, the Kenya Government's Poverty Reduction Strategy Paper of 2000 prioritized the need to develop farm-forestry with improved planting and management of trees on farms.

This project addresses, through research and extension, the importance of tree pruning technologies in realizing sustainable on-farm timber, wood fuel and crop production. The techniques, which have been developed, help to meet the planning objectives of the Republic of Kenya.

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