TREE PLANTING AND MANAGEMENT

A guide for small-scale farmer groups

What is tree planting?

This is the process of transplanting tree seedlings or saplings to a permanent location.

What is agroforestry?

Agroforestry is the integration of trees and/or shrubs with other crops and/or animals in a farming system in order to sustain agricultural production.

What are the benefits of agroforestry?

- Trees give us air to breath and water to drink.
- Trees provide food, fodder, fuelwood, poles, timber, medicine, etc.
- Some trees fix nitrogen in the soil for our crops.
- Trees imrove the soil's ability to absorb and keep water.
- Trees improve soil structure and help in controlling soil and wind erosion.
- Trees give us cold and shade.

Promotion of agroforestry

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Step-by-step procedure of planting agroforestry trees in the field

Transportation of seedlings to the field – do not underestimate the time and effort needed to transport tree seedlings to your planting sites. You can transport tree seedlings in baskets, on a bicycle, on an oxcart, on a car or with a tractor. Your choice of transport depends mainly on the distance to the planting site and the number of seedlings to be transported. Consider using an oxcart if you are going to transport high numbers of seedlings (300 or more). Consider a car or tractor for transporting more than 1,000 seedlings.

Field layout – Consider different sites for different tree species: Plant fertilizer trees (Gliricidia) in your crop fields. Plant those trees that require more attention in your garden or next to your house. This way you can better protect them daily.

Preparation of the planting hole and actual transplanting – Dig a hole large enough to accommodate the entire root system and heap the topsoil on one side and the subsoil on another (4); Place a mixture of top soil and manure, Bokashi or compost back in the hole before placing the seedling (5A). Remove the seedling from the container and place it in the hole (5B). The seedling should be planted with the root collar just above the soil surface (6A). Place back the topsoil-manure/compost/Bokashi mixture and some of the subsoil around the seedling (6B) and water.

Spacing of agroforestry species in the field

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Tree species	Spacing (m)		Planting hole L×W×D (cm)
	In-between rows	Within rows	
Gliricidia (alley cropping)	5	1	30×30×40
Mango	7	7	60×60×60
Oranges grafted on lemons	5	5	60×60×60
Paw paw	5	5	60×60×60
Moringa	3	2	30×30×40
Khaya (Mubaba)	3	3	30×30×40
Leucaena	3	1	30×30×40
Direct seeding			
Tephrosia (alley cropping)	5	1	Press the seed in the soil just the way you plant maize.
Pigeon pea (alley cropping)	5	1	
Tephrosia (seed or biomass production)	1	1	
Pigeon pea (seed or fodder production)	1	1	

Spacing – Different trees have different spacings based on:
(I) *Characteristics of the tree* - trees with a wide crown require wider spacing than those with narrow crowns.
(ii) *Tolerance of the tree species* - spacing is narrow for shade loving trees and wider for light demanding trees.
(iii) *Type of agroforestry practice* - narrow spacing for trees or shrubs grown in single stand for seed, fodder or biomass, while wider spacing for trees/shrubs used in an alley cropping system.

What is alley cropping? - this is the planting of rows of trees and/or shrubs to create alleys within which agricultural or horticultural crops are produced.

Spacing for fertilizer trees grown in an alley cropping system - narrow spacing is used for trees like gliricidia and leucaena for more biomass to contribute to soil fertility. The regular trimming of these trees during the growing season helps reduce competition between the trees and the crop and return the biomass to the soil.

Spacing for fruit trees - wider spacing is given in case of fruit production to reduce competition among trees and ensure high yields and good quality of fruits.

Spacing for trees or shrubs grown by direct seeding - narrow spacing is used for species such as Tephrosia and pigeon peas because of uncertainties related to the germination percentages. After germination, thinning can be done to the desired spacing.

Spacing for timber or fuel wood production - wide spacing is used for species such as Mubaba that are grown for timber/wood production to ensure that the plant receives more nutrients and produce good quality timber. Species grown for fuel wood are usually fast-growing and a narrow spacing is recommended as these species will be regularly pruned to obtain fuel wood.