WINDBREAKS, LIVING FENCES AND OILS

Objective

1. To know how to use trees on your farm for windbreaks, living fence and oils.

10.1 Other ways in which you can integrate trees into your farming system

In Session 2, we took a quick look at a list of many different ways that you can integrate trees or shrubs into your farming system. In this chapter we will examine three services and products provided by trees: windbreaks, living fences, and oils from tree seeds. Several of the trees that will be mentioned in this chapter are further examples of multipurpose trees.

10.2 Benefits of having windbreaks on my farm

You will find that there are many advantages to having windbreaks on your farm. Most of these advantages come from the fact that the speed of the wind is lowered by the windbreak. The lowered wind speed will then not cause as much erosion of the soil nor as much evaporation of water from the soil or from plants. Wind of lower speed will cause less physical damage to crops or houses and other buildings than would wind of a higher speed. The trees you plant in the windbreak can also give you other benefits such as firewood, fodder or pest control agents, depending upon which trees you plant in your windbreak.

10.3 How to plant trees to form a windbreak and later manage the windbreak

First, you must know the direction from which the wind usually comes. When you determine the most common wind direction, plant the trees in a line at a right angle to the wind direction. Look at figure 9.1 on where to plant. It is best to plant at least two rows of trees, one row of short trees and one row of tall trees. Plant the short trees on the windward side of the windbreak.
Do you have windbreaks in your area? Take a walk to one and discuss whether it is a good windbreak or not. How can it be improved? Think about the recommendations you have just read about how to plant trees in a windbreak and which species to use.

10.5 How to plant and manage trees and shrubs to form a living fence

First, select the tree or shrub to be planted. It is a good idea to choose a kind of tree or shrub that will yield some valuable product in addition to serving as a living fence (hedge). Examples of such trees or shrubs are those with edible fruit, such as Mulberry (Morus alba and Morus nigra) or Himalayan Berries (Rubus procerus), or those with valuable oil in the seed such as Moringa or Jatropha (mentioned in the next section), or those which will yield firewood or fodder or material for your compost pile. Of course it is possible and even advantageous to plant more than one kind of tree or shrub in your living fence.

There are a variety of ways in which the living fence can be constructed. One way is to plant the seeds, seedlings, or cuttings in a staggered double row, with about 50 cm between the plants in the row and about 25 cm between the rows.

Especially while the trees or shrubs in your fence are small it will be necessary for you to protect them from the usual hazards of fire and domestic animals. Cows for example can easily break the young trees or shrubs even if they are not tempted to eat them. You will probably want to trim your living fence regularly, both to keep the fence at the size you desire and to harvest some product from the fence.

The windbreak must be carefully managed. No large holes or gaps should exist in it, for these would channel an even stronger wind through the trees onto your crops. Nor must the windbreak become like a solid wall because then a very turbulent wind would blow over your crops. Instead the windbreak should allow half of the wind to pass through the trees (See diagram above).

A well-planted and well-managed windbreak will protect your crops for a distance equal to about 15 to 20 times the height of the tall trees.

10.4 Some good trees to plant in a windbreak

For your tall trees in the windbreak good trees are Senna siamea, Cmelina arboeaa and the species of Eucalyptus. Suitable trees for the row of short trees are Senna spectabilis and Trichilia emetica.
When you trim you can use the technique of pollarding. Here the main stem of the tree is cut off above the browse line of livestock and other animals. The tree reacts by sending up a whole crop of young new stems, which, in time, develop into a new tree. Its new branches provide firewood at a very convenient level for cutting, while leaving the growing tree intact, and providing wood for years to come. Pollarding some trees in an established hedge is excellent as the branches are close by for firewood, while the main stem of the original tree continues to form part of the hedge.

![Pollarding trees to collect firewood](image)

1. What are some other trees or shrubs that are used locally as living fences?

2. If you plan to use a living fence around a nursery, it would obviously have to be started a long time before you plant the first tree seed in your nursery. Prepare a calendar of other activities connected with your tree planting project, including both those before and after seed planting.

### 10.6 Some of the valuable oils in tree seeds

The oils in many tree seeds can be easily extracted and are very valuable. Oils can either be used on your farm or you can sell the oil and get income. We will focus our attention on three trees with important seed oils. The first tree is Jatropha curcas, mentioned above as a good tree for a living fence. The seeds of Jatropha contain a viscous oil which can be pressed from the seeds and used in the manufacture of soap, candles or cosmetics. The oil can also directly be burned for cooking and lighting, and - amazingly - can be used to run diesel engines.

About half of the seed’s weight is oil. The cake left after expressing the oil is rich in nitrogen and has the same fertilizing value as chicken manure. You can also sell Jatropha seeds if you do not have the possibility to process them yourself. Jatropha can also be used as medicines, pest control agents, and for soil fertility improvement. Also, bees like its flowers, so it is good for honey production.

A second tree with valuable seed oils is *Moringa oleifera*, mentioned above for its qualities of providing food, fodder and for being a living fence tree. *Moringa* seeds contain a fine oil which can be pressed from the seeds and that can be used in cooking, in lubrication of delicate machinery, and in the manufacture of paints and perfumes. About 30-40% of the seed’s weight is oil. It is also possible to sell seeds directly.

The third tree we consider for its oil was mentioned above as a possible tree to plant in your windbreak, *Trichilia emetica*. *Trichilia emetica* seeds contain a superior quality oil that can be extracted in boiling water after pounding the seeds. The oil can then be used to make a good quality soap or cosmetics and for medicinal purposes.

*Trichilia emetica* is also a good shade tree and it makes good firewood, poles and tool handles. It is a good tree for fodder and for bee forage. Its leaves, bark and roots have medicinal uses.

? Are you aware of some other uses of trees which we did not cover in this study circle and that you would like to present to the group?