062197

AGROFORESTRY IN HIGH RAINFALL AREAS

Notes for brochure in the Tree Care series

What is Agroforestry?

"Agroforestry" is a term used in a broad sense to cover a wide spectrum of approaches to integrating trees with farming. Types of agroforestry range from a fully integrated system with grazing under widely spaced pine trees to stategically placed belts of trees around paddocks for shelter and protection.

The integration of trees and farming is not new as it has been practised for 1000's of years. Only relatively recently however has the importance of agroforestry been recognised.

Why Agroforestry?

In high rainfall areas of the South West (900-1400mm per year), tree growth is rapid and increasing numbers of farmers are seeing trees as a way of diversifying their income by producing timber and other products. In addition agroforestry can provide protection for soils susceptible to erosion and shelter for stock and crops.

What Types of Agroforestry?

The ways of integrating trees and farming are limitless. The appropriate form of agroforestry will depend on the type of land, the requirements of the farm and the interests of the farmer. Some types of agroforestry have only recently been tried and therefore we have incomplete information on such aspects as economics and the potential to utilize thinnings. Some of the main types of agroforestry are listed below.

.../2

1. Wide Spaced Trees and Grazing

This type of agroforestry involves the integration of trees and grazing. To let in light for pasture, trees are widely spaced and pruned to a considerable height.

The combination of trees, pasture and grazing is possibly more productive than either trees on their own or pasture and grazing alone. For example, clover produces nitrogen which can boost tree growth and trees provide shade and shelter for stock and pasture.

Under this system trees require careful tending during the formative years (age 3 to 10) to produce high quality timber and to minimise debris. This involves frequent pruning to prevent branches becoming excessively large. Debris from thinnings and prunings cover pasture and mulching or removal of debris may be desirable. Radiata pine is the main species that has been tried to date.

.../3

2. Woodlots

Woodlots are a type of agroforestry in the sense that they can be integrated with the overall management of a farm. For example, woodlots can be positioned on land that has the potential to erode or on soil that is unsuitable for good pasture. Woodlots are usually dense and managed as a small plantation to produce timber.

In addition woodlots can provide shelter for livestock, such as newly shorn sheep during bad weather.

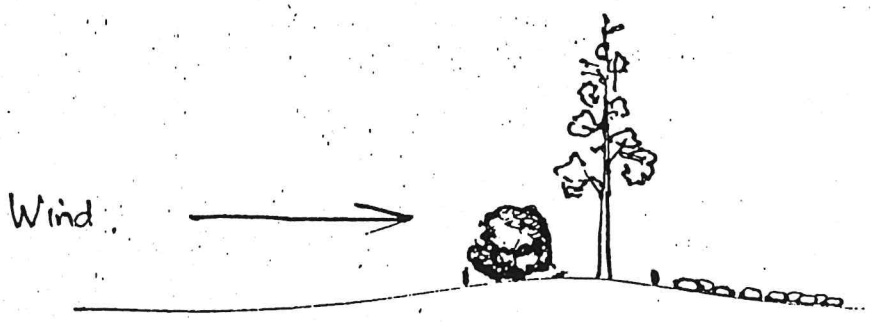
3. Windbreaks

Windbreaks are belts or blocks of trees designed primarily to provide shade or shelter. However windbreaks are dynamic and can be managed for firewood or poles by thinning out. With appropriate selection of tree species, honey and stock fodder can also be products of a windbreak. In an established windbreak, grazing may become part of management. Less tangible benefits such as encouraging bird species and enhanced aesthetics can be important too.

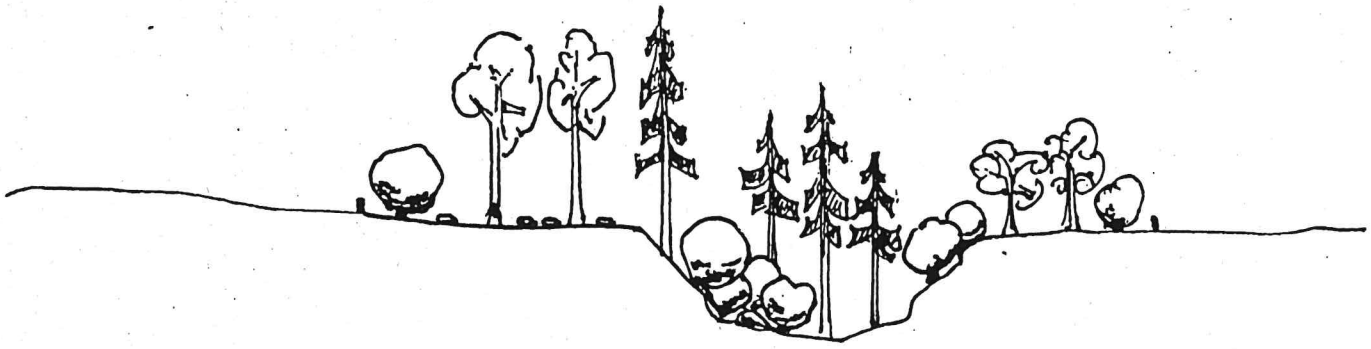
../4

The illustrations below depicted only two types of windbreaks. There are many other possible types.

Narrow belts around paddocks

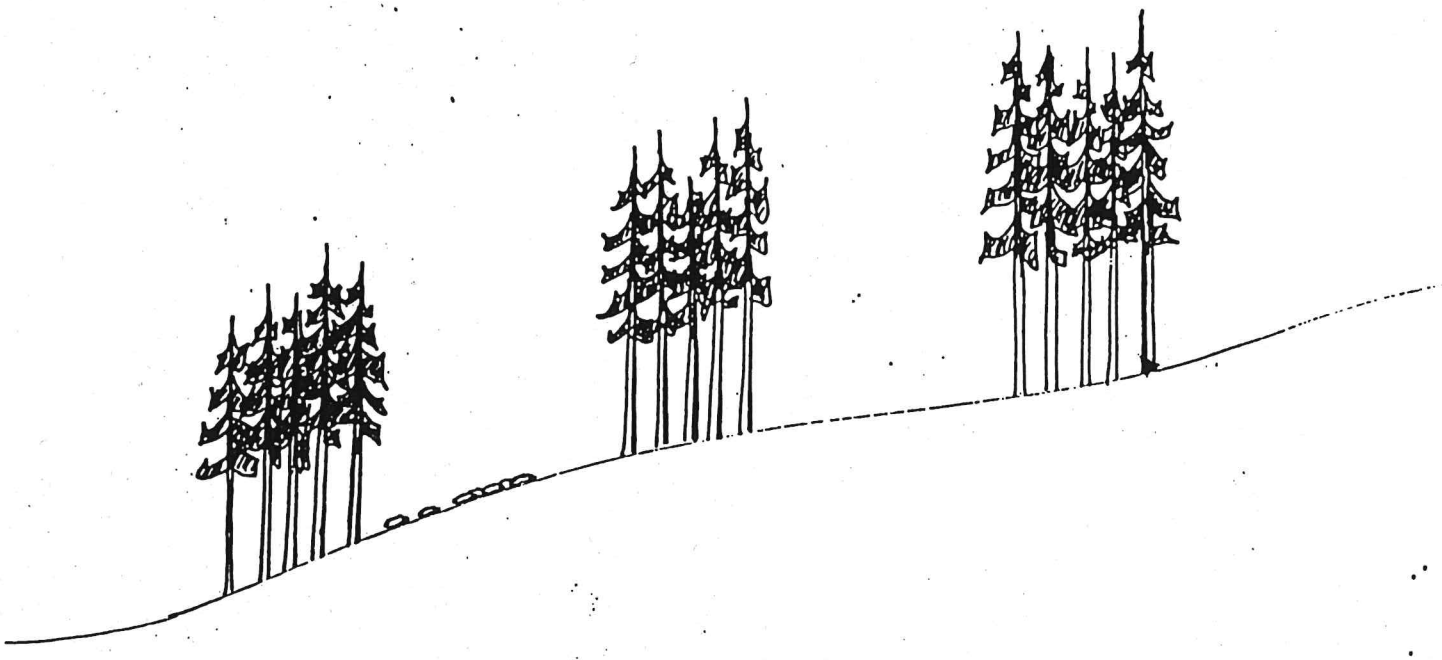


Strategically placed blocks



4. Strips of Trees and Grazing

This type of agroforestry involves strips of trees with inter-strip areas of pasture. As a method of integrating trees and farming it is a new idea and requires testing to confirm possible benefits. However the system is effective because it enables cropping to continue between the strips of trees. Also thinning and pruning debris remains within the strip of trees and doesn't cover the pasture.



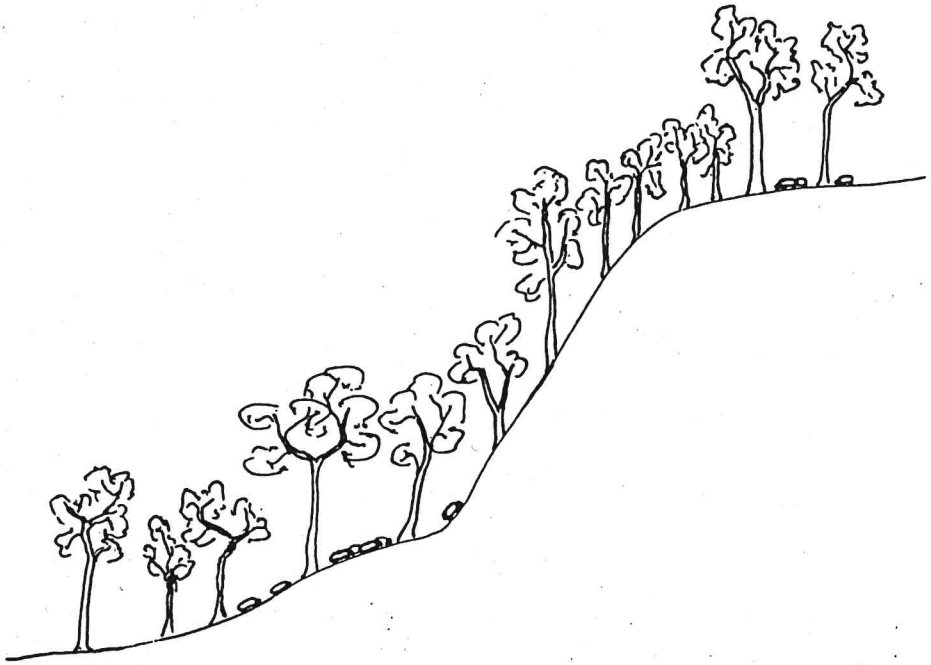
The desired width of pastured land between the strips of trees will depend on the type of farming. Where cropping is the main aim and trees are required primarily to help control wind erosion, strips could be 200 metres or more apart. On the other hand, if the objective is to grow substantial amounts of timber with some pasture then the strips could be as close as 20 metres apart.

Generally it is considered that the strip of trees should contain 3-5 rows as this width (12m) should make it possible for all trees to tap nitrogen produced by pasture and to receive phosphate fertilizer. If mechanical thinning is envisaged a five row strip is an advantage as this is the number of rows that current machines thin in one pass.

Pasture under Native Forest

Grazing stock under native forest has been practised since the first settlers arrived 150 years ago. In recent years a few farmers have demonstrated that good pasture can be established and managed under native trees.

../6



The forest is burnt prior to spreading clover seed and superphosphate. To maintain pasture the grass and leaves must be burnt about every second year and dressings of fertilizer applied. The main advantage of the system is that for relatively little outlay bush land can produce returns from grazing. This technique may be especially useful on steep slopes where erosion is a potential problem. As the price of jarrah timber rises farmers may even see value in tending the trees; removing the poorer ones to allow the remaining trees to grow faster.

Species for Agroforestry

Where timber production is the aim there are numerous pinus and eucalypt species to choose from. Pinus radiata is a particularly versatile species due to its rapid growth and quality timber. The oaks (Quercus) and walnuts (Juglans) are examples of attractive exotic genera that produce high quality timber.

Fodder trees with potential include the carob (Ceratonia siliqua) and tree lucerne (Cytisus proliferus). The range of species tested under agroforestry is limited and there are many others to try. Further information about trees suitable for high rainfall areas of the South-West can be found in pamphlet No. 3, in the Tree Care Series, called Trees for Rural Areas.

Richard Moore
September 1982