

Windbreak establishment on farms using native plants

Forests NSW Nurseries

Well-designed windbreaks can increase the productive capacity of a farm by providing shelter for both animals and crops, particularly where extreme weather conditions occur.

Allocating space to windbreak establishment will reduce the productive area of a property. For a grazing property, a good windbreak system could occupy up to 10% of the farm area, with the root systems of trees collecting moisture and nutrients some way from the tree itself. This varies according to individual tree species.

This loss of land, however, is more than compensated by the increase in the net productivity created by the additional protection that the windbreak system will give.

Principles of windbreak design

The ideal windbreak is composed of several rows of trees planted at spacings that will give a particular reduction in windspeed, without eddying or turbulence that would be caused by an impenetrable screen.

The characteristics of individual windbreaks are determined by the choice of plant species; the number of rows and spacing, including cross-section placing; the length and configuration of the windbreak area relative to topography.

Choice of species

The choice of the correct species of trees for planting is probably the most important factor in creating a successful windbreak. Factors influencing the choice of species are:

- Suitability of climate and soil
- Height of mature trees

- Density of crowns
- Rate of growth and length of life
- Wind strength
- Resistance to disease, frost and fire.

Always use local native species windbreaks. These species will be proven in your area, will grow quickly, will provide valuable shelter for wildlife and are vital to the natural revegetation of your land. Local native species are adapted to local conditions, particularly drought and frost. Use bottlebrush, tea tree, tick bush, paperbark, wattle and grevillea species as smaller shrubs. Medium shrubs and small trees can include wattles, she-oaks, hakea and larger bottlebrush, whilst taller trees can be eucalypts, angophora and other tree species.

Number of rows

The number of rows in a windbreak will ultimately dictate its overall efficiency. Land and moisture availability are often the determining factors in the number of rows that are used in windbreaks.

If land available is plentiful, multiple row windbreaks can provide ideal protection as well as providing valuable wildlife habitat and a potential future timber supply.

Where space is limited, especially in drier areas, a single row windbreak using tree species that maintain a live crown to ground level can be planted. Single rows can also be planted to provide secondary protection to multiple row windbreaks in areas of varying wind directions.

Spacing

The planting distance between individual trees and shrubs in the row and between the rows themselves is critical to the success of the windbreak. For example, consideration should be given to issues such as access to tractors and slashers for weed

control. Distances will vary according to species used, but in multiple row windbreaks will generally be within the following range:

- Tall trees: 5-8 metre spacing, 3-6m between rows
- Medium trees: 3-5m spacing, 3-5m between rows
- Shrubs: 2-4m spacing, 2-4m between rows

Length, configuration and location

The area sheltered by a windbreak is relative to the mature height of the trees. As a guide, a windbreak will reduce windspeed by more than 70% and shelter an area roughly 20 times the mature height of the trees planted. Also consider the length of the windbreak, as unless it is 15 to 20 times the height of the trees, the wind will be deflected around the ends and lose effectiveness.

Configuration and location of windbreaks on a property need to be co-ordinated to work in harmony and efficiently with other property activities.

Considerations include:

- Direction of prevailing winds
- Topography
- Areas requiring protection
- Land available
- Existing tree cover
- Access for other activities.

From the information above it is clear that establishing a windbreak system requires a certain amount of time, money and organisation.

Planting a windbreak of Australian native plants will provide a farm with protection from hot and cold winds. It will also protect livestock by providing shade and shelter and shelter homes and gardens. Windbreaks can reduce soil erosion and dryland salinity and add to wildlife habitat.

Forests NSW Nurseries are the Australian native plant specialists and will be pleased to advise you on all aspects of windbreak planning and establishment.

To find your nearest Forests NSW Nursery contact:

Forests NSW Information Centre: 1300 655 687
Visit our website: www.dpi.nsw.gov.au/forests

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (April 2008). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

Figure 1: Establishing a windbreak

