



Providing Shade and Shelter

Trees add aesthetic appeal to the farm landscape, but their benefits go much further with increases in productivity and animal welfare when shelter is provided. Spring storms occur annually, killing newly born lambs, and while well planned shelters will not completely solve the problem, they will go a long way to giving stock protection from the effects of cold driving rain. Animal productivity is reduced in cold windy conditions as energy is used to maintain body temperature, instead of producing milk, meat and wool. The other extreme is when animals seek shade in the hottest part of the day.

Shade provided by single large trees or a shelterbelt, can reduce the air temperature by 5-10 degrees. Providing shade against sun exposure and high temperatures is vital.

Initial planning and good establishment management is required to obtain the maximum long term benefit. Take into account prevailing adverse weather conditions, the noonday sun angle and stock movement from paddock to paddock.

Irrigators, especially centre pivot, have their own special challenges. A farm plan is a useful tool for planning and recording shelter plantings.

NZ flax and cabbage tree



Quercus palustris



TYPES OF SHELTER

Every farming region has different reasons for shelter and every property is different in its requirements. Shelterbelts can be planted as a barrier, as a wind filter, or a combination of both.

A barrier type shelter is normally evergreen using conifers like *Pinus radiata*, Cedrus or Leyland cypress, and *Phormium* (flax) and Pittosporums where height restrictions apply. The advantage of this type of shelter is that during adverse weather, animals can shelter close to the trees; the disadvantage is that tumbling air is created in the lea of the shelter giving less benefit downwind.

A semi-permeable shelterbelt can reduce wind speed by 20-50% over a distance 10-20 times its height. Moisture losses due to drying winds are reduced, resulting in greater crop and grass growth.

Deciduous versus evergreen is an important consideration. Tall evergreen shade creates long winter shadows, pugging in paddocks and dangerous ice on roads. Deciduous has the disadvantage of leaf fall resulting in a more open draughty shelter at ground level. Regular hedge trimming of some deciduous species such as Beech cause the leaves to hold on throughout the winter until new buds emerge in the spring.

A good compromise is to use deciduous to create the more open upper wind porosity, while using a native evergreen to provide stock shelter in the lower third.



Mid-Canterbury shelter belt



Sheep escaping the midday sun

BASIC PRINCIPLES OF SHELTERBELTS

POROSITY Ideally 50%, to slow the wind, not stop it altogether.

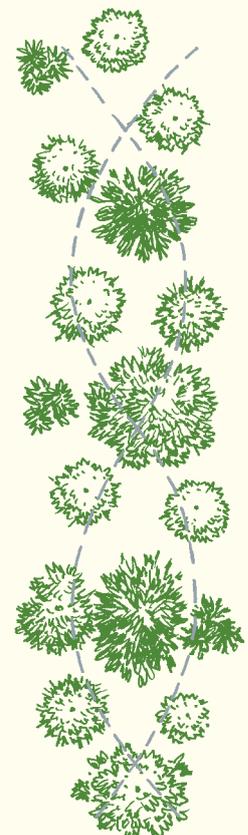
HEIGHT Preferably as tall as the situation allows. Deciduous trees can provide excellent shade and shelter, with little shading in winter.

SPECIES A mix of deciduous trees and native evergreens has the benefit of the ideal 50% porosity.

SPACING Single row shelter 1.2 to 1.5m apart. Multiple rows and timber belts 1.8 to 2.5m.



Multi row mix of native and deciduous trees



Providing Shade and Shelter continued

SINGLE ROW SPECIES

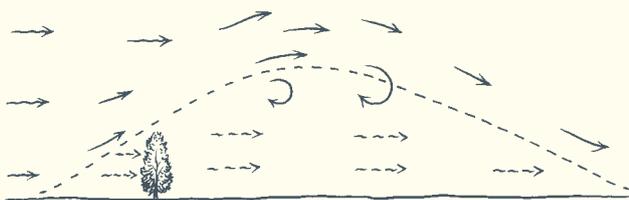
Single row shelterbelts tend to be used where land use or values restrict wider multi-row shelters. Horticulture and dairying are examples where Italian alders (*Alnus cordata*) or Poplar and evergreens such as *Pinus radiata* and Leyland Cypress are trimmed into formal narrow shelterbelts. However almost any species can be trimmed into a shelterbelt, care needs to be taken to form prune early and not cut beyond live needles in conifers.

The sheltered environment of a mixed species shelterbelt or woodlot creates a corridor for migrating wildlife, valuable habitat for beneficial insects, birds and forage for bees.

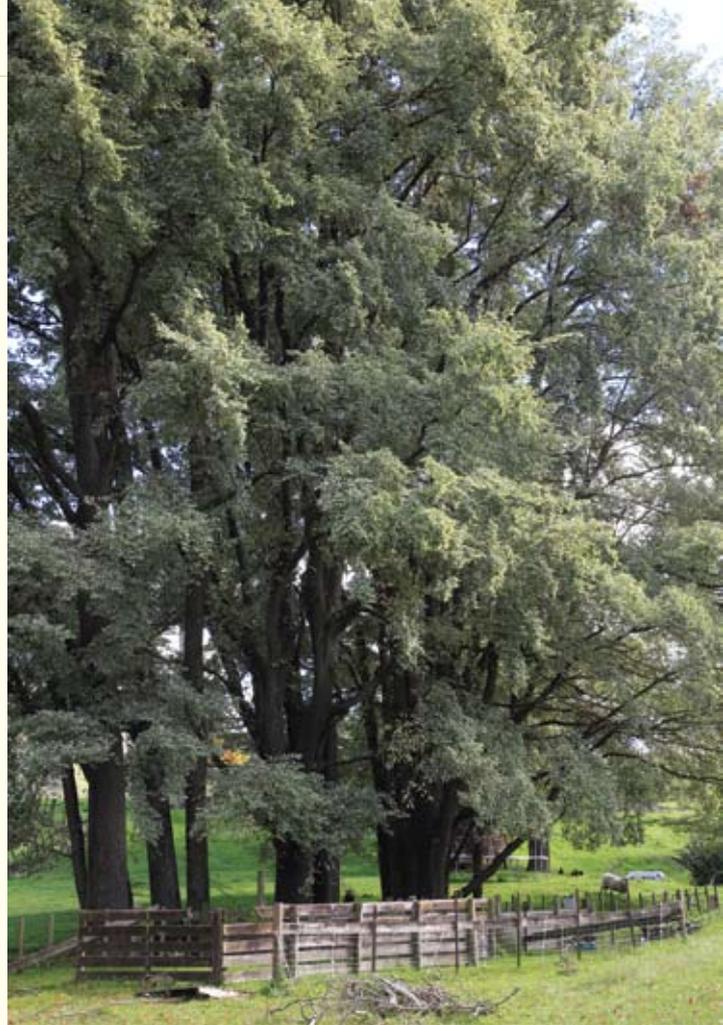
WHAT SPECIES TO USE?

Species choice is dependant on local soil and climatic conditions. Local advice and experience from tree growers with successful established shelter is very valuable as conditions vary from region to region. *Macrocarpa*, *Radiata*, Leyland cypress and *Cedrus deodara* are traditional faster growing conifers.

Deciduous species such as Poplar 'Crows Nest' and Italian alder, along with a wide range of other species such as Beech, Hornbeam and Oaks offer diversity in leaf shape and autumn colour.



Effect of shelter on wind speed



Variegated elms



Quercus shade trees



SPECIES RECOMMENDED

Natives

Cordyline australis
Dodonaea viscosa
Griselinia littoralis
Phormium
Pittosporum
Podocarpus totara
Sophora

Deciduous

Acer campestre
Carpinus betulus
Crataegus
Fagus sylvatica
Platanus orientalis
Populus
Quercus
Salix



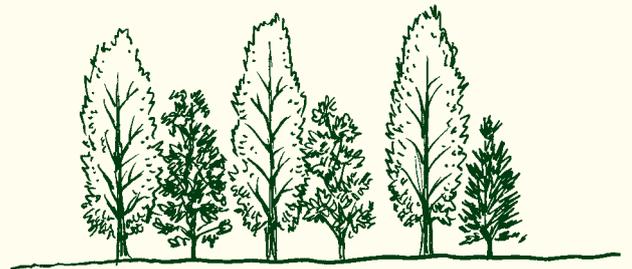
Fagus sylvatica hedge

Evergreens

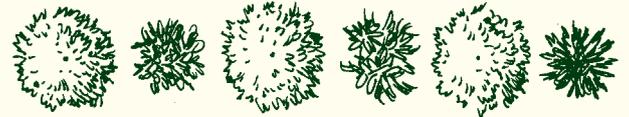
Acacia melanoxylon
Eucalyptus fastigata
Lauris nobilis
Quercus ilex

Conifers

Abies
Cedrus deodara
Cryptomeria japonica
Cupressocyparis cv ovensii
Pinus
Thuja plicata



Mixed native and deciduous shelter

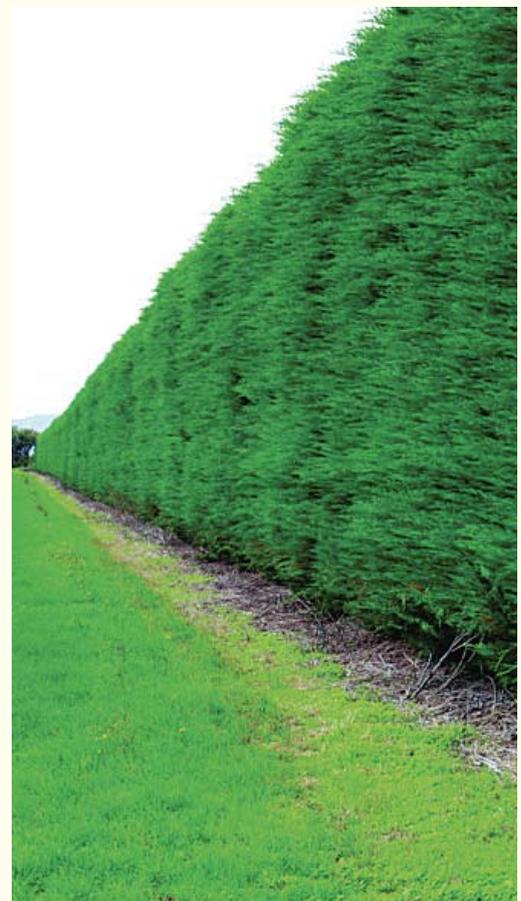


Cupressocyparis cv ovensii (Oven's Cypress)

Oven's Cypress has largely replaced the 'Leighton Green' cypress as a shelter and timber tree due to the continued spread of cypress canker throughout New Zealand. *Ovensii* grows well in a wide range of climates and soil conditions. The foliage is a darker grey-green, trims well into a dense hedge and produces clean straight trunks when pruned as a timber tree.

Grown from cuttings in our propagation facility, we have them available as a bare-rooted plant from June to September. We also have container grown stock which gives you the option of being able to plant in autumn or spring.

They will not tolerate salt laden winds—in these situations *Cupressus macrocarpa* would be more suitable.



Trimmed cypress shelterbelt

