

Trees for deer

Environment, welfare and productivity

Deer need trees

In nature, deer prefer to live in the forest margins where they can hide from predators and have access to browse and grassland for feeding.

Experienced deer farmers say deer are more settled where they have shade, shelter and visual barriers between mobs.

Shelter from cold and protection from heat stress are important for animal welfare and are a requirement of the NZ Farm Assurance Programme.

On many deer farms there are steep hillsides that may be better suited to trees. Excluding stock and planting trees in these areas will likely reduce soil erosion, improve water quality and may generate income from carbon and timber.

When areas of native biodiversity are retired from grazing, enrichment planting with native species is often needed. But whatever its purpose, almost every tree you plant will enhance biodiversity in one way or another, whether it's pollen for bees; habitat for insect predators that will help protect your crops; and shelter and roosts for the birds that feed on grassgrubs.

Trees add to the beauty and value of a property, as well as its appeal as a place to live and work. They also make your deer more content.



Photo: Richard Hillson

Pregnant hinds enjoying shelter on a windy October day

Trees for shade and shelter

In paddocks without natural shelter such as gullies, tussock and scrub, shelterbelts are needed for animal welfare.

Shelterbelts reduce wind speed, soil erosion and the physical damage to plants caused by the force of the wind. In winter they reduce wind-chill and in summer their shade reduces heat stress.

Shelterbelt design

It is best to have compact trees, shrubs and flaxes for lower-level protection and taller, more porous species providing higher shelter. Deciduous species are often used as tall shelter, particularly in the south, to reduce pasture shading in winter.

It is usually best to plant shelter that is sufficiently porous to slow the wind down, as dense barriers like hedges tend

Key points

Trees play many important roles on a deer farm. They:

- Provide shade and shelter
- Stabilise hillsides and streambanks
- Help improve water quality
- Enhance biodiversity
- Store carbon
- Provide firewood and timber
- Produce nectar and pollen
- Provide summer browse
- Beautify your farm

to create turbulence. The reduction in wind speed extends for a distance equal to several times the height of a porous shelter belt. Deer are good at finding the shelter 'sweet spot' – usually some distance downwind.

Because shelter belts are expensive to fence, plant and maintain, first look at what grows well in the district and talk to other deer farmers about their experience. The NZ Farm Forestry Association is a treasure trove of information, www.nzffa.org.nz

"We are continually planting trees for shade and shelter. They calm the deer – providing visual separation between mobs. There's also more summer pasture growth in the lee of shelter."

Cam Nelson, Winton, Southland

Preventing erosion

Trees will greatly reduce the risk of soil erosion during heavy or prolonged rainfall. In areas where the erosion risk is high, closed canopy forests are the best option for stabilising hillsides. In areas of moderate or low risk, spaced plantings of willows and/or poplars may be sufficient.

Manawatu deer farmer Tony Gray saw large chunks of the family's farm slip away in a 2004 weather bomb. He says erosion control plantings "are not a cost. They're an investment. There will be another 2004."

He has been experimenting with pole protectors. He made this one from galvanised steel mesh.



Photo: Trevor Walton

Willows or poplars?

Willow or poplar poles are usually planted during winter at 10-15 m spacings. After 5-7 years their roots knit the hillside together, reducing the risk of landslides. Where earthflows and gully and tunnel erosion are the issue, willows are the better choice as their roots form thick mats in wet soils.

There are many poplar and willow clones. Ask your regional council for advice on the most suitable ones for your farm and how they should be planted.

Protecting poles from deer

Netlon and Dynex sleeves are commonly used to protect newly planted poles from sheep. Dynex sleeves also provide useful possum, rabbit and hare protection.

However neither of these sleeves will provide adequate protection from cattle and adult deer until the poles are well established (usually 2 years). Cattle rub against the poles, pushing them over. Deer chew the bark and new growth above the sleeve.

Hawkes Bay deer farmer Mark Mitchell protects poles with 1.7 m Dynex sleeves, topped with half a sheep Netlon sleeve. "With the Netlon on top, the deer struggle to have a really good chew. The aim is to protect the bark."

Even so, the Mitchells use temporary electric fences to exclude deer and cattle from pole-planted areas for two years, to enable the trees to get established.



Above; Electric fencing is recommended by Hawkes Bay deer farmer Mark Mitchell until the poles are well-established

Left; Determined deer need a determined response! Mark Mitchell's answer to bark-eating hinds

Medium gauge reinforcing mesh secured to a post or waratah is used by Peel Forest Estate, South Canterbury to protect poles and specimen trees. Manager Mark Tapley says the mesh keeps deer out and stags don't like rubbing their buttons or antlers on the steel.

Home-made Hurricane wire cages with 3 or 4 rammed posts may be an option for specimen trees, but not for mass plantings of poles. They are time-consuming, expensive and the wire needs to be well away from the pole, as deer will poke their noses through to browse.

Spiky Tree Guards show great promise. They are 1.7 m high, come in a flat-pack and are easy to erect. Because deer and cattle keep well away from them, only one securing post or waratah is needed.



Photos: Trevor Walton

A Tree Guard (a sheep version) has been thoroughly investigated by this mob of deer, but there is no damage to the pole. With the longer deer version, there may be no need for the Dynex sleeve

They are marketed in New Zealand by the McVicars, a deer farming family. Contact Tash Lord (Hawkes Bay) Tel 021 806 709 or Carla Pedler (Canterbury) Tel 027 920 7183, cmpedler@gmail.com. Facebook: @treeguardsnz

On-going management

Once established, poplars and willows develop tough bark that is reasonably resistant to chewing by deer. However stags can cause severe damage when rubbing their antler buttons and should not be grazed in pole-planted areas during late summer and autumn.

To remain healthy and useful, poplars and willows must be actively managed. Unmanaged trees topple and break in storms, damage fences and make a mess.

Poplars are best grown as a single leader. Prune them in summer to remove broken or diseased branches. Pruning lower branches also encourages stock to move around the tree for shade, rather than creating camps.

Poplars can be pollarded (cutting the trunk and branches at a fixed height) but they do not yield as much edible fodder as willows.

Willows are naturally multi-stemmed. They are best managed by pollarding in summer. This increases the amount of light reaching the pasture and reduces the tree's water requirements during droughts, enhancing tree survival.

In year 8, or when the trunk diameter reaches 28-30 cm, pollard by cutting all branches back to a short stump, around 3 m above the ground (above the reach of deer). Repeat the pollarding cycle every 3-4 years.

For more on poplars and willow establishment and management go to www.poplarandwillow.org.nz

Trees for fodder

Poplars and willows

Poplar and willow leaves are highly digestible, provide reasonable energy (8–9 MJ/kg DM), have a crude protein level of around 15% and contain condensed tannins that benefit deer health. They have much higher nutritive value than drought pasture.

"Deer love them," says Hawkes Bay deer farmer Evan Potter. "They will eat branches down to 20 mm thick. When we start the chainsaw in a drought they come running."

Willows produce much more fodder than poplars but their leaves are low in sodium, so if little or no pasture is on offer when feeding willow, a salt block should be provided. Matsudana and kinuyanagi willows are reported to provide great deer feed.

For more on poplars and willows as fodder, go to www.poplarandwillow.org.nz

Tagasaste

Tagasaste (tree lucerne) is a fast-growing, drought-tolerant tree that can be used as a nurse crop for slower-growing native species, or retained in shelter belts and other plantings for shade, shelter, nectar, firewood and browse. It is well suited to farms with wet winters and dry summers.

With crude protein levels of 22-26% and DM at around 80% it is a useful feed during droughts. Like willows, tagasaste can cope with complete defoliation during coppicing.

For more on tagasaste, go to www.treecrops.org.nz/crops/shelter/tagasaste

Riparian areas

To get the full benefits of fencing stock out of streams and wetlands, the fenced-off area needs to be planted. These plantings will:

- Help stabilise stream banks
- Intercept nitrogen in the groundwater
- Intercept sediment run-off
- Help shade the waterway (which is good for aquatic life)
- Provide biodiversity benefits

Plant native grasses like carex, toi toi and tussock in the 2 metres either side of the waterway. Flood waters will go over the top of them.

If streambed or streambank erosion is an issue consider planting osier and/or tree willows 2 m back from the stream edge and 5 m apart. Willows are also good nurse plants, both for the trees you plant yourself and those that arrive as seeds in bird droppings. Seek advice from your regional council on the best clones for your area. Don't plant crack or grey willows as they grow and spread quickly and can choke waterways.

Many shrubs and small trees are suitable for riparian strips. Select species based on what grows well in your area and other potential benefits, such as browse, firewood, biodiversity, pollen and nectar.

Avoid planting tall trees in riparian strips as stock will shelter alongside them – depositing dung and urine where they can easily be washed into the stream. Tall shelter is best planted well away from waterways, ideally on higher ground.

Avoid planting flaxes on stream banks. If they get carried away in a flood, their large root ball is likely to block the stream channel, causing streambank erosion.

Trees for pollen and nectar

Natural pollination of clover by bees and other insects ensures there is enough clover in the pasture to fix the nitrogen needed for grass growth.

Consider including a mix of trees and shrubs in your plantings so there is a year-round supply of high-quality pollen for bees and other pollinators. With native species there is a seasonal 'pollen gap' from February to July that needs to be filled by pollen from exotic species.

See www.treesforbeesnz.org/regional-plant-guides for advice on trees and shrubs for your region.

Big trees, powerlines and fences

Avoid planting tall tree species under or close to power lines. If in doubt, check first with your local lines company.

Tall tree species should also be planted well back from fence lines where falling branches and debris might cause damage, short electric fences and require regular maintenance. Some eucalypt species are prone to losing limbs and creating litter. Conifers like radiata pine on the edge of planted areas tend to grow large side branches that may need to be pruned.

Trees for carbon and timber

Consider planting trees on erosion-prone hillsides and other less productive areas to reduce sediment loss, improve water quality and potentially generate income from carbon and timber.

Carbon

Any tree species (other than those grown mainly for fruit or nuts) can be used in a carbon forest, so long as they will reach at least 5 m in height and the forest after 12 years has:

- At least 30 per cent tree canopy cover
- An average width of at least 30 metres
- An area of 1 hectare or more

Fast growing trees like radiata pine and Douglas-fir planted in closed canopy forests are the most profitable for carbon forestry because they store (sequester) the most carbon in the shortest time.

Species that have other attributes (biodiversity, specialty timbers, amenity etc) may be included in a carbon forest. Space-planted willows or poplars can be part of a carbon forest, but their carbon yield will be low.

Carbon farming can be profitable, but there are risks. Seek advice from a forestry consultant as to what is appropriate for you and your farm.



Pruned radiata on Waihi Pukawa deer farm, Lake Taupo, are protecting a gully from erosion, providing shelter and are not too far away from becoming a cash crop

Timber

Conventional radiata or Douglas-fir forestry for harvest can be profitable, especially if the block is within 70 km of a port or mill, and has reasonable access for felling equipment and trucks. Add income from carbon in the first harvest cycle and it may be a lucrative investment.

Many other species may be grown for specialty timbers depending on the site. Some farm foresters have established successful plantations of native species like totara, red beech and black beech.

Because of the potential for landslides and debris flows following harvest, check with your regional council before planting extremely steep, erosion-prone land in production forestry. It still may be suitable for carbon forestry, either by planting or allowing reversion to native cover.

For more information on farm forestry, go to www.tanestrees.org.nz and www.nzffa.org.nz

Planting young trees

The actual planting of trees and shrubs is relatively easy. Keeping them alive and growing is the hard part.

- Don't plant without good site preparation
- Don't be too ambitious – it's better to plant a smaller area and do it well
- Match the tree species to the site and source good quality planting stock
- Keep on top of weeds and pests – lack of weed control is the biggest killer of young trees
- Water if necessary, especially in the first year



Photo: Trevor Walton

Native shrubs and trees ready for planting at the Potters' Hawkes Bay deer farm

"You need trees for shade, shelter, birds and beneficial insects. To make a farm really productive you need the whole ecosystem working with you."

South Otago deer farmer Tony Roberts

The best time to plant is in late May to early June – as soon as possible after autumn rains.

Weed-whack circles to remove any rank grass or weeds and pre-plant spray with herbicide. Consider placing straw or wool crutchings around young trees as a mulch to suppress weeds and to conserve moisture.

Weed and pest control is essential for getting young trees through their first summers along with watering in summer-dry regions. Grass control is critical as it out-competes young trees for moisture and nutrients, and can overtop and smother them.

A hectare of native plants at 1.5 x 1.5 metre spacings (4444 plants per ha) costs about \$30,000 – all of which can be lost without effective weed control.

Establishing native bush

In order to shade out weeds as quickly as possible, plant your natives at reasonably close spacings (1.5 - 2 metres) and include plenty of fast-growing species with a spreading form such as karamu, wineberry and koromiko. Once these are established – after 2-3 years – you can plant slower-growing forest canopy trees, such as rimu, matai, totara, tawhai (the beeches) and pukatea.

For more about managing areas of native biodiversity, including pest control, see the *Deer Fact*, 'Make your native bush sing'. Tane's Tree Trust is an excellent source of information on all aspects of establishing and maintaining native tree plantings, www.tanestrees.org.nz

More >>

Deer Industry NZ

www.deernz.org

Deer Facts: Make your native bush sing

Video

Benefits of riparian management for deer farmers, by Peter Allan <https://bit.ly/DeerFarmTrees>

Pest & weed control

For links: See the *Deer Fact*: Make your native bush sing

Tree establishment

www.tanestrees.org.nz

www.poplarandwillow.org.nz

www.hbrc.govt.nz

www.nzffa.org.nz