

Woodlots in the landscape





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by Diane Lucas

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With considerable areas of land throughout the country being established under farm forestry and agroforestry regimes, it is becoming increasingly important to recognise the full potential of our landscapes.

Trees have an important role to play in the continued enhancement of our rural environment. Whether planted for timber production, shelter, soil and water protection, landscape enhancement or a combination of these functions, the careful planning and execution of woodlot establishment brings both material and aesthetic rewards and satisfaction.

"Woodlots in the Landscape" is written primarily for landowners proposing to plant trees on their properties and was first prepared for the 1984 New Zealand Farm Forestry Association Conference. This edition has been completely revised and extended and includes new sketches, and photographs.

This booklet provides important planning and design guidelines to ensure that trees are used in a way that will enhance the beauty of our countryside.

We strongly endorse and recommend this booklet to everyone who plants trees for personal and productive reasons.

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Ministry of Forestry

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President
Federated Farmers of
New Zealand (Inc.)

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Chairman
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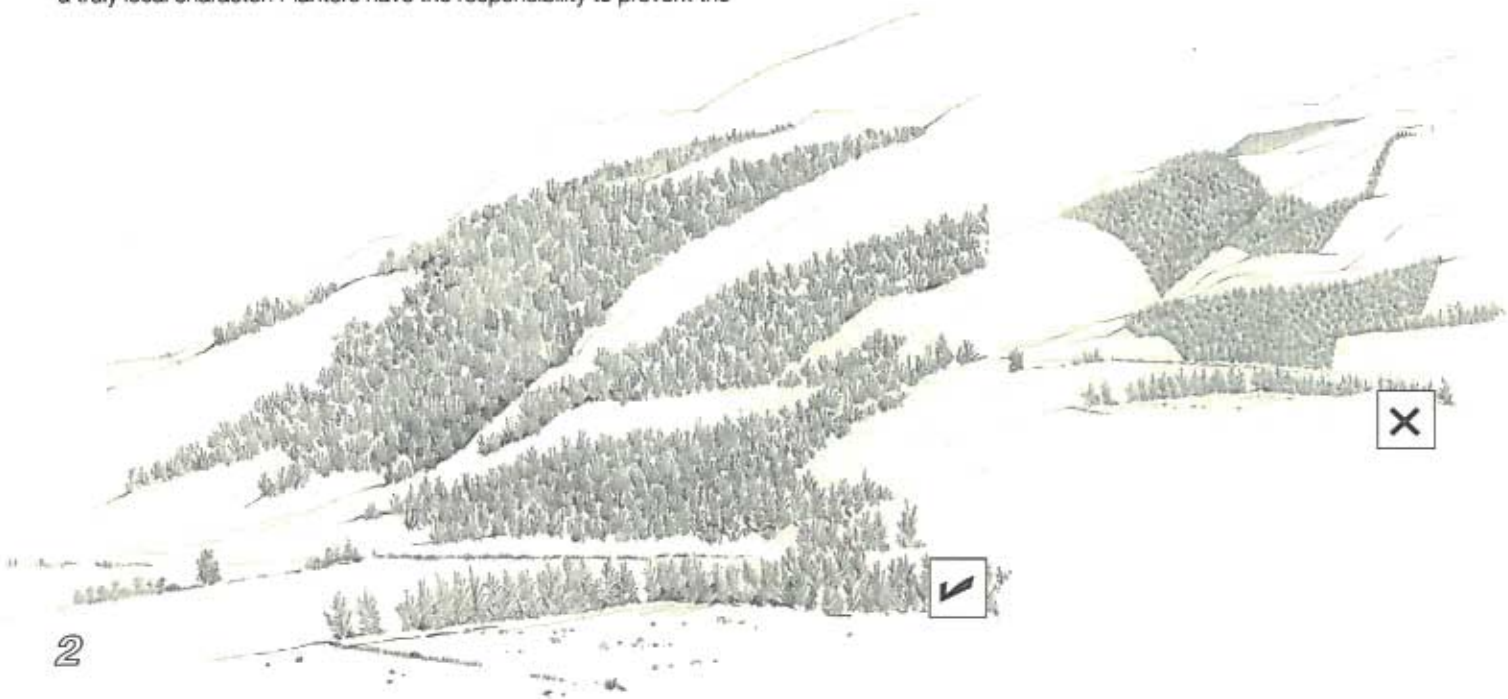
Introduction

As farm forestry expands throughout the country, the siting and design of all plantings becomes increasingly important if we are to protect and enhance our countryside.

Dramatic change in our farm landscapes is inevitable as we work towards the present afforestation and land diversification targets. It is the tree planters who must ensure the new landscapes that are created are not only productive but varied and interesting, and display a truly local character. Planters have the responsibility to prevent the

loss of New Zealand's natural diversity and beauty under a monotonous carpet of exotic conifers.

A landscape that displays a sense of naturalism has been shown by research to be preferred to one of neatly squared woodlots and dark parallel shelterbelts unrelated to the contour. It is with this overall aim of ensuring naturalism in our landscapes, that the following guidelines for the design of woodlots have been prepared.



General Considerations

Landforms are the basis of any landscape. Any landuse pattern should reflect these landforms, emphasising rather than detracting from the natural patterns. Productive rural landscapes should be planned and designed in response to natural patterns. They need not be comprised of geometric, formal, unrelated patterns.

Any planting should show the variations in topography, climate, and soils. This will help emphasise the natural variety that exists throughout the country, enhancing the local landscape character.

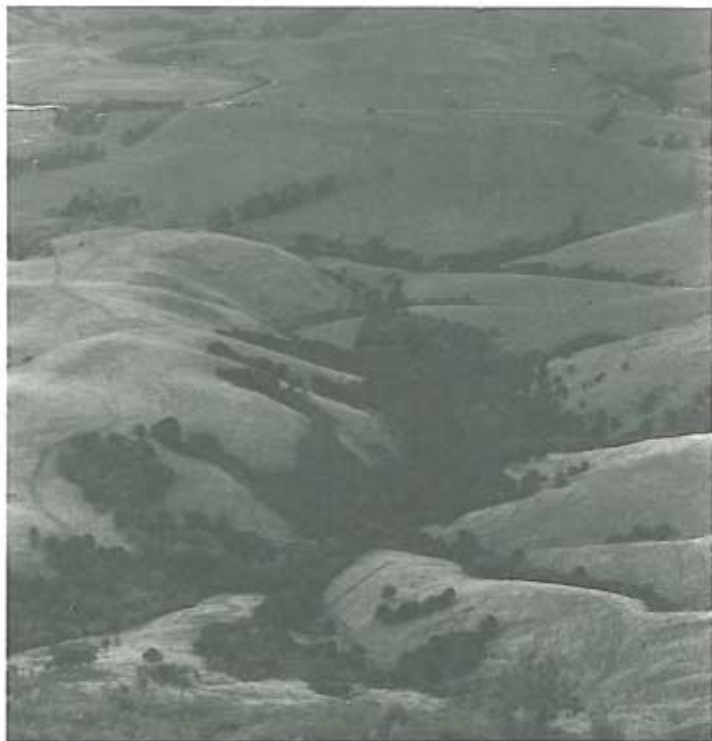
Planting design involves designing masses and spaces that will fulfill a range of functional and visual requirements over time. Responsible planting involves attempting to design not only for maximum benefits, but also for minimal stress on other natural factors (soil and water values, native plant communities, wildlife habitats, etc.).

Attempts should be made to ensure that each and every planting is designed as part of a planned network of vegetation. This may include plantings for timber, shelter, erosion control, shade, fruits, nuts, bee and stock fodder, as well as plantings to screen buildings, and to link into waterways and any remnant or regenerating native vegetation.

Carefully protect any remnant native forest or shrubland that you have. Areas of scrub such as manuka or kanuka are also important and require protection. These areas are the early stages of native forest regeneration and once protected will become the forests of the future. Protection is best achieved by fencing the remnant out completely, with no gates.

These remnant patches of native vegetation help to create local character and interest and are important as wildlife habitats and for soil and water protection. Therefore, it is important that these remnant bush areas are retained.

Native vegetation is vitally important to the health and identity of the country. It is most distressing to see people clearing this vegetation and replacing it with a monoculture of exotic timber trees. Such



Woodlots should link into existing native vegetation such as that shown to create an integrated vegetation framework.

It is important to protect existing native vegetation especially around waterways and wetlands, and to exclude grazing.



plantings do not help to create a local landscape character or identity; in fact they create a landscape that could be anywhere.

Pines are relatively insensitive to site and can be grown to simple and rapid production 'recipes'. Consequently they have been mass planted in a variety of landscapes right throughout New Zealand. Pines dominate every landscape in which they grow. The natural diversity and beauty of many parts of New Zealand is being rapidly dominated by pines.

Before planting any trees, consider the relationship with the surroundings. Generally a woodlot should not be a prominent feature in complete contrast to the surroundings. Instead, the scale, colour, shape and texture should be in sympathy with the landforms, and with other vegetation.

Before any planting is done the woodlot should be carefully planned, and its relationship to the landscape assessed. In addition to aerial photographs and plans, photographs from different viewpoints should be used as a basis for preparing design proposals. Planting options should be drawn on the photographs to assess and compare their visual impact. On separate photographs draw the various phases of

establishment, as well as felling and replanting options.

Every planting should enhance the landscape. Unfortunately a beautiful rural landscape can be ruined when some well-meaning person 'develops' it by adding unsympathetic plantings which dominate or obliterate the natural character or beauty.

Developing a woodlot which enhances the beauty of a landscape does not involve adding a few ornamental trees around the edges of a standard block of pines! The productive planting itself should be sited and designed to complement the landscape.

There are many opportunities on most New Zealand farms to develop small, interesting woodlots. It has been clearly demonstrated that there is a need for high quality timber trees to be grown. Such trees require soils of reasonable quality. If sensitively sited, the planting of small, special purpose woodlots on good soils scattered throughout farmland can significantly enhance the beauty and character of our rural landscapes.

Siting woodlots

1 Choose favourable sites

Areas with some natural shelter and reasonable moisture are the most suitable for tree establishment and growth. These are the first sites that should be selected to establish woodlots. The handiest and most accessible sites will be the more readily managed and harvested.

2 Link all into a framework



A woodlot should not be a totally isolated feature. Instead, informally link each planting to other vegetation to create a framework or overall pattern.

All farm planting should be planned for a wide variety of uses. By linking woodlots into other plantings, the range of uses can be increased, particularly for shelter, soil and water protection, stock fodder, wildlife habitat, and for overall integration of the visual landscape.

3 Avoid destroying natural resources

Do not establish woodlots where they will disrupt significant native vegetation, wildlife habitat, historic sites, soil and water resources, or visual landscape values.

Preferably retain or enhance dense native plant cover around streams and wetlands. Also ensure that the plantings will not obscure geological features such as outcrops and cliffs, interesting existing vegetation, or distant views.

Avoid planting any woodlots where the open character is significant. Any plantings could severely degrade visual landscape values, e.g. in high country basins, valleys and terraces.

4 Relate woodlot shape to topography

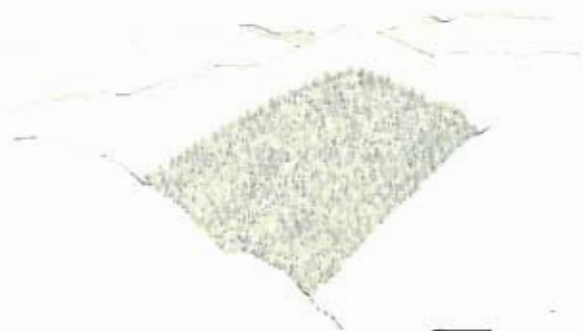


Every effort should be made to fit the overall shape of the woodlot to the topography. Relate the outline to natural boundaries and patterns such as gullies, hillslopes and terrace edges.

Follow hollows and gullies uphill, and run down on ridges and spurs.

On almost flat ground, planting only the higher areas will emphasise these landform changes.

5 Avoid geometric shapes



Do not use strictly geometric boundaries. Never have the edge of a woodlot running straight across or up a slope. Nor sharp-angled edges on a hillside. Do not automatically follow fencelines or property boundaries. First consider the visual impact that the woodlot may have on the landscape. Leave areas unplanted, or extend areas of plantings beyond the fenceline to create more sympathetic woodlot shapes.

6 Care with skylines

The boundary between land and sky is a very important landscape feature. The contrast between the two elements means the land/sky boundary is always prominent. Care must be taken not to disrupt this boundary. A plantation should never suddenly start or stop on a



A harsh geometric boundary that does not relate to the topography.

skyline. The skyline should either be left open, or be mostly planted, depending on which best fits the character of the surrounding landscape.

Where hills are predominantly open, leave the hill-tops unplanted. At least the upper third of the hill should remain unplanted. A careful transition from woodlot up to open tops is essential.



In hill country which is, or should be, well-vegetated, either allow native bush to develop on hill-tops, or establish hardwoods for long-term selective logging.

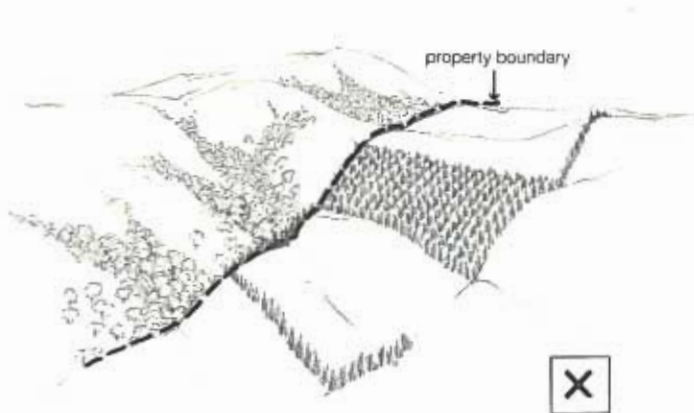
Avoid extending short-rotation, clear-fell regimes onto ridges and hill-tops.



7 Complement neighbours

Plantings should follow landform features such as gullies and terrace faces. Where a property boundary cuts across such a feature, work out with the neighbour ways in which the planting can be continued along the feature.

Landuse patterns will then reinforce the topography and help to create a logical, harmonious and beautiful landscape.

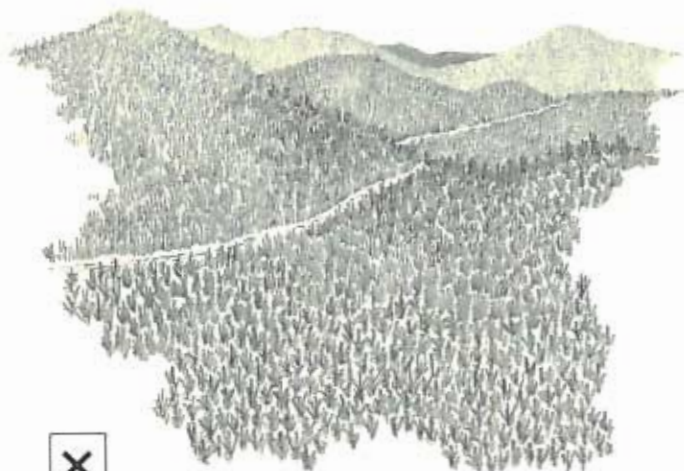


8 Check planning controls

Investigate whether administering authorities provide guidance or have controls on afforestation, e.g. the county council, catchment authority, and where applicable, those agencies administering the 'Tree Planting' and 'Rural Landscape' policies for Crown Leasehold lands.

Design within the woodlot

1 Avoid monocultures



Do not plant extensive woodlots of just one type of tree. Conifer (softwood) plantings in particular should not be planted as a monoculture because they are visually dominant and they disguise the underlying details and variety of the landscape.

However, because of their form, colour and texture, small woodlots of broadleaved trees (hardwoods) can often be successfully integrated and appear quite in harmony with the landscape when nestled into the landform.



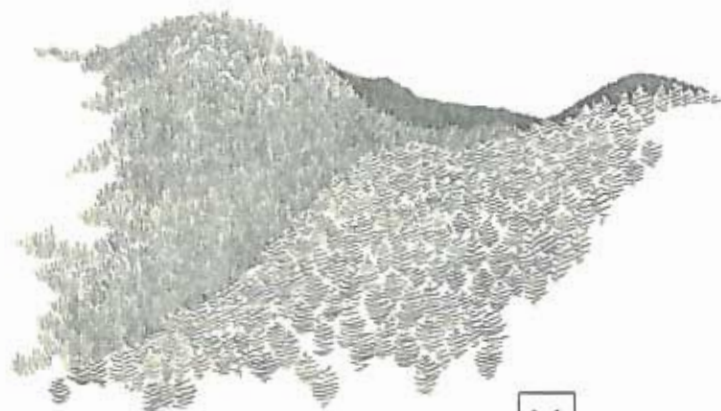
Mixed plantings can often be more difficult to manage and harvest. Thus, care is needed at the planning and design stages to minimise these problems.

2 Change species logically

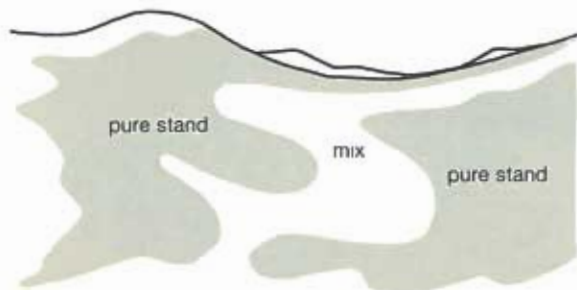
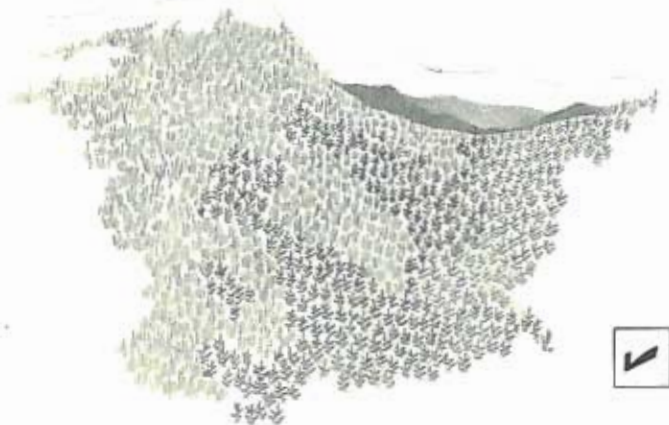
Have a change in species where there is a physical difference in the site such as a change in soil, aspect, moisture, slope, or microclimate.

3 Mix species subtly

Do not have sudden changes from a block of one species to a block of another.

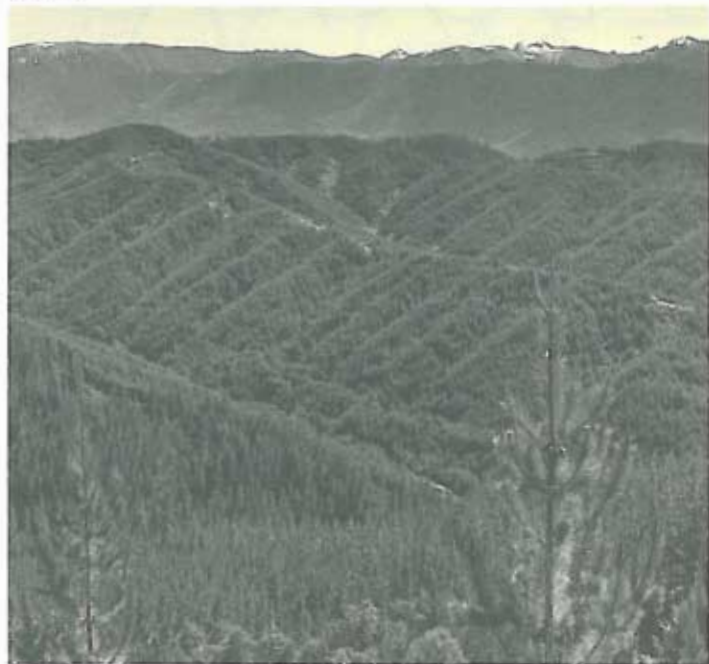


Instead, mix the species where they meet. Merge one type into the other.



A guideline to the amount of mixing in a woodlot containing two

species is to have a $\frac{1}{4}$ to $\frac{1}{3}$ of the area in a mixture of the two species. The remaining $\frac{2}{3}$ to $\frac{3}{4}$ is made up of pure stands of each of the two species.



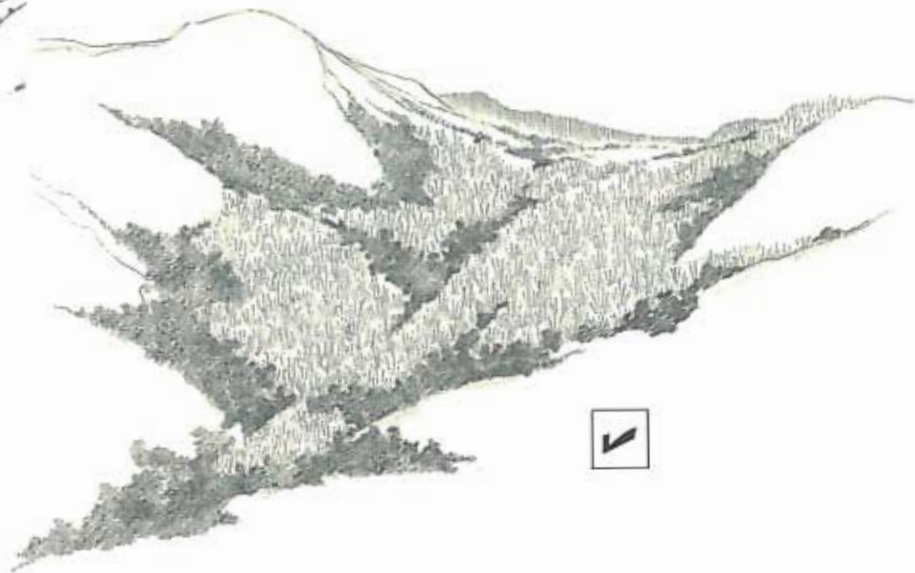
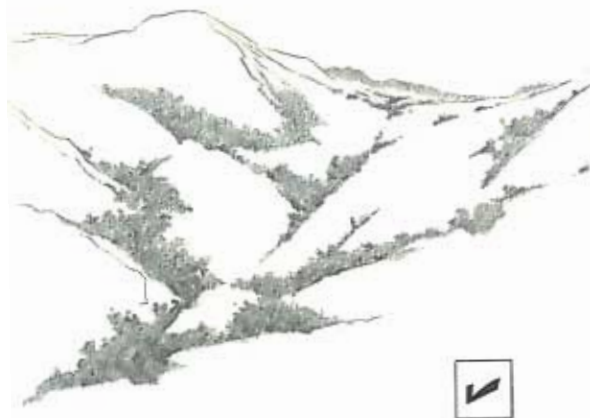
Conifers planted as a monoculture are visually dominant and disguise the underlying details and variety of the landscape.

4 Have a permanent framework

Plant long-rotation trees, hardwoods particularly, to give a framework when the main crop is felled or coppiced.

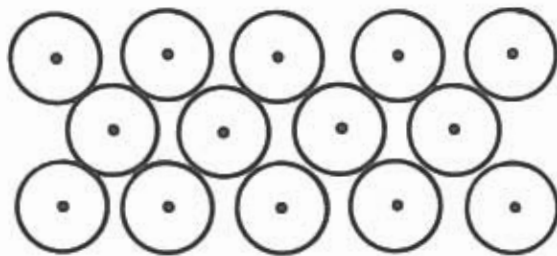
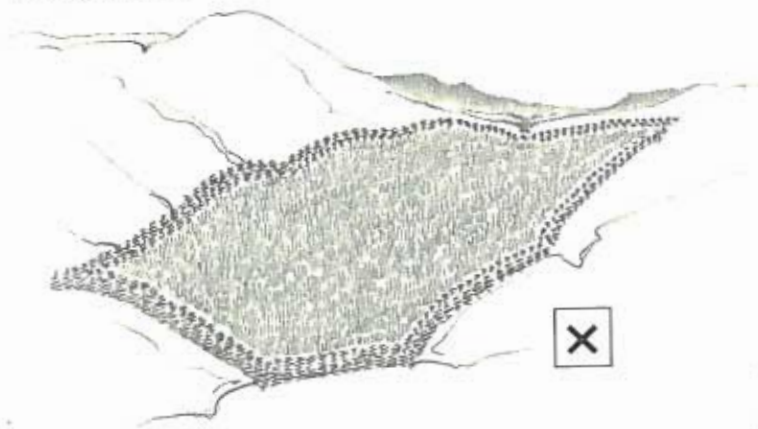
The framework may be designed for soil and water conservation, including permanently vegetated areas along waterways, and slopes too steep for clear-fell regimes.

The framework should follow main landform patterns, particularly waterways, spurs and ridgelines, and parts of the outer margins of woodlots. However, this framework planting does not need to be continuous.



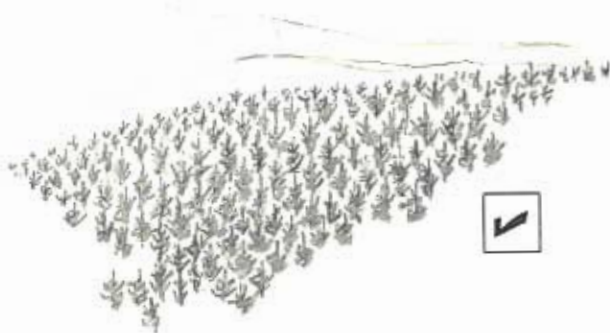
The framework should not appear as a constant band of trees, but be of varying width widening out at some points, narrowing down to nothing at others.

Staggering rows reduces their impact, such as with the ancient quincunx planting pattern.

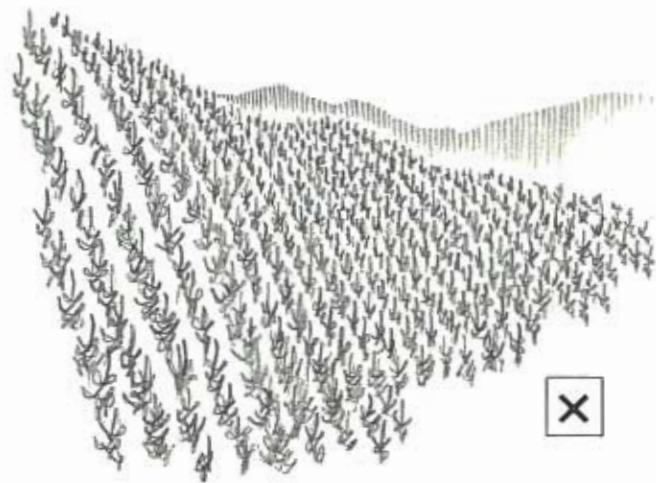


6 Run rows with the contour

If trees need to be in rows, then have the rows running with the contour around the hillside.

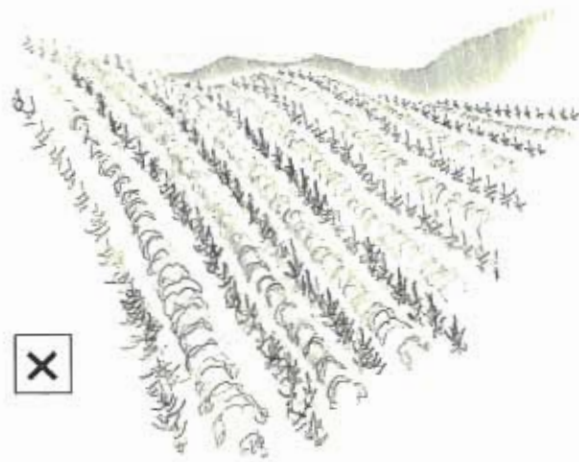


Do not have rows running up and down a hillside as this makes them more prominent; they will be visible for a longer time, and conflict with the lie of the land.



7 Take care with interplanting

Planting temporary plantation mixtures, such as for a nurse crop, can be visually disruptive and quite ugly. Alternating rows of contrasting trees should not be planted where they may be visible. Do not have alternating rows up and down a hillside; this results in a pyjama stripe effect!



If different types need to be closely mixed to produce both nurse crop and long-term crop, plant them in mixed groups rather than in long rows. If rows are necessary then keep them in short sections running around the contour.

The planting of mixtures of species is important not only for physical or microclimate reasons, but also because some species can benefit others through soil improvement. Use of nitrogen fixing species such as alders, acacias or locusts may, when interplanted, benefit the other crop trees.



8 Plan for maximum multi-use



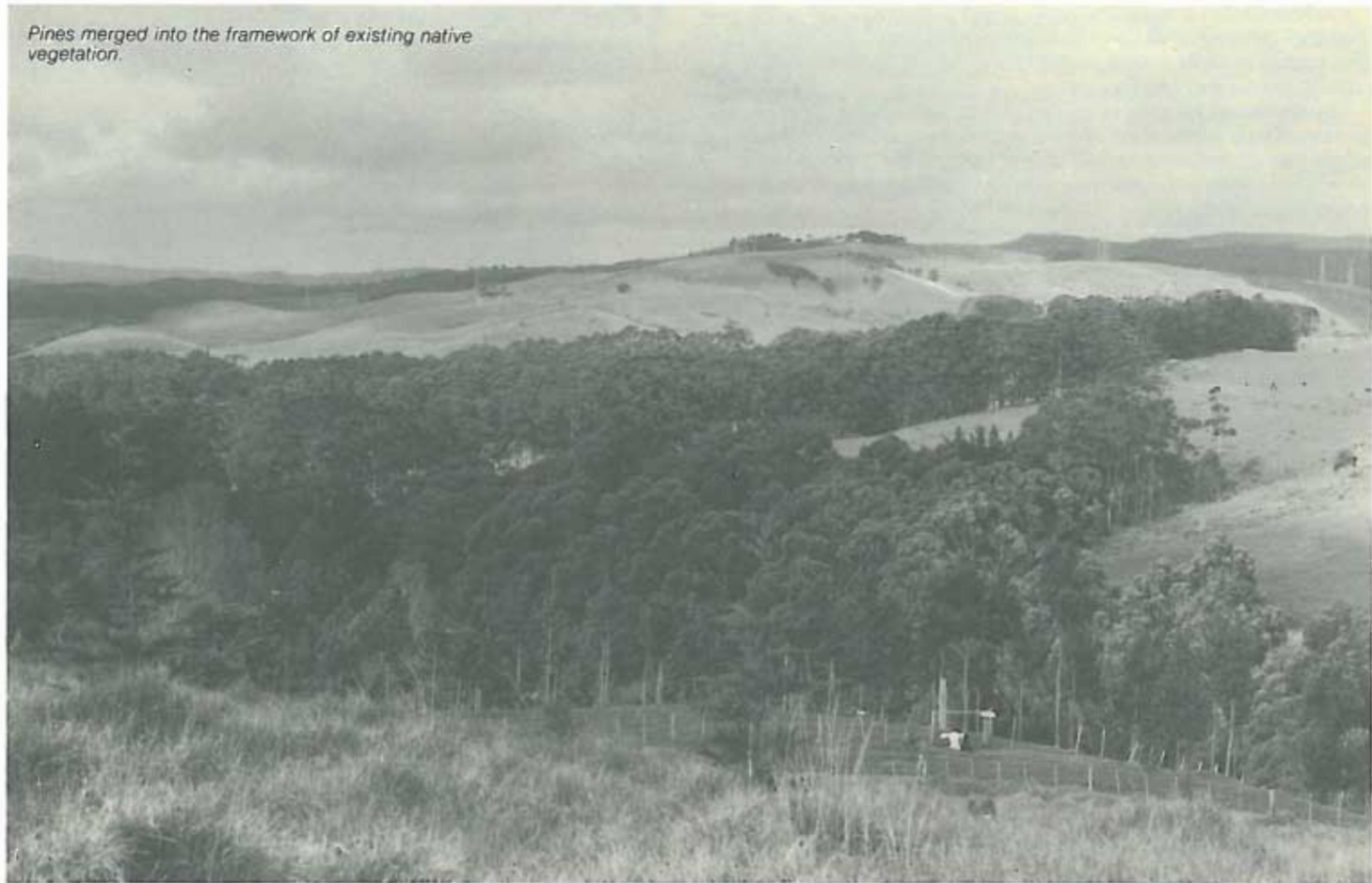
A woodlot should preferably be designed as a multi-tiered structure for a range of uses.

- (i) Uses complementary to farming — for shelter, stock shade, stock and bee fodder, soil and water protection, and possibly farm recreation.
- (ii) Direct products — high quality timber, farm timber supplies (particularly of ground durable species), fuel, mulch, fruit, nuts and honey.
- (iii) Nature conservation and enhancement — as wildlife habitats, and the re-establishment of local native vegetation.

9 Manipulate local climate

The climate is milder within a stand of trees than out in the open. Initially plantings should be established to create a microclimate (e.g.

Pines merged into the framework of existing native vegetation.



for wind shelter, reduce frosting, to trap the sun or to create shade). Later the same area may be interplanted with higher value, less hardy species. Shade frost-sensitive crops from morning sun and create warm, sheltered niches on the sunny sides of plantings.

10 Protect existing cover

Areas of scrub such as manuka or kanuka should be protected and allowed to regenerate to native forest. Where necessary, establish clusters of local native timber species in gaps in scrub and cutover forest.

To establish native timber trees in open country, first establish a local native nurse crop, or use a fast growing exotic timber crop (e.g. eucalypts).

For all plantings of native species, be sure to use plants raised from natural local vegetation, using those species occurring on similar sites in that particular Ecological District.

11 Be responsible

Take care to avoid using species which may spread through seeding or suckering. Be particularly careful to protect native vegetation from exotic tree spread. For example, avoid certain alders, willows and poplars near wetlands and waterways; avoid various pines, larch, and acacias in grassland with low grazing pressure; and avoid ash, sycamore, and pines in shrubland and bush.

12 Improve bad designs

Poor design in existing woodlots should be improved at the earliest opportunity.

Prematurely remove plantings from an inappropriate site to :-

- improve the overall shape of a woodlot
- provide spaces in an overly extensive planting
- expose hilltops, ridges, terraces and other significant landscape features
- protect ecological values

- expose significant views,
- allow alternative species to be introduced

Establish additional plantings to :-

- improve the overall shape of the woodlot
- expand the woodlot to a more appropriate visual scale
- link isolated blocks into adjoining vegetation
- provide a long-term framework and visual buffer for a clear-fell regime, to,
- add age and species diversity, and take advantage of the microclimates created

Take care to merge existing and new plantings.

13 Harvesting design

The shape and size of a clear-fell or coppiced area should follow similar design principles to those for planting, by reflecting the landform pattern and scale of the landscape.

Poorly designed plantings can be improved by felling to a more sensitive layout.

Rectangular block plantings need not be felled in this pattern. Leaving some clumps of trees and extending the felling into adjoining blocks will improve the shape of the remaining woodlot, and of the clearing whether left open or replanted.

Vulnerability to wind-throw will obviously have to be taken into consideration.

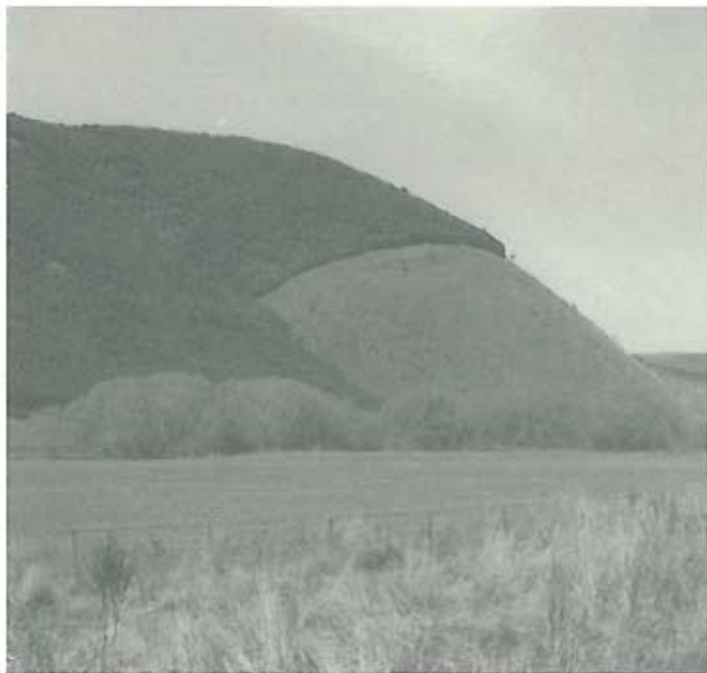
Existing woodlot sites should not automatically be replanted. Reassess the appropriateness of the site for a woodlot. If the site is to be replanted, reassess the design. If the site would be better unplanted, consider allowing native regeneration or pastoral use.

To reduce visual impact, generally fell upper slopes in a later phase than the lower slopes, unless there is a need to modify and improve the upper boundary of the woodlot.

Edge design

1 Avoid straight, sharp edges

The edges of a woodlot need to be softened to create a pleasant transition from forest to pasture.



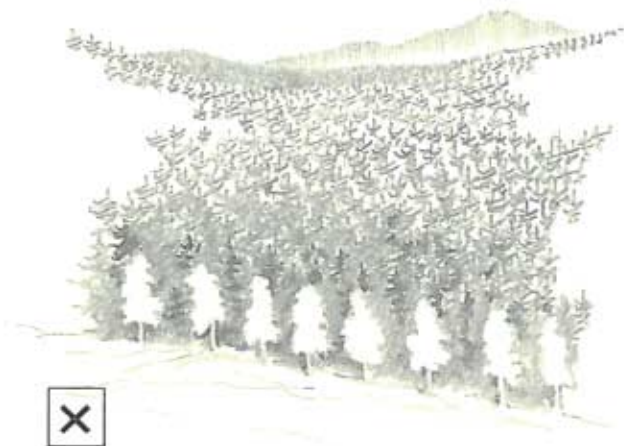
Woodlot with a sharp boundary unrelated to the landform.

2 Follow landform change

Have edges run up gullies and hollows on hillsides, then down off ridges. Additional irregular variations may be needed in some landform types. Each length of edge should run approximately diagonal to the slope.

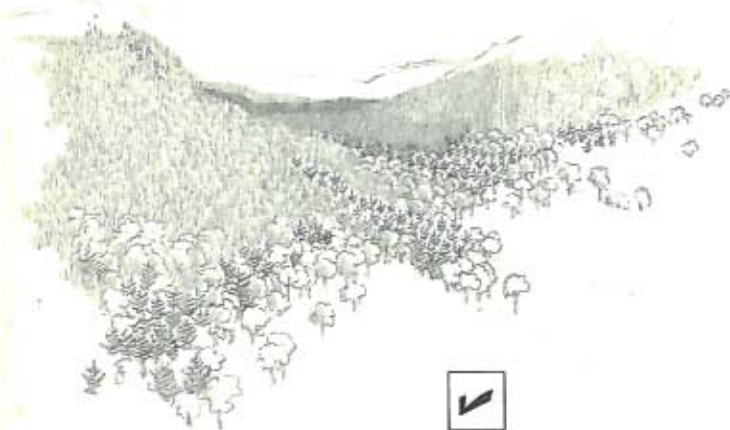
3 Avoid cosmetics

Do not plant a narrow fringe of ornamental trees around the edge of a woodlot. This merely creates visual conflict between ornamental and productive plantings. If they are well sited there is no need to hide or disguise productive plantings.



4 Vary edges logically

The way in which the edges of a woodlot are treated is very important. Edges should be varied so that they appear logical. Plant large groups and groves of other productive trees, and have them "drift" back into the main crop. The "drifts" should relate to the landform pattern and follow gullies, swales, ridges, or terraces, as well as "feather" up slopes.

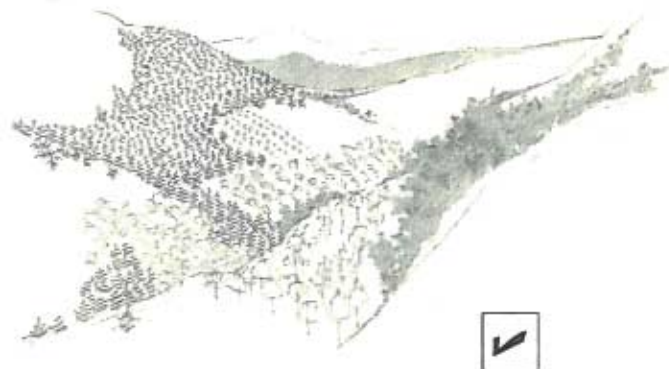


5 Local character

Edge plantings can contribute significantly to the local landscape character if an appropriate local native tree and shrub mix is used. Following natural boundaries wherever possible, an edge of native species can remain as a logical vegetation pattern even after the woodlot is harvested.

The scale of the planting must be in balance with the main crop trees, not a narrow fringe of trees that is out of scale with the main crop. The height and depth of planting is critical. Extend the native species planting back under the main crop. The possibility of using native timber trees as the main crop should also be explored.

6 Maximise edge microclimate



The natural transition from forest to grassland is usually complex. The edge, or transition, has a variety of species taking advantage of the special conditions — plenty of sunlight and warmth particularly, and often some shelter. Use such highly productive sunny, warm sites, for species which under normal climatic conditions may otherwise be marginal. Fruiting crops are especially worth considering.

Multi-tiered cropping will take maximum advantage of these sites. For example, a fruiting shrub layer under small fruiting trees, under larger ones perhaps.

7 Use 'softer' species

Productive species which are generally located near the edges should be softer-looking than the main crop species.

Dense, dark, or stiff-looking species should generally be located in the heart of a woodlot. Lighter, more rounded and open species should



be planted near the edges. This will help to 'round down' the woodlot as a transition from forest to pasture.

Therefore, if a woodlot has conifers and broadleaves, the conifers should be more central and the broadleaf species near the edge.

If a woodlot has both evergreens and deciduous species, the evergreens should be more central with the deciduous species towards the edge.



8 Avoid coloured foliage

When selecting species it is important to ensure all planting has summer-green foliage. 'Coloured' foliage such as golden, variegated or purple, etc., is visually distracting, appears unhealthy or out of season. Generally these forms should be avoided.

The subtle contrasts between various greens, combined with different textures and seasonal changes, provide more satisfying and natural interest.

9 Widen spacings

To create a gradual transition from dense woodlot to grassland, space the trees further apart toward the edges. The trees should be spaced irregularly rather than in strict rows, or leave gaps in rows.

10 Reduce pruning



Even though the main crop may be high-pruned for timber production, do not continue this pruning out to the edges.

Instead, reduce the amount of pruning towards the edges of the woodlot. These trees which provide a transition from the woodlot to the adjacent land use will consequently have a balanced shape.

11 Retain framework

The informal edge plantings of wider-spaced, minimally-pruned trees should be windfirm, and can be retained as a framework while the main crop is felled and re-established.

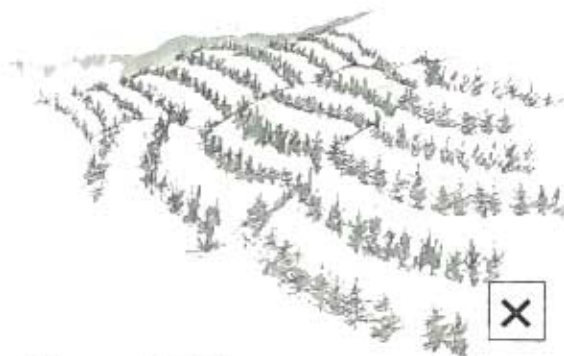
It is critical that these edge plantings follow natural and logical boundaries, so that they appear as a complete planting in their own right when the main crop is felled. They should not appear as the 'icing' with the 'cake' removed!

Agroforestry design

1 Landscape benefits possible

If designed with care, planting timber trees in pasture can enhance the physical and visual landscape.

But, if planted in extensive geometric patterns on rolling or hilly country, agroforestry can be a very unwelcome intrusion into the landscape.



Round formed eucalypts under an agroforestry regime provide a sympathetic addition to the pastoral landscape.

2 Layout prominent — extra care also needed

The same siting and design guidelines already outlined also apply to wide-spaced agroforestry plantings. But wide spacings can give greater visual emphasis to the tree layout within the planting, because the individual trees remain visible, rather than appearing as a tree mass. Thus even greater care is needed in the design.

Compared with close-planted woodlots, the wide tree spacings of agroforestry plantings mean that the actual tree layout can be much more prominent through the entire life of the trees.



3 Clump planting preferable

Rather than plant long rows of trees, plant in groves or clumps which have an overall informal shape and layout in keeping with the landscape. The clumps need to be of varying size and shape. Very small regular groups will appear little better than rows of planting.

Instead of having wide-spaced trees continuous through pastoral land, leave considerable areas unplanted to provide an open space

contrast. The pattern of these spaces should be informal and, as with the planting layout, it needs to be closely fitted to the pattern of the landscape.



4 Agroforestry as transition planting

Establishing agroforestry as the edge or transition from dense woodlots to open pasture can contribute significantly to the landscape. A series of landuses can thus be developed which are both visually and functionally appropriate.



Pine and eucalypt woodlots integrated with a native vegetation remnant.



5 Use 'softer-looking' species

When wide-spaced, the form, habit, colour and texture of each tree becomes more visible than when massed closely together. The visual relationship between the type of tree and the surrounding landscape then becomes very important.

Avoid strong contrasts between the tree type and the surrounding landscape, for if the contrast is great, the trees will dominate. When selecting species for agroforestry:-

- avoid trees that appear much darker than the surrounding landscape
- most landscapes suit round-form trees rather than formal upright shapes
- open trees are more readily visually integrated with the landscape than are dense foliated trees

Therefore, not dark, dense, formal conifers, but mid-green, rounded, broadleaved trees (e.g. oaks, walnuts, ash, chestnut, green eucalypts and acacias, poplars (not lombardy), willows, beech, locusts, and alders).



Conclusion

These guidelines can only be general. The essence of landscape design is the uniqueness of every site. Each site needs to be assessed and its physical nature studied to see how it can be developed in relation to:-

- the site's natural values,
- the surrounding landscape and landuse pattern,
- the people involved, and
- the desired site use

A different design approach may be necessary in an area of very special character, either natural or man-made.

The aim in the design of any farm planting is the development of a functional, healthy and beautiful landscape. The New Zealand landscape will be considerably enriched by avoiding extensive monocultures and instead establishing small-scale, multi-use plantings that relate to both the ecological and visual attributes of the landscape.



Glossary

Landscape: the expression of the interrelationships of the natural and cultural world; the character of land as seen, shaped and experienced by society.

Ecological District: a distinctive area as determined by the geology, topography, climate and botany, as mapped by the Biological Resources Centre, DSIR. New Zealand has been divided into 85 Ecological Regions, and each of these into several Ecological Districts (268)

Tree types:-

Broadleaf: angiosperm, generally leafy rather than having needles; bear flowers. e.g. oaks, eucalypts, beech, tawa, kanuka.

Conifer: gymnosperm; often cone-bearing; generally having needles or scale-like leaves e.g. pines, Douglas fir, larch. Includes native conifers e.g. rimu, kaun, totara, tanekaha

Hardwood: a broadleaf species; a botanical term unrelated to hardness of timber

Softwood: a conifer species; a botanical term unrelated to hardness of timber.

Evergreen: retain their leaves through the winter

Deciduous: shed leaves in autumn and winter, producing fresh foliage in spring.

Exotic: not native but introduced to New Zealand.

Native: indigenous, occurring naturally; occurrence not as a result of people.

Local native species: occurring naturally in the local area

Management terms:-

Agroforestry: direct integration of agricultural and forest landuses; timber trees interspersed with pasture or crop; also of value for soil conservation, soil moisture management, and microclimate development.

Clear-fell: felling of all trees in an area in one season.

Coppice: regularly harvested (regular harvesting of) tree stems near ground level, with management of a number of regrowth stems as the next crop. Trees with coppice potential include chestnut, ash, some poplars, willows, eucalypts and acacias.

Interplant: planting in amongst existing vegetation, either formally or informally

Monoculture: a planting containing only one species

Nurse crop: the preliminary planted, sown, or existing vegetation which creates appropriate conditions for establishment of the next phase. e.g. nurse crops of manuka and other native pioneers, gorse, tagasaste, or ryegrass, as well as short-rotation timber trees (e.g. pines and eucalypts as the nurse crop for slower growing native or exotic trees)

Pioneer: colonising species; plants which naturally establish on an open site, able to withstand climatic extremes.

Selective logging: felling only a few trees from any area in a season, retaining the majority of the canopy.

Trees mentioned:-

Exotic		Native	
Acacias,	<i>Acacia</i> spp.	Beech	<i>Nothofagus</i> spp.
wattles		Kanuka	<i>Kunzea</i> (formerly <i>Leptospermum</i>)
Alders	<i>Alnus</i> spp.		<i>ericoides</i>
Ash	<i>Fraxinus</i> spp.		<i>Agathis australis</i>
Beech	<i>Fagus sylvatica</i>	Kauri	<i>Leptospermum</i>
Chestnuts	<i>Castanea</i> spp.	Manuka	<i>scoparium</i>
Eucalypts	<i>Eucalyptus</i> spp.		<i>Dacrydium</i>
Larch	<i>Larix</i> spp.	Rimu	<i>cupressinum</i>
Locusts	<i>Robinia pseudoacacia</i>	Tanekaha	<i>Phyllocladus</i>
	<i>Quercus</i> spp.		<i>trichomanoides</i>
Oaks	<i>Pinus</i> spp.	Tawa	<i>Beilschmiedia</i>
Pines	<i>Populus</i> spp. & hybrids	Totara	<i>tawa</i>
Poplars	<i>Acer pseudoplatanus</i>		<i>Podocarpus totara</i>
Sycamore	<i>Chamaecytisus palmensis</i>		
	<i>Juglans regia</i> ,		
Tagasaste	<i>J. nigra</i>		
(tree lucerne)	<i>Salix</i> spp.		
Walnut			
Willows			

Useful references:-

1. 'Revegetation Manual. A Guide to Revegetation Using New Zealand Native Plants' Boyden Evans, QEII National Trust, 1983.
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3. 'Creative Forestry' Landscape Section. NZ Forest Service, 1982.
4. 'Forestry — both an art and an exact science. Perpetual and self-propagating forests'. Gordon A. Atkinson. *Growing Today* April 1986.



Diane Lucas is a consultant landscape architect and has a practice based in Geraldine, Aorangi, concentrating on rural design.

She has a Bachelor of Science in botany from the University of Otago and a Diploma in Landscape Architecture from Lincoln College. After graduating she worked as a landscape architect for the Ministry of Works and Development in Christchurch, Dunedin and Hamilton. She started her private practice in 1979.

Since 1982 Diane has been a member of the Environmental Council, and a member of the South Canterbury Land Settlement Committee 1984-87. She has also served on the Executive Committee of the New Zealand Institute of Landscape Architects and spent a term as Vice President.

Diane is frequently asked to present papers to seminars and conferences and is a regular speaker to groups, organisations, classes and field days on various aspects concerned with the rural landscape. She has also lectured part time to students at Lincoln College.

In 1980-81 Diane Lucas published 'Landscape Guidelines for Rural South Canterbury' which was very successful. In 1984 the first edition of 'Woodlots in the Landscape' was prepared by Diane and her colleague, landscape designer Ines Stäger, for the New Zealand Farm Forestry Association Conference held in South Canterbury. Other joint contributions include a series of sixteen articles to the 'New Zealand Farmer' on design for farm development, and, 'Planting Design', the first chapter for John and Bunny Mortimers' book, 'Trees for the New Zealand Countryside'. Diane has also had articles published in the 'New Zealand Journal of Agricultural Science', 'The Landscape', 'New Zealand Environment', 'Permaculture Association Bulletin', and 'Landscape Australia'.

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