



CHAPTER 11 - SUMMARY

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The cypresses, specifically macrocarpa from Monterey, coastal California, lusitanica from the mountains of central Mexico, the Leyland and ovensii hybrids and, on some very dry sites, *Cupressus torulosa*, are well suited to plantation forestry under New Zealand conditions. They are relatively straightforward to grow and tend, flexible in rotation length, and produce highly regarded, high quality, and high value timbers.

Generally cypresses prefer well-drained sites with moderate to good fertility and rainfall greater than 800 mm. Macrocarpa and Leyland cypresses are better suited to colder and more exposed sites, but macrocarpa in particular is very susceptible to cypress canker on warm exposed sites. Lusitanica and ovensii prefer sheltered sites with lusitanica thriving on warmer sites. Lusitanica does not tolerate salt-laden winds. However, cypresses are sometimes being successfully grown outside these ranges and they should be regarded as guides, not limits.

The most serious problem with cypresses is the disease, cypress canker. But this reflects, in large part, our insistence on growing macrocarpa in preference to other cypresses, and putting it on inappropriate warm, exposed sites.

Cypresses are poised to be the third most important genus in New Zealand plantation forestry.

They already have excellent market acceptance, with a substantial price advantage over radiata pine and a major premium for quality. Export prospects for eastern Asia are very promising, but currently the domestic market remains under-supplied.

Success with cypresses needs good matching of species and sites, good establishment, and timely and appropriate silviculture. As in all commercial undertakings, neglect is not a good recipe for success.

Breeding programmes for both macrocarpa and lusitanica were started in the early 1980s, and more recently clonal programmes have been initiated, including selections for canker resistance. There is also interest in breeding new hybrid genotypes for New Zealand conditions and this is currently being researched.



CHAPTER 12 - REFERENCES AND WEBLINKS

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Web links

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www.ensisjv.com	www.timberworks.com
www.kiwibackyard.co.nz	

GLOSSARY

Anti-transpirant: A treatment given to planting stock that limits water loss via transpiration and, therefore, minimises stress during and immediately after planting.

Adventitious shoots: New shoots initiated in response to propagation treatments such as topping or hedging.

Appearance grade: Grades of timber for finishing and other uses determined basically from the appearance of the better face and edge, usually clearwood.

Bare-rooted planting stock: Plants (seedlings, cuttings or other) grown in open nursery beds rather than containers and lifted and planted with much of the soil gone from their roots.

Basal Area: The cross sectional area of all tree stems in a stand, measured at breast height and per hectare of land.

Basic Density: The average density of the wood at 0% moisture content.

Breeding: Intensive selection and subsequent mating of top selections to achieve cumulative genetic gain over time.

Breeding population: The population in which breeders carry out intensive selection and genetic recombination. It comprises the selections that are intermated and their resulting offspring. It requires a broader genetic base than the seed production (orchard) population.

Cambium: A layer of rapidly growing cells between the bark and the wood, from which new wood and bark develop.

Chemithermomechanical (CTMP) pulp: A high yield pulp, where wood particles have been cooked with various chemicals, and have been softened by preheating under pressure, prior to refining.

Clearwood: A length of timber which is free of knots due to branch removal, usually achieved by pruning.

Clearfell or Clearcut: Harvesting of trees in which essentially all trees are removed in one operation.

Checking: The separation of wood fibres on a piece of timber during the drying process.

Clone: A group of genetically identical plants, which have been vegetatively propagated from a single individual.

Clonal forestry: Establishment of plantations with a restricted number of vegetatively propagated clones. These clones have been tested and selected in clonal tests, the best being subsequently mass produced.

Clonal trial: Evaluation of the relative performance of clones in a replicated field trial.

Compression wood: Reaction wood formed on the lower side of crooked or leaning stems. Characterised by dense, heavily lignified cells and tends to cause distortion and splitting during the drying of timber.

Continuous cover forestry: Silvicultural management of stands, via selective harvesting of stems, so as to retain a canopy cover.

Controlled pollination: The transfer of pollen from a known source to receptive flower parts of known seed parents, all other pollen being excluded (by covering flowers with isolation bags prior to pollination).

DBH: Diameter at breast height of tree stems, at 1.4 m in New Zealand.

Family: A group of individuals directly related by descent from a common ancestor.

GLOSSARY

- Family forestry:** Families deployed operationally in plantations as single family blocks, (either directly as seedlings or vegetatively multiplied). These families are usually full-sib, i.e. from controlled pollination.
- Fluting:** The development of longitudinal grooves in the lower part of the tree stem. Can lead to loss of harvestable timber, due to deviation from a circular cross section and included bark.
- Genetic diversity:** Amount of genetic variation in a population.
- Genetic gain:** The average improvement in a progeny over the average of the parents. Gain is achieved by selection and mating of top parents.
- Genotype:** (1) An individual's genetic make-up, or (2) Individual(s) characterized by a certain genetic constitution.
- Hardness:** A property of timber that enables it to resist indentation.
- Heartwood:** The inner, nonliving part of a tree stem. Natural chemicals are often deposited in the heartwood, making it more durable and darker in colour than sapwood.
- Hedging:** Repeated top-pruning of a tree; in this context to arrest further maturation.
- Hybrid:** The offspring of parents that have distinct genetic differences. Can apply to the progeny from matings within species (intraspecific) as to those between species (interspecific). Hybrids combine the characteristics of the parents or exhibit new ones.
- Hybridisation:** The mating of parents that have distinct genetic differences to create hybrid progeny.
- Inter-fertile:** Related individuals that readily and naturally cross pollinate to produce viable hybrid progeny.
- Intergrown knots:** A live knot that is wholly intergrown with fibres of the surrounding wood.
- IRR (Internal Rate of Return):** The discount rate that equates the various costs and benefits anticipated in future years of forestry (or other) operations.
- Knots:** A cross section of a branch that is imbedded in timber. The knots can either be live knots (branch was living when the tree was cut) or dead knots (from a dead branch) which often fall out.
- Land race:** A population within a species that exhibits adaptive characteristics. This term is often used to describe populations of introduced species that have become adapted over several generations to their new environment through natural selection.
- MARVL: Method to Assess Recoverable Log Type by Volume.**
- MAI (Mean Annual Increment):** The total increment of a stand up to a given age, divided by that age. Includes thinnings as well as standing crop.
- Maturation state: (syn. physiological age)** A particular developmental state along the continuum of complex physiological changes, which plants undergo as they progress from an embryonic state, through to juvenile and then to a mature condition. Generally dominated by total distance along the stem and/or branch from the original root:shoot junction. However, it can be accelerated by some nursery treatments, or arrested by treatments such as hedging. Very difficult to reverse in woody plants, except during sexual reproduction.

GLOSSARY

- Mean (arithmetic mean):** the average value for a set of observations, obtained by dividing the sum of all observations by the total number of observations.
- MoE (modulus of elasticity):** A measure of stiffness in sawn timber.
- MoR (modulus of rupture):** A measure of bending strength in sawn timber.
- Mouldings:** High grade timber, usually clearwood, sawn for specific end uses, e.g., skirting.
- MTD: (Mean Top Diameter):** The average diameter of the largest 100 stems/ha in a stand.
- MTH (Mean Top Height):** The average height of the largest 100 stems/ha in a stand.
- Native population: (syn. native provenance)** A group of naturally growing trees found at a particular geographic location, within the native range of the species.
- Physiographic:** Pertaining to the landform and underlying geology.
- Pith:** The central core of a stem & roots, representing the first year of growth.
- Progeny trial:** Evaluation of parents by comparing the performance of their offspring in replicated field trials.
- Propagation:** Multiplication of plants. Can be either via sexual reproduction (seed production) or via asexual means (vegetative propagation).
- Provenance:** The original geographic source of seed, pollen, or trees.
- Provenance test:** A replicated field trial comparing the performance of trees grown from seed collected from different parts of a species' geographic range.
- PSP plots (Permanent Sample Plots):** permanent plots that have been set up throughout the plantation estate, to provide growth information for the national database on the plantation resource.
- Resistance:** The relative ability to endure pests or other damaging influences. It may vary in degree from immunity, in which the attack or influence is completely without effect to absolute susceptibility, which may result in death.
- Sapwood:** The outer layers of a tree trunk, which are composed of living cells and conduct water up the tree. Generally lighter in colour than heartwood.
- Sarking:** Internal roof panelling.
- Sawlog:** A log that meets standards for diameter, length and defect, which is intended for sawing.
- SED:** The small end diameter of a sawlog.
- Seedlot:** A collection of seeds, usually of known origin.
- Seed orchard:** A plantation of selected trees, established and managed primarily for the early and abundant production of genetically improved seed. The seed orchard is isolated to reduce pollination from outside sources, and trees with undesirable characteristics are removed, based on ongoing evaluations.
- Seed stands:** A well-grown stand of trees, with good growth and form, selected and managed for abundant seed production.
- Seed stratification:** A treatment given to seed to break dormancy and improve germination, which usually involves a moist chilling.

GLOSSARY

Shelterbelt: A strip of trees established to shelter farm or horticultural land from prevailing winds.

Site index: A measure of forest site quality expressed as the average height (actual or potential) in a specific stand of trees, at a specific age (30 years for cypresses).

Standing volume: The total volume of harvestable trees in a stand.

Stocking: The number of trees in a given area of a stand.

Stool plant: A plant grown in a nursery bed, which has been hedged or topped to produce adventitious shoots, which are subsequently used for vegetative propagation.

Thermomechanical (TMP) pulp: A high yield pulp, where wood particles have been softened by preheating under pressure prior to refining.

Tissue culture: (syn. micropropagation) Growing plantlets from small pieces of plant material on artificial media in a sterile, laboratory environment.

Tree improvement: Usually synonymous with tree breeding, but may also refer to breeding in combination with cultural practices, particularly propagation.

Veneer: A thin sheet of attractive wood, used to cover wood of lesser value.

Vegetative propagation: (syn. vegetative multiplication) Multiplication of plants via asexual means, i.e. without sexual reproduction. Includes tissue culture, rooted cuttings, and grafting.

Virulence: The ability of an organism to cause disease.

