Native Plants for Revegetation Projects

Introduction

Native plants can be used for the restoration of local flora, enhancing local habitat and natural landscape values, or for effect in garden plantings. In all cases, it is desirable to select species which represent original vegetation and are adapted to the site, as well as for their aesthetic qualities.

Plant Selection

Choosing what species to plant, and where to plant it, depends on a number of factors. Firstly, there is the objective of the planting. It may be ecological restoration, the establishment of a tree/shrub canopy in areas retired from livestock grazing, or simply for landscaping purposes. Often a combination of these objectives will be sought. This will affect the composition and spacing of plantings.

Native plants can be used for restoration and landscape purposes

Secondly, the limitations of the planting site will influence choice of species. Wet, dry or infertile soils will require species well adapted to such conditions. Also, many planting sites are often long and narrow: streambanks or lake/estuary margins for example. In these situations plantings are subject to a strong edge effect and hardy, colonising shrubs are the most suitable species to use. Species like flax or kawakawa are useful for shade and shelter along the margins of plantings.

As a general rule planting sites should be at least 10 metres wide, otherwise select species that have a maximum height approximately equal to the width of the planting site.

Successional species grow best within an established canopy, so establish colonising or nurse species first. Successional species are then planted after a number of years amongst the established vegetation. Initial plantings may include a range of colonising shrub species or those well suited to a nurse role, e.g. manuka. The exotic species tagasaste can also be used as a nurse crop and is attractive to native birds (see ***Sustainable Options*** LM19: Management and Uses of Tagasaste).

Threats from weed or pest invasion also need to be taken into account. Native species will not compete with exotic invasive brush weeds like blackberry for example, and weed control must be maintained throughout establishment. Pest animal threats should be fully assessed before any planting takes place and an effective control programme put in place. Contact Environment Bay of Plenty for advice and assistance with pest control.

Ecological Considerations

Wherever possible, select plants that represent those that originally occupied the planting site. Some may be still present, or can be seen on similar sites in the district. Also, seek nursery stock that has been grown from seed/cuttings of material sourced from the appropriate ecological district.

The local office of the Department of Conservation can usually provide this information. Using such plant stock promotes true restoration, and also has the practical advantage of providing stock well adapted to local conditions (e.g. frost or soil types). Such plants will establish and grow well, whereas plants of the same species from a source outside the ecological district may not be so well adapted to the local environment, and suffer growth checks such as frost or salt spray damage.

Revegetation Species For The Bay Of Plenty Region

The following list of plants mainly features colonising or early succession species with particular reference to the regional environment. A glossary of terms follows the table.

Group One lists species which are known to establish and grow well in most areas of the region. These species are recommended to make up 60-70% of the planting for rapid canopy development, providing they are compatible with site conditions.

Group Two represents a wider range of species although most have some degree of sensitivity to site limitations. This list is by no means comprehensive and there are a number of other species available. Natural colonisers such as tutu, mahoe and wineberry will readily regenerate on most sites in the Bay of Plenty and they have not been listed.

	Botanical Name	Common Name	Sucessional Status	Form and Height	Site Tolerance (see back page)					
					Shade	Wet Soils	Dry Soils	Wind	Salt Spray	Frost
Group 1	*Carex secta*	Pukio	S_1S_2	Gt, 0.4m	Mod	High	Low	Low	Low	High
	Coprosma repens	Taupata	S_1S_2	ST, 8m	High	Low	Mod	High	High	Mod
	C. robusta	Karamu	S_1S_2	ST, 6m	High	Mod	Mod	Mod	Mod	Mod
	Dodonaea viscosa	Akeake	S_1S_2L	sST, 7m	Mod	Low	High	High	High	Mod
	Kunzea ericoides	Kanuka	PS_1S_2	ST, 15m	Low	Mod	High	Mod	Low	High
	Leptospermum scoparium	Manuka	PS_1S_2	S, 5m	Low	High	High	Mod	Mod	High
	Pittosporum colensoi	Rautawhiri, Black Mapou	S_1S_2	ST, 10m	Mod	Mod	Mod	Mod	Low	High
	P.eugenioides	Tarata, Lemonwood	S_1S_2	ST, 12m	Mod	Mod	Low	Mod	Low	Mod
	P. tenuifolium	Kohuhu	S_1S_2	ST, 10m	High	Low	Mod	Mod	Low	High
	Phormium tenax	Harakeke, Flax	S_1S_2L	Ht, 2-3 m	Low	High	Mod	High	High	High
Group 2	*Brachyglottis repanda*	Rangiora, Pukapuka	S_1S_2	sST, 7m	High	Low	Mod	Mod	Mod	Mod
	Cassinia fulvida	Golden Tauhinu	PS_1	S, 2m	Low	Low	High	Mod	Mod	High
	Coprosma acerosa	Sand Dune Coprosma	S_1	(p)S, 2m	Mod	High	Mod	Mod	Mod	Mod
	C. lucida	Karangu	S_2L	ST, 6m	High	Mod	Low	Mod	Mod	Mod
	Cordyline australis	Ti Kouka, Cabbage Tree	S_2L	T, 5-13m	Mod	High	Mod	High	Mod	High
	Corokia x virgata	Korokio	S_1S_2	S, 2-4m	High	Low	Mod	High	Mod	High
	Cortaderia spp	Toetoe	$(P)S_1S_2$	Gt, 2.5m	Mod	Mod	Mod	High	Mod	Mod
	Corynocarpus laevigatus	Karaka	S_2L	T, 16m	Mod	Low	Mod	High	High	Low
	Dacrycarpus dacrydioides	Kahikatea, White Pine	$(S_1)S_2$	T, 25-50 m	Mod	High	Mod	Mod	Low	Mod
	Griselinia littoralis	Kapuka, Broadleaf	S_1S_2	ST, 10-15m	High	Mod	Low	High	High	High
	Hebe salicifolia	Koromiko	$(P)S_1S_2$	sS, 5m	High	Low	Mod	Mod	Low	High
	Hebe stricta	Koromiko	$(P)S_1S_2$	sS, 4m	Mod	Low	Mod	Mod	Mod	Mod
	Hoheria populnea	Houhere, Lacebark	$(S_1)S_2$	T, 10m	Mod	Mod	Mod	Mod	Low	Mod
	Knightia excelsa	Rewarewa	S_2L	T, 20-30m	Mod	Low	Mod	Mod	Low	Mod
	Metrosideros excelsa	Pohutukawa	S_1S_2	ST, 10-20m	Low	Low	Mod	High	High	Low
	M. robusta	Rata	S_2L	ST, 15-25m	Mod	Low	Mod	Mod	Low	od

Group 2	*Myoporum laetum*	Ngaio	S_2L	ST, 10m	Low	Low	Mod	High	High	Mod
	Olearia albida	Tanguru	S_1S_2	ST, 5m	Low	Low	High	High	Mod	Mod
	Olearia paniculata	Akirahu	S_1S_2	ST, 7m	Low	Low	Mod	Mod	High	High
	Olearia traversii	Chatham Island Akeake	S_1S_2	ST, 10m	Low	Low	Mod	High	High	Mod
	Pittosporum crassifolium	Karo	S_1S_2	ST, 9m	Low	Low	Mod	High	High	Mod
	P. ralphii	Karo	S_1S_2	ST, 6m	Low	Low	Mod	High	High	Mod
	Phormium cookianum	Mountain Flax	S_1S_2L	Ht, 1-2m	Low	High	Mod	High	High	High
	Plagianthus divaricatus	Makaka, Shore Ribbonwood	S_1S_2	S, 2m	Mod	High	Mod	High	High	Mod
	Podocarpus totara	Totara	$(S_1)S_2L$	T, 10-30m	Mod	Mod	Mod	Mod	Low	High
	Pomaderris apetala	Tainui	S_1S_2	ST, 5m	Mod	Low	Mod	Mod	Mod	Mod
	Pratia angulata	Paanakenake	S_1S_2	Hc, 0.1m	Mod	High	Low	Low	Mod	Mod
	Pseudopanax arboreus	Puahou, Fire Finger	S_1S_2	ST, 8m	High	Low	Mod	Mod	Low	Mod
	Sophora microphylla	Kowhai	S_2L	dT, 10m	Low	Mod	Mod	Mod	Low	High
	S. tetraptera	Kowhai	S_2L	T, 12m	Mod	Low	Mod	Mod	Low	High

Successional Status

P Pioneering/colonising species suitable for bare sites and/or low fertility soils.

S_1 Colonising species suitable for planting as a nurse crop or on slipfaces/earthworks. Will respond to fertiliser on low fertility sites.

S_2 Successional species requiring topsoil and some shelter. Will provide shelter for other species once established.

L Later successional species, long-lived, used to complete canopy or for composition/landscape effect.

Growth Form

S Shrub
T Tree, forming a distinct trunk although can be short
ST Shrub or small tree
G Grass or sedge
H Herbaceous plant
s Spreading or forming wide canopy
d Divaricating (wide angle, intertangled branches), often only in juvenile stage
t Tussock forming
c Mat or creeping

Site Tolerance

Shade	High	Tolerates shade, dappled rather than heavy shade.
	Moderate	Tolerates partial shading.
	Low	Is suppressed by shading.
Wet Soils	High	Can withstand roots continually in wet/ waterlogged state, although growth rate may be slowed.
	Moderate	Can withstand frequent, but not continual (i.e. several weeks) waterlogging.
	Low	Will not tolerate roots being in waterlogged soil for more than a few days.
Dry Soils	High	Can withstand prolonged seasonal drought.
	Moderate	Will withstand seasonal drought unless soil moisture drops below wilting point for extended periods (i.e. several weeks).
	Low	May withstand short periods (i.e.up to three days) of mild moisture stress, but will rapidly lose vigour or suffer permanent damage if moisture stress is prolonged.
Wind	High	Will tolerate strong to gale force winds with little or no damage.
	Moderate	Will tolerate strong winds and occasional gale force winds, but with minor damage and will not grow well in very exposed positions.
	Low	Desiccated or damaged by strong or persistent wind.
Salt Spray	High	Tolerates salt laden winds, and to some extent saline soils.
	Moderate	Tolerates some salt deposition on leaves but will lose vigour if exposed to heavy or continuous disposition of salt.
	Low	Little or no capacity to withstand salt deposits on foliage.
Frost	High	Generally frost hardy in most low to mid altitude districts, and will tolerate frosts of -7ºC or lower.
	Moderate	Will tolerate frosts of –3ºC to –6ºC.
	Low	Generally tender and will be damaged by cold winds or frosts of –2ºC to –3ºC.

Establishment

Most commercially available native plants are supplied as containerised stock. Root balls of container stock should be loosened/ pruned before planting. Plant at a maximum spacing of 2 x 2 m and use species with a maximum height of 2-4 m around edges of the planting to offset the edge effect on the under storey. Generally smaller stock (e.g.15 cm– 25 cm high root-trainer stock) is cheaper than larger stock (e.g. 45 cm – 60 cm high, pb3-pb5 planter bag). Smaller stock requires more care to establish however, and is more susceptible to animal browsing or weed competition. Weed control is critical for establishment of new plantings.

Competition from grasses and broadleaf annual weeds will rob new plantings of soil moisture or smother them with rank growth. Brushweeds on site should be thoroughly controlled before planting.

Pest animals such as rabbits, hares or possums can cause considerable damage to seedlings and should also be controlled before any plantings take place. Environment Bay of Plenty pest animal officers are available to advise landowners on pest problems and control options.

Also, ensure that plantings are well fenced-off from domestic stock (see ***Sustainable Options*** *LM03:* Protection Fences).

For more information see:

Sustainable Options *LM15:* Establishment Techniques for Revegetation Projects.

www.bush.org.nz/planter guide

Environment Bay of Plenty REGIONAL COUNCIL

For further information and advice, contact your local land management officer at Environment Bay of Plenty:
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