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Spring 1979

Horticulture

in New Zealand

Bulletin of the Royal New Zealand Institute of Horticulture (Inc.)



HORTICULTURE

IN NEW ZEALAND



BULLETIN OF THE ROYAL NZ INSTITUTE OF HORTICULTURE
NUMBER 13, SPRING 1979

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Cover by Janet Hart, Teaching Aids Unit, Lincoln College.

ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE (INC).

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The Editors welcome articles, letters and news items for consideration for publication. Contributions should be addressed to the Bulletin Editor, or the Annual Journal Editor, P.O. Box 12, Lincoln College.

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~ Editorial ~

For all those bewildered horticultural learners who, like me, have been utterly confused by botanical names, species, families, sub-species, varieties and cultivars, and when to italicise, use capital letters or underline, I have included in this issue notes on "Conventions in Writing Plant Names". You will find these on pages 8 and 9. As the teachings therein slowly sink into my understanding the plant names in future issues of this Bulletin will, hopefully, appear correctly. Please bear with me in the meantime.

It also complicates matters when botanists reclassify and rename plants. I had only just become used to calling our 'red bride lilies' *Antholyza* when I was informed their name had been changed to *Chasmanthe aethiopica*. A rose by any other name may smell as sweet, but would it be as easy to remember?

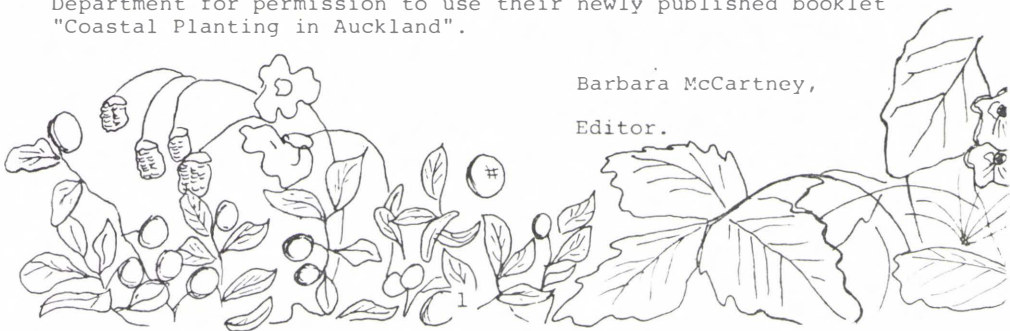
The NZ Institute of Agricultural Science 25th Anniversary Conference came and went, with many visitors to Lincoln College. One RNZIH contribution was the arranging and maintaining of the flowers in the large lecture theatre and foyer. Even the hardiest agricultural types appreciated these horticultural endeavours.

Mr John Taylor, our Chairman of Executive, will be overseas from October 6th for four months, but we shall shortly welcome back Dr Ron Close, newly-appointed Chairman of the Examining Board, on his return from overseas. Dr Close is Reader in the Department of Microbiology at Lincoln College.

My thanks go as usual to contributors of articles for this Bulletin, and once again further articles are requested from members for future issues.

I am indebted to "The Press" (Christchurch) and to Mr Derrick Rooney for their permission to reprint a precis of four articles on Riccarton Bush, and to the Auckland Regional Authority Parks Department for permission to use their newly published booklet "Coastal Planting in Auckland".

Barbara McCartney,
Editor.



Letters to the Editor

"In the Autumn Bulletin the Ministry of Works has a warning about the spread of Asian rust of weeping willow.

I thought that the legend that our weeping willows came from cuttings from a willow at Napoleon's graveside on St. Helena had been scotched years ago. Has some evidence come to light?

Even if it can be shown to be true the statement "all the trees have the same genetic make-up" cannot be so as there were two trees at the graveside.

I understand that there is a translation of H.F.Desfontain's "Flora atlantica" somewhere in Christchurch. This may record other weeping willows on St. Helena."

- H.R. Sampson, (FRIH), Christchurch.

- I had also believed that the legend of the St. Helena willows had been discarded, and was surprised to see it come to light in an MOWD publication. Do readers know anything more about the source of NZ willows? Concerning the "same genetic makeup" - this would surely depend on how many trees yielded cuttings - one or two? - Ed.

"With reference to the last issue of "Horticulture in NZ" - I should like to express my interest in the formation of a District Council of the RNZIH, which I think would be of great value to members in this area."

- R.L. Read, Napier.

- Are there any more? - Ed.

MR EDGAR TAYLOR -

The death occurred recently in Christchurch of Mr Edgar Taylor, the man who has been described as the father of New Zealand landscape. Mr Taylor was 94 years of age.

Mr Taylor was a foundation member of the RNZIH, and an Associate of Honour. He was a member of the Management Committee of the Canterbury Horticultural Society for 41 years and was an honorary vice-president at the time of his death. He was involved with the layout of the society's floral exhibitions for many years.

Mr Taylor came to New Zealand in 1888 when his father was appointed Curator of the Christchurch Botanic Gardens. In 1942 he became landscape architect to the Christchurch City Council.

Responsible for the first report and plan for the development of Timaru's Caroline Bay, Mr Taylor was the architect for a number of well-known factory gardens in Christchurch. He also designed the foreshores at Sumner, New Brighton and North New Brighton, the floral clock in Victoria Square, the Ballantyne Fire Memorial Garden, and the garden at Christchurch International Airport.

Horticulture moves fast!

EXCITING PROSPECTS IN HORTICULTURAL EXPORTS -

At the recent opening of a 4630sq.m pot plant propagation and greenhouse unit in Avoca Valley, near Christchurch, Mr Talbot, the Under-Secretary of Agriculture, stated his belief that horticulture offers one of the most exciting prospects for export diversification and increased overseas returns. Kiwifruit may be New Zealand's most publicised horticultural export, but it was not the only one with a sound future.

"We exported \$330,000 worth of ornamental plants and flowers in 1975. Exports of these products passed the \$1 million mark last year, nearly half of this coming from the export of orchids," Mr Talbot said.

"In the four years since 1975 exports of horticultural seeds have risen from \$677,000 to more than \$1.1 million. Exports of fruit have likewise increased dramatically, from \$23.7 million in 1975 to \$44.6 million."

Mr Talbot said that the time had come for everyone interested in New Zealand's development to speak out loudly on what was being achieved and to "abandon the negative and destructive criticism of our export achievements."

Zealandia Nursery Company, who have opened the Avoca Valley unit, is committed to exports. The construction of this energy-efficient unit aimed at exports illustrates the dynamism of New Zealand's developing horticultural industry.

RNZIH Canterbury District Council members were conducted around the Zealandia complex on the morning of Saturday 22 September.

FUEL HORTICULTURE COULD BE BIG MONEY EARNER -

Mr P.S. Yates, managing director of Arthur Yates and Company, was recently reported as saying that the production of synthetic fuels could be New Zealand's biggest money earner in horticulture within three years. He said New Zealand should reserve its best agricultural land to grow crops for the production of ethanol, which he believes is a good use of the land, despite farmers' expected outcry.

Cash returns from biomass production would be four times as high per hectare than from any other crop, at present OPEC prices, Mr Yates believes, and as oil prices rise, this return would increase further.

District Council News..

AUCKLAND : At the July meeting Mr Phil. Jew spoke on the development of ornamental horticulture in Auckland from the arrival of the early settlers until today.

We are apt to forget that we live in one of the best horticultural climates in the world with a potential not yet fully developed. He reminded us of our climate - 36°S, warm and temperate with no part more than a few miles from the coast - maritime and windy. Isolation gives it oceanic features and relatively low altitudes a moist atmosphere and low annual cloudiness. Diverse topography creates a diversity of plant habitats and therefore our ability to grow a wide range of plants.

Then there is the exposed west coast and more protected east coast. Rainfall varies from 45-50" annually with 30% falling between May and August. Humidity is fairly constant with a 10% variation within seasons. Prevailing wind: SW - W 40% of the time is strong and cool; NW 20% of the time is more violent but less frequent and temperature milder. Temperatures are generally mild with few frosts and then of low-medium severity.

Summer mean temperature (Feb.) 11 - 26°C; winter mean (July) 8 - 19°C. Sunshine - Auckland receives 49% of possible sunshine (56% summer and 42% winter); fogs and low cloud are not frequent occurrences.

To summarise - we have a warm summer and mild winter climate; rainfall which although sometimes insufficient to meet summer needs of plants is fairly well spread throughout the year. Because of all this, plants have a luxuriance of foliage, native plants are of divaricate habit, flowers are available throughout the year. Without contrasts of climate, dramatic floral displays cannot be expected. Soils are unusually diverse reflecting influences of rock, climate and native vegetation (dominant plant-kauri-causes extreme leaching and reduces fertility). The broad divisions are : Clay soils influenced by native vegetation cover; subsoils compact and sticky; volcanic soils influenced more by parent rock - volcanic ash-basaltic rocks; river flats and swamps.

JOHNSON GRASS is rearing its ugly head in New Zealand. This grass (*Sorghum halepense*) has joined nut grass (*Cyperus rotundus*) and pigweed (an *Amaranthus* sp.) as being a SUPERWEED! Nut grass is considered to be the world's worst weed by some people, and along with the two other species is classified as a C4 species. This classification refers to photosynthesis, and so far no herbicide has been formulated to deal successfully with these pests.

Auckland RNZIH member, Mrs Ann Wilcox, Coulter Road, Henderson, has a wide collection of Geraniums, and members are welcome to visit - September to November is the best time. Mrs Wilcox is interested in starting up a "Geranium Group", initially for the Auckland area.

DISTRICT COUNCIL NEWS CONT

WHANGAREI : The June display table, by Kevin Young FRIH , featured a wide selection :

Rondeletia named for Guillaume Rondelet, French physician and student. Although about 80 species are known, only two are common in New Zealand - R. amoena and R. strigosa. Propagate from short cuttings in autumn. Family Rubiaceae.

Rhaphiolepis, a small genus of hardy evergreen shrubs with firm textured leaves, the name being derived from Rhapsis, meaning a needle, and lepsis - a scale, being an allusion to the awl-shaped bracts. Family Rosaceae.

Reinwardtia a genus of a single species from the North Indian mountains, named in honour of K.G.K. Reinhardt, director of the Botanic Gardens, Leiden. Being frost tender this species is grown as an indoor plant throughout Europe.

Phyllica (the name comes from Phullikos, meaning leafy) is very common in South Africa. This genus of evergreens contains about 150 species. All Phyllicas require a peaty, well drained soil in full sun, and the blooms are much sought after for floral work. Family Rhamnaceae.

Hakea - this genus of over 100 species confined to Australia and Tasmania was named in honour of Baron von Hake, a German patron of Botany. Family Proteaceae.

Other specimens on display : Protea nerifolia, P. susanniae, Luculia pinceana 'Thryptomene', Saxicola rosea, Grevillea thellmaniana, Kniphoffia 'Green Goddess', and a good cross-section of Camellias and Chimonantes, Bosea, Deeringia variegata and Bilbergia nutans.

PLEASE NOTE :

The third joint Meeting of the Northern District Councils of RNZIH will be held in AUCKLAND on SATURDAY 10th NOVEMBER 1979, at 10 am in the Horticultural Council's Rooms, Eden House, off Khyber Pass.

One of the major items under discussion will be the report from a sub-committee listing 'Good Garden Shrubs for the northern region' and reaction to this scheme from members of the individual District Councils.

This meeting is open to all members, and judging from the two previous meetings will be a worthwhile experience for all interested in Institute affairs.

NORTH TARANAKI : On Monday 12th November the Denver Botanical Garden Society will visit the Pukekura Park and Pukeiti Rhododendron Trust. Local members will act as guides.

It is interesting to note the growing diversification of farming into horticulture in this area. Pharmaceutical crops are already taking over the hectares, more pip fruits as well as kiwifruit are being planted. Market gardens are being established, and pick-your-own seems to be in vogue. As the larger nurseries devote more of their energies to export earnings and reduce the number of lines, the opportunities for specialist nurseries are becoming even greater.

DISTRICT COUNCIL NEWS CONT

North Taranaki (cont)

Shelter belt planting is taking place and there is the usual shortage of hedging plants. Once established and micro climates are created, who knows what exotic sub-tropical fruits and nuts Taranaki soil will host?

Did you know the Institute has its Ann Burgess Memorial Library Collection on the top floor of the Bell Street Polytechnic Building in New Plymouth? Also that in June we added the third edition of the comprehensive and up-to-date book "Horticultural Science"? It's ideal reading for both the student member or home gardener, topics are discussed in clear and practical terms. It is generously illustrated and each chapter contains a list of key references.

WELLINGTON : Our July pruning demonstration was held in calm, fine weather at Raumati Beach, with a large crowd of approximately 200 attending. The plant stall and silver collection yielded \$120. The pruners were : Richard Nanson and Donal Duthie (roses), Moira Ryan (apples), Bob Lowe, Peter Russell and Brian Pollock (fruit trees). Our thanks go to Mr and Mrs Patchett for the use of their garden, and we hope they have a bumper crop. At the AGM on July 26, Horticultural Sales' Certificates and one National Certificate in Horticulture were presented to successful Wellington students. The speaker, Mr Peter Scott, gave a very informative talk on "Regional Planning". He gave background information of the Wellington Regional Planning Authority, and spoke of several aspects of his work. His work in the environmental and recreational areas was enlarged with slides of the various areas under the control of the WRPA. Belmont Regional Park was dealt with in great detail, and Mr Scott ended his address with an invitation to members to join him on a conducted tour of the Belmont region, an invitation readily accepted.

FROM THE QUESTION BOX (Whangarei D.C. Newsletter August 1979) -

- Q. Sansevieria (mother-in-law's tongue). A flower has appeared on a plant all of ten years old. The grower has several growing on a warm window sill where they have a permanent home. This is the first time one has flowered - are they shy to bloom?
- A. If they are root bound they will flower more readily. One of our members grows them outside on the southern side of the house, where they flower quite freely - *Ann Reed, FRIH.*
-

UNUSUAL GARDEN PLANNED IN CHRISTCHURCH -

Two years ago, the Christchurch City Council approved the planting of a special garden, containing plants mentioned in the Bible, in part of the old Barbadoes Street Cemetery.

The Barbadoes Street Cemetery has been cause for concern for some time - it contains very old graves (including those of Bishop Harper, first Bishop of Christchurch, and the Rev. James Buller, pioneer Methodist missionary who arrived at Hokiangana in 1836) and trees older than a hundred years. In recent years it has been the object of some vandalism, and general lack of care. This new idea of a garden is welcome.

TWO MORE PUBLICATIONS RECEIVED IN THE RNZIH OFFICE -

"ARNOLDIA"

(ISSN 0004-2633)

This bi-monthly magazine is published by Arnold Arboretum of Harvard University, USA, and always contains articles of interest to horticulturists and botanists.

The latest edition to hand (May/June 1979) concentrates on Street Trees for Home and Municipal Landscapes, and gives lists of the best street trees, a secondary list, a trial list, a list of Evergreen screening plants, and pertinent characteristics of street trees in tabular lists.

The lists in this edition are illustrated by black/white photographs. Although this magazine is American, and not all articles apply to New Zealand conditions, it is well worth reading, and always receives a warm welcome from our horticultural friends.

Subscriptions are \$8.00 per year (US), and the address is :

The Arnold Arboretum, The Arborway, Jamaica Plain,
Massachusetts 02130, USA.

"FOREST AND BIRD"

(ISSN 0015-7384)

This publication of the Royal Forest and Bird Protection Society of New Zealand is recommended reading for anyone with an interest in our native flora and fauna, and in its protection.

The latest issue deals with the Lewis Pass region, Tararua Forest Park, the Austrian naturalist Andreas Reischek's observations in the 1870's and 1890's (with particular reference to the Kokako) and the wrybill - one of the world's ornithological oddities.

Membership (February 1979) of the Royal Forest and Bird Protection Society is 28,126, and subscription rates are :

Junior \$2.50 p.a. (under 17 or at school)
Ordinary \$7.00 p.a.
Senior citizen (over 60) \$5.00 p.a. Husband & wife \$7.00.
Family \$9.00 p.a.
Life - \$250 per person.

Subscriptions should be sent to the National Secretary,
Royal Forest & Bird Protection
Society of NZ Inc.,
P.O. Box 631, Wellington.

THE BEAUTY WAY -

*In beauty I walk,
With beauty before me, I walk.
With beauty behind me, I walk.
With beauty above and about me, I walk.
It is finished in beauty,
It is finished in beauty.*

- Navajo night chant.



CONVENTIONS IN WRITING PLANT NAMES -

TAKEN FROM A LINCOLN COLLEGE LEAFLET -



1. BOTANICAL NAMES

(a) Generic and Specific Names

The generic name, when used alone, or as the first name of a binomial, is always written with an initial capital letter. The specific, or second, name of a binomial is written with a small initial letter - e.g. Calandrinia, Calandrinia menziesii, Cedronella canariensis, Conium maculatum, Senecio jacobaea.

A name in any category below species rank, e.g. subspecies, variety, form - is written with a small initial letter - e.g. Atriplex hortensis, f. rubrum.

In manuscript or typescript, generic, specific and lower rank names should be underlined, and in printed text, set in italics.

(b) Cultivar Names

Cultivar names, whether Latinised or vernacular, are written with an initial capital letter, are never underlined in manuscript or typescript, and are set in roman type. Cultivar names are enclosed in single quotation marks, and may be preceded by the abbreviation cv., (this latter being optional) - e.g. Populus nigra 'Italica', Populus nigra cv. 'Italica'.

(c) Abbreviations of Categories

The abbreviations for the categories - species (sp. - singular, spp. - plural), subspecies (ssp.), variety (var.), form (f). and cultivar (cv.) - are always written in small letters, are never underlined or italicised, and are set in roman type.

(d) Abbreviation of Generic Names

Provided the context does not make it ambiguous, generic names in lists or text may be abbreviated in instances when several species belonging to the same genus are quoted. The generic name is given in full for the first species listed, and is subsequently abbreviated to the initial capital letter followed by a full stop - e.g. Carex demissa, C. flacca, C. hirta.

(e) Names of Families and Higher Groups.

Names of plant families and of higher groups in the plant kingdom are written with an initial capital letter and set in roman type - e.g. Amaranthaceae, Hypericaceae (families), Geraniales (order), Bryophyta (division).

2. COMMON OR VERNACULAR NAMES

(a) Common Names in Lists and Text

Common names in descriptive text should be written in small letters, except when part of the name is a proper noun or adjective, in which case an initial letter is necessary -

e.g. balm of Gilead, Canadian pondweed, Cape tulip, hemlock, Malta thistle, parsley piert, ragwort.

Common names are usually set in roman type in text, but are sometimes set in small capitals or other contrasting type to make them stand out. On commercial labels, common names are usually written or printed in capitals as an aid to legibility.

(b) Botanical Names used as Common Names

When botanical names have been adopted as common names, they are written with an initial small letter, are never underlined or italicised and are set in roman type in printed text; it is then a clear indication that the particular generic name or binomial combination is used in the vernacular and not in the technical sense - e.g. danthonia, dichondra, nassella tussock, pennisetum macourum, vulpia hair grass.

(c) Common Names used with Botanical Names

In technical texts, it is common for the botanical name to precede the common name, while in non-technical or popular texts, the common name usually precedes the botanical name, the practice preferred by the individual may be adopted.

When a common name follows a botanical name it is commonly enclosed in parentheses, a like procedure being adopted when a botanical name follows a common name - e.g. Daucus carota (wild carrot), wild carrot (Daucus carota).

BOOK REVIEW -

VEGETABLE GARDENING IN NEW ZEALAND (1979). Ralph Ballinger
The Caxton Press.

For New Zealand vegetable gardens this book is long overdue. The book has two outstanding features - one is that it tells you how to do the job in a proper and concise manner, and the second is that it shows you how the job should be done, with beautifully clear, close-up photographs.

Everything is logical in this book and it is easy to find information by the alphabetical listing of the vegetables, or from the index. There are also very many useful and practical additions such as month by month reminders, a glossary of terms, notes on the use of manures and fertilisers, how to prepare seed beds and raise your own plants and brief but to-the-point notes on pest and disease control.

Perhaps missing are a few words of advice on the problems of growing vegetables on home garden sections on hill sides.

"Vegetable Gardening in New Zealand" is written by one of our noted authorities and for \$3.95 it just has to be handy to every vegetable gardener.

I can well imagine how thousands of these books will become soiled and tattered after gardeners' hands have thumbed through the pages, because they are sure to be put handy on a box or the wheelbarrow while the gardening is being done.

This is an abridged version of a series of four articles by Derrick Rooney, recently published in "The Press", Christchurch. Our grateful thanks are due to "The Press" and to Mr Rooney for their permission to print this article.

Riccarton Bush ~

or Putaringamotu (and locally - Deans Bush), is not only unique in the botany of New Zealand but has the distinction of being one of the earliest-settled sites on the Canterbury Plains.

The Bush has had a chequered career, having been cut back heavily in the early years of European occupation, and today covers barely one-third of its acreage at the time of settlement.

It has been the subject of regular scientific study since 1870, when Mr J.F. Armstrong listed 94 native flowering plants and ferns, 20 mosses, lichens and fungi, and six exotic flowering plants, and a publicly-owned scenic reserve since 1915. It is recognised by scientists as a "precious living relic".

However, until four years ago there was no clear, long-term plan for the perpetuation of this unique plant community, the last healthy remnant of a type of lowland forest that occurs nowhere but in Canterbury, and which once covered vast areas of the coastal plains between the foothills of North and South Canterbury.

Riccarton Bush contains no rare plants in the sense that there is nothing there that does not occur elsewhere, although there are numerous species that are rare in the bush itself - in several cases only one specimen survives. Riccarton Bush is a living anomaly, a lush association several storeys high of forest plants growing in a dry climate. About 70 species of native flowering plants and ferns grow in the bush, but the number fluctuates and at intervals over the last century the count has varied between 59 and 98. There are also numerous "adventive plants" - interlopers both native and exotic, most of which are no threat to the bush, but some of which are menaces, either through their tenacity or their habit of strangling the hosts, and a recent checklist compiled by Dr Brian Molloy, the Royal Society representative on the Board of Trustees of Riccarton Bush, puts six exotic plants and two native ones in the "destroy on sight" category.

Forest communities of the Riccarton Bush type are commonly known as "kahikatea swamp forest," although nowadays scientists prefer the term "flood plain forest", a better description of the way in which the forest came into being. By New Zealand standards, Riccarton Bush is classified as a young forest, although some of the oldest kahikateas may well have been big trees before William the Conqueror cut down his first English oak.

RICCARTON BUSH (CONT)

Wind is a persistent enemy of forestry in Canterbury, but Dr Molloy does not regard wind as the most serious threat to Riccarton Bush. During the August 1975 north-westerly "bigblow" Dr Molloy put on a tin hat and went into the bush - "The kahikateas were bending over with the wind, riding it out. The damage to them was relatively minor and most of it was in the wettest areas." The natural disaster most feared is snow. Heavy snowfalls are rare in Christchurch, but the 1945 fall caused damage from which the bush took years to recover, and which eliminated the last of the mature titoki (*Alectryon excelsis*) trees. Efforts to re-establish titokis since then have met with adversity - one planting was destroyed by frost and another was removed by a light-fingered collector.

There are four other large forest trees, two of them podocarps, and two broadleaves, hinau (*Elaeocarpus dentatus*) and pokaka (*Elaeocarpus hookerianus*). The hinau is a splendid sight in November, when it is covered with sprays of creamy-white flowers. This site is its southern limit, and only four mature specimens survive, but they are regenerating. The last big totara (*Podocarpus totara*) died 30 years ago, and only young specimens are in the bush now.

Beneath the dominant trees is a second storey of smaller trees, the best known being the kowhai (*Sophora microphylla*). Others include *Paratrophis microphylla* and the mahoe (*Meliclytus ramiflorus*) and kaikomako (*Pennantia corymbosa*), ribbonwood (*Plagianthus betulinus*), matipo (*Myrsine australis*) and kohuhu (*Pittosporum tenuifolium*), cabbage trees (*Cordyline australis*) and lemonwoods (*Pittosporum eugenioides*).

The third tier consists largely of young plants of these species, plus numerous shrubs - wineberries (*Aristotelia serrata*), putaputaweta (*Carpodetus serratus*), and *Coprosma* spp.

On the ground floor are numerous clumps of the bush rice-grass (*Microlaena avenaca*), *Astelia* spp., ferns, mosses and lichens. In the wetter areas are swamp plants such as niggerheads (*Carex secta* 'secta') and toetoe (*Cortaderia richardii*).

Climbing plants include the small pohue (*Muehlenbeckia complexa*), the larger pohue (*Muehlenbeckia australis*) which is a menace in this bush and destroyed on sight; native *Convolvulus* spp., native fuchsia (*Fuchsia excorticata*), lawyer (*Rubus* spp), supplejack (*Ripogonum scandens*), and the "NZ Passionfruit" (*Tetrapathaea tetranda*).

A number of species which were presumably once abundant are down to small numbers now and in several cases to a single plant. The matai (*Podocarpus spicatus*) is down to two immature trees and several saplings, the titoki (*Alectryon excelsus*) to one immature tree and one sapling, and the pepper tree (*Pseudowintera colorata*) is down to one sapling. There are no female plants left of *Coprosma propinqua* although recent plantings of seedlings may have remedied this, only one *Fuchsia*, one supplejack (*Ripogonum scandens*) and one white and one dwarf mistletoe (*Elytrantha* spp.).



Mr Jack Wildermoth, the Riccarton Bush Ranger, with some of the thousands of young trees and shrubs he is raising in the bush's nursery. It is estimated that 2000 trees and shrubs will be needed annually for the next ten years, to complete the rehabilitation of the bush.

Photograph - "The Press", Christchurch.



The southern perimeter of the bush today, with newly planted seedlings growing in the foreground.

Photograph - "The Press", Christchurch.

On the ground floor are numerous species represented by single plants and as most of these are dioecious, regeneration is impossible. These include the large bush-flax (*Astelia grandis*) and a giant sedge (*Gahnia xanthocarpa*).

Dr Molloy has compiled a check list of plants which formerly grew in the bush, and where appropriate, replacements from local stocks will be reintroduced.

Since 1976, when ranger Mr Jack Wildermoth took over his duties, measures to restrict public access to the bush have been introduced. These met with strong opposition at first, but they have been so successful that the opposition has largely disappeared. On the former paths, seedlings that once would have been trampled out of existence are springing up by the thousand, and in clearings where grass - and probably countless tree seedlings - had been cut short for generations, native ferns and other plants are taking over.

On the south side of the bush, where poplars were removed four years ago, native trees and shrubs are growing so fast that the voices raised in protest will surely be stilled within the next year or two.

RICCARTON BUSH (CONT) , , , ,

Huge oak trees planted last century in the north-west corner of the bush will eventually have to go. They were originally planted for wind shelter, and are now unnecessary and even harmful, as they densely shade the bush.

Two other policy changes have been the restriction of replacement stocks to those of local provenance, and the cessation of the practice, now shown to be harmful, of dragging out and burning fallen limbs and trees.

Now when a big tree comes down, its trunk is sectioned, if possible, so that its age and cause of death can be determined, but otherwise everything is left to rot down into humus to feed a future generation of trees.

The result is that some areas look untidy at present, but they are healthier and more natural.

To lessen the blow of being denied access inside the perimeter of the most interesting patch of forests in the province, a clearing used by many people as a picnic area is being surrounded by specimens of all the major trees and shrubs.

The establishment of the nursery at Riccarton Bush was the last major job of Mr Ted Rickard before he retired in 1976, and in July of that year Mr L.W. McCaskill, former Royal Society representative on the board and honorary ranger, transplanted to it several hundred seedlings raised from seed that he had collected in the bush.

The present ranger, Mr Jack Wildermoth, has enlarged the nursery to an annual output of 2000 trees and shrubs, the number estimated to be needed annually for the next 10 years to complete the rehabilitation of the bush.

When this has been done, and the planned irrigation and drainage schemes have restored the natural balance between dry and wet areas in the bush, and the last of the intrusive deciduous trees has been removed, this unique scrap of lowland forest which has withstood millennia of floods, winds, snow and fire, and the woodsman's axe, should continue as one of the prime assets of Christchurch for generations to come.

NZIAS - HILGENDORF MEMORIAL LECTURE

"Environmental regulation of the genetic potential of plants."

This lecture was delivered by Dr John Troughton on the afternoon of the last day of the NZIAS Conference (having been postponed because of the speaker's late arrival due to Wellington fog!)

With slides featuring graphs, botanical studies and landscape, Dr Troughton concentrated on arid areas in Chile, California, Mexico, Hawaii and East Africa. He ended with the statement that man will determine the shape of plants to come - a matter deserving the closest attention from today's agronomists.

This paper will be published by the Lincoln College Council.

SOME ENERGY SAVING EXPERIMENTS IN GREENHOUSES -

A novel, *fluid-roof solar greenhouse* will be built and tested by Texas A & M University scientists under a co-operative agreement with the US Dept. of Agriculture.

The greenhouse will have a transparent, hollow-core roof through which a dilute chemical solution (cupric chloride) will be circulated. This solution will act as a selective filter to gather heat from the sun but not hinder the transmission of light necessary for good plant growth.

In conventional greenhouses there is generally need during the heat of summer to paint or shade greenhouse roofs to prevent excessive heating. The cover in turn reduces the amount of light available to plants and slows their growth.

The heat captured by the fluid roof will be stored in solution in a large underground tank for use during the cool nighttime hours to keep the plants in the greenhouse at a desirable temperature.

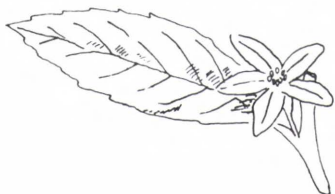
At Berkeley, California, USDA scientists at the Western Regional Research Center are testing a newly-developed plastic lens for solar heating a greenhouse near Watsonville. The clear plastic lenses permit sunlight to pass through to plants below. The Fresnel lens is a well-known optical device with prism-shaped grooves that refract or bend the light to concentrate large areas of light on a common focus. The present experimental lenses focus only 30% of the available sunlight.

The new lenses can concentrate light more than 10 times so that less than 1/10 of the area must be coated and encased in the expensive insulating jackets. The lenses also generate a higher temperature. The light was focused on a black, heat-absorbing pipe encased in a glass tube having a vacuum. The glass tube permits nearly all the sun's energy to enter and heat the metal pipe but acts as an insulator to prevent heat from escaping the system. This can create higher temperature for boiling water or sufficient for use in air conditioners.

AND A PICNIC COOLER FOR BEE HIVE -

Dr G.D.Walter of the Bee Research Laboratory, Tucson, Arizona, uses \$1 foam-plastic picnic coolers for minihives. Often when small spaces like greenhouses and field cages need pollinators, large colonies are moved in. Such colonies are often too populous for the available forage, which can cause colony deterioration. Minihives provisioned with water, syrup and pollen can be hung in a convenient place out of the way of greenhouse workers. Not much effort is needed to modify the boxes for use as hives.

from "Chronica Horticulturae" Vol 19, No. 1 - April 1979.



NATURE CONSERVATION COUNCIL NEWS -

FROM THEIR NEWSLETTER NO. 32

PEATLANDS

The ecological importance of peatlands in New Zealand is something which cannot be ignored. The Nature Conservation Council recently recommended that New Zealand universities and government agencies should be encouraged to undertake indepth studies of peatlands throughout New Zealand. The Council was told that an international workshop is proposed for August 1980 to stimulate research on wetlands throughout the world.

Most of New Zealand's peat resources are located in the Waikato Valley, and most of the peats have been formed from shrub or restiad bogs. *Sporodanthus/Calorophus restiad* bogs are found only in the Waikato Valley, and a good example is Moanatuatua Swamp, a domed restiad bog near Hamilton, 70 hectares of which is reserved. Unfortunately, its long-term future is in doubt due to peripheral drainage.

The vast Hauraki peat dome is now considered for reservation, which is fortunate since the land here is almost at sea level and the dome itself is a most valuable flood protection system. Some raupo swamps are found around the perimeter of the Hauraki system, where the effects of groundwater are felt. The Whangamarino Swamp in the Lower Waikato is also used for flood protection, so will hopefully survive the current drive to reclaim or mine as much of New Zealand's peatlands as possible. Some excellent examples of pakihi bogs occur in the Urewera National Park.

THE KOPUATAI PEAT DOME

The Kopuatai Peat Dome meets seven of the eight criteria set down by the International Union for the Conservation of Nature and Natural Resources Convention, for wetlands of international importance. At Kopuatai there is :

- a) an opportunity to preserve a botanical community that has been minimally disturbed by man. There is a need to provide sufficient and suitable habitats for rare and endangered peatland plants. *Sporodanthus traversii* (Kopuatai is the only place in New Zealand where this is growing naturally), rushes from the Restionaceae family, and 'club moss' *Lycopodium serpentinum* (which is almost extinct), can all be found at Kopuatai.
- b) an opportunity to preserve intact, evidence of pollen grains and volcanic ash showers for dating plant history and climatic change.
- c) an opportunity to preserve areas of long term ecological and scientific research especially on the growth and development of peat.
- d) the opportunity to preserve a suitable habitat for the conservation of waterfowl and wetland wildlife. At Kopuatai 54 species of birds have been recorded, 27 of which are absolutely protected, 17 unprotected and 10 game species. Of these, 33 species are indigenous.

FROM THE NATURE CONSERVATION COUNCIL NEWS (CONT) , , , ,

Kopuatai swamp has other values including fish production, nursery areas for Crustacea, recreational uses, plant production, aesthetic enjoyment and landscape diversity. The working party considered that information about this area was lacking and in view of this it was felt it would be unwise to seek a permanent reservation. Accordingly, a temporary reserve status was favoured for a term of 20 years. If there is further evidence of the need for a more permanent reservation, the existing 20 year reservation should be revoked in favour of a permanent reservation.

STEWART ISLAND 1080 DEBATE

Parts of Stewart Island's coastal forest are suffering die back and deterioration. The damaging factors could be any one or a combination of browsing by deer, opossum, and possibly rats, wind and salt spray in exposed locations, and insects. The damage is especially bad in the north and east coast of Stewart Island as far south as Lords River.

1080 poison is not used on Stewart Island, but because action is needed urgently, the Stewart Island Consultative Committee recommended that 1080 poison be approved for opossum and deer control, subject to its being used "with all due care".

The Nature Conservation Council realises that numbers of browsing animals must be reduced urgently but is concerned at the long term effects 1080 might have on insects and the possibility of secondary poisoning of birds. The use of 1080 should be confined to critical areas in need of urgent attention and the location and boundaries strictly defined. Monitoring by the Wildlife Service or reputable ornithologist would be necessary, to determine the type and extent of birdlife present. Aerial sowing of 1080 poisoned baits is an internationally unacceptable method of poison application, and the Council would not approve this method on Stewart Island.

The tie down method of application using 1080 gel appears to offer the least opportunities to harm non-target species. Branches with palatable leaves are anchored to the ground with twine so that they can be easily eaten by the deer. The operator paints the underside of individual leaves with the 1080 gel. The poison is water soluble and will wash off after some rain has fallen. After a longer period, the twine rots, and the branch is released to its former position. The Council would like to see further research undertaken into the adhesive properties of the gel and has supported the Protection Forestry Research Committee who recommended that this be done.

STOP PRESS : the Nature Conservation Council announces
SYMPOSIUM 1979 - RARE & ENDANGERED SPECIES

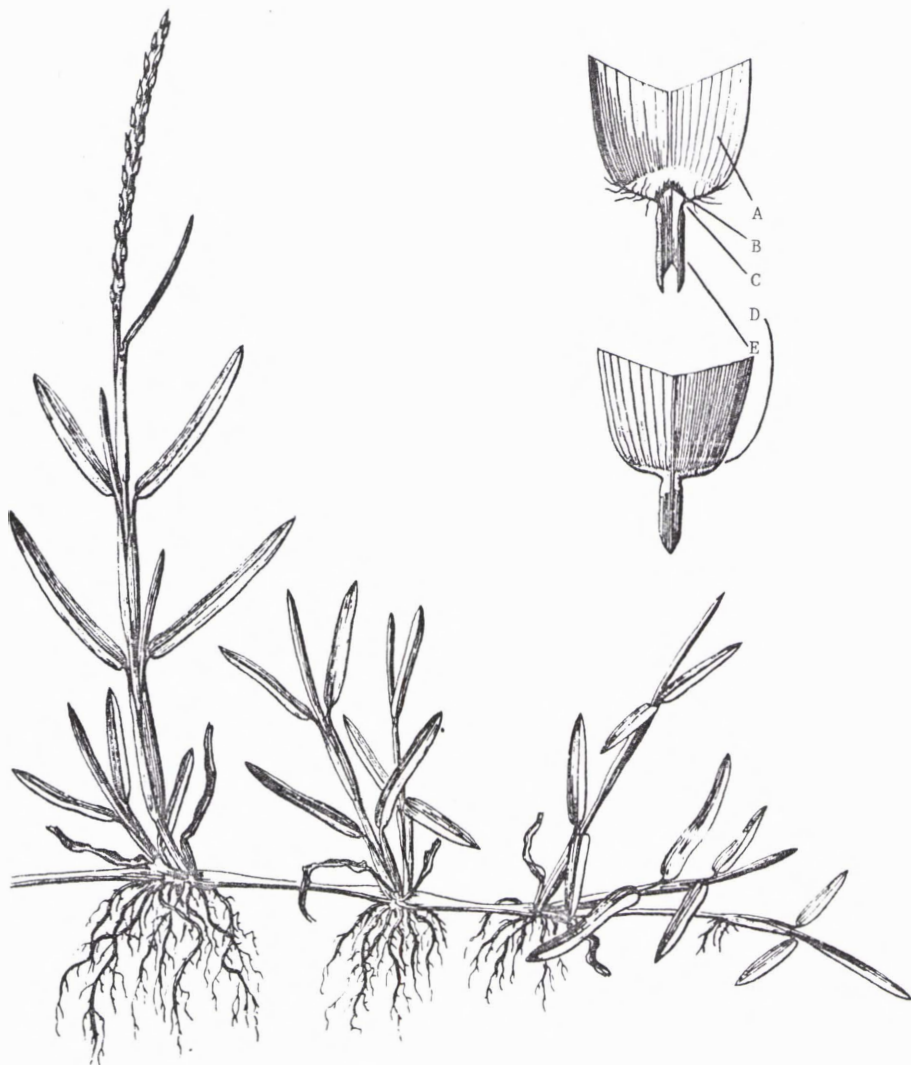
A one day session of workshops to be held in Wellington on Friday 16 November 1979. For registration write to the Secretary, Nature Conservation Council, Box 12-200, Wellington North, before 26 October. Fee \$2 payable on the day.

Know Your Turfgrass - 5

D.E. ALDOUS

BUFFALOGRASS

(*Stenotaphrum secundatum*)



KNOW YOUR TURFGRASS - 5

Buffalograss - (*Stenotaphrum secundatum*)

- A. Venetion - leaves folded in the bud; leaf blade (4-10mm wide) flat glabrous.
- B. Ligule - inconspicuous fringe of hairs (approx. 0.3mm long)
- C. Auricles - absent.
- D. Collar - broad, continuous, glabrous.
- E. Sheath - compressed, keeled, slightly ciliate.

REMARKS : This warm season perennial turfgrass, commonly known as St. Augustine-grass in the USA, is a native to the West Indies, but is also found in tropical Africa, Mexico and Australia. Buffalograss spreads by long stolons and prefers fertile, well drained soils, is subject to winter damage and can remain dormant throughout winter. Widely utilised under shaded conditions, buffalograss also demonstrates quite good salt tolerance. Cutting height 2.5-5.0 cm. Improved turf cultivars include Bitter Blue, Florantine and Roselawn, all of which have an improved low temperature colour retention.

RNZIH NOTABLE & HISTORIC TREES COMMITTEE

report 6 recent additions to the Register :

1. An oak, *Quercus robur*, in Invercargill, which was presented to Jack Lovelock by Hitler after Lovelock's victory in the 1500m in the 1936 Berlin Olympics.
2. A holm oak, *Quercus ilex*, in New Plymouth.
3. The walnut mentioned in the Winter Bulletin.
4. A weeping pagoda, *Sophora japonica* 'Pendula' in Lower Hutt.
5. A weeping ash, *Fraxinus excelsior* 'Pendula' in Lower Hutt.
6. A *Magnolia campbellii* in Lower Hutt.

For more information contact :

The Secretary,
RNZIH Notable & Historic
Trees Committee,
P.O. Box 11379,
Wellington.



NZIAS CONFERENCE - LINCOLN COLLEGE 20-24 AUGUST 1979.

A wealth of papers ranging from "Engineering aids in horticulture" to "Farm secretarial services", plus debates and plenary sessions kept conferees busy for the week.

One session I was able to share in was "Trends in Horticultural Research", given by Professor R.N. Rowe, of the Department of Horticulture, Landscape and Parks at Lincoln College.

In the allotted time, Professor Rowe was able to deal only with selected areas, and chose those which seem to him to be the most important. Horticultural research is at present in its most exciting phase since W.W.II, and is being generated in the main by small groups in Israel, New Zealand and Australia.

In the field of fruit cropping two major themes have emerged which dominate a significant amount of the world's present day research.

The first is an extension and refinement of concepts developed in Europe just prior to and after the Second World War. This period saw a major shift in horticultural research thinking away from an emphasis on production per tree to a concentration on developing methods to increase production per unit of land area and, more recently, production per unit of orchard volume. The intensive orcharding systems based on dwarfing root-stocks focused attention on the potential for improving the efficiency of the use of labour, capital, and production in-puts and the utilisation of sunlight and has led to highly efficient fruit production systems incorporating sophisticated plant training and shaping methods and irrigation and nutrition techniques. The challenge in horticultural research in recent years has been to combine these highly efficient biological production systems with efficiencies to be gained from mechanised harvesting. The development of the Lincoln canopy and the Tatura trellis are the most advanced systems developed so far to achieve this goal. Professor Rowe emphasised theoretical and practical plant problems which had to be faced in designing these systems to achieve the most efficient trapping of sunlight and at the same time allowing the easy removal of fruit by mechanical means without fruit damage. He briefly discussed such things as canopy depth, cover and orientation in relation to these systems. The use of trellises to maintain the orchard canopy in the desired configuration is essential to these modern systems. Professor Rowe believes that we are now at the stage where even high quality fresh fruit will be harvested mechanically.

The second emphasis in research is on the improvement and widening of the genetic base of horticultural crops and the production of healthy disease-free planting material. The most significant recent research contribution to this area has been the development of tissue culture techniques. Professor Rowe spoke of the exciting potential of tissue culture methods for the rapid propagation of elite plants. He spoke of the four methods used, pointing out that the potential of the meristem culture method can be frustrated because the specific hormonal and nutritional requirements have been worked out for only a limited number of species and cultivars and much empirical work needs to be done with horticulturally important plants. He believes this method should be used to build up stocks of elite plant material, as the process is costly both financially and technically. There is also some question about the genetic stability of plants produced by this method, although less than experienced with callus and single cell culture methods.

"Trends in Horticultural Research" - cont :

Professor Rowe spoke of work being done in Israel with callus and cell cultures where scientists are utilising the instability of the genes in such cultures to select plants of citrus and stone fruits tolerant or resistant to disease and poor soil conditions. He also indicated the potential of cell culture method for the production of drugs and important plant chemicals on an industrial scale.

The results of recent research into the function of plant roots highlight the importance of root-tips in the total plant performance. The work has indicated the potential feasibility of controlling the growth vigour of plants by controlling root growth particularly by restricting the volume of the medium in which the plant is grown in much the same way that plants are controlled by the Bonzai technique.

COASTAL PLANTING IN AUCKLAND

The Auckland Regional Authority Parks Department have produced a 15 page booklet "Coastal Planting in Auckland", setting out guidelines for selecting the right plants for your site, and with instructions on their care.

This is the initial one in a series which the Department hope to produce in association with their Regional Botanic Garden activities, and is an appropriate topic for the first publication in view of the Authority's wide involvement in the management of regional coastal parks now totalling over 23,000 acres.

In this Bulletin we have reproduced the sections on HERBACEOUS PLANTS and SHRUBS. The section on TREES will appear in the next Bulletin.

We trust our many northern members will find this article of use, and extend thanks to Mr P.J.Jew, Manager of the ARA Parks and Reserves Department, for permission to reprint.

PLANT LISTS

A SELECTION OF PLANTS FOR AUCKLAND'S COASTLINE

The plants are grouped into HERBACEOUS PLANTS, SHRUBS & TREES -

- * BOTANICAL NAME - This is the only reliable way of identifying plants. It is necessary to find both the first name (genus) and the last name (species).
- * COMMON NAME
- * NATIVE - Plants native to New Zealand are marked with a star.
- * HARDINESS of plants in extreme conditions :
SHELTER - plant requires shelter from strong salt winds,
HARDY - hardy in most coastal conditions.
- * SOILS - Poor soils can be sandy, rocky or clay, and can be subject to drought. Average soils have a good structure, have adequate organic matter and are less subject to drought. Most ornamental plants require good drainage.
- * ATTRACTIVE FEATURES of the plants are listed as LEAVES, FLOWERS, FRUIT, of the overall FORM of the plant.
- * PRUNING - Many ornamental plants benefit from PRUNING in late spring or late summer.

HERBS (Herbaceous Plants)

Botanical name	Common name	Native plants	Hardiness in extreme conditions	Soils	Attractive features	Pruning	Comments
Agapanthus orientalis.	Agapanthus.		Shelter.	Most.	Leaves and flowers.	Flower heads.	Propagation by division. Hardy groundcover.
Aloe aborescens.	Tree aloe.		Hardy.	Sand.	Leaves and flowers.		Hardy salt-resistant species. Grows 3 to 5 metres tall.
Arctotis Hybrids.	Arctotis.		Hardy.	Most.	Flowers.		A hardy and colourful ground cover daisy.
Arthropodium cirratum.	Rengarenga lily.	★	Hardy.	Most.	Flowers and form	Flower heads and old leaves.	Good groundcover plant tolerating semishade. Protect from moving sand.
Arundo donax.	Giant reed.		Shelter.	Average.	Form.	To control suckering.	Giant perennial grass, growing up to 3 metres.
Asplenium lucidum.	Shiny asplenium.	★	Hardy.	Most.	Fronds.		Hardy once established. A striking groundcover fern that should be used in association with other plants.
Carex flagellifera.	Coastal sedge.	★	Hardy.	Most.	Form.		Tussock-like plant; hardy under most garden conditions. Good groundcover.
Carpobrotus edulis.	Ice Plant. (Mesembryanthemum edulis).		Hardy.	Sandy.	Form and flowers.		Tough; succulent; resistant to salt spray and wind. Ideal groundcover.
Cortaderia splendens.	Toetoe.	★	Hardy.	Most.	Flowers.		Plant the N.Z. species and not the pampas grass. Tolerates saline soil.
Dianthus spp.	Carnation.		Hardy.	Most, but well drained.	Flowers.	Flower heads and shaping.	Good coastal garden plants.
Disphyma australe.	N.Z. ice plant (Horokaka).	★	Hardy.	Most.	Form and flowers.		More suitable for the smaller garden than <i>Carpobrotus edulis</i> . Propagated readily from cuttings in early autumn.

<i>Hibiscus trionum</i> .	Puarangi.	★	Shelter.	Average.	Flowers.	To shape.	Treat as an annual in Auckland.
<i>Phormium cookianum</i> .	N.Z. mountain flax.	★	Hardy.	All.	Leaves and flowers.		A smaller species found naturally on coastal cliffs. Useful as a groundcover.
<i>Phormium tenax</i> .	N.Z. flax.	★	Hardy.	All.	Leaves and flowers.		Found naturally in wet lands. Provides nectar for birds.
<i>Polygonum vacciniifolium</i> .	Knotweed.		Hardy.	Most (clay banks)	Leaves.		Can become a weed. Better to restrict to difficult situations as a groundcover.
<i>Xeronema callistemon</i> .	Poor Knights lily.	★	Hardy.	Good.	Leaves and flowers.		Requires a well drained fibrous soil in a sunny location.
<i>Yucca aloifolia</i> .	Spanish bayonet.		Hardy.	Sandy.	Leaves and flowers.		Sword-shaped leaves makes it a striking garden plant. Does best in warm, well drained locations.

SHRUBS

<i>Buddleia salviifolia</i> .	Buddleia.		Hardy.	Most.	Flowers.	Heavy.	Suitable as a shelter hedge.
<i>Cassinia</i> spp. cult.	Tawhina (cottonwood).	★	Hardy.	Rocky.	Form and flowers.	Light shaping.	Hardy, adaptable shrub. Cultivars of N.Z. species of <i>Cassinia</i> can sometimes be obtained.
<i>Coprosma acerosa</i> .		★	Hardy.	Most.	Form and berries.	Light shaping.	A good groundcover plant.
<i>Coprosma prostrata</i> Hybrid.		★	Hardy.	Most.	Form.	Light shaping.	Groundcover plant. Lush green in colour.
<i>Coprosma repens</i> .	Taupata.	★	Hardy.	Most.	Leaves and berries.	Regular shaping.	Very hardy shrub suitable for hedging.
<i>Correa alba</i> .	Australian fuchsia.		Shelter.	Most.	Flowers.		One of the hardier garden shrubs suitable for dwarf hedges.
<i>Corokia cotoneaster</i> .	Corokia.	★	Hardy.	Most.	Flowers and fruit.		Many different garden forms. Suitable for medium hedge.
<i>Cytisus proliferus</i> .	Tree lucerne.		Hardy.	Most (free draining).	Flowers.	Hard.	A good shelter plant for establishing natives. Attracts birds and bees.

<i>Entelea arborescens</i> .	Whau.	★	Shelter.	Average.	Flowers and seedheads.	Regularly to shape.	Large leaves. Requires permanent shelter.
<i>Feijoa sellowiana</i> .	Feijoa.		Hardy.	Clay to average.	Flowers and fruit.	To shape.	Excellent informal hedge with edible fruit. Selected forms available.
<i>Griselinia littoralis</i> .	Kapuka (broadleaf).	★	Hardy.	Most.	Leaves.	To shape.	Useful as an informal hedge or specimen plant.
<i>Hebe speciosa</i> .	Koromiko.	★	Hardy.	Most.	Flowers.	Lightly to shape.	There are many Hebe cultivars available. Useful in windy and semishaded situations.
<i>Hibiscus rosa-sinensis</i> .	Chinese hibiscus.		Shelter.	Good.	Flowers.	To shape.	A wide range of hybrids are available. Best to use the hardier varieties. Frost tender.
<i>Leptospermum</i> spp.	Manuka and kanuka.	★	Hardy.	Most.	Flowers.		Coloured flowering forms are less hardy. Periodic spraying is necessary to control scale and leaf roller.
<i>Metrosideros carminea</i> .	Rata.	★	Shelter.	Average.	Flowers.		Slow grower. Good climber for brick or stone walls. Requires a cool root run. Shelter from heavy frosts.
<i>Muehlenbeckia astonii</i> .		★	Hardy.	Most.	Form and fruit.	To shape.	An erect much-branched interlacing shrub that can be used as a small hedge as well as specimen plant.
<i>Nerium splendens</i> .	Oleander.		Shelter.	Most.	Flowers.	To shape.	Poisonous if eaten. Selected varieties available.
<i>Olearia traversii</i> .		★	Hardy.	Most.	Form.	To shape.	Fast-growing hedge plant that can be a useful addition to a shrub border.
<i>Pseudopanax lessonii</i> .	Houpara	★	Hardy.	Most.	Form.	To shape.	Many hybrids are available. Needs shelter when young. Tolerates shade.
<i>Ricinus communis</i> .	Castor-oil plant.		Shelter.	Average.	Leaves.	To shape.	Easy to grow. Seeds are poisonous.
<i>Rosmarinus officinalis</i> .	Common rosemary.		Hardy.	Most.	Form, flowers and leaves.	To shape.	Withstands dry conditions when established. Prostrate form makes good groundcover.
<i>Tecomanthe speciosa</i> .	Tecomanthe.	★	Shelter.	Average.	Leaves and flowers.		Very frost tender. Heavy, vigorous climber.

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