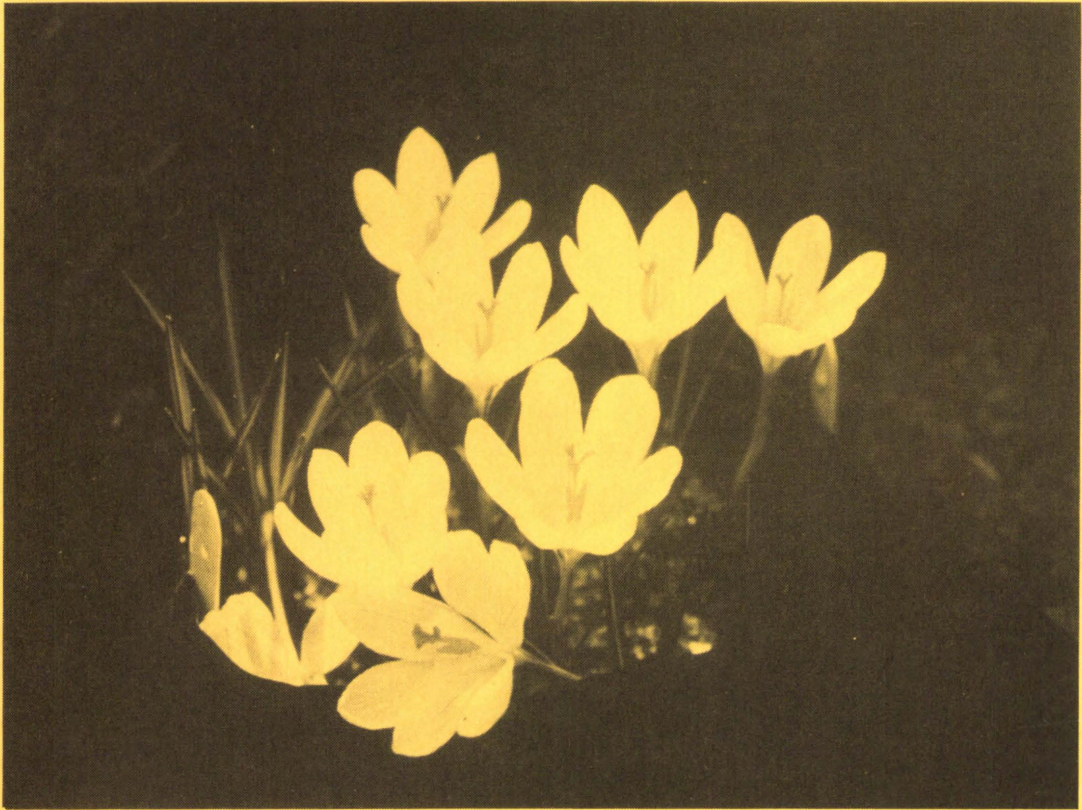


# Horticulture

in New Zealand

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



**37**

**Spring**

**1985**



BULLETIN OF THE ROYAL N.Z. INSTITUTE OF HORTICULTURE

NUMBER 37, SPRING 1985

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Cover photo: *Crocus* spp.

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**ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE (INC)**

<i>Patron</i>	His Excellency the Governor-General
<i>Vice-Patron</i>	THE HONOURABLE MINISTER OF AGRICULTURE AND FISHERIES
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<i>National Secretary</i>	MR D.B. CAMERON, B.Sc., Dip. Tert. Ed. P.O. Box 12, Lincoln College
<i>Annual Journal Editor</i>	MR M. OATES, B. Hort. Sc. (Hons) (Reading)
<i>Bulletin Editor</i>	MR D.L. SHILLITO, Dip Hort., Dip Hort Mgt.
<i>Student's Editor</i>	MR N.W. OWERS, N.C.H.

The Editor welcomes articles, letters and news items for consideration of publication. Contributions should be addressed to the Bulletin Editor, P.O. Box 12, Lincoln College.

Views expressed are not necessarily those of RNZIH.

Registered at Post Office Headquarters, Wellington as a magazine.

# EDITORIAL

The spring issue of the bulletin is off to the printers. In many parts of the country I'm sure many of you think spring has well and truly past, but for members in the South it is still fresh in their minds. Even here in Christchurch everything has that new look and the blossom is only just giving way to leaves.

In this issue we have a wealth of interesting information. It's also a little longer than usual so do take the time to have a good look through.

We have a couple of letters to the editor in this issue. What about making this a regular feature to air your views or ideas?

The 1985 Journal is very near to completion and if you look on page 11 you will get an idea of some of the interesting and informative articles that are in it. A must for everyone.

Spring is a great time of the year for horticulture, but it does have its drawbacks. For those members working on horticultural properties and preparing for the forthcoming exams it can be difficult to get motivated for swot. I hope you have all started and you do the best you can.

That's enough from me as I suspect the more I write, the less inclined you are to read it.

I hope you enjoy the spring bulletin.

David Shillito  
Editor.

# LETTERS TO THE EDITOR

26 April 1985

The Editor  
R.N.Z.I.H. Bulletin.

Dear Sir,

You ask in your Editorial 'What do you wish the Institute to do for you?' There is only mention of one Wellington remit in the Bulletin.

I have just gone through the file of the Northern Region District Councils meetings and reiterate below what the N. Region felt was necessary for discussion, for action - in this last year.

1. 'Award of Garden of Excellence' - prior to the last A.G.M. we requested the reinstatement of this Award. We made a plea for it to be discussed at that 1984 A.G.M. We have again asked for such a discussion in 1985.
2. Our D.C.'s wanted a copy of the Register of all SHOW JUDGES
3. 'Beautiful New Zealand' Scheme - we asked that discussion take place at the A.G.M. on this, its progress, the R.N.Z.I.H.'s involvement in the scheme. In 1984 and again in 1985.
4. Re: Show Judging - now not an Executive sub-committee we asked for person on Executive responsible and the syllabus. Further we asked for the urgent reinstatement of the Show Judging Committee (all classes) on the National Executive. Any course organised HAS to be referred to the National Executive for confirmation.
5. 'Historic Gardens Society' - prior to the '84 A.G.M. we asked for the initiation of an Historic Gardens Society under the auspices of the R.N.Z.I.H. to be discussed at the A.G.M. On this subject on 13th October '84 a remit was proposed:- 'That the keeping of detailed records (archives) of Historic Gardens be initiated, all D.C.'s contributing.
6. Further remit from our 13th October meeting:-  
Records of N.Z. Plant Breeders from early days - moved that these be collected from early days to the present, the matter being urgent, so much is already lost or in danger of so being.
7. Publicity & Information Officer - 3rd remit from 13th October meeting:- that a Publicity and Information Officer on the National Executive be appointed, with representatives from all areas with responsibility to ensure public awareness of the aims and objects of the R.N.Z.I.H. and to

provide material therefore.

8. Formulation of U.E. Syllabus - under review '84/'85 but our region felt the R.N.Z.I.H. should be assured of input into the school horticultural syllabus and Dept. of Education consistently be made aware of this.

Perhaps I should not have riffed through our last year to voice to you the areas of concern expressed at our Northern Region meetings of D.C.'s but, Mr Shillito, you did ask 'What do you want the Institute to do for you?' I'm repeating from our file what the N. Region have wished. I hope we all have a stimulating and productive A.G.M.

Yours sincerely,

Mrs D. White

Sec. Treas. N. Region D.C.'s  
R.N.Z.I.H.

21 May 1985

Mrs D. White

Secretary/Treasurer  
Northern Region District Council.

Dear Mrs White,

"....I understand that many of the points you brought up in your letter were to be discussed at the May A.G.M. which will have passed by the time you receive this letter. I hope satisfactory results were obtained. I found it interesting that many of the points you raised were new to me. I wonder how many other members are in the same situation of not really understanding what the Institute is involved in and what the District Councils do, other than arrange talks and visits.

Perhaps if you are agreeable to my earlier letter of submitting a short news item for the District Council News section of the Bulletin, it should not only include the activities of the District Council, but also items for discussion so everyone has a chance to see them, and not just those who go to the A.G.M.

I shall await with interest the outcome of the A.G.M. and hopefully in the Winter edition we could have further points to discuss.

Yours sincerely,

David Shillito

Editor

'HORTICULTURE IN NEW ZEALAND'

Dear Sir,

For over twenty years I have collected and exchanged seed and propagating material of native and exotic plants with Wisley, Cambridge Botanic Gardens etc. in order to acquire for the warmer gardens of N.Z. various plants I have seen overseas or read about. For a few years I supplied Thompson & Morgan of Ipswich and Albert Schenkel of Hamburg-Blankenese. Nowadays, it is expensive and difficult to import anything but seeds. The following are some plants I would like to try growing and feel many are already in New Zealand if only I could track them down - for purchase or exchange.

*Amaryllids* (uncommon)  
*Anamopaegma chamerlaynii* (Bignoniaceae)  
*Clematis heracleifolia* var. *davidii* 'Wyvale'  
*Dahlia coccinea*  
*Clivia x cyrtanthiflora* or *gardenii*  
*Dahlia imperialis* (white form)  
*Decaisnea fargesii* (tried many times from seed)  
*Elaeagnus angustifolia*  
*Elaeagnus multiflora*  
*Erythrina* spp. or hybrids  
*Hedychium* spp. or hybrids  
*Hippophae rhamnoides* (unsuccessful many times from seed)  
*Lycoris* other than *radiata* or *aurea*  
*Mutisia clematis*, *decurrens*, *oligodon*, *speciosa*  
*Oreocallis wickhamii* (said to be in Bay of Plenty)  
*Passiflora recemosa* or *vitifolia*  
*Salvia grahamii*  
*Solanum crispum* or *macrantha*  
*Tigridia* spp. other than *pavonina*  
*Tweedia* sp. red flowered (Kell Butler had it)  
*Mandevillea* or *Dipladenia* any colours other than pink  
or white with yellow throat.

Maxwell Goodey  
81 Gladstone Road  
Parnell  
AUCKLAND 1.



# FROM THE SECRETARY

The end of year examinations are fast approaching, new qualifications are underway in all directions, the Otago District Council is well advanced in its planning of a revamped 1986 A.G.M. and Conference, The Horticultural Trade Fair has come and gone, there are lambs in the paddocks and spring growth on the trees: Spring is here, and everything in the Institute's garden is growing steadily.

## HORTICULTURAL TRADE FAIR - AUCKLAND 2 - 5 JULY 1985

This year the Horticultural Trade Fair had a special "Horticultural Training Court". The idea was for all institutions involved in horticultural training and education to set up stands so that people attending the fair to catch up on the latest in horticultural machinery, facilities and techniques could also gather information on the wide range of horticultural qualifications available throughout the country.

Most Technical Institutes and Community Colleges offering courses in horticulture were represented along with Massey University, Labour Department, M.A.F., the Horticultural Cadet Scheme and our own R.N.Z.I.H.

I set up a stand, somewhat at short notice, but judging by the number of people who made enquiries the exercise was well worthwhile, if somewhat exhausting.

I would like to take this opportunity to thank members of the Auckland District Council who so cheerfully assisted me during the week. Phil Jew acted as instant taxi service, Brian Buchanan shifted a sizeable piece of the Botanic Gardens to Epsom for the occasion and Jean Veale, Sue Davison, Joan Dingley and Mark Tomlin "held the fort" from time to time. Without such assistance my week would have become impossible.

Above all, our stand at the Trade Fair served to "raise the R.N.Z.I.H. profile". As the demand for qualifications in horticulture continues to grow I believe it is most important that people involved in the industry in any way at all are made aware of our statutory role as an examining authority. Our historical links to many branches of the industry give us a unique position, but to retain and enhance this position good public relations, professional standards, and a high profile need to be maintained. THAT is what, from my point of view, the Horticultural Trade Fair was all about and I think the exercise will be worth repeating next year when I hope to be able to mount a more sophisticated display.

It should be noted that the National Executive has recently endorsed the need for the Institute to establish a permanent "display" that can be readily transported around the country for occasions such as the Horticultural Trade Fair.

Mike Steven of Hamilton has undertaken to spearhead the establishment of this display, so any members with ideas, useful photographs or other materials are invited to contact Mike (Ph. Hamilton 69-025).

## NATIONAL EXECUTIVE

The National Executive met in Wellington on 29 August. Members may care to note the following points:-

- a) Nominations for Awards and Honours to be announced at the 1986 A.G.M. in Dunedin must be received by the National Secretary in time for them to be considered by the Executive at its next meeting (5 December 1985).
- b) 1986 Banks Lecture: Dr D. Given of Christchurch will present the 1986 Banks' Memorial Lecture in Dunedin on Saturday, 17 May 1986. It is expected that his topic will be an aspect of conservation.
- c) Hebe Checklist: Mr Lawrie Metcalf has almost completed his checklist of Hebe cultivar names, and it has been agreed that when published the National Secretary will hold a stock of reprints, to be distributed on request at a price yet to be determined.
- d) Garden History: Following a report from Mrs Shepherd, the Executive set up a Subcommittee consisting of Mrs Shepherd, Mr Oates, Mrs Bagley and Mr Adam, to administer a "Garden History Section" of the Institute. They have power to act within the objectives of the R.N.Z.I.H. and members are to be kept informed of progress by means of the Bulletin and Annual Journal.
- e) Role of District Councils: The Executive is continuing with its review of the role of District Councils with regard to students and general members. A report should be available after the next Executive Meeting.

## EXAMINING BOARD

Highlights from the last meeting of the Examining Board included:-

- a) Certificate in Horticultural Practice: This prescription has been finalised and is now being prepared as an "Approvals Notice" for Gazetting through the Ministry of Agriculture and Fisheries.
- b) Certificate in Horticultural Management: This prescription is also being prepared for Gazetting and it is hoped to introduce the programme in 1986. There will also be an "internal assessment" component for this Certificate, the details of which are still being finalised.



- c) New N.C.H./N.D.H. Prescription: Details of transition arrangements for students part way through the N.C.H./N.D.H. programme when the new prescription comes into effect (hopefully in 1986) were finalised. All current students will be written to individually on this matter as soon as the new prescription is Gazetted.
- d) Theses for submission in 1985: The Board was pleased to note that 13 students expected to be submitting N.D.H. theses this year.

## DATES TO NOTE

### 1985

- SEPTEMBER 31 : Subscription accounts for 1986 posted out to all members.
- OCTOBER 9 : C.H.P. Examination Kati Kati.  
 10 : C.H.P. Examination Te Puke.  
 15 : C.H.P. Examination Auckland.  
 17 : C.H.P. Examination Kerikeri.  
 22 : C.H.P. Examination Gisborne.  
 30-31 : N.D.H. O. & P. Examinations Lower Hutt (Schedules I & IV).  
 31 : 1986 Subscriptions : due date for payment.
- NOVEMBER 5 : N.D.H. O. & P. Examinations Hastings (Schedule II).  
 5-7 : N.D.H. O. & P. Examinations Christchurch (Schedules I & IV).  
 7 : N.D.H. O. & P. Examinations Auckland (Schedule II).  
 8 : C.H.P. Examination Nelson.  
 12 : C.H.P. Examination Hastings.  
 12 : N.D.H. O. & P. Examinations Levin (Schedule III).  
 12-13 : N.D.H. O. & P. Examinations Auckland (Schedules I & IV).  
 18-22 : N.C.H./N.D.H. Written Examinations.
- DECEMBER 5 : National Executive, Wellington.  
 20 : R.N.Z.I.H. National Office closes for Christmas.  
 25 : Christmas Day (same date as last year, and next year).

### 1986

- JANUARY 6 : R.N.Z.I.H. National Office opens.  
 14 : Examining Board, Wellington.  
 20-24 : ALL Examination Results posted to students.

Dave Cameron  
NATIONAL SECRETARY.

## MORE COLUMNER CONIFERS

by Cliff Donaldson

I would like to add two conifers to the list in Mr Hugh Redgrave's excellent article on 'Columner Conifers' printed in Bulletin 35.

Two native conifers in this category which warrant more garden usage are the New Zealand cedars *Libocedrus bidwillii*, (Kaikawaka or Pahautea), and its close relative *L. plumosa* (Kawaka). Strangely enough, amongst all the numerous volumes of books that have been published about our New Zealand plants, very few cover the subject of their use as garden plants or in cultivation. The earliest reference work of this type that I possess is a 1923 edition of "The Cultivation of New Zealand Plants" by L. Cockayne, in which he refers to the above-mentioned species as suitable for "garden cultivation", suitable for "home decoration" in pots, and suitable also for foliage "for decorating the home". More recently, however, this gap in information on the uses of native plants in the garden has been filled by the publication of two fine books - "Growing Native Plants" by B. Matthews, and "Gardening with N.Z. Plants, Shrubs and Trees" by M.E. Fisher, E. Satchell and J.M. Watkins.

The former book notes the suitability of our native cedars for specimen trees, a purpose to which I have used them with success. The latter book recommends both for various situations in the garden with *L. plumosa* suitable as a specimen tree, although with more of a pyramidal habit. Unlike the examples of growth rate of the *Libocedrus bidwillii* Mrs M.E. Fisher mentions in her book, I have found that this tree grows at quite a steady rate; not as fast as some of the exotics, yet not remaining small. Of two trees growing on my property for about 20 years, one in a dryer sunny situation is about 3.6 metres (12 feet) high and just starting to be slightly pyramidal after being columnar, while the other, in a sheltered semi-shady site is about 4.5 metres (15 feet) high and starting to develop the typical conical top but still narrow for all its height.

Two other younger specimens (about 12 years) more or less in full sun, are still columnar and between 2.1 and 2.4 metres (7 and 8 feet) tall.

These trees have quite attractive foliage, especially when young, and *L. plumosa* in particular, and seem to prefer a reasonably moist soil.

I would rank them with any of the exotics as a columnar tree of merit.

# SELECTING PLANTS FOR THE GARDEN

*by*

*Joy Amos*

Anyone who has planned a garden knows the difficulty of selecting plants which will provide the desired effect in the conditions of soil and climate of that garden.

Some nursery and garden centre staff are most helpful and reliable with this sort of advice.

The rate of growth and ultimate size of the plants must also be taken into account, and decisions made about filling or leaving vacant the spaces between trees and shrubs.

A detailed scale plan of the area, with the circumference of each plant at maturity marked on the plan, will help to avoid the common mistake of overplanting.

Few trees and shrubs develop their natural shape if crowded; so planting too close and then thinning out at a later stage is not the best way.

Filling in with ground cover or with bedding plants is one way to provide colour and to bridge the gaps in the early years, without affecting the natural growth of the permanent tree and shrub planting.

Too often, those who plan and plant new gardens are concerned only with the immediate effect.

A blatant example of this was a plan I saw recently, for perimeter planting only, of the small back garden of a very small section. It included five trees and forty four large shrubs (some very large) as well as many smaller plants for the narrow border around the central lawn area.

One can imagine the problems this would create for the garden owner and his neighbours in a few years time.

Yet this plan was prepared by a 'professional'!

The ultimate size and rate of growth of trees and shrubs varies according to local conditions, but there are reference books and catalogues which give some indication of average height and width; and there are private and public gardens where mature specimens may be observed.

There is plenty of choice in the Auckland 'Yellow pages' under the headings Landscape Architects: and Landscape Gardening - Designing and contracting.

A visit to gardens they have planned five or more years ago would be interesting, and would no doubt help to indicate the most appropriate firm to employ.

The initial cost of a garden design is only one small aspect, when one has to live with the consequences.

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## R.N.Z.I.H. TELECONFERENCE

On 16 May 1985, 38 people attended a session on Pruning and Training Ornamental and Fruit trees. Nothing unusual, except that they were in Alexandra, Comwell, Gore, Oamaru, Dunedin, and Balclutha and were linked by the Otago University Extension Teleconference System.

Those at Alexandra were taking part in a Cadet block course and the Dunedin contribution was prepared by 4 senior RNZIH students who meet fortnightly after work in a Mutual support group.

Now that many RNZIH students are able to attend classes at Community Colleges and Technical Institutes in some Centres, the need to assist students doing all their study by Correspondence becomes even greater.

We hope this trial teleconference will only be a start and that by the time the system is extended to become a National Network at the end of this year, RNZIH will be in a position to use teleconferencing to assist its isolated groups of students and the Horticultural Industry in general.

This will require an input of expertise beyond that available in any one local group. Anyone interested in becoming involved in anyway is welcome to contact:-

Mrs R. Baqley  
31A Lonsdale Street  
Belleknowes  
DUNEDIN.

# ANNUAL JOURNAL NO. 13 1985

The Journal is due out in December and has been upgraded to an A4 size. The Journal will be typeset and will have a colour illustration on the front. The Journal will be divided into sections:-

1. Main section, which includes the Banks Lecture, and general interest articles.
2. Garden History section, which will include articles and information about Garden History in New Zealand.
3. Research section, which includes annual reports from Massey and Lincoln as well as summaries and extracts from N.D.H. theses.

Articles this year include:

Botanical Illustration in New Zealand - The Kew Connection - Miss N. Adams.

Trends in the Nursery Industry - Joy Amos.

Vegetative Propagation and Development of *Sophora microphylla* - Butcher and Wood.

Trees and the Urban Landscape - M.A. Robinson.

The Hamilton Gardens Complex - P. Sergel.

Early Conifer Catalogues - Charlie Challenger.

plus many more.

REMEMBER - When you are renewing your subscription for 1986, don't forget to elect to receive the Annual Journal.

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## CERTIFICATES OF PROFICIENCY

The Institute's Examining Board has agreed that recognition should be granted to students who sit and pass N.C.H./N.D.H. subjects from Schedules other than the one in which they are registered. Although these subjects cannot be credited towards the students' Certificate or Diploma, the Institute will issue a statement to the students concerned that they have achieved a level of proficiency in the particular subject or subjects.

# THE BIBLE IN BLOOM

by

David Matthews

Printed by permission of the International  
Christian Embassy, Jerusalem, New Zealand Branch

Jerusalem - After nearly two decades of development and nearly two generations of dreaming - *Neot Kedumim*, Israel's Biblical Landscape Reserve, is about to open to the public.

The reserve, located mid way between Tel Aviv and Jerusalem, is a unique living museum of fabled flora - and something of an organic dictionary of obscure Scripture as well.

For just as Israel's archaeological reconstructions help us to visualise cities, fortresses and other sites mentioned in the Bible, *Neot Kedumim* allows us to see the hundreds of flowers, shrubs and trees that so often figure in the Old and New Testaments. And even better, at *Neot Kedumim* visitors can see, feel and smell what the Bible is talking about.

## Living Illustrations of the Bible

Helen Frenkley, the assistant director of the Biblical Landscape Reserve, gives as example; "When Job moans that he's been 'brought lower than a seller of *rotem* root,' the figure of speech is meaningless to most readers. But here you can see the *rotem*, or white broom plant, and learn that its roots are still made into charcoal and sold by Beduin in the Negev Desert. Suddenly it becomes clear that Job has fallen from being a wealthy merchant to a peddler of charcoal."

Helen points to a tall, weed-like flower nearby. "In Hebrew this is called *kimosh* and it is found all over the world. When Isaiah predicts the destruction of the Edomite cities, he says that 'nothing will remain, not stone on stone,' and that only such weeds as the *kimosh* will live there. You probably know this wild growth as Queen Anne's lace."

Mid way down a rocky slope, Helen Frenkley, a native of Silver Spring, Maryland who immigrated to Israel in 1969, draws our attention to a low, dark green plant with a lettuce-like leaf.

"This is easy to overlook," she says "although you've no doubt heard of it. Mandrake, or *dudaim* in Hebrew."

Brushing back the leaf, she reveals a half-dozen four-smelling, egg-shaped fruits on the ground. "These so-called 'love-eggs' of the Mandrake," she says "were believed to promote fertility. You may recall in the Bible that Reuben brings them to Leah. And there are other references to the legendary root of the Mandrake, which, in fact, is somewhat poisonous..."

Aside from the natural ground cover, which includes an abundance of thistles, shrubs, wild herbs like thyme and hyssop, and a variety of wildflowers, everything growing at the 550 acre Biblical Landscape Reserve was meticulously collected from all over Israel and transplanted here. This involved tens of thousands of tons of soil.

Certain areas are set off as special exhibits, such as biblical vineyards, walnut trees from the Carmel range and date palms from the Sinai coast. "The Dale of the Song of Songs" includes all the numerous and sensual flowers, shrubs and trees mentioned in that highly poetic book. "The Garden of the Seven Varieties" features the blessed fruits of the Land of Israel that blossom in the spring between Passover and the Feast of Weeks (wheat, barley, vines, figs, pomegranates, olives and honey).

### A Labour of Love

Earthmoving, terracing and planting of the site took nearly 20 years. This labour was crowned recently with the dedication of a study centre that includes lecture halls and laboratories, and dining and dormitory facilities for volunteer workers and overnight guests. Then Prime Minister Yitzhak Shamir, who serves as chairman of *Neot Kedumim's* board of directors participated in the opening of the study centre.

While the nature reserve was being developed, it was open only for prearranged visits by groups of tourists, school children and soldiers. But this summer, it will finally open on a daily basis to individual visitors.

The guiding spirit behind *Neot Kedumim* is Dr Nogah Hareuveni, whose dedication to biblical botany is the realisation of the dream of his parents, Ephraim and Hannah Hareuveni.

"My parents, who were teachers, devoted their lives to identifying and collecting the flora of the Bible," he says. "As a boy, I accompanied them everywhere even to Lebanon in 1936, when we acquired the cedars that we transplanted to Mount Scopus in Jerusalem."

Mt Scopus was the site of his parents' Museum of Biblical and Talmudic Botany at the Hebrew University. The museum unfortunately was destroyed when the Arab Legion captured Mt Scopus in 1948 during Israel's War of Independence.

"Thereafter," Nogah Hareuveni says, "my parents dreamed of a living exhibition of biblical plants. They died in the 1950's, but in the 1960's the government granted me this land, and with state aid and donations from faithful friends everywhere, we've managed to put together what I think is a very educational facility."



# GARDEN HISTORY

Interest in our past, in things historic such as Buildings, Genealogy and Gardens has increased in recent years. A very real effort is needed to preserve and record these important aspects of our heritage for future generations, before they disappear or are lost forever.

Mindful of this, the National Executive of the R.N.Z.I.H. has appointed a Garden History Sub-Committee of Winsome Shepherd, Mike Oates, John Adam and Robin Bagley with power to co-opt. This sub-committee plans, among other things, to establish contact with the Australian Garden History Society, include a Garden History Section in the Annual Journal and organise garden history discussions and trips at the 1986 Dunedin Conference. Several Institute members have contacts with the Australian group.

If you are interested in or have any knowledge of:

1. Research into early gardens, nurseries, and plant importations
2. Maintaining or developing a period garden
3. Garden artifacts
4. Growing and/or supplying suitable plant material

or any other aspects of garden history, please contact any of the above Committee members, or write to:

Garden History  
R.N.Z.I.H.  
P.O. Box 11379  
WELLINGTON.

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## DEADLINE DATES FOR THE BULLETIN

Articles, letters, news items and illustrations forwarded for publication in the Bulletin should be in the hands of the editor by the following dates for the respective issues:-

Spring	-	1 September
Summer	-	21 November
Autumn	-	1 March
Winter	-	1 June.

# RNZIH PUBLICATIONS

Members are reminded that the following publications may be ordered from the National Secretary:

## "Flowers For Shows"

A "must" for anyone interested in producing flowers to 'show' standard. A book of 178 pages revised and reprinted in June 1984. It covers a wide range of topics including suggestions for show organisers and exhibitors, judging of flowers, fruits and vegetables, and a section on garden competitions.

Price: \$10.00 per copy (including postage) for individual orders.

\$6.30 per copy for bulk orders of 10 or more.

## "Floral Art Handbook"

A handbook of 50 pages giving a comprehensive guide to Exhibitors, Stewards, Judges, and all people involved with Floral Art Competitions. Revised 1980.

Price: \$3.50 per copy (including postage) for individual orders.

\$2.60 per copy for bulk orders of 10 or more.

## "Horticulture: The Career for You?"

This 46 page booklet, produced in 1985 has proved very popular with schools, community colleges, technical institutes and a number of other organisations involved in horticultural training. It has been produced as a guide to young people considering a career in one of the many different areas of the horticultural industry. It entails a comprehensive list of career pathways, job descriptions and national training opportunities currently available.

Price: \$2.00 per copy, or \$1.40 per copy for orders of 10 or more

Further details available from:

Dave Cameron  
National Secretary  
R.N.Z.I.H.  
P.O. Box 12  
Lincoln College  
CANTERBURY.

# ARAUCANOS

by

Harold T. Hall

This fascinating word 'Araucanos' is the name given to a particular species of pine located in Chile, and originates from 'Araucana', an Indian race inhabiting the Southern regions of South America.

Other species however, indigenous to Australia, Brazil and the South Pacific area, and of similar latitudes, all of the Pinacea family, are classified under the botanical name *Araucaria* which was taken from the word 'Araucanos'.

Chile Pine, *Araucaria araucana* and synonym *imbricata* was first discovered in 1795, and because of the climatic conditions inherent to the South Chilean mountain environment, it can sustain much colder situations than its kindred pines from the warmer climes of the South Pacific. Its ovate-lanceolate dark green, thick leathery leaves are wide at the base, and sharp pointed, making it extremely difficult to climb, hence the term 'Monkey Puzzle'.

Another related tree from the mountains of Brazil, is *Araucaria augustifolia*, with the common names of Parana and Candelabra Tree. This 30 metre (100ft.) species is used for construction work in South America. Perhaps a more appropriate name is the synonym *Araucaria brasiliiana*.

The most outstanding, and widely used species for cultivation purposes is the 'Norfolk Is. Pine', *Araucaria heterophylla* or *Araucaria excelsa*, both names are widely used. This beautiful symmetrical tree, reaching up to 60 metres (200 ft.) in height, was first discovered in 1793 and is widespread throughout many urban districts of New Zealand. It is an excellent subject for container work. Other less well known cultivars are: *A. albospicata*, *A. compacta*, *A. glauca*, and *A. robusta*.

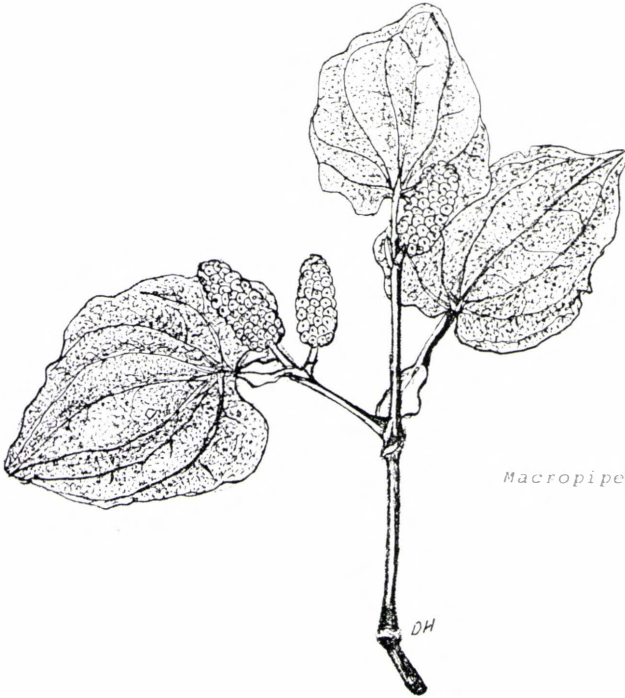
*Araucaria bidwillii*, commonly known as Bunya Bunya, is a native of Queensland, Australia. This distinctive conifer reaches a height of 45 metres (150 ft.) and is an attractive tree. The Aborigines found the seeds most palatable. Also from Australia is the Moreton Bay or Hoop Pine, *A. Cunninghamii*, which can reach the height of 60 metres (200 ft.), this species can also be found in the Arfak mountains of New Guinea, together with *A. beccarii*, which is closely allied to *A. Cunninghamii*.

*Araucaria columnaris* is suitably named for its characteristic column-like appearance and up to 60 metres (200 ft.). Its synonym is *A. cookii*, and has three cultivars: *aurea*, *rigida* and *luxurians*.

*A. columnaris* was first discovered in 1851 in New Caledonia and the New Hebrides together with a further species *A. rulei* and its variety *A. goldiana*. A synonym of *A. rulei* is *A. vanmertii*. This race of evergreen trees have contributed greatly to the New Zealand landscape, particularly in the North Island,

where the Norfolk Is. Pine is one of the most popular of all the urban exotic trees.

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*Macropiper excelsum*

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"The planting of a tree .... is a gift which you can make to posterity at almost no cost and with almost no trouble, and if the tree takes root it will far outlive the visible effort of any of your other actions, good or evil."

George Orwell  
(From an essay in  
"Tribune" April 1946)

# PROGRESS TOWARDS A N.Z. BOTANICAL SOCIETY

Over one thousand questionnaires were sent out to members of the botanical community in mid-1984 seeking views on the need for, and possible functions of, a national botanical society.

Three hundred and thirty-one questionnaires were returned - 32% of the total mailed out. The following results are derived from the 331 respondents:

- 290 (88%) see the need for a national botanical society
- 29 (9%) do not see the need
- 269 (81%) would join such a society
- 35 (11%) would not join.

Of the 8 given possible functions such a society might perform,

- 284 (86%) favoured publication of a newsletter
- 125 (38%) favoured annual meetings/conferences
- 163 (49%) favoured occasional meetings/conferences
- 150 (45%) favoured occasional field trips
- 72 (22%) favoured occasional social events
- 143 (43%) favoured the preceding three options combined
- 264 (80%) favoured presentation of submissions on legislation/ issues affecting New Zealand botany
- 270 (82%) favoured co-ordination of national projects, e.g. an atlas of the New Zealand flora.

Many took the trouble to offer additional comments, for which thanks are due. The most common were (i) the need for a professionally-based society, open to all; (ii) the need for effective liaison and co-operation with 'competing' societies and existing regional botanical societies; (iii) that there are already too many societies and too many annual meetings; (iv) that a general outlook should be maintained - covering the whole of botany; and (v) that organisation may eventually be able to follow the Ornithological Society. Support was particularly marked and enthusiastic from professional botanists and from amateurs in areas not served by existing regional botanical societies.

Meetings of interested botanists were called at both the SYSTANZ and Ecological Society conferences in August 1984. Although both meetings were small, a large majority of those present voted that 'we' (!) proceed towards the formation of a New Zealand Botanical Society.

There appears to be consensus that the publication of a Newsletter is the most desirable first step. Accordingly, it is hoped to produce two issues in 1985, at mid and end of year. Donations will be requested to cover the costs of 1985 Newsletters, which will be mailed to all those who responded indicating that they would join a national botanical society - and of course, to any others who would like to receive it. For 1986, a quarterly newsletter will be aimed at.

Some time during 1986, an inaugural meeting (one day symposium and AGM?) of the society will be held, probably attached to one of the major existing biological society meetings.

Thanks are due to all who returned their questionnaires, and for the many messages of support. Apologies are offered to those who received their questionnaires late (or not at all!). I welcome further suggestions, and contributions to the first newsletter, including notice of current events, informal research interests, people news, reports on field work, desiderata, new records etc. Whilst maintaining a high standard of presentation, it is hoped that the content will be relatively informal, informative, and interesting to read.

Anthony Wright  
Auckland Institute & Museum  
Private Bag  
AUCKLAND 1.

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### MY LITTLE NUT TREE

by Nutty Pooh

(Taken from Waikato Branch Newsletter of  
N.Z. Tree Crops Assn. Inc.)

I had a little nut tree, nothing would it bear,  
Not in Honikiwi, nothing grows out there.  
I took it to the Mafia to see what was the matter,  
They held a mini conference and after quite a natter,  
Decided that my nut tree was really half a pear.

They said this serious problem, at the owner's instigation,  
Required looking into - a complete investigation.  
They treated it with colchicine - whoever would have thought  
of it.  
True scientific sadism, they did it for the sport of it.

They said my little nut tree - I know it all sounds queer,  
Was the work of some new chappy, a genetic engineer,  
Who really knew his nut trees - 'twould fruit for sure next  
year.

Well, fruit it did, the size was good, the colour was exquisite.  
The taste was bloody horrible - that's not important is it?  
And people came from miles around to simply stand and stare,  
Upon a little nut tree which wasn't quite a pear.

The Minister of Tourism jumped up and down, ecstatic,  
"Your nut tree's got a future lad, of that I'm quite emphatic".  
The Queen of England's customs man came to visit me,  
And all for the sake of my little nut tree.

# A BRIEF CONCEPT OF THE MEANING OF HUSBANDRY

*Michael Edmund Eden*

*N.Z. Workers' Union*

(Paper given at Outlook Conference on Training & Education for the Horticultural Industry, Wellington 29-30 August, 1985)

From the distant times when part of mankind gradually moved towards permanent communities and abandoned the nomadic life, an essential to livelihood was the provision of permanent sustenance. This took the form of cultivated grains, roots, fruits berries and domesticated stock. In order not to exhaust the earth and thus to have to abandon permanent living quarters, roads, bridges, communal buildings and other facilities, a system was devised over the ages through experience, observation, expertise and trial and error which evolved into a relationship between man, the earth and the firmament. Many centuries later the Anglo-Saxon in his language very descriptively called this 'husbandry'.

As one whose ancestry traces back to pre-Norman England, and who learnt his farming in the Roodings of East Anglia, (possibly the best farmed land in W. Europe), I have possibly taken for granted that the principles of good husbandry were understood as the foundation upon which all agricultural and horticulture training should be based. Do we ourselves understand the implications of this somewhat outmoded word? I will try and explain further.

To begin, in the firmament we are able to observe through our own sight on a suitable night, the planets, stars, near galaxies etc, and reinforced by a telescope and further study of astronomy we can have a reasonable appreciation of something of the immensity and order of the Universe. Likewise we are able to study beneath our very feet the composition of a vast micro-cosmology, consisting of finely ground rocks of various types, pebbles, stones, clays, insects large and small (in their millions) and micro-bacteria (in their billions), together with air pockets, moisture, chemicals, humus and other co-related structures, which within our boundary fences (and sometimes beyond) be they enclose 10 hectares or 1000, we as farmers and fruitgrowers have literally the designated power of a god.

What we decide to clear, level, drain, cultivate, plant, sow, harvest, irrigate, spray, manure, burn-off, fence, etc. etc. will directly and often immediately affect the functions and life cycle of the structures and populations of the aforementioned micro-cosmology. Thus the Saxon word husbandry implied very aptly a relationship between man and the soil for a common good, a bond and commitment to cherish, nurture, make available, multiply, harvest, preserve, and distribute for the good of the family of man; and never the reverse to exploit, plunder, exhaust, neglect, abuse, rape, speculate or divorce.

Good husbandry must be seen as the highest principle in the practice of farming, and therefore an essential element in the



practice of farming, and therefore an essential element in the training of young farmers and horticulturists, for it is the practice wedded to the philosophy, and the science wedded to the morality; and we have a dire warning in the deserts and famines of the present age of those who do not comprehend its significance.

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## PLANT HUNTING EXPEDITIONS TO KASHMIR

In 1987 Mr Chris Chadwell, Freelance Botanist, shall be visiting New Zealand and Tasmania for 2½ months. He intends spending July in the North Island, and August in the South Island.

One of his aims is to promote the Himalayan expeditions and other activities. He hopes to book up as many Slide Shows/Lectures as possible. His talks are being well received by a wide range of audiences in the U.K. Mr Chadwell plans to book up on a lecture by lecture basis and shall err on the low side concerning a fee, to encourage a favourable response. The talks will also include the recently formed U.K. Herb Society.

Any groups who would like more information about Mr Chadwell's tour are asked to contact him direct.

Mr Chris Chadwell,  
Freelance Botanist,  
81 Parlaunt Road,  
Slough,  
Berks, SL3 8BE,  
England.

# THE ROLE OF THE TIMARU BOTANICAL GARDEN IN NATIVE PLANT CONSERVATION

The Timaru City Council Parks and Recreation Department's 'Statement of Mission, Philosophy, Goals and Policies' states as a long term goal "to develop and maintain a Botanical Garden as a feature of regional importance and use for South Canterbury as an educational institution in satisfying the needs of people".

The garden of the future will concentrate on interpreting the marvels of the plant kingdom and provide the maximum benefits for our patrons.

One of the listed "Aims" is to recognise the importance of New Zealand's incomparable flora and an "Objective" to place special emphasis on the cultivation of endangered plants in view of their critical place in the plant world, by providing plant displays both indoors and outdoors.

The specific policy for the role of the Timaru Botanical Garden in New Zealand endangered plant conservation is set out below.

1. To provide an alternative and complementary conservation effort to the natural functioning ecosystems.
2. To cultivate, propagate and disseminate endangered plants of the surrounding Botanical District as the first priority and those of other districts that can be successfully cultured as second priority.
3. To make seed or plants available for purposes of study, or re-establishment in the wild or to other holdings.
4. To record in detail plant data on source, status, culture, propagation and habitats.
5. To educate to a state of awareness, plant conservation by utilising resource data.
6. To assist and liaise with allied organisations whose role covers facets of the natural sites, protective legislation, herbarium collections and general documentation.
7. To report to the Nature Conservation Council and the Threatened Plants Committee of the Botanic Gardens Conservation Co-ordinating Body.

With 10% of the world's flora under threat, it is topical for emphasis to be placed on conservation matters.

The Timaru Botanical Garden is well placed to create an identity not duplicated to the same degree in other Botanical Gardens in New Zealand.

With this planning completed and agreed on the next step was

the Propagation of endangered plants.

### Propagation

The initial aim was set at propagating fifty plants of each species held. To date this has been achieved with ten species. This aim has since been refined to give priority to those plants listed with a triple star rating. These are plants recorded as being held by only one Botanical Garden or Institution in the world and in our case naturally those only held in Timaru.

The facilities used for propagation are basic and predominantly those that were already available to the Botanical Garden. In order to get the conservation programme underway, the decision was made to start by propagating by the simplest methods. This in itself has provided proof and the logic that endangered plants are not necessarily difficult to propagate.

A small 4m x 3m unheated glasshouse is used for this purpose with a back up unit of heated mist unit and weaner area also being used where necessary.

Frame space is provided for growing and holding plants.

Seed sowing was used and simple cuttings made. Where possible stem cuttings as well as tip cuttings were taken for the purpose of increasing stock as quickly as possible. Some of the plants resulting from stem cuttings were mishapen and unsuitable for specimens and these were used to provide further tip cuttings from the multiple growths.

### Plant Use

A stock bed has been established in a non-public area of the Botanical Garden. The general aim has been to hold plants in more than one place in order to reduce the chance of all plants of one collection or one variety being destroyed. The stock bed is naturally used for a seed and cutting source.

A display border has been established in the native plant section and to date some 22 specimens have been planted and labelled. The border itself is signposted as New Zealand Endangered Plants. After some eighteen months of growth it is pleasing to record that no vandalism has been experienced in the area.

*Hibiscus trionum* is also used in bedding displays.

The initial display, however, was placed in the public conservatory at the time of the official opening of the complex in December 1983. A compartment of the conservatory is set aside specifically for the display of endangered plants. It is heated sufficient to exclude the winter frosts and thus allows for the plants from northern New Zealand and the outlying islands. Three information boards within the compartment display data aimed at increasing public knowledge of the state of endangered plants in the plant world, of the categories of risk and the reasons of risk.

Plants have also been disposed of to interested colleagues or

sold to members of the public who have shown an interest.

### The Conservation Network Worldwide

The headquarters for the movement is the Kew based I.U.C.N. (International Union for Conservation of Nature and Natural Resources) Conservation Monitoring Centre. The Botanic Gardens Conservation Co-ordinating Body joins together approximately 250 botanic gardens around the world as an offshoot of the monitoring centre. A Threatened Plants Newsletter keeps members in contact.

The main thrust of the Body has been to find out which gardens are growing endangered plants and their source. Botanists and plant people have identified plants which are considered to be at risk and as each country is surveyed lists are sent out to each member botanic garden for annotation of plants held.

The results are collated in the form of "Botanic Garden Lists of Rare and Threatened Species of" each country. This lists each plant held by at least one garden and identifies this garden or gardens.

The information is also made available in the form of a computer list of "Conservation Plants at" each Botanic Garden along with their status and degree at which they are at risk and the number of other botanic gardens holding each plant.

While this Kew based effort is achieving admirable leadership and co-ordination, the co-ordination does not reduce the remoteness of New Zealand.

The International Association of Botanic Gardens decided in 1981 to adopt in principle the concept of regional organisations within the Association. In 1984 sufficient responses were received from Botanical Gardens in Australia and the South Pacific Region. The Canberra and Adelaide Botanic Gardens have liaised to produce a Newsletter which will open the way for closer communication and will include conservation matters.

On the New Zealand front a step forward was made in 1983 when the Nature Conservation Council decided to accept the role as the body to co-ordinate a programme to cultivate rare and endangered plants in Botanic Gardens and elsewhere.

The Botany Division of the D.S.I.R. and its personnel have played an active and catalytic role in plant conservation in New Zealand and a liaison with this group is enjoyed. Their efforts have centred on identifying the plants at risk, the documentation of plants in the wild and the reservation of areas and legislation for the protection of plant species.

### Spreading the Word

The story of plant conservation has been spread by the talks given to groups. Travels as far as to Dunedin and Christchurch are involved with many more closer to home. To date the groups addressed have been largely plant lovers but their knowledge of the subject has been minimal.

Articles have been written for various publications ranging from local newspapers to publication with worldwide distribution. The success of articles is difficult to gauge as feedback relies on the motivation of the reader. The written word, however, is a resource easily obtained as recall.

A display of plants and information was staged at the Oamaru Festival in 1984 and more displays are planned locally.

### The Future

Efforts in the future will include:-

- (1) The acquisition of further endangered plants.
- (2) The introduction of these to the public.
- (3) The development of displays in the Interpretive Centre.

It is pertinent to record that what has been achieved at the Timaru Botanical Garden in native plant conservation, has to date been at no greater cost than that expended on other specific plant collections.

The derelict Tea Kiosk in the Botanic Garden has been repaired and repainted and displays will now be assembled in what will be the Interpretive Centre for the Botanical Gardens.

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# **WELCOME: to the following new members**

Ashman Miss L.M.	Gisborne	Bowden D.B.P.	Tauranga
Clemow D.S.	Auckland	Fdgear S.M.	Tokoroa
Ellis J.M.	Turangi	Fabish Mr & Mrs B.	New Plymouth
Fabish S.	New Plymouth	Ferris L.A.	Gisborne
Garton D.R.	Auckland	Johnson R.	Whangarei
Macfarlane Mrs S.	Canterbury	Macpherson J.T.	Gisborne
Matthews Miss S.M.	Auckland	Napier Environment Centre	
Northland Community College		Parry P.B.	Raoul
Pellow Miss G.M.	Tuakau	Pitts A.C.	Auckland
Plant M.	Horowhenua	Prowse M.G.	Te Awamutu
Sedgwick Miss P.	Switzerland	Simpson Mrs J.L.	Auckland
Southon Miss S.A.	Auckland	Sutherland F.O.	Christchurch
Te Hau T.T.K.	Auckland	Tinsley R.J.	Napier
Williams C.H.	Auckland	Williams T.A.	Waitoa
Wolf Mrs B.V.	Dunedin		

# LOW COST ANNUALS

by D.K. McIntyre and A. Godkin

*(Horticultural Services Unit, Parks and Conservation Service,  
Department of Territories and Local Government, Canberra.)*

In recent years there has been a decline in the number of annuals being grown in display beds. The main reason for this has been cost, as the traditional methods of maintaining annual beds are very labour intensive.

In Canberra, areas formerly planted with annuals have been allowed to revert to grass or shrub beds. This has deprived the city of a lot of colour.

On analysis it was found that the maintenance tasks of watering, weeding and breaking up the surface of the soil was the major area of cost of annual beds. With this in mind we set about to find a method of growing annuals which would greatly reduce the cost, and possibly make it cheaper than grass to maintain.

A trial was set up in the spring of 1982 at the Horticultural Services Unit. The aim was to reduce or eliminate the labour component of various tasks as much as possible.

## MATERIALS AND METHODS

A bed of approximately 21 m x 2.5 m was filled with a sandy loam to a depth of about 230 mm and this was enriched by incorporating compost. The bed was rotary hoed twice.

Petunias were chosen for the trial because they grow quickly, are long lived, and give a good floral display.

The seedlings were purchased from a major nursery. They were potted on into 1.2 litre plastic bags. Potting on is not necessary but if a nursery is available it produces larger plants for planting out.

The petunias were grown on until they were about 100-120 mm in diameter and 50-70 mm high. They were planted out in early October, at a spacing of 250 mm between plants and 300 mm between rows. Plants were watered in with a hose.

## IRRIGATION SYSTEMS

A low volume irrigation system using Biwall was installed.

- a) Filter used was an Amaid 150 mesh with a flushing valve.
- b) Pressure reduction valve used was a Bermad pressure

regulator which is adjustable between 50-100 Kpa (7-14psi). The system was operated between 70-85 Kpa (10-12 psi).

- c) Manifold of 13 mm polyethylene pipe was used with T pieces every 300 mm to produce a Biwall line between each row of plants.

Each Biwall line had a self flushing valve at the end.

- d) Biwall is an extruded dual chamber linear discharge tube specially designed for row crops. Water flows through the main chamber and passes through inner orifices into the secondary smaller chamber. Each inner orifice in the main chamber serves four orifices in the outer chamber.

The water pressure is reduced as the water flows into the outer chamber. This allows for uniform water distribution and low emission rates over long distances.

The orifice size is very small, therefore great care is required during installation to prevent dirt entering the line.

In this trial Biwall was laid in shallow grooves made by the back of a rake on the surface of the soil and later covered with mulch.

Watering was done only when required. A two hour watering with the Biwall system was all that was necessary, during the whole period.

#### WEED CONTROL

The day after the Petunias were planted the whole bed was sprayed with Dacthal (Chlordalmethyl 50 per cent) at the rate of 1 g product per square metre dissolved in 250 mls of water. The bed was then watered for about 10 minutes to ensure that the Dacthal was incorporated into the soil.

The whole bed was then mulched with 13 mm fine bark (any fine mulch would be suitable). The mulch was spread about 50-75 mm thick.

Only two weeds grew in the plot, one in December and one in March.

#### FERTILISING

Three weeks after planting the plants were fertilised with Multigro (10N:4P:6K) fertiliser at a rate of 80 g/m<sup>2</sup>. This was placed just before a shower of rain. Overhead watering would have been used if it had not rained sufficiently. A second application of fertiliser was applied at the time of pruning.

At the end of January 1983, the plants were pruned with hedge clippers. About 100 mm was cut off the top of each plant.



## RESULTS

The growth of the Petunias was excellent and they flowered profusely. Because there was no overhead watering, damage to flowers was minimised. This flower damage is common when overhead watering is constantly used.

Flowering commenced in mid October and continued until early May. During that period weeding was not necessary.

The only labour used in seven and a half months was to turn the irrigation system on and off once a week and to carry out pruning and fertilising.

The cost of \$591 over 33 weeks for 53 sq. m. means that the cost of growing the annuals for that period was \$0.34 m<sup>2</sup>/week.

In Canberra maintaining prestige lawn areas, cut twice a week and fertilised regularly, costs about \$0.40 m<sup>2</sup>/week.

## CONCLUSIONS

When compared with the traditional methods of growing and maintaining annuals it can be seen the above method offers significant savings. The complete operation is no more expensive than maintaining prestige grass, and has the advantage that nearly all the work can be done in one operation, and from then on does not require constant maintenance.

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# CHRISTCHURCH BOTANIC GARDENS

## SUMMER BEDDING TRIALS 1984/85

The Canterbury District Council conducted a field day at which staff of the Botanic Gardens spoke. Some fifty cultivars of bedding plants were placed on trial. The plots are open to the public who may freely walk about the trial ground to view the new cultivars on display.

All the plants were sown from seed on 14 May 1984, and then planted out nearing the end of the following spring.

## RECORDINGS

Three separate recordings were carried out as not all cultivars flowered at the same time. The recordings were spaced out over three months for the purpose of one evaluation.

The recordings discussed assessment of plant height, spread, vigour, uniformity, colour, diameter of flowerheads, disease resistance and overall appearance.

The following page lists the cultivars under trial with the final evaluation appearance and height. Anyone wishing more details of the evaluation could write to the Christchurch Botanic Gardens.

	<u>Overall Appearance</u>	<u>Height</u> cm.	<u>Overall Appearance</u>	<u>Height</u> cm.
Ageratum 'Blue Blazer'	Very Good	15	Lobelia 'Colour Cascade	
'Blue Danube'	Excellent	14	Mixed'	Average
Alyssum 'Wonderland'	Very Good	7	Lupin 'Monarch Dwarf	Fair to Average
Antirrhinum 'Regal	Excellent	61	Mixed'	
Mixed'	Fair	26	Marigold 'Honey Sophia'	Average
Aster 'Type F Mixed'			'Scarlet Sophia'	Very Good
			'Space Age Mixture'	Fair
Carnation 'Scarlet	Very Good	44	Nicotiana 'Domino Mixture'	Excellent
Luminette'				
Dephinium 'Blue	Fair	68	Oenothera cheiranthifolia	Average
Fountain'				
Gazania 'Mini Star	Very Good	28	Petunia 'Pink Daddy'	Fair
Tangerine'			'Red Flash'	Average
			'White Flash'	Average
Geranium 'Rose Diamond'	Good	37	Rudbeckia 'Goldilocks'	Very Good
'Steady Red'	Fair	30		
Impatiens 'Super Elfin Pink'	Very Good	18	Salvia 'Laer Purple'	Excellent
" " Scarlet'	Average	20	'Coccinea'	Fair
" " Orange	Below Average	11	Schizanthus 'Star Parade'	Fair
" " Improved'			Sisyrinchium bellum	Not Impressive
" " Bright	Very Good	24	Venidium fastuosum	Poor
Eyes'			Verbena 'Trinidad'	Excellent
'Blitz Orange'	Very Good	30	'Petite Mixed'	Fair
'Parfait Mixed'	Good	26	'Showtime Blaze'	Excellent
'Twinkles Improved'	Good	29	'Showtime Mixed'	Very Good
'Grande Rose'	Excellent	28	'Derby Rose Pink'	Very Good
'Grande Orchid'	Very Good	30	'Large Flowered	Average
			Mixed'	
Kochia 'Acapulco Star'	Average	48		

## ORCHARD FEATURES IN HERITAGE PARK

New Zealand Heritage Park, the 12 hectare theme park complex currently under construction at Mount Wellington, near Auckland will feature an impressive orchard of fruit trees, kiwifruit, grapes, and other traditional horticulture of New Zealand.

The orchard area will become part of the Agriworld within New Zealand Heritage Park, and will be presented in a traditional way as one of New Zealand's natural attractions.

"The priority of the park is to present aspects of New Zealand horticulture as a modern, technology supported industry."

"We want to whet the appetite of our visitors so they will want to see and learn more." said Terry Beckett, Managing Director and the driving force behind New Zealand Heritage Park.

"Everything in the park will be authentic and this applies particularly in the horticulture area."

"We will have the full horticulture activities going on, such as pruning and fruit picking, and we will also have the facility for visitors to actually taste and sample fruit, and fruit juices derived from our own fruit."

The horticulture activity will be contained in a separate area within the park itself, and it will feature as an important part of a visit to the park.

More than 35 different varieties will be planted, highlighting New Zealand's best known product brands.

"In apples, for instance, we will have Gala, Red Delicious, Granny Smiths, and the full range. The same will apply in other fruits, too," said Mr Beckett.

New Zealand Heritage Park is a 12 hectare \$7,500,000 theme park being developed on a site in Harrison Road, off the Ellerslie-Panmure Highway.

The park is an exciting concept which breaks new ground in the tourist scene in New Zealand.

It is a true theme park which accurately portrays aspects of New Zealand life in an entertaining and enjoyable way.

The land was previously quarried by the Ministry of Works but has not been used for many years and the developers have transformed this wasteland into a landscaped oasis centred around a large lake.

The park is planned to be open seven days a week in the summer months, but will be closed for two days of the week during winter.

Staff numbers are expected to be 80-90 and visitor projections are for 400,000 people per year.

# STUDENT SECTION

## EDITORIAL

An early spring has arrived again with flashes of colour blooming forth from such perennials as various *Tulipa* and *Narcissus* cultivars, and strongly scented beauties like *Viburnum carlessi* and our own native *Persoonia toru*.

Along with plant life beginning their growth cycle so also do insects become more evident. Today the tendency is for integrated pest management which prevents the mass usage of chemical sprays. Remember many insects are in fact predators and parasites and should thus be looked upon as friends and not foes. For example eleven-spotted ladybird *Coccinella undecimpunctata* is a predator on several aphids *Aphis* spp. A minute black wasp *Litomastix maculata* parasitises the green looper *Chrysodeixis eriosoma* larvae.

All the best for examinations which are looming. A helpful guide booklet entitled 'T.C.I. Guide to Exam Success' will have been sent to you. Ensure you take time to read it.

In this bulletin there is an interesting and informative article on the topic of plant nomenclature - an important aid in the correct writing of botanical names which you will find helpful in your work as well as examinations. Also in this bulletin is an interesting book review on floriculture - a rapidly growing industry in New Zealand for local and export markets.

In today's world when it seems at times that man is causing the destruction of his environment, for example, the nuclear arms race, acid rain syndrome, it is good to take note of technological innovations that enable us to have a deeper understanding of how nature works. An example of this is seen in the realm of photography, which sees diversity from the instant snapshot of an attractive flower, through to the more intricate equipment taking time exposures allowing us the privilege of seeing nature 'come alive' right before our eyes. Thus a process which can take several hours, such as the opening of floral buds, or even several weeks, as in the life cycle of a moth, can be viewed within a matter of minutes. What a fascinating means of gaining a greater appreciation of life on this earth.

Kind regards,

Nick Owers.

# CONVENTIONS IN WRITING PLANT NAMES

Taken from

"Standard Common Names For Weeds In New Zealand"

Reproduced with permission from

The N.Z. Weed and Pest Control Society (Inc.).

When writing plant names in texts, lists, or on labels, it is recommended that the procedures outlined below be adopted.

## 1. BOTANICAL AND CULTIVAR NAMES

Two codes - "The International Code of Botanical Nomenclature" and "The International Code of Nomenclature for Cultivated Plants" - govern the application of botanical and cultivar names respectively.

### a) GENERIC, SPECIFIC AND LOWER CATEGORY NAMES

The generic or first botanical name, when used alone, or as the first name in a binomial is always written with an initial capital letter - e.g. *Avena*, *Brassica*, *Avena fatua*, *Brassica napus*.

The specific or second name in a binomial is always written with an initial small letter, irrespective of whether it is descriptive, commemorative of a person, or indicating the locality or country of origin - e.g. *Carduus nutans*, *Cortaderia richardii*, *Cotula maniototo*, *Festuca novae-zelandiae*.

A name in any category below species rank under the "International Code of Botanical Nomenclature" - e.g. subspecies (ssp.), variety (var.), form (f.) - is written with an initial small letter - e.g. *Avena sterilis* ssp. *ludoviciana*, *Datura stramonium* var. *tutula*, *Atriplex hortensis* f. *rubrum*.

Generic, specific or lower category names are underlined in manuscript or typescript. In printed text the names are usually set in italics type. However, such names are sometimes set in bold type to make them stand out from the rest of the text, or to be more legible in tabulations or on labels. This latter procedure has been adopted in the indexes in this publication.

The abbreviations for the categories, including species (sp.-singular, spp. -plural), are always in small letters, are never underlined, and are set in roman type in printed material - e.g. sp., spp., ssp., var., and f..

b) CULTIVAR NAMES

Cultivar names under the "International Code of Nomenclature of Cultivated Plants" give status below species rank to cultural entities. Latinized or in the vernacular, they follow the species name in a binomial. Cultivar names are distinguished by adding the abbreviation cv. before the cultivar name, or if the abbreviation is omitted, enclosing within single quotation marks - e.g. *Populus nigra* cv. *Italica*, *Populus nigra* 'Italica', *Lolium perenne* cv. Grasslands Kuanui, *Lolium perenne* 'Grasslands Ruanui'.

The abbreviation cv. is written in small letters, never underlined or italicized, and is set in roman type.

A cultivar name may be used with an established common name provided there is no likelihood of ambiguity - e.g. potato cv. Duke of York, potato 'Duke of York'.

c) ABBREVIATION OF GENERIC NAMES

Generic names in lists or texts may be abbreviated when several species belonging to the same genus are listed or cited, or there is repetition of the same species name. Only when the context makes it unambiguous should this be done. The generic name is spelled out in full for the first species listed on its first appearance in the text and is subsequently abbreviated to its initial capital letter followed by a full stop - e.g. *Carex buchananii*, *C. colensoi*, *C. comans*: *Oxalis articulata*, *O. corniculata*, *O. latifolia*.

d) NAMES OF FAMILIES AND MAJOR PLANT GROUPS

Names of plant families and major groups in the Plant Kingdom are written in manuscript or typescript with an initial capital letter, are not underlined and are set in roman type in printed material (e.g. Families - *Amaranthaceae*, *Polygonaceae*; Order - *Geraniales*; Division-Bryophyta). Family names are however usually set in capitals in tabulations and floras.

e) CITATION OF AUTHORS' (BOTANISTS') NAMES

Botanical names, are followed by one or several personal names, in full or if abbreviated, usually with final full stop - e.g. *Aciphylla ferox* Oliver, *Amaranthus powellii* S. Wats., *Datura stramonium* L. var. *tatula* L.

Authors' names always have an initial capital letter, are never underlined in manuscript or typescript, and should be set in roman type in printed material.

The personal name(s) after a specific or lower category name indicates the author(s) who first validly described the particular plant by that name. With a more complete knowledge of plant relationships, an author may decide that a particular plant would be more correctly placed within a different species or genus and formally publishes the change in status or position. The original author(s), in parentheses is then followed by that of the later author(s). For example, the well-known shepherd's purse was first described by Linnaeus in 1753 as *Thlaspi bursa-pastoris*: it was subsequently transferred to *Capsella* by Medicus in 1792, the correct citation becoming *Capsella bursa-pastoris* (L). Med.

Inclusion of authors' names is normal in floras and some technical publications since it makes for accuracy and clarity, but is not expected in semi-technical and popular publications as the implied accuracy could be misleading.

## 2. COMMON OR VERNACULAR NAMES

### a) COMMON NAMES IN LISTS AND TEXTS

In descriptive text, common names are written in small letters e.g. hemlock, ragwort, except when part of the name is a proper noun or adjective e.g. apple of Peru, Canadian pondweed, Cape tulip, Malta thistle. When a name begins a sentence an initial capital letter is necessary.

In tabulations, all common names are often given an initial capital letter since this gives a more pleasing appearance.

In printed material common names are normally set in roman type but are sometimes set in small capitals or other contrasting type to make them stand out. On commercial labels, common names are often printed in capitals: this is permissible as an aid to legibility.

### b) BOTANICAL NAMES USED AS COMMON NAMES

Botanical names adopted as common names are written with an initial small letter, are never underlined in manuscript or typescript, and in printed matter are set in roman type, never italicized. It is then a clear indication that the particular generic name or binomial combination is being used in the vernacular, not in the strict botanical sense - e.g. danthonia, liliium auratum, nassella tussock, phalaris, vulpia hair grass.



c) COMMON NAMES USED WITH BOTANICAL NAMES

In technical papers, botanical names are often used without common names: if the latter are used, they follow the botanical names. In non-technical or popular texts, the common name usually precedes the botanical name if the botanical name is used.

When a common name follows a botanical name, it is frequently enclosed in parentheses, with the same procedure being adopted when a botanical name follows a common name - e.g. *Conium maculatum* (hemlock); hemlock (*Conium maculatum*). A less frequently used alternative is to separate the two names by a comma - e.g. *Conium maculatum*, hemlock; hemlock, *Conium maculatum*.

Whichever practice is adopted is a matter of individual preference or the editorial policy of a particular publication.

GENERIC AND COMMON NAMES USED  
IN A GENERAL SENSE

In descriptive text a less precise name may be needed in a variety of circumstances. These include:

- when the exact identity of a species is not known;
- when several species of a genus cannot be separated;
- when itemizing a number of known species would not be convenient;
- when referring to a group of plants with some character in common.

Such uses cannot all be standardized but guidelines may lead to some uniformity of treatment and reduce the possibility of misunderstanding by readers.

- a) As stated earlier the generic name may be used followed by sp. when one species is involved or spp. when more than one species, e.g. *Solanum* sp.; *Solanum* spp.
- b) The generic name may be used as a noun in the singular or plural, e.g. a solanum, solanums; an oxalis, oxalises.
- c) A word included in the standard common name of a number of species in a genus may be used as a collective name e.g. a nightshade, nightshades for species of the genus *Solanum*.

More than one collective name may occur amongst species in a genus and each may be used in a general sense, e.g. a clover, clovers; a trefoil, trefoils in the genus *Trifolium*.

- d) In some genera the collective name is also the standard common name for one of the species, e.g. blackberry for *Rubus fruticosus*; broom for *Cytisus scoparius*; storks-bill for *Erodium cicutarium*. In these cases where one species is referred to in a general sense the indefinite article must be used to avoid confusion, e.g. a blackberry, blackberries; a broom, brooms; a storks-bill, storks-bills.
- e) The collective name is used for more than one genus of a family - e.g.: mayweed: widely used for white-rayed daisy-like plants in the genera *Anthemis* and *Matricaria*, family Compositae.

thistle: used in genera with prickly leaves or with prickly floral bracts, family Compositae.

cross: used in several genera of the family Brassicaceae. In this case addition of an adjective creates a collective name for a particular genus as for (c) above - e.g. yellow cross(es) for the genus *Rorippa*.

- f) The name is applied in genera belonging to different families, e.g. grass, lily, rush, tussock. e.g. arum lily - *Zantedeschia aethiopica*, family Araceae; Kaffir lily - *Schizostylis coccinea*, family Iridaceae; tiger lily - *Lilium tigrinum*, family Liliaceae.

Because names of this type are broad in their application their use can give only a general idea of plant identity. In descriptive text, grass-like plant(s), lily-like plant(s), must be used only in a broad, non-definitive sense.

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## DISEASE KILLING CANADA'S EMBLEM

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The maple, *Acer* spp., whose leaf is Canada's national emblem, is threatened by dieback. About 73 per cent of the stands studied so far have been affected by dieback, which involves slower growth, loss of bark and ultimately death.

The culprits: "Acid rain and air pollution have been retained as the most likely causes," says a report presented to a Canadian-U.S.A. acid rain conference in Quebec.

At the conference were representatives from seven Canadian provinces, 15 U.S. states, the Canadian government and the U.S. Environmental Protection Agency.

Jean Piette of the Quebec Environment Ministry said the fight against acid rain in all of Eastern Canada was increasing.

"All governments are working together to promote a clean-up programme which should bring us close to the objective of 20 kilograms per hectare per year (in acid deposits)," he said.

# BOOK REVIEW

'COMMERCIAL FLOWER GROWING'

by

John P. Salinger

Published by Butterworths Horticultural Books 1985

Price \$53

At the 1985 A.G.M. of the R.N.Z.I.H. the Examining Board announced in its annual report that an extra option, 'Floriculture', will be available in the near future for N.D.H. students.

This is significant in view of the increasing importance of the commercial production of cut flowers and foliage for local and overseas markets. The quality, quantity and variety of cut flowers in New Zealand has increased dramatically in recent years. Exports for the year ending June 30, 1985 topped \$10 million.

Skilled, qualified growers and staff are needed to produce flower crops for the highly competitive overseas markets.

Until the publication of this book there was no standard reference on floriculture in New Zealand.

Overseas information, mostly from Northern Hemisphere sources, was adapted with varying success. Our climate, soils and light conditions are different.

Production techniques for a variety of ornamental crops have gradually evolved here as a result of research, practical experience and observation. Information was scattered in Aglinks and as articles in various New Zealand horticultural publications.

Students, teachers, advisers and growers needed a concise, comprehensive reference book, based on New Zealand experience. John Salinger is well aware of the type of information required. As a Horticultural Advisory Officer, and then a Senior Lecturer in ornamentals at Massey University, he has worked with both students and growers for many years.

All aspects of cultivation and marketing of commercial flower crops are covered. The book is well presented, with a bibliography at the end of each chapter, and an excellent index, easy for quick reference.

'Commercial Flower Growing' is likely to be the standard New Zealand reference book on the subject for many decades, with revision from time to time to include the results of further research.

JOY AMOS.

# ORGANOPHOSPHATE PESTICIDES

## WHAT IS THE DANGER?

Organophosphate pesticides affect your nervous system.

They do this by reducing the level of an enzyme in your body - cholinesterase - which is vital for your nervous system to work properly.

Repeated small exposures to pesticide will continually reduce your level of cholinesterase. This is because once the level has been lowered it can take several weeks to get it back to normal again.

Thus, without warning symptoms, one additional small exposure could lower an already low level of cholinesterase to the danger point, resulting in poisoning.

THE SYMPTOMS OF POISONING include: dizziness, nausea, headache, muscle cramps, and excess salivation.

Severe poisoning results in difficulty in breathing, blurred vision, vomiting, diarrhoea, a slow pulse rate, coma and death.

## LIST OF ORGANOPHOSPHATE PESTICIDES

Most are insecticides.

These are some common brand names:

Orthene	Dansanit 10G
Gusathion	Malathion
Nexion 40	Supracide
Trithion	Phosdrin
Lorsban	Gramothion
Metasystox	Dibrom
Dyzol	Folimat
Gesapon	Folidol
DDVP	Thimet
Vapona	Imidan
Rogor	Tokuthion
Disyston	Afugan
Ekamet	Ekatin
Nemacur	Dipterex
Verthion	Lipidex
Basudin	Nuvan
Dyvos	Tamaron

IF YOU USE ANY OF THESE FOR MORE THAN 30 HOURS A MONTH, YOU SHOULD HAVE BLOOD TESTS REGULARLY.

## SOURCES OF FURTHER INFORMATION

Precautions and protective clothing - local offices of the Department of Health and the Ministry of Agriculture and Fisheries. The Department of Labour may be of help too.

# ORGANOPHOSPHATE EXPOSURE AND CHOLINESTERASE MONITORING

*By S.D. GEE  
Medical Officer  
Health Department*

Organophosphate (and carbamate) pesticides work by blocking the transmission of impulses between motor nerves and muscles, thus inducing paralysis. Relatively low doses are lethal to insects, but larger animals, including humans, are more resistant because of their size and biochemical complexity. Humans are affected if large doses are taken; for example, by ingestion, or, in the case of organophosphates, if there is repeated exposure to even relatively small concentrations. The effects of organophosphate exposure are cumulative, one dose having an effect for 4-6 weeks, thus making it possible for a relatively small additional dose to produce disproportionately severe symptoms. The symptoms of organophosphate poisoning are various and can consist of different degrees of visual disturbance, respiratory difficulty and gastro-intestinal hyperactivity. Symptoms are maximal 2-8 hours after exposure and can vary in severity from mild anxiety to coma and death.

Biochemically, organophosphates lead to muscular paralysis by combining with the inactivating acetylcholinesterase, the enzyme which breaks down acetylcholine (the substance which transmits the impulse between the nerve and muscle). Fortunately, the human body has considerable reserves of acetylcholinesterase and these need to be depleted before symptoms are evident. It is possible to gain an indication of these reserves using biochemical tests for acetylcholine activity. To complicate matters however, in the human body acetylcholine serves many purposes and has several sources. A degree of caution is therefore needed when interpreting the results.

The current test from Christchurch Hospital gives red cell and plasma cholinesterase activity. Variance in the baseline of plasma cholinesterase activity often reflects genetic factors. This is important to consider in situations such as anaesthesia because individuals with low plasma cholinesterase levels may react adversely to muscle relaxants. When plasma cholinesterase activity is low, further tests are often carried out to elucidate genetic factors.

The activity of most (but not all) organophosphates, is reflected by changes in the red cell enzyme, and so, in the first instance, it is this enzyme which should be monitored. If the individual intends to work with organophosphates for more than 30 hours per month he should have two baseline levels taken, and thereafter have monthly tests for as long as he works with organophosphates.

Baseline levels should be taken after 60 days free of exposure between 3 and 14 days apart. If levels differ by more than 15 percent, another sample should be taken, otherwise the average should be used. The monitoring test is within normal limits if it is greater than 80 percent of the baseline. If less than 60 percent the worker should be suspended and examined. Workers with monitoring levels between 60 percent and 80 percent of that baseline should be suspended if they exhibit symptoms. All tests below 80 percent should be repeated and the work procedures of the workers checked out. Symptomatic pesticide poisoning, or workers showing less than 60 percent of baseline cholinesterase activity should be notified to District Office.

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## STARVING FRUIT TREES OF WATER

### BOOSTS YIELD

Australian orchardists are starving their trees of water and getting 20 per cent more production along with smaller, more manageable trees.

The method, called controlled deficit irrigation, which involves starving deciduous trees of irrigation water during the spring, is being used in most orchards in the Goulburn Valley in northern Victoria, the centre of Australia's fruit canning industry.

It was developed by the state's department of agriculture and its director of irrigation research, Dr David Chalmers, and produces smaller trees that require less water and less pruning while yielding more fruit.

According to an Australian Government agricultural newsletter, the unconventional concept works by suppressing cell growth during spring vegetation growth, while encouraging fruit growth in summer.

Dr Chalmers's experiments in trickle-irrigated, high-density orchards showed that regulated deficit irrigation offered 20 per cent more production from 20 per cent less water.

# THE PRODUCTION OF EUCALYPTS *EUCALYPTUS* SPP IN NEW ZEALAND

The following is the first part of a two-part article.

Eucalypts *Eucalyptus* spp. are a fast growing genus native to Australia and are used in home gardens and amenity horticulture for a quick impact on the landscape.

In addition to these uses, selected *Eucalyptus* species are becoming valuable trees in afforestations in New Zealand.

A number of *Eucalyptus* spp. were successfully established as part of the afforestation effort of the early 1900s. The choice of species was generally unsatisfactory so that expectations of timber production were not realised. Insect damage greatly reduced tree growth and even eliminated some species. A few species grew well, untroubled by insects, and have demonstrated their potential as yielders of quality sawlogs and veneer logs, and as a source of short-fibred pulpwood.

During the past 5 years there has been a marked increase in the area planted in eucalypts, with a major private forest company establishing a considerable pulpwood resource. Not all planters of eucalypts have achieved this degree of success and it is timely to reassert the requirements for successful eucalypt establishment as determined after several years' experience at the Forest Research Institute (F.R.I.).

The three main facets of successful establishment are species choice and site selection, the provision of good quality nursery stock, and care at planting. Although these aspects are considered separately, success is dependent on all three.

## SPECIES AND SITE SELECTION

There is no single eucalypt species suited to the wide range of sites on which *Pinus radiata* will grow. Thus for eucalypts it is important to match the species for a district to the general conditions of climate and topography. The species covered are the main ones considered for growing to produce timber for a wide range of special uses.

As a general guide, the best growth will be obtained on the best sites while poor results will occur on areas with poor drainage, cold air ponding or subject to exposure from strong winds.

Site requirements for individual *Eucalyptus* spp.

E. saligna

Of the eucalypts with potential for plantation establishment *E. saligna* would be the best represented by existing plantings and as a consequence the site requirements should be easy to determine.

The major climatic restriction is temperature with death of seedlings occurring below  $-6^{\circ}\text{C}$ . Older trees can take lower temperature but growth rates are lower in cold climates even though survival may be adequate.

Although *E. saligna* will tolerate some exposure, on sites subject to strong winds growth is reduced and the trees malformed resulting from stem and branch breakage.

In most areas warm enough for good growth, rainfall is unlikely to be limiting.

Soil type does not appear to restrict suitable sites provided depth and drainage are adequate, with good growth on alluvial soils, sand (Matakana Island) and volcanic ash. On the phosphate deficient clays of Northland and Coromandel growth is still satisfactory although *E. pilularis* and *E. muellerana* may perform better.

Altitudinal limits are difficult to define as factors such as exposure or cold air ponding may limit growth. With adequate shelter and air drainage good growth is possible at elevations up to 250 m in the North Island.

E. regnans

This species is essentially one for cool climates and rolling or hill country. Although good specimens occur in the Waikato, elsewhere flat areas are too cold or receive insufficient rainfall to support good growth. Frost sensitivity and establishment problems have affected the success of past plantings. Where it has succeeded *E. regnans* has, in the majority of instances, greatly exceeded the growth of other species.

The major limitation to the species is sensitivity to frost with young trees killed at temperatures colder than  $-8^{\circ}\text{C}$ . Seed origin has a marked influence on cold tolerance and accounts for some of the variation in success in the past. A rainfall greater than 800 mm per annum is required for good growth although irrigation can extend the range of the species in low rainfall areas.

Although intolerant of salt winds the species can tolerate more exposed conditions than *E. saligna*. The pumice soils of the central North Island appear ideal for this species but good growth occurs on a wide range of types including Waikato peat, loess soils in both Islands, sedimentaries, and clays.

Of the likely commercial species, *E. regnans* would have the greater potential area available for planting in New Zealand although lack of representation in several districts makes a strict definition of suitable sites difficult. Good survival



and growth has been achieved at elevations of 600 m in the central North Island, on sites with good air drainage, but the altitudinal limit would be far lower in Southland, probably down to 300 m. In many districts the lower altitudes suited to the species overlap with *E. saligna*.

Thus, most sites below the upper altitudinal limits, with adequate rainfall, good cold air drainage, shelter from salt winds, and reasonable fertility, should grow good *E. regnans*. The exception would appear at this stage to be Northland and Coromandel where winter temperatures may be too warm, although there may be provenances that will succeed in warm climates.

#### *E. delegatensis*

*E. delegatensis* has been planted over much of the country but long term success is limited to relatively few areas. As a young tree growth it is very good but in many cases early success is followed by growth stagnation and the death of some or all trees. In many cases the reasons for failure are unclear but a combination of climatic stress, disease and mis-siting are probably to blame.

The relative ease of raising nursery stock of this species and establishing it in the field has meant that it has been planted in situations where other eucalypts could have succeeded better. Future plantings of this species should be confined to those localities where the species has performed well and shown sustained vigour. These localities are the elevated areas of the North Island (good examples are growing on the Kaingaroa Plain and at Raurimu and Karioi) Nelson and Southland. On the West Coast of the South Island there are examples of good growth in younger plantings.

#### *E. fastigata*

The main concentration of this species is in the North Island and site preferences are similar to *E. regnans* but with an ability to withstand somewhat colder conditions. Recent species trials have confirmed this greater frost tolerance.

Although a vigorous grower it is not a preferred species for timber production because of the occurrence of large branches and a high incidence of gum vein. If a satisfactory method of pruning is developed this species could have greater potential for timber production.

#### *E. botryoides*

General requirements for this species are similar to *E. saligna* but it would not be planted where the latter could grow well. The special attributes generally accorded to *E. botryoides* are an ability to withstand salt winds and poor drainage not exhibited by *E. saligna*. The reason it is not more widely planted is the poorer form and heavier branches by comparison to *E. saligna*. These latter characteristics are correlated with the extent of apparent hybridisation between *E. botryoides* and *E. saligna* with the best "botryoides" exhibiting capsule

characteristic and bark type more akin to *E. saligna*.

*E. obliqua*

This species poses difficulties in the allocation of suitable sites. This is because of the high incidence of branch defects even in well stocked stands, the development of epicormic growths and the extreme variation in form and vigour observed throughout the country. It is the most dense and durable of the Ash group with a lower incidence of collapse than *E. regnan* or *E. delegatensis*.

In general, sites are similar to *E. regnans* but with a lower frost resistance and an extension on to warmer (North Auckland) and drier sites. It is for the latter reason that it has often been recommended for planting on the east coast low rainfall areas of both Islands.

Thus *E. obliqua* would probably fill the role of a farm tree for those districts where cold restricts the growth of species such as *E. pilularis* or *E. muellerana*.

*E. nitens*

It is only within the last 10 years that this species has been planted in any numbers in New Zealand and so far the long term potential is hard to judge. Early growth over a range of localities has been spectacular.

Further experience with the species will be required before its true potential is known.

Also to be determined is the long term effect of *Paropsis charybdis* (eucalypt tortoise beetle) attack on growth and form.

Eucalypt species with timber not generally suited to decorative uses but highly regarded for strength and natural durability are:-

*E. muellerana*, *E. pilularis* and *E. globoidea*.

These species would most likely be grown to produce durable construction and fencing timber. In general similar sites to *E. saligna* are required for good growth with *E. pilularis* the least frost resistant and *E. globoidea* the most.

Other species of potential timber value but untried at present are:

*E. sieberi*: similar to *E. regnans* and *E. fastigata* in growth and site requirements.

*E. fraxinoides*: is being grown in New Zealand by some local catchment boards for erosion control. Similar in site requirements to *E. fastigata* and *E. delegatensis*.

*E. oreades*: similar in site requirements and growth to *E. delegatensis*

# POPPY CULTURE IN TASMANIA

By B.H. Hye-Wyatt

Senior Weeds Agronomist  
Tasmanian Department of Agriculture

The opium poppy, *Papaver somniferum* L. is the source for a range of alkaloid products of which codeine, the principal constituent of many painkillers, is the most widely used.

Tasmania has a number of distinct advantages as the base for the industry. First, the traditional vegetable-growing areas of its North West Coast have deep, superbly structured, krasnozem soils which are ideal for the crop. Irrigation is available on many properties, while the vegetable growers form a cadre of farmers with experience in growing high value annual crops and in using pesticides.

The major problem inhibiting development was weed control. The seedling poppy is a small, weak plant, highly susceptible to competition from the vigorous broadleaf weeds such as Wild Radish (*Raphanus raphanistrum* L.), Wild Turnip (*Brassica rapa campestris* L.), Shepherd's Purse (*Capsella bursa-pastoris* (L.) Medic.) and Fat Hen (*Chenopodium album* L.) which grow abundantly in the areas where the crop was first introduced.

The poppy proved to be susceptible to all the herbicides then available for broadleaf weed control. It was not until a break through was made by Brasil Baldwin, who discovered that the crop could tolerate a mixture of nitrofen plus a low rate of diquat, that broad-acre production on a commercial scale became a possibility.

The development and introduction of effective weed control programmes has been far from simple and straight forward. It has been found that mixtures of materials are generally necessary, and frequently two sequential applications of different mixtures have to be used. Application timing is often critical.

A further complication is the progressive change in the composition of the weed populations, which has almost certainly resulted from the high level of herbicide use in the cropping areas. Twenty years ago the dominant species were the Crucifers and Fat Hen. These have now been at least partially replaced by Chickweeds (*Stellaria* and *Cerastium* spp.), Polygonums (*Polygonum* spp.), Plantains (*Plantago* spp.), Fumitories (*Fumaria* spp.) and odd hard-to-kill species like Scarlet Pimpernell (*Anagallis arvensis* L.).

One spin-off from the development of the poppy industry with its need for precision application of pesticides has been a marked improvement in the standard of herbicide spraying and in the quality of the spray machinery used.

Many properties are now equipped with modern machinery. There is a far wider awareness in the farming community of the importance of accurate application and an acceptance of modern innovations in equipment.

The evolution of the modern efficient poppy industry has involved many fields of research and development over a quarter of a century, and is still continuing. From a crop which, in the early days, was a distinct gamble, poppy growing has progressed to the stage where it is an efficient and profitable enterprise which makes a considerable contribution to the economy of the farming industry and the State as a whole.

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## PHOSPHATE NEEDS OF WOODY PLANTS

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New Zealand soils tend to fix phosphates in insoluble forms, thus rendering such materials unavailable to plants. Because of this we have a habit of using superphosphate regularly as part of our fertiliser programmes.

Soil-less growing media do not fix phosphates in this way and consequently any phosphate present tends to remain available to the plants.

Partly for this reason the amount of phosphate required in a soil-less mix is less than would be required in a soil media. Slow-release fertilisers such as Osmocote and Nutricote provide low levels of phosphates, although many growers supplement this by adding superphosphate to their growing media.

Some woody plants, particularly members of the Proteaceae do not tolerate higher levels of phosphate, and so there has been a move away from adding superphosphate to the media. Generally the indications have been that the phosphate released from the slow release fertiliser has been adequate.

Trials carried out in 1984 with several woody plant species showed that, with one exception, this has been true. The exception is *Daphne odora* 'Rubra'. When superphosphate was added to the medium (1kg/cu m) growth rate was nearly double that of plants where no superphosphate was added. In some other cases response to superphosphate has been shown to be due to the sulphur contained in the superphosphate, but these trials showed that this was not the case in the response by *Daphne*.

Nurserymen growing *Daphne odora* 'Rubra' in soil-less media should either add superphosphate to the medium when it is prepared or, preferably apply a topdressing of superphosphate to the containers in which the plants are growing.

# TALL LOBELIAS

by Hugh Redgrove  
on behalf of the N.Z. Nurserymen Association

Most of us think of lobelias as dwarf bedding plants which we enjoy for their vivid blue flowers, or perhaps we use the trailing forms in hanging baskets or cascading down a wall, but there are a number of taller kinds that are perennial and hardy throughout the country.

The brilliant scarlet spikes of *Lobelia* Queen Victoria begin to open sometime in January and the display will continue for quite two months if spent flowers are cut to prevent seed forming. The plants are often set out in mixed borders of annuals and perennials and the dark purple foliage adds considerably to the eye appeal.

There are several other species and cultivars in the family all worth growing but much less well known. They all like fairly moist soil and apart from very dry seaside gardens it is not difficult nowadays to install watering systems to provide this. And allowing for our generous rainfall in most areas the cost need not be high because the need for additional moisture need never be more than twice a week even in drought periods. And the clockwork time clocks help tremendously.

The easiest tall lobelia is the blue *L. siphilitica* and in some gardens this vigorous plant will produce many seedlings. It grows about 60 to 90 cm and when the main spike has finished flowering it should be removed promptly so that side shoots may develop and flower. There is an albino form which turns up occasionally but must be propagated by division so that there are never many around. But it is very pure white and when planted among the blues, their colour seems to be intensified.

*Lobelia vordrariensis* is said to be a hybrid, but it breeds true from seed, having longer leaves that are not serrated on the edges and tall spikes that may reach 1.5m if there is plenty of moisture about. The flowers are from violet blue to purple and are rather larger than those mentioned previously. In a mixed planting I like the additional height that this plant provides.

Even more vigorous is a new variety raised by Mr Bernie Hollard of Kaponaa, whose garden is known to many for its rhododendrons.

The new cultivar has spikes of rich pink without any trace of purple, and it has larger, wider leaves than many others. It is very vigorous and produces many secondary spikes. It has been named 'Flamingo' but I have never seen any of those handsome birds with such deep colouring. But 'Flamingo' is a must for anyone keen on perennial plants.

As these plants are surface rooting the soil should be enriched with plenty of compost, and my experience is that a ground cover of *Parochetus communis* will thrive and its foliage shades the ground, keeping in the moisture. This *parochetus*

has clover-like leaves and brilliant blue peashaped flowers from autumn till spring. Although it spreads fast, there are no difficulties about controlling it.

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## DOING THINGS ON A LARGE SCALE . . .

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An article in the January issue of American Nurseryman tells of the Monrovia Nursery, California, which claims to be the biggest wholesale nursery in the world.

Some statistics: 600-800 employees depending on season; 600 acres producing more than 17 million plants per year; sales of around US\$35 million.

About 1,000 plant types are produced, 200 experimentally. An interesting point is that the nursery always includes some soil in its mixes, saying it helps plant quality by holding nutrients better and not drying out so quickly. The nursery's 'general mix' has about 30 percent native soil and 70 percent soil compost, to which minerals and nutrients are added.

Eighty percent of the nursery's plants are propagated from cuttings and it has begun 'direct sticking' some cuttings that root easily into flats filled with peat and perlite. Although this takes more room, says the article, it eliminates the potting process.



Toru

*Persoonia toru*

(Proteaceae)

Country of origin - New  
Zealand

Method of propagation -  
seed

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