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Horticulture

in New Zealand

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



HORTICULTURE

IN NEW ZEALAND



BULLETIN OF THE ROYAL N.Z. INSTITUTE OF HORTICULTURE
NUMBER 9, SPRING 1978

In this issue

Further Views on N.D.H. Modifications	T.M.Morrison	1
Letters to the Editor		2
Trees Can Live With It!	J.O.Taylor	5
Choke, a Disease of Grasses caused by <i>Epichloe typhina</i>	J.Hedley and M.Braithwaite	6
Gardens in China	Margery Houston	10
N.D.H. Modifications	T.M.Morrison	12
<i>Cortaderia</i>		13
Tree Feeding		14
Conference	T.M.Morrison	16
Know Your Conifers - 5	M.B. Thomas	17
Edible Weeds	K.F. Millar	22
Identification of Turfgrasses by Vegetative Characteristics	D.E. Aldous	27
Know Your Turfgrass - 1	D.E. Aldous	30
District News		32

Cover design by Julie Thomas

ROYAL NEW ZEALAND INSTITUTE OF HORTICULTURE (INC.)

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The Editor welcomes articles, letters and news items for consideration for publication. Deadline dates for material are: Autumn issue, February 20; Winter, May 20; Spring, August 20; Summer, October 20. Contributions should be addressed to the Editor, P.O. Box 12, Lincoln College. Views expressed in the Bulletin are not necessarily those of R.N.Z.I.H.

Further Views on N.D.H. Modifications

T.M. MORRISON

There are half a dozen crucial arguments for the change in the National Diploma.

1. That many students are unable to complete the thesis and therefore have no reward for years of study and effort.
2. There are insufficient numbers of N.D.H. in the industry to have a very significant impact on it. While the quality is high, the impact is low.
3. We are placing far too much importance on the thesis. It remains as the principal barrier to receiving a qualification or nothing. I firmly believe that to make it an adjunct to a qualification would reduce its status to an acceptable level. It seems to me to vastly over-rate it when it is allowed to prevent a reward for a minimum of five years but an average of probably eight years of study and effort.
4. At present the examiners are very hard put to fail theses which they know are not up to standard. It is very hard indeed to turn down a student that you know will receive no reward at all for a failure and therefore his previous years of work have gone for nothing.
5. The combined tertiary education institutions in Christchurch have recently come up with a formula for accrediting titles of academic qualifications. This at present is simply a local exercise but could expand to a national formula in time. Australia already operates under an accrediting system. Briefly this states that a certificate may be granted to any course from a weekend seminar to a preferred maximum of one year's full-time study. A Higher Certificate would range from one to two year's full-time study after sixth form. A Diploma would include courses of 2-3 year's full-time study, or its equivalent, after the sixth form. An advanced diploma would require a further minimum of one year's full-time study. Thus to classify the N.D.H. written and practical examinations as Higher Certificate is to significantly under-rate the level of attainment and prejudice the qualification in salary negotiations.
6. The re-classification of our award as a diploma with honours will equate it more closely with degree status and should assist us in salary negotiations.

Letters to the Editor

New RNZIH Diploma

Dear Sir,

Your Editorial in Bulletin No. 8 concerning the recognition of those who have not completed the full syllabus of the N.D.H. examinations I cannot let pass without comment.

I am quite incredulous that the suggestion of awarding such people any form of recognition should emanate from the Examining Board and equally incredulous that the subject should command what appears to be sympathetic Editorial comment.

The fact that the people referred to choose not to complete the examination syllabus is surely their personal decision and if they now feel the need to support whatever prominent position they occupy in Horticulture with completed educational qualifications, then it is entirely over to them to knuckle down and complete the necessary units. I note on Page 24 of the Bulletin that the age of a recent student enrolment is 68 years.

If a person of this age is prepared to start on an N.D.H., it surely is not asking too much of a much younger person to complete one or two units.

The further suggestion that an Honours N.D.H. be awarded on completion of a Thesis is also quite unacceptable for such an award would surely indicate the attainment of Honours level throughout the examinations and not merely the passing of the Thesis requirement. It would be possible for a student to scrape through with minimum pass levels and failures along the way, to end up with an N.D.H. (Honours).

It is not merely because of fear of downgrading the existing N.D.H. that I write, it is also a fear of betrayal by the Institute of all those students who have worked hard to obtain their qualifications and are justifiably proud of their achievement. I sincerely hope that thoughts such as those you have expressed are merely provocative comments and do not reflect any serious intentions on the part of the Examining Board.

Yours sincerely,
E.H. LATIMER
Director, Cornwall Park

More Guidance Needed

Dear Sir,

The thesis requirements for the N.D.H. should not be removed. Other alternatives could be available. A more positive approach could be taken by the RNZIH towards students who are about to begin the thesis.

In most cases no formal tuition is received from T.C.I. after a student has completed the third year of examinations, at which stage the student receives the National Certificate of Horticulture. The student then passes the fourth year's examinations, and then embarks on the thesis. At this stage the student must be capable of doing the thesis, or he would not have passed the examinations so far. However, many students are daunted by this task, as they have no idea of how to start or go about producing a thesis that may take a number of years.

It is at this stage that students must receive more guidance. The N.Z.C.S., a similar qualification, provides the alternative of a block course of three months' intensive training in the final year. I am not suggesting that RNZIH students need a three month course, but they would benefit from even one or two weeks of intensive study such as those at Lincoln to begin a literature review, etc.

The thesis is a major undertaking. In my own case it has taken three years to complete. There are others who have taken longer. There is still a large number of areas of research in horticulture in which N.D.H. students in particular can excel.

At present the N.D.H. qualification is highly regarded. To reduce the input into the same qualification by removing the thesis requirement, which for some is the equivalent of the four years of examinations, is to reduce its value severely. What qualification will then replace it? It is surely better to encourage and guide students undertaking the thesis by whatever options may be available.

Yours sincerely,
R.A. EDWARDS.

Common Ash

Dear Sir,

For comparison with the common ash (*Fraxinus excelsior*) at Dunsandel (Horticulture 8 Winter 1978 p.3) you may like to have details of a tree of the same species at Dunedin which though planted about 30 years later, almost equals the size of that 105 year old tree.

The Dunedin tree is part of a planting made on a steep face below High St., between the Exchange and Mornington by Watson Shennan, a pioneer Central Otago runholder. Early photographs make it clear that the trees are no older than the house which he completed there for his retirement in 1903. They are thus about 75 years old. All have thrived but the ash is quite the largest. Its height is 24 m, its spread about 16 m and its trunk has a d.b.h. of 0.86 m giving it a circumference of 2.7 m. As the circumference is so close to the Dunsandel tree (2.82 m), presumably the Dunedin tree makes up in height for its lack of spread.

It would be interesting to know if any ash in New Zealand has grown faster than this one.

The accompanying trees are mostly copper beech (*Fagus sylvatica cuprea*) ranging in height from 12 m to 20 m and in diameter from 0.41 m to 0.55 m. But an English elm (*Ulmus procera*) 21 m high and 0.71 m in diameter is the next largest tree.

Yours sincerely,
G.T.S. BAYLIS
Professor of Botany, Otago University.

Request for Seeds

The Institute has been contacted by a firm of Importers from the United States who are interested in importing seeds of indigenous N.Z. Flora.

They are interested in importing seeds of native trees, shrubs, insectivorous plants, flowers etc. as well as spores of ferns and tree ferns.

They would like interested exporters to contact them directly, including information on which months of the year seeds and fern spores are available, quantity discount, information, and shipping weight information, if possible, for heavy seeds such as those of palms.

If you can help, please contact,

Mr. William J. Beckwith,
P.O. Box 81097,
Cleveland, Ohio 44181,
U.S.A.

"Man's spirit cannot be shut off from Nature and from beauty unless civilisation is prepared to pay a bitter price."

- Orville Freeman.

Trees Can Live With It!

J.O. TAYLOR

Nine years ago (by annual ring count), a nail was driven into this branch of an oak, for what reason no one will ever know.

The tree was healthy and vigorous, and shrugged off the injury by growing over the intrusion and absorbing it into its woody tissue.

The branch continued its upward growth until it met up with some power lines. The electricity authorities saw fit to remove the offending branch before the wires were absorbed into its evergrowing canopy.

Chainsaws are fast and vicious. But this chainsaw laboured and screeched until finally the branch dropped to the ground. The heat generated by the friction was sufficient to blacken the wood surrounding the nail, and the operator exclaimed:

"That's one in a million - I've cut a nail lengthwise clean down the middle!"

There must be thousands of trees around New Zealand concealing all sorts of swallowed articles from nails to wire to concrete. But this one must surely take the cake!



Choke, a Disease of Grasses Caused by *Epichloe typhina* (Pers.) Tul.

J. HEDLEY and M. BRAITHWAITE

Plant Health Diagnostic Station, Ministry of Agriculture and Fisheries, Lincoln.

In December 1975 a disease called choke which can affect many grasses was identified on an ornamental grass, *Festuca glauca*. It was found on *F. glauca* first in mid Canterbury then later in north and south Canterbury and Southland.

This paper is written with the aim of providing some background information on the disease to aid diagnosis and to suggest some possible control measures.

Symptoms

The symptom by which choke is easily recognised is the production of a stroma on the inflorescence of the host. This takes the form of a cylindrical sheath of fungal tissue covering part or all of the inflorescence, thus affecting the development of the seed head. Infected heads of *F. glauca* seem to be incomplete and contain few, if any, seeds. The stroma is at first white to cream in colour, changing to orange then to brown or black as it weathers.

The production of the stroma on the inflorescence is the only clear symptom of infection. Infected plants may or may not have an unthrifty appearance. If debility is observed it may have been caused by factors other than the presence of choke. Hence the detection of infected plants can be difficult, made more so by the fact that infection may be latent and stroma production not occur until several years after initial infection.

The Pathogen

The disease is caused by the fungus *Epichloe typhina*. The vegetative mycelium of the pathogen is completely internal or systemic in an infected plant, and will invade all parts of the host except the root. The fungus normally has two fruiting stages:

- i. The asexual spores (conidia) are produced on the white stroma around the inflorescence. These one celled microscopic colourless spores are spread around by wind and water splash.
- ii. The windborne sexual spores (ascospores) are produced at a later stage in flask-shaped fruiting structures (perithecia), which are embedded in the stroma. The production of perithecia causes the colour of the stroma to become orange. However, this stage has not as yet been observed in the specimens examined in this laboratory.

Transmission.

Ornamental grasses -

In the nursery production of ornamental grasses, physical division of plants is the normal method of asexual propagation. Because of this and the fact that mycelium of choke invades the vegetative parts of infected plants, transmission of the fungus takes place easily.

Agricultural and amenity grasses -

As the fungus can invade the floral organs it can be present as internal infection of the seed. This has been shown to occur with *Festuca rubra* (Sampson 1933) and probably takes place with other species. Seed contamination, in the form of mycelium on the surface of the seed, can also occur and could be more common than internal infection.

Webster and Cavett (1959) found that infection could occur directly from spores under certain circumstances. Under appropriate moisture and temperature conditions germinating spores, ascospores and conidia were capable of causing infection on cut plants of cocksfoot.

However, it is likely that direct spore infection is less important than seed transmission in the infection of agricultural pastures and amenity turf.

It is of interest to note that a systemic fungus similar in spore description to *E. typhina* has been recorded in New Zealand. Neill (1941) described a fungus found in tall fescue (*Festuca arundinacea*) and meadow fescue (*F. pratensis* syn. *F. elatior*) as strongly resembling *E. typhina*. Accurate diagnosis of the disease remains uncertain as none of the infected plants examined developed a stroma on the inflorescence.

Host Range

In New Zealand the disease has been positively identified, by production of the stroma, only on the ornamental grass *Festuca glauca*. Tentative identifications of a similar endophyte on *F. arundinacea* and *F. pratensis* (Neill 1941) have also been made as noted above.

Other genera which include species found to be affected by the disease overseas are: -

Agropyron, *Agrostis*, *Alopecurus*, *Andropogon*, *Anthoxanthum*, *Arrhenatherum*, *Asprella*, *Bouteloua*, *Brachypodium*, *Bromus*, *Calamagrostis*, *Calamovilfa*, *Cinna*, *Dactylis*, *Danthonia*, *Dreschampsia*, *Eatonia*, *Elymus*, *Festuca*, *Glyceria*, *Hierochloa*, *Holcus*, *Hystrix*, *Koeleria*, *Leersia*, *Lolium*, *Milium*, *Molinia*, *Melica*, *Phleum*, *Poa*, *Sphenopholis*. (Couch, 1973 and Kohlmeyer and Kohlmeyer, 1974.) O'Rourke (1976) states the disease appears to be most commonly recorded on species of *Agropyron*, *Agrostis*, *Andropogon*, *Dactylis*, *Festuca*, *Phleum*, and *Poa* in Europe and North America.

Effect of the Disease

Ornamental grasses -

The disease does not appear to affect the vegetative growth of the plant to any degree. Possibly, infection with the fungus may affect the persistence of a plant, making it less able to tolerate unfavourable environments or other pathogenic or physiological disorders. It is in the effect of the fungal stroma on the attractive appearance and full development of the inflorescence, that the main difference between infected and non-infected plants becomes apparent.

Agricultural and amenity grasses -

The significance of the disease in agriculture and amenity grasses is difficult to assess. The disease seems to affect production of these grasses only by way of limiting seed production, (Sampson, 1933). In this aspect seed yield losses of up to 69% have been recorded (Sampson and Western, 1954). As far as pasture growth is concerned, no significant effects have been noted.

Control

Overseas, the disease is widespread and not considered a problem severe enough to warrant specific control measures. It is a matter of speculation whether this situation will develop in New Zealand.

Amenity grasses are used and enjoyed by most New Zealanders; agricultural grasses are of prime importance to our livestock industry. It seems reasonable that some effort should be made to reduce the incidence of a disease which affects grass seed production.

Control of this disease in the nursery may be difficult. This is because firstly the disease is systemic and fungicidal elimination would be extremely difficult if not impossible. Secondly, the disease can be latent for a period not showing symptoms, and during this time an infected plant could be used as a stock source for multiplication.

Where the disease is positively identified, the following suggestions could help reduce the incidence of the disease: -

1. Careful selection of stock plants with only the most vigorous being used. A laboratory check to microscopically examine a sample plant for internal mycelium could be useful. Any weak or diseased plants should be destroyed.
2. A fungicidal spray programme as an insurance against aerial spore infections.
3. The use of a system of grouping plants which allows the nurseryman to identify progeny plants from the same stock. This would enable related plants to be discarded if one plant does exhibit symptoms of infection before other plants from the same stock.

It is hoped that the above description and comments will encourage an awareness of the disease, and its associated problems in recognition and control in both ornamental and agricultural grass production.

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Book Review

Basic Book of Garden Pests and Diseases

by W.E. Shewell-Cooper. 176 pages. £3.95 (U.K.)
Published in 1978 by Barrie & Jenkins Ltd. London.

This is an attractive small book with many photographs including 16 colour plates. It is very readable because it is well indexed, and laid out to allow quick reference. The book is aimed at the home gardener and gives a wide general coverage of pest and disease problems of vegetables, fruit, lawns and ornamental plants. The book is written for English conditions and therefore loses much of its appeal because many of the problems are not encountered in New Zealand. Conversely some N.Z. pests and diseases are not included (such as grass grub beetle). This book is therefore limited in its usefulness since both the emphasis and detail is often not applicable to New Zealand.

M. B. THOMAS.

Gardens in China

MARGERY HOUSTON

At first it was quite a shock - a real cultural shock - my first impressions of gardens in the Peoples Republic of China. I think it was the lack of green grass. There was so little grass of any kind, - no roadside verges, or vast stretches of well-kept lawns. There was only dirt at the sides of paved streets. But, there were trees, many, many trees everywhere, especially along the streets - plane, sycamore, gingko, and many others I could not identify. They must surely help to purify the air, which is so heavily polluted. The next thing that I was very aware of was the lack of colour - no well-kept beds of flowers or masses of glorious colour that are so attractive in our gardens, particularly in summer. Here and there we saw some beds of roses and a few canna lilies. I clearly remember being shown a glass-house in one public park and being astonished to find only a few pots of geraniums and border begonias and some shelves with a display of small grafted cacti.

I discovered that visiting a public garden or park in the big cities in China frequently meant going in through a gateway in a high wall. This wall would sometimes be surmounted by dragons. Within these walls there would be many odd-shaped rocks which tower above you and inside them, a veritable labyrinth of hollow caves and passages. One walks for quite some distance climbing and descending into "chasms", yet the whole "garden" covers a very small area of land approximately .4 of a hectare. In other so-called "gardens" there would be stone walls painted white with moon-gates, key-hole and jar gates to pass through and here and there most attractive little pagodas and pavilions.

Land is so valuable in this country of nearly 900 million people that these little parks, or "retreats" as I would call them, are very precious to the people in the large industrial cities.

But let me tell you of an area we stayed in which was refreshingly different. It was near the ancient city of Wusi, 3,000 years old and quite close to Lake Taihu, one of China's largest lakes. Here, even our hotel had an attractive garden of walk-ways down a hill-side amongst many trees and shrubs and at the bottom, a large pond with a decorative arched bridge and small pagoda. The water in all the ponds that we saw was very dark in colour and inclined to be stagnant. Out on the Lake we were taken to visit several wooded islets, Turtle's Head Islet being one of the most attractive. Its natural rustic beauty was accentuated by the foil of the artificial structures here and there. These little pavilions were given such quaint names as - "The Hall of Clarifying Waves", "Pavilion of the Sturdy Pine," "The Pavilion of Bright Future." Little arched bridges had names such as "The Ever-Spring Bridge." This particular one was fringed on both sides with cherry trees which had finished flowering when we saw them, as had the plum trees on the steeply peaked hill of Xihui Park

which is crowned by a tall pagoda. This hill must be lovely in the Spring when the plum trees are flowering. On our climb up to the top, through the trees, we passed spots with such charming names as "Second Spring under Heaven" and "Garden for Ease of Mind."

Another attractive "garden" was on the shores of Lake Taihu called the "Garden of Le Yuan." It was designed around a smaller lake or pond with pavilions of the Four Seasons arranged around each side of the pond. To their east was the "Long Causeway" which ran along the Lake side - shrouded in mist the morning we walked there. This causeway had willow and peach trees along its length. Back in the "garden" there were more of the unusual shaped rocks grouped together in what are called "exquisite" designs and we zig-zagged our way up through them to what is called the "Cave of Returning Clouds" and from this high point we looked down on the pond and Lake beyond. Then there was the covered promenade extending for 300 metres and taking about 1,000 steps to walk from end to end. Its wall is decorated with 80 flower-shaped windows framed with tiles in various shapes and sizes, earning the title - "A thousand-step-long corridor with a hundred flower-shape windows." In front of this promenade is the "Mid-lake Pavilion" with a pagoda on one side which juts out into the lake and from where you can obtain a view of all this "garden."

Other so-called gardens in this area consisted mostly of water, - very dark in colour, with decorative bridges and walkways zig-zagging across it, and little hillocks here and there covered with tall bamboo. Small pagodas here had such entrancing names as "Hall of Distant Fragrance," "Pavilion of Surging Waters," and "Pavilion of Expecting Frost"! One particularly attractive small arched bridge was named - "The Small Flying Rainbow Bridge!"

A visit to a bonsai nursery on the outskirts of Shanghai stands out in my memory. Here there were many hundreds of most beautiful bonsai trees of all sizes from only a few centimetres to a metre or more in height. Some of the larger ones were up to 400 years old. In their most attractive containers they were arranged on pedestals, along shelves and grouped in bays. Many varieties of trees including palms had been used in this exquisite art form.

So my memories of "parks and gardens" in China are of something very different from the smooth lawns, large spreading trees, neat beds of colourful annuals and borders of perennials that we associate with that title here in our favoured land.

Mrs. Houston travelled to China in June 1977 on a "Garden Lovers' Tour" organised by Thos. Cook & Son.

"God Almighty first planted a garden; and, indeed, it is the purest of human pleasures."

- Francis Bacon.

N.D.H. Modifications

At its last meeting the Examining Board was presented with the results of an opinion poll from a student survey which is printed below. The Board resolved that an identifiable award should be made at the completion of all written and practical examinations but has reserved its decision on what that award might be. I believe the discussion culminated in two possible solutions.

1. To award the student a Higher National Certificate in Horticulture on the completion of examinations and practical work and reserve the National Diploma of Horticulture for award on completion of the thesis.
2. To add the requirement for a dissertation (that is, a minor thesis which may be a review of a particular subject rather than original research) to the examination and practical work requirements. This could then be awarded the National Diploma in Horticulture and in addition the completion of a thesis which would be a major piece of work would qualify for the award of Honours.

The Board would be very pleased to receive comments from members and students on these proposals and others which they may wish to bring forward.

RNZIH EXAMINING BOARD - results of questionnaire: N.D.H.
with or without thesis

	NDH completed	Thesis only to complete	Partway thru course	TOTALS
OPTION 1 (Status quo)	4	2	3	9
OPTION 2 (Honours with Thesis)	10	13	32	55
OPTION 3 (another award for students without Thesis)	2	2	2	6
OPTION 4 (any other suggestions)	-	-	-	-
TOTALS	16 (/20)	17 (/20)	37 (/60)	70 (/100)

T.M. MORRISON
 Chairman,
 Examining Board. 20/9/78.

Cortaderia

There have been a number of name changes and new species in the last 15 to 20 years in the toetoes previously listed in the genus *Arundo* but now included in the genus *Cortaderia*.

As the Nursery Industry has not caught up on all these changes here is a summary.

Cortaderia fulvida. The common North Island species growing on stream banks and hillsides. 1.5 to 2.5 m. tall. Plumes nodding.

C. toetoe. Growing in lowland swamp and spreading onto adjoining sand dunes from Auckland to Lake Ellesmere. 4 to 6 m. tall. Plumes upright. Leaves 1 to 3cm. wide. Stiff and rough.

C. splendens. North Auckland species extends down to Kawhia and Coromandel on sand hills, rock and cliff faces. Plumes less upright and leaves wider, 3 to 5 cm. more flexible and less rough than *C. toetoe*.

C. richardii. The common South Island species. 2 to 3 m. tall. Plumes smaller than above.

C. selloana. Pampas grass. Introduced from South America. Plumes may be a variety of colours from white, ivory, cream, pink flecked and pink through to violet. All colour forms are included in the one species.



Tree Feeding

(Ref: British Standards, 3998:1966)

Feeding:

Under certain circumstances trees in poor health, or low vigour (particularly after tree work has been carried out on them) may or may not be in addition to cultural or soil amelioration operations such as soil aeration, irrigation or incorporation of bulky organic material.

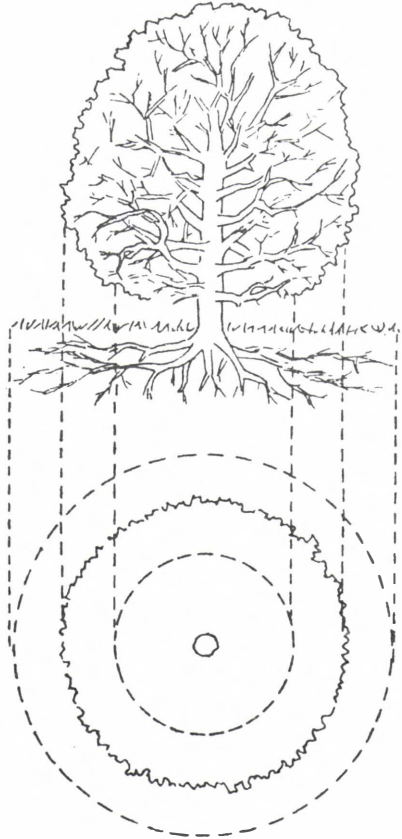
The type of fertilizer, the amount required and the method of application depend on the following main considerations:

- (a) the size, age, condition and species of the tree;
- (b) the type, pH and nutrient state of the soil (determined by analysis);
- (c) the type and speed of response needed from the fertilizer;
- (d) the type and extent of any hard surface surrounding the tree.

Specialist advice should be obtained.

Method 1. For ease of insertion, and to prevent excessive concentration, bulk the selected fertilizer with suitable materials* and evenly allocate it to holes made in a band extending from about 1.5m. (5') inside the spread of the tree to 1.5m. (5') outside the spread. (See diagram). Open the holes to a depth of 300-460 mm. (1'-1'6") for soft-wood trees and 460-760 mm. (1'6"-2'6") for hardwood trees. Insert the fertilizer; make good the disturbed surface.

* Such as 5 parts of peat and 10 parts of sand to one part of fertilizer.



Tree Feeding.

Holes are made at 460mm (18") centres within the inner and outer circles.

Method 2. Mark out a band extending from about 1.5 m. (5') inside the spread of the tree to 1.5m. (5') outside the spread. With a heavy fork prick over this area as deeply as possible, the lines of holes being about 150 mm. (6") apart. Scatter the selected fertilizer over the treated area at the rate of 250g/m² (8 oz./yd²). Brush the area so as to work the fertilizer into the holes. Then water at the rate of 10 l/m² (2 gal./yd²).

An example of a good fertilizer is:

5 parts, by volume, ammonium sulphate (20 per cent N)
5 parts, by volume, superphosphate (18 per cent P₂O₅)
1½ parts, by volume, potassium sulphate (48 per cent K₂O)

Horticultural Visitors to New Zealand

Professor Richard Harris, Head, Department of Environmental Horticulture, University of California, Davis, will be visiting Massey University August 4-5, on his way to the Horticultural Congress in Sydney, Australia. Professor Harris' interests include the planting and care of trees in public and private landscapes and in park maintenance. During his stay in New Zealand, stops will include the Auckland Regional Authority, Forest Research Institute (Rotorua), National Plants Material Centre (Akoutere) and Wellington to meet members of the New Zealand Institute of Parks and Recreation.

Professor Stuart Nelson, Head, Department of Horticulture, University of Saskatchewan, Canada, spent from July 1977 to June 1978 working on turfgrass grown under sand culture with D.S.I.R. (Grasslands Division) personnel.

Dr. Abraham Halevy, Professor of Floriculture, Hebrew University, Israel will be travelling through New Zealand from 28 August to 9 September.

Dr. Halevy is a world authority on factors affecting the growth and flowering of floral-cultural crops and the maintenance of vase life of cut flowers. He and his colleagues have played a major role in the development of the cut flower industry in Israel and particularly in the encouragement of the export of cut flowers.

While in New Zealand, he will be visiting and addressing commercial flower growers in Auckland, Levin, Christchurch and Tauranga and meeting scientific workers at these Centres. He will be at Massey University Monday 4 September and Wednesday 6 September.

Conference

T.M. MORRISON

Attendance at the international Horticultural Conference held in Sydney in the period August 15-23 was a bewildering experience. Abstracts of 933 papers were included in the Congress literature along with timetable details of eight simultaneously running sections. The first afternoon was spent trying to arrange a personal programme whereby one moved usually at periods of 15 minutes from one paper to another. The net result is a confused impression of the range and depth of horticulture but a very clear impression that horticulturists the world over are a single cultivar and amongst the two thousand participants there was very much in common.

The Conference opened with a majestic ceremony in the Sydney Town Hall with the so-called Sydney Training Orchestra providing musical items. The Conference filled the hall and the spectacle of the whole of the opera stage taken up with floral decorations and greenery was an auspicious beginning to the whole Conference. We then retired at about 5.30 for cocktails and savouries in the very comfortably carpeted foyers of the Opera House. Australian wines are of course most acceptable and I for one preferred to take the long trek back to the University on foot. At the other end of the Conference the closing ceremony was held in the University Great Hall, a very majestic imposing building with a renowned organ which was used to introduce and close the ceremony. The closing ceremony was used to introduce the next president who is a German, instep with the venue for the next conference, and the president elect is an American indicating that in eight years time the Conference will be held in U.S.A.

The sessions of the Conference ranged from the very scientific to the very popular and those of us who attended the session on Horticulture for the People, saw the horticultural theatrical performance of the decade by Dr. Cathay (renowned horticultural scientist) with his multiple projectors moving images and incidental music. The title of his final text for the day was People need Words and his paper justified that. I also heard the only case of heckling that I have ever heard at a scientific conference (and it was deserved).

In general I would say that New Zealand rated fairly high at the Conference with its horticulturists filling key positions and providing key papers on many occasions. Our reputation as a country, strong in horticultural education, research, extension, and practice has grown over the years and was further enhanced on this occasion.

Know Your Conifers - 5

M.B. THOMAS

Drawings by B.V. McCartney

GENUS *PINUS*.

Evergreen resinous trees (or occasionally shrubs) with conical habit and whorled branches.

Leaves usually in bundles of 2, 3 or 5.

Leaf clusters surrounded at the base by a sheath of scales, which may be deciduous or permanent according to species.

Cones very variable in size, shape and nature of scales.

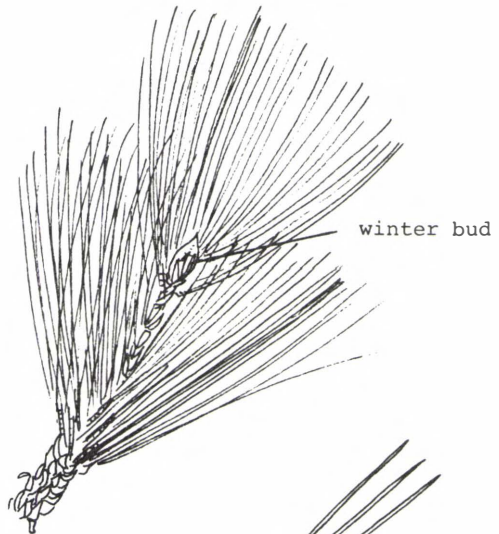
One or two vascular strands per leaf.

Example : *P. coulteri*.

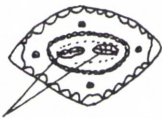
Cone.



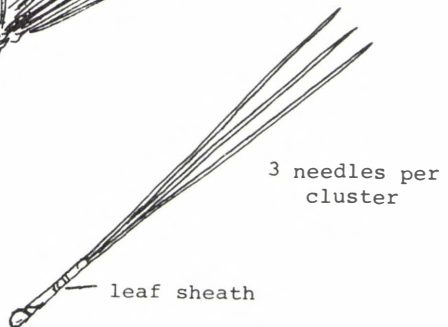
Branch in winter.



SECTION OF LEAF.
X15

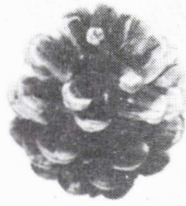


2 vascular strands





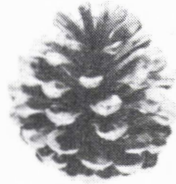
patula



mugo



strobus



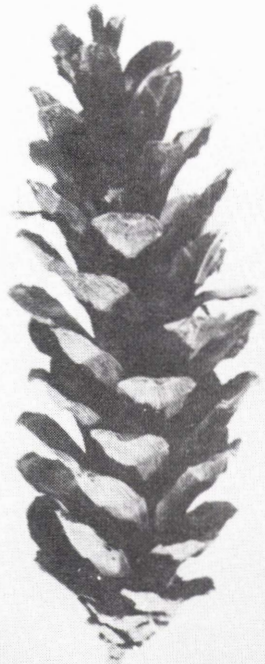
contorta var. latifolia



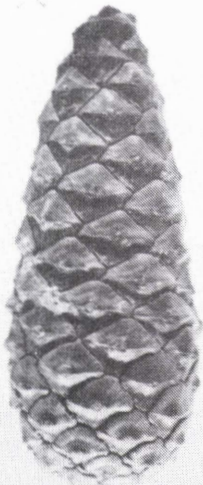
radiata



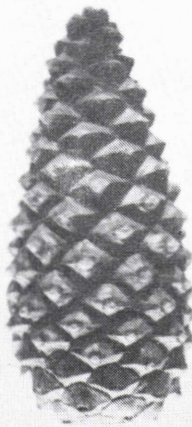
muricata



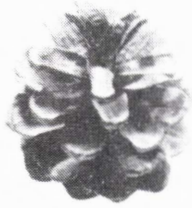
wallichiana



canariensis



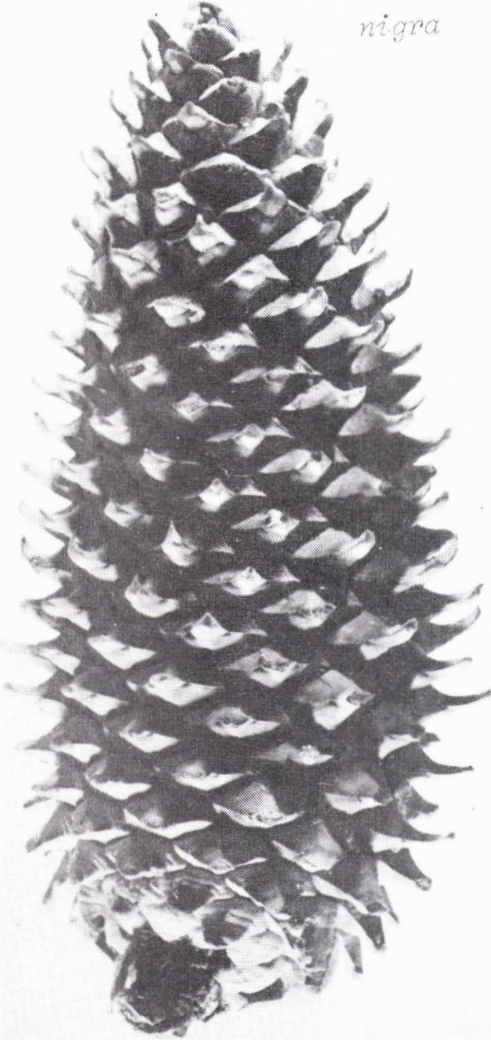
pinaster



nigra



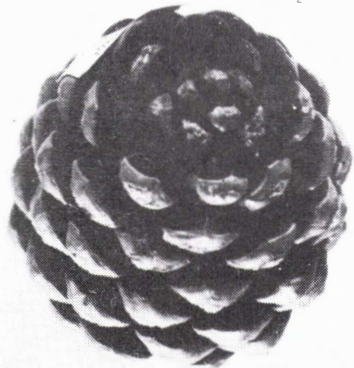
torreyana



coulteri



ponderosa



pinna

KEY POINTS FOR IDENTIFICATION OF THE COMMONER PINUS SPECIES IN N.Z.

2 NEEDLES PER CLUSTER - all have 2 vascular strands.

1. Winter buds non-resinous:

Bud scales recurved.

- (a) Leaves 10-12 cm long, not rigid *P. pinea*
- (b) Leaves 13-20 cm long, stout and rigid.
Also young shoots yellowish brown.....*P.pinaster*

2. Winter buds slightly resinous:

Bud scales appressed, if free are not recurved.

- (a) Shrubby, cones not very prickly *P. mugo*

Tree cone scales not prickly, or with a very short prickly umbo**, cones symmetrical, deciduous with opening scales after maturity (also cones tawny yellow) *P.nigra*
- (b) Cone scales with a very prickly umbo.
Cones asymmetrical, persistent and remaining closed on the tree for years. Leaves 10-15 cm long, cones 6-9 cm long.
Never shrubby *P.muricata*

Leaves less than 8 cm long. Sometimes shrubby
Cones 3.5-7 cm long. Also cones with variable symmetry.
Large cones tend to be symmetrical*P.contorta*
var. *latifolia* (*P.murrayana*)

3 NEEDLES PER CLUSTER - all have 2 vascular strands and persistent leaf sheaths.

- (a) Young shoots with glaucous bloom. Foliage very pendulous *P.patula*

Young shoots without glaucous bloom.
Foliage not especially pendulous *P.canariensis*

Leaves less than 15 cm long, tips of bud scales appressed *P.radiata*

Also cones remaining on branches for many years; scales rounded, woody.
- (b) Leaves more than 15 cm long.

Young shoots with glaucous bloom, very large cones with claw-like attachments *P. coulteri*

Young shoots without glaucous bloom. Leaves sometimes in twos or fours - prickly cones *P.ponderosa*

** apical part of cone scale

5 NEEDLES PER CLUSTER.

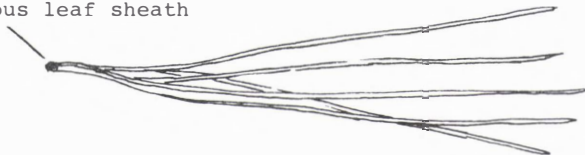


1. Persistent leaf sheaths
2 vascular strands
hard cones *P. torreyana*

2. Leaf sheaths deciduous
1 vascular strand
soft resinous cones



Deciduous leaf sheath



Young shoots with glaucous bloom *P. wallichiana*
Cones usually 20-25 cm long (*P. excelsa*)

Young shoots without glaucous bloom *P. strobus*
Cones usually 5-12 cm long.

(This is the final in the series - we would like to acknowledge the help of W.R. Sykes, Botany Division, DSIR)

"----there is nothing in this life pleasanter and more delightful than to wander over woods, mountains, and plains, garlanded and adorned with flowerlets and plants of various sorts - and to gaze intently upon them."

Leonhart Fuchs in 'De Historia
Stirpium'
1542.

Edible Weeds

Eating For Free

K.F. MILLAR

My 'garden' is barely cultivated at all. There is a lot of beautiful bush, a lawn, a few tubs round the kitchen door for herbs and a couple of banks on which various edibles are from time to time sketchily encouraged.

I hope better habits will set in, and if they do there will be quite a crop more weeds to eat than at present, for some weeds only grow in cultivated ground. However, a really lazy non-gardener living on the forest edge may still greatly reduce food costs while continuing to munch without tears.

To begin with salads - there is the onion-weed (*Allium triquetrum*), considered by many to be a menace - but by me a staple and most welcome article of diet. This time of the year you pull it up - leaves, flower, bulb and all - wash it under the cold tap, and slice it all. (After Christmas you will have to dig up the bulbs and go without the greens). Then chickweed, (*Stellaria media*) with starry white flowers, is a good basic ingredient. Same treatment here - though there are no bulbs. Even if you had to cultivate chickweed it would, I think, be a paying crop as I've read it completes its life cycle in 3 weeks. A deliciously tender pleasant little plant, said to be high in minerals.



Chickweed

Other neutral salad ingredients of which a lot can be eaten every day are nipple-wort (*Lapsana communis*) with soft lyre-shaped leaves; rampion (*Campanula rapunculoides*) - (so beloved of Rapunzel's expectant mother that she sent her husband over the wall to brave the witch, and called the daughter after the herb when she duly arrived). Rampion provides not only the leaves - two kinds, stalk leaves and base leaves - but also very pleasant nutty swollen roots and beautiful blue flowers, which add greatly to a salad's attractiveness.

Cats-ear (*Hypochaeris radicata*) slightly hairy, with dandelion-like flowers and diagnostic swellings caused by wasps, and the fine solid branching flower-stalks - is a great stand-by all year round. So are dandelion leaves, which are slightly and pleasantly bitter (*Taraxacum officinale*).

Also for salads ... the little *Hydrocotyles* that grow in moist places have a pleasant parsnipy taste. Garden nasturtiums (*Tropaeoleum* spp.) - leaves, flowers and seeds are all good and edible; leaves and flowers are delightful in salads, and seeds are a substitute for capers.

Then there should be plenty of variety from the crucifers (none of them are poisonous). 'Four-tone' wild radish (*Raphanus raphanistrum*) has charming radish-smelling flowers, which go into the salad; there was various cresses (*Cardamine hirsuta*,) twin-cress (*Coronopus didymus*), hedge mustard (*Sisymbrium officinale*) - these go in in varying amounts for variety and for stimulating the taste buds. Also land-and water-cress (*Rorippa* spp.) - but beware of liver flukes if water cress grows where sheep can pass them on to us.

Little bits of sheep sorrel (*Rumex acetosella*) or of oxalis, are pleasantly sour - too much could lead to gall-stones; but a little is attractive and entirely harmless in salad.

Then there are the herbs - fennel, borage (again, the beautiful blue flowers are visually appealing), eau-de-cologne mint, parsley - all rampantly weedy ... and others grown in the tubs round the door - bergamot, marjoram, thyme ... not weeds, but they do come for free.



Nightshade

Some wild fruits are good with salads - the really black berries of *Solanum nigrum* (the green ones are poisonous, though the plant should never have been called deadly nightshade); Cape gooseberries, *Elaeagnus*, and barberry fruits.

It is wise to pick and wash carefully, and cut up rather fine. Balance the tastes, and put in some flowers or fruits.

Some of my weeds I prefer cooked - there are some traditional recipes. A favourite one is for Nettle Porridge: (Obviously nettle is not for eating raw!)

Boil a small teacup of barley till soft. Take 6 handfuls of young nettle leaves, 1 of dandelion leaves, a small bunch of water-cress, small bunch of sorrel leaves (*Rumex acetosella* - sheep sorrel, does well), 8 black currant leaves, sprig of mint, spray of thyme and some weed onions.

Wash and chop everything fine and mix with the cooked barley. Season with salt and pepper and add a tablespoon of butter. Mix well with a well-beaten egg and put into a basin. Cover and steam for 1½ hours. Serve with rich hot gravy.

Nettle is a great treasure. It not only makes the admirable porridge - it makes a splendid soup.

Audrey Hatfield's "How to enjoy your Weeds" is good reading and very relevant, though it is written for and in England.

Fat-hen (*Chenopodium murale* and other spp.) is another weed of cultivation which will come up prolifically after digging. And those in sandy coastal regions will find plenty of New Zealand spinach (*Tetragonia trigyna*). It grows wild on many sandy or rocky coasts where there is also abundant silver beet (*Beta vulgaris*) - and, of course, rariki ... *Sonchus oleraceus* is ubiquitous ... wall lettuce is also widespread and good to eat, preferably raw. The leaves of wild radish I prefer cooked, with cheese sauce ... they are a grand vegetable but a little overpowering raw.

So really there is no need to buy vegetables, even for non-gardeners; though I don't find a substitute for tomatoes, and I do buy potatoes - though these often come up in the compost and grow very well in the wild.

However this is not the end of the free food being offered. There is a wide variety of drinks - and I don't find it difficult to give up commercial drinks. Teas are everywhere abundant. Peppermint and eau-de-cologne mint and pennyroyal are excellent infused and perhaps best joined to oat-straw. Chamomile - though it reminds one of Peter Rabbit's disgrace - is pleasant. Anthemis grows and flowers in a tub by the house, but a more plentiful and even pleasanter chamomile for tea is the small weedy rayless matricana (*Matricaria matricarioides*) which retains its smell beautifully when dried - just pull it up and put it in the airing cupboard for winter use. Bergamot and sage and manuka are remarkably good too; and none are the slightest trouble to make. You may add honey ... but milk seems a pity for tea.

Dandelion roots - sliced, baked and ground, do make a pleasant drink with hot milk. It isn't like real coffee but is good in its own right. Coprosma berries - baked and ground - are nearly related to coffee, and supply the same caffeine, I'm told. You can't have it both ways, I suppose ... but you can have a drug or a drug-less drink and both for free!

Fermented drinks should not be forgotten. Some of my friends germinate their own barley, or wheat, grind it up and ferment it using wild hops - or substituting other plants for flavour and for clarifying their beer. It is a wonderful drink when you consider it depends on the two great transformations of germination and fermentation.

I admit I take the lazy way and buy maltose; but good draught beer is very simply and quickly made flavoured with branchlets of rimu (Captain Cook's N.Z. spruce beer designed to keep down the scurvy), or other traditional flavourings, as 'alehoop' or ground-ivy (*Nepeta glechoma*) or a traditional mixture - White horehound (*Marrubium vulgare*) used sparingly, with nettles, dandelion, yarrow, sorrel.

Being draught beer (unprimed) it is no insult to use it for cooking soya beans. This is a staple dish, rich in protein and very tasty - well soaked and cooked soya beans with beer added at

the end, and also flavoured with grated cheese, and weeds - rariki, water-cress, wild radish or turnip leaves, /or dock.

Then there are the spices. Coriander - I first met it growing beside the road, but nowadays I throw a few seeds into a tub or box of soil. The plants are very pretty and the seeds delicious.

Fenugreek (*Trigonella suavissima*, alias *Trifolium*) does grow wild in numerous places - but I have to cultivate it to the same extent as coriander. My third spice - ginger - is really naturally occurring and occupies a great bank below the house and fends very satisfactorily for itself. Besides the tawny honey-sweet flowers, the grated rhizome is a splendid spice for one's own curry (along with coriander and fenugreek) and for making wassail (home-made beer heated but not boiled) with crab apples and other spices.

Fennel (*Foeniculum vulgare*) is a wonderful weed herb - it makes excellent sauce for fish ... or for the court bouillon in which fish is cooked; and it makes a delightful Greek cold soup.

Fennel seeds are wonderfully sweet and should surely serve as a sugar (pure white and poisonous) substitute ... try rhubarb, unripe figs, fennel seeds, and some angelica - the floral kind grows wild and is very pleasant in cooking too.



Fennel

Germination - of course - should not be forgotten. Sprouted alfalfa, and fenugreek are excellent added to salads ... or anything else; and both come as weeds. Fenugreek (*Trigonella suavissima* or *Trifolium ornithopodioides*) is certainly a multiple use plant and intriguing to watch ... the seeds will germinate in the long thin pods too. The seeds make a good tea, are nourishing and easily germinated as sprouts. The whole plant was enormously esteemed by the Australian explorer Sir Thomas Mitchell; and it is also a renowned spice.

Blackberries with rose geranium leaves added are really delightful ... and so are elderflowers with gooseberries.

Comfrey rages on like the best of weeds - make it into fritters ... the great coarse leaves become crisp and tasty ... but do be very careful not to serve up foxgloves or tobacco plants instead - dangerous accidents can easily occur!!

Jerusalem artichokes (*Helianthus tuberosus*) make wonderful soup .. and the Egyptians have a famous soup made with mallow (*Malva sylvaticus* or allied spp. I have also used Lavatera.)

Again, you may have interesting weeds in your area like succory, with beautiful blue flowers (*Arnoseris minima*) - this is eaten in a

fantastic number of disguises; or salsify (*Tragopogon porrifolius*) with purple flowers, or the related goats-beard (*T. pratensis*).
Amaranthus sp. Red-root is an American Indian pot-herb - seeds and leaves may be used.

Docks are famous food plants - curly dock (*Rumex crispus*) is one of the best. The large coarse leaves become tender when cooked. They are best picked in spring, boiled for 10 minutes in limited water and served with salt, pepper, and vinegar or lemon juice.

Tree Registration Officers

North Taranaki :

Mr. G. Fuller,
25 Victoria Road,
NEW PLYMOUTH.

Canterbury:

Mr. W. Fielding-Cottrell,
Springs Road,
CHRISTCHURCH R.D.3.

Waikato:

Mr. I. Gear,
Morrinsville Road,
Newstead R.D.4,
HAMILTON.

Wellington:

Mr. R. Mole,
c/- Parks Department,
Wellington City Council,
P.O. Box 2199,
WELLINGTON.

Otago:

Mr. S. Kemp,
c/- Ministry of Agriculture
and Fisheries,
Private Bag,
DUNEDIN.

"A traveller should be a botanist, for in all views plants form the chief embellishment."

- Charles Darwin

Identification of Turfgrasses by Vegetative Characteristics

D. E. ALDOUS

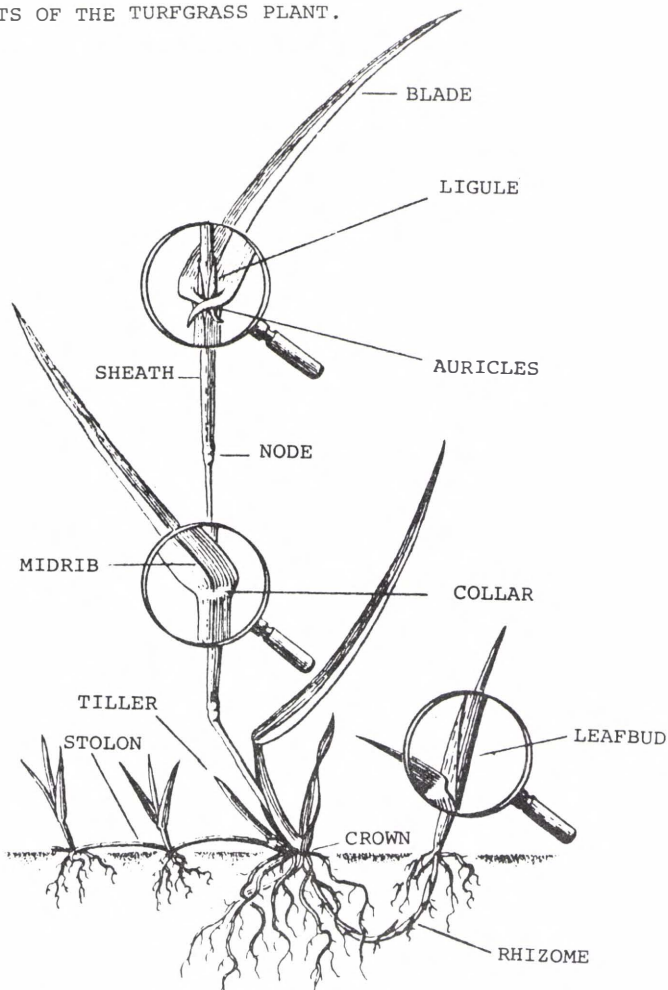
Department of Horticulture & Plant Health, Massey University

The grass family contains over 5,000 species but less than 1% find a role in turf culture. Each species requires identification to remove both the confusion associated with grass-like plants such as Toadrush (*Juncus bufonis*) as well as those grasses which are taxonomically similar but bear different common names. For example the warm season grass Indian Doub (*Cynodon dactylon*) is also known as Bermudagrass (New Zealand and the U.S.A.), green couch (Australia), Kireek grass (South Africa), Neguil (Egypt) and Serangoon in Malaysia.

The taxonomist depends almost entirely upon flowering and seeding parts for identification. However, under turf management conditions, the grass plant is seldom in flower. Hence one is restricted to vegetative characteristics. Plant parts of value in identifying nonflowering turfgrasses are illustrated in Figures 1 and 2 and are described below:

- A) LEAF BUD: Arrangement of leaves in the bud shoot (venation). Leaves may be either folded with margins meeting but not overlapping, or rolled lengthwise with margins overlapping.
- B) BLADE: The upper portion of the leaf divided from the rest of the plant by the collar and ligule. Blades of different species vary in size, shape type of tip, deeply ridged or smooth and degree of hairiness.
- C) LIGULE: The appendage which clasps the grass stem at the junction of blade and sheath. The type (membranous, hairy, absent) and shape (tall, short, toothed etc) are fairly uniform within a given species.
- D) AURICLES: Appendages projecting from either side of the collar and may or may not clasp the stem.
- E) COLLAR: The area on the outer side of a leaf at the junction of the blade and the sheath. Generally lighter in colour than the rest of the leaf, and may be broad or narrow, continuous or divided by a midrib.
- F) SHEATH: The lower portion of the leaf which wraps around the stem. May be rough, smooth, hairy, cylindrical or compressed.
- G) STOLON: A stem growing along the soil surface which is capable of taking root and starting a new plant at each node.

Figure 1. PARTS OF THE TURFGRASS PLANT.

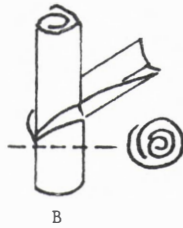
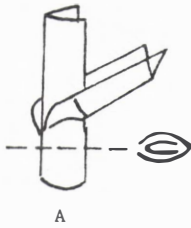


- H) **RHIZOME:** The underground stem which is capable of producing a new plant.

These botanical features have been developed into keys which group the turfgrass into categories according to common characteristics. Examples of such keys may be found in the following texts.

- a) Turf Culture (New Zealand Institute for Turf Culture)
Simon Printing Co.Ltd., Palmerston North.
- b) Beard J.B. (1973) Turfgrass - science and culture
Prentice-Hall Inc. Englewood Cliffs, N.J.

Figure 2. USEFUL PLANT PARTS USED IN IDENTIFYING NONFLOWERING GRASSES



VERNATION : A- leaf folded in bud-shoot.

B- leaf rolled in bud-shoot.

AURICLES : A- Clawlike.

B- Rounded.

C- Absent.



LIGULE SHAPES AND MARGINS :

A- Fringe of hairs.

B- Acute.

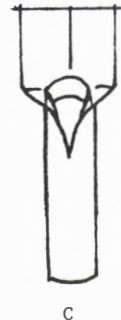
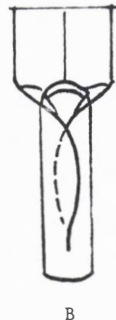
C- Truncate.

D- Ciliate margin.

COLLAR : A- Broad band.

B- Narrow band.

C- Divided by midrib.



SHEATH : A- Split. B- Split to near base with margins overlapping. C- Closed.

Note ligule shapes: A-Acute.

B-Truncate.

C-Rounded.

- c) Hanson A.A. etal (1971) Species and Varieties In Turfgrass science by A.A. Hanson and F.V. Juska (Ed.) Agronomy No.14. American Society of Agronomy.
- d) F.V. Juska and A.A. Hanson (1964) Evaluation of Burmudagrass varieties for general purpose turf. Agriculture Handbook No. 270 54 pp.
- e) Tothill J.C. & J.B. Hacker (1973) The Grasses of South-East Queensland University of Queensland Press.
A workable knowledge of one of these keys can assist the reader in identifying selected grasses for use in turf culture.

Know Your Turfgrass - 1

D.E. ALDOUS

Perennial ryegrass (*Lolium perenne*)

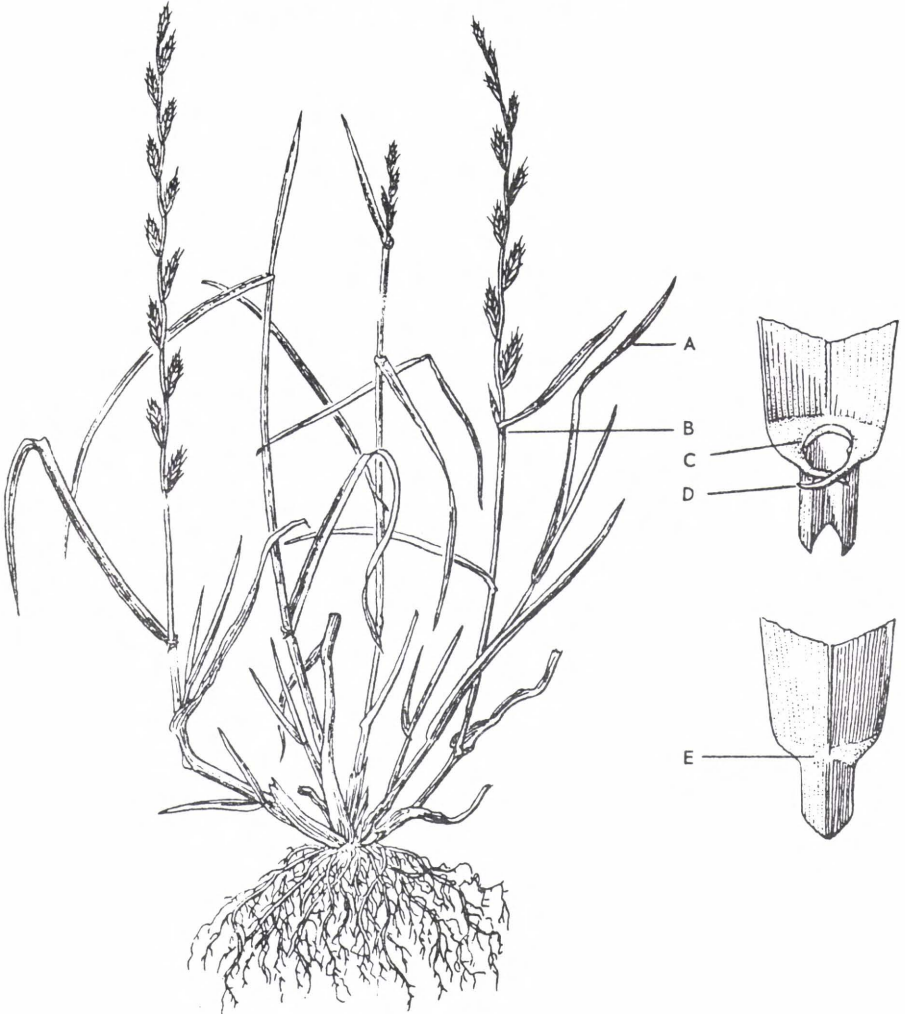
- A - Blade: folded in the bud. Long, bright green, narrow, ridged and rough above, glossy below, keeled, margins lightly round, hairless.
- B - Sheath: usually compressed, glabrous (free from hair), pink green, reddish at base.
- C - Ligule: membranous short (0.5-1.5mm), round, may be toothed near apex
- D - Auricles, small, soft, clawlike
- E - Collar: broad, distinct, continuous, glabrous, pale to yellowish brown.

Remarks: utilized where rapid establishment and soil stabilization desired. Wear resisting, recovers quickly. Used as a constituent of winter sports turfs for soccer, football, hockey as well as golf fairways and tees. Adapted to cool, moist regions having mild winters and cool, moist summers. Does not tolerate extremes of cold, heat or drought.

Perennial ryegrass is adapted to a wide range of soil types.

KNOW YOUR TURFGRASS - 1.

Perennial Ryegrass (*Lolium perenne*)



District News

AUCKLAND: The programme for the remainder of the year is as follows.

- Oct. 17th : Mr. Dick Endt 'In Search of Subtropical Fruit'
Nov. 21st : Social Evening. 'An Evening with Flowers' - Dr. and Mrs. Davison. 'Report of International Horticultural Conference in Sydney.'

Field Trips:

- Oct. 14th : Visit to Botanic Gardens, 10.30 a.m.
Nov. 11th : Visit to Mr. Hans Petersen's garden, 54 Birkdale Road, Birkdale - 2 p.m.

The following notes are taken from the Auckland District Council Newsletter.

OPENING of the Botanical Garden at Manurewa: this took place on Saturday, 10th June, and it was good to see the large number of people who came along to the gardens on that day. Several very successful tours of the garden under Mr. Buchanan's direction were made. Representatives planted a varied selection of trees and we have a stake in watching ours grow. Miss Dingley planted one of the Gleditsias from a selection of nine: three each of 'Ruby Lace', 'Moraine' and 'Sunburst'. Later in the year our Council will be visiting the Gardens and will see these trees as well as taking the 'nature walk' and having a really good look at the representative collection of natives which is coming along quite nicely. Mary Buckland is the Landscape Planner at the gardens and her artistic eye is helping to make this a place of beauty. Mrs. Susan Davison has agreed to serve on the Technical Advisory Committee as our representative.

TERRANIUMS & BOTTLE GARDENS the subject for our June lecture were ably handled by our speaker, Mr. Brian Buchanan. He went to a lot of trouble and brought along several different types of planters together with soil, charcoal, scoria and a wide selection of suitable plants. Containers of this nature as well as dish gardens are 'in' things at the moment. It has taken a long time for bottle gardens to reach us, perhaps because of the nature of our climate and no real necessity to depend upon such things for winter decoration. But now with more town houses and units with less space for outdoor gardening these serve a useful purpose by bringing a bit of the garden indoors. Bottle gardens are direct descendants of Wardian Cases and to read a little bit of their history is interesting.

It was in the year 1834 that Nathaniel Bagshaw Ward made an

accidental discovery that revolutionised the transport of exotic plant specimens to England; so important was his discovery that plant hunting may be divided into two periods: up to 1834, pre-Wardian; afterwards, post-Wardian. Dr. Ward was an amateur naturalist who, by necessity, practised medicine in London's East End. What Ward saw in 1827 was by chance. He had placed a caterpillar to pupate in mould at the bottom of a glass jar which he corked and then forgot about. When he remembered about it, to quote from his little book "I observed the moisture which during the heat of the day rose from the mould condensed on the surface of the glass and returned whence it came, thus keeping the earth always in the same degree of humidity" and from the mould was growing a tiny fern and a tiny blade of grass. Although this cycle had been noticed before in glasshouses when ventilation had been overlooked, it took Ward to make the deduction that the fern had grown because there was 'a moist atmosphere free from soot or other extraneous particles' and had light, heat and moisture. Developing his idea, Ward designed a largescale adaption of his caterpillar jar, instructing the carpenter who made it up that the joinery must be as near perfect as possible and the wood hard and thoroughly seasoned to withstand the effects of condensation from within and 'extraneous particles' from without.

This case, in which he grew plants experimentally, was the prototype of the ones used to convey plants by sailing ships to England from the outermost parts of the world.

NORTH TARANAKI: The followingtrips are planned for the remainder of the year.

- Oct. 21 - 23rd : Labour week-end trip to Te Kuiti area.
- Oct. 26th : Day trip to Stratford Gardens.
- Nov. 22nd : Day trip to Bushy Park, Kai Iwi and gardens.

The following notes are taken from the North Taranaki District Council Newsletter:

A somewhat revolutionary approach is being promoted in Australia in the concept of what is termed Urban Forestry. Officers of the CSIRO, the trans-Tasman equivalent of our DSIR, have prepared a planning model incorporating urban forestry with a cost-benefit analysis for the City of Melbourne. The concept has been developed for some years in Europe and North America where population growth pressures and increasing demand for natural recreational facilities have prompted authorities to make better use of urban land resources.

It has been studied by a United Nations group on Arboriculture and Urban Forestry. The economic prospects are fascinating and I quote: "Estimates of total costs that could be associated with an urban forest programme for Melbourne population 2.7million indicate possible savings of millions of dollars annually. Reductions in engineering infrastructure, costs for water supply,

drainage, cooling of buildings and transportation could accrue from an urban forest programme providing a more beautiful, cleaner and diverse life pattern for urban dwellers. The products of the urban forest could also have beneficial economic, social and environmental effects.

OTAGO:

The Annual General Meeting was held in July and after the usual business was concluded, a panel discussion was held on "Trees."

This was certainly the highlight of the afternoon. Mr. Jolyon Manning - well known for his enthusiasm and knowledge of trees - spoke first on the subject, the Value of Trees. He handed us all a couple of sheets of paper on which he listed 11 points as his values of trees to the community. The first, "To Keep us in touch with Nature" - Most of the others are familiar to you if you stop and think, and the last (for more thought), "To promote a spiritual dimension".

Can you think of 9 commercial values for trees? Jolyon did. Perhaps values such as Public Works Landscape - Visual Separation - Strengthening Weak Topographical Contours is not your idea of commercial? Associated Values - Fruit trees, Tree Nut Crops, Honey from tree blossom. Did you know that the Oak is used by the Russians, in some of the poor wheat growing areas, to bring to the surface some of the necessary minerals for the wheat crops?

Is there any relationship between sunspots and tree rings? This is the science of dendroclimatology. Mr. Manning has recently had an article published in the June '78 issue of Soil and Water (the National Water and Soil Conservation Magazine) entitled "Sunspot Cycles and the Clutha Hydro Lake Storage". In this article he suggests dendroclimatology could well be used "to create a crude forecasting index based on sunspot activity expectations with a view to better managing inflows".

Mr. John Peterson of the Dunedin City Planning Office spoke briefly on the tree aspects of a District Scheme. This is the major planning document used by local authorities for such things as environmental controls. Planners must be concerned with community values in regulating the use of land. For example, one large specimen tree could make a substantial impact on many properties within one locality in the urban areas.

Mrs. Helen Bremner of the Otago branch, N.Z. Tree Society, was the third speaker. She briefly outlined the aims and objects of her Society which are basically, appreciation, planting and preservation of trees everywhere.

She indicated, with examples, that land developers and subdividers are beginning to have changing attitudes to existing trees but there is still considerable inadequacy in the tree laws of this country.

Mrs. Bremner went on to cite examples of what is being, and

can be done, by those who feel a dedication to the aims and objects mentioned as being those of the Tree Society.

The discussion was initiated by a comment that many of the recorded and labelled tree planting has been related to the use of exotic rather than indigenous tree species and questioned why commemorative plantings seldom used N.Z. native plant species.

The panel made many comments on this point which drew others from the floor. Two points are worthy of record. Firstly the availability of native plant specimens has left much to be desired as well as the problems associated with transplanting larger type trees of our indigenous species. This related to the second point which was one of scale. Usually, it is easier, within the urban townscape, to make an impact with exotic trees than with native specimens.

It was a good meeting. Thanks to the members of the Panel and to all who attended, particularly our members from Oamaru and other places outside Dunedin.

POVERTY BAY: The following extracts are taken from the Annual Report:

Another horticultural year has come and gone with the usual mixtures of worries, work and, we hope, a great deal of pleasure.

The weather affects horticulturists to a greater degree than many other occupations but, of course, over that we have no control. However, the heavy rainfall during the winter and the wet weather, continuing into Spring with a generous downpour in the middle of January, stood us in good stead when the rest of New Zealand was suffering drought conditions.

Our Society is the poorer for the loss this year of two long-standing members, Mrs. Ruth Woodrow and Mr. Stan Monck. Both had given much to the Society and to horticulture over many years. They will be sadly missed. A fitting tribute to Mrs. Woodrow was made at the Rose and Iris Show where her nieces arranged a beautiful display of her favourite old roses.

As usual, our main activity for the year has been the arranging and staging of four flower shows. These have all been held at the Kaiti Memorial Hall, and have proved successful financially, as well as being a pleasant occasion for flower lovers to meet and enjoy beauty and fellowship. Special displays have been a feature at each flower show.

As both the City and the County were celebrating their centenary this year, a special feature at the Camellia and Daffodil Show was arranged as a focal point on the stage.

At the Rose and Iris Show the Iris Society put up a beautiful array of irises. At the Summer Show, in addition to the many wonderful dahlia blooms on display was a table covered with the most gorgeous exotic hibiscus, many of which had not before been seen in Gisborne.

Pottery was the theme at the Chrysanthemum Show and the art of local potters was evident in containers of many kinds.

The Horticultural Society is a member of Friends of Eastwoodhill and members of the society have visited Eastwoodhill on two occasions, October and April, and we were also invited to view the orchids growing in several gardens. In September an evening was held in the Abercorn Hall to view slides and hear a travel talk by Mr. Ivan Day, a nurseryman and horticulturist from Whangaparaoa.

In an endeavour to give members more value for their subscriptions, the society is intending to have bi-monthly meetings where they will be able to learn from different speakers, tips on many aspects of gardening. The first of these meetings, held at St. Andrew's lounge, in April proved a very worthwhile event where Miss Ann Coe spoke about house plants, Mr. G. Johnston told about daffodils and Mr. E.W. Gray gave many instructions on vegetable gardening.

WELLINGTON: A very successful pruning and composting demonstration was held at Belmont in July by the R.N.Z.I.H. and the Soil Association of N.Z.

The property had a well established orchard with quite large fruit trees plus a big grape vine, on which to demonstrate.

The AGM held in the Lower Hutt Horticultural Rooms was a very pleasant affair. The business part of the evening progressed smoothly and the new executive committee was elected.

Mrs. Kath Black, our guest speaker, told us some of the background history of Black's Nursery at Levin. It was founded in 1905 by John Black and since that time has gone through all phases of nursery production from the growing of mushrooms, etc. to the present day growing of orchids.

They first started growing orchids during the Second World War when stocks of orchids were sent out to N.Z. from England to save them from the blitz. As the medium they were grown in, in England, was not available here they had to experiment and potted them on in Dicksonia and sphagnum moss, in which they did very well.

Over the years Mrs. Black has improved the stock by importing many new strains and varieties from several countries and their flourishing business produces and sells cut flowers for the local and export market.

We were shown many magnificent slides showing orchids growing in different countries under glass - acres of them! With so many blooms that hardly a leaf could be seen. There were also close-up shots of many of the orchids she herself specialised in. After her address the President of the L.H. Rotary, Mr. Ron Wilson, moved a vote of thanks and gave a short account of the Tutukiwi Orchid House that Rotary had donated to the city. Members then filed over to admire the Tutukiwi Orchid display.

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