

Fern Society of Victoria Inc.

NEWSLETTER



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FERN SOCIETY OF VICTORIA Inc.

POSTAL ADDRESS: P.O. Box 45, Heidelberg West, Victoria, 3081
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Our Society's Objectives.

The objectives of the Society are:

- *to bring together persons interested in ferns and allied plants*
- *to promote the gathering and dissemination of information about ferns*
- *to stimulate public interest in ferns and*
- *to promote the conservation of ferns and their habitats.*

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- ° Pensioner Family...\$14.00 ° Organisation.....\$17.00
- ° Overseas \$22.00 (Payment by international bank cheque in \$A please. Sent by Airmail.)

Subscriptions fall due on 1st July each year.

MEETING VENUES: The Kevin Heinze Garden Centre at 39 Wetherby Road, Doncaster (Melway 47; H1).
 Other meetings at members' gardens or as advertised on the following page.



Opinions expressed in this newsletter are the personal views of the authors and are not necessarily endorsed by the Society, nor does mention of a product constitute its endorsement.

TIMETABLE for EVENING GENERAL MEETINGS:

- 7.30 Pre-meeting activities - Sale of ferns, spore, books, merchandise and Special Effort tickets. Also library loans and lots of conversation.
- 8.00 General Meeting.
- 8.15 workshops and demonstrations.
- 9.15 Fern identification and pathology, Special Effort draw.
- 9.45 Supper and another good yarn.
- 10.00 Close.

2004 Calendar of Monthly Events

May 20th Meeting

Will be a night of fern identification, so if you have a fern growing in your shade house or garden that your not quite sure of the name, then make it a date to attend this meeting. Bring your potted plant, or if it is growing in the ground then bring along a frond (maybe with spore) to assist in the species identification, and our panel of experts will attempt to identify it with a discussion and diagnosis of each fern.

Competition is open to any fern on the table.

NOTICE

EXCERSION
SUNDAY JUNE 6TH 2004

NOTICE

A visit has been organised to Dorothy and Ian Fortes' Nursery this will take place of our usual meeting night for this month. For our new members these outings are a great way to meet and talk to our members, so keep this date free as you are sure to have a terrific time. This will also be an opportunity for members to add to their fern collections always a main concern for some!

Weather permitting we will be making a day of it.

See page 37 for more information.

25TH SILVER ANNIVERSARY CELEBRATION SUNDAY THE 20TH JUNE, 2004

With this newsletter you will receive your invitation to attend this once only event. The venue for which is Nth Blackburn Bowls Club, Nth Blackburn, located on Springfield Rd. As this event is not far off please ring now before you forget as we do require to know the numbers for catering purposes.

Our guest speaker will be our founding member and first President Chris Goudey

We do look forward to seeing you all there.

FRONT COVER:

The front cover of this issue was used from February 1985, to August, 1987. This was a black and white photo it's origins I'm unsure of.

PRESIDENTIAL PERORATION

Well, another fern show has come and gone, and what a success it was. Saturday in particular was very busy, with what I think were record crowds and high volume sales. Sunday was a much quieter day, but still we could class it as a success.

A very large thank you is required to all those who contributed in any way to the show. Those who put ferns into the both the competition and display are highly commended, as a very good display was achieved. Also there were enough ferns on the sale tables to satisfy most purchasers. It should be noted that there were some people looking for *Pyrosias*, but none were to be found. Maybe next year?

As I am writing this straight after the show, I have no idea if it was a financial success or not, but from a promotional aspect it delivered everything we would wish.

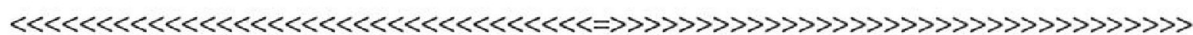
Don Fuller, who still managed to take out the Best Fern of the Show, put in a very large portion of the effort behind the show as usual. Well done on both counts Don!

We now look forward to celebrating our 25th Anniversary with an afternoon tea at the North Blackburn Bowls Club. More information on this will appear elsewhere in the magazine; suffice for me to say to you to set aside this date to attend and enjoy the afternoon. Chris Goudey will be speaking, and I'm sure that all of us will be speaking to old friends and acquaintances that we haven't seen in some time.

Don't forget that our meeting on May 20th will be a fern identification night. As there were a number of ferns in the show that were not identified correctly (I didn't notice this, but those with more expertise pointed it out to me), it will be beneficial to bring along any fern that you are even doubtful about the name to have it identified by the experts.

I will be unable to attend this meeting, as my play will be in full flight at this time. This prompts me to inform you all that I will be standing down as President at the September AGM, as I do not have the time to commit to the Society that is required of a President. Ferns are not my passion, but I agreed to stand in until a new President could be found. The position is not an onerous one, and I ask all members to consider whether they could take on this job. All it needs is someone who loves ferns and is not afraid to stand in front of the meetings. Please note that there is no necessity that the position be male!

RFX



Excursion Sunday 6th June

On Sunday 6th June a visit has been arranged to Dot and Ian Forte's home in Garfield North. There we will have the opportunity to look through Dot's ferneries and to explore the fern gulley at the back of their property. Dot has a great collection of ferns and also has ferns for sale at a good prices.

We will meet at Dot's place at about 11.30 a.m., spend an hour or so having a look at Dot's ferns, followed by a picnic lunch (bring your own everything). After lunch we will explore some of the fern gulley.

We will then move onto Labertouche to have a look at one or two nice fern spots there.

DIRECTIONS:

To get to Dot and Ian's farm take the Princes highway, continue on down past Pakenham until you see "Gumbuya Park" on the LHS. Take the next road on the left which goes to Garfield North. Drive up this road for about 7 kilometres. Dot and Ian's place is number 545 and is signed posted appropriately enough "Fern Glen".

Talk Fern Society - August 2003

NEPHROLEPIS

Don Fuller

NEPHROLEPIS is a genus of ferns which have not enjoyed popularity in recent years (in fact I cannot remember a talk on them in the 14 years I have been a member of this Society). However I find them attractive and very suitable for warm, well lit protected situations.

This genus belongs in the family NEPHROLEPIDACEAE (which also includes Arthropteris). The genus contains approx. 40 species of which 7 are found in Australia. They are found in all tropical countries as well as China, Japan and New Zealand.

DESCRIPTION

- Terrestrial or epiphytic.
- All feature much branched, wiry slender runners or stolons which give rise to plantlets.
- Circular sori. Indusia are mostly round, kidney shaped or crescent.

OCCURRING IN AUSTRALIA

1. Nephrolepis acutifolia

Found in NE Qld, tropical Africa, Asia, Polynesia.

Sori is marginal and the indusium linear, often interrupted.

Fronds are pale greyish green. Both surfaces of the lamina are covered with hair-like scales when young which are shed with age.

Resents disturbance and is very cold/frost sensitive.

2. Nephrolepis auriculata (syn. *N. biserrata*)

Found in coastal NE Qld and tropical Asia and Pacific Islands.

Sori is well in from the margin, about halfway towards mid-vein. Indusia round/kidney shaped.

Fronds bright green - lower pinnae gradually shorter and widely spaced.

Pendulous and narrow. A large, coarse fern.

Frost sensitive.

3. Nephrolepis cordifolia

Found in North & South Qld, Northern NSW, North-Eastern WA, NT, Tropical Asia from Japan to NZ.

Sori prominent, midway between margin and mid vein.

Fronds narrow, dull green, margins irregularly crenate, basal pinnae reduced.

Tubers on roots.

Hardy in Melbourne conditions.

4. Nephrolepis hirsutula

Found Eastern Qld, Northern WA, tropical Asia and Pacific Islands.

Sori towards margin, large and prominent.

Fronds - Bright green, broad, margins of pinnae irregularly crenate. Base of pinnae distinctly lobed.

A large, coarse fern.

Extremely frost sensitive and resents disturbance.

Continued from previous page

5. *Nephrolepis obliterated* (oh blit er ata)

Found Northern Qld, NT, North-Western WA, also the lowlands of New Guinea.

Sori - Small, circular and situated near margin. Indusia round - kidney shaped.

Fronde - Light green, glossy. pinnae irregularly lobed and toothed. Basal pinnae reduced and spaced.

Somewhat cold sensitive.

6. *Nephrolepis radicans*

Found NE Qld (on the edge of caves in the Chillagoe district)

Sori just in from margin, indusia round - kidney shaped.

Fronde smaller.

It was stated that there are seven Australian species but though I found at least two references to this fact, could not trace the seventh specific fern.

Of these ferns only *Nephrolepis cordifolia* is readily growable in Victoria. All the others are tropical and are very cold and frost sensitive. They also resent disturbance.

Let's now have a look at some of the more interesting *Nephrolepis* ferns which can be grown successfully here.

Nephrolepis cordifolia - Fishbone or Sword Fern

This is an extremely hardy species which is almost world wide throughout the tropics and sub tropics where it grows in a wide variety of conditions. It is a vigorous, drought- and sun-tolerant fern. It will survive in full sun and is almost indestructible and invasive. A measure of its toughness is the fact that for a period of time there was a thriving clump of it growing between the cracks in the vertical platform wall on No 2 platform at North Melbourne Station. (Within mms of moving trains)

A distinguishing feature of this fern is the fleshy tubers that it produces along its runners or stolons.

This fern has given rise to a number of cultivars - The most common and attractive is *Nephrolepis cordifolia* cv. Plumosa (Plumed Sword Fern). This fern is also very hardy and will grow quite well in the garden in Melbourne.

Some of the others are *Garrettii* (which I have not seen for some time) and Kimberley Queen

EXOTICS

Nephrolepis exaltata

This fern is found in Asia, Africa, and the Americas. It was introduced into cultivation from Jamaica over 200 years ago and became a popular greenhouse plant. The fronds are larger and longer than *N. cordifolia*, fairly stiff and dark green in colour. However if grown in the shade the growth is softer and more arching.

In the late 1890's a florist near Boston found among his *N. exaltata* ferns a new variety which was softer, more graceful and had long broad pendulous fronds. It was very popular and was in great demand and is still popular today. This fern is called *Nephrolepis exaltata* cv. *Bostoniensis* - Boston Fern. This fern is sterile.

However the mutation did not stop there. Among the many thousands of Boston Ferns in many locations appeared a large number of very different ferns which had ruffles, frills and other variations. This ability to produce interesting cultivars has continued to this day to the extent that the number of named cultivars rivals *Adiantum raddianum*. All of these cultivars are also sterile.

Some of the common and easily grown cultivars are -

- *N. bostoniensis* Compacta - Dwarf or Compact Boston Fern. Similar to *N. bostoniensis* but a much smaller compact fern.
- *N. bostoniensis* Gretnae - A large weeping fern with crested fronds and forked, bluntly lobed pinnae.
- N. bostoniensis* Delilah - Similar to Gretnae but golden yellow.

- *N bostoniensis* Fan Dancer - A smaller golden yellow form.
- *N bostoniensis* Elegantissima - A very attractive cultivar with long, open, finely dissected bipinnatifid fronds.
- *N bostoniensis* Elegantissima Chantilly Gold - A golden yellow version of Elegantissima.
- *N bostoniensis* Fluffy Ruffles
- *N bostoniensis* Childsii - A slow growing cultivar with medium density, clustered, overlapping segments.
- *N bostoniensis* Smithii
- *N bostoniensis* Suzi Wong
- *N bostoniensis* Verona - A cultivar with open, lacy, finely divided fronds.

Growing Conditions for *N bostoniensis* and cultivars.

- These ferns all grow well in pots or baskets but not in the open garden. I find that they do well in plastic baskets.
- They do best in a protected position with good air movement, a high light level, warm temperature and reasonable humidity. For these reasons they are suited to sunrooms or sunny porches. I grow mine in an igloo high up next to the roof.
- Use a good quality, well draining potting mix.
- Feed with slow-release fern food, dynamic lifter or organic liquid fertilizer at repotting and during the growing season.
- As they are all sterile they need to be propagated by division (or tissue culture), and as they prefer to be slightly root bound I find that they do best if I do not divide them into too smaller clumps.
- Don't repot in cold weather or you'll lose a lot of ferns. Wait until the soil and air are warm; well into Spring.
- The congested cultivars will not tolerate overhead watering as it rots the centre fronds. Water potting soil not the fronds.
- Do not over water, They require reasonable water in summer but very little in the cooler months. Best to water thoroughly then allow to almost dry out. They are very tolerant of short periods of dry conditions.
- Keep on the dry side in Winter.
- Grooming is difficult as eventually they will commence to die out in the centre with all the new growth around the edge. When this happens you need to repot. Remove and discard the centre and replant the new growth from around the edge. They can be slow to re-establish.
- They prefer high humidity in summer.
- With the golden yellow forms; the higher the light level the brighter the colour.
- If the light level is too high the tips of the fronds will become bleached.
- *Nephrolepis* are not as prone to damage from snails or caterpillars as most ferns, probably because they are rather less tender and succulent than others.

Pests

Mealy bug is a difficult pest to eradicate as the usual treatment (cut the plant back to the soil level) also eradicates this fern! For a small infestation a recognised, effective method is to dip a cotton bud in Metho and dab it on each individual bug. RogorTM is an effective, systemic pesticide which **must** be used with extreme caution, good protection and in a well ventilated area.

Scale can be a problem.

REFERENCES

- Australian Ferns and Fern Allies - Jones and Clemesha.
- Australian Ferns - Calder Chaffey.
- Ferns of Queensland - S. Andrews.
- Ferns for Home and Garden - Gillean Dunk.

ADDENDA

- There was discussion about the exact nature of a stolon, and the difference between it and a rhizome. After an extensive survey of fern book glossaries, I'm none the wiser except for a vague impression that they are both stems, both grow on or under the soil surface and both produce roots and fronds but stolons are very thin and always grow horizontally whereas rhizomes can be thin or thick and aren't necessarily growing horizontally. Also, rhizomes divide and stolons don't. **Any better explanation, anyone? Please?**
- Flora of Australia lists a *Nephrolepis arida* D.L.Jones, and does not include *N. radicans*. If both these were included it would give us the seven species in Australia. *N. arida* is said to be "endemic and uncommon in scattered localities in far-northern W.A. and in central and northern N.T., growing in damp crevices and on ledges in sandstone gorges"*. It appears to be most closely related to *N. hirsutula*.

*Flora of Australia (Vol.48, P.442) 1998.

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Pteridoforutn 63: October 2002

GROWING TIPS FOR FERN LOVERS

By Peter Wilkins

As most of us are not blessed with a tropical climate, I would like to share with you some experiences I have had in trying to grow delicate ferns, either from plants or spores:

- Plant with hessian.
- Do not bring in new plants from tropical areas after February. This will give them a chance to acclimatise.
- If you are growing spores like *Platycerium*: not plant the sporelings out too small. Let them set two pairs of leaves first.
- Keep sporelings in a warm area and let them get some filtered sunlight.
- Also use the same soil mix you sowed the spores in. Do not make use of manure for the first transplant.
- Give sporelings regular feeds with a mild solution of organic fertiliser.
- Before winter you should give a good feed and during winter on warmer days you can carry on feeding. This keeps plants strong.
- When transplanting plants or sporelings, do not go to a too bigger pot. I found that from tubes the next best size is a 50 mm pot.
- Remember that small pots dry out quickly.



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(This article is copied, with thanks from the Newsletter of the Western Australian Fern Society Inc., December, 1994)

ATHYRIUMS

Helen Moirhead

An attractive group of ferns which contains some very decorative species of delicate appearance. The Lady Fern (*Athyrium filix-femina*) has been responsible for hundreds of cultivars. The genus consists of about 600 species, widely distributed around the world with about seven species extending to Australia.

HABITAT:

Ferns of this group are invariably ground growers and mostly shade lovers. A few hardy types grow in sunny positions, but usually where there is an abundance of soil moisture or at high altitudes. Some species have very brittle fronds which are easily damaged by wind or rough handling.

SOIL TYPES:

Most *Athyriums* prefer a well-drained, organically rich loam containing plenty of humus. They also appreciate regular applications of organic mulch to the soil surface. A few *Athyriums* such as *Lunathyrium japonicum* appreciate the addition of lime. Potted *Athyriums* prefer an open mix based on well structured loam which has been fortified with peat moss or milled pine bark. Many ferns in the group have a very strong root system and quickly outgrow their container. Such species are best planted in the ground, otherwise their appearance suffers because of the confined root system.

WATERING:

Athyriums generally like moist conditions and appreciate plenty of water, especially during periods of hot dry weather. They also respond to water sprayed onto their foliage during such weather. Their fronds quickly become tattered if the plants dry out at the roots or are exposed to dry, buffeting winds.

FERTILISING:

As a group, these ferns are strong growers and respond to the use of fertilisers and manures. Blood and bone, well rotted animal manures and compost are particularly beneficial and should be applied during the spring and summer. Slow release fertilisers can be added to the potting mix or plants can be supplemented with applications of liquid fertiliser.

PESTS:

Slugs and snails eagerly attack the young fronds. Grubs may be a problem on those with finely divided fronds and aphids may congregate on crosiers and uncurling fronds.

ATHYRIUM FILIX-FEMINA (LADY FERN):

One of the commonest ferns widely distributed throughout the British Isles, India, China, Japan, North Africa, Canada, North America, Mexico and Peru. Plants are dormant in winter and in cold regions they

may be completely deciduous. A vigorous flush of new growth in spring is very decorative. In all, over 300 cultivars of this fern have been named. As a plant of this species gets older, the crown tends to grow out of the ground on a short trunk so that the young roots have further to grow to reach the soil. This can slow the whole plant down and make the growth a little sparse. Replanting (possibly at the same time as dividing the crowns if they are becoming too crowded) so that the crowns are just level with the soil, followed by regular mulches of leaf mould, will result in renewed vigour.

CULTIVARS:

Athyrium filix-femina 'Congestum', 'Cristatum', 'Congestum Cristatum', 'Congestum Grandiceps', 'Victoriae', 'Frizelliae'.

ATHYRIUM JAPONICUM (*Lunathyrium japonicum*)..

This *Athyrium* is native to Australia and is a weedy type that naturalises readily in any favourable situation. Plants are variable from one population to another, especially in the thickness and lobing of the leaves. It grows in colonies on damp rock faces, stream banks, etc., and sometimes in quite exposed situations,

Other *Athyriums* which are native to Australia are

A. accedens, *A. assimile*, *A. austral* and *A. dilatatum*.

Athyrium nipongenense var *pictum* (Japanese Painted Fern):

This *Athyrium* is prized for its delicately coloured new fronds which are of a soft metallic grey colour, but frequently contain reddish or bluish tints. The colour is maintained in old fronds., however, the young fronds contrast pleasantly with the mature ones. Plants are cold-hardy, withstanding quite heavy frosts. They can also be grown in subtropical regions. A shady location in humus-rich loam is suitable, although plants in good light develop the best colour.

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MEMBER PROFILE

BILL TAYLOR

By Mirini Lang and Brenda Girdlestone

Bill was working as a dentist technician, but his passion and hobby were in Horticulture. So with a strong desire to learn he enrolled in a night course at Burnley school of horticulture. Bill says he enjoyed it so much when he finished that first course he enrolled in another to further enhance his knowledge. Bill's interest was in gardening leaning towards ferns, azaleas and rhododendrons.

It was whilst taking these classes that he saw an ad in the weekly times about the inaugural meeting that the Fern Society of Victoria was intending to hold. It was curiosity and the easy access (being able to leave one building after his class, to go to the next building where the fern meeting was being held) that enabled Bill to attend the first Fern Society meeting. He became a member and this gave him access to knowledge that was not available in his courses. It didn't take long before he was putting into practice what he was learning and was growing his own ferns.

Attending the meetings was important as this gave Bill access to the knowledge that Chris Goudey had gained and spores that Chris was importing into Australia. It was not long before Bill was growing ferns from spore. It was whilst growing spores that he developed a cultivar *Adiantum* cv. *Crested pacottii*.

Bill and his wife Joan remember these early meetings with 200 to 300 people attending each month, filling the hall to standing room only capacity.

Bill and his wife Joan moved up to Belgrave South where he started his business as a Dental Technician. He built two shade houses and four cold houses covering half an acre on the land. This enabled Bill to start his Hobby Wholesale Nursery which he dedicated to the growing of ferns, camellias, rhododendron and azaleas. He found it easy to grow *Adiantum*, which were always regarded as his favourite.

Combining both dental and nursery businesses worked well.

If the weather was wet he worked in his dental laboratory, if the weather was fine he found that he was drawn to his nursery. His love of rhododendrons never wavered and around the same time as joining the Fern Society he also joined the Rhododendron Society.

Whilst being an active member in the Fern Society, Bill together with his wife Joan became committee members.

They also served time on the show committee from the early 80's to early 90's. This was during the time the show was located at the herbarium in the Royal Botanical Gardens. He was made a life member of the society for his dedicated work during this time.

In the early 90's Bill brought in some sandy loam to use in his potting mix, mixing it with a compost mix that he made up himself. He planted selling stock, and young plants into this mix. Unfortunately 12 months later when he went to repot these plants the roots all dropped off. The sandy loam had too much salt causing the roots to rot off. This proved to be an insurmountable hurdle that Bill couldn't see himself getting over and with the work required to get to this stage it was with a heavy heart and dwindling enthusiasm which led to the ceasing of Bills days of growing ferns.

Ferns, as Bill found, are very demanding when you are trying to grow the best. From this time his interest in his rhododendrons grew even more.

Bill fondly remembers some of the local trips he and wife Joan joined went on, although they were unable to attend the overseas trips.

During this time both the Rhododendron and Fern Societies were conducting separate shows at the Nunawading Horticulture Centre. Although the location was good with a potting shed at the back of the hall, both Societies were starting to struggle with attendance numbers. It was becoming more difficult to make a profit out of the show. With this in mind, it was suggested that a combined show may prove to be beneficial to both Societies. Hence we now have the Fern and Vireya Rhododendron Show, and our popularity is growing again.

Bill is now the President of the Rhododendron Society and one of their aims is to have one of the largest collections worldwide.

As an active member of the Rhododendron Society he competes in the shows. He frequently wins exhibitor prizes. This year he won 4 out of 8 categories.

Bill has contributed greatly to both the Fern and Rhododendron Societies over the past 25 years through his keen interest in horticulture.

FERN SHOW COMPETITION RESULTS 2004

<u>SECTION</u>	<u>EXHIBITOR</u>	<u>NAME OF FERN</u>
1. ADIANTUM		
1st	JOHN HODGES	<i>Adiantum frostii</i>
2nd	KIETH HUTCHISON	<i>Adiantum fragrans</i>
2. ASPLENIUM		
1st	FRAN HARRISON	<i>Asplenium sp. aff flaccioum</i> (New Caledonia)
2nd	DON FULLER	<i>Asplenium Lividum</i>
3. DAVALLIACEA		
1st	JACK BARRETT	<i>Davallia griffithiana</i>
2nd	JACK BARRETT	<i>Scyphularia. Cv</i>
4. FERN OF NEW ZEALAND		
1st	DON FULLER	<i>Davallia tasmanii</i>
2nd	DIANA MAYNE	<i>Asplenium Bulbiferum</i>
5. POLYPODIACAE		
1st	DON FULLER	<i>Pyrosia lingua cv. Serrata</i>
2nd	KEITH HUTCHISON	<i>Polypodim</i>
6. FERN IN 150mm CONTAINER OR LESS		
1st	BRENDA GIRDLESTONE	<i>Nephrolepis smithii</i>
2nd	JOHN HODGES	<i>Huperzia</i> (fine rock tassel)
7. ANY OTHER FERN		
1st	DON FULLER	<i>Drynaria rigidula cv. Whitei</i>
2nd	DON FULLER	<i>Blechnum gibbum</i>

BEST FERN OF THE SHOW

DON FULLER

Pyrrrosia lingua cv. serrata

Congratulations to Don and all the other winners.

SHOW STATISTICS: 11 exhibitors submitted a total of 57 entries in the competition, the most popular category this year was the 150mm or less container with 13 entries followed closely by Adiantum with 12 entries and any other fern came in third with 11 entries.

FERTILIZERS IN SOILS AND TYPE OF FRTILIZERS

Ferns must extract nutrients from the soil so that they can grow and reproduce. These nutrients, or elements, are present in soils in various chemical forms.

Major elements are:

Nitrogen
Phosphorus
Potassium
Calcium
Magnesium
Sulphur

Minor elements are:

Iron
Manganese
Boron
Zinc
Copper
Molybdenum
Chlorine
Cobalt
Sodium

Healthy ferns need a balanced supply of all of the above elements. If one is in short supply, growth will be reduced or malformed. Most soils provide these elements in sufficient quantity for normal fern growth. However, they can become short, and we then have to boost the levels with fertilisers. The following summarises briefly what each of these elements does to ferns, both in normal supply and when deficient.

Nitrogen is necessary for vigorous growth throughout the growing season, and produces a lush green-ness in the fronds. A nitrogen-deficient fern is usually stunted in growth, with uniform, pale green or yellowish-green fronds which are smaller than normal.

Phosphorus is for the storage and supply of energy in transpiration and photosynthesis. It is also important for root growth and reproduction.

A phosphorus deficiency results in stunted plants with very dark green fronds and a reduced root system.

Potassium is important for the lengthening of tissues such as stipes and stems. It also is a protection agent against disease by thickening the outer cell walls of plant tissues. When in short supply, plants may show marginal patches, or a border of dead tissue on the older fronds.

Calcium is used for cell wall construction, cell division, and protein formation. It is also very important for the development of a healthy root system.

Calcium-deficient plants develop stunted, distorted fronds which die back from the tips.

Magnesium is vital for photosynthesis, as it is an important component of chlorophyll. Magnesium may be in short supply in acid or sandy soils. Magnesium-deficient ferns display chlorosis on the older fronds, with the main veins remaining dark green.

Sulphur is a necessary element in the formation of roots. Sulphur deficiency is not very common; affected plants are a uniform pale green overall.

Iron is needed in continuous, small amounts, for the functioning of chloroplasts and in production of enzymes. It is usually abundant in soils. Ferns suffering from a lack of iron have pale green or yellow new fronds with prominent dark veins.

Manganese is required in small quantities for enzyme production, and also for photosynthesis. It is commonly lacking in alkaline soils rich in organic matter. Deficient ferns show curled or cupped fronds, and chlorotic patches with the veins remaining green.

Boron is required in small amounts for cell construction in actively growing parts such as meristems and root tips. Boron is frequently lacking in calcareous soils. Boron-deficient plants may show thickened, malformed fronds

Zinc is of prime importance in plants for the production of growth hormones responsible for leaf and stem development and expansion. Zinc-deficient plants produce markedly shortened, malformed fronds, which may show irregular yellowish interveinal areas when young.

Copper is needed in small quantities for use in enzyme systems. Deficient ferns may show wilting and dieback of young fronds, and malformation

Reference: Encyclopaedia of Ferns, by David Jones

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Copper is needed in small quantities for use in enzyme systems. Deficient ferns may show wilting and dieback of young fronds, and malformation

Reference: Encyclopaedia of Ferns, by David Jones

Most ferns appreciate well rotted animal manures or organic fertilisers such as blood and bone. Inorganic fertilisers can be very useful for strong, vigorous ferns such as tree ferns, but they should be used with care on weak-growing ferns. Liquid fertilisers can be beneficial, especially for ferns in containers. So, too, are organic extracts.

Fertilisers should not be applied right against the active growing regions, as burning may result. The best time to apply fertilisers and or manures is during spring or early summer, while the plants have a long growing period ahead of them.

Late applications of fertilisers or manures may interfere with the plants' dormancy, producing late growth which will reduce their ability to survive a cold winter. This, of course, is a generalisation. In Western Australia our winters can sometimes be quite mild, and ferns tend to continue to produce new growth anyway. Again, the growth of some ferns can be at its most active during winter months, especially the cooler-climate species, and these examples may be fertilised during the winter period.

Types of Fertilisers

The following summary first appeared in 1995, in the Victorian Fern Society's newsletter. It was subsequently reproduced in our own newsletter in June 1996, and it also appeared in the newsletter of the San Diego Fern Society.

The type of fertiliser used depends on the fern and the growing conditions. Some fertilisers are:

Blood and Bone - a slow-acting nitrogenous fertiliser, easily obtained and long-lasting.

Osmocote - a slow-release fertiliser in pellet form which can be purchased in a type specifically for ferns. It is relatively expensive but long-lasting. Can be obtained in 3- or 9-month grades. Best placed in the top layer of soil and near the bottom if potted. A typical amount would be about 12 grains at top and bottom in an 8-inch pot. The lifetime depends on the amount of watering and the temperature. If used with manure, it should definitely not be mixed in the bulk medium since the heat from the manure may cause a rapid release of nutrients from the Osmocote, burning the plant. Osmocote may burn the foliage of plants if the granules are in direct contact (eg if placed in Platyceriums).

Nutricote - another slow-release fertiliser in pellet form, especially formulated for ferns and palms. One application will last for up to five months.

Aquasol - a faster-acting liquid fertiliser. As with most liquids, it must be applied more often than a solid product. As the potassium nitrate in the original formula has been replaced with urea, the nitrogen is not immediately accessible to the plant, so that Aquasol is not as good as formerly. Products with ammonia or urea must first have their nitrogen converted to nitrate before being accessible to the plant. This may take 2-3 weeks.

Thrive - nearly all urea and not as good as a nitrate fertiliser. Rather alkaline.

Maxicrop - an improved liquid product with nitrogen, phosphorus and potassium. May be used on its own or in a 1:1 mixture with Aquasol for hand watering every 1 or 2 months.

Cow manure - can be used as a solid or applied as a liquid extract.

Nitrosol - another liquid nitrogenous product. Fertiliser spikes - long-lasting and effective for reviving pot-bound plants.

Dynamic Lifter - a compressed and pelletised fowl manure, shorter-lived than blood and bone. The lifetime depends upon watering frequency.

Dynamic Lifter Plus - as above but with extra nitrogen.

Dried chicken or horse manure - also used by some growers.

Ground eggshells, limestone, dolomite, gypsum - these supply calcium and increase the pH, resulting in a more alkaline medium. This may harm acid-loving or calcium-sensitive ferns such as *Blechnum spicant*.

This article is reprinted with many thanks from the Western Australia Fern Society March 2001.



The following article is taken, with thanks, from "Fiddlehead Forum" 23, 6 (Nov. - Dec. 1996), the Bulletin of The American

EVERGREEN VERSUS DECIDUOUS?

Barbara Joe Hoshizaki

The application of the term "deciduous" takes on a different emphasis depending on whether one is a gardener, a botanist or a lexicographer. As mentioned in an earlier article by Dr. Wagner, deciduous may take on different meanings by different botanists as well. I would like to present the gardener's point of view.

Anyone who has dealt with the gardening public knows one of the fundamental questions asked by the gardener is, "Is it evergreen or deciduous?". The gardener is primarily interested in knowing if the plant is evergreen or will it "die down" on a seasonal basis. Of less immediate concern is how the "die down" will occur, that is, will it be shed by an abscission layer or wither in place. Gardeners want to know if there will be a gap in the planting bed at a particular time of the year. Most gardeners become concerned about foliage decline at clean-up time. Does the clean-up require cutting of each withered leaf to remove it or does it require only a rake?

If one wishes to narrow the dictionary definition of deciduous to make the meaning more precise as Dr. Wagner proposes, one can pick the words "fall", or "shed" to emphasize, or the words "seasonal" or "annual". Both sets of words are used by lexicographers in their definitions. Some dictionaries will add, "as opposed to evergreen" or "perishing after a seasonal life" which in my mind tilts the meaning toward emphasizing "seasonal" or "annual", the gardener's choice. If the meaning of deciduous becomes limited to mean shedding by an abscission layer then what objection is there in saying the foliage is "jointed" or "abscised" instead? These terms are already in use and understood by the vast majority of botanists. Deciduous could then be retained as a word which opposes evergreen.

The use of wintergreen instead of evergreen is again an introduction of another term. How is it better than evergreen? Could wintergreen imply that it is not summer green? If one thinks of winter in terms of certain months instead of a season with short days, it then becomes confusing when wintergreen is used to describe a fern from the southern hemisphere. One could imagine a discussion of various other side issues such as "evergreens" not really being ever

green (as applied to individual leaves), or the precise meanings of dormancy and rest periods, but these are not particularly pertinent to this discussion.

The usage of marcescent may describe ferns in a given geographical area, but outside that area may be inaccurate. Admittedly some ferns seem to be obligate deciduous and marcescent wherever they grow, but many have their behaviour governed by climatic factors. In one climate they may be promptly deciduous or marcescent and in another climate they may be sub-marcescent or even essentially evergreen. Precise usage may require more explanation than we would like.



In summary, I propose we emphasize the seasonal or annual part of the dictionary's definition which is to say deciduous is the seasonal perishing of the foliage as opposed to evergreen. The terms abscising (jointed) and marcescent may then be used to describe how the foliage declines. This is the least disruptive change, maintains the popular understanding of deciduous, provides evergreen with an opposition term, and still maintains acceptable precision.

marcescent = withering but not falling off

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