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From the President

Dear Fellow Epiphyte Growers

By the time this magazine reaches you it will be spring in New Zealand – a time when the days are getting longer, the temperatures of air and soil are warming up and those plants that have been dormant over the winter start poking their heads above the ground.

I always love spring, knowing that winter is over and summer will soon be here. Spring is also a great time for epiphyllums as their buds are rapidly growing and will burst into flower within a couple of months. It is the time to give these plants some fertiliser to encourage bud development and to gradually increase watering. And of course it is also the time when hoyas start growing again. September and October are good months to take hoya cuttings, giving them plenty of opportunity to root and grow during the warmer months. As with epiphyllums the watering regime for hoyas is also increased at this time. The same is also true to Ceropegias.

As you do give your plants a spring sprucing bear in mind that we will need plants for the Hutt Horticultural Show in November. It would be good if you had plants to display at that show.

In December our Society is 10 years old and therefore a celebration will be in order. If you have any ideas on how we might celebrate this milestone do let myself or one of the other Committee members know. We can't let this occasion slip by as it really is a great achievement.

Happy growing

Jane Griffith

29th August 2000

The Programme for 2000

Meetings are at Johnsonville Union Church (Dr. Taylor Terrace) and start at 2.00 pm. Library books etc. are available at 1.30 pm.

Those on duty are responsible for preparing the room, assisting with tea and tidying the room at the end of the meeting. If for any reason you are unable to do your allocated duty please arrange for someone else to do it.

September 9th	**Creating new epi hybrids**
	On Duty: Julie Stewart, Jenny Askwith, Yvonne Johansen
October 14th	**Aporophyllums**
	On Duty: Penny Luckens, Mary Hardgrave, Isobel Barbery
November 18th	**Visits to Collections**
December 9th	**AGM** **Talk on "Other Epiphytes"**
	On Duty: Joyce Walter, Robyn Gibson, Virginia Stead.

Items for your Diary...:

Hutt Valley Horticultural Society Show **November 11th and 12th** we will have a display and sales table there..

Our 10th Birthday **December 9th** be sure to come and celebrate.

- Bring along a friend to the next meeting.
- Introduce a Neighbour to Hoyas or Epis, then bring them along to meet the group.
- Plant a seed in conversation, "pop in and join us on the second Saturday of each month."
- Distant members are always welcome

Help our Society to GROW...

Hybrid Schlumbergeras

The photograph opposite, taken by Penny Luckens shows three of her own plants. The Zygomorphic nature of the flowers is shown very clearly in this picture.

Schlumbergera...

Penny Luckens talked at our July meeting on Schlumbergeras. - **Alison Beeston** reports..

At the July meeting Penny Luckens lead a discussion on Schlumbergeras. Unfortunately not many members had plants in flower to bring in - as usual they were either just finished or about to come out. Penny began with a discussion on name changes - plants once known as Zygocactus are now called Schlumbergeras - and went on to discuss the nature of the flowers. Schlumbergeras have zygomorphic flowers - that is - if cut down the middle, there are two matching halves. Rhipsalidopsis, on the other hand, although similar in flower are not zygomorphic. Five or six original species have been crossed to give the variety of flowers available now.

Schlumbergeras are native to Brazil and come from an area with distinct wet and dry seasons. They need a well-drained soil. A common problem in cultivation is bud drop, which Penny considered is usually caused by water stress, either under or over-watering. They also tend to be susceptible to draughts.

The Schlumbergera species are *russelliana, truncata, kautskyi, orssichiana,opuntioides* and *microsphaerica* but most plants that are available in garden centre are hybrids.

Plant Nutrition.

*This article, by **David McRitchie** which originally appeared in "The Amateur's Digest" Vol 11/3, September 1999 compliments the discussion led by Andrew Flower - and also reported in this issue - on the medium we use to grow our plants in.*

"It's All In the Chemistry"

Most cacti and succulent hobbyists fertilize their plants during the growing season on a

regular or whenever "I think of it" basis and so are familiar with the N-P-K ratio typically shown on the fertilizer container. However, many may not be familiar with the function of these nutrients and their contribution to plant growth.

Of course N-P-K stands for Nitrogen, Phosphorus and Potassium which, along with Calcium, Sulphur and Magnesium are known as the macro nutrients. The corresponding numbers indicate the percentage by weight of each as apart of the total fertilizer mixture. Often the fertilizer will also contain traces of micronutrients such as Iron, Manganese, Zinc, Copper, Boron[1], Molybdenum and Chlorine. We'll examine all of these in order.

Macro nutrients

Nitrogen (N)

Nitrogen is found in the soil in three main forms.

1. Elemental Nitrogen, which is an inert gas and as such is unavailable to plants
2. Organic Nitrogen from decaying matter, again in an unusable form although soil organisms convert a portion of it into inorganic forms (ammonium and nitrate) which can be taken up by plants.
3. Inorganic Nitrogen applied as a fertilizer. This is also generally found in three forms, ammonium, nitrate and urea, Although the latter is actually an organic form, with exposure to moist, aerated soil it rapidly converts to the ammonium form. In moist warm soils with a pH above 5.0, the ammonium form quickly converts to the nitrate form which is readily assimilated by a plant. The ammonium form can also be utilized if present in the soil solution.

Nitrogen is present in all living cells and is an essential component of all proteins, enzymes and metabolic processes. It is a structural part of the chlorophyll responsible for photosynthesis which allows a plant to form necessary simple carbohydrates essential for growth. Nitrogen is therefore associated with stimulating rapid, vigorous growth.

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[1]Boron is a necessary nutrient - but, as is noted elsewhere, excess quantities can be very damaging to plants. Ed.

Nitrogen can be leached from the soil by excessive moisture and, if the soil becomes depleted, must be replaced with the application of a suitable fertilizer. However, it must be noted that cacti and many other succulents present a somewhat unusual situation in that fertilizers with a high percentage of nitrogen (above 5% or so) can inflict considerable damage in that it causes the plant to produce soft, weak growth making it susceptible to infection by pests and disease.

Phosphorus (P)

Like nitrogen, phosphorus is an essential part of the photosynthesis process. It is normally absorbed by the roots from the soil solution in the form of phosphate ions. The soil solution is then replenished by soil minerals, organic matter decomposition or applied fertilizers.

In young plants, phosphorus is most abundant at the growing point and can be transferred from older to younger tissues as needed (translocation). Phosphorus is involved in such plant processes as utilization of starch and sugar, cell nucleus formation, cell division and multiplication, fat and albumin formation, cell organisation and transfer of heredity.

Potassium (K)

Potassium is absorbed by plants in larger amounts than any other mineral except nitrogen and in some cases calcium. It is supplied by soil minerals, organic materials and inorganic fertilizer. Potassium can be subject to leaching loss.

Potassium plays an important part in the metabolic processes of plants including several enzymatic reactions, particularly those involving the adenosine phosphates (ADP and ATP) which are the energy carriers in the metabolic processes of both plants and animals. It is essential in the carbohydrate mechanism by which energy is obtained from sugar, as well as playing a role in photosynthesis by initiating the closure of stomata and in protein synthesis.

Calcium (Ca)

Calcium is supplied to plants by soil minerals, organic fertilizers and liming materials.

An important part of the cell wall structure, calcium provides for normal transport and retention of other elements as well as plant strength. It exists in delicate balance with manganese and potassium in the plant. An oversupply of any one of the three can lead to a deficiency in the other two.

Sulphur (S)

In most soils sulphur is present as a result of the decomposition of organic matter and is taken up by plants primarily in the form of sulphate ions and then reduced and reformed into organic compounds.

Sulphur is a component of the amino acids cystine, cysteine and methionine and therefore of the proteins which contain these amino acids. It is found in vitamins, enzymes and coenzymes.

Magnesium (Mg)

Soil minerals, organic material, fertilizers and dolomitic limestone are sources of magnesium for plants.

Magnesium is part of the chlorophyll in all green plants and essential for photosynthesis. It also helps activate many plant enzymes needed for growth. A relatively mobile element in the plant, it can be readily translocated from older to younger plant parts in the event of a deficiency.

Micronutrients

Of the elements known to be essential for plant growth, seven are required in such small quantities that they are referred to as micronutrients.

Manganese (Mn)

Manganese may substitute for magnesium by activating certain phosphate-transferring enzymes, which in turn affect many metabolic processes. High manganese concentration may induce iron deficiency in plants. Manganese availability is closely related to the

degree of soil acidity. Deficient plants are usually found on slightly acid or alkaline soils.

Iron (Fe)

Iron is essential for the synthesis of chlorophyll, iron is a constituent of many organic compounds in plants. Iron deficiency is often induced by an alkaline soil and can be induced by high levels of manganese. A high iron level can also cause manganese deficiency.

Copper (Cu)

Copper is essential for growth and activates many enzymes. A deficiency interferes with protein synthesis and causes a build-up of soluble nitrogen compounds. Excess quantities of copper may also induce iron deficiency.

Zinc (Zn)

Zinc is essential for plant growth because it controls the synthesis of indoleacetic acid, which dramatically regulates plant growth. Zinc is also active in many enzymatic reactions.

Boron(B)

Boron primarily regulates the metabolism of carbohydrates in plants. Boron deficiency may occur in both alkaline and acidic soils but is more prevalent in calcareous, alkaline soils.

Molybdenum (Mo)

Molybdenum functions largely in enzyme systems of nitrogen fixation and nitrate reduction. Plants which can neither fix nitrogen nor incorporate nitrate into their metabolic system because of inadequate molybdenum become nitrogen deficient. Molybdenum is required in minute amounts.

Chlorine (Cl)

Chlorine is needed in relatively large quantities in plant nutrition. However, the abundance of chlorine from many sources in the environment means that deficiencies in plants are rare.

Speciality Fertilizers

Fertilizers compounded especially for cacti and succulents have low N-P-K values, For example, the container of a popular brand in USA, "Cactus Juice" indicates values of 1-7-6 respectively. In addition, small amounts of the micronutrients calcium (1%) and chlorine (4.5%) are shown.

There are two main reasons for low values in this product. The first, of course, is to avoid a build-up to toxic levels of any components. The second reason is more complicated and requires some explanation.

In nature, water tends to flow spontaneously towards regions of lower energy, that is, downhill. This tendency is controlled by three effects:

1. Gravity - effect is almost negligible
2. Water under pressure (called hydrostatic pressure) tends to move towards lower pressures
3. Water flows from regions of low salt or solute concentration to regions of higher concentration. This process, as you may know, is called osmosis. This is particularly important in regard to succulent plants.

Succulents, by definition, are able to store large volumes of water and therefore do not absorb the quantities in any given time of non-succulent plants. As cacti lose moisture, mainly at night through the stomata, a negative hydrostatic pressure is induced in the plant which, under effect number two above, causes soil moisture, which is under a less negative or perhaps positive hydrostatic pressure, to be taken up by the roots. In order to pass into the roots, the soil moisture must overcome only the slight tendency of the solutes in the root moisture to move water in the opposite direction by osmosis.

However, it is possible, if an application of fertilizer with high N-P-K values is applied to the soil, the low solute concentration in the roots combined with the high concentration

in the soil moisture will create an osmotic pressure in the opposite direction which may be great enough to overcome the hydrostatic pressure described above and cause a migration of moisture from the roots to the soil.

Clearly then, fertilizers with low nutrient values are to be preferred. The commercial brands intended specifically for cacti, while no doubt excellent, tend to be expensive. A more frugal route to follow is to use a dilute solution of the water soluble mixtures available at all garden centres. For example a 20-20-20 fertiliser mixed at 1/4 the strength recommended in the manufacturer's directions gives a 5-5-5 solution - quite suitable for our purpose.

References:

Fact Sheet SL-8, Soil and Water Sciences Dept., Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida

The Cactus Primer, Gibson & Nobel, Harvard University Press, Cambridge, Massachusetts, 1986.

That was the Month that was....

August is now past. National climate statistics have confirmed the obvious for many parts of central and lower North Island - August was exceptionally dry. Overall August was the coldest month of winter this year with a national average temperature of 8.8 degrees C., a figure lifted by above average sunshine over the North Island. It has been an odd month. So what can we say about epiphyllum flowers - which one expects in November?

In Waikanae things seem to have been a little unusual. Most of our plants are now in the shadehouse - and some of these have been in flower. These have mainly been small-flowering hybrids - which are notable for producing flowers through much of the year. Lollipop, Pete's Snowflake, Disocactus Nelsonii and Tina have all produced blooms - as have two new hybrids.

Some plants are still hanging under trees in the garden. While it has been warm in the daytime, we have had many very cold clear nights - and on occasions frosts.

Out there Indian Chief is in full bloom, buds are ready to burst on Communion and we have had flowers on Piland's Pride, Tiny Treasure, Baccaret and Lollipop.

As our North American friends would say: Go figure!

Dirt ...

Andrew Flower *led the discussion at our August Meeting...*

This is the stuff we grow our plants in. Many people give it much more exotic names and there is no more certain way of starting long and passionate debate than to promote a new "wonder" mix - but in reality things are much more simple. (If you grow Tillandsias - things are simpler still - you don't need any mix at all!!)

Andrew offered the image of a SWAN.

The mix we grow our plants in has to provide:

- ❑ Support
- ❑ Water
- ❑ Air
- ❑ Nutrients

As a well known grower has said often - provided you provide these basics to the plants - your mixture could consist of ground-up rubber tyres.

Epiphytes do not usually grow well in ordinary garden "dirt" there is not enough air and too much water.

A basic mix might consist of:

- ❑ Composted bark
- ❑ Bark
- ❑ Pumice
- ❑ Peat

The composited bark and peat provide organic material and ensure the mix is slightly acidic - which epiphytes prefer. These two ingredients are somewhat interchangeable. Peat has been traditionally used - but has disadvantages (let it get dry - and it is very hard to wet it again!). Bark ensures good drainage and good air availability, the pumice assists drainage and adds structure to the mix. Sand can be used as an alternative to pumice - provided it is reasonably coarse.

The bark in the mix does break down over time - and the air supply to the roots is diminished - so plants must be repotted in new mix every few years.

A slow release fertiliser (like Osmocote) provides a slow supply of essential nutrients - but there are a number of variants of Osmocote which release the nutrients over varying time periods. Do not use a "long period" variety for plants that go dormant - as the nutrients will continue to be released during the dormancy period - and root damage will ensue. It may be better to use a "short release" variant - say three months - and apply it each year.

The mix used is one part of the growing equation - other parts being the amount of light available, the average temperature and how often water is supplied. Thus the mix that suits one person's growing environment and regime will not suit another.

Andrew uses the same mix for a wide variety of plants - including schlumbergeras, orchids, hoyas, bromeliads and succulents.

Other members felt that they would not do this - Phyllis said that in her environment she would only use bark for growing orchids - otherwise the mix would not allow the roots to breathe and would retain too much moisture.

A number of other members listed the ingredients they use. However all agreed that the underlying principles were the same.

Remember the *SWAN*.

Now is the time .....

.. To Prune
.....To Fertilize
..... To Repot

Don't forget your society has stocks of pots, fertilizers labels etc. at prices you won't find anywhere else! Buy at the next meeting ....

If you have suggestions for new lines we should buy in bulk - talk to one of the committee.

Epiphyllum Workshop - photos by Penny Luckens

Odd Cuttings and Seeds

Plant names index online

The Royal Botanic Gardens, Kew, the Harvard University Herbaria and the Australian National Herbarium in Canberra have announced the Internet launch of the International Plant Names Index (IPNI). This is a database of the names and associated basic bibliographical details of all seed plants, a combination of the Index Kewensis, Gray Index and the Australian Plant Names Index. It is fully searchable and freely available over the Internet. The index was first available for searching in December last year but has been recently updated with additional records for recently published names recorded until 23rd May 2000, as well as much data on geography and related topics not previously available in this form. To search IPNI, and for more details of the project, see
http://www.ipni.org

The Olympics are coming .. So talking sport .....

In a number of earlier articles reference has been made to "cultivars" and "sports" and as the Olympics are only 13 days away -it seems timely to remind ourselves of the difference...

The word "cultivar" is part of the official botanic nomenclature rules. It is a named individual plant selected from many different individuals of one species

or hybrid. Usually cultivars are selected because they are in some way better than most individuals of that species or hybrid. The cultivar will be given a name, which is capitalized, may consist of no more than 3 words, and is written inside single quotes.

For example, Astrophytum asterias 'Super Kabuto.' All the true Super Kabutos in existence are propagations from the original plant. Seedlings of the cultivar may or may not be true to the cultivar parent but cannot be called by the same name. For example, seedlings from almost all citrus produce sour, bitter fruit not resembling the parent fruit.

"Sport" is a colloquial term, not recognized as part of the botanic nomenclature. A sport is an unusual form of a plant It may be variegated, monstrose, crested, or have differently coloured leaves, stems, or flowers. It may occur as a seedling or as an unusual growth on an otherwise normal plant. All crests, monstrose, and variegated succulents could be called sports. So could a white-flowered Matucana madisoniorum in a tray of red-flowered plants. Sometimes sports revert back to normal growth.

The standard English usage would be something like this:

"Some variegated junipers occurred as individual branches on the normal tree sported We call the plant propagated from this branch a sport of the normal form."

Colour charts .....

Those producing their own hybrids will be aware of the difficulty of accurately describing the colour of a new flower.

The use of a standard colour chart is to be recommended. There are at least three that have been published:

- Colour Terminology in Biology - Dade, 2nd. ed., 1949
- Horticultural Colour Chart - Wilson, 1938-41
- R.H.S. Colour Chart - 1966

Other general-biology colour charts were prepared by Maerz and Paul (1950), Ridgeway (1912), Paclt (1958) and others. However Ridgeway's chart seems to be now out of print.

More Pest remedies...

There are as many "cures" for mealy bugs as there are growers - here is another: (also said to be effective for scale and whitefly) 80% water, a few drops of liquid dishwashing soap, and 20% rubbing alcohol in a sprayer. It is said to be very good at knocking out the mealies - alcohol is commonly used in many spray products as a 'spreader'.

Ants are not a great problem in Wellington - but are in other regions. Ants are very susceptible to Boron, and the normal enticement is some sodium perborate + honey/sugars etc. The mix is usually carried back to the nest and consumed with fatal consequences, so the Boron will stop where the last of the ants stop. I add this as ants recycle their fallen brethren so the Boron gets to do it's thing again. This is why it is so effective, and damages the ants nest so badly.

However you need to be aware that Boron (the active ingredient) can also be very damaging to plants. Borax (Boron) is a highly efficient and long term soil sterilant. Read Dead Plants! Do not place it in, on, or around your pots or soil if you ever want anything to grow there again. Plants have different sensitivities, for example citrus is very sensitive, and shows signs which looks like nutritional deficiency e.g. lack of magnesium. The effects of such trace elements are likely to vary with pH and other features of soil composition.

Future Publication Dates..

EPIFLORA is published quarterly by the Wellington Epiphyllum and Hoya Society.

Comments and contributions are most welcome.
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