WELLINGTON

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EPIFLORA

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From the President

Dear fellow epiphyte growers

Well at last summer has come - after a most curious spring. I hope that all your plants are now blooming beautifully for you and that, after last months talk, you are taking pictures of them that please you.

Talking of taking photographs - last week we were visited by Bethany McLennan (who writes the gardening column for the Dominion Post). She is in the process of writing a piece on epi's. We have been trying to persuade her that, in due course, she should write about hoyas and about schlumbergeras as well. I believe she was also fascinated by our ceropegias - soem of which were in flower. We have enjoyed our conversations with her - and look forward to seeing her articles.

This coming weekend quite a number of us are off to Taranaki to visit "Craigmyle Epiphyllums" - and so much more besides. It promises to be a wonderful weekend - many thanks to Yvonne and Andrew Brunton and to Jane Griffith for organising it.

Our December meeting is the time for our annual meeting where we look back over the year just past and look forward to the coming one. We also elect our committee for the coming year. Please do come - both to support your new committee and to join in thanking those who have worked so hard on your behalf this year. We will also:

- ❑ share afternoon tea (so please bring some!)
- ❑ and exchange presents - so please bring a present (value no more than two dollars)
- ❑ and have a chance to show off - so please bring a plant, a flower or a photo

I look forward to seeing you at the next meeting - and for those who are unable to attend I hope that the coming holiday season will be both restful and enjoyable.

Happy growing and kind regards

Roy Griffith

3rd December 2002

The Programme for 2002/3

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 and bringing a plant or other item for the raffle. If for any reason you are unable to do your allocated duty please arrange for someone else to do it.

December 14th	**AGM and Christmas Function** *Bring something for afternoon tea and a $2 present* On Duty: Dianne O'Neill, Beryl McKellar, Leone Neil.
January 11th	**Workshop on Problem Plants - Bring one to work on...** On Duty: Jane and Roy Griffith, Alison Beeston.
February 8th	**Visit to Members Collections** On Duty: Brian Read, Nola Roser, Joyce Walter.
March 8th	**Beginning or Renewing a Collection** On Duty: Aynesley Taylor, Marion and Lewis Struthers
April 12th	**Talk on Aporophyllums** On Duty: Mary Hardgrave, Anne Goble, Beryl McKellar
May 10th	**Schlumbergeras** On Duty: Keith Greer, Virginia Stead, Penny Luckens
June 14th	**Visiting Speaker**
July 12th	**"Midwinter" meeting - with visiting speaker**
August 9th	**Other People's Pictures - slide presentation**

September 13th	**Field trip to the Wairarapa**
October 11th	**Workshop on Hoyas**
November 8th	**Rhipsalidopsis and Rhipsalis**
December 13th	**AGM and Christmas Function**

News about People.

Congratulations Diane

Diane Comber reports that her epis are doing really well since she moved them to Taupo. So well in fact that having entered some blooms in a local show she won a significant prize....

Allied Societies - and their Newsletters.

*At our September meeting a panel of people talked briefly about some of the overseas societies we have contact with - and the journals they produce.. The reporter is **Alison Beeston**.*

Roy Griffith introduced the subject reminding us that we belong to a society which shares a minority interest and because of that there is a dearth of literature and not a great deal to be found on the internet. For this reason we need to keep in touch with allied societies and are very dependent for information on their newsletters. Because of climatic conditions growing the plants in Europe and Great Britain is both difficult and expensive. The west coast of America is more congenial to the plants and a lot of more recent hybridising has happened there.

Merv Keighley talked about the Asclepiad Society and his interest in the plants that belong under that heading - stapeliads, huernias, carallumas. ceropegias, hoyas etc. He had on display on the interest table a number of plants he had grown from seed supplied by the Society. He also talked about their journal, published 3 times a year. Articles are often technical but with good illustrations and interesting information supplied by plant collectors describing their successes and failures.

Jane Griffith then continued to introduce several other societies and their magazines. The International Hoya Association, unlike many of the other societies mentioned, does not hold regular meetings but does produce "Fraterna", an excellent magazine on hoyas. They also have a website (www. international-hoya.org). Dale Kloppenburg, well known for his books and other writings on hoyas edits Fraterna and Ann Wayman, when secretary of the I.H.A. made a generous donation of hoya photographs to our library.

San Diego Epiphyllum Society publishes Epi News monthly. This society has been in existence for 32 years (it was formally set up in November 1970) and has a large and active membership. Epi News has a beautiful cover photo and contains growing tips and news of the Society activities. There is also a website (www. EPIPHYLLUM. com)

The Epiphyllon is the newsletter of the Epiphytic Cactaceae-Asclepiadaceae Society of Australia. The Society has about 70 members and was founded in 1989. It meets on the outskirts of Sydney and produces 3 newsletters a year. There are 2 shows a year and the newsletter is full of useful tips about growing and information about the Society.

Roy concluded a very informative talk with an account of two other American societies. The South Bay Epiphyllum Society is based in Palos Verdes, California, just south of Los Angeles. They have a perfect climate for growing epi hybrids and schlumbergera and rhipsalis. Further inland cold nights can be a problem. They run monthly meetings, sometimes bringing in outside speakers and making use of the good slide collections held by places such as "Rainbow Gardens". Their monthly newsletter which Roy highly recommended is called "The Epi-gram" and is edited by Dick Kohlschrieber whose knowledge of all aspects of the plants is extensive.

The Epiphyllum Society of America meets monthly in Arcadia, Los Angeles and publishes a quarterly journal, "The Bulletin". This is the group responsible for the registration of hybrids. They have a large international membership including people still engaged in exploration and research such as Myron Kimnach, a name that should be familiar to readers of many of the newsletters already mentioned. Copies of all the newsletters mentioned are available from the Library.

Nomenclature.

One of the issues that exercises people interested in the Cactaceae is that of the names of the plants - and the fact that some species are being renamed as more knowledge about them is obtained. In this article Robert S Wallace Associate Professor of Botany at Iowa State University and President of the International Organization for Succulent Plant Study (IOS)

discusses how we got to this position - and where we may be going.

Introduction

Given that this is a very popular topic for hobbyist growers of cacti and other succulents, I think many would find it helpful to review a bit of history regarding recent classifications and publications on the Cactaceae, and it is worth the time to look at this topic in a bit more detail for everyone to get a better perspective about what has happened, is happening, and what will happen in the near future. A time perspective is important to consider, since classification concepts change through time and with the accumulation of new data. Publications also have certain goals and priorities which are sometimes focused and intended for a variety of end users or different audiences.

The Word Game:

Readers should know that there is a subtle difference between 'nomenclature' and 'classification'. Nomenclature is the formal treatment of names (nomina) and combinations using an agreed upon set of rules (the International Code of Botanical Nomenclature, ICBN) which have formal (some would say, "legal") requirements. Classification, or the arrangement of species into genera, genera into tribes, families, subfamilies, etc. at ranks above 'species' is less constrained by formal rules, and in many cases is a matter of (hopefully informed) opinion. Modern studies including a multidisciplinary approach to classification which include aspects of evolutionary relationships disclosed through studies of anatomy, cytology, molecular variation of all kinds, and other sources of data are part of the discipline of the biological sciences which is termed 'systematics'. Modern day botanists who specialize in this aspect of science are known as 'systematists', who may wear the hats of taxonomists, nomenclaturists, anatomists, molecular biologists, ecoplogists, biogeographers, etc. Systematics is a synthetic science, calling upon information gleaned from a variety of scientific disciplines, and bringing all of this information to bear on determining an evolutionarily-based ("natural") classification system that reflects evolutionary relationships. Through time new information accumulates, and understanding of the various groups under investigation improves, necessitating, if not mandating change. It is an inevitable aspect of this kind of study, so users of the names and classification systems should be ready to accept this change, learn from it, and move on!

The past.....

Recent synoptic revisions: The really complete (at the time) "whole family" review by Britton and Rose (The Cactaceae, 1919-1923) was an excellent reference for documenting cactus diversity, however the authors used a largely artificial classification, and by today's standards, does not address concepts of evolutionary relatedness which is at the center of consideration in modern systematic treatments. This reference did much to establish a basic

classification system for the cacti, and was among the best reviews of our understanding of the plants, their structure, and their geographic distribution, making it still a good overall reference if one is willing to learn of the many changes in classification that have occurred since that time. Throughout the 1950's and 1960's significant work by Franz Buxbaum and others helped to improve the general understanding of the cactus family, particularly from an evolutionary aspect. Buxbaum's (1957) paper in Madrono on the establishment of Tribes within the subfamily Cactoideae was one of the most significant advances in cactus classification, since this also emphasized relationships that he observed when evaluating developmental and anatomical similarities in the various groups of cacti. The classifications of Backeberg (a German horticulturist), such as included in The Cactus Lexicon and the six-volume publication Die Cactaceae, certainly emphasized differences in taxa, and resulted in a very "fragmented" treatment of the family, which some (many?) botanists considered as an example of excessive splitting based on trivial characters. Backeberg's classifications were also influenced heavily by geography and similarity of growth form, the latter known to be highly convergent (or more precisely, parallel) in the Cactaceae. Adding fuel to the fire, was another person operating in the opposite direction! An "early" paper (1957) by Dr. David Hunt, working at the Royal Botanic Gardens, Kew, recognized many fewer genera than Britton and Rose had included in their monograph (e.g. - Hunt was branded a "lumper"), and far less than those established by Backeberg. This set the stage for additional investigation and discussion regarding the problem of what defines a genus in the Cactaceae. Despite its shortcomings, Backeberg's compilation did advance the general understanding of the family, and provided present day botanists questions for further investigation of evolutionary relationships. For example, some of the genera of Opuntioideae that he recognized in the 1960s we have chosen to accept in a revised classification, based on our recent molecular and micromorphological studies of the subfamily. This information has been included in the Succulent Plant Research volume (no. 6) that is dedicated to studies of Opuntioideae.

IOS Cactaceae Working Party - Beginning about 1986, The Cactaceae specialists of the International Organization for Succulent Plant Study (IOS) established a working group to begin to evaluate the taxonomic problems in the cactus family and met regularly to discuss relevant issues of classification, nomenclature, and there was agreement on the use of certain generic names. With such a variety of conflicting names and classifications, the "taxonomic stability" of the Cactaceae was quite low, and in order to try to get international consensus on the use of certain names, a 'voting approach' was attempted to see how much support there was for accepting a particular name or classification. Opposition to "taxonomy by committee" was a common complaint, but the process brought about much fruitful discussion, and identified groups that were particularly problematic, or had little if any research done on them. It helped set priorities and determine where collaborative research might do the best good to improve the overall knowledge base for the family. The procedure has been followed by other botanists who study several other flowering plant groups, although none of these has had the level of taxonomic confusion as did/does the Cactaceae, due in large

part to over description of polymorphic taxa, narrow species concepts, and a desire to "create names" for fame or fortune. IOS Cactaceae Working Party, which in itself had its own evolution, has drawn upon the expertise of dozens of botanists, and has reorganized twice since its inception, becoming the "Cactaceae Consensus Group" along the way to becoming the present "International Cactaceae Systematics Group" (ICSG) which continues to meet regularly, and is the primary driving force bringing together cactus specialists to produce the forthcoming New Cactus Lexicon (see below).

Gibson and Nobel, 1986 - Publication of Gibson and Nobel's The Cactus Primer was also a significant addition to the understanding of the family, in that it brought together (with good explanations) all of the relevant information about cactus biology, and included an updated version of Buxbaum's classification of the family. It remains a very good introduction to the biology of the cacti for the newcomer.

Barthlott, 1988 - A paper by Prof. Dr. Wilhelm Barthlott (in German) published in 1988 (Beitrage zur Biologie der Pflanzen 63: 17-40) brought together recent information about the family gleaned from a variety of sources, and a then completed detailed analysis of seed morphology by Giesela Voit and. Prof. Barthlott. In this paper, Barthlott showed a "bubble diagram" which gave a 2-dimensional representation of the inferred relationships between the tribes and genera from a presumed 'common ancestor'. This phylogenetic interpretation, while not a true phylogeny (i.e. based on shared derived character states) gave an approximation of relationships that could be tested with additional study. It also enumerated taxa in the various groups and revised the earlier classification of Buxbaum.

CITES Checklists: Dr. David Hunt (Royal Botanic Gardens, Kew) was asked by CITES (Convention on International Trade in Endangered Species, main office in Switzerland) to produce a list of cactus names which could be used by border inspectors to validate shipments of plants being passed across international borders (keeping with the CITES Convention) under various names. This list was never meant to be a taxonomic treatment of the family, although it functionally served as one, since it was an easily accessible, recent 'whole family' list of cacti which many hobbyist growers were looking for! It did reflect taxonomic opinion, such as the re-evaluation of Notocactus and defining this group of related plants under a broader concept of what this group comprises, and necessarily had to use the earlier name Parodia for this more broadly defined group. This caused many growers, particularly those having been "brought up" on the narrowly defined genera of Curt Backeberg to become angered at this "lumping" activity. The first CITES Checklist was published in 1992, and a revised, updated, and slightly re-formatted second edition was

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Epi hybrid "Tina" - photo by Neville Glasgow

published in 1999. Dr. Hunt served as the compiler of these checklists, however there was extensive communication among cactus taxonomists around the world which enables the list to reflect a variety of taxonomic views and opinions of a number of taxonomists listed in each of the volumes.

Barthlott and Hunt, 1993 - Another 'landmark' paper in Cactaceae systematics was published by Barthlott and Hunt in the large serial work edited by K. Kubitzski and collaborators (Families and Genera of Flowering Plants, Vol. 2, pp. 161-196). This paper was an outgrowth of Barthlott's earlier 1986 paper, and reviewed the general characteristics of the family, provided a compilation of relevant facts about the family in the series' format, and included an updated 'bubble diagram' bringing the classification current to that time. The IOS Cactaceae Working Party, Cactaceae Consensus Group, and the ICSG met almost yearly (on occasion twice a year) from 1986 through 2000, and collaborative and cooperative research on various cactus groups enabled re-evaluation of generic concepts and provide new evidence for updating the group's classification system. The ICSG still continues to function in addition to the Cactaceae Section of the IOS, with considerable overlap in membership.

The Present.....

Anderson's, 2001 Book, The Cactus Family - Edward F. "Ted" Anderson was a very active member of these international cactus study groups, and among their strongest supporters. In the early 1990's he was approached by Timber Press about the possibility of writing an 'accessible', well illustrated monographic treatment of the Cactaceae at the time when he was retiring as a Biology Professor at Whitman College in the state of Washington, USA. He was hired as Senior Research Botanist at the Desert Botanic Garden (Phoenix, Arizona) and worked on this book (and other cactus projects) from about 1992 until his death in 2001. The classification used in his book is largely influenced by the ICSG (and predecessor groups), but reflects decisions he needed to make that were not adequately reviewed by the group, or for which little information was known. He was very concerned that any classification he proposed in this book was based on the most recent evidence available, and that correlation between his book, and the forthcoming New Cactus Lexicon was strong and the treatments non-conflicting. We spent many hours discussing these issues and he took great pains to determine the best scheme.

Two other books on cacti were published this year (2002), one on the cactus family in general (P.S. Nobel editor, Cacti: Biology and Uses, University of California Press) is a multi-authored, 15 chapter volume covering a variety of aspects of cactus biology including anatomy, geography, systematics, evolution, physiology, economic botany, and agriculture. The second, Columnar Cacti and Their Mutualists: Evolution, Ecology, and Conservation, is the result of an international conference on columnar cacti held in Tehuacan, Mexico in 1998 and is edited by T.H. Fleming and A. Valiente-Banuet (published by the University of Arizona Press). This volume of 17 chapters focuses on the columnar cacti, their geography

and evolution, anatomy and physiology, and population and community ecology and conservation, including several chapters on the bats and other organisms interacting with the cacti.

The Future....

The New Cactus Lexicon - The culmination of many years' efforts by a dedicated group of cactus taxonomists and advanced hobbyist growers will result in the production (scheduled for 2004) of the New Cactus Lexicon (and a companion photographic Atlas). Although I am an active contributor to this work, it is being edited by Dr. David Hunt, with assistance from Dr. Nigel Taylor; the primary "mover" on the Atlas is Mr. Graham Charles. These volumes will bring together taxonomic information and expertise from cactus specialists around the world, and will result in the most comprehensive classification system for the entire Cactaceae, and will reflect the conclusions based on the most recent data available. For a more elaborate explanation of the work still in progress for the Lexicon and pre-publication information, interested persons can go to http:/www.cactuslexicon.org

Summary

This brief review has shown the evolution of cactus classification to be still active and improving with the accumulation of new data, precisely what is supposed to happen in scientific endeavour. Hobbyists should be sensitive to the idea that taxonomy is never "finished", but must be approached from the standpoint of "successive approximations toward the truth". We may never know when we have "achieved" the truth, or if we have a complete understanding of how the organisms evolved, but we may measure our closeness by looking at the magnitude of changes brought forth by new research data. If the changes become incrementally smaller through time (i.e. no profound changes in classification, few new lineages or new transfers proposed, etc.) then we can be reasonably assured that the relationships we have defined are "good" ones, and that they should be reflected in the classification. Although the publications generally always improve our state of knowledge, as noted above, things in systematics are really never "done". Pessimists will hasten to remind us that books are often out-of-date the day they are published. I personally cherish my books and the information they contain, and I am glad I can contribute to their production. Without them, our understanding of this fascinating group of plants would be incomplete, and our appreciation for these plant far less rich.

Nature Photography.

*At our October meeting **Neville Glasgow** came to talk to us, **Jane Griffith** reports ..*

"Mindful photography depends on keeping yourself, your cup empty. The photographer must be open, receptive – able to wonder, learn and experience with the freshness of a child." This quotation by photographer John Daido Loorie and Minor White"s comments about photography:

> "Be still with yourself
> Until the object of your attention
> Affirms your presence."

were opening quotations by our November speaker, Neville Glasgow. Neville is an accomplished nature photographer who has held exhibitions in Wellington. He brought a fresh approach to photography for all who attended the meeting. He spoke initially of attending a Zen Buddhist course in photography in the Nelson Lakes region. This course emphasised a meditative approach to photography where the person empties their mind in order to appreciate the subject anew. At this course each participant was given a cheap instant camera in order to take pictures and then the differences of subject were highlighted.

Neville appreciates that in some circumstances the photograph is taken as a record of the flower or tree but also those same subjects can be used in an abstract form. The slides he showed of hoyas and epicacti highlighted this point as did his numerous abstract shots of other flowers.

As an exercise he guided us through a meditation using as our focus the flowers of epicactus Augustus von Szombathy. After spending several minutes meditating most people agreed they would take quite a different photograph than prior to this exercise.

Although Neville mentioned he used Fuji film for his nature photography and preferred taking his subjects in late afternoon, he did not concentrate on the traditional aspects of depth of field, etc. His approach was refreshing and stimulating, providing new insights for both those with considerable photographic knowledge and for those of us with a love of flowers, but few technical photographic skills.

Hoya Chiang Mai - photo by Neville Glasgow

Tissue Culture..

*The speaker at our October meeting was **Max Willacy-Kuhn** who brought samples of some of the plants he has been growing with this technique – at various stages in their development – as well as some of the items of equipment that he uses.*

Max has been using tissue culture methods for about two years. He noted that there are two approaches to the subject:

- The home-based approach, which makes use of ordinary household equipment and materials
- The hi tech approach – which uses specialised laboratory equipment and chemicals Either method can produce good results.

Tissue culture is not a new technique – the first experiments were done by White in 1920 to 1930. In essence it is very simple. One uses a small glasshouse (a jar or a flask) and a small piece of plant material (a root, leaf or seeds) and in a very short time a large number of plants can be produced.

First start by sterilising the plant material

- This can be done with bleach or alcohol
- The material is then thoroughly rinsed with sterile water – and a little detergent

The plant material is put into the jar with the chosen medium

- You can make your own – or you can buy it ready mixed.
- The basis of the medium is agar
- The mixture includes growth hormones – to make the tissue cells proliferate (a variety of chemicals can be used for this – some are also commonly encountered in weed-killers!)
- The mixture also includes sugars – to provide carbon
- The pH needs to be carefully adjusted (vinegar can be used for this).
- At the "low-tech" end of the scale – the medium can be prepared in a saucepan – and after it has been put into jars – these can be sterilised in a pressure cooker.
- The composition of the medium is critical – as it has to supply all the plants needs. The actual make-up, therefore varies – depending on the plants being grown

This all needs to be done in a sterile environment – a closed sterile box will do, or a fish-tank on its side – sprayed with alcohol.

The plant tissue that grows in the first phase is split into small pieces – and the process is repeated as often as is desired – to produce the number of plantlets required. Generally the process starts in a small container like a test-tube containing just one piece of plant material

– and then, as multiplication proceeds, several plantlets may be put in each jar. When the desired number of plantlets has been produced – they are transferred to another batch of agar – which contains a rooting hormone. Now the plantlets divide no more – and instead grow roots. If roots start to grow during the multiplication stages – the multiplication process stops.

Tissue culture can be used to produce plants for a number of reasons

- To produce a large number of identical plantlets in a very short time – this is the main commercial reason for doing it.
- To propagate plants that are difficult to propagate by other means
- To produce more plants from a specimen of an extremely rare one
- To produce "clean" plants from diseased or virus infected stock. The meristem can be taken to provide "clean" material to multiply – but this needs to be done using a microscope.
- Tissue culture can also be used to produce "genetically modified" plants. Chemicals can be added to the agar to produce variegated leaves, or change the colour of the flowers.
- Some plants have still not been successfully propagated by tissue culture – but further research may find the correct formulation for the media to achieve this.

Once the rooted plantlets have developed sufficiently they can be planted out. They are very vulnerable at this stage – and need to be kept in conditions of very high humidity to start with – and then gradually "hardened off" Once this has been done they are as strong and resistant to pests and diseases as plants grown more conventionally.

The equipment you will need includes

- A pipette for preparing dilute solutions of some of the chemicals (hormones are used at a concentration of 1 ppm – so to achieve this level of dilution a stock solution is prepared – and portions of it diluted progressively)
- A Bunsen burner to flame tools to sterilise them
- A fire extinguisher (alcohol is being used to sterilise things – and there is that Bunsen burner!!)
- Rubber gloves
- A place to work – a room with a bench and cabinet which provide a sterile environment. Getting the work area completely sterile is quite difficult to start with – but after a while it is not so hard to maintain sterility.

Where to get things:

- A number of books are available – and from these one can obtain details of the particular media formulations for propagating different plants. The book that Max referred to most often was "Plants from Test-tubes – an introduction to Micropropagation" by Lydiane Kyte and John G. Kleyn. This book may be obtained

from amazon.com or from Timber Press. It may also be available from some libraries.

- GibCo (in Auckland) can supply all necessary chemicals,

Thank you Max – for a most interesting and informative talk.

Now is the time.....

Things are a bit late this year for all plants

Epicacti - *start watering regularly, enjoy the flowers - take pictures even. After flowering repotting can be done..*

Hoyas - *water when dry, Fertilise, Keep a wary eye out for mealy bugs. Start enjoying the flowers. It is not too late to take cuttings..*

Schlumbergeras - *still a good time to repot, using a slow-release fertiliser in the potting mix. Water when dry.*

Rhipsalis - *water regularly as rhipsalis come into flower. A little fertiliser will assist the plants.*

Aporophyllums - *Water regularly, Enjoy the flowers. After flowering the plants can be lightly pruned..*

Ceropegias - *Water when dry. A daily task is to untwine runaway growth. Keep in a very warm (hot even) environment for maximum flowering.*

Odd Cuttings and Seeds

Supplies of pots etc...

The society buys stocks of pots, fertiliser etc. in bulk - and sells them (at just about cost) at meetings. **Rex Hannam** has volunteered to take over the job of coordinating this from Leone. Thank you Rex and thank you Leone. If you have any suggestions of other things the society should consider

buying and supplying - pass them on to Rex - he would love to hear them.

Sterilising ....

Many people feel that sterilising soil prior to planting precious seeds is a good way to ensure success. Here are some thoughts on the matter from a number of people:

I sterilise my potting mix using the microwave. I place the mix into a container and place it in a large plastic bag, letting the air out and then sealing the opening then place them in the oven setting it to high and keeping a close watch. As it heats up the bag will rise and just before getting too big I turn off the oven and remove it. Bring the bag outdoors and after letting it cool, open the bag to let out all the earth smell before bringing it back in for potting. With this method I don't smell up the microwave.

If you are going to the trouble of sterilising the soil, you need to be careful to maintain sterility. It is probably best to sterilise some water at the same time in a separate container. Then there are the seeds themselves. You can't microwave them of course, but if you don't make some attempt to sterilise them, you might as well not bother sterilising the rest. Dilute hypochlorite solution (chlorine bleach) is probably the easiest way to sterilise the outside of the seeds. Calcium hypochlorite is probably better, but harder to get.

And a final point..

..... *maybe you really need not sterilise soil, pasteurising it at about 190F (90C) for half an hour kills off the fungus spores that cause damping off. And as others have implied, as soon as you remove sterile soil from the autoclave/microwave/oven/whatever it starts picking up new spores from the air in your house/greenhouse/outdoors/etc. If you quickly harden off newly sprouted seedlings so they can be exposed to moving air and sunshine, you may well find that sterilising soil is more trouble than it is worth.*

Getting rid of Pests - organically ...

These suggestions were posted recently in an on-line discussion group
Spider-Mites: *Try spraying them with a home made concoction of chilli pepper, and garlic. It works well in keeping most pests away .....*
Mealy Bugs: *We had a nasty crop of mealies in our greenhouse and had good success using an organic drench of 1 C. manure tea 1 oz molasses 1 oz apple cider vinegar 2 oz orange oil mix in a gallon of water and use as a drench.*

Online discussion groups...

There are a large number of these - covering all manner of topics - a new one has recently been started for the Asclepiadaceae family (Ceropegia, Hoodia etc.)
Group home page :

http://groups.yahoo.com/group/Ceropegia-HoyaToo

Rooting Plants in Water.....

A number of our members have tried this - some have good success - here is one more suggestion:

I have found that when plants are started in water they acclimatise a lot better if you do not dump the water but start adding a small amount of potting soil. This will let the plant get used to soil and still have enough water so that it is NOT shocked out of the new root system.

Back Numbers of "Epiflora" .....

The first edition of Epiflora appeared in March 1992. We have limited stocks of back-numbers for most issues from Volume 2 - issue number 1 (March 1993) onwards. Prices are 50c per copy plus postage (if applicable) - contact the Editor ..

Season's Greetings to all our readers .....

Future Publication Dates..

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

Please address correspondence to:

249 Te Moana Road,
WAIKANAE.

Or: griffith@globe.co.nz

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