

ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS.

VERTICORDIA STUDY GROUP.

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NEWSLETTER Nº 11 - FEBRUARY 1989.

MEMBERSHIP

I am very pleased to record the following membership additions:-

ACTIVE.

Neil Marriott, White Gums Nursery, Warracknabeal Road, Stawell, Victoria 3380.

Laurie Deane, 27 Lindfield Garden Village, Ulmarra Place, East Lindfield, N.S.W. 2070.

Dr. Greg. Doran, 11 Fitzgerald St., Camperdown, N.S.W. 2050.

Dr. Rod King, C.S.I.R.O. Division of Plant Industry, Box I600 Canberra, A.C.T. 2601.

PASSIVE.

Mildura Group, S.G.A.P. Victoria 3500.

SUBSCRIPTIONS.

Subscriptions for both ACTIVE & PASSIVE membership remain at three dollars per year and are renewable from July 1 in each annual period.

As yet a few members have failed to bring themselves up to date for the current 1988/89 financial year and I have included reminder notes herewith. Failure to respond will be regarded as a reduction of interest in the Study Group and consequently no further Newsletters will be forwarded.

With so many questions yet to be resolved with the cultivation etc. of Verticordias, the Study Group needs your support, both financially and otherwise.

DONATIONS.

The following amounts in excess of the nominal fee have been received and are very much appreciated:-

Eric Taylor -----	£ 2.00
G. Curtis -----	2.00
Elizabeth & Alex. George ---	23.00
Ivan Holliday -----	2.00
Jeannette Graham -----	2.00.

TAXONOMY.

Elizabeth George reports that Alex. has now completed the Revision of the genus Verticordia and that the manuscript is in the hands of the W.A. Herbarium.

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TAXONOMY (CONTINUED).

I have had a number of enquiries from Study Group members as to when this information might become available to us, and I had been hoping that in this Newsletter I might be the bearer of good tidings.

Unfortunately it seems, the Revision, with new identification key cannot be released to us until official publication has been made by the Herbarium, indicating final acceptance.

It is not clear when this might be done, but we can only hope that it is sooner rather than later. The lack of names for a number of species, and what we understand will be amended names for many others is a complication to the research work we have embarked upon, and makes this work so much more difficult.

On December 6, 1988 a presentation was made by Elizabeth George and accepted by Dr. S.D. Shea, Executive Director of the Department of Conservation and Land Management, of the Verticordia Reference Collection. The following comments are by courtesy of the Departments publication, CALM NEWS, Volume 4, No. 46:-

"A Reference Collection comprising 27 bound volumes and about 700 specimens of Verticordia has been presented to the W.A. Herbarium.

The albums, which include specimens, a description and a photograph of each known variant of Verticordia will be held in the Community Research Herbarium and will be available to the public and special interest groups.

The 700 plus specimens will be added to the general Herbarium collection."

In paying tribute to Mrs. Georges work Dr. Shea said:-

"Elizabeth's interests in Verticordia go back to 1970. She realised then that there was no method available for an amateur enthusiast to readily identify specimens.

Through Elizabeth's enthusiasm and encouragement that has now changed----- and as a result of the collection the existing information on the distribution and habitats of the various species and the extent of rare and endangered species has been significantly expanded.

There were now 95 species of Verticordia including 37 sub-species and varieties."

Elizabeth reports that the buttonhole sprays and vases of cultivated Verticordias provided by Norm and Pat Moyle which adorned tables outside and inside were very much admired and showed just how much potential the genus has for both horticulture and floriculture.

### CULTIVATION NOTES.

I have recently received comments from several Study Group members who have had occasion to visit W.A. and who have taken the opportunity to call in on the Moyles at Mandurah. They have come back with very glowing reports describing the establishment of Verticordias in particular as really magnificent.

Before you downplay these comments on the basis that Verticordias in the main hail from South West Australia, and that this is where you find Mandurah, remember that with possible exception of a few species, the genus has, even in W.A., been in the too hard basket for nearly 200 years.

I would like to be able to claim successes comparable with the Moyles from our cultural efforts in Eastern Australia. In areas of summer rainfall such as Sydney, however, many of our problems seem to be linked, albeit in varying degree, to the differing climatic situation, and accordingly many of our thoughts tend to be concentrated on ways and means of combating the effects of same.

I noted in the last Newsletter that in Sydney, the first half of 1988 had been climatically difficult. Unfortunately the difficult pattern continued through to the end of the year. The two months of winter dry I then noted continued on into November. For the 5 months the only rain capable of wetting the ground fell on two or three days in late September. For the rest of the time there were not even dewy nights to give the plants a little hope. In October there were a number of temperature readings in excess of 40 C and Sydney recorded its driest such month on record. Into November and we had the coldest Sydney November day record with only 12.5 C maximum. Since then we have had virtually no summer with sunlight hours well down on the average. We have though had reasonable rain without torrential downpours as earlier in the year and the gardens generally are looking green and lush.

I should add that Verticordias have not been the only ones to suffer from this topsy turvy year of weather extremes. Some plant nurserymen have commented to me that it has been the worst year they could remember.

Plant losses from Phytophthora attack during late spring and early summer could, I believe be traced back to the record downpours we received during late last summer and autumn. A few Verticordias which I had felt to date had not been particularly phytophthora subject, have failed following spring flowering. Perhaps it may be reasonable to postulate that lack of winter and spring conditions of air humidity, at a time when they should be making pre-flowering growth contributed also to producing a weakened condition which was not robust enough to carry them beyond the flowering stage, which is a natural stress period.

I have noted that young plants, prior to the first heavy flowering are generally less likely to be affected by problems of root rotting than are more mature specimens.

I have also noted that Phytophthora attack does not always develop to the extent that plant specimens are completely lost. This pathogen was earlier known as the "Disease of Partial Die-back", and as the name suggests results frequently in the loss of part only of the plant, in the initial stages at least. I have found that early removal of these affected branches frequently

CULTIVATION NOTES (CONTINUED).

accelerates the die back effect. On the other hand, if this temptation to prune off the unsightly parts is resisted until same are completely inflexible and have lost all traces of moisture, (and this may well take several months), and providing also that the weather becomes a little kinder, full plant recovery sometimes occurs. As well as with some other plants from different genera such recoveries have occurred in my own garden with Verticordias polytricha and huegelii. In both cases about three quarters of the foliage was lost from die back in the initial attack.

In order to improve drainage in my heavy loam soil, where I now suspect long term compaction may have contributed to root rotting problems, I have now adopted the practice of digging in gypsum when new plantings are made. Time of course will tell.

Col. Thorley has made an observation to me which I believe has significant application to some species in relation to our summer rainfall conditions. Some species, particularly those which flower over a long period such as Verticordias monadelphica, huegelii and affinity staminosa, accumulate a dense mulch of fallen flowers under their foliage. He feels that when this has been allowed to remain there it has been a contributory factor in plant losses, and further that upon removal, plants which had been looking a little off, had improved in leaf colour again. My own observations would seem to confirm this plant behaviour.

While it is certainly true that in their natural habitat this mulch of spent flowers is frequently a fact of life, the differing climatic situation here with long periods of summer soil moisture would certainly result in the mulch near the plant stem becoming a collar rot hazard. Away from the stem it would have the effect of tracking excess water into the soil during heavy rain periods, and this must contribute to the risk of Phytophthora attack.

On the other hand, the maintenance of a clean soil surface, which has been allowed to crust slightly must increase water run off. I have found this provision of a clean surface of much benefit also in the growing of many of our Eastern Rutaceae species, some of which are notoriously collar rot sensitive.

With regard to the above Verticordias I think it would be appropriate to emphasize that in their natural conditions this spent flower mulch is probably a benefit to the plants rather than a hazard.

Another factor which seems to increase our difficulties is the fact that in late summer and early autumn plant growth starts to diminish with many species and this reduction of growth coincides with moist soil conditions. In other words the plants are subjected to more moisture around the roots at a time when their ability to take up same is reducing.

Col. Thorley has made a further point which he feels is particularly applicable to Vert. sp. aff. staminosa, viz. that availability of good light is a very necessary factor in keeping the plants healthy. He notes that the wood of this species is relatively soft and that the foliage, which gives the plant the appearance of a small conifer is only maintained in healthy dark green condition at the outside plant surface where good light is available. For the inner foliage, leaf drop occurs early similar

CULTIVATION NOTES (CONTINUED).

again to a conifer, and this also contributes to a build up of the dense mulch noted above. He suggests that the reduction of light at ground level, which naturally ensues may be rather critical for such a soft wooded species.

I have not had the pleasure of observing this species in its natural location but I believe it is one that is found on granite outcroppings. Perhaps it would be reasonable to suppose that in such conditions it would be subject to more wind than a heath plant. This thought would be supported by its natural development of a relatively thick stem which would provide buttressing.

If the above surmises are correct, it could then be expected that wind would tend to reduce the litter collection under the plant and at the same time make good light available to the stem.

While speaking on the subject of culture I believe the time is almost at hand for me to undertake a comprehensive update of all species grown taking into account members experiences since my last review in Newsletter No. 6 (August 1986).

With this in mind I would be pleased to have your comments so that we can cover as wide a range of climatic and soil conditions etc. as possible. Please remember if you are only growing one species your observation may be very useful, either to support or dispute earlier comments or to throw new light on some aspect of growing.

For the above exercise of course, it would be most helpful if we are in position to use the taxonomic revision.

VERTICORDIAS FROM SEED.

In Newsletters 9 and 10 I referred to a number of seedlings I had raised of Verticordia insignis, and how I was hopeful of having overcome what some of us have experienced previously, viz., that although germination itself was slow and the yield low, the real troubles began to show out after potting up with high incidence of damp off. I reported that I had sterilised some potting soil by subjecting it to boiling water immersion when sealed in a plastic envelope, and that early progress appeared to be favourable. I can now report that although growth rate was very slow in the early stages they have remained healthy and did not show any damp off tendencies, even when subjected to torrential rains or normal hose watering.

A further seedling germinated last winter and was potted on about six weeks after germination. In this case I acted upon a suggestion from Nick Derera and placed the potting soil in the microwave oven for 10 minutes instead of exposing it to boiling water. The specimen was then placed in the glass house for a few weeks and was then watered by hand hose with other nursery plants. It progressed satisfactorily and has since been planted out into a light soil elevated bed where it continues to make good progress.

With a little encouragement from the above I am now looking forward with increased confidence to post germination handling of the next batch of seedlings I can succeed in germinating.

VERTICORDIAS FROM SEED (CONTINUED).

Verticordia picta is one species I intend to try again as soon as I can obtain seed. In the past it has proved one of the easier ones to germinate but has been difficult to strike from cuttings.

Tim Angus reports he is about to attempt germination with peeled seed placed on a sterile Agar solution. We will be interested to hear the results of this exercise.

MEMBER REPORTS.

MARTIN SWANSON, Glenmaggie, Victoria reports:-

"It has been the most topsy turvy spring and early summer here. It has been constantly humid for two months and some Verticordias have suffered.

Verticordia acerosa (2 forms, as stock plants in 10" pots), were left crowded in with other plants and mould attacked the flowers, progressing down the foliage to kill the plants. Similar species out in more open places were unaffected.

Verticordia mitchelliana started to get foliage disease at the growing tips in December, but has recovered and will survive.

Verticordia serrata. Surprisingly some plants freshly potted into 6" pots died, apparently due to lack of water prior to the onset of our wet November and December. Strange indeed. I have observed Verticordia densiflora being worked for nectar by bees and Verticordia Mitchelliana by Eastern Spinebill Honeyeaters, but none of the other species in my collection seem to have attracted any vectors. Is the general lack of naturally occurring hybrids the result of very specific pollinating agents, or genetic barriers to inter-species pollination?"

ERIC TAYLOR? Narrandera, N.S.W., is having trouble with soil salt in his red, almost pure sand, soil and he feels the town bore water situation is not helping. The situation.

He has had general success in propagating Verticordias, but is experiencing trouble at the potting on stage.

He has recently invested in a heated misting propagation unit and is hoping for improved results from a concentrated effort.

We certainly wish Eric better success. His inland climatic zone and particular soil type could significantly widen the scope of our documentation on the cultivation of Verticordias.

ROD KING, C.S.I.R.O., Canberra, has embarked upon an intensified effort to develop the economic potential of Verticordias. He has the advantage of controlled simulation indoors of heat, humidity and light exposure and reports good success with cutting propagation.

Verticordia grandis struck in three weeks in mid summer. He considers the availability of cutting material from controlled environment conditions to be a key factor in this achievement.

JEANNETTE GRAHAM, Strathmerton, Victoria reports young plants of Verticordias huegelii and fastigiata growing well, although a V. densiflora was lost after making rapid early growth. Verticordias oxylepis, brownii and affin. staminosa are also progressing steadily, although not quite as fast as some of the

MEMBER REPORTS (CONTINUED).

others.

She reports that last winter was particularly mild with minor frosts only and with lots of rain.

She has acquired seed of a number of species and proposes to have another try at germination using some of the methods proposed by other members.

One plant she reports losing was Verticordia monadelpha. She says:-

" After pulling it out and examining it, I was none the wiser about it's demise. I wonder how is one supposed to determine the cause of death? I admire those who can look at a very dead root system and know the whys and wherefores."

Many will no doubt appreciate this latter comment of Jeannette's. Although I suggested guidelines for making such an assessment in Newsletter No. 1, it would perhaps be appropriate for me to again outline an approach later in this Newsletter.

With regard to her loss of Verticordia densiflora I can assure Jeannette she is not alone. I have had similar losses on a number of occasions, plants having failed after making rapid early growth. Strangely on occasion, nearby specimens planted at the same time, have progressed satisfactorily, so purely climatic influence could clearly be ruled out. I have assessed some of these losses as having been caused by Phytophthora, there having been evidence of rotting of the leader roots.

Other factors which I feel may have significance and which could be overlooked are a)-Time of planting.

b)-Condition of root system in nursery pot.

With regard to "a", I believe there is an optimum time for the planting out of many species, and that this should be when continued seasonal growth could be expected. The question may not be easy to answer on a general basis as climatic differences between regions seem to have an bearing. Until such differences can be more comprehensively documented, local experience will be the best teacher.

With regard to "b", I have noted that where plants have been held in pots to the stage where coiling in the bottom of same has developed, a burst of vigorous growth sometimes follows planting, which is not always maintained. I suspect that through root interference at planting, sap flow in the plant is reduced slightly and that this condition actually encourages the vigorous, but unsustainable new growth. (unsustainable because new feeder roots have not at that stage had time to develop). ?????  
To support the above thoughts I have noted generally in the garden that plants which die suddenly have frequently indicated this appearance that all is very well a little prior to final collapse.

Before planting Verticordias which have developed this root coiling, I have adopted a policy of removing same, returning plant to the pot and holding it under humid nursery conditions until new feeder roots become active.

I have also noted that when this coiling is present, it can at

MEMBER REPORTS (CONTINUED).

times be brown in colour and indicates that some deterioration, and even at times rotting may have commenced. I feel that this also is sufficient reason to remove the roots as a precautionary measure.

MR. G. CURTIS, Happy Valley, South Australia, reports he has had mixed successes so far with his Verticordias, but has brought back further stock material from the West. He aims to try out a few ideas he has on nutrition and has promised to keep me posted on his results.

COL. THORLEY, Baulkham Hills, N.S.W. reports a few losses in his heavy clay loam and confirms my own thoughts that compaction with time has been a contributory factor. Species which have continued to do well include Verts. lindleyi, serrata, monadelpha, staminosa plumosa, densiflora, lepidophylla and fastigiata. He notes that the latter species develops a distinct bonsai look with small compact foliage and a stem which is thick at ground level and which has a gnarled appearance dividing into a number of sections and tapering quickly. My own have developed similarly and I wonder if, as I suggested earlier with regard to V. staminosa, this growth form indicates wind exposure in it's natural area.

DENNIS MARGAN, Thornleigh, N.S.W. whose garden is in soil of sandstone parentage has a number of species doing well, but ones which interest me particularly because of difficulties I have experienced are V. sp nova Mt. Hampton and V. drummondii. Of the former it has been suggested by the Moyles that it should be pruned hard after flowering, following which new growth could be expected. Dennis has three plants in close proximity which he has not pruned but which have continued to develop after flowering with dense and vigorous growth. They are in a warm situation north of his house, have not been watered since planting and have not shown a tendency towards die back of tip foliage, which I have found precedes debilitation. Verticordia drummondii seems more tenacious in his conditions than in my own and shows much more ability to grow on seasonally after post flowering dormancy.

DAVID ANDREWS, Canley Heights, N.S.W. reports that many of his Verticordias have responded well in the elevated light soil bed he has prepared. He confirms an opinion I have also formed that in the main they seem to have a liking for a hot garden location. He had been away for a while during the October heat wave and was surprised, on returning home to see how well they were looking. Species which have done best are Verts. chrysantha var. preissii, pennigera, nitens, multiflora, lindleyi, monadelpha, muelleriana, serrata, brownii, drummondii, hughanii and densiflora.

Verticordia plumosa remains healthy but is inclined to be rather more open and erect than is usual and possibly reflects influence of the light soil.

Species which have failed are Verts. chrysostachys, huegelii brachypoda and oculata, although the latter grew a little and flowered. Examination of the root system suggested that collar-rot had been responsible in this case.



### ROOT EXAMINATION AFTER PLANT LOSS.

I believe this to be one of the most informative exercises Study Group members should undertake, as much can be learned of not only the actual reason for the plant loss but it's reaction to cultural factors, such as soil type, aspect, fertilising, climate etc.. Documentation of these reactions and trial of variations which they suggest comprises much of what our Study Group is about, and when we have accumulated and processed sufficient of such data we will be better equipped to nominate guidelines for growing Verticordias on other than a hit and miss basis.

The reasons for a plants demise may, of course be many and varied and may not necessarily stem from below ground. Fungal or insect attack on foliage, for instance, can at times be sufficiently debilitating to initiate failure.

I personally keep a log book of all Verticordia plantings and note for each plant:-

- Date of planting.
- Location. (grid system).
- Origin of plant and pot size.
- Size at planting & occasionally as it progresses.
- Description such as single stem, branching or branched.
- Any special root condition such as coiling, root bound etc..
- Soil additives such as Gypsum or fertiliser.
- Special treatments in ground e.g. fertiliser, fungicide etc..
- Assessment on demise, of root system.
- Comment if appropriate, re pre-loss seasonal weather pattern.

Noting the above may appear to be quite a handful, but if a system of notations and abrieviations is devised and followed consistently it does not really take a great deal of space or time. The big advantage is that when new plantings of a species are contemplated a quick glance over previous notes will highlight the reason for losses and maybe suggest a trial of a different approach. I use a small loose leaf book about 8" by 6" and cover more than 60 species or forms.

If the plant, though defoliated still retains green stem wood and shows resistance to pulling out, it may be merely in a dormant phase. Verticordia huegelii in particular comes to mind in this regard.

If it is dead I suggest lifting with a fork and shaking the soil from the roots.

- a). Note whether the development of the main roots has been predominantly vertically or laterally. I believe this can be significant in the selection of an appropriate soil type for the species. If it is vertical it may well do best in well drained light soil. If it is lateral drying out in summer could be a hazard and it may respond better to heavier bodied loam or gravelly soils.
- b). Note if the fine (or feeder) roots are intact or have been destroyed. If the latter applies the probable cause is *Phytophthora cinnamomi* or root rot. Rotting of the main root stems may also be evident. On occasion I have noted that vertical leaders have rotted below a certain level e.g. 6". I have had the case where this has occurred leaving the upper section and associated fine roots

ROOT EXAMINATION AFTER PLANT LOSS. (CONTINUED).

intact. Plant loss occurred in a dry spell, probably some months after the lower root loss, when the surface soil dried out leaving the specimen without the use of it's deeper water collectors.

- c). If the fine and leader roots are intact examine the plant stem at ground level. If a collar rotting fungi such as Pythium or Rhizoctonia was the culprit softening of the bark or separation from the main stem can be detected. The disease attacks the cambium layer which is the water transporter to the foliage. If the plant has been lifted soon after demise, break the stems progressing downwards to ground level. Also break the leader roots progressing upwards to the same point. If collar rot is the culprit root and branch ends should break white or pale green, and discoloured, greyish or brown wood would show up nearer ground level. Even if plants have been dead a long time from collar rot flaking of the bark at ground level gives a reasonable clue.
- d). If all roots are in good condition and there is no evidence of collar rot, drying out of the soil may have caused the trouble. Refer to comments on soil type above.
- e). Examine the root system to check for bad nursery treatment. A gooseneck in the plant stem just below surface can be a result of careless potting up or could eventuate if too light a medium is used which settles unduly. Another problem can be the formation of knuckles where lateral root growers contact the side of the pot. All of the above can have the effect of shortening the effective life. The loss usually occurs at a stress period such as a spell of very hot weather or after heavy flowering.
- f). Another condition closely related to the above can occur when cuttings have been struck and left excessively long in the propagating tubes and have developed a great many closely packed roots. I suspect this can occur at times when propagating systems are a little too good. The final result is a tangled mass of roots which can be very difficult to spread effectively, and which the plant may not outgrow. A naturally occurring seedling could be expected to develop a well spread root system. Possibly the only way to keep alive with a root system tangled as noted would be to leave it in a container and water regularly.
- g). If a specimen had been planted with coiling of the roots, and this can sometimes be camouflaged by nursery repotting into a larger pot, it would be readily evident. Restriction from same can be life shortener as above.
- h). If the root system had failed to develop beyond the profile of the nursery pot it is highly probable that too rich a potting medium had been used and that on planting out, the specimen did not require to forage for nutrient. I consider that when this condition applies, plants need a lot going for them weatherwise, if they are to succeed. In other words they have two chances, their own & Buckley's.

Don't forget to note your conclusions. When you have been through the exercise several times you will feel more confident about your assessment and chances are you will be pretty close to correct.

H.M. HEWETT  
VERTICORDIA STUDY GROUP LEADER.