ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS

VERTICORDIA STUDY GROUP

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NEWSLETTER NO 46 -- August 2006.

LIGNOTUBEROUS GROWTH

In recent newsletters the subject of plant dormancy and the related matter; **lignotuberous growth of some species,** has been referred to and I am very pleased to include here the following appropriate comment from **Alex. George** (21/2/06)

"In light of recent weather patterns in Eastern Australia thoughts on this subject might well be appropriate and warrant particular horticultural consideration with planted specimens, such as to ensure adequate depth of leader root penetration .

Recently I was asked which Verticordias have a lignotuber, i.e. a woody rootstock from which they can resprout after fire (in contrast to those without such a feature, which are killed by fire and regenerate from seed). This was discussed by Elizabeth in her book , *Verticordia,* p 11 with examples. It occurred to me that, although you can find the species by going through the book, the list may be of interest to members of the Study Group as it can be relevant to horticulture. For example, plants with a lignotuber can be pruned back to the base once the rootstock is large enough – usually within five years or so), and will resprout.

Those without a lignotuber will die if so pruned. I am unsure whether or how quickly a lignotuber forms in plants grown from cutting.

Verticordia with lignotuber.

A query (?) indicates that a lignotuber has been recorded but I am uncertain if it is so.

V. apecta (?).
V. brevifolia
V. chrysanthella (but possibly not all forms)
V. coronata
V. cunninghamii
V. dasystylis (?)
V. decussata
V. densiflora var *cespitosa (some forms)*
V. x euardyensis
V. grandis
V. habrantha (some forms)
V. helmsii
V. huegelii var *decumbens*
V. insignis (some forms)
V. oculata
V. ovalifolia
V. oxylepis (?)
V. pennigera
V. plumosa var *ananeotes*
V. rennieana (?)
V. verticillata

The three tropical species; *V.s cunninghamii, decussata and verticillata,* are robust shrubs or small trees and sprout from the main stems after fire"

CULTIVATION NOTES

In my reading of newsletters from the various regions of our society, which I receive as a study group leader, I come upon many articles which might have a bearing upon our particular interest; the understanding for satisfactory establishment, of as many species of Verticordia as possible, under differing climatic conditions and soil types etc..

I have taken the liberty here of including, for the benefit of our members, words of wisdom from a number of such articles. Some of the comment may possibly be considered 'old hat' but I believe it is worth repeating. The particular Regional Newsletter and authors of the articles in question have been noted.

In my last newsletter I made reference to the subject of **etiolation** in relation to the cutting propagation of difficult to strike species and I believe more detail on same would be worth while. ***(The article was by Hazel E. Dempster and appeared in Volume 43 No 4 of the Wildflower Society of Western Australia Newsletter).***

Quote----"It has been well known for many years that plants put aside as stock plants produce better quality and easier to strike cutting material. Going a step further again these plants put under light shade will encourage new growth to stretch out or become etiolated, which puts longer spaces between the leaf buds. This etiolated material is ideal for use as a cutting and is found to strike quickly and produce stronger root systems----.

I have always advocated using new growth which comes away from lignotubers and cluster roots, as cuttings, because of its ease of striking.---- this stretched growth has the same attributes as etiolated material probably because of all the nutrients and hormones pushing the growth at a fast rate-

A further extension of the idea of etiolation again is recorded in The Plantsman, publication of the Royal Horticultural Society, Vol 4 Part 1 2005,-------and mentions hormone–treated bands for preparing woody cuttings.*ms)*

Quote----Recent research at Cornell University, Dept. of Floricultures and Ornamental Horticulture at Ithaca in New York, USA, on a range of woody plants, showed that placing bands of dark material round the lower ends of the shoots to blanch the tissue when you intend to make the cutting, is effective in creating the effects of etiolation. Applying bands made of strips or squares of black Velcro about 2.5 x 2.5 cm, turned out to be the most practical way of doing this. Dusting the inside of the band with hormone rooting powder before pressing the squares together round the shoot improved subsequent rooting performance even more.-------

--------As well as increasing the likelihood of rooting, the treatment also extended the length of time over which successful cuttings could be taken -----successful cuttings also had better root systems than those from untreated shoots.".

Some comments under the heading **Saving Water** are also very worthy of special thought, particularly at the present time. ***(They were made by Ivan Holiday and taken from his article in the Journal of the Australian Plants Society,South Australian Region Inc.Volume 18, No. 2)***

Quote-----"water saving often comes back to consideration of the type of soil where the plants are grown."

Another tip which might not please some suppliers of horticultural additives.:- "avoid composting your soil. Generally the most water retentive soils are those which have been left untouched. Organic matter eventually creates non-wetting soils and there is no better example than the modern potting soils, which are organically rich. These require very frequent watering and invariably they dry out and cause plant death------when such watering is so often neglected."

I believe it is of the utmost importance to appreciate what the root system is trying to achieve and how it goes about its job.There are many considerations including:-

A- Function and development of the root system in 'good times'
B- Function and development of the root system 'in bad times'
C- Specimen stage at planting
D-Early establishment regime
E- Watering and maintenance
F- Pruning during early and subsequent development.
G-Maintenance and defence against root rot
H.Maintenance and defence against collar rot
I- Consideration of Initial Root Development

Function of the **root system in good times**.The prime object of the root system is to satisfy the foliage demands for nutrient, moisture etc. so that ultimately the specimen will flower and seed.

In 'good times' with adequate moisture available, transpiration from the foliage is minimal and so attractive development can ensue,.with little demand on the roots to forage for moisture.

Function of the **root system in bad times**. Bad times might include annual dormancy or rest periods but more particularly a drought cycle such as we have experienced here of late with well below average rains, separated by extended dry, and sometimes unseasonably cool periods.

Another hazard here in such times has been the occasional light precipitation.during the species' natural dormancy period. I have noted here in Eastern Australia that Vertcordias in the main tend to accept favourably, such things as summer storms and I believe the same comment would apply

in their region of natural occurrence; Southwestern Australia. With the current drought cycle however it has appeared here that the stimulus to foliage from merely light or misty precipitation interspersed between extended very dry and sometimes very hot conditions, (44 or 45 degrees on New Years Day), or extended very cool and dry weather at other summer/autumn times, has proved recently to be a definite hazard, resulting in some leaf scorch.

With such light precipitation the top soil strata remained dry and the fine root system , especially when root leader development was in the comparitively shallow range,would not have been able to respond to the new demands of the foliage. See IRD comment later.

Specimen stage at planting. At the rear of the booklet West Australian Plants- 1965, published by our Society, there is an article by A.R.Fairall, Superintendent, King,s Park and Botanic Garden on Planning, Making and Growing a Native Garden. I strongly support the following statement under the heading Planting:-"It is better to use young plants about a year old than older root-bound specimens"

I.R.D. or 1NITIAL ROOT DEVELOPMENT (Implications as I see them)

If you aspire to grow some of our very special Australian Plants you have a number of options you should firstly consider regarding your acquisition of specimens. All of these have certain pluses and minuses going for them.

They are briefly:- 1- Use grafted specimens if available. Some consideration of rootstock may be appropriate, as some may react less favourably to very dry climatic conditions

2- Use specimens grown on commercially or otherwise, to a relatively advanced or semi-mature stage in medium sized containers

3- Attempt to acquire smaller tubestock specimens.

4- Grow your own from seed.

5- Be a C.P (Cutting Propagator).

You will doubtless have reasons for selecting one of the five options, which I will not labour at the moment. Rather then, I will refer to a matter which I believe has particular significance; viz. I.R.D., and which may easily be overlooked by those who adopt one of the first four options.

1 believe appreciation of **I.R.D**. can contribute significantly to many cultural answers for those who aspire to grow **and** satisfactorily maintain, some of our special Australians.

If you are a C.P. and especially if you pot on early from several cuttings per striking tube, which require separation and bare rooting at potting, you may have noted that when roots start to grow, the angle of development from the cutting stem tends to vary, according to species, from almost horizontal to almost vertical. Some species may embrace almost a full angular range.

This I.R.D. characteristic is particularly evident when propagation occurs quickly, in optimum striking periods, rather than when it has ultimately been achieved after many months of holding on. I have found it a very useful indicator of planting requirements for particular species.

To grow and maintain our specimens satisfactorily over the longer term I would name three basic considerations. In very general terms these are **response** to applied treatments, **reaction** to particular conditions and **survival.** To achieve the latter we must understand what the root system is trying to achieve at certain times and under particular conditions.

. In recent newsletters I have referred to a planting method I have tried, to counter some of the well recognised growing hazards, particularly with species from winter/wet and summer/dry climatic regions, grown under a diametrically opposed weather pattern or under garden conditions Generally speaking my results have been very satisfactory.

Rather than bemoan our recent excessively dry weather pattern, let us capitalise on this opportunity to advance our understanding of what is not visible to the eye, because it goes on out of sight underground, viz. reaction by the root system

The above planting experiment, (described in recent newsletters and started about three years ago), was an attempt to promote good and faster leader root penetration as well as to cope with some of the more expected plant hazards, especially from inadequate drainage, such as rotting of root leaders. Despite this weather of recent years and despite furthermore, with very few exceptions, that virtually no artificial watering had been given after initial establishment, my results have generally proved very satisfactory. and may well be applicable in garden establishment Australia wide.

In the recent exceptionally very dry and very erratic summer/autumn however, a new hazard has sometimes been evident. A few plants have suffered significantly from sun scorch., which I believe could be attributed primarily to record high ultra violet readings, following closely upon several days of temperature extremes for the seasonal period.

Of seven specimens of ***V. attenuata*** three were unaffected, one affected partially, (to approx. 30% on the north side) and three have suffered complete scorch with rapid demise. The above followed shortly after a few days of light misty weather. All plants had been tip pruned as they grew to develop a relatively compact growth form, rather then the more typical, taller, wind vulnerable habit experienced here with the species, and had grown particularly well for two or three years.

To assess the reason for the rather sudden loss I dug them up recently to examine the root systems. My records of I.R.D. for the species suggested leader development of from 30 to 45 degrees. The actual root development was in accordance with this.

My first surprise however was to note the good fine root development remaining on the rather laterally developed root leaders, from their tips, up to about 50 mm below surface level. From this point and up to ground surface however ,collar rotting of the main stem was evident and it was clear that this had been the cause of the ultimate plant losses.

My detail recollection of the weather of the previous weeks was that :-
a- Three or four days of misty rain were followed by a rather hot period with warm nights.
b-The rain had been barely heavy enough to wet the soil surface, let alone penetrate to the fine roots.
c-.The recent autumn period had been one of the driest on record for Sydney.
d- The plants had maintained very good foliage appearance until soon after the misty rain period.

Following is my assessment for the failures. I have found generally in Eastern Australia that most Verticordias respond well to occasional summer rain, providing ensuing skies clear reasonably quickly allowing night temperatures to drop sufficiently to dodge the 20 to 26 degrees collar rot hazard range. In their growing areas in W.A. late summer is a natural dormancy or rest period and even despite occasional storm rain there, I believe they would not generally be subjected to prolonged overcast night conditions following same.

In the above cases I would suggest that the 'congenial' misty weather period would have triggered a quick tip foliage **response** by the general foliage, which had been in good condition and not showing drought stress. This temporary tip activity would place demands on the fine root system to provide moisture to sustain continued growth. Because the root system was comparitively shallow, the dry upper soil stratum would very soon leave the fine roots unable to **respond** to the moisture demands by the tip foliage.

The dense growth habit would have acted in the nature of a funnel to track whatever light precipitation that did occur, down via the main stem and thereby slightly moisten the surface soil in the stem region. The soft, recently induced tip activity would then try to **respond** to the ensuing hot and dry conditions but without support from the fine roots would quickly **react** to the high ultra violet, resulting in the sun scorch. With a small amount of moisture still around the main stem just below ground level but not reaching down as far as the fine feeder roots, and with warm night temperatures, collar rot attack might well be expected..

My remaining observation concerns the unaffected specimens. I note from Elizabeth's Verticordia book that this species will accept the presence of close foliage association and further, that the angular range of IRD can sometimes extend more vertically. At this stage I obviously cannot determine.if this latter condition applies with these. Adjacent foliage however may possibly have afforded some protection however from the unusually high ultra violet conditions

So what can we learn from the above losses ?

For general growth appearance and wind resistance I would not recommend changes to the early tip pruning regime but to avoid pruning more matured specimens during later summer periods, especially in very dry seasonal conditions. I would expect that in natural conditions in W.A. the weather during summer would not encourage vulnerable lush tip growth, hence collar rot attack should not be an expected hazard there.

I would still favour using the same planting method, aiming to encourage fast deep leader development, from soil medium a little more open from gravel inclusions and with slight initial premoistening of the mix in order to minimise the need in early establishment for more frequent artificial watering.. In this early, minimum watering establishment period, specimens are only given sufficient watering to maintain a healthy appearance, rather than rapid development and are protected

from weather excesses by bell jars as previously described. After initial establishment the bell jars are removed during mild weather conditions and specimens generally left to their own resources, generally without artificial watering. As noted above, satisfactory plant performance has now been generally achieved for some three or so years despite the drought..

If the I.R.D for the species suggests it to be naturally shallow rooting and it had developed since planting, well beyond the establishment stage, very light summer rain in a very dry season might well constitute a hazard. If also the root system had been distorted from careless early potting up or otherwise restricted before planting out, such as from over-long staging in a nursery pot, the risk from such weather might be even greater. In either case it might be necessary to augment the natural precipitation with some artificial watering around the plants immediately following the light rain, to help the fine roots over a short period

If the I.R.D. suggests more lateral or shallower root development furthermore, the fine feeder root systems might also be particularly susceptible to excess drying out, especially in lighter soils. With such IRD the alternative to maintaining a more frequent watering pattern might be to introduce a soil strata of heavier bodied moisture holding capacity, reasonably close to the soil surface.

Finally I report the recent weather effect on one of three specimens of ***V. fastigiata*** .It was a two year old specimen and had grown vigorously in rather heavier soil conditions than many of my other Verticordias.

A little prior to the misty weather mentioned above it had been very vigorous but was becoming partly overshadowed from the south side by a rather dense small shrub. I decided I should do it a good turn with more sunlight like my other two specimens, so I cut the adjacent shrub back heavily.

With the subsequent cool misty conditions followed by hotter drier windy weather, the entire leaf system browned quickly and a little later defoliated, I believe from sun scorch. Heeding the advice of Alex. George I left it in situ to see if it was serious or just kidding.

If it has really gone through, the lesson might well be:- Don't be in too much of a hurry to do you're your plants a good turn by changing their local environmental conditions during their traditional rest period.

I have noted some advice on **pruning** generally to the effect that it may be undertaken at any time during the year. In light of the above experience, perhaps we should try to put ourselves into the 'brain' of the plant and not create undue stress on it by pruning during traditional rest periods.

During recent months I have noted many examples around my garden generally and in nearby areas, indicative of drought and/or sun scorch, such as new foliage shooting from stems or trunks near ground, of some shrubs and trees, This also is a typical reaction to drought conditions.

MEMBER REPORTS

Brett McDonald, Miga Lake, Victoria (2/06), sent his following list of Verticordias:-

V. mitchelliana
V. chrysantha
V. plumosa
V. densiflora
V. grandis (grafted).
V. monadelpha var. *callitricha*
V. grandiflora (grafted).
V.cooloomia
V.blepharophylla

He also has cuttings down of *V.s fragrans, attemiata, lindleyi* subsp. *lindleyi and drummondii.*

Judging by the standard of cuttings he sent me of *Vs. cooloomia and grandiflora,* Brett must be doing something right. We look forward to hearing more about the growing performance of his Verticordias in due course.

Bob O'Neill, Katandra Gardens, Wandin, Victoria, (1/06) reports:-

"With some perseverance we have obtained a few species of Verticordia;

V. grands-. These struggle here.
V. chrysantha- Do well as do cuttings on bottom heat
V. mitchelliana.- Do well and strike quite well from cuttings.

V. plumosa- Probably the easiest to grow, most versatile in accepting variable conditions, even quite moist.

V. monadelpha, white form, just finished flowering. In well draining red soil. Ball shaped, two feet rall.

V. monadelpha var. *callitricha*, pink form. Doing quite well in well draining red soil. Ball shaped, two feet tall.

I aim to have all Verticordias in well drained open sunny positions with plenty of space about them. We have approx. 900 mm of rain over approx.120 wet days. Summer rains are more storms, winter more of the cold wet cloudy day variety. Even so our grass grows the whole year round.

We can grow Verticordias well but we do have losses. I guess that wet feet could be a factor with some of these. Wandin is in the Yarra Valley at the foot of the Dandenong Ranges. We have just come through a period of extreme temperatures; three days over 40 degrees. We did however have 37mm of rain over 4 days near the end of January and we are now back to more comfortable conditions.

All in all we do have some losses, but on balance we are very happy with the state of the plant health."

Gordon Curtis, Happy Valley, South Australia (2/06) reports acquiring last spring a grafted *V. grandis* on Geraldton Wax stock. from Xanthorea Nursery in Perth. It is very vigorous and flowering for the second time. It has been planted into a 15 inch pot in Native Plant potting mix and has four main branches 18 inches tall.

Graham Eastwood, Batemans Bay NSW comments, (4/06) on the difficult weather of recent times. (I think he might like Bob O'Neill to pass on some of that rain).

"As far as Verticordias are concerned it has been very disappointing and I have lost several. *V .densiflora* var. *cespitosa* died towards autumn last year. I dug it up recently and the collapsed root system suggested collar rotting.

Three other plants that died this year were two *V. attenuata* and *V. brownii*. They had been healthy but the root systems appeared weak. I believe the upper development had been too vigorous for the roots?

V. blepharophylla had responded very quickly to water or rain with quick and luscious growth. I pruned it several times but in a short while it was back where it was, growing more than ever..When I dug it up the foliage was stiff but the roots had completely disappeared..

V. fragrans died following flooding from a blocked sewerage line.

A V. monadelpha had been a particularly slow grower and had only produced a few flowers. Root examination early this year showed me why. It had been in a 15cm pot when bought. When I pulled the root ball to pieces I found that the roots had been still screwballed from the seedling tube it had been propagated in.

V. pennigera has been flowering almost continuously until recently, and although it still has green leaves overall, many others have browned. This is a matter of waiting and seeing.

Six *V. staminosa* are stubborn and are shooting green stems.

The *V. chrysanthellas* are battling. ***(I believe this is typical for the seasonal period indicating partial dormancy- HMH)***

I have at the moment a healthy looking *V. mitchelliana, V.plumosa (2), V.densiflora (2),* one recently flowered, *V. densiflora* var *cespitosa*, self sown a couple of years ago, *V. minutiflora*, plus 2 nearby seedlings of same which have flowered, and *V. fastigiata*

STUDY GROUP FINANCIAL POSITION AT 30/6/2006

Receipts 05/06	**$205.50**	**Summary**	
Expenses 05/06	**$216.23**	**Credit balance 30/06/2005**	**$303.82**
Nett Debit 05/06	**$10.73**	**Nett Debit 05/06**	**$10.73**
		Credit balance 30/6/06	**$ 293.09**

VSG FEES 05/06

Members are reminded that the 06/07 fee of $5.00 is now due. Please make cheques payable to the Verticordia Study Group. Prompt payment would be appreciated

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