EREMOPHILIA STUDY GROUP NEWSLETTER NO. 11 AUGUST 1978

BUDDING AND GRAFTING

Mrs. Doris Phelps reports:

'I have an E. santalina budded onto an E. bignoniiflora. This was done by Mr. Brian Staker of Barmera. For fun he has also budded E. santalina onto Myoporum parvifolium and it has taken.

G.N.

SEEDLINGS

Geoff Needham

There has been a renewed interest in seed raising following success, though not in large numbers, with some seed collected in 1977. As Ray Isaacson put it, we can only expect to raise stock plants by this method. Proof of this point is his success with three seedlings of E. tetraptera and from these he has struck two plants from the juvenile wood. For something that is not in cultivation, this is very worthwhile.

EREMOPHILIA CRASSIFOLIA

Rosemary Pedler (Koolunga, S.A.)

In answer to Joylene Noble's article in Newsletter no. 8, a plant of E. crassifolia obtained from Joylene at Arno Bay in 1973 flourished until the summer of 1977-78, when it collapsed and died. Cuttings from this plant, taken when it began to look sick, struck readily, and I have also noticed what appears to be a naturally growing root sucker near the original plant.

A more prostrate form of E. crassifolia, also from Joylene is still in a very healthy state, but perhaps I would be wise to strike some cuttings of this too?

SEED GERMINATION

Ken Warnes

While we still have no answer to seed germination, a number of plants have been established from seed, and perhaps it is an opportune time to put down a few thoughts, all conflicting. The subject has been discussed in earlier Newsletters, and I will summarize what was covered.

No. 2: I gave my own experience in which I concluded that solutions of iron chelate triggered germination. Dave Gordon plants copious quantities of seed in ironstone soil and waits up to four years for germination. Bert Curtis sows in March and keeps damp with rain water to simulate a natural break in the season.

Murray Catford planted half a batch of E. scoparia with no result. Four years later he planted the rest and had good germination in 10 days. Did the storage period help? Bruce Spiers and others have extracted seed from the drupe and germinated them on blotting paper.

No. 5: John Blakeman synthesized an emu's digestive system. He thoroughly scarified fruits in a rock tumbler and sweated them in an enclosed ice-cream container in the sun. It worked with E. maculata.

Doris Phelps scraped up a heap of fruit and trash of E. maculata and in from 9 days to 15 months germinated 140 with odd later stragglers. She observed that a white

mycelium looking growth was present and wondered if this had any effect. Older, shabby-looking fruit germinated first.

No. 6: Graham Harrington, CSIRO, Deniliquin, gave the results of experiments with seed of several species at varying controlled temperatures and summarized it, as follows:

a) The germination requirements are mysterious when a seed under constant conditions will germinate for no apparent reason after 9 months.

b) Permanently wet conditions do not seem to be inhibitory and may eventually be required.

c) Fresh seed will germinate and these results suggest a loss of viability after the 1st year.

d) Unlike the results with many arid zone species, high storage temperatures do not seem to encourage germination although I have not tried a period of high temperatures (summer), then cold (winter) and then germination at moderate temperatures (spring).

No. 10: Ray Isaacson reported germination from seemingly immature fruit in one season when sown immediately, but nothing the next year after a short storage period.

Personally, I have always been a bit sceptical about the emu theory being a necessary part of germination. Then one day I suddenly realized how strange it was that emus would eat old mature fruit, which are really only chunks of wood; surely they would pluck the fleshy young drupes if Eremophila fruit were useful feed. Ray's experience would show that young fruit contains viable seed and I think this is a field to be developed.

On the other hand we have members who are convinced that old fruit are required and to support this I recently had germination of 11 E. gilesii sown at least six years ago (seed from Dave Gordon), plus 1 E. delisseri and 1 E. hillii. This seed lay in a large pan in the open and had been subject to the iron chelate treatment which triggered germination of E. oldfieldii, E. hastieana and E. latrobei in 1—12 weeks. No E. gilesii had been seen in all that time, yet after the prolonged heavy rain in April, 11 came up from the totally decomposed fruit, 6 being from a single fruit. Three months later only 4 survive and only 2 have just started a pair of leaves. The others are still cotyledons only. Another snapped at point of axil from the drupe and this 6 mm shoot was set as a cut and still looks fresh after two weeks—talk about small beginnings! The E. delisseri and E. hillii rotted in continuous rain.

I have a theory that an inhibitor is involved, and this inhibitor takes a certain time to develop. It is natural that conditions for germination and survival must be optimum for a desert plant. I suggest that a young fruit if detached could germinate immediately if suitable conditions prevail, but if maturing on the bush and not detaching until suitable conditions prevail, the inhibitor would have developed and would be effective until broken down by time or leached out by water. This would be consistent with the evidence of numbers as summarized earlier. Graham Harrington's loss of viability may in fact be such a development.

During the SGAP Seminar in Perth last year, Arthur Chapman of Canberra told me of some incomplete experiments with another plant, which was difficult to germinate, Polycarpaea spirostylis. While the work is incomplete and figures were not exact, but merely indicative of trends, they went along the following lines:

Watered with distilled water : 0%

Watered with double distilled water through a silicon still:

100% (orange crystals settled out with this treatment; could this be the suspected inhibitor?)

With a copper salt : 25%

With a lead salt : 90%

Other salts gave lesser percentages.

The hypothesis was that the metal ions in the salts bent the inhibitor into non-inhibitory form, while double distilled water washed out the inhibitor. Could it have been that my iron chelate treatment had a similar effect with eremophilas? It certainly seems a field worth pursuing.

Before leaving the subject of seed dormancy, the article by R. Haslehurst in "Australian Plants", Vol. 9, p. 206, may also be worth further study.

COLLECTING PLANT MATERIAL INTERSTATE

Bob Chinnock

Members will be aware that in most States, there are plant lists of protected species, or regions where all plants may be protected, e.g. National Parks. In Western Australia all wildflowers are protected, so I wrote to the Conservator of Forests in Western Australia, who controls all Crown Land, requesting information relating to collecting Eremophila material. His letter of reply, I believe, is favourable to the collection of Eremophila cuttings by members if they are prepared to comply with the conditions laid down in the Native Flora Protection Act.

Any person travelling west will have to apply for a permit direct to the Conservator. They will have to give details of the area they will be visiting and the dates. Persons stating that they will be making herbarium voucher collections to place in a State Herbarium will probably have better ground for a permit because of the scientific value.

A copy of the relevant parts of my letter to the Conservator of Forests, his reply, and some of the provisions under which the permit is issued, are given below:

'I am a member of the Eremophila Study Group of the Society for Growing Australian Plants of which I am the Editor of the Newsletter. From time to time members of the Study Group do trips and collect cuttings of Eremophila which are forwarded to Adelaide where they are distributed to certain growers to establish.

'In recent years many members at my insistence have been making voucher collections of species collected in the field which are then donated to this herbarium. Thus cultivated plants, when established, are also represented by a collection in a herbarium so that scientific studies on cultivated plants of known origin may be used in my own and future research.

'One member of the Study Group has intimated that he is visiting Western Australia later this year and asked if I knew what permission should be sought to collect cuttings and voucher material.

'As there will probably be many occasions when Study Group members will be visiting Western Australia in the future, I would appreciate it if you could provide me with your set of guidelines relating to the granting of a permit to collect on Crown Land and other Reserves under your control. I would also appreciate a list of the requirements under which the permit is issued.

'The sort of material collected for cuttings would probably be about 15 portions of

stem approximately 15 cm long plus one voucher collection with flowers (and fruit) for pressing. '

Reply received from Mr. B.J. Beggs on behalf of the Conservator of Forests, Perth, dated 7th June, 1978.

'Native Flora Protection Act, 1935-1938'

'Your letter of May 28th last refers.
'The Forests Department is responsible for the administration of the Native Flora Protection Act, 1935-1938, and it is our practice to issue Authorities under the provisions of this Act to persons who wish to collect specimens of Western Australian native flora.

'Requests for Authorities must be made in writing and be addressed to the Conservator of Forests at the above mentioned address.* Applicants must state the purpose for which they require the Authority. Most Authorities are issued for scientific, research, propagation or herbarium collection purposes.

'For your further information on this matter, I am enclosing a copy of the Native Flora Protection Act and a sample copy of the Authority that is issued.

'The following is an extract from the Native Flora Protection Act, 1935—1938.

1. 'The number of specimens of any one species shall be kept to a minimum.
2. 'This authority will remain in force from ..... to .....
3. 'No seeds, propagating material or plants are to be obtained from:
   (a) National Parks or Reserves under the control of the National Parks Board.
   (b) Reserves set apart from indigenous flora and fauna.
   (c) Within five kilometres of Canning Dam, Mundaring, Serpentine and Wellington Weirs.
   (d) An area extending two kilometres on either side of the Kalamunda—Mundaring Weir Road.
   (e) Within 50 metres of the centre line of any road or forest track.
4. 'No orchids to be picked within a radius of 80 kilometres of the G.P.O., Perth.
5. 'No specimens obtained under this authority are to be sold.
6. 'No specimens shall be taken in such a manner as to destroy or jeopardize the survival of the plants.'

* **Requests for Authorities should be addressed to:-**

The Conservator of Forests, Forests Department, 54 Barrack Street,
Perth, Western Australia 6000.

PUBLICATION

Warnes, K. (1977). Some Aspects of Eremophila. S.G.A.P. 2nd Federal Seminar, Perth.