Final report on the project **Propagation of *Conospermum* spp.**

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Summary

Attempts to propagate Conospermum species by either seed germination (in viva and in vitro) or by cuttings have failed to produce any results so far. The few seed which have germinated have died within 2-4 weeks of their transfer to potting mix.

This final report consists of two progress reports, one on November 1990, and the second on March 1991.

To: The Australian Flora Foundation

PROGRESS REPORT November 1990

The aim of this project is to investigate the propagation of *Conospermum* spp. Both seed and cutting material have been obtained from W.A. (with the assistance of local collectors through Bill Payne and Jim Armstrong).

Most of the cutting material has arrived in poor condition because of the difficulty of collecting at the best time and ensuring prompt delivery. No rooting has been observed although some cuttings remained sound for several weeks. No useful data has been obtained from the treatments used.

After some delay, 'seed' material of several species has been received but most has been barren. The exception was *C. petiolare* which had a small number of well-developed seed. Individual seed were extracted by hand. They have a hard seed coat; therefore a range of seed coat treatments have been applied. The best treatment was nicking the distal end which gave 19% germination. Other seed swelled but did not germinate suggesting some other dormancy factor beside the hard coat.

Current experiments are testing the response to various plant hormones in order to break the dormancy.

Having obtained at least a few seedlings we are currently trying to germinate seed under sterile conditions to provide starting material for tissue cultures.

We have now located plants of *C. burgessiorum* in the New England area and can collect fresh shoot material and later seed when ready. This should provide an adequate supply of suitable material for more detailed work over this growing season.

Progress has been slow because of the difficulty of collecting material. We have only recently started using the initial grant for casual assistance, although the work rate will increase now that we are making progress using local material. and initiating cultures.

Proposal for 1991

The overall research plan remains the same. The workload for next year will depend on the rate of progress.

Approval in principal is sought for additional funding in 1991 up to the amount initially requested ($2450). This will enable us to continue the work assured of support when needed However, since we will carry funds over into next year, we will not seek payment of this additional amount until the current grant is committed.

Dr Acram Taji 5/11/90

To: The Australian Flora Foundation.

PROGRESS REPORT March 1991.

Project Title: Propagation of *Conospermum* spp.

Supervisor: Acram Taii - University of New England.

Seed Germination Trials.

Experiment 1.

Conospermum petiolare was used in this trial. The following treatments were applied with 10 seed per condition.
1.Intact seed.
2.Hair removed.
3.Distal end of testa removed
4.Proximal end of testa removed.
5.Testa was removed completely.
6.As in 2 but seed were soaked in boiling water over night.
For each condition one petri dish was kept in dark and one petri dish was stored in light. Although 2 seeds from group one and one seed from treatment three and treatment six germinated none of the seedlings survived the transfer to the potting mix.

Experiment 2.

Seed were surface sterilized and transferred to agar medium containing 0.5µMBAP. The following treatments were applied:
(i)-Testa removed
(ii)-Hair removed
(iii)-Intact seed
Cultures were stored in either darkness at 23ºC or in the light at the same temperature. This experiment commenced on 2/1/91. None of the seed have germinated to date, even though most seed still look very healthy without any obvious infestation.

Experiment 3.

Following species were used in this trial:
1.-*Conospermun luegelii*
2.- " *stoechadis*
3. - " *incorvum*
4.- " *triplinervinm*
5.- " *distichum*
20 seed of each species were surface sterilized and transferred to agar medium containing 250 µM GA_3. For each species 10 seed with testa completely removed and 10 seed intact. Within two weeks of the date this experiment commenced all cultures became heavily infested and were all discarded.

Experiment 4.

The following species were used in this trial:
Conospermum bracteosum
Conospermum amoenum
Conospermum caeruleum
Conospermum capitatum
Conospermum doienii
Seed were surfaced sterilized and transferred to the petri dishes containing filter paper either moistened with water or 1000 µM GA_3. Each dish contained 10 seed, 5 seed intact and 5 seed with their testa removed completely. The GA_3 was filter sterilized and all petri dishes were autoclaved prior to the commencement of the experiment. For each species one dish was stored in light and one in total darkness. Theincublation temperature was 23ºC. Within 2 weeks all dishes were heavily infested even though all the seed were sterilized and the experiment was set up in a laminar flow cabinet.

Experiment 5.

In this experiment we used the same species as in exp.4 This time the seed were put on the surface of agar containing 250 µM GA3 Each container contained 10 seed. The testa was removed from 5 of these seed. All these culture were infested within 2 weeks.

Experiment 6.

In this experiment we used the same species as in the previous experiment. The length of surface sterilization was increased also the seed were flame sterilized prior to dissection. They were then cultured an deFossard MMMM or Special seed culture medium containing 0.5 µM GA_3 plus l µM zeatin (both these chemical were filter sterilized). At this point of time the seed still look free from infestation (but the experiment commenced only 8 days ago).

Cutting Trials.

The following treatments were applied to the cuttings of a range of species from W.A.:
-control no hormone
-1000 ppm IBA
-1000 ppm IBA + 1000 ppm NAA
-1000 ppm IBA+ 1000 ppm NOA
-1000 ppm NAA
-1000 ppm NOA
None of the cuttings survived beyond the sixth week.

Cutting materials were also collected from a population of *Conospermum burgessiorum* on.the Gwyder Highway 60 km. east of Glenn Innes. Treatments as above were applied. Two sorts of cuttings were taken from this species, shoot tip cuttings and node cuttings. These cuttings also all died within six. weeks.

Summary.

Both the seed germination (in viva and in vitro) and cuttings have failed to produce any results so far. The few seed which have germinated have died within 2-4 weeks after the transferr to potting mix.

Future work.

1. Effect of temperature on seed germination in viva and in vitro will be examined.

2. Effect of seed stratification on rate of germination will also be investigated.