



Development of Ovule Culture Techniques for Breeding Interspecific Hybrids among *Abelia* Species

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Nature of Work:

Flowering evergreen shrubs that are compact and resistant to pests are in great demand in the nursery and landscape industries. The genus *Abelia* contains 30 species that vary in many traits including flower color, growth habit, and hardiness. Interspecific hybridization among species of *Abelia* offer the potential for new cultivars. Interspecific hybridization can be difficult or impossible due to a number of factors such as failure of endosperm development or failure of viable seeds to germinate. To circumvent such problems, embryo rescue can be employed. Furthermore, ovule culture can promote faster breeding cycles that ultimately leads to earlier releases of new cultivars by eliminating the time associated with seed maturation and germination.

Seeds from interspecific hybridization between *A. × grandiflora* 'Francis Mason' × *A. schumannii* failed to germinate. Controlled interspecific pollinations were performed using *A. × grandiflora* 'Francis Mason' as the maternal parent and *A. schumannii* as the paternal parent. Ovules were dissected from the fruiting structure 4, 5, and 6 weeks after pollination and placed in petri plates containing either Woody Plant Medium (WPM) or Linsmaier and Skoog (LS) Medium. In addition 0, 2, or 8 mg/l 2iP was added to both media. All media contained coconut water (5% v/v), sucrose (30 g/l), agar (8 g/l), and MS vitamins (1 mg/l). After roots began to form, embryos were transplanted from in vitro culture to a 1:1 sphagnum peat:perlite mixture. To harden off the embryos, the transplanted seedlings were placed under intermittent mist in a greenhouse. Seedlings were removed from the mist when new growth was observed.

Results and Discussion:

Data was collected on embryos recovered, spontaneous embryo germination, embryo survival following transfer to standard greenhouse conditions, and final plant survival following the hardening off process. A significant effect due to number of weeks following pollination was found for all parameters examined. The best harvest date was 5 weeks after pollination. Plant growth regulator rate and basal salt media were only significant for final plant survival following the hardening off process. Woody Plant Medium and 0 mg/l 2iP produced the best results. Eight-five percent of the cultured ovules produced embryos that rooted and 65% survived the hardening off process when ovules were cultured 5 weeks after pollination on WPM containing no growth regulator. A total of 115 hybrids have been obtained.