Conospermum: A Cultivated Cutflower

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***Conospermum* is an Australian native flower being developed by Agriculture Western Australia as a cut flower. *Conospermum* is a diverse genus with genotypes varying in colour from white/grey to blue, and varying in forms from shrubs to small trees. Some *Conospermum* species readily propagate from cuttings with strike rates up to 50%, while others can only be propagated from tissue culture. *Conospermum* species respond favourably to cultivation.**

INTRODUCTION

Development of new Australian native plants is seen as crucial for the long-term growth of the Australian cut-flower industry. Smokebush (*Conospermum* species, Proteaceae) has considerable potential for commercialisation. There are 53 species of *Conospermum* in Australia with 42 species occurring in Western Australia (Bennett, 1995). They occur in 200- to 800-mm rainfall isohyets and flower from winter to late summer depending on the species. Species vary widely in appearance with several having blue-coloured flowers. Few species have been domesticated (Tan et al., 1994).

Research has identified several selections of *Conospermum* species (Seaton, 1996; Seaton and Webb, 1997, 1998) suitable for the cut-flower trade.

MATERIALS AND METHODS

Natural populations of *Conospermum* species were sampled in WA from north of Kalbarri to east of Esperance. Cuttings were surface sterilised in 1% (w/v) sodium hypochlorite for 10 min then washed in distilled water. Stem ends were treated with 3000 ppm indol-3-butyric acid (IBA) in a gel (Clonex®) and placed in a sand, peat, and perlite propagation mix (1 : 2 : 4, by volume) in individual cells. These were placed on a heat bed maintained at 26C within an air-conditioned propagation house (maximum air temp 26C) with misting sprayers controlled by a Weather Watch® system (Sage Horticultural).

Rooted cuttings were grown on in a sand and pine bark (composted) potting mix (1 : 1, v/v) and finally planted at Medina Research Station (coarse sand with pH 6 to 6.5). These were watered using 4-litre h^{-1} drippers and N, P, K fertilisers (76 kg ha^{-1} per annum of N and K and 10 kg ha^{-1} per annum of P) were applied through the irrigation system.

RESULTS

Selections. *Conospermum* species occur as small trees and shrubs. Small trees are typified by *C. triplinervium* (tree smoke) that vary considerably in leaf form and are high-stem producing plants with grey/white panicles of flowers. Small shrubs

include *C. amoenum* with blue glabrous flowers; *C. floribundum* with a white perianth, blue lobes, and bract; *C. incurvum* (plume smoke) with a white perianth and black lobes and bract; *C. eatoniae* (blue lace) with erect leafless stems and masses of striking blue glabrous flowers; *C. caeruleum* (slender smokebush) with fine drooping stems, few leaves, and blue flowers; and *C. crassinervium* (tassel smoke) with a rosette of strap-like leathery leaves, corymbs of white woolly perianth, and brown to black bracts. All these species flower in winter to spring, except *C. crassinervium* which flowers in summer.

Propagation. Wide variation in the strike rate occurs in *Conospermum*. *Conospermum triplinervium* cuttings strike readily with a success rate of up to 50% depending on selection. Strike rates for *C. incurvum* are lower and *C. eatoniae* can only be propagated using tissue culture (Fig. 1). For *C. amoenum* only one clone was propagated out of 19 tested. In general, strike rates from cultivated material is up to 3 times higher than from cutting material from natural populations. *Conospermum* takes 6 to 24 weeks to initiate roots and propagates best from nonflowering material.

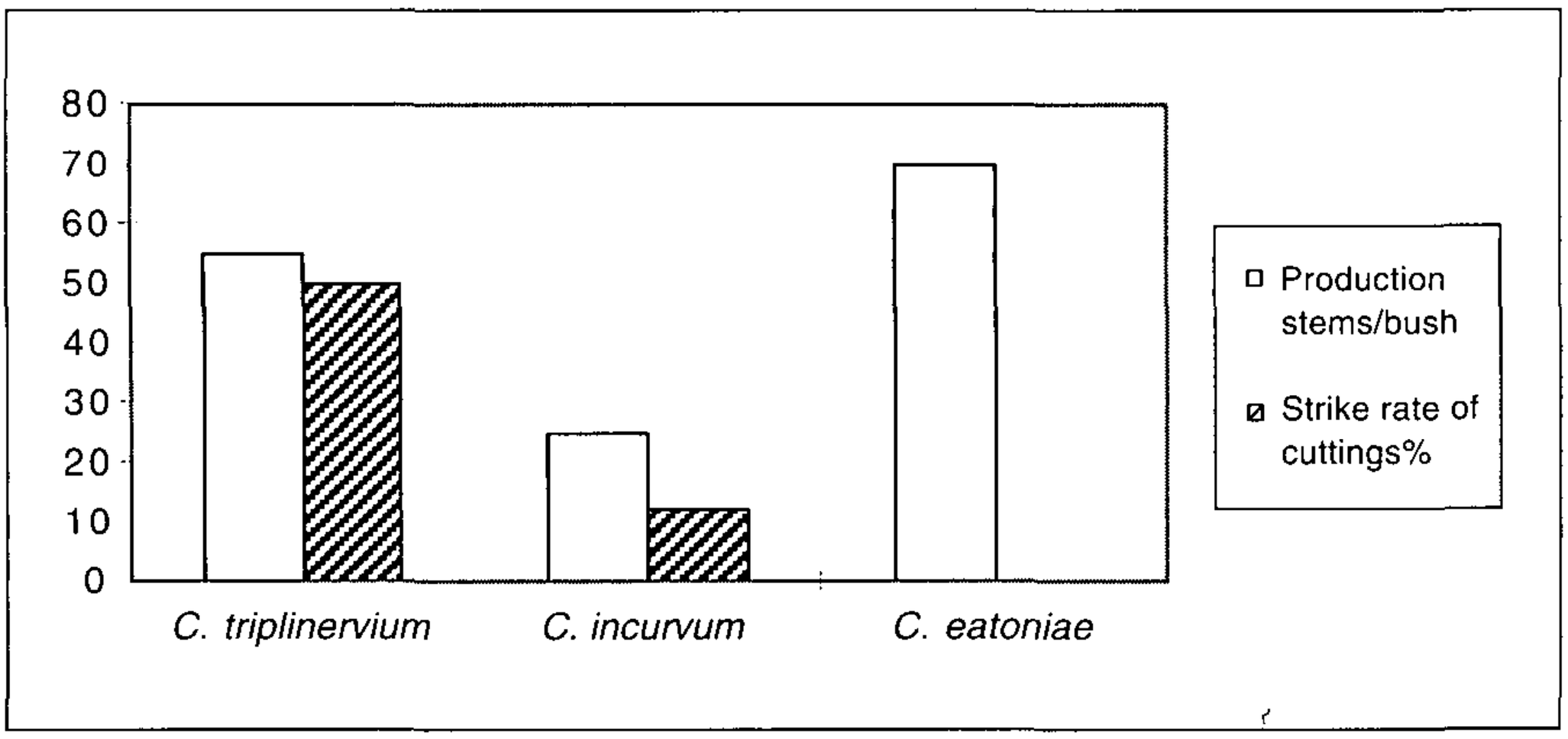

Figure 1. Cutting strike rate of bush picked material and stem production of 3-year-old cultivated *Conospermum* species.

Cultivation. In cultivation *C. triplinervium*, *C. eatoniae*, and *C. caeruleum* produce flowers in their 1st year. They respond to regular watering and are sensitive to high phosphorus fertilisers. Pruning after flowering in the 1st year increased stem numbers which increased by 5 to 10 times in the following season. Stem production of 3-year-old bushes was highest for *C. eatoniae* followed by *C. triplinervium* and lowest for *C. incurvum* (Fig. 1). For *C. eatoniae* and *C. caeruleum* floral stem growth occurs from early spring to autumn. For *C. triplinervium* floral stems are initiated in June and elongate rapidly until flowering in September. *Conospermum triplinervium* flowers over a longer period than *C. eatonaie* and *C. caeruleum*. High postplanting losses were observed for *C. floribundum* and *C. incurvum* with the surviving plants growing slowly.

DISCUSSION

Several *Conospermum* spp. have been selected which show considerable potential in cultivation. Cut flowers of *C. eatoniae* were marketed in trial quantities in 1996 and 1997 and were eagerly sought by florists in Australia and Japan (James, 1997). Inconsistent propagation of *Conospermum* spp. has limited the availability of plants for cultivation. The extended time taken for cuttings to strike roots increases the risk of disease. Propagation results with *Conospermum* suggest a dependence on genotype. A similar relationship has been observed with *Banksia* (Sedgley, 1996). Research is continuing to develop commercial methods of propagation of selected *Conospermum* species.

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LITERATURE CITED

Bennett, E.M. 1995. *Conospermum*. Flora of Australia. Vol. 16. Elaeagnaceae, Proteaceae 1. Orchard A.E. (ed). Melbourne CSIRO Australia 12:224-486.

James, K. 1997. "Flowerful Australia" on display in Tokyo. The Floriculture industry newsletter. No. 43, Dec. pp. 2-3.

Seaton, K.A. 1996. *Conospermum* in the search for the new wildflower. Aust. Hort. 4(6):47-48.

Seaton, K.A. and **M.G. Webb.** 1997. The ecology and development of *Conospermum*. Acta Hortic. 453:107-110.

Seaton, K.A. and **M.G. Webb.** 1998. Smokebush. The New Rural Industries. A handbook for farmers and investors. Hyde, K. (ed). Rural Industries Research and Development Corporation. Canberra. 1998. pp 555-558.

Sedgely, M. 1996. New *Banksia* cultivars for cut flower production. Acta Hortic. 453:77-79.

Tan, B., de. M. Vos and **M. De. Vos.** 1994. Tree smokebush. *Conospermum triplinervium*. In vitro germination and propagation. Aust. Plants. 18(141):28-35.