APICAL DOMINANCE IN SINGLE-NODE ROOTED CUTTINGS OF *ROSA* CULTIVARS

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Apical dominance in single-node rooted cuttings of cultivars Apricot Silk, King's Ransom, Peace, Wendy Cussons and Alec's Red was checked at an early stage using 2-chlorethyl phosphonic acid (ethephon) and distilled water sprays. Ethephon at 500 ppm with Tween-20 (1%) as a wetting agent caused significant increase in the number of shoots growing from the single node. This treatment also improved the commercial quality of the bush.

INTRODUCTION

The investigation here reported are concentrated chiefly with the possibility of using plant growth regulating compound to check the apical dominance and to induce the growth of shoots from the bud after it has established its roots in single node cuttings. Zieslin *et al.* (1972) found the best branching response in cv. Baccara from a spray of ethephon (500 ppm) when a thin score has been made above the basal axillary buds. The growth regulating chemical ethephon at 500 ppm had been used successfully to induce basal shoot development in greenhouse grown roses. The treatment led to the production of a denser foliage canopy and good flowers. Kingham and Sharpe (1973) stated that none of the plants showed distress, there was no apparent damage to foliage and after about six weeks a number of basal shoots began to develop on ethephon treated plants of roses.

MATERIALS AND METHODS

One hundred eight-week old plants of Apricot Silk, King's Ranasom, peace, Wendy Cussons and Alec's Red raised from single-node cuttings were transplanted into 8 cm diameter plastic pots of John Innes potting compost No. 2 in a greenhouse (24±2°C). Plants were sprayed with ethephon 500 ppm and distilled water as the control. The Tween-20 at 0.1% concentration was used as a wetting agent. The data for new branches were recorded four weeks after the last spray. A completely randomized design with 10 replications was adopted.

RESULTS AND DISCUSSION

Ethephon at 500 ppm significantly increased the number of new shoots growing from the single node cuttings ($P<0.05$). All the cultivars responded similarly (Table 1).

Ethephon induced bud-break low down on the shoot and around the bud in the greenhouse roses (Zieslin and Halevy, 1976). The combined treatment of ethephon and urea gave a similar result to that of ethephon alone and the plants were compact and bushy (Khan, 1978).

Ethephone kills active shoot apices, the shoots lose their ability to mobilize nutrients and apical dominance is lost. Schaefer and Sharpe (1969) found that when apical dominance is destroyed, the control over the quiescent axillary buds changes abruptly to permit the net synthesis of deoxyribonucleic

acid (DNA) and the elaboration of new metabolic products associated with rapid growth and development.

The use of ethephon sprays in the single-cuttings as outlined above, may become commercially viable with certain cultivars and the technique could replace manual 'pinching'. The size and the quality of the bushes grown in containers receiving the ethephon (500 ppm) treatment was good (3-4 branches per bush). Zieslin and Halevy (1976) have previously reported similar results in newly budded plants. Fifteen weeks after propagation, the plants were ready in the pots for sale in the nursery. The results allow the suggestions that ethephon could be used commercially for container growing roses to manipulate the shape of young rose bushes.

Table 1. Effect of ethephon on the development of new shoots from rooted single-bud cuttings (No. of new shoots plant^{-1})

Cultivar	Control	Ethephon (500 ppm)	Means**
Apricot Silk	0.4*	2.5	1.45
King's Ransom	1.0	2.7	1.85
Peace	0.8	3.5	2.15
Wendy Cussons	1.0	3.6	2.30
Alec's Red	0.6	3.6	2.1
Means***	0.6	3.18	2.1

At P = 0.05; LSD* = 0.8; LSD** = 0.56; LSD*** = 0.35.

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