



Growing 'Sonora Red' Poinsettia under Different Growth Retardants

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Introduction

Poinsettia (*Euphorbia pulcherrima* Willd. ex Klotzsch) is widely used as Christmas decoration for its showy color and dark green foliage. It grows in 50 states and grossing \$220 million worth of poinsettias are sold during the holiday season. 'Sonora Red' poinsettia is a new cultivar for commercial growers in recent years. It has contrasting red bract (Fig.6), but is often too tall and leggy. Plant growth retardants (PGR), such as uniconazole, paclobutrazol, chlormequat and ancymidol have been used for the poinsettia production. However, they are all expensive for the commercial growers.

Objectives

- To evaluate influences of different combinations of plant growth regulators on growth of 'Sonora Red' poinsettias.
- To investigate the feasibility of plant growth regulators for controlling growth of 'Sonora Red' poinsettias.

Materials and Methods

• Rooted poinsettia cuttings from Fischer Horticulture LLC were transplanted into 6" round plastic pots (1.30 L or 0.34 gal) with Scotts® Metro-mix 560® growing media and University of Maine, Orono.

• The mean day/night temperature recorded by 21X Campbell Data Logger were 32.27 / 18.55 °C (90.09 / 65.39 °F).

• Poinsettia miracle-Gro®(20 -2.2-15.8, N-P-K) were fertilized every watering at the concentration of 100 mg-L⁻¹ for the first month, 200 mg-L⁻¹ for the second month, and 300 mg-L⁻¹ thereafter.

• Plants were sprayed twice (in 31 and 63 days) with 500 mg-L⁻¹ ethephon (A); 500 mg-L⁻¹ chlormequat plus 1,000 mg-L⁻¹ daminozide (B); 500 mg-L⁻¹ ethephon in the first time, then 1,000 mg-L⁻¹ ethephon (C); 500 mg-L⁻¹ ethephon in the first time, then 500 mg-L⁻¹ chlormequat plus 1,000 mg-L⁻¹

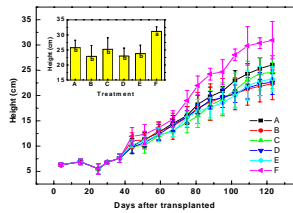


Fig. 1: Height variation of 'Sonora Red' poinsettia after transplanting and at the end of experiment (inserted)

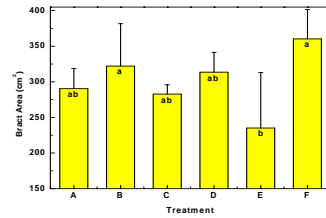


Fig. 2: Bract size of 'Sonora Red' poinsettia under different treatments

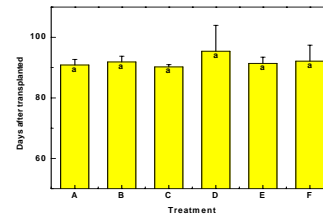


Fig. 3: Bract coloration time of 'Sonora Red' poinsettia under different treatments

daminozide (D). Plants were also sprayed three times in 31, 53 and 76 days with 500 mg-L⁻¹ ethephon (E) and no growth retardants as control (F). Each treatment includes eight plants.

• Height (weekly) and bract coloration (daily) were recorded, dry weight (aboveground portion), canopy and bract size were measured at the end of experiment (Nov.11, 2005). Analysis of variance and mean separation with least significant difference were done using SAS.

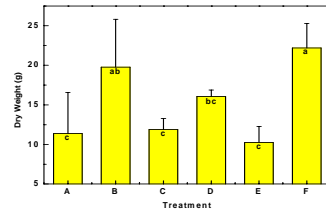


Fig. 4: Dry weight of 'Sonora Red' poinsettia under different treatments

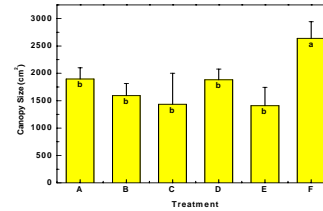


Fig. 5: Canopy size of 'Sonora Red' poinsettia under different treatments

Results and Discussions

'Sonora Red' poinsettia growth was inhibited at the presence of PGR and the effects of PGR became more and more significant in later period (Fig. 1). Compared with control, all treated 'Sonora Red' poinsettias were significantly shorter, which were 17.3%, 26.6%, 19.0%, 26.2%, 23.6% as of control fro treatment A, B, C, D and E, respectively (Fig. 1,6). However, no significant differences occurred among all the treatments (Fig.1, inserted).



Fig. 6 Comparison of 'Sonora Red' poinsettia among different treatments: A, B, C, D, E, F (from left to right)

Although undesirable side effects of reducing bract size were observed on all treated 'Sonora Red' poinsettias, no significant differences occurred between control and all treatments with the exception of E (Fig. 2). Bract coloration time was similar for all treated 'Sonora Red' poinsettias (Fig.3). Compared with control, all treatments with exception of B significantly reduced the dry weight of 'Sonora Red' poinsettias (Fig. 4), which suggested that phototoxicity occurred on all treated 'Sonora Red' poinsettias. In addition, canopy size of 'Sonora Red' poinsettias reduced under all treatments in contrast to control, but no significant differences were observed among all the treatments (Fig. 5). They could be used for producing better compact potted 'Sonora Red' poinsettias.

The chemical costs of the treatments of A, B, C, D and E were 0.025, 0.038, 0.044, 0.043 and 0.029 \$ per pot, respectively, and treatment A was the cheapest among all treatments (Fig.7).

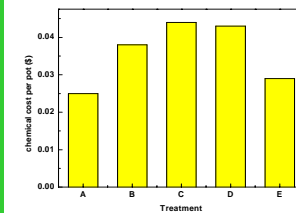


Fig. 7: Comparison of chemical cost per pot among different treatments

Conclusion

500 mg-L⁻¹ Ethephon, sprayed in 31 days and 63 days after plants potted, was the feasible way to control growth of 'Sonora Red' poinsettias without reduction of their bract size.

Literature Cited

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