

THE INFLUENCE OF THE GROWTH RETARDANTS PACLOBUTRAZOL,
ANCYMIDOL AND S-3307 ON GROWTH AND DEVELOPMENT OF *ACHIMENES*
LONGIFLORA, DC. 'VIOLA MICHELSSSEN' GROWN UNDER TWO LIGHT REGIMES.

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Growth retardants are used commercially in *Achimenes* to reduce height of main stem and to promote development of axillary shoots in order to get a more compact plant. The growth retardants used in this experiment have not been previously applied on *Achimenes*. The effect of these three growth retardants on height, branching and flowering are studied. Furthermore, the hypothesis that by reducing growth of the aerial parts of the plant might induce the formation of more and/or bigger rhizomes is investigated.

Plants of *Achimenes longiflora* DC., cv *Viola Michelssen*, propagated by stem cuttings and uniform in height (2 cm) with 3 to leaf whorls, were sprayed once or twice with one of the following three growth retardants in three different concentrations each:

Paclobutrazol at 25, 50, and 100 ppm

Ancymidol at 12.5, 25 and 50 ppm

S-3307 at 0.05, 0.5 and 5 ppm

Each plant, depending on application treatment, was sprayed with 5 ml on the first application, and with 10 ml of solution on the second. Plants were kept in a greenhouse at 21°C either under natural daylight (unshaded) or under a shading cloth (shaded) that provided a 40% light reduction for 12 weeks. The experimental layout was a split-plot design with 4 replications, two light regimes (main plots) and 2 application frequencies (sub-plots). There were 10 growth retardant treatments randomized within each sub-plot. 4 plants per replication were the experimental unit. Halfway and at the end of the 12 week period height of the main stem and numbers of leaf whorls and axillary shoots were recorded. The number of days to first flower was also observed. At the end of the experimental period the following data were collected: total number of flowers, number of rhizomes and dry weight of aerial parts and rhizomes. Data were analysed according to analysis of variance and means were compared by the Wilcoxon test ($p=0.05$).

All growth retardants reduced height of main stem. Two applications of paclobutrazol at 100 ppm caused 67% height reduction under both light regimes. Ancymidol and S-3307 were effective only on shaded plants at the highest concentrations and caused 48 and 56% height reduction respectively. Number of leafwhorls was similarly affected. Paclobutrazol at 50 or 100 ppm, applied once or twice, delayed flowering and reduced number of flowers and rhizomes. Ancymidol and S-3307 had no significant effects. Dry weight of aerial parts was reduced by two applications of the highest concentrations of all growth retardants.

The growth retardants used were more effective on shaded rather than unshaded plants and two applications were usually more effective than one. Shaded plants had a lower dry weight with less axillary shoots and flowers than those grown under natural daylight. Reduction of growth of the aerial parts did not increase rhizome formation and development; it is assumed that increased vegetative growth results in increase of assimilates and/or hormones which stimulate rhizome development.

References

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Fig. 1. The effect of two applications of paclobutrazol on *Achimenes* cv *Viola Michelssen* on height reduction. Plants were grown under shade in a greenhouse for 12 weeks

