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Ornamental Gingers as Flowering Potted Plants – Part 4
Effects of Light Intensity and PGR's on Growth and Flowering

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BACKGROUND

The optimum light intensity for producing various genera of ginger as flowering potted plants have not been determined. Marketable flowering potted plants are generally grown to a standard of 1.5 to 2 times the height of the container. *Curcuma alismatifolia* and other ornamental gingers often produce tall inflorescences resulting in unmarketable plants due to excessive height. The objective of these experiments was to determine the optimum light levels and concentrations of paclobutrazol (Bonzi) or uniconazole (Sumagic) for producing quality flowering potted plants of *Curcuma* spp. 'Precious Patuma', *C. parviflora* 'White Angel', and *C. alismatifolia* 'Chiang Mai White'

MATERIALS & METHODS

Rhizomes were obtained from Set Con Co. Thailand. They were planted one per six inch container and grown in a greenhouse with temperature setpoints of 81°F /70°F day/night. The planting medium was 50% peat moss, 30% pine bark, and 20% perlite (v/v). Plants were fertigated with Peters 24-8-16 Tropical Foliage at 150 ppm N. When shoot height was 4 inches, plants were drenched with 4 fl. oz. of Bonzi or Sumagic at 0, 10 or 20 mg (active ingredient) per container and grown under a 0% (1,860 μmol/s/m^2), 30% (922 μmol/s/m^2) or 60% (352 μmol/s/m^2) shade. Average daily temperatures for the three light levels were 86°F.

RESULTS

There was no significant effect of shade level (light intensities) on days to emergence or days from emergence to first flower for *Curcuma* spp. 'Precious Petuma'. Flower height was significantly taller for those plants grown under reduced light levels; however, these heights were still of acceptable quality for a flowering potted plant. Shade level had no affect on flower longevity. Inflorescences had a post-production longevity of 30 days, which is excellent. The number of days from first to second flower were extended by approximately 12 days when plants were grown under 60% shade. Application of Bonzi and Sumagic at 20 mg a.i./pot reduced the flower height of 'Precious Patuma' by 27 and 54%, respectively. Because flower height was acceptable at all shade levels, the use of these PGR's is not recommended.

***Curcuma* sp. 'Precious Petuma' grown under 60% shade. From left to right; control, 10 mg a.i. Bonzi, 20 mg a.i. Bonzi, 10 mg a.i. Sumagic, 20 mg a.i. Sumagic.**

Days from emergence to first flower of *C. parviflora* 'White Angel' was significantly extended by 13 days when grown under 60% shade. Flower height was significantly taller under 30% shade; however, due to the short stems, this height was acceptable. Shade level did not affect flower longevity or days to second flower. Flower longevity was favorable at approximately 30 days and

days to second flower was approximately 40 days.
The stem lengths of 'White Angel' flowers were below required heights. Thus, a PGR application is not necessary.

***Curcuma thorelii* grown under 60% shade. From left to right; control, 10 mg a.i. Bonzi, 20 mg a.i. Bonzi, 10 mg a.i. Sumagic, 20 mg a.i. Sumagic.**

Days from planting to emergence (37 d) and emergence to first flower (61 d) of *C. alismatifolia* 'Chiang Mai White' were not significant. When grown at 30 or 60% shade, flower height was significantly taller than the controls (18.5 inches) by 3.5 and 5 inches, respectively.

***Curcuma alismatifolia* 'Chiang Mai White' grown under 0, 30 and 60% shade.** All floral stems exceeded 12 inches and were taller than marketable quality. Days from first to second flower was significantly extended by both shade levels with no second flower being produced under 60% shade. Thus, these plants must be grown under full sun and a PGR must be used to control flower height. Days from emergence to first flower was not affected by PGR application. First flower height was reduced by 25% with application of 20 mg a.i./pot Bonzi and up to 55% at 10 or 20 mg a.i./pot Sumagic.

***Curcuma alismatifolia* 'Chiang Mai White' grown under 60% shade. From left to right; control, 10 mg a.i. Bonzi, 20 mg a.i. Bonzi, 10 mg a.i. Sumagic, 20 mg a.i. Sumagic.**

For production of a marketable 'Chiang Mai White' ginger, the application of Sumagic at 10 mg a.i./pot and a rate greater than 20 mg a.i./pot of Bonzi is recommended. Post-production longevity of this ginger is approximately 40 days. There was no effect of PGR on days to second flower.

CONCLUSIONS

Curcuma spp. 'Precious Petuma', *C. parviflora* 'White Angel', and *C. alismatifolia* 'Chiang Mai White' produce marketable flowering potted plants. They require no shade. 'Precious Patuma' and 'White Angel' can be grown under shade levels up to 60% without jeopardizing plant quality. 'Chiang Mai White' however, must be grown under full sun and a PGR application of 10 mg a.i./pot of Sumagic and over 20 mg a.i./pot of Bonzi must be used. If this ginger was intended to be marketed as a patio plant, PGR application could be omitted. Post-production longevity of the flowers of these three ornamental gingers in the greenhouse exceeded 40 days. Therefore, these gingers are highly recommended as a flowering potted plant.

IMPACT TO THE INDUSTRY

1. *C. alismatifolia* must be grown in full sun.
2. 'Precious Petuma' and *C. thorelii* can be grown full sun or 60% shade.
3. Bonzi at 20 mg a.i. or Sumagic at 10 mg a.i. should be used as a drench to control height of *C. alsimatifolia*. No PGR is needed for production of Precious Petuma or C. thorelii.

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