

# COMPLETED AND ONGOING RESEARCH FOR THE CALENDAR YEAR 2011

## PLANT GROWTH REGULATORS

### EFFECT OF VARIOUS PLANT GROWTH REGULATORS ON BRANCHING OF SELECTED WOODY ORNAMENTAL PLANTS.

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**Objective:** Determine the effect of Florel, Configure and Augeo on branching of Bougainvillea, Mandevilla, and Hibiscus.

**Materials and methods:**

Plant Species: Bougainvillea ‘Raspberry Ice’, Mandevilla Rio™ ‘Hot Pink’, and Hibiscus ‘President’  
 Size: 9cm  
 Product: Florel, Augeo and Configure  
 Location: Climate controlled greenhouse at 80/65°F day/night temperature

**Treatments:**

Species	PGR	Method of Application	Rate
Bougainvillea	Florel	Spray	0, 500, 1000
		Drench	0, 500, 1000
	Configure	Spray	0, 300, 600
		Drench	0, 300, 600
	Augeo	Spray	0, 1600, 3200
		Drench	0, 800, 1600
Mandevilla	Florel	Spray	0, 500, 1000
		Drench	0, 500, 1000
	Configure	Spray	0, 300, 600
		Drench	0, 300, 600
	Augeo	Spray	0, 1600, 3200
		Drench	0, 800, 1600
Hibiscus	Florel	Spray	0, 500, 1000
		Drench	0, 500, 1000
	Configure	Spray	0, 300, 600
		Drench	0, 300, 600
	Augeo	Spray	0, 1600, 3200
		Drench	0, 800, 1600

Plants were fertilized once a week with 200ppm N of 20-10-20.

**Experimental Design, Sampling and Data Analysis:** Plants were arranged in a complete randomized block design with 7 replicates per treatment. Plant height and number of branches were recorded before treatment application. Phytotoxicity on a scale of 1 to 10 was assessed at 0, 7, 14 and 28 days after treatment. Growth index was calculated based on plant height and diameter in two according to the formula. The number of branches (shoots) and flower buds were counted at 30, 60 and 90 days after treatment application. Three months after application, plant quality was assessed on a subjective rating scale from 1 to 7:

1= Significantly worse than untreated

- 2= Moderately worse than untreated
- 3= Slightly worse than untreated
- 4=no difference from untreated
- 5= Slightly better than untreated
- 6= Moderately better than untreated
- 7=Significantly better than untreated

Data was analyzed using JMP version 9.0.

### Summary of Results

**Bougainvillea:** plants were transplanted from 50-cell liners and treatment applied 2 weeks after transplant.  
**Drenches of Florel caused plant death 1 week after treatment (WAT)**

**Effect on the number of branches:**

All plants had a similar number of branches at the beginning of the experiment. Four WAT, only plants that were drenched with Augeo at 1600ppm had more branches than the control. The rest of the treatments had a similar number of branches as the control. Eight and 12 WAT, plants that received drenches of Augeo at 800 and 1600ppm had more branches than the control.

**Effect on plant height:**

At 8 and 12 WAT plants sprayed with Florel at 1000ppm and drenched with Augeo at 800 and 1600ppm were significantly shorter than the control.

**Effect on the number of flowers:**

Augeo as spray or drench and at all rates studied increased the number of flowers at 4 and 8WAT. AT 8 and 12 WAA drenches of Configure At 12 WAT all treatments had similar number of flowers, however Configure as a drench at 600ppm and Augeo at 800 and 1600ppm had fewer flowers than the control. This could be an indication of the shift in flowering, which peaked in plants drenched with Augeo at 8WAT with an average of 56.6 and 41.5 flowers (800 and 1600ppm respectively) compared to 32.6 for the control; these plants were capable of re-blooming as seen in picture 4 at 15 WAT.

**Effect on quality:**

Based on compact plant growth habit and general appearance, plants drenched with 800 and 1600ppm Augeo and Sprayed with Florel at 1000ppm were significantly better than the control. The rest of the treatments were similar in quality to the control group.

Bougainvillea plant appearance 12 WAT

Picture 1. Florel



Picture 2. Configure



Picture 3. Augeo



Picture 4. Plants drenched with Augeo at 15WAT



**Mandevilla:**

**Effect on the number of branches:** Augeo caused a dramatic increase in the number of branches, However, plants that received drenches were no salable. The chemical stimulates cell division and branch formation but the number of shoots was too high for the plant to properly develop, these plants did not develop flowers or flower buds and were stunted (see picture 4). Plants sprayed with Augeo at 1600ppm and drenched with Configure at 300ppm and Florel at 500ppm had a higher number of branches than the control.

**Effect on plant height:** drenches of Augeo (both rates) and spray at 3600ppm resulted in stunted plant, 12 WAT, sprays of Florel at 1000ppm and Augeo at 1600ppm, drenches of Configure at 600ppm and Florel at 500 and 1000ppm resulted in plants that were more compact than the control group.

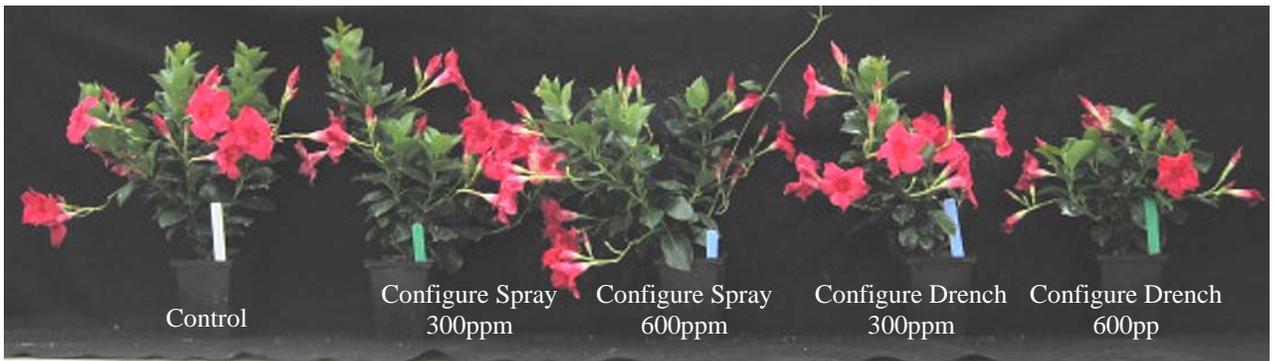
**Effect of the number of flowers and flower buds:** 12 WAT Augeo at all rates caused a decrease in the number of flowers but not in the number of buds (with the exception of the drenches) which indicates that the product might delay blooming but not the number of flowers. Configure at 600ppm also decreased the number of flowers but not the number of flowers buds.

**Effect on plant quality:** plants sprayed with Augeo at 1600ppm had better quality than the control group. Drenches of Florel at 1000ppm, Augeo drenches at both rates and sprayed at 3600 resulted in plants that had much lower quality than the control.

Mandevilla plant appearance 12 WAT  
Picture 1. Florel



Picture 2. Configure



Picture 3. Augeo



Picture 4. Plants drenched with 1200 and 3600ppm Augeo



**Hibiscus:**

**Effect on the number of branches:** the products tested did not increase the number of branches compared to the control.

**Effect on plant height:** 90 WAT all plants were similar in height.

**Effect of the number of flowers and flower buds:** all plants had similar number of flowers and flower buds.

**Effect on plant quality:** the treatment did not affect plant quality.

The plants in this trial were 12-16 weeks old when received at the Center. Hibiscus might be sensitive to the PGRs only before stems become woody. A separate trial testing the effect of PGRs on hibiscus liners and at 2, 4 and 6 weeks after transplant is recommended<sup>1</sup>.

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Hibiscus plant appearance 12 WAT  
Picture 1. Florel



Picture 2. Configure



Picture 3. Augeo

