

## Cutting Production for Eucalyptus

Internal report for Young Plant Research Center

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### Research questions to increasing *Eucalyptus amplifolia* cutting production:

- 1) How can cutting production from liner stock plants be rapidly increased
- 2) What are acceptable cuttings for rapid rooting

### Overall Summary

Based on these quick trials, we would recommend

- Doing a soft pinch removing the top mature leaf to increase the number of nodes that can form axillary shoots
- Provide open spacing to increase light and side shoot growth
- Stick the axillary side shoots without any of the main stem attached to the base, using rooting hormone

### Stock Plant Research Methods

For the stock plants, we evaluated combinations of:

- two densities (close spacing on the tray, at their current 98 cells/tray; or open spacing (which I think will encourage branching) at 1/3 of this density or around 33 cells/tray
- soft pinch (below the first mature leaf) or hard pinch (below the 6<sup>th</sup> mature leaf)
- with and without Florel at 500 ppm applied at days 1 and 8

Stock rooted liner plants grown from tissue culture, provided by Twyford International in Apopka Florida were arranged in two density growing environments – in the original 98-count deep nursery tray (56 plants/square foot) or spaced on the bench (10.3 plants/square foot) on 4/6/09 as shown below.

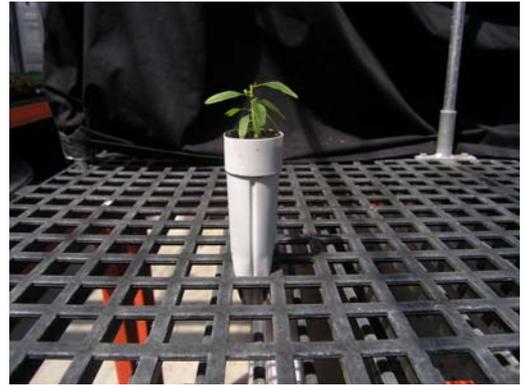


There were two blocks for each spacing.

Half of the plants received a hard pinch (below the 6<sup>th</sup> mature leaf) and half received a soft pinch (below the first mature leaf) on 4/6/09.



Soft pinch (left)



Hard pinch (right)

Florel was applied at 500 ppm 1 day and 8 days after pinching.

14 days after pinch, on 4/20/09, the number of axillary shoots was counted in three size classes 0.5 to 1 cm, 1.1 to 3 cm, and greater than 3 cm. Very small side shoots less than 0.5 cm were not counted.

### Cutting Propagation Research Methods

We stuck four types of cutting into Ellepots containing peat/perlite/vermiculite (provided by Knox Nursery):

- **tip cutting** (main shoot below the first mature leaf, with that leaf removed)
- **stem cutting** (main shoot from below the first mature leaf down to below the 6<sup>th</sup> mature leaf (removed)
- **axillary cutting** (not including the portion of the main stem below it)
- **axillary cutting** (including the portion of the main stem below it, but with that main stem leaf removed)



Arrangement of four types of cuttings under mist.

Cuttings were harvested on 4-6-09, and placed on mist in the propagation greenhouse. All the cuttings will receive dips in Hormodin 2 rooting hormone.

## Results for the Stock Plant Trial

The highest number (12.0 per plant) of total axillary shoots longer than 0.5 cm occurred with open spacing, a soft pinch, and no Florel application.

Florel tended to make axillary shoots more compact or slower to elongate. We observed very rapid side shoot development without Florel. Florel sprays are therefore not recommended.

Averaging across Florel applications, the table below shows that a soft pinch and open spacing both increase sideshoot growth rate.

Table 1. Effect of combinations of open or tight spacing on axillary shoot growth after 15 days.

Spacing	Pinch	Number of Axillary Shoots per Plant			
		0.5 to 1 cm	1.1 to 3 cm	> 3 cm	Total
Open	Hard	6.1b	3.0ab	0.9b	10.0b
Open	Soft	6.1b	3.4a	2.1a	11.6a
Tight	Hard	7.1a	1.3c	0.1c	8.5c
Tight	Soft	5.6b	2.2b	1.8a	9.5bc

**Letters that are the same within each column are not significantly different using Tukey's HSD test at the p=0.05 level.**

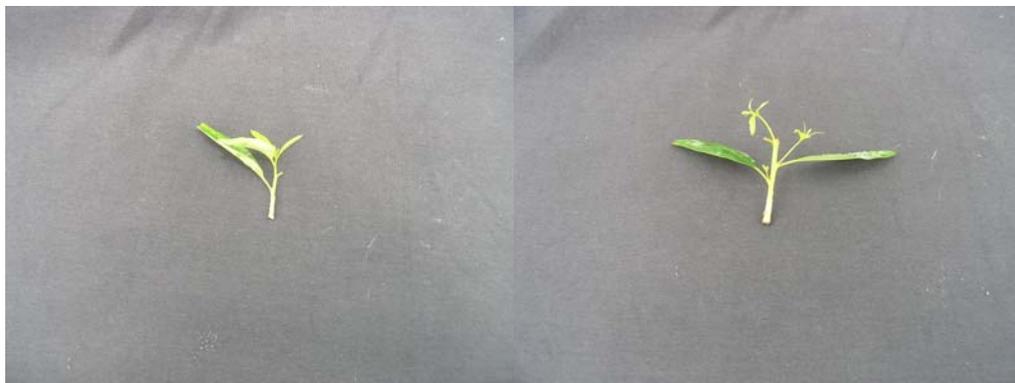
Based on these results, a soft pinch and open spacing without Florel application are recommended for rapid cutting development. We observed 2 side shoots emerging from each leaf axil, indicating a large potential for rapidly bulking up crop numbers.



**Axillary shoots rapidly developed, especially for plants grown with open spacing and a soft pinch. The plant at left was pinched 14 days earlier.**

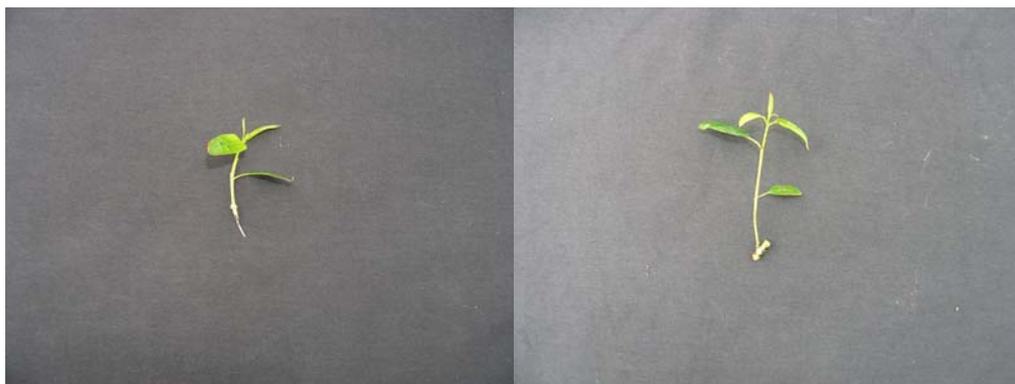
## Results for the Cutting Propagation Trial

Our pilot trial provided clear results. We observed callus forming on all cuttings, but the most rapid rooting occurred in axillary side shoots that did not include any of the main shoot at the base.



**Tip cutting**

**Stem cutting**



**Axillary shoot cutting (already rooting)** **Axillary shoot cutting with base**

Based on our results, we would recommend taking axillary shoot cuttings, without any of the main shoot attached. That not only roots most quickly, it also provides the maximum cutting potential per stock plant.