# Effects of Constant Fluorescent Light on the Growth of Carnation Shoot Tips

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It has been recognized (1) that adventitious root development may be effected by light radiation. This study was designed to investigate the effects of constant light on the rooting and growth of carnation shoot tips.

One millimeter carnation shoot tips, variety Pink Sim, were placed in a suitable growth medium[1] in test tubes. Twenty tips were placed under constant light and 20 received 12 hours of light per day. Light was supplied by two Westinghouse cool white 40-watt fluorescent tubes, 16 inches from the plants. Intensity of light to each group was equal. The plants were grown in the tubes for 4 weeks at 70 to 75°F, after which time the groups were compared for root development and growth.

Root development was determined by rating each plant by the following scale: 0 -- no indication of rooting, 1 -- bulbous base, 2 -- abundant callus, 3 -- roots evident, 4 -- roots well developed. Growth was estimated by measuring the length of each plant.

The data (Table 1) show no evidence that rooting was inhibited by constant light. There was a highly significant increase in the growth of plants receiving constant light (Fig. 1). Growth data were

1. Dr. P. Neergaard, unpublished.

analyzed and tested by a standard statistical t test.

Table 1 -- Growth and root development of carnation shoot tips receiving constant and alternating light.

| Shoot tip number | Constant light | | 12 Hour alternating light | |
|---|---|---|---|---|
| | Growth (mm) | Root development[a] | Growth (mm) | Root development[a] |
| 1. | 3 | 2 | 4 | 3 |
| 2. | 6 | 3 | 1 | 1 |
| 3. | 4 | 2 | 4 | 3 |
| 4. | 2 | 1 | 4 | 2 |
| 5. | 3 | 4 | 3 | 2 |
| 6. | 5 | 2 | 1 | 0 |
| 7. | 4 | 3 | 4 | 4 |
| 8. | 3 | 2 | 3 | 2 |
| 9. | 3 | 3 | 0 | 0 |
| 10. | 8 | 2 | 2 | 2 |
| 11. | 3 | 3 | 4 | 3 |
| 12. | 5 | 2 | 5 | 2 |
| 13. | 3 | 4 | 3 | 2 |
| 14. | 5 | 3 | 3 | 4 |
| 15. | 3 | 3 | 2 | 2 |
| 16. | 3 | 4 | 3 | 2 |
| 17. | 5 | 2 | 5 | 3 |
| 18. | 4 | 2 | 4 | 3 |
| 19. | 3 | 2 | 3 | 3 |
| 20. | 6 | 4 | 3 | 2 |
| Mean | 4.05** | 2.6 | 3.05** | 2.2 |

** Significant difference at the 1% level

[a]Root development scale: 0 - no indication of rooting, 1 - bulbous base, 2 - abundant callus, 3 - roots evident, 4 - roots well developed.

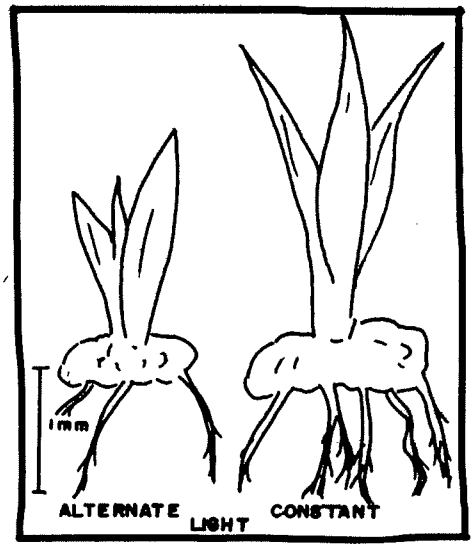


Fig. 1--The relative growth of carnation shoot tips under constant light and alternating (12 hr.) light and dark.

This study points out that constant fluorescent light of relatively low intensity does not inhibit root formation on carnation shoot tips. Constant light is apparently beneficial for growth of these tips.

Literature cited

1. Hartmann, H. T. and D. E. Kester. Plant Propagation. Prentice-Hall, Englewood Cliffs, N. J. 215p. 1959.

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