

## Some Suitable Environmental Conditions for the Rooting of *Dianthus caryophyllus* Cuttings<sup>®</sup>

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### INTRODUCTION

There are many species and horticultural cultivars of ornamental plants grown with many new crops and new cultivars introduced every year. Although we can find research papers on the morphogenesis of bud and root formation few such papers exist for such research on ornamental plants that also synthesize the entire process. This investigation is the start of those comparative studies which will require at least 10 years to obtain these research achievements. The first year's experiments were made on the environmental conditions during initial rooting of *Dianthus caryophyllus*, rose pink.

### MATERIALS AND METHODS

From the point of view in this investigation, current information about microscopical details of morphogenesis is not complete enough and not enough evidence is available to compare the similarity and differences among the many ornamental plants. In future research many ornamental plants will be used and comparative observations will be made at the cellular level for several years or more. In the first year, these aspects of rooting were observed under four environmental conditions: cutting compost, temperature, light intensity, and plant growth regulators.

### RESULTS AND DISCUSSION

**Cutting Rooting Compost.** Rooting medium materials commonly used for cutting propagation are perlite, vermiculite, peat moss, or river sand. However, in this experiment, only rice charcoal or mixes of it with another compost showed good result in rooting of *D. caryophyllus*. This result may be due to the following characteristics of chaff charcoal:

- A) Microscopic porous structure,
- B) Very even granules,
- C) Freedom from fungi and bacteria.

**Temperature.** The combination of 15°C atmospheric temperature (AT) and 20°C bottom heat (BT) produced the best rooting of the eight combinations of AT and BT. It is believed that the regulation of bottom heat was very important for the successful rooting of *D. caryophyllus* cuttings.

**Light Intensity.** A light irradiation between 2000 and 7000 lux produced the best rooting. On the other hand, higher light irradiation reduced root formation. It is believed that the effects of light intensity vary with the kind of plant, so attentive care is important to establish the best light conditions.

**Plant Growth Regulators.** In Japan, IBA (indolebutyric acid) or NAd (naphthalene acetoamide) are usually used to promote root initiation in cuttings. In this research, a mixed solution of 250 ppm IBA and 250 ppm NAA (naphthaleneacetic acid) promoted better root formation of *D. caryophyllus* by spraying or dipping treatments.