

# Production of Own-Rooted Nursery Plants of Mango by Air Layering<sup>®</sup>

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## INTRODUCTION

Nursery plants of mango are usually produced by grafting using rootstocks of the Taiwan native strain in Japan. Cutting propagation is profitable for production of nursery plants by reason of disuse of rootstocks and shortening of the growth period of the nursery plants. But mango is a difficult fruit tree to root from cutting. The objective of the present study is to present the production technique of own-rooted nursery plants of mango by air layering in order to shorten the growth period of the nursery plants and establish the container planting cultivation of mango using own-rooted plants.

## MATERIALS AND METHODS

Several air layering experiments were conducted in 2007 and 2008 using 'Irwin', 'Aikou', and Taiwan native strain of mango trees grown in a greenhouse at the experimental farm of Kinki University. Method of air layering was as follows: stem was girdled (2 cm width) and split in two at the upper part of the girdled stem. Then, a polyethylene bag cut at the bottom was used to cover the girdled part, bound at the bottom with vinyl tape, and filled with moist vermiculite. Subsequently, the upper part was bound with vinyl tape and the polyethylene bag was covered with aluminum foil. After 2 months of air layering, rooting rate and total length of roots were measured.

## RESULT AND DISCUSSION

### Experiments in 2007.

- 1) Spray treatment of IBA 2000 ppm solution (50% ethanol) on the girdled parts enhanced rooting of 'Irwin', 'Aikou', and Taiwan native strain, but no 'Aikou' roots were observed on nonsprayed stems. Rooting rate was highest in Taiwan native strain, followed by 'Aikou', and 'Irwin' with the smallest rate.
- 2) Rooting rate and total length of roots were highest in treatments with NAA (2000 ppm), followed by IBA (2000 ppm), but 2,4-D (20 ppm) was ineffective.
- 3) Optimal concentration of NAA for rooting was 2000 ppm, and an additional application of zinc did not enhance rooting.
- 4) In 'Irwin' and Taiwan native strain, rooting was enhanced by a spray treatment of NAA 2000 ppm solution, too.

**Experiments in 2008.**

- 1) Both split treatment and age of shoot did not affected rooting, but total length of roots was decreased in non-split stems.
- 2) Removing cambium of girdled stems with scissor did not affect rooting in 'Aikou'.
- 3) Additional treatments of NAA solution inhibited the rooting of 'Irwin' and 'Aikou'.
- 4) Rooting rate was higher in the stems with more than 10 leaves in comparison to those with about six. It was considered that optimal time for air layering was July to August in terms of the rooting rate and total length of roots.