

Adventitious Rooting of 'Tommy Atkins' Mango Air Layers Induced with Naphthaleneacetic Acid

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Rooting of mango (*Mangifera indica* L.) air layers has been achieved in Indian cultivars by using synthetic auxins (Chaudri, 1976; Rao, 1967; Singh, 1960). Singh (1954) obtained 100% rooting in air layers of 'Dashehari' using 1.0% and 2.0% naphthaleneacetic acid (NAA) in lanolin. Air layering has not been reported for mango cultivars originated in Florida, such as 'Tommy Atkins', which is popular worldwide. Air layering ensures genetic uniformity and maturity of experimental plant material. We examined the efficacy of NAA in promoting adventitious rooting of 'Tommy Atkins' air layers to quickly obtain plants for studies of flowering physiology.

Air layers were made in fifteen 12-year-old trees in July 1988. We tested 0%, 0.1%, 0.5%, 1.0%, and 2.0% NAA in lanolin. Branches (n = 45), 2 to 3 years old and ≈2 cm in diameter, were girdled by removing a 5-cm bark band. Lanolin paste (0.3 cm³) was applied to the distal edge of the girdle. Girdles were covered with moist sphagnum moss and wrapped with aluminum foil. Air layers were detached after 12 weeks to characterize root development (Table 1).

Root stage increased as NAA rate increased (Fig. 1). Within treatments, 93% of air layers treated with 2.0% NAA had stage 5 roots, while only 55% of air layers treated with 1.0% or 0.5% NAA produced such roots (Fig. 2). Maximum root development in control air layers was stage 3, and only 7% reached this category. Although Singh (1954) indicated that branches <2 years old pro-

duced better rooting than older branches, we obtained excellent rooting in 2- to 3-year-old branches. Upon potting in October, highest survival rates (> 90%) were achieved by air layers with stage 5 roots, and they bloomed during the normal flowering period in January (data not shown). Because of their maturity, uniformity, and manageability, air layers are used to study the physiology of mango flowering (Nunez-Elisea and Davenport, 1991; Nunez-Elisea et al., 1991).

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Table 1. Root developmental stages of 'Tommy Atkins' mango air layers.

Stage	Morphological characteristics
0	No basal swelling, no visible root primordia
1	Basal swelling, no visible root primordia
2	Root initials ≤1 cm long
3	Primary roots 1 to 5 cm long
4	Primary roots >5 cm long, few lateral rootlets
5	Primary roots >5 cm long, many thin, lateral rootlets ≈5 mm long

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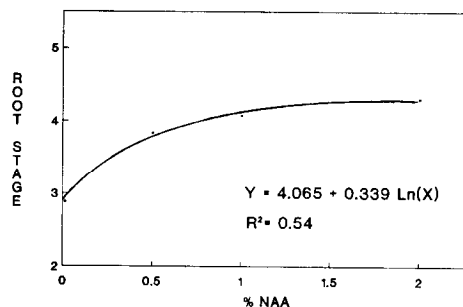


Fig. 1. Effect of NAA concentration on root stage of 'Tommy Atkins' mango air layers (curve fitting by SAS nonlinear regression).

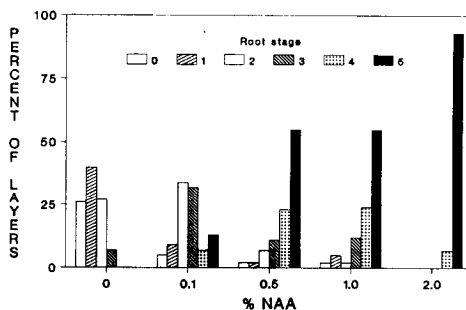


Fig. 2. Distribution of root stages within NAA treatments (see Table 1 for description).

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