

# Juvenility as a Factor Affecting Air-layering in Jackfruit

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JACKFRUIT (*Artocarpus heterophyllus*

Lam. is a unique fruit in several respects. It is one of the most productive among fruit trees, a healthy tree yielding 100 fruits or more every year and each fruit weighing 20-80 lbs. Isolated trees producing fruits of excellent quality have been observed, which cannot be perpetuated from seeds because of the high degree of heterozygosity. Different methods of vegetative propagation as inarching (Naik, 1949) budding and grafting (Hayes, 1957) have been reported to give success in varying degrees, but none has so far attained popularity. Difficulty in working on old, high-branching trees and inadequate percentage of success are great handicaps. Therefore, it would be of great practical advantage if younger trees of comparatively lesser stature could be treated to give satisfactory results in any of the vegetative methods of propagation.

## MATERIALS AND METHODS

Air-layering was done on jackfruit seedlings which were two-year old. The initial trial was performed during August 1960. Three types of wood based on the external colouration of the shoot were selected.

(1) Green wood i.e. the region of the shoot which is still completely green and unligified.

(2) Intermediate wood i.e. the region of the shoot which is intermingled with streaks of green and brown (lignified).

(3) Hard wood i.e. the region of the shoot which is completely lignified and shows uniformly brown colouration.

In each of these three groups 25 shoots were taken for treatment. In each treated shoot a ring of  $\frac{1}{2}$ " wide bark was removed carefully from the selected region. The milky latex exudation was cleanly wiped off with a wet cotton pad. The base of the upper cut was dusted with Seradix B and the excess powder was removed. A ball of moist garden soil was applied covering the ringed region. This ball was covered with a 6" square of alkathene film which was tied air tight above and below the ball. The air-layered plants were examined after the expiry of two months.

## RESULTS AND DISCUSSION

There have been indications based on observations made by plant propagators in other countries that relatively young plants may produce roots more readily than older plants of the same species or variety. In India no work of any significance, along this line, has been reported so far. Young plants are very often characterised by juvenility,

not only in the form of morphological characters, such as thinness of leaves, leaf shape modifications and thorniness, but also in their physiological reactions. It was Gardner (1929) who first pointed out that, in general, the younger the plant from which cuttings were taken, the better was the rooting response.

*The jackfruits found to show, dear signs of juvenility in seedlings up to 3 or 4 years of age, especially in the modifications of leaf shape and leaf-size. (Fig. 1) It is seen from results already obtained that young jackfruit plants which are still in the juvenile stage, give definitely better rooting response compared to grown up plants when air-layering is done.* Singh and others (1949) obtained only about 60% success and I... B. Singh reported 72% success with Seradix A in air-layering of jackfruit. But the trial under this report gave 100% success on two year old plants with hard wood where the treated region of the shoot was completely lignified. Intermediate wood gave 96% success whereas green wood was found completely unsuitable showing no indication of rooting.

From the above it is clear that mature trees give only about 70% success whereas the two two year old plants gave 100% success, both with the aid of seradix. Hence the juvenility of jackfruit is definitely a factor controlling the extent of root formation in this plant.

O' Rourke (1951) observed that the seat of juvenility may be at or just below the ground level, which can be of practical importance in the case of jackfruit also. Gardner (1929) and Stoutemyer (1937) found that when young seedling apple trees are cut to the ground level, shoots that arise from remaining adventitious buds retain the capacity to root better. Hence the influence of juvenility detected in the jackfruit may be of

usefulness in obtaining better success from relatively younger plants or by employing stooling operation to older plants.

### Summary and conclusions

- (1) Juvenility is manifested in the jackfruit especially in the modified shape of leaves of young seedlings.
- (2) Young seedlings, two years old gave 100% success by air layering when mature hard wood was ringed and treated with rooting hormone.
- (3) The success obtained in young plants is much higher than that obtained in old trees, which indicates the advantage of root formation at juvenile stage.
- (4) This effect of juvenility may be of practical utility in getting more success in air-layering on trees of relatively younger age or by resorting to stooling of old trees.

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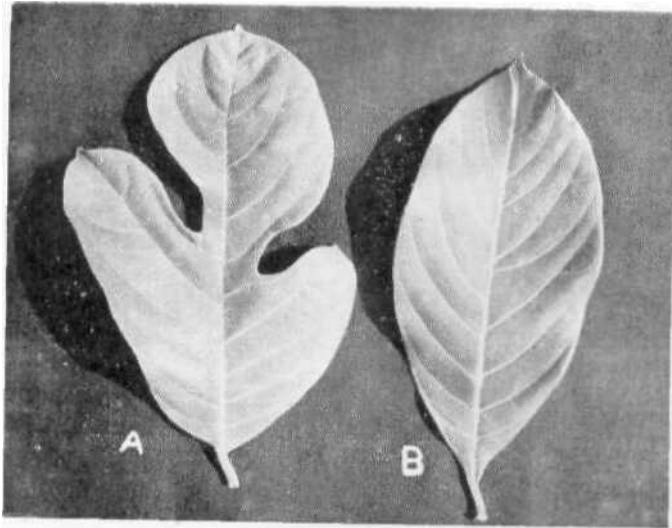


Fig. 1. (A) Juvenile leaf  
(B) Normal leaf

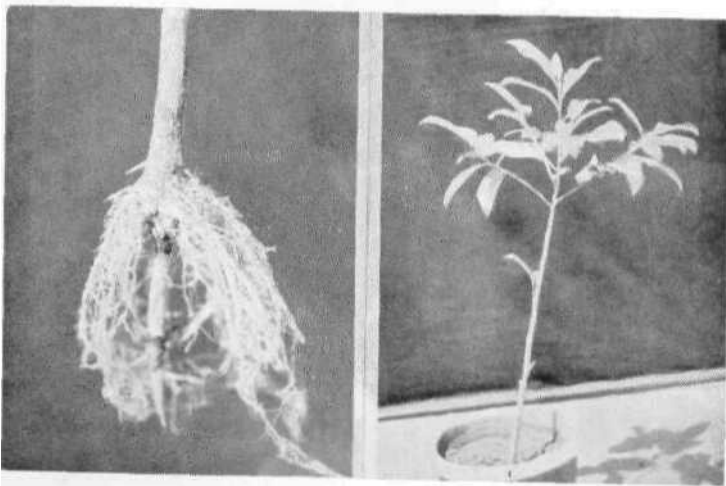


Fig. 2. Root formation at the treated portion and a potted layered plant.