

sistnet perianth than the taller members of the Cavendish group, is particularly liable to infection."

'Double Cavendish' (1956)—A freak form introduced from Hawaii, producing two or more stalks of fruit from one trunk. Being an unstable mutation, its suckers tend to revert back to the normal single-bunch fruiting forms. Prior to shooting the inflorescence, the excessive number of leaves gives it the appearance of Bunchy-top virus. In Florida up to five stalks have emerged from the top of a single trunk but, as far as is known, the strain is non-existent here today, having reverted back to the normal type.

'Pisang Radja,' 'Pisang Raja" or "Peesang Radja' (1959)—A thin-skinned, orange fleshed desert banana of the Far East where it is held in high esteem. Under Florida conditions it grows fairly well but can become tall, especially under partial shade. A prior successful importation of this variety had been made by J. J. Ochse before 1959.

'Lady Finger,' 'Sucrier,' 'Datil' etc. (1962)—A tall slim-trunked banana producing thin skinned, white fleshed fruit about 4 inches long. Although the flavor is rich and sweet the plants suffer wind damage because of their height. Probably this variety has been previously intro-

duced and may have been allowed to die out. Reports of the existence of 'Lady Finger' checked into by the writer turned out to be the 'Apple' banana.

'Lacatan' (1966)—A strain of 'Lacatan' introduced into Hawaii from the Philippines and later brought to Florida by the writer. Presently the plant has a half grown stalk of fruit which is reported to be very sweet.

'Ice Cream' (1956)—A banana that looks, grows and tastes like our 'Orinoco,' only its immature fruit ususally has a bluish white silvery sheen. Introduced from Hawaii where its origin appears to be unknown.

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A SUCCESSFUL METHOD FOR PROPAGATING SAPODILLA TREES

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INTRODUCTION

For many years sapodilla (*Manilkara zapotilla* (Jacq.) Gilly) trees were known mainly as the source of chicle, the elastic gum which is made from the latex of the bark and which was the main ingredient of chewing-gum. Today manufacturers prefer synthetic ingredients, the supply of which is more dependable, and sapodilla trees are grown in southern Florida and many tropical areas for their fruit and as orna-

mentals. The sapodilla is a highly savory fruit and lends itself to many dessert uses.

The availability of grafted trees of superior fruiting varieties has always been limited. One reason has been the lack of a practical method of propagation which requires a minimum of labor and time, and is adapted to profitable nursery practices.

This paper describes new methods of handling stocks and scions by which a nurseryman can produce a large number of grafted plants quickly and reliably.

PROCEDURE

Germinating the seed.—Seeds for rootstocks are obtained preferably from vigorous sapodilla trees and if possible from large fruit which contain larger than average seeds. Although

the seed will germinate after a few months if kept dry (1), it is desirable to use fresh seed to avoid any delay in germination and obtain uniform seedlings. Seeds germinate readily in flats containing either perlite or a mixture of vermiculite and peat moss. Germination is usually better in a shadehouse. As soon as the first pair of leaves appears, the seedlings are watered with a weak solution of soluble fertilizer until they are ready for transplanting, thus providing an added boost to encourage faster growth.

Growing and transplanting the seedling.—Seedlings with two or three pairs of leaves are transplanted to No. 10 metal cans or similar containers containing a mixture of equal parts of sand and peat moss or sand and light muck (Fig. 1). It is preferable to grow the seedlings in full sun. If kept moist and fertilized with $\frac{1}{2}$ tablespoon of 8-4-8 N-P-K (with 30%-40% of the nitrogen coming from organic sources) every $1\frac{1}{2}$ months the seedlings will be ready to graft in 8 to 12 months (Fig. 2).

Grafting.—The ideal rootstock should have 5 to 8 pairs of leaves, a stem caliper of $\frac{1}{4}$ to $\frac{3}{8}$ inch, and should be growing vigorously. In contrast to previous practice (2), scions are obtained from young terminal shoots having approximately the same caliper as the stock, and without any preconditioning or preparation. The stocks are veneer-grafted by removing longitudinally a $1\frac{1}{2}$ -inch section of cortex or bark barely cutting into the wood. The scion is prepared to fit this cut (Fig. 3), by cutting the cortex and wood in the same manner. Then the scion is wrapped and completely covered with a plastic strip which allows free gas exchange, while restricting transpiration and dehydration (Fig. 4).

Forcing.—Thirty days after grafting, regardless of whether the scion has begun to grow or not, the plastic is removed entirely (Fig. 5), and unless the scion is dead, the top of the stock is cut back leaving only two leaves. Stocks with scions that failed to take are re-grafted as soon as possible. When the scions have grown 6 to 8 inches (Fig. 6), the remaining section of stock is cut off at the graft union, and the growing new shoot is tied to a training stake (Fig. 7).

DISCUSSION

One unpleasant feature of grafting sapo-

dilla trees is the continuous flow of latex from cut surfaces, which requires the operator to work fast and clean his knife regularly. Otherwise the sticky latex makes for a difficult and slow operation, particularly when many plants are involved. In the past it was customary to cut and bleed the cortex of most of the latex before grafting (2). This was done at a point above or below the graft site, and it was thought that this insured a higher percent of success. Recently it has been shown that bleeding is an unnecessary and time-consuming operation which does not improve the success of grafting.

In addition to good grafting technique, the following points should be kept in mind. a) Seedlings should be uniform in size and growing vigorously. Undersized plants should be discarded. b) There is a period of perhaps 2 to 3 months when seedlings have the right combination of stem caliper and vigor, in which the chances of success are greatest. Before and especially after this period the number of successful grafts declines. c) The best time of the year for grafting sapodilla seedlings in Florida seems to be the summer and fall months, which follow the time when seeds are available in the spring. d) When grafting the scion should be covered completely with plastic. This prevents dehydration of the scion during the relatively long period of time required for formation of callus at the graft union. Sapodilla trees grafted and handled this way are ready for field planting in about 20 to 24 months from the time they were started from seed (Fig. 8).

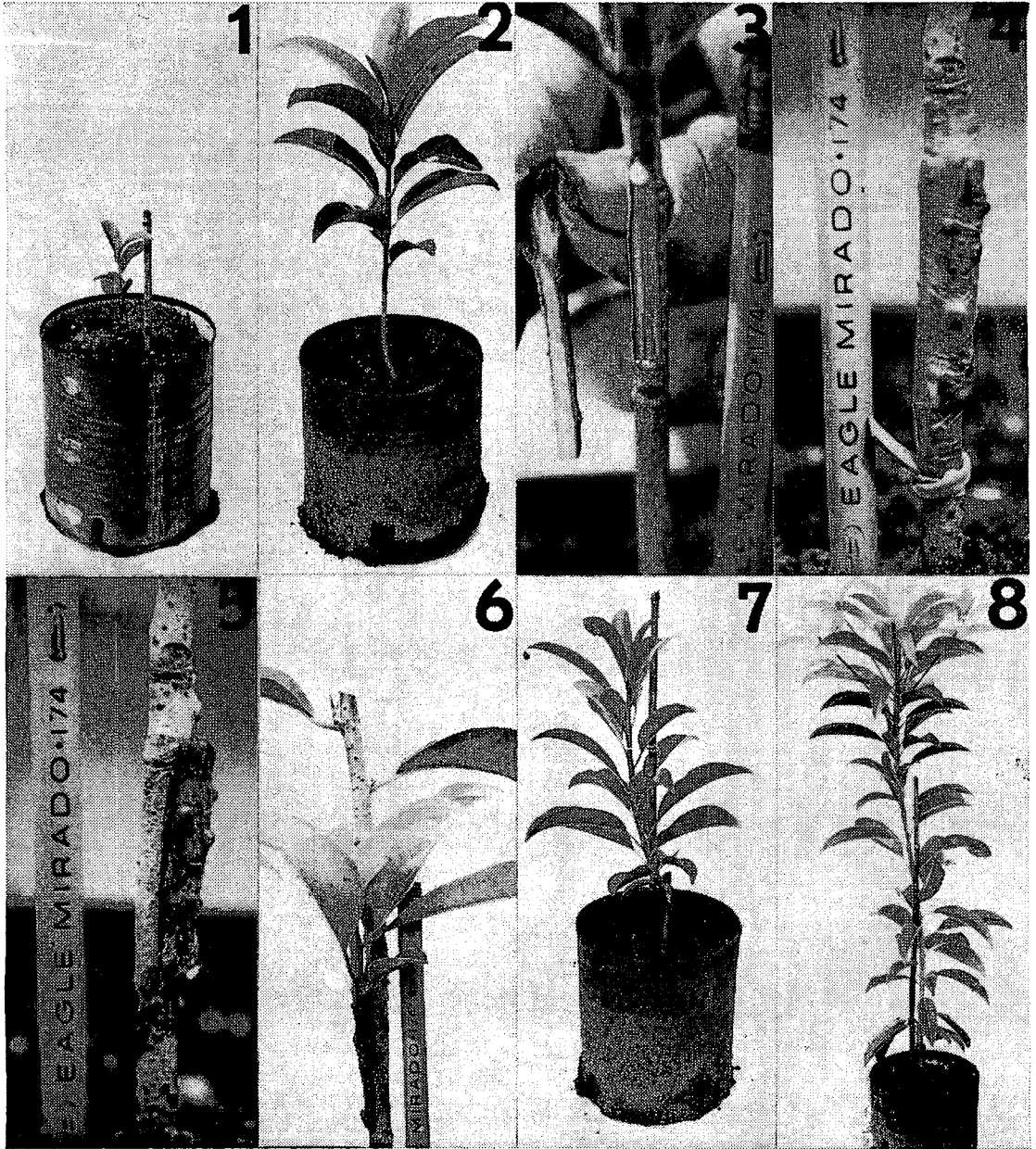
SUMMARY

A successful method for grafting sapodilla trees is described.

1. Sapodilla seedlings are used for rootstocks. Fresh seeds from vigorous, large fruited trees, are germinated in flats containing either perlite or vermiculite plus peat moss.

2. Seedlings are grown in metal cans, or other suitable containers, in a mixture of equal parts of sand and muck. Their growth can be hastened with careful fertilization and moisture control.

3. When seedlings have 8 to 12 pairs of leaves, they are veneer-grafted with scions from young terminal shoots. Scions are covered completely with plastic strips which are removed after 30 days.



Figures 1 to 8 show different steps in the process of grafting sapodilla trees.

4. After the scion is established, growth is hastened by cutting off the top of the rootstock and leaving only two leaves. When the scion reaches 6 to 8 inches in height, the remaining

section of stock is cut off at the graft union, and the scion trained with a stake. Plants are usually ready for field planting in 20 to 24 months from the time the seeds were planted.

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OBSERVATIONS ON THE BIOLOGY BIONOMICS AND CONTROL OF WHITE PEACH SCALE, PSEUDAULACASPIS PENTAGONA (Targ.)

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INTRODUCTION

Peach production in Florida was extensive from about 1870 to 1930. The white peach scale destroyed many peach orchards in the early 1900's including one of 10,000 trees in South Georgia (5). Snapp, 1928, reported that the white peach scale is as injurious as the San Jose scale (8). After 1930, production and marketing problems could not be overcome and the peach industry in Florida faded away. Renewed interest in peach production occurred in the early 1950's with the introduction of nematode resistant rootstocks and early bearing varieties.

Commercial peach growing is almost certain to become a more important industry in Florida than it is at present, however, some orchards have been abandoned in spite of distinctive Florida varieties including the nematode resistant ones. One of the factors retarding this development is the necessity for controlling white peach scale. Control of the scale with chemicals is effective but programs have been inadequate.

The white peach scale, *Pseudaulacaspis pentagona* (Targioni) was first described as *Diaspis pentagona* by Targioni in 1886. It was described by Tyron in Australia as *D. amygdali* in 1889, as *D. lanatus* in 1892 by Morgan and Cockerell in the U. S. and as *D. patelleformis* by Sasakin in Japan in 1894. Ferris (4) designated *P. pentagona* (Targioni) as the correct name for this species.

DISTRIBUTION

The white peach scale was first mentioned by Targioni in 1886 as a pest of Mulberry, *Morus* sp. in Como province of Northern Italy. By 1912 the insect was threatening the then prosperous silk industry throughout Italy. The spread of *P. pentagona* was so extensive that the Italian government passed a law against the Diaspis, compelling tree owners to fight the insect by mechanical means (scraping the trunk and the infested branches, pruning, sterilizing by fire) and by insecticidal solutions (6).

Gossard (5) first reported the scale from Florida on peach in 1889. It is now found throughout the state and has become an individual problem for every orchardist and home owner interested in peach culture.

DESCRIPTION OF INJURY

Heavy infestations of white peach scale have been observed on chinaberry, persimmon, mulberry, privet and black walnut without any evidence of serious damage present on the host. Peach is the only host observed which is highly susceptible to the feeding of this scale. Usually only a few branches or twigs are killed, however unattended trees usually die within two to three years. The larger branches often die following development of blossoms and new foliage. Heavily infested trees which survive often have small fruits and these drop from the trees when the tree encounters periods of stress such as drought. The writer is of the opinion that the pruning requirements of peach upsets the natural control factors; however, infested trees which are not pruned show the same susceptibility.