

Progress Report on the Planting of Imported Avocado Pear Varieties in Jamaica

Begun by

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1. IMPORTATION:

The first reported introduction of imported avocado pear varieties was either that of Linda, Collinson, Collinred, Winslowson, Pollock, Simmonds, Trapp and Gottfried made by the Department of Agriculture from Florida and Guatemala, or that of Prince, Button, Eagle Rock, Dickinson, Lula and Fuerte varieties made by Mr. C. A. P. Stewart of Walkers Wood. Both introductions occurred about 1935. From the former an orchard was established at Hope Gardens on heavy alluvial clay while from the latter, one was planted at "Avocado" near Sligoville on rocky limestone soil in St. Catherine. Both orchards are in low rainfall areas of less than 50 inches a year; at Hope, however, it has been possible to apply irrigation water during certain times of the year, but not at the height of the early Spring and Mid-Summer dry seasons.

2. EXPANSION:

In 1939 with the formation of the Crop Development Division under Mr. G. K. Argles budwood was obtained from both sources, a budding technique was developed and from the plants produced about 36 orchards were established on the majority of the soil types and climates in the island with from 31 to 247 trees each planted at 30x30 ft.

Expansion Data: Plants Produced by Nursery:

| 1940-41 | 1941-42 | 1942-43 | 1943-44 | Total: |
|---------|---------|---------|---------|--------|
| 1677 | 3835 | 889 | 936 | 7,337 |

3. INFORMATION OBTAINED:

(a) Vegetative Propagation:

The only drawback to the successful inverted T budding technique which has been worked out, is that a certain percentage of the buds, although remaining "green" for up to two months after inserting, fail to unite properly and eventually fall out. Mature terminal budwood is used; second and third growth wood provides buds which are very backward in growing out. Experiments are in progress to discover whether position of

buds on the terminal growths, (both with regard to distance from the tip and whether they are on the upper or lower side), is related to the propensity for quick growth or ultimate death. The timetable varies with the performance of the buds, but is usually as follows:

Tipping and Ringing 2 weeks

Cutting back 3 weeks and another if necessary at 4 weeks to within about 4 leaves of bud. (Final cutting back) when scion diameter at point of union is nearly equal that of stock.

Side grafts are used to employ the tip buds which could not otherwise be used and are very successful. It has also been found possible to top-work old trees by ringing them and budding the resulting growths: later the tree is cut back to the budded branch. Side-grafts have also been successfully used under the thick bark of old trees. But two attempts in January 1944 to top work old trees by cutting back to a 4 ft. stump and wedge grafting in the way it is done in Florida were unsuccessful. Two second growth graft woods were inserted into a split made with a saw in the stump; a wedge fashioned from lumber kept the split permanently opened. The sides of the split were pared to as smooth a surface as possible; difficulty was experienced in obtaining a good "fit" with the graftwood. Grafting wax was used to seal the ends of the graft wood. A collar of grease proof paper tied around the trunk received a mixture of sand and peat which reached to just below the last bud on the graft wood; after moistening the sand the top of the grease proof paper was tied. Possibly the sand was not moistened frequently enough; it is intended on the next occasion to allow water to drip from a container held above the sand. An easily employed top working method will be required in the future to change unsatisfactory varieties in orchards.

(b) Varieties

(i) Varieties of which there is little information.

Up to 1940 the Dutton trees at "Avocado" had never set fruit although they had flowered. Dutton trees in the orchards, established from 1940 onwards have grown well but have not fruited except in 1943 at Hope where a tree bore 4 fruit. The Dickinson, Eagle Rock and Prince have proved very slow growing and difficult to establish. The Dickinson has been known to fruit at "Avocado" but only at Hope in 1944 in the "New Orchard" planted in 1940 has one of the two trees borne two fruit. The Eagle Rock has carried a few fruit at Hope this year for the second time, while the Prince produced one or two fruit this and last year. The little that is known about these varieties is not promising.

(ii) Varieties about which there is more information.

In 1935 the Department of Agriculture made its importation with the main object of establishing in the Island varieties of pears which would stand cold storage transport, that is varieties which would not suffer from internal breakdown, a physiological blackening of the flesh. It was possible to conduct storage tests at from 42° to 47°F. in 1943, which established which of the varieties in bearing then, suffered from this condition. It was found that the three varieties of the West Indian Race—Simmonds,

Trapp and Pollock and three of the West Indian Race crosses with other races—Winslowson, Collin-red and Collinson were susceptible. Varieties which were unaffected were Gottfried, Lula, Linda and Fuerte. Of these however, only the Fuerte appears to be a satisfactory variety, subject to confirmation of its yielding ability. While its taste is unappetizing compared with the majority of the others, it would be satisfactory for the foreign market. The Gottfried's taste is too poor for the fruit to be worth eating. Attempts are being made to extract its oil, of which it has a high content. The Lula has proved susceptible to scab attack and the flesh of its fruit is too thin. The Linda's fruit suffer from sunscald and shriveling under conditions which do not affect other varieties; Anthracnose spotting has also been observed penetrating into the flesh. Because of other satisfactory characteristics the relatively light incidence (13%) of Internal Breakdown on the part of the Collinson can probably be overlooked and consideration given it as an export variety. There is now every justification for a further importation of pear varieties in the hope that more suitable exportable varieties will be discovered.

So far satisfactory yields have been obtained at Hope from the Lula, Simmonds, Pollack, Collinson, Linda, Trapp and Collinred varieties (Order of merit)

The Winslowson has borne well on one of two occasions that it flowered. The Lula, Collinson, Simmonds, Trapp and Collinred have been principally responsible for whatever crop has been harvested in the country parts. It is difficult to find a local pear which is better than the Simmonds with its thick flesh and nutty flavour. The high moisture content of the Pollock's flesh and the small sized fruits of the Trapp render them inferior varieties for the local in-season market. It appears from the short experience at Hope and in the country, that the Collinson, Collinred and Winslowson will provide for Jamaica that most desirable of fruit—a satisfactory out of season pear. It is almost certain that the Fuerte's taste will prevent it becoming popular as an out of season pear in Jamaica.

To summarize: it seems that while the importation of foreign varieties has improved on local in-season varieties with the Simmonds and provided satisfactory varieties in the Collinson, Collinred and Winslowson for a most necessary extension of the pear crop to March and April, it has fallen far short of its most important intention—that of providing satisfactory varieties for export under cold storage conditions. Only the Fuerte is available for this at present.

(c) Effect of Soil on Growth

Some four orchards have been disregarded by their owners and the majority of their trees have naturally died from lack of attention. Only one, planted on very heavy, but not low-lying, acidic Trappean shale has failed because of unsuitable soil conditions. Trees have grown exceptionally well on Terra Rossa soils at altitudes above 2,000 feet but it so happens that the owners of these have given them their best attention.



Layering of Avocados. This and other similar layers are on selfed seedlings of Topa Topa set out in 1941. Note and photo from Dr. C. A. Schroeder of the University of California at Los Angeles.