

On-Site Topworking of Guava Trees

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A technique to double-graft guava trees (cv Beaumont) could provide an alternative to standard uprooting/replanting practices.
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introduction

The development of small- and medium-sized fruit processing units and the booming tourist industry have promoted an increase in the demand for local fruit in Guadeloupe. Local guavas are in high demand since imported guava pulp is often expensive and of unsatisfactory quality.

The guava cultivar Beaumont is of interest for its high yields and quality, particularly with respect to its processing performance (colour, flavour, sweetness and acidity). Varietal conversion of a guava orchard with this cultivar was thus investi-

gated. Local and poor-performing improved varieties could be replaced by an on-site topworking technique, as an alternative to conventional uprooting/replanting.

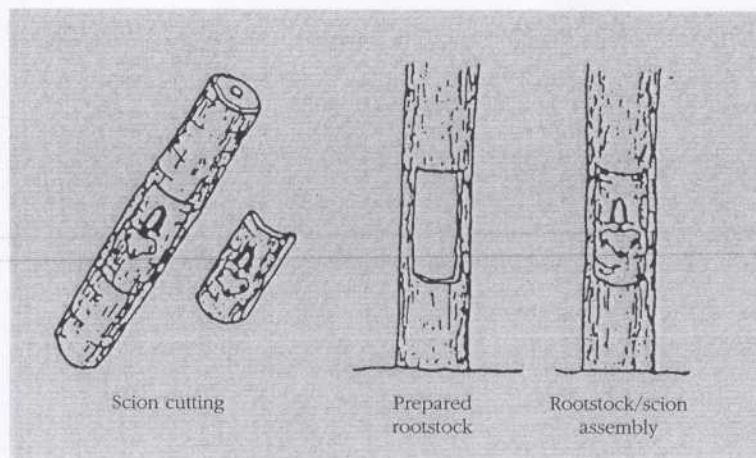
material and methods

topworking technique

Topworking is carried out as follows:

1. The trees to be grafted are cut back to the main branches, and the remaining trunk and main branch bases are daubed with thick whitewash to hinder sun scorching.
2. Four to six vigorous ratoons are selected; they should be spatially well distributed to give a well-balanced architecture to the tree. Frail, poorly located and excess branches are pruned.
3. Cultivar Beaumont is grafted onto the stocktree by patch budding when the ratoons are 10-15 mm diameter and beginning to lignify (Fig. 1). The buds are protected with grafting plastic.
4. Fifteen to twenty days after grafting, ties are removed from the bud union on grafted branches and they are partially pruned to 10-15 cm above the graft. Bud sprouting occurs very soon after this operation (< 1 week).

Figure 1
Patch budding.



5. Branches are pruned to about 2 cm above the scions after they have reached a length of 15-20 cm, and the pruning wounds are sealed with grafting wax.

6. Buds are removed from the rootstock on a regular basis, generally 2-3 times.

experiments

The double-grafting experiments were carried out at the Vieux-Habitants research station, Guadeloupe, in an irrigated 0.3 ha guava orchard cropped with various cultivars that have poorer yield performance than cv Beaumont. The trees to be grafted (3.5 years old) were cut back on 27 October 1988, and grafted on 14-15 February 1989. They were planted in stands of 357 trees/ha (7 m x 4 m).

An equivalent-sized control plot (0.3 ha) was planted with cv Beaumont cuttings in 1989.

results and discussion

An assessment carried out in late March 1989 revealed a success rate of more than 95% in the double-grafted orchard. In December 1989, the first blossoms were noted, with subsequent yields of 11.6 t/ha in 1990, 32.6 t/ha in 1991, and 32.5 t/ha in 1992. However, 50% of the guavas could not be harvested because of a fungal disease (*Phoma* sp.).

The yield results on the control plot were 9.1 t/ha in 1990, 24.8 t/ha in 1991 and 59.5 t/ha in 1992.

These results indicated that topworked guava trees began producing slightly sooner than ungrafted trees.

Finally, a cost-effectiveness analysis study showed that the cost of labour involved in the topworking procedure (i.e. pruning, disposing of wood left after pruning, whitewashing trunks, grafting, bud removal, partial and final pruning of grafted branches) was equal to that required for conversion (uprooting, purchasing new plants, replanting) of a similar-sized plot, i.e. about 11 000 FF/ha.

conclusion

The present study highlighted the benefits of using the topworking technique to rehabilitate a guava orchard as compared to an uprooting/replanting procedure, i.e. the onset of production is earlier for the same technical costs. The 1992 harvest was poor because of a fungal disease and the yield figures will therefore have to be confirmed.

With this topworking technique, an efficient experienced grafter is required to obtain a high grafting success rate in a single operation.

Another interesting advantage of this technique is that it avoids potential rot development due to inefficient uprooting; this is a common problem after uprooting and land clearing operations. ●