

Research selected two coconut varieties to increase productivity of Vanuatu coconut plantations



Senescent coconut plantation on Santo

Since the end of the 19th century, the economy of Vanuatu has largely depended on the production of copra and coconut oil, two coconut products that still amounted to 43% of export earnings in 2007. Coconut plantations were once limited to the island coasts, but have gradually spread to more fertile zones where they compete with food crop production. This situation jeopardizes the country's food self-sufficiency.

Use of coconut oil as a biofuel in diesel vehicles and for electricity production has developed in recent years and has revived interest in a declining copra industry. Nationwide use of coconut products would also make it possible to escape the volatility of world copra prices

Preference should be given to replanting senescent coconut plantations located in low-fertility zones, such as coral coastal terraces, in order to maintain the current production level. By using early-bearing and high-yielding coconut varieties, it will be possible to ensure high production on a limited area and thereby reserve fertile lands for other crops.

Coconut genetic improvement: a lengthy business

Since 1962, on the island of Santo, research has been underway at the Saraoutou station, now known as the Vanuatu Agricultural Research and Technical Centre (VARTC), to improve the productivity of coconut plantations through modern management techniques in nurseries and plantations, and by selecting new coconut varieties.

Two varieties perform much better than the unselected Vanuatu Tall: the Elite Vanuatu Tall (Elite VTT) and the hybrid between the Vanuatu Tall and the Rennell Island Tall (VTT x RIT). They are well suited to the local ecology and particularly display total resistance to coconut foliar decay, a viral disease endemic to Vanuatu, which decimates varieties introduced from other countries.

Elite Vanuatu Tall

The Elite VTT was obtained through selection, over 4 generations, of the best parents from coconut populations collected on the east coast of Santo. Under good soil and growing conditions, it starts flowering very early and gives its first harvest 4 years after planting. The amount of copra per nut has been improved by 50% and yield (2.8 tons of copra per hectare) by 56% compared to the unselected VTT.



5 years old Elite VTT



Bunch of Elite VTT

Hybrid Vanuatu Tall x Rennell Island Tall

Crossing the Vanuatu Tall with the Rennell Island Tall (a variety with very large nuts originating from the Solomon Islands) has given an early-bearing hybrid variety producing a large number of large nuts (120 nuts per palm and per year). On good soil, without fertilizer, copra yield is remarkable with an average 3.7 tons per hectare, i.e. double the yield of the unselected VTT.

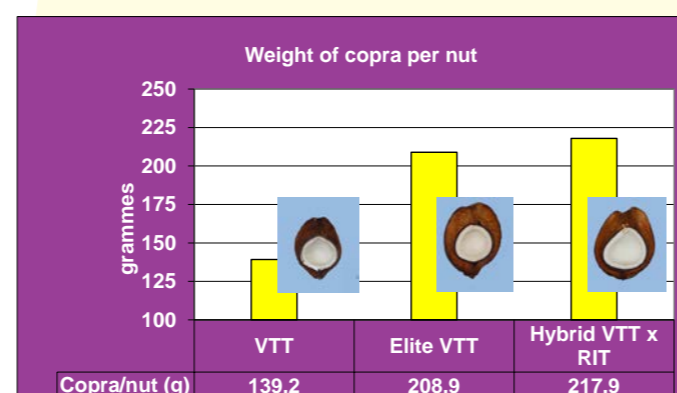
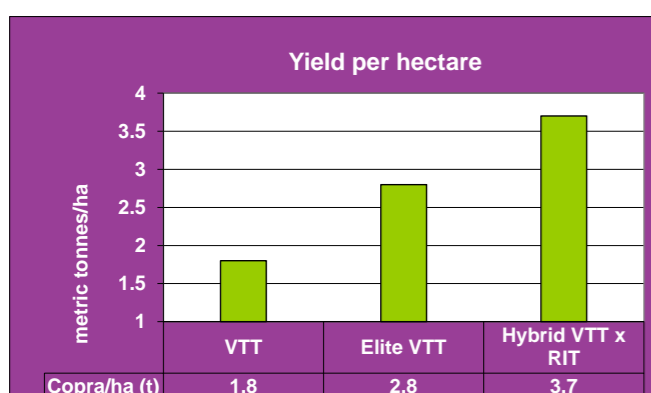


5 years old VTT x RIT



Bunch of VTT x RIT

Performance of improved coconut varieties compared to unselected Vanuatu Tall



Conclusion

The hybrid performs remarkably well but it has to be produced in centralized seed gardens using a pollination technique requiring qualified staff. It cannot be propagated from seednuts by farmers.

Consequently, the Elite Vanuatu Tall is the most suitable planting material for carrying out a large-scale planting programme under the conditions in Vanuatu. It is a variety that is inexpensive to propagate and can be reproduced by farmers using seednuts collected from under their own Elite VTT coconut palms.

For both varieties, the optimum performance in terms of early bearing and yields, such as obtained on-station, depends on the care provided in the nursery (notably the elimination of seednuts that germinate late), at the time of planting (good holing) and in the first 3 years after planting.

References

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