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Effect of stumping height on regeneration potential of Quillou coffee (*Coffea canephora* var. *canephora* Haarer)

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Abstract

Old non-productive coffee groves were stumped at 0, 15, 30 and 45cm heights at both Gambari Experimental Station, Ibadan, and Kotopo, Abeokuta. At both stations, there was a significant positive correlation between the stumping height and the sucker height as well as number of lateral branches produced by the suckers. It is concluded that stumped coffee trees can regenerate new suckers that could be used to establish new stands within two to three years.

Introduction

Coffee is one of the important cash crops in Nigeria, but very little work has been done on its production practices in the country. The few reported works centre mainly on the crop's nutrition and nursery practices, leaving rehabilitation of old trees univestigated.

Pruning is a common practice in coffee cultivation. It is usually done to control the growth pattern of young trees and make them readily accessible during harvesting as well as increase their yield (Guerra, 1972). However, pruning of old coffee trees is primarily done to produce new suckers which will have renewed vigour for fruit production. This has been done to rehabilitate both Arabica and Robusta coffee in the Cameroon (Bouharmont, 1977a & b) and Burundi for Robusta coffee (Colinet, 1962).

This paper reports certain investigations carried out to establish standard rehabilitation procedures for coffee in Nigeria.

Materials and Methods

Two plantations of old non-productive Quillou coffee were selected at Gambari Experimental Station near Ibadan, and Kotopo near Abeokuta respectively. Treatments included stumping at 0, 15, 30 and 45cm height using Dolmar chain saw. The experimental design was a randomised complete block with four replicates, each comprising four trees. The

treatments were applied at Gambari Experimental Station in June 1974 and Kotopo in April 1975.

Nine months after stumping, pruning was done randomly on each stand, leaving four suckers per stump. The height of each sucker and the number of lateral branches produced by them were taken subsequently at monthly intervals. Field maintenance was done by constant slashing.

Results and Discussion

At both experimental stations, coffee stands stumped at 45cm produced the tallest suckers, followed by those stumped at 30cm. The shortest suckers were produced by the stands stumped at Ocm (Fig. 1). The pooled correlation coefficient (r) for each station was 0.90 for Gambari Experimental Station and 0.93 for Kotopo. A similar pattern was observed at both stations for the number of lateral branches, the pooled correlation coefficient (r) being 0.78 and 0.82, respectively (Fig. 2). The similar results obtained at the two stations are not unexpected since both enjoy relatively similar rainfall and temperature regimes (Fig. 3.). There was a drop in the number of lateral branches at the two stations in the early part of 1977. This was due to the severe dry season towards the end of 1976 that extended into the early part of 1977. The effect of this dry season was however much more severe on coffee stands at the Gambari Experimental Station than those at Kotopo.

The high level of correlation between the height of stumping and number of lateral branches produced by the suckers, shows a clear dependence of the suckers on stumps of the parent plants. Such dependence is probably due to better provision of growth factors and regeneration activities by coffee stands with taller stumps. Similar observations have been made on stumped Kola stands (Odegbaro, 1973). In conclusion therefore, stumped coffee trees can regenerate new suckers that could be used to establish new orchards within a relatively short time of two to three years.

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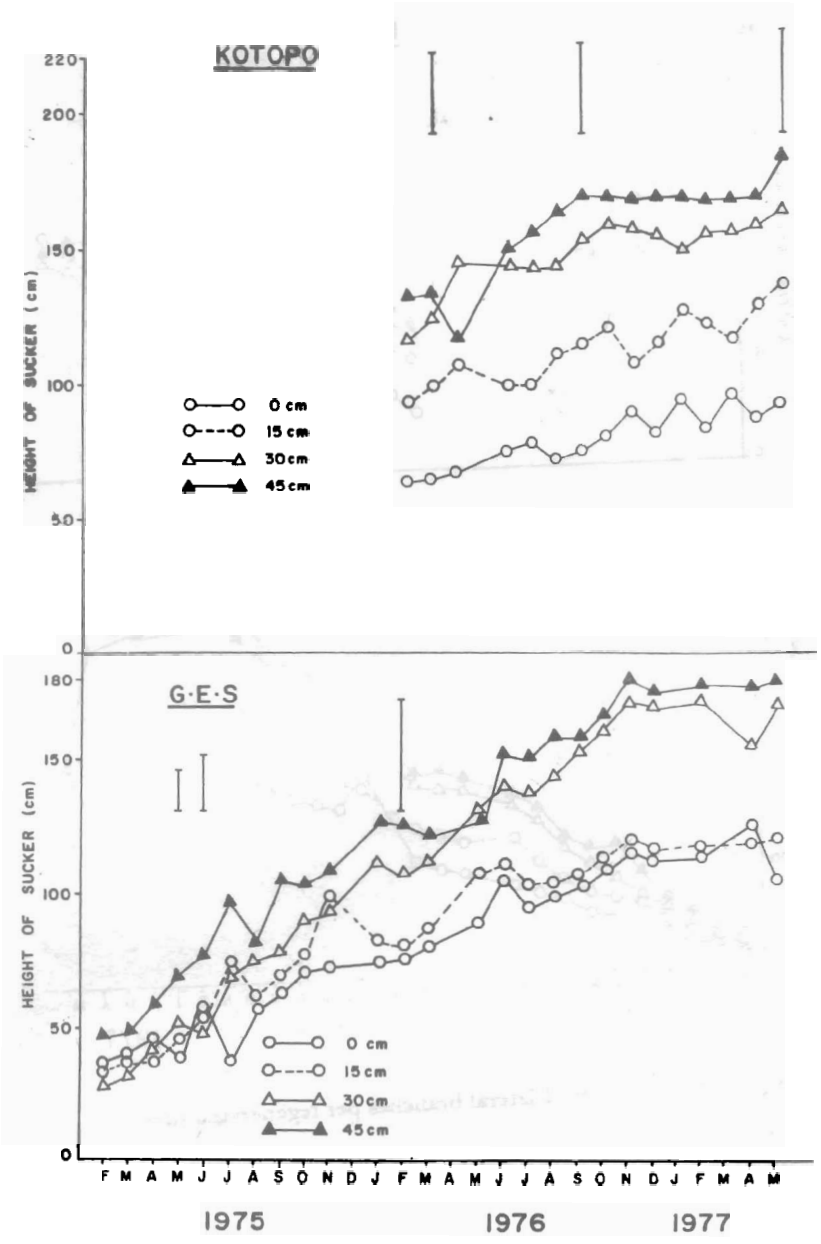

Fig. 1 Mean height of regenerated suckers at various heights from the ground level.

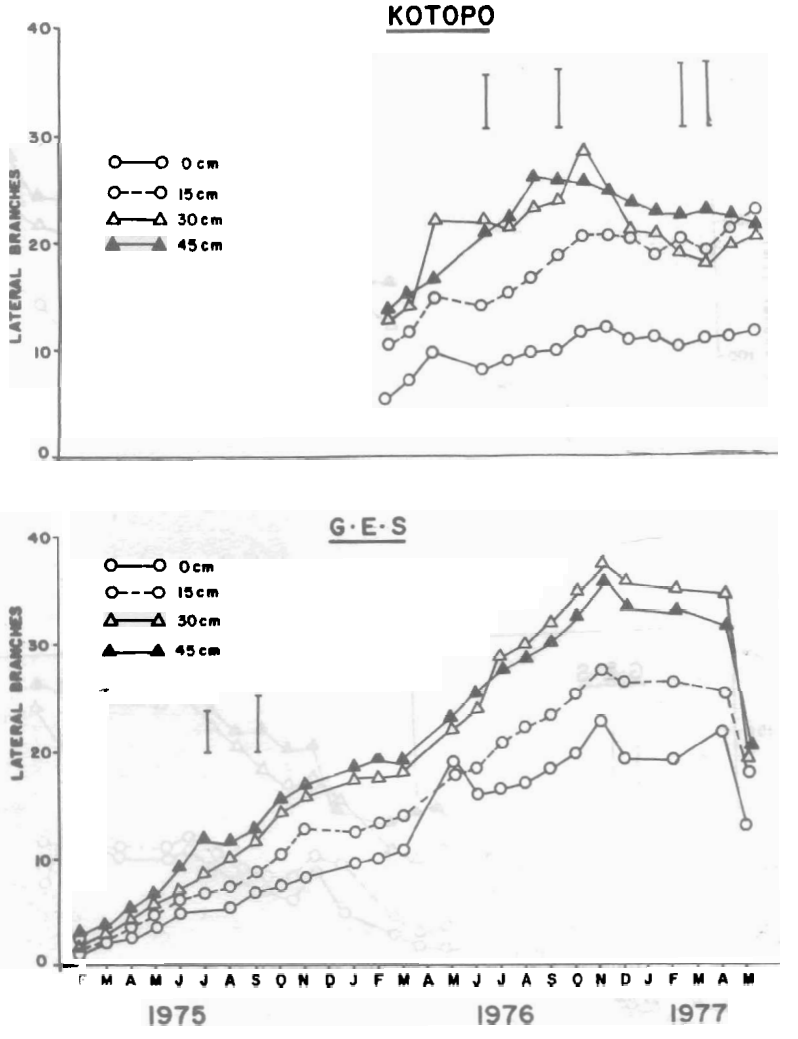

Fig. 2 Mean number of lateral branches per regenerated sucker.

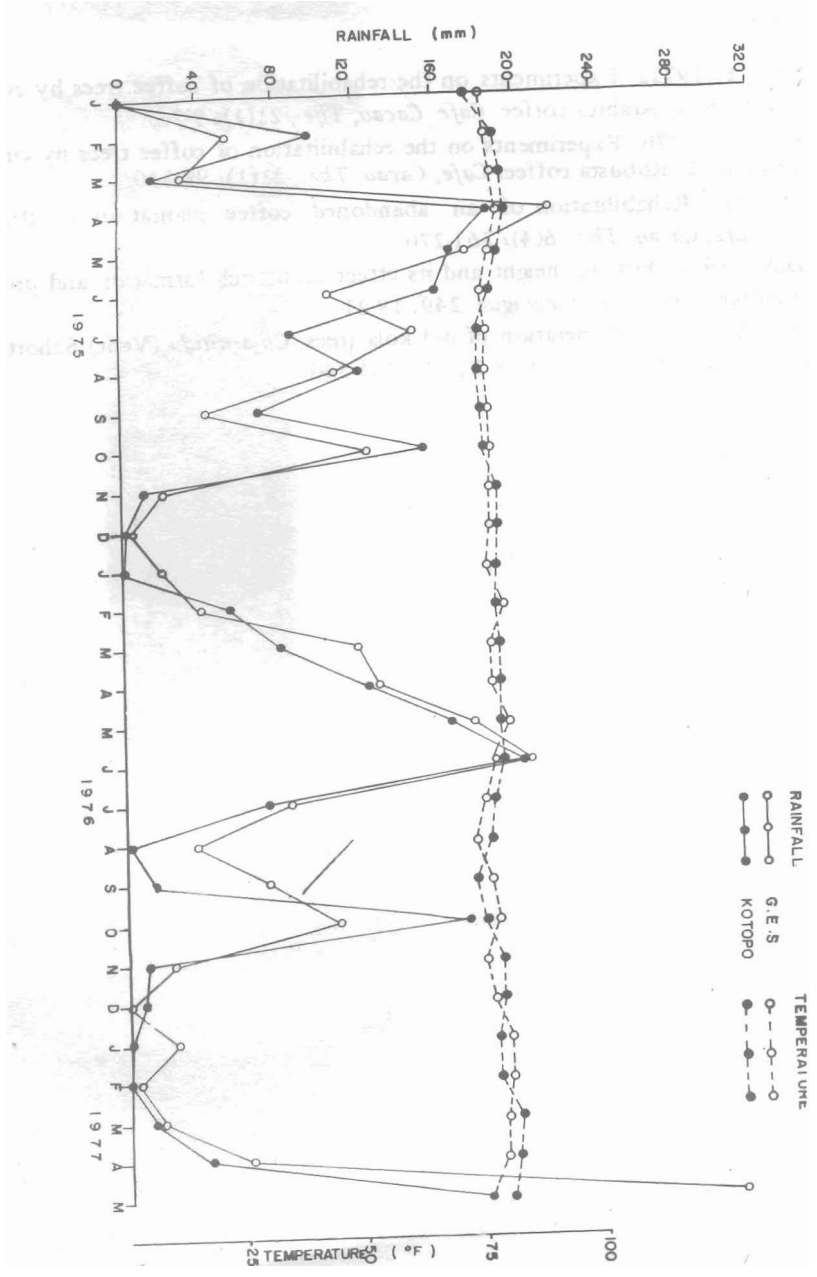

Fig. 3 Mean rainfall and temperature for both the G.E.S. and Kotopo experimental sites.

References

Bouharmont, P. 1971a. Experiments on the rehabilitation of coffee trees by cutting back old stems. 1. Arabica coffee. *Cafe, Cacao, The.*, 21(1): 9-26.

Bouharmont, P. 1977b. Experiments on the rehabilitation of coffee trees by cutting back old stems. 2. Robusta coffee. *Cafe, Cacao, The.*, 21(1): 99-110.

Colinet, P. 1962. Rehabilitation of an abandoned coffee plantation in Ruanda Burundi. *Cafe, Cacao, The.*, 6(4): 261-270.

Guerra, D.A. 1972. Pruning height and its effect on branch formation and production of coffee trees. *Cafe, Nicaragua*, 249: 19-21.

Odegbaro, O.A. 1973. Regeneration of old kola trees, *Cola nitida* (Vent) Schott and Endlicher, by coppicing. *Turrialba*, 23 (3): 334-340.