

Single-Stem Pruning of Coffee.

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ABSTRACT.

A trial to compare several techniques of single-stem pruning of Coffea arabica was conducted at the Highlands Agricultural Experiment Station, Aiyura, over a five-year period from February, 1959, to March, 1964, using a field of 'Blue Mountain' coffee planted in 1954. The results indicated no significant yield difference between techniques and that there was no advantage in heavy pruning.

INTRODUCTION.

SINGLE-STEM as a permanent system of pruning coffee is not generally practised in the Highlands of Papua and New Guinea today. However, some plantations have small areas of mature single-stem already established, and other limited areas have been brought into early production by being permitted to grow straight into single-stem, with the idea of converting to multiple-stem after several years' bearing. The trial conducted was intended to discover any yield differences arising from variations in single-stem pruning techniques.

MATERIALS AND METHODS.

The coffee bushes were spaced on a 9 ft. triangle under *Albizia stipulata* shade, and until the commencement of the trial had been pruned to the single-stem system approximating to treatment number three.

The new pruning treatments imposed on the existing single-stem bushes are described.

Control.—No pruning other than removal of suckers as they appeared at the top of the bush.

Cut head primaries.—Prune top four pairs of laterals only, cutting them back to new growth. Otherwise only cut back skirt growth to clear the ground.

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Single-stem, light.—Remove minimum growth to give orthodox single-stem framework, leaving secondary laterals in pairs.

Single-stem, heavy.—Again orthodox framework, but only one secondary lateral permitted at each node of the primary.

Colombian.—Also known as the umbrella system. In this treatment the upper laterals are allowed to grow unchecked as they curve out and down towards the ground forming a dome-shaped bush. In Colombia, where the system is practised, the lower laterals tend to weaken and disappear, being continually heavily shaded by the overlying branches; but in this trial several lower laterals were cut out each year to keep the centre of the tree free from congestion. Suckers were removed regularly from the top of the bush.

Treatments were replicated four times in randomized blocks, and plots comprised four rows of 12 trees each, yields being recorded from the centre two rows only.

RESULTS.

Coffee yields over the five-year period on the trial were as in *Tables 1* and *2*, expressed in pounds of clean coffee per acre. A factor of 15 per cent. was used to convert cherry weights to clean coffee equivalent. The 12-month period, April to March, is used for annual production figures.

Table 1.

Treatment.	1959-1960 lb./ac.	1960-1961 lb./ac.	1961-1962 lb./ac.	1962-1963 lb./ac.	1963-1964 lb./ac.	Average five years lb./ac.
No pruning	1,841	1,966	1,841	1,694	1,936	1,856
Cut head primaries	1,849	2,040	2,035	1,383	2,197	1,901
Single-stem light	1,459	1,832	1,804	1,432	2,092	1,724
Single-stem heavy	1,323	1,600	1,820	1,147	2,093	1,597
Colombian	1,513	1,814	1,713	1,374	1,836	1,650

Table 2.—Coffee Yields—Single-Stem Pruning Trial, Aiyura.

Treatment.	Average five years—1959 to 1964. Replicates—				Average lb./ac.
	Rep. 1 lb./ac.	Rep. 2 lb./ac.	Rep. 3 lb./ac.	Rep. 4 lb./ac.	
No pruning	1,806	1,732	1,678	2,206	1,856
Cut head primaries	1,905	2,008	1,661	2,029	1,901
Single-stem light	1,753	1,817	1,382	1,943	1,724
Single-stem heavy	1,659	2,036	1,322	1,370	1,597
Colombian	1,751	2,096	1,470	1,284	1,650

DISCUSSION.

Experiments have been carried out in other countries on the effects of different single-stem methods, and results in both South India and East Africa suggest that optimum yields are obtained with light pruning. In the present trial, although the average yields indicate some differences between treatments, from Table 2 it may be seen that there was high variability between replicates of the same treatment. Analysis showed that differences between treatments were not statistically significant. The

coffee was too variable for it to be reasonably sure that differences were due to the treatments applied. However, the trial did at least indicate that there was no advantage in heavy pruning. Unless a clear yield improvement could be expected it would not be worth the increased cost involved.

(Received January, 1965)

REFERENCE.

HAARER, A. E. (1956). *Modern Coffee Production*. Leonard Hill, pp. 185-7, London.