

## Krc 43, Cacao Re-establishment Trial.

### Introduction

Cacao in the seedling spacing trial Krc 4 in Station Block 2010 yielded so poorly during 1967 that it was decided to terminate the trial and use the trees for a re-establishment trial. It was reasoned that these trees would be in similar condition ~~and the~~ to many commercial plantings and a trial to discover a satisfactory method of re-establishing a complete and high-yielding stand would be valuable.

### Method:

Four methods of re-establishment were decided upon and each was allocated to one replicate of the original spacing trial as <sup>indicated in Table 1.</sup> follows.  
(Table 1 about here)

Treatment A is <sup>now probably the most usual</sup> ~~now a~~ less standard procedure than a re-establishment method and could be classed as the control. Treatment B is a variation on this which ~~can~~ <sup>could</sup> ~~would~~ lead to complete replacement of amounts to establishing a new stand.

while maintaining the old stand and taping what the original stand by ~~some~~ trees grown from the best little crop it produced in the meantime. ~~Planting material available~~ Treatment C was included because it was thought that the best way to handle the old stand may be to remove it and thus obviate the need for pruning, harvesting, etc. The return from this stand was minimal and scarcely justified its maintenance and harvesting. Treatment D is a modification of C in which the ~~age~~ <sup>maintenance</sup> of a ~~few~~ <sup>small</sup> few mature trees <sup>is</sup> ~~is~~ obviated but the replacement stand has the benefit of the root systems of the original trees.

The treatments were carried out between October 1968 and January 1969: New plantings as required were made at stake in December 1968 and stumping was done in January 1969 following ring-barking in November 1968 to induce cheepers. Misses were replaced by planting 3 seeds per position, spaced <sup>60cm</sup> 2 feet on the triangle, where vacancies occurred. In the complete replanting while treatments B+C plantings were made <sup>at stake,</sup> as above, between the original lines. The ~~12 ft. x 15 ft.~~ <sup>3.66m x 4.57m</sup> blocks were planted at these same spacings whereas the <sup>distance between trees in the</sup> ~~spacing in the~~ other B+C treatments <sup>(5.23m, 6.10m & 7.32m triangles)</sup> ~~(17'2", 20' & 24' triangles)~~ was halved, resulting in ~~8'7", 10' & 12' triangles~~ <sup>8'7", 10' & 12' triangles</sup> respectively.

Oilbark infections and yields of pods ~~are~~ <sup>were</sup> recorded for each treatment at four weekly intervals.

Labour inputs for dieback inspection & treatment were recorded.

Table 2 gives details of these ~~data~~ dieback inputs, number of infections recorded & the production from each treatment.

(Table 2 about here)

Discussion

As this was an unreplicated observation infection gradients had an important influence on treatments. Treatment C was closest to ~~real~~ non-trial cocoa & hence was subjected to the greatest infection pressure, as all trial cocoa was being inspected & pruned 4-weekly.

The trial did not provide any ~~clear-cut~~ answers results which could be termed significant. However, it did indicate the factors to be considered when choosing a method of rehabilitation. These include:-

(a) Distance from other infected cocoa.

This has always been recognized as an important consideration. It influences not so much the method of rehabilitation but whether rehabilitation can be successfully carried out or not. Experience with Koc 43 & other blocks revealed that establishing cocoa adjacent to ~~old~~ <sup>mature</sup> infected trees will not be successful unless the mature trees are pruned regularly, the ~~replanting~~ <sup>young trees</sup> are pruned regularly & replanting is carried out as required in the new stand.

(b) The productivity of the existing stand.

As a general rule, the better this is producing the less reason there is for removing it. So, where an infected stand is

producing a reasonable crop, & this can only be a subjective judgment, it should be ~~renewable~~ rehabilitated by treating the old stand for dieback & either replacing misses or planting a complete new stand as well. Where the existing stand is yielding very poorly it will not repay the expense of maintaining it.

(c) The age of the existing stand.

If the existing stand is to be retained & efforts made to rehabilitate it then it would have to be ~~sufficiently young~~ of an age where several years of productive life can reasonably be expected of it. If not, the expense of rehabilitating it would not be recovered & it should be removed.

(d) The potential of the planting material available at the time.

The greater the potential of the planting material available the stronger the argument for removing the old stand & planting a new one. In KTC43 the new plantings were made with open-pollinated seed from selected clones. Treatment C did not out-yield treatments A & B until 1974/75, when it produced an estimated 7300 pods ~~of~~ during the 9 months to 31/3/75, against 6109 for A & 5424 for B. Reasonably, this yield advantage would have widened <sup>with time</sup> as the trees in A & B were planted in 1956 & were therefore approaching the end of their economic life in 1975. ~~But~~ Had ~~been~~ better material been available at the start of the trial than was used to replant C then the production loss occasioned by complete removal would have been more rapidly regained than was the case in KTC 43.

Table 1. Allocation of treatments & treatment details  
 Treatment replicate of  
 KTC 4

Details of treatment

(5)

A	1	Monthly dieback pruning of the existing stand + replacement of misses.
<del>B</del>	<del>2</del>	
B	2	Monthly dieback pruning + complete replanting between the lines.
C	3	Removal of the original stand + complete replanting between the lines.
D	4	Stumping of the surviving trees + replacement of misses.

Table 2. Labour inputs for dieback treatment, numbers of infections & yield.

Treatment Year	Treatment															
	A				B				C				D			
	a	b	c	d	a	b	c	d	a	b	c	d	a	b	c	d
1969/70	21	64	569	1125	25	365	865	1761	13	715	-	-	9	112	159	-
<del>1970/71</del>																
1970/71	46	55	1852	3443	53	473	1522	4730	21	612	-	26	16	211	215	104
1971/72	39	229	493	7594	53	346	497	8544	36	979	-	1715	28	313	202	2205
1972/73	35	273	421	4453	46	409	475	3443	36	1084	214	3673	32	555	284	2618
1973/74	20	108	412	9209	28	46	395	9417	26	159	721	8832	20	55	340	7191
TOTAL	161		25824	205			27895	132			14246	105			12118	

- A = Dieback pruning of existing stand + replacement of misses
- B = Dieback pruning of existing stand + complete replanting between the lines
- C = Removal of the original stand + complete replanting between the lines
- D = Stumping of the surviving trees + replacement of misses.
- a = man-hours for dieback detection & treatment
- b = number of infections in the replants
- c = number of infections in mature trees + regrowth from stumps
- d = pods produced