

DEPARTMENT OF AGRICULTURE,

Ref No. *D147/57/38*

P. O. Box 159,

ZANZIBAR

EAST AFRICA

2nd February, 1938.

Dear Mr. Cochran,

Very many thanks for your letter of January 4th. I must apologise for the delay in answering, but we have just finished off a record clove crop.

2. In reply to the points you raise I have to reply as follows:-

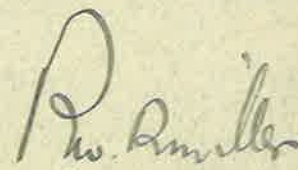
- (a) the data presented represent the only known yields of individual clove trees conducted for more than one year.
- (b) the yields for five years for the individual trees are attached. Blank spaces in the plan sent with my original letter represent trees which have died during the course of the experiment and any individual yields from these trees in the first years of the experiment should be neglected.

3. From the attached individual tree yields you will appreciate the remark in para 2 of my original letter. It may be said that normally the production seems to have a five year cycle which includes one bumper, two average and two poor crops.

Trusting you have now all the information you require,

I am,

Yours sincerely,



DIRECTOR OF AGRICULTURE.

W. G. Cochran, Esq.,
Statistical Department,
Rothamsted Experimental Station,
Harpenden, Herts, England.
RWRM/LP.

Yields in lbs. per tree of Green Cloves for the
five seasons 1933-34 to 1937-38.

Plot K.B.C. Kizimbani.

No. of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
1.	84.5	72.6	-	-	76.0
2.	83.5	43.0	-	-	90.75
3.	29.5	65.4	-	-	-
4.	44.5	75.2	-	-	-
5.	50.5	55.0	24.0	-	91.0
6.	6.0	-	-	-	-
7.	73.5	-	-	-	-
8.	59.5	68.5	-	-	-
9.	48.0	9.0	-	-	-
10.	28.5	82.5	-	-	-
11.	21.0	60.4	-	-	-
12.	46.5	122.4	-	-	-
13.	25.5	19.3	-	-	-
14.	32.5	64.2	-	21.0	171.25
15.	61.5	48.0	15.0	20.0	68.75
16.	-	56.5	-	-	114.5
17.	28.0	114.2	-	-	-
18.	81.75	84.0	-	-	-
19.	23.5	15.5	-	-	-
20.	11.5	12.0	-	1.0	53.0
21.	49.75	24.0	1.0	6.0	68.50
22.	11.0	14.5	-	-	111.25
23.	48.5	6.0	-	-	-
24.	32.0	49.0	-	-	-
25.	36.5	52.3	-	10.5	89.0
26.	88.0	111.0	-	-	154.0
27.	58.5	16.1	-	-	74.5
28.	40.0	9.0	-	-	-
29.	45.5	70.0	-	-	-
30.	33.5	25.7	-	-	-

of free.	1933-34	1934-35	1935-36	1936-37	1937-38.
31.	88.0	88.5	-	18.0	122.0
32.	15.0	19.4	-	-	106.25
33.	29.0	30.7	-	-	121.0
34.	-	31.0	-	-	172.25
35.	-	-	-	-	80.0
36.	45.0	24.5	-	-	77.25
37.	20.0	51.1	-	-	77.0
38.	70.0	65.0	-	-	-
39.	-	53.0	-	7.0	-
40.	-	12.0	-	-	-
41.	-	19.7	-	1.0	66.5
42.	9.0	100.2	-	3.0	29.5
43.	11.0	49.0	-	-	51.75
44.	67.0	44.0	-	-	6.0
45.	33.5	18.0	-	-	41.25
46.	9.0	46.9	-	-	41.0
47.	5.0	72.4	-	-	-
48.	16.0	51.8	-	-	170.0
49.	32.5	28.2	-	-	56.75
50.	-	-	-	-	92.5
51.	-	-	-	-	206.25
52.	10.5	75.0	-	-	65.5
53.	16.0	88.9	-	-	71.0
54.	21.0	26.9	-	-	110.5
55.	35.5	60.5	-	-	85.5
56.	79.0	13.0	-	-	113.5
57.	-	-	-	-	87.25
58.	28.0	73.0	-	-	99.0
59.	9.0	58.5	-	-	72.0
60.	59.0	34.5	34.5	15.0	135.0
61.	43.0	66.5	-	-	99.5
62.	-	19.3	-	-	83.0

of tree.	1933-34	1934-35	1935-36	1936-37	1937-38	
63.	17.5	78.0	-	-	66.5	
64.	7.0	-	-	-	59.25	✓
65.	78.25	101.7	-	-	172.25	✓
66.	65.5	4.0	-	2.0	77.25	✓
67.	32.5	30.6	-	6.0	77.0	✓
68.	36.5	40.0	-	-	68.5	✓
69.	32.0	69.0	-	-	139.0	✓
70.	18.5	53.5	-	-	138.5	
71.	16.0	56.5	-	-	139.75	
72.	45.0	77.7	-	-	79.75	
73.	39.5	-	-	-	36.5	✓
74.	44.5	42.0	-	24.0	51.75	✓
75.	-	-	-	-	6.0	✓
76.	5.0	26.0	-	-	41.25	✓
77.	-	15.0	-	-	41.0	✓
78.	8.0	137.5	-	-	178.0	✓
79.	7.0	26.75	-	-	56.75	
80.	51.0	83.9	-	-	206.25	
81.	30.0	36.0	-	-	71.0	
82.	13.0	21.6	-	-	110.5	
83.	25.0	74.9	-	-	85.5	
84.	12.0	56.2	-	-	111.5	
85.	18.5	79.0	-	-	93.25	
86.	19.0	71.7	-	-	72.0	
87.	9.0	51.1	-	-	130.5	
88.	9.0	35.1	-	-	83.0	
89.	55.5	113.8	-	-	118.75	
90.	9.0	21.3	-	-	94.5	
91.	32.0	27.6	-	-	70.5	
92.	13.0	16.5	-	-	80.0	
93.	11.0	7.0	-	-	151.25	
94.	20.0	22.7	-	-	-	

No. of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
95.	62.0	14.5	-	-	50.5
96.	63.5	32.0	17.0	-	69.75
97.	54.5	17.5	45.0	45.0	71.5
98.	42.5	3.8	-	35.0	49.25
99.	79.0	13.1	-	5.0	106.0
100.	93.5	81.1	-	20.0	221.0
101.	59.5	15.0	17.0	13.0	103.75
102.	76.5	57.2	10.0	17.0	138.5
103.	89.0	17.7	-	5.0	139.75
104.	75.25	48.8	-	-	106.25
105.	30.5	82.7	-	-	105.5
106.	104.0	136.3	-	-	104.5
107.	44.0	22.5	10.5	-	162.25
108.	24.0	6.0	-	5.0	165.0
109.	89.0	25.0	5.5	35.0	97.5
110.	48.0	25.3	-	15.0	40.0
111.	63.0	58.7	-	-	71.5
112.	24.0	26.0	-	5.0	57.25
113.	100.5	15.3	-	-	75.0
114.	97.0	77.0	-	-	115.25
115.	75.5	80.5	-	-	105.5
116.	58.0	60.3	-	5.0	75.75
117.	35.0	15.0	-	-	85.25
118.	57.5	58.0	-	33.0	132.0
119.	85.75	79.0	20.0	67.0	77.0
120.	60.5	41.5	-	-	117.25
121.	86.5	40.0	13.5	27.5	132.0
122.	77.5	62.6	7.5	34.0	124.5
123.	40.5	42.2	-	9.0	117.0
124.	66.5	81.4	-	-	128.75
125.	6.5	20.0	-	-	128.0

of tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
126.	20.5	45.0	-	-	0.5
127.	37.5	12.1	-	-	83.0
128.	74.5	17.5	45.0	40.0	50.0
129.	39.0	24.5	-	39.0	93.5
130.	45.0	104.4	-	6.0	88.5
131.	5.5	30.5	-	-	33.0
132.	75.0	18.0	17.0	-	86.25
133.	34.0	3.0	10.0	-	68.5
134.	77.0	135.0	-	-	88.75
135.	30.0	56.0	-	-	68.5
136.	52.5	57.0	-	-	82.5
137.	57.0	22.4	-	-	104.5
138.	24.5	25.6	10.5	-	55.75
139.	86.5	45.7	-	2.0	169.0
140.	52.0	20.0	8.5	31.0	51.0
141.	14.0	41.0	-	14.0	113.5
142.	28.0	62.0	-	-	69.75
143.	27.0	35.7	-	-	66.5
144.	12.5	9.0	-	-	73.0
145.	42.0	110.0	-	-	112.25
146.	54.0	40.0	-	-	109.5
147.	58.5	55.1	-	1.0	79.75
148.	23.0	13.0	-	-	80.25
149.	13.0	36.0	-	-	55.0
150.	19.5	2.0	-	-	46.0
151.	20.0	3.5	-	-	44.0
152.	37.5	69.0	-	-	97.0
153.	35.0	35.5	-	8.0	78.0
154.	12.0	21.0	-	-	42.25
155.	-	66.6	-	-	87.0
156.	-	26.0	-	-	66.6

of ree.	1933-34	1934-35	1935-36	1936-37	1937-38.
	1933-34	1934-35	1935-36	1936-37	1937-38.
157.	84.5	19.4	-	37.5	58.75
158.	22.5	72.4	-	-	0.5
159.	48.5	21.7	-	-	164.0
160. ✓	28.0	64.7	-	-	53.075
161. ✓	-	6.0	-	5.0	30.755
162.	62.0	35.5	-	-	71.75
163.	11.0	36.3	-	-	76.55
164.	3.0	55.2	-	-	50.00
165.	82.5	125.0	-	-	72.75
166.	50.5	209.5	-	-	95.525
167.	-	-	-	-	185.5
168.	-	-	-	-	-
169.	-	49.3	-	-	-
170.	17.0	26.0	-	1.0	64.0
171.	12.0	120.0	-	-	43.0
172.	54.25	85.9	-	2.5	76.5
173.	14.5	86.1	-	-	95.0
174.	32.5	87.9	-	-	174.0225
175.	62.5	11.9	-	-	82.75
176.	28.0	73.4	-	-	93.75
177.	65.0	65.0	-	-	98.5
178.	-	48.1	-	-	128.5
179.	9.5	49.4	-	-	55.0
180.	54.5	154.8	-	-	51.5
181.	38.0	58.5	-	-	180.75
182.	-	68.8	-	-	102.0
183.	19.5	91.6	-	-	110.0
184. ✓	16.0	67.6	-	-	106.0
185. ✓	35.5	28.5	-	0.25	85.5
186. ✓	21.5	66.6	-	-	59.0
187. ✓	4.5	26.0	-	-	87.0
188.	-	-	-	-	65.5

of fee.	1933-34	1934-35	1935-36	1936-37	1937-38.
189.	84.5	19.4	-	27.5	88.75
190.	16.5	61.9	-	-	65.0
191.	28.5	-	-	6.0	95.5
192.	31.5	58.6	-	41.5	72.75
193.	36.5	37.0	-	2.0	92.25
194.	51.0	51.5	-	-	71.75
195.	63.5	168.0	-	-	100.5
196.	6.0	82.5	-	-	54.0
197.	61.0	105.7	-	-	138.75
198.	25.0	61.5	-	-	98.25
199.	79.5	83.6	-	-	106.00
200.	34.0	45.0	-	-	61.0
201.	36.5	75.5	-	-	93.75
202.	85.0	120.6	-	1.0	175.0
203.	10.0	69.7	-	-	74.75
204.	69.5	121.4	-	2.5	47.5
205.	22.0	87.8	-	-	85.5
206.	76.0	25.1	-	40.0	72.25
207.	29.5	91.0	-	-	99.75
208.	42.0	90.5	-	-	90.5
209.	16.0	35.0	-	-	54.0
210.	32.0	56.7	-	-	47.5
211.	31.0	14.5	-	-	56.5
212.	16.0	-	7.0	-	5.5
213.	24.5	67.2	-	-	82.75
214.	41.0	76.8	-	-	77.5
215.	51.0	124.8	-	-	139.0
216.	22.0	38.5	-	-	70.75
217.	30.5	84.3	-	0.25	123.5
218.	27.5	72.9	-	-	90.75
219.	35.0	47.9	-	-	66.5
220.	61.0	84.9	-	-	86.0

No. of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
221.	20.0	88.2	--	5.0	117.5
222. ✓	51.5	180.6	--	1.0	185.0
223. ✓	45.0	66.5	--	6.0	126.5
224. ✓	55.5	196.9	--	41.5	190.5
225. ✓	49.5	122.0	--	2.0	131.75
226. ✓	55.0	154.6	--	--	157.75
227. ✓	37.0	40.8	--	--	67.0
228.	49.5	61.2	--	--	106.5
229. ✓	48.0	77.0	--	--	183.5
230. ✓	38.0	99.5	--	2.0	151.75
231. ✓	77.5	131.5	--	--	197.75
232. ✓	64.0	71.9	--	--	82.5
233. ✓	19.5	98.0	--	--	118.5
234. ✓	52.5	247.0	--	--	113.75
235. ✓	41.2	79.2	--	--	100.25
236. ✓	81.0	126.5	--	--	119.5
237.	27.2	26.2	--	--	89.5
238.	65.0	132.4	--	40.0	182.0
239.	8.5	13.0	6.0	8.0	20.0
240.	30.5	583.0	--	--	118.0
241.	33.0	550.0	--	--	68.75
242. ✓	21.0	956.8	--	7.0	118.25
243. ✓	64.0	955.4	--	5.0	95.75
244. ✓	30.5	487.7	--	--	136.25
245. ✓	56.0	1103.0	--	--	115.0
246. ✓	128.5	1184.0	--	9.0	171.0
247. ✓	67.5	688.5	--	1.0	106.5
248.	43.2	14.3	--	--	49.0
249.	72.5	6173.7	--	--	93.5
250.	56.0	2553.1	--	--	104.25
251. ✓	37.5	8496.8	--	13.5	100.25

of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
252.	51.5	38.0	-	3.0	84.5
253.	115.0	144.2	-	1.0	150.0
254.	-	-	-	-	3.0
255.	95.0	135.6	-	-	114.75
256.	-	23.4	-	-	128.0
257.	33.0	52.0	-	-	97.75
258.	29.0	48.6	-	-	82.75
259.	45.5	61.0	-	-	87.25
260.	55.0	57.2	-	-	116.5
261.	28.0	54.0	-	18.5	87.25
262.	22.0	115.0	-	-	155.25
263.	22.0	94.0	-	-	87.5
264.	11.5	53.0	-	-	44.0
265.	22.0	22.2	-	-	61.25
266.	41.0	79.3	-	-	100.25
267.	80.5	87.4	-	-	145.75
268.	29.0	26.1	-	-	89.5
269.	49.0	15.4	-	2.0	44.25
270.	37.0	13.0	6.0	8.0	47.25
271.	32.0	52.9	-	-	64.5
272.	86.0	51.0	-	-	121.25
273.	67.5	96.6	-	-	88.0
274.	7.0	99.0	-	-	55.75
275.	36.5	48.8	-	-	36.0
276.	52.0	165.5	-	-	121.25
277.	13.5	103.4	-	-	66.0
278.	31.0	69.4	-	-	143.75
279.	42.5	14.3	-	-	49.0
280.	24.5	63.0	-	-	52.5
281.	-	25.0	-	-	-
282.	71.0	84.7	-	-	78.0

of ree.	1933-34	1934-35	1935-36	1936-37	1937-38.
283.	-	28.0	-	-	47.75
284.	29.0	67.3	-	-	86.0
285.	-	-	-	-	3.0
286.	82.0	104.3	-	-	96.5
287.	33.5	81.7	-	-	111.75
288.	11.5	9.5	-	-	29.5
289.	-	29.0	-	-	95.75
290.	27.0	73.1	-	-	133.0
291.	15.0	49.7	-	-	38.25
292.	80.0	148.2	-	13.5	154.0
293.	-	-	-	-	4.0
294.	-	-	-	-	-
295.	-	-	-	-	-
296.	19.0	108.3	-	-	164.75
297.	-	16.0	-	-	78.5
298.	33.0	76.0	-	-	78.75
299.	59.0	60.6	-	-	157.75
300.	75.0	101.9	-	-	125.0
301.	8.5	96.6	-	-	141.0
302.	-	60.0	-	-	-
303.	-	-	-	-	-
304.	-	87.0	-	-	-
305.	-	-	-	-	-
306.	-	54.9	-	-	79.0
307.	-	33.1	-	-	-
308.	-	72.0	-	-	141.5
309.	18.0	110.8	-	-	-
310.	-	59.0	-	-	60.0
311.	20.0	62.0	-	-	41.5
312.	-	-	-	-	-
313.	-	56.0	-	-	-
314.	8.0	-	-	-	-

No. of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
315.	-	-	-	-	-
316.	26.5	44.0	-	-	-
317.	-	93.0	-	-	2.5
318.	-	49.1	-	-	134.5
319.	-	31.0	-	-	130.5
320.	11.0	17.7	-	-	-
321.	37.5	13.0	-	1.0	89.5
322.	38.5	67.0	-	-	-
323.	5.0	31.0	-	-	34.0
324.	25.0	17.0	-	-	-
325.	4.0	80.7	-	-	-
326.	97.0	100.4	-	-	-
327.	-	12.0	-	1.0	124.75
328.	-	34.0	-	-	-
329.	15.0	150.8	-	-	140.0
330.	8.0	15.5	-	-	135.0
331.	-	58.1	-	-	164.35
332.	13.5	57.0	-	-	54.0
333.	-	-	-	-	15.0
334.	56.5	70.0	-	-	-
335.	-	47.5	-	-	-
336.	24.0	65.6	-	-	-
337.	10.0	611.7	-	-	144.75
338.	21.0	1532.0	-	-	152.0
339.	4.0	64.0	-	81.0	48.5
340.	55.0	455.5	-	37.0	67.0
341.	-	12.0	-	-	148.75
342.	14.0	35.1	-	-	-
343.	10.5	45.0	-	-	80.0
344.	-	15.1	-	-	41.5
345.	-	84.5	-	-	79.0

No. of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
346.	-	-	-	-	17.75
347.	31.0	103.4	-	-	-
348.	9.0	95.0	-	-	-
349.	-	72.0	-	-	134.5
350.	-	68.5	-	-	130.5
351.	-	-	-	-	-
352.	-	-	-	-	-
353.	-	-	-	-	-
354.	6.5	6.0	-	-	34.0
355.	25.0	53.8	-	-	-
356.	-	36.0	-	-	-
357.	13.5	27.0	-	-	-
358.	37.5	31.0	-	1.0	127.75
359.	-	-	-	-	-
360.	19.0	102.0	-	-	-
361.	18.5	67.0	-	-	136.0
362.	23.0	58.8	-	-	154.25
363.	21.5	35.0	-	-	22.5
364.	-	-	-	-	15.0
365.	-	-	-	-	-
366.	6.0	47.0	-	-	-
367.	-	-	-	-	-
368.	38.5	66.0	-	-	144.75
369.	78.5	157.4	-	-	238.0
370.	26.5	80.5	-	-	-
371.	-	46.75	-	-	148.75
372.	-	12.0	-	-	48.0
373.	14.0	107.0	-	-	110.0
374.	5.0	60.0	-	-	79.0
375.	9.0	15.3	-	-	51.0
376.	29.0	64.8	-	-	137.5

No. of Tree.	1933-34	1934-35	1935-36	1936-37	1937-38.
377.	-	35.9	-	-	17.75
378.	11.0	72.0	-	-	70.0
379.	50.0	20.9	-	-	13.0
380.	23.0	77.0	-	-	-
381.	28.0	46.3	-	-	-
382.	22.0	40.0	-	-	47.5
383.	121.0	21.0	-	-	77.5
384.	51.0	33.3	-	-	4.0
385.	-	48.5	-	-	61.5
386.	-	43.0	-	-	87.25
387.	26.0	38.7	-	-	117.0
388.	35.5	63.5	-	-	82.0
389. ✓	5.0	18.0	-	-	22.5
390. ✓	-	10.0	-	-	169.0
391. ✓	-	46.1	-	-	21.5
392. ✓	11.0	68.3	-	-	124.5
393. ✓	21.5	64.0	-	-	118.0
394. ✓	38.0	13.1	-	-	141.75
395. ✓	-	19.0	-	-	50.0
396. ✓	-	-	-	-	-
397.	69.50	108.16	11.0	-	-
398.	35.50	59.0	46.0	25.0	82.5
399.	27.5	35.0	-	4.0	125.0
400.	46.5	45.9	-	-	138.5
401.	13.0	24.4	-	-	77.5
402.	-	-	-	-	-
403.	86.5	41.50	-	25.0	105.5
404.	45.0	-	-	-	51.0
405.	33.5	73.1	-	-	-
406.	5.0	89.8	-	-	-
5 407.	12.5	-	-	-	-