

THE MAIN FEATURES OF THE COCONUT INDUSTRY

Coconut palms are a common sight in Malaya. Very often they are found around houses and villages, especially along the coastal belts of Malaya. There are appreciable concentrations of estates and smallholdings in several localities, notably in the western coastal belts of Johore, Selangor, Province Wellesley, and Terak, and the eastern coastal belt stretching from the north of Muar on through the State of Trengganu to Kota Bharu.

Some of the coconut palms are found in pure or almost pure stands, but most of the holdings contained other crop over the whole or part of the holdings.

TOTAL ACREAGE FOR COCONUT

The first Malayan acreage figures for coconut was compiled by Jack<sup>1</sup> in 1924. He estimated that there was approximately 462, 495 acres of coconut farms in that year. From figures of copra exports and assuming an average of 50 palms per acre, he arrived at this rough estimate for coconut acreage.

In 1930, the Malayan Coconut Census conducted by Grist<sup>2</sup>, made the second area-estimate for coconut farms in Malaya. Nearly all the information on smallholdings was obtained through the local village headmen from owners and farmers, while information on estates was obtained direct from estate managers. The accuracy of the returns from local headmen is doubtful as they were not trained to do the job. The lack of a complete cadastral survey map meant that some coconut farms were left out. The estimated acreage of coconut farms was 594, 747 acres. Grist admitted that these figures was only an

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1. Jack, H.W., Annual Report of the Economic Botanist, Malayan Agricultural Journal, 1924, p. 11.

2. Grist, D.H., The Malayan Coconut Census, Malayan Agricultural Journal, 1930, p.2

approximation.

In 1934, the Report of the Coconut and Vegetable Oil Industry Commission<sup>3</sup> estimated that there was 636,855 acres of coconut farms in Malaya. The following year, Grist improved on his 1930's area-estimate of coconut farms by eliminating errors, reported that there was 606,000 acres of coconut farms in Malaya.

There is no doubt that these pre-war figures were only rough approximation of the coconut acreage. The changes in pre-war figures of area-estimate should, therefore, be treated as changes in opinion of coconut acreage and not changes in actual acreage of coconut farms.

The post-war figures are compiled from returns submitted by State Agricultural Officers based on figures of alienated acreage recorded in Land Offices. Any new planting is added and any cutting-out or known destruction of coconut farms is subtracted. The total reported coconut acreage for selected post-war years is shown in Table 1. It was discovered in West Johore that alienated acreage for coconut farms differs from the actual area planted with coconut palms<sup>4</sup>. On this account the official area-estimate is likely to be overestimated.

TABLE 1

ESTIMATED CULTIVATED AREA UNDER COCONUT PLANT

(in thousand acres)

<u>Period</u>	<u>acres</u>
1948	511
1952	485
1955	495
1957	518
1960	520
1962	520

Source: Department of Statistics, Monthly Statistical

Bulletin of the States of Malaya, November, 1963, Table 1.2 p.15.

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3. Straits Settlement, Federated and Unfederated States of Malaya, The Report of a Commission on the Present Economic Conditions of the Coconut and other Vegetable Oil Producing Industries in Malaya, 1934, Table VII, p. 84.

4. Wilson, op. cit., p.5.

From the available information in Table 2, the calculated average size of smallholding is  $3\frac{1}{2}$  acres while the average size of estates is 600 acres. It was pointed out, that comparatively speaking, smallholdings in Malaya are smaller than those found in Ceylon while Malayan estates are larger on the average.

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7. Average size of smallholding = total farm acreage  $\div$  total number of smallholdings =  $144,600 \div 39,949 = 3\frac{1}{2}$  acres approximately;  
average size of estates = total farm acreage  $\div$  total number of estates =  $3,500 \div 12 = 600$  acres approximately.

8. Cooke, F.C., Report on Investigations on Coconut and Coconut Products in Ceylon, Malayan Agricultural Journal, Kuala Lumpur, p.2.

TABLE 2

SIZE OF ALL HOLDINGS CONTAINING <sup>Coconut</sup> ACCOUNT IN WEST JOHORE, 1956.

Size of holding (in acres)	Area		Holdings	
	Acres	%	Number	%
Below 1	2,100	1	3,487	9
1 and below 2	11,200	8	7,540	19
2 " " 3	18,200	12	7,306	18
3 " " 4	24,000	17	6,966	17
4 " " 5	28,000	19	6,225	16
5 " " 10	49,000	33	7,575	19
10 " " 15	6,300	4	554	1
15 " " 20	2,800	2	166	1
20 " " 40	3,500	2	130	-
100 " " 200	700	-	4	-
200 " " 500	1,400	1	6	-
500 " " 1000	1,400	1	2	-
Total	149,100	100	39,961	100

Average size of holding (ungrouped data) = 3.73 acres

Source: Wilson, op. cit., Table 11, p.12.

The published figures for the period 1952 - 1956 showed a net increase of 34,000 acres of coconut farms. But it was found that the net increase in coconut farms was overestimated. The total net increase as compiled by the Department of Agriculture was 1,461 acres as against the published figures of 34,000 acres<sup>5</sup>.

There is no doubt that post-war figures are more reliable than pre-war figures, but still the acreage under coconut farms is at best only an approximation.

#### TYPE OF COCONUT FARM

The coconut industry is classified, officially into estates and smallholdings. Estates are defined as farms of or more than 100 acres while farms of less than 100 acres are defined as smallholdings. For the purpose of this study, the official classification is used.

It was estimated that there was 79,706 acres of coconut farms under estates and 439,867 acres under smallholdings in 1961<sup>6</sup>. The total estimated acreage under coconut farms was 519,570 acres for the same period. Percentage-wise, the estate sector occupies about 15% of the coconut farms and the rest is under smallholdings. This indicates the predominating importance of the smallholding sector in the industry; unlike other major crops such as rubber and oil-palms which are dominated by estates.

Table 2 shows that 98% of the total farm area in West Johore is under smallholdings and it accounts for 99% of the total number of holdings. are over 100 acres.

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5. Wilson, op.cit., p.5

6. Mohamad Jambil, 1961 Annual Report of the Department of Agriculture, Kuala Lumpur, p.14.

COCONUT PRODUCTION

There are a large number of varieties of coconut palm, but these can be grouped into two main types: dwarfs and tall<sup>9</sup>. Under ideal conditions, dwarf palms yield more coconuts and the coconuts are easily harvested. Tall palms can better tolerate a wider range of environments and this accounts for their popularity with farmers on both estates and smallholdings in Malaya.

The nut-bearing ability of palms vary not only between estates and smallholdings, but also within respective sector of the industry. Palm yields also vary from season to season. Generally, the estate sector of the industry has higher yielding palms, better drainage system and the general conditions of estates are better than those smallholdings. It is therefore to be expected that coconut yield is higher on estates than smallholdings.

It was reported that in 1958, estates produce a total of 176,276,500 nuts; and the acreage under estate in the same year was 83,775 acres<sup>10</sup>. From these informations, the calculated average coconut production per acre for estates is about 2,140 nuts<sup>11</sup>.

In West Johore, the average coconut yields for the coconut industry i.e. both estates and smallholdings is about 1,350 nuts<sup>12</sup>. From these available informations, the calculated average nut yield per acre for smallholdings is about

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9. Department of Agriculture, The Coconut Palm, Agriculture Leaflet No.41, Kuala Lumpur, p.1.
10. United Planting Association of Malaya, 1963 Annual Report, Kuala Lumpur, pp.41 - 42.
11. Average coconut yields per acre for estates = total nut output ÷ total acreage under coconut farms = 176,276,500 ÷ 83,775 = 2,140 nuts approximately.
12. Wilson, op. cit., Table 32, p. 34.

560 nuts.<sup>13</sup> This indicates that nut yields per acre on estates is about 3 times greater than that on smallholdings. According to Table 3, more the half of the acreage under coconut farms in West Java, produce less than average nut yield per acre of 1,350 nut. It is very likely that all of them are smallholdings. Some 11% of the coconut smallholdings have no recordable nuts. Therefore, it is apparent, that coconut yields per acre for smallholdings may have to be considerably less than 560 nuts. Furthermore the nuts produced by smallholdings are usually smaller and of inferior quality than those produced on estates.

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13. average nut yield per acre (smallholdings and estates) = (average nut yield per acre for smallholdings + average nut yield per acre for estates)  $\div$  2. Therefore average nut yield per acre for smallholdings = average nut yield per acre (smallholdings and estates) - average nut yields per acre for estates =  $(2(1,350) - 2,140) = 560$  nuts approximately.



TABLE 3

ESTIMATED ANNUAL PRODUCTION OF COCONUTS

Nuts per acre per annum	Area		Coconuts		Holdings	
	Acres	%	( 000)	%	Number	%
Nil	14,700	11	-	-	3,551	10
1 - 299	14,000	11	2,000	1	4,470	13
300 - 599	13,300	10	5,500	3	4,937	14
600 - 899	14,000	11	10,300	6	3,475	16
900 - 1,999	12,600	10	12,800	7	3,948	11
1,200 - 1,799	16,800	13	25,400	15	4,429	13
1,800 - 2,399	18,900	15	39,800	23	5,418	15
2,400 - 2,999	11,200	9	28,700	16	2,058	6
3,000 - 3,599	6,300	5	21,000	12	1,504	4
3,600 - 4,199	2,800	2	10,400	6	597	2
4,200 - 4,799	3,500	3	15,600	9	681	2
4,800 -	700	-	3,900	2	123	-
Total	128,800	100	175,600	100	35,191	100

Estimated average annual production (ungrouped date): 1,363 <sup>†</sup> 87.8 nuts per acre.

Source: Wilson, op. cit., Table 32, p.34.

## COPRA PRODUCTION

There are two main types of farmer; coconut selling farmers and copra selling farmers. Therefore, the produce of the coconut farms is sold either in the form of harvested copra production but sell the harvested nuts to local dealers for local consumption in the form fresh coconut or for copra production. In many cases, the nuts are sold forward, often on the tree in various forms of leasing (pajak).

It was estimated in West Johore that only one-third of the smallholders had their own kilns for copra production<sup>14</sup>. Much of the production is sold in the form of harvested nuts and not copra to local dealers.

There is a very marked difference in copra production methods between smallholdings and estates. Copra production methods employed by smallholders are crude and labour-intensive. Together with inferior nuts, the copra produced is of low quality. The reverse is true for the estates where production methods are more capital-intensive and efficient. The nuts produced by estates are usually of high quality. As the result, estates usually produce high quality copra.

The official estimate for copra output in estates is 11.5 to 15 piculs of copra per acre while smallholders produce 3.7 piculs of copra per acre.<sup>15</sup> Lee Ming Chong accepted the official estimate<sup>16</sup>. In other words, copra output per acre is about 3½ times greater on estates than on smallholdings and the average copra output per acre of coconut farm (estates and smallholdings) is 8 piculs.<sup>17</sup> The

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14. Wilson, op.cit., p.35

15. Federation of Malaya, 1961 Annual Report, Kuala Lumpur.

16. Lee Ming Chong, The Coconut Industry in Malaya, Some Facts, Economic, p. 42.

17. Average copra output per acre = (average copra output per acre on estates + average copra output per acre on smallholdings) ÷ 2 = (13.25 + 3.7) ÷ 2 = 8 piculs approximately.

prevailing poverty in the coconut growing areas suggests that the official figures are overestimated.

It was estimated that the estate sector of the industry produced 584,976 piculs of copra in 1958<sup>18</sup>. In the same year the acreage under estates was 85,775 acres. Therefore the calculated average copra output per acre is about 7 acres. This figure is about half that of official estimate regarding copra output per acre.

Table 4 shows that the average output per acre of coconut farm (estates and smallholdings) is about 4.4 piculs. From these informations available, the calculated average output for smallholdings is about 2 piculs<sup>19</sup> against the official figure of 3.7 piculs.

This indicates that copra output per greater on estates is 3½ times greater than on smallholdings. This figure tallies with that of the official estimate.

According to Table 4, about 55% of the farm - acreage in West Johore produce less than 4 piculs of copra per acre and 11% nothing at all. Therefore, the copra yield per acre may be considerably less than 2 piculs per acre.

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18. United Planting Association of Malaya, 1963 Annual Report, Kuala Lumpur, p. 41.

19. Average copra output per acre (estates and smallholdings) = average copra output per acre for smallholdings + average copra output per acre for estates ÷ 2. Therefore, the average copra yield per acre =  $\left[ \frac{2(4.4) - 7}{2} \right] = 2$  piculs approximately.

TABLE 4

## ESTIMATED ANNUAL PRODUCTION OF COPRA PER ACRE

Piculs of Copra Per Acre	Acres	Area		Piculs		Holdings	
			%	Number	%	Number	%
Nil	14,700		11	-	-	3,551	10
Below 2	31,500		24	31,200	6	10,130	29
2 and below 4	25,900		20	75,800	14	8,066	24
4 " " 6	16,800		13	82,900	16	4,004	12
6 " " 8	24,500		19	169,600	32	6,084	17
8 " " 10	4,900		4	45,600	6	1,107	3
10 " " 12	5,600		4	59,800	11	1,151	3
12 " " 14	3,500		3	45,800	9	834	2
14 " " 16	700		1	10,000	2	141	--
16 " " 18	700		1	11,900	2	123	--
Total	128,800		100	532,000	100	35,191	100

Estimated average annual production (ungrouped data):  $4.13 \pm 0.27$

piculs of copra per acre.

Source: Wilson, *op. cit.*, Table 36, p.38

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## PALM DENSITY

### Normal Palm Density

On estates, the normal palm density is 48 palms per acre when 30' x 30' square planting is employed. But sometimes 56 palms are planted per acre based on 30' x 30' triangular planting. The former method of planting is recommended by the Department of Agriculture for maximum copra production.<sup>20</sup>

On smallholdings, the normal palm density is 70 palms per acre based on 25' x 25' square planting. In recent years there has been a tendency to favour palm density of 80 - 100 palms per acre. The former planting method is recommended by the Department of Agriculture for smallholdings.<sup>21</sup>

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20. Wilson, op. cit. p. 16.

21. Ibid.

Actual Palm Density

The actual palm density on estates corresponds more or less to the palm density of 48 palms per acre as recommended by the Department of Agriculture. The average palm density for both estates and smallholdings in West Johore is 35 palms per acre<sup>22</sup> which is half the normal planting density recommended for smallholdings and three-quarters of normal palm density on estates. From the above information, the calculated average palm density per acre for smallholdings is about 23 palms<sup>23</sup>.

According to Table 5, three quarters of the total coconut acreage have less than 48 palms per acre and 98% have less than 70 palms per acre. Some 8% of the total acreage under coconut have no palms at all. The real palm density per acre may have been considerably lower.

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22. Wilson op. cit. Table 18, p.22.

23. Average palm density (estates and smallholdings) = average palm density for estates + average palm density for smallholdings)  $\div$  2.  
Therefore, the average palm density for smallholdings =  
 $2(35) - 48 = 22$  palms.

TABLE 5  
MATURE PALMS

Density of Palms Per acre			Area	Palms		Holdings		
			Acres	%	Number	%	Number	%
Nil			10,500	8	-	-	3,561	7
1	-	9	4,900	4	29,700	1	3,217	9
10	-	19	16,100	13	218,700	5	5,158	15
20	-	29	15,400	12	318,500	8	5,132	15
30	-	39	21,700	16	749,300	17	4,511	13
40	-	49	29,400	23	1,311,100	29	6,506	18
50	-	59	20,300	16	1,088,700	24	6,291	18
60	-	69	7,700	6	481,600	11	1,250	4
70	-	79	2,100	2	156,800	3	426	1
100	-	109	700	-	75,600	2	134	-
Total			128,800	100	4,493,200	100	35,191	100

Average density of mature palms (ungrouped date):  $34.8 \pm 1.45$  palms per acre.

Source: Wilson, op. cit., Table 18, p.22

TABLE 5  
MATURE PALMS

Density of Palms Per acre			Area		Palms		Holdings	
			Acres	%	Number	%	Number	%
	Nil		10,500	8	-	-	3,561	7
1	-	9	4,900	4	29,700	1	3,217	9
10	-	19	16,100	13	218,700	5	5,158	15
20	-	29	15,400	12	318,500	8	5,132	15
30	-	39	21,700	16	749,300	17	4,511	13
40	-	49	29,400	23	1,311,100	29	6,506	18
50	-	59	20,300	16	1,088,700	24	6,291	18
60	-	69	7,700	6	481,600	11	1,250	4
70	-	79	2,100	2	156,800	3	426	1
100	-	109	700	-	75,600	2	134	-
Total			128,800	100	4,493,200	100	35,191	100

Average density of mature palms (ungrouped date):  $34.8 \pm 1.45$  palms per acre.

Source: Wilson, op. cit., Table 18, p.22



### Healthy Palm Density

Palms affected by adverse growing conditions usually develop taper-tops i.e., bottleneck constriction in the stem. As mentioned earlier, the average palm density per acre for estates and smallholdings is 35 palms while the average palm density for estates is 48 palms and the average palm density for smallholdings is 22 palms. Palms on estates usually do not suffer from taper-tops but many palms on smallholdings are affected by it. It was estimated in West Johore that about 15 palms per acre suffer from taper-tops on the average. Therefore, the average healthy palm density per acre for estates and smallholdings is 20 palms. As palms on estates do not suffer from taper-tops, the figure of palms suffering from taper-tops, may well have reflected conditions on the smallholdings. Out of the average palm density of 22 palms for smallholdings, 15 palms have taper-tops, thus leaving an average of 7 healthy palms per acre. Percentage-wise, this is 10% of recommended palm density for smallholdings.

Table 6 shows that only 1% of the total acreage under coconut farm has healthy palm density of over 70 palms per acre while 7% of the same area have healthy palm density of over 48 palms per acre.

TABLE 6

HEALTHY PALMS, 1956

Density of Healthy palms per acre	Area		Palms		Holdings	
	Acres	%	Number	%	Number	%
Nil	23,100	18	-	-	5,786	16
1 - 9	21,700	18	91,800	4	8,761	25
10 - 19	27,300	21	367,800	14	7,278	21
20 - 29	15,400	12	378,000	15	3,428	10
30 - 39	21,700	17	730,800	28	4,591	13
40 - 49	10,500	8	462,100	18	3,483	10
50 - 59	4,900	4	254,800	10	1,233	4
60 - 69	2,100	2	133,000	5	194	-
70 - 79	1,400	1	103,600	4	303	1
100 - 109	700	-	57,400	2	134	-
Total	128,800	100	2,579,200	100	35,191	100

Average density of healthy palms (ungrouped data):  $20.0 \pm 1.32$   
palms per acre.

Source: Wilson, op. cit., Table 21, p.23

COCONUT AND COCONUT PRICES

It is common knowledge that the price of agricultural products tend to fluctuate violently on local and international markets. Coconut and coconut products are not exceptions. But comparatively, prices of coconut products are fairly stable in relation to other agricultural products in Malaya. This relative stability of coconut products in relation to rubber products is shown on Table 7.

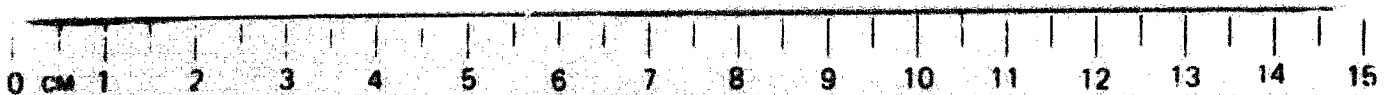


TABLE 7  
 WHOLESALE PRICES

Item	Units	1947	1955	1960
Rubber, R.2.S.1	cents per lb.	37.31	114.16	108.08
Copra	\$ per picul	20.87	28.14	33.10
Coconut oil	\$ per picul	40.06	44.42	52.58

Source: Federation of Malaya, 1961 Official Year Book,  
 Table 33, p. 473.

SUMMARY

Unlike rubber and oil palm, the coconut industry is dominated by the smallholding sector in terms of average under coconut farms and total output. Most of the coconut holdings contain other crops over the whole or part of the holding. There is a wide gap between the general conditions, productivity and palm density on estates and smallholdings. This gap must be bridged or narrowed by improvements in the smallholdings sector of the industry.