The Supply and Utilisation of some Major Oilseeds and Oilseed Cakes in Nigeria

by

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I INTRODUCTION

Nigeria produces several oilseeds, the major ones among these include groundnut (*Arachis hypogea*, Linn), Palm Kernel (*Elaies guineensis*, Jaeg), and cotton seed (*Gossypium*, Sp.). There is limited production of others like Beniseed (*Sesamum indicum*), and Soyabean (*glycine max*). Of these several oilseeds only groundnut has found wide-spread use within the country in human nutrition as foods, while the others are exported whole or are crushed for the purpose of expressing the oils. Oil expression from the oilseeds leave residual cakes which are of major importance in animal feed manufacture. Groundnut cake, cottonseed and, to a lesser extent, palm kernel cake are prominent ingredients for animal feeding in Nigeria.

Two previous reports, Ogunfowora and Fetuga, (1976 a and b), have highlighted the role that increased quantities of various classes of livestock feeds could play on planned livestock development programmes for Nigeria. Increased output of such feeds is inextricably tied to the wide availability, at reasonable cost to the feed manufacturer, of these oilseed cakes. Groundnut cakes for instance comprises between 20-25% of the total mix in most poultry and pig formulations in current use in Nigeria, while palm kernel cake is finding increasing use in compound livestock feeds. Cotton seed cake serves as the major source of supplements in the supplementary feed programmes as presently constituted in the drier regions of the country.

The present high cost of feeds in Nigeria have been attributed to the soaring costs of grains and groundnut

cake in particular. A ban on exportation of cakes and grains has been advocated as one of the means of forcing down prices. Available evidence however on the requirements of oilseed cakes for compound livestock feed manufacture indicate a surplus at the current level of feed production (Ogunfowora and Fetuga, 1976b), thus raising doubts about the rationale behind the existing ban on the exportation of certain oilseed cakes.

Groundnuts, palm kernels and cotton seed are the so-called scheduled commodities i.e. products, whose purchases, sales and pricing are governed by the Marketing Board System. With the drought of 1972/73 in mind, government banned the exportation of groundnuts, groundnut cake and cotton seed when it became clear that the groundnut and cotton seed crop would reach very low levels in 1973/74, in an attempt to make them available for livestock feeding. This decision seemed to have been taken in ignorance of the current and potential supply and demand situation for these commodities, thus creating problems within the industry, which appeared to be threatening the future of oil milling and the supply of cakes and meals for livestock feeds in the country.

The purpose of this paper is therefore to examine the current production of groundnut, cotton seed and palm kernel, and the minor ones like soyabean and sesame oil meal, their domestic consumption and exports and estimate future domestic demand, with a view to assessing the ability of the oilseed crushing industry to support the several livestock feed mills that are likely to be established during the current plan period. Such examination could provide useful guidelines on pro-

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duction and marketing policies for oil seeds and oil seed cakes designed to achieve an efficient capacity utilization in the oil seed crushing industry, as well as guarantee cheaper supply of livestock feeds needed for accelerated livestock development programmes.

The relevant information and data for this study were obtained through the use of a combination of structured questionnaires, personal interviews, discussions and surveys conducted in all the states of the Federation during July–September 1975. The respondent were mainly oil millers, the National Association of oil-seed processors, officials of States' Marketing Boards, National Produce Marketing Company, livestock feed manufacturers, state government officials involved in the supplementary feed programmes and livestock producers.

In the remaining part of this paper, section two reviews the production, consumption and the export of oil seeds in the country, while section three analyses the distribution and the extent of capacity utilization in the oil processing industry. Section four examines the future domestic demand for oil seeds and cakes and compares this with potential availability within the same period, while section five discusses the utilization of oil seed cakes in compound livestock feeds. Finally, section six gives the summary and conclusions of the paper.

II PRODUCTION, CONSUMPTION AND EXPORT OF OILSEEDS

A. Production of Oilseeds

Production statistics of oil seeds are very unreliable and estimates have been based mainly on the purchases by the marketing boards. Such figures under-estimate production since primary producers may retain unspecified amounts for consumption or for planting in the next season, engage in crude processing, sell outside the Marketing Board system or smuggle abroad. This is particularly true for groundnuts. The estimates of the proportion of groundnut production which is not

sold to the Marketing Boards range from 33–50% of total production. The production figures for some of the major and minor oilseeds are presented in table 1. The values for groundnut, cotton seed and palm kernel meal are, essentially, purchases by Marketing Boards, while the production figures for soya-bean represent the total production in Benue and Plateau States. The production of this crop is almost entirely limited to these areas. Some production is also carried on in the former North Western State, but this has varied in the last 10 years from about 140 to 463 metric tons. On average, about 170 metric tons are produced annually. Sesame seed is also almost exclusively restricted to the Benue and Plateau States.

While these figures may underestimate actual production of the various crops, they serve to show the trends in the quantities available for purchase and sale by the Marketing Boards on which oilseed crushing industry has depended for its raw materials. Particularly striking is the downward trend in groundnut purchases. There was also an observable downward trend in the production of Beniseed and Soyabean and in the purchases of cottonseed and palm kernel. The downward trends in production, and therefore in quantities available for purchase by Marketing Boards, have been caused in the past by low producer prices, which served either to discourage farmers from the production of these crops, or to seek ways of selling outside the Marketing Board system since the late sixties. Between 1970 and 1973, the steep decline for most of the crops, particularly those that are grown exclusively within the confines of the Northern States, was due to the severe drought prevalent in the Sahelian zone during this period. The decline in soyabean production is essentially as a result of the relatively lower price incentive for this crop compared to others. The f.o.b. price in 1973/74 were ₦140, ₦230 and ₦351.30 per ton for soyabean, groundnut and beniseed respectively. Even though, producer prices for groundnut have increased from ₦94.25 to ₦254 per long ton, a bad harvest is expected for 1975/76, perhaps ranging from 100,000

TABLE 1

Production Trends or Purchases by the Marketing Boards of some Oilseeds in Nigeria
(⁰⁰⁰ metric tons)

b Year	a Groundnuts	a Cottonseed	a Palm Kernel	Beniseed	Soyabean
1965/66	1045	95	503	—	—
66/67	1150	110	468	18	18
67/68	769	55	470	13	9
68/69	861	124	214	13	4
69/70	722	192	259	17	11
70/71	315	81	326	6	5
71/72	338	77	272	3	1
72/73	610	100	304	—	—
73/74	49	62	259	—	—
74/75	181	109	328	—	2

- a. These represent purchases by Marketing Boards reported by Marketing Boards and Monthly Reports of Central Bank of Nigeria.
- b. For groundnut and cotton seed, crop year extends from October to October, for palm kernel crop year equal calendar year.

to 150,000 tons due to reported insect pest infestation. Prospects for cotton seed and palm kernel appear brighter as forecast from the Marketing Board placed expected production at between 100,000–150,000 and 300,000–400,000 metric tons respectively.

B. Domestic Consumption and Exports of Oilseeds and By-products

(i) Groundnut and its by-products

No accurate consumption data exist for groundnut. The largest share of domestic

consumption is thought to be derived from the groundnuts not purchased by the Marketing Boards. Table 2 shows the export of groundnuts and its by-products between 1967 and 1974. The table clearly demonstrates that groundnut has up to date been largely an export crop. On average, over 90 percent of the purchases by the Marketing Boards were exported during the period 1967–1974. Groundnut exports as percentage of total export of groundnut and groundnut products (Column 6) shows that the proportion of groundnut exported declined gradually

TABLE 2

Exports of groundnuts and its by-products C⁰⁰⁰ tons

Year	(1) Groundnut	(2) Groundnut oil	(3) Groundnut cake	(4) Total export of groundnut and ground- nut product	(5) (4) as % of purchases by Market- ing Boards	(6) Groundnut exports as % (4)
1967	520	79	131	722	70	72
1968	638	109	171	918	134	69
1969	519	99	168	784	102	66
1970	289	89	160	536	83	54
1971	134	42	96	272	97	49
1972	104	39	39	96	239	44
1973	196	109	136	441	81	44
1974	30	24	31	85	193	35

a. Source: Federal Office of Statistics

b. This column may be regarded as a crude indicator of the 'share' of exports in total production. The 'share' can rise above 100% because actual exports in a given year may include disposal of stocks accumulated in earlier years and use of groundnuts purchased outside Marketing Board System.

between the period 1967 to 74, due to increasing local processing as well as the steep drop in groundnut production. The oil millers estimate that groundnut oil consumption amounts to about 40,000 tons per annum, while it is anticipated that this may rise to about 50,000 tons in the late seventies. Increasing local processing has resulted in this greater availability of groundnut cake, but the present level of consumption in the country is still low. Estimates based on a survey of the use of this product in feed compounding and in the supplementary feed programme (Ogunfowora *et. al.* 1975) showed that at present about 4,000 tons per annum is being used in the supplementary feed programme while the feed mills utilised approximately 23,000 tons which together give a value of 27,000 tons per annum up to 1974.

(ii) *Cotton seed and its by-products*

Presently, domestic consumption of cottonseed serves two purposes. About 15% of the annual cotton seed production is used as seed for planting. The balance is used mainly in the supplementary feeding of cattle in the dry season. The quantity used in feed amounts to less than 6,000 tons per annum. Until 1973/74 about 60% of the Marketing Board purchases were exported. In 1972/73 and 1973/74, an estimated quantity of 60,000 and 10,000

tons respectively of cottonseed were wasted due to lack of domestic demand, export restriction and refusal by crushers to process because of disagreements over the 'take-over-price'*. Currently, there is no large scale processing of cotton seed oil and cake in the country.

(iii) *Palm Kernel and its by-products*

A large proportion of the palm kernels, its oils and cakes are exported. Table 3 below shows the trends in the export of palm kernel and palm kernel by-products between 1967 and 1974.

On average, approximately 90% of the Marketing Board purchases of palm kernels were being exported either whole or in semi-processed forms between 1967-1974. The current domestic consumption of palm kernel is almost negligible. Estimates of current use places local consumption of cakes at about 1,000 tons per annum. The local consumption is negligible because of a total lack of understanding of its effective use in rations for simple-stomached animals. Its use in ruminant animal feeding has also been limited, partly because its production is mainly in the southern states, where the ruminant stock population is far less than in the Northern States, and partly because of high transportation costs to the Northern States.

TABLE 3
Exports of Palm Kernels and By-Products ('000 metric tons)

Year	Palm kernel	Palm kernel cake	Palm kernel oil	(1+2+3)	Total Export of Palm kernel and products as % of Marketing Board Purchases
1967	183	45	41	269	57
1968	178	34	254	466	99
1969	197	45	41	283	132
1970	204	37	36	267	103
1971	267	34	29	330	101
1972	234	27	37	298	98
1973	152	25	44	221	85
1974	205	34	40	279	85

Source: Federal Office of Statistic.

*Take-over price is the producer price of the commodity plus the costs incurred by the Marketing Boards and a flat levy to cover administrative costs of the N.P.M.C.

(iv) Soyabean and Sesame oil seed

Limited quantities of soyabean and sesame oilseed are produced in the country and none of these is presently being processed. Table 4 shows the trends in the production and export of soyabean and sesame seeds.

Table 6, gives the installed capacity for the crushing of palm kernel meal. The installed capacity for palm kernel processing stands at 395,000 metric tons. A comparison of these figures with the supply of products (Columns 3 & 4, Table 7), gives an indication of the enormous over

TABLE 4

Recent trends in the Production and export of soyabean and sesame oilseed
(‘000 metric tons)

Year	SOYABEAN		SESAME OILSEED	
	Production	Export	Production	Export
66/67	17.7	15.3		
67/68	8.7	8.9	18.0	17.6
68/69	4.2	4.1	13.3	13.3
69/70	10.8	9.5	13.2	12.8
70/71	4.8	4.4	17.4	20.6
71/72	0.9	0.9	6.1	5.7
72/73	—	1.7	3.2	2.2
73/74	—	0.6	—	3.1
74/75	1.5	—	—	3.2

The table clearly shows that the small quantities of these crops grown within the country have been mainly for export and there has been a steady decline in production and export over the years. They therefore have had very little or no role to play as concentrates for livestock feeding up to the present time.

III INSTALLED AND UTILIZED CAPACITY FOR OILSEED CRUSHING IN NIGERIA

The available capacity for the crushing of oilseeds in Nigeria and their distribution according to states are presented in tables 5 and 6. Capacity for crushing Groundnut and cottonseed amount to 989,000 metric tons as shown in table 5 below. A greater percentage of the mills are located in Kano State, representing over 70% of the total installed crushing capacity for cottonseed and groundnuts. This is understandable as over half of Nigerian groundnuts is grown in and around Kano

capacity for the processing of cottonseed, groundnuts and palm kernel meals. It is likely that capacity utilization in the oil milling industry would remain at this level in the late seventies given the present low level of production of raw materials and the conflict between processors and Marketing Boards over the ‘take-over-price’ of the raw materials.*

Production costs are directly related to capacity utilization in the oil milling industry. It has been estimated that an increase in capacity utilization from 50 to 80 percent would decrease processing cost by about ₦13 per ton of groundnuts, or over 30 percent of total processing cost. It is obvious that a rationalization of the industry has to take place to increase capacity utilization and therefore reduce processing cost. Measures that could be taken to increase capacity utilization include the effective implementation of the plans to increase the production of raw materials in the plan period, controlling the exportation of raw materials and

The disagreement between the Marketing Boards and the processors has led to temporary cessation of oil seed crushing.

TABLE 5

Capacity and Location of Groundnut and Cottonseed Processing industries

STATES	LOCATION	OWNERSHIP	CAPACITY TONS
Kano	Kano	Kano Oil Miller Ltd.	100,000
"	"	Kano State Oil & Allied Products Ltd.	180,000
"	"	K. Maroun Ltd.	80,000
"	"	Oil and Nut Processing Co. Ltd.	80,000
"	"	Nigerian Oil Mills Ltd.	100,000
"	"	P. S. Mandrides & Co. Ltd.	100,000
"	"	Road & Fadoul Ltd.	15,000
"	"	Nigerian Industrial Manufacturers and Distiller Co.	42,000
TOTAL	—	—	697,000
Kaduna	Katsina	Katsina Oil Mills Ltd.	40,000
"	Funtua	Funtua Cotton Seed Crushing Co. Ltd.	40,000
"	Gusau	Gusau Oil Mills Ltd.*	50,000
"	Zaria	United Oil Mills Ltd.	25,000
TOTAL	—	—	155,000
Borno	Borno	Bornu Oil Processing Enterprises	3,000
"	Maiduguri	Maiduguri Oil Mills Ltd.	50,000
"	Nguru	Nguru Oil Mills Ltd.	40,000
TOTAL	—	—	93,000
Adamawa Plateau	Gombe	Gombe Oilseeds Ltd.*	20,000
	Bauchi	Bauchi Oil Mills Ltd.	24,000
TOTAL CAPACITY			989,000 tons

* These Mills can crush either groundnuts or cottonseed.

TABLE 6

Capacity and Location of Palm kernel processing industry (metric tons)

STATES	LOCATION	OWNERSHIP	CAPACITY
Lagos	Ikeja	Vegetable Oils Nig. Ltd.	80,000
Ogun	Ijebu-Ode	Ijebu Vegetable Oil Ltd.	40,000
Bendel	Benin	Edewor Vegetable Oils Ltd.	50,000
E.C.S.	—	Nigeria Industrial & Prod. Co. Ltd.	55,000
		Palm Oil Industries Ltd.	40,000
Rivers	Port-Harcourt	Rivers Vegetable Oils Ltd.	30,000
Cross River	—	Palm Oil Industries Ltd.	100,000
TOTAL CAPACITY			395,000

TABLE 7
Estimated Utilized Capacity of Oil mills as at July 1975
(metric tons)

<i>Purchases by Marketing Boards</i>	<i>Export of seeds as % of Purchase</i>	<i>Retained for domestic processing tons</i>	<i>Capacity of mills</i>	<i>Utilized Capacity (%)</i>
1) Groundnut 450,000	15	375,000		
2) Cottonseed 125,000	0	125,000		
3) (1) + (2) 575,000	13	500,000	989,000a	50.6
4) Palm Kernel 1350,000	35	200,000	395,000	50.6

A number of mills can either process groundnut or cottonseed.

Maximum cottonseed processing would be in the order of 150,000 tons per annum.

correspondingly increasing the volume processed locally, and controlling the establishment of more mills. Reduction in processing cost consequent upon improved capacity utilisation could directly reduce the supply price of cakes to the livestock feed manufacturing industry which could, in turn, reduce the supply price of compound feeds to the livestock producers.

IV. FUTURE DEMAND FOR CAKES AND MEALS:-

Oil milling is generally by two methods i. e. the expeller process which leaves approximately 5% oil in the residue which is called cake, and the solvent extraction process which leaves a residue containing less than 1 percent oil which is described as the meal. The three major products under consideration give the following yield of by-products:

	<i>Expeller Process</i>		<i>Solvent extraction Process</i>	
	<i>Oil %</i>	<i>Cake %</i>	<i>Oil %</i>	<i>Meal %</i>
Groundnuts	44	56	48	52
Cotton seed	16	53	19	50a
Palm kernel	45	55	49	51

Two other by-products become available: hulls about 25 per cent and linters about 5 percent.

These figures are only approximations because the proportion of oil to cake or meal would vary with climate, variety and edaphic factors. Most of the Nigerian mills apply the expeller process. The available quantities of cakes have been estimated on the basis of these extraction rates.

Estimates of the requirements of concentrates for the new supplementary feed programme (Ogunfowora et al 1975) forecast a requirement of 100,000 metric tons of groundnut and 60,000-65,000 of cottonseed in 1979/80, assuming a ratio of use 25% groundnut and 75% cottonseed. It was also estimated in that report, that in the latter part of the seventies no more than 200,000 metric tons of groundnut and 65,000 metric tons of cottonseed will become available. This would mean that about 50% of the available groundnuts and all of the cottonseed would be used up. Taking into consideration however, the possible adoption rates which is likely to be low initially, partly because of insufficient exposure of the Fulani livestock man to the programme, and partly because of inadequate executive capacity to implement the programme, it was estimated that effective demand in 1975/76 would be 25,000 metric tons of groundnut cake and 75,000 metric tons of

cottonseed cake. (Ogunfowora et al 1975). Apart from the requirements for dry season supplementary feeding, the livestock feed mills would also require these cakes for compounding livestock feeds. Table 8 gives an estimate of the possible total requirements over the next 5 years, 1975/76-1979/80.

TABLE 8

**Total domestic demand for cotton seed cake and groundnut cake 1975-1980
(metric tons)**

	<i>Cotton seed cake</i>	<i>Groundnut cake</i>
1975/76	75,000a	50,000
1976/77	32,000	85,000
1977/78	40,000	110,000
1978/79	65,000	140,000
1979/80	60,000-65,000	185,000

It is suggested that all the cottonseed cake produced will be used for supplementary feed programme.

TABLE 9

Estimated Surplus of Cotton seed cake and groundnut cake, 1975-1980, (metric tons)

	<i>Cotton seed cake</i>	<i>Groundnut cake</i>
1975/76	—	80,000
1976/77	33,000	115,000
1977/78	25,000	90,000
1978/79	15,000	60,000
1979/80	—	15,000

These figures indicate that there may be estimated surpluses of these products to the tune shown in table 9.

It should be stressed that the figures presented above are highly speculative as production of cotton seed and groundnuts may be either higher or lower. The purpose of this table is therefore to give an impression of possible order of magnitude only. Even though these figures are regarded as tentative, the figures quoted for the supplementary feed programme is quite high and indications are that domestic consumption cannot totally absorb the available quantities of cakes that would become available, particularly if the disputes over 'take-over-price' are settled, yields of crops improved and oilseed processors are able to buy and crush more groundnuts and cottonseeds. The domestic demand for palm kernel cake is a very negligible proportion of the total becoming available.

The above exposition indicates that the present ban on the exportation of oilseed cakes cannot be justified on both technical and economic grounds. The rational approach might be to conduct periodic surveys of the quantities that may be

needed within the country, direct the oil millers to sell such quantities locally and then export surplus quantities. Apart from this, a rational look at some of the problems of the industry, with a view to solving some of them, could result in wider availability of cheap protein concentrates for livestock feed manufacture. Principal among these problems are the raw material availability situation and the present pricing policy for the scheduled commodities, both of which are responsible for the high capacity under-utilization prevalent within the industry. A comprehensive survey of the costs and returns structure of the industry will be needed to provide a framework within which a realistic level of prices can be determined for both the raw materials and the by-products of the industry.

V. UTILIZATION OF OILSEED CAKES, AND MEALS IN COMPOUND LIVESTOCK FEEDS

The present ban on the exportation of oilseed cakes have stemmed principally from a desire to preserve within the country sufficient quantities of concentra-

tes to support compound feed manufacture in an attempt to accelerate the livestock development programmes. The aspect of utilization therefore deserves brief mention. The present use of oilseed cakes and meals in compound feeds is restricted to groundnut cake and small quantities of palm kernel meal. Cottonseed cake is hardly used in compound livestock feed manufacture because of the lack of technology within the country for the elimination of gossypol, a phenolic compound with proven anti-nutritional effects. Projections for ingredients needed to meet projected compound feed requirement by 1980 (Ogunfowora et al, 1975), showed that about 85,000 metric tons of groundnut cake and 11,055 metric tons of palm kernel cake would be required. The low projected requirement for palm kernel cake is based on the present low level of use. However, recent nutritional findings (Fetuga, Babatunde and Oyenuga, 1973a, 1973b, Babatunde et al, 1975), have indicated considerable potentials for more rational use of this ingredient in diets for simple stomached animals. Based on recommended levels of inclusion in these studies, it is estimated that, in fact, about 45,000 metric tons of palm kernel cake could be used and would reduce significantly the requirement for groundnut cake in animal feed compounding. If processing facilities for gossypol removal became available, cottonseed could be used at increasing levels of inclusion and could further reduce the present near complete reliance on groundnut cake as the major protein concentrate in livestock feeds. In terms of nutrient contents, the amino acid make-up of palm kernel and cottonseed compare quite favourably with the levels in groundnut. As previously stated, local processing of soyabean and sesame oil seed is almost non-existent. This is unfortunate, since in terms of nutritional contents, residual cakes from these sources have a big role to play in providing nutrients that have been found to be lacking in most compound feeds available for sale within the country. Reports by Fetuga et al, (1973a & b) indicated the lysine, methionine and

cystine and perhaps, threonine are the amino acids most likely to be limiting in feed mixtures in Nigeria, because of the limitations in the levels of these amino acids in most available alternative oilseed residues which are the principal sources of amino acids in diets. Soyabean is particularly valued for its high lysine contribution to diets for pigs and poultry and forms the basis of most American compound feeds. It contains higher levels of this amino acid than groundnut, palm kernel and cotton seed cakes. It is however, low in methionine. Sesame oilseed meal on the other hand is perhaps one of the few plant protein sources with a high content of methionine and cystine, two amino acids which are limiting in most other well known feed ingredients, except fish meal.

Deliberate efforts need to be made to encourage the production and local processing of these two oilseeds. It is in fact envisaged that local processing of sesame oilseed and soyabean would yield additional quantities of residual oilseed cakes and meals. Unless most livestock development and expansion programmes proceed with considerable rapidity and success, and therefore generate greater demand for compound livestock feeds and supplements, improvements in production efficiency and capacity utilization in the oil milling industry could result in large surpluses of cakes and meals for which external markets would have to be found.

VI. SUMMARY AND CONCLUSIONS

This paper clearly shows that there has been a steady decline in the level of production of some of the major oilseeds such as groundnut, cottonseed and palm kernel meal. The main reasons for the decline are the recent drought in the Sahelian zone and low incentives for farmers resulting from poor producer prices. A similar decline was noticed for soyabean and sesame oil seed which have remained up to date mainly export crops.

The dwindling supplies of raw materials and their recent pricing policy of the Marketing Boards for the so called scheduled commodities, have given rise to grave

problems of capacity under utilization in the oil milling industry with consequent rise in costs of production. Prospects for improved efficiency within this industry are bright, if only there is a rationalisation in the establishment of additional mills, and producer prices are made more attractive to encourage the wider adoption of production practices which could enhance the availability of raw materials.

The abundant supply of raw materials at reasonable 'take-over price' could enhance a higher degree of capacity utilization, reduce per unit cost of production in the industry and, invariably, lead to cheaper compound and supplementary feeds to the livestock producer present domestic demands for groundnut, cottonseed and palm kernel cakes cannot absorb the available quantities. There is therefore a need to review along more reasonable lines the present ban on the exportation of oilseed cakes. It is concluded that the present installed capacity of oil mills will be more than adequate to handle the quantities of raw materials that would become available throughout the later half of the seventies. It is also felt that mills which have the capabilities should undertake to process other commodities such as soyabean and sesame oilseeds which are also useful livestock feed ingredients. Efforts should be made to estimate as accurately as possible and project over short periods, the domestic requirements for oilseeds cakes both for livestock feed manufacture and for the supplementary feed programmes. This would provide a rational basis for export control and processors could be compelled to sell a proportion of their production locally and allowed to export surpluses after estimated demands have been met. It is clear from the present and projected future require-

ment for palm-kernel that domestic demand is never likely to be sufficient to absorb the total quantities that would become available between 1975/76 and 1979/80. A more liberal policy towards exportation of palm kernel cake should therefore be exercised. Finally, a comprehensive survey of the costs and returns structure of the oil milling industry will be needed to provide a quantitative framework within which rational prices can be fixed for both the raw materials and the byproducts (oils and cakes) of the industry.

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