



DEPARTMENT OF AGRICULTURE, MINISTRY OF AGRICULTURE

DEPARTMENT OF COMMUNITY DEVELOPMENT, MINISTRY OF INTERIOR

DEPARTMENT OF LAND DEVELOPMENT, MINISTRY OF NATIONAL DEVELOPMENT

DEPARTMENT OF FOREIGN TRADE, MINISTRY OF ECONOMIC AFFAIRS

OFFICE OF THE ACCELERATED RURAL DEVELOPMENT, OFFICE OF THE PRIME MINISTER

KASETSART UNIVERSITY

JUTE TRADERS' ASSOCIATION OF THAILAND

UNITED STATES OPERATIONS MISSION TO THAILAND

APPLIED SCIENTIFIC RESEARCH CORPORATION OF THAILAND

COOPERATIVE RESEARCH PROGRAMME NO. 1

PRODUCTION, PROCESSING, AND UTILIZATION OF KENAF AND ALLIED FIBRES

RESEARCH PROJECT NO. 1/10

ECONOMIC STUDIES ON KENAF

REPORT NO. 1

AN ECONOMIC STUDY

OF THE PRODUCTION AND MARKETING OF THAI KENAF

BY

CHAIYONG CHUCHART

NORMAN L. WAKE

SACHEE SUTHASATHIEN

ASRCT, BANGKOK 1967

not for publication

DEPARTMENT OF AGRICULTURE, MINISTRY OF AGRICULTURE
DEPARTMENT OF COMMUNITY DEVELOPMENT, MINISTRY OF INTERIOR
DEPARTMENT OF LAND DEVELOPMENT, MINISTRY OF NATIONAL DEVELOPMENT
DEPARTMENT OF FOREIGN TRADE, MINISTRY OF ECONOMIC AFFAIRS
OFFICE OF THE ACCELERATED RURAL DEVELOPMENT, OFFICE OF THE PRIME MINISTER
KASETSART UNIVERSITY
JUTE TRADERS' ASSOCIATION OF THAILAND
UNITED STATES OPERATIONS MISSION TO THAILAND
APPLIED SCIENTIFIC RESEARCH CORPORATION OF THAILAND

COOPERATIVE RESEARCH PROGRAMME NO. 1
PRODUCTION, PROCESSING, AND UTILIZATION OF KENAF AND ALLIED FIBRES

RESEARCH PROJECT NO. 1/10
ECONOMIC STUDIES ON KENAF

REPORT NO. 1
AN ECONOMIC STUDY
OF THE PRODUCTION AND MARKETING OF THAI KENAF

BY
CHAIYONG CHUCHART
NORMAN L. WAKE
SACHEE SUTHASATHIEN

ASRCT, BANGKOK 1967

not for publication

F O R E W O R D

Cooperative Research Programme No. 1 is a joint research venture between ASRCT and other agencies of the Government of Thailand, including the Department of Land Development (Ministry of National Development), the Department of Agriculture (Ministry of Agriculture), Department of Community Development (Ministry of Interior), Office of the Accelerated Rural Development (Office of the Prime Minister), Department of Foreign Trade (Ministry of Economic Affairs), and Kasetsart University, with collaboration from the United States Mission to Thailand and the Thai Jute Association.

The Steering Committee of this Research Programme considered that there was an urgent need for up-to-date economic information on the production and marketing of kenaf in Thailand to guide policy decisions on research and on various aspects of the development of the kenaf industry.

Accordingly, the present study was undertaken by Dr. Chaiyong Chuchart of the Department of Land Development (Ministry of National Development), and Mr. Norman L. Wake and Miss Satchee Suthasathien of the Economic Evaluation Group, ASRCT, with help from officers of both organizations. Dr. Chaiyong and his group were responsible for the portion of the survey involving contacts with producers, balers, and provincial traders.

The survey was restricted to an examination of the production and marketing of kenaf in Thailand. The structure and prospects of the export market and the long-term demand and price potential for kenaf have not been dealt with, although it is hoped that support will be forthcoming to enable a further study to be made of these topics.

AN ECONOMIC STUDY OF THE PRODUCTION AND MARKETING OF THAI KENAF

By Chaiyong Chuchart*, Norman L. Wake⁺, and Sachee Suthasathien⁺

1. INTRODUCTION

Kenaf or "Thai jute" has developed rapidly over the past decade into one of Thailand's most important commodities. In 1966 it ranked third after rice and rubber as an export earner with a value of 1,646 million baht, and contributed 16.5 per cent of the coarse fibres reaching world trade. Gunny sack production based on kenaf meets all local needs and has resulted in considerable savings in foreign exchange.

Production of kenaf is largely confined to the north-eastern region where it has provided valuable cash supplements to rice farmers. Although it competes with rice to some extent for labour at harvest time, kenaf is an upland crop and does not displace rice from wet lowland soils. In this it differs from true jute which is not grown extensively in this country.

The present study aims to provide current information on the economics of kenaf production and marketing in Thailand as a basis for planning and research, and it includes an examination of gunny sack production. Earlier surveys by Chuchart et al (1961, 1963) have been brought up-to-date and extended by the present report, which makes use of appropriate comparative data from them.

Increasing sales of Thai kenaf abroad have been attributed to disturbances in India and Pakistan, and the demand for lower grade material at a cheaper price to dilute high-priced jute. The increase in exports has occurred at a time when world prices for coarse fibres are high.

Thai farmers have used primitive pond-retting techniques which have resulted in low fibre-extraction costs, although producing lower grades of fibre. Furthermore, under present practices, kenaf growing in Thailand has involved only small cash outlays, permitting production to be increased or decreased readily in the face of fluctuations in demand. With the depletion of soil fertility reserves on existing farms and with new land no longer readily available, this situation is changing.

* Department of Land Development, Ministry of National Development

+ Economic Evaluation Group, ASRCT

These topics have not been explored in any detail in this study (although a wealth of relevant statistical material is presented) but there exists an urgent need for them to be examined immediately, along with related matters, in a broader study of the long-term market prospects for jute and kenaf.

Problems of the Thai kenaf industry

But while the booming kenaf industry has both earned and conserved foreign exchange, considerably benefited farmers, middlemen, exporters and the owners of gunny sack factories and their employees, there are problems in the industry and qualms about its future.

Outside Thailand, kenaf, because of its lower price, is generally used in admixture with jute and, in increasing proportion. It is thus both complementary and competitive with jute and, in either case, its market outside Thailand depends, in the short-term at least, upon the continued consumption of jute and the price difference between jute and kenaf.

The continued use of jute in its traditional applications, raises the first series of problems for kenaf. Already, plastic bags have taken some of the market from jute containers and there are growing claims that synthetic fibres, particularly polypropylene, will capture more of the jute goods market. Bulk-handling has, for a long time, been eroding the sack market and, in particular, some maize is now being bulk-handled in Thailand itself. India and Pakistan, moreover, are reported to be considering a partial retreat from the traditional jute goods market, and are looking at the possibilities of the finer qualities of jute for furniture fabrics and apparel.

In the face of the consequent market uncertainty for kenaf, various proposals and panacea have been put forward. The merits of these are difficult to establish with certainty because there is a grave lack of comprehensive data on the industry and even when the data exist, they are often controversial.

Thus, while kenaf has better knot-strength properties than jute and is more resistant to moisture, the relative tensile strength of retted jute and kenaf has long been a subject of dispute, although the actual strength of either fibre depends of the degree of retting (Dempsey 1963).

Hence the market for kenaf is not a single entity, but a complex of continually varying, and largely opportunistic markets depending on the relative price and quality of jute and kenaf and the commercial and technical expertise of those who handle it.

As with other commodities, especially in the agricultural field, there has been strong advocacy of the proposal that the farmer should be induced to grow a better quality of kenaf over all. In greater or less degree, this may well be so, but it could be just as tenable instead to show the farmer how to grow more low grade (grade C) kenaf per rai, for it has often turned out with other commodities that the enhanced returns for the better grades did not offset the extra resources needed for their production. Which of the alternatives is correct cannot be decided because sufficient market and other data does not yet exist upon which to base a judgement. The need for such data is urgent, however.

Even given such data, there is no guarantee that a judgement would be correct —there are inevitable uncertainties such as, for example, that the farmer may find that the guar bean, which achieved almost overnight success in the U.S.A., is a more attractive crop than kenaf. Likewise, while the added expense of central retteries may appear superficially a dubious investment, unexpected improvements in retting technology could nevertheless make the investment worthwhile.

The role of the middlemen is equally important with those of the farmer and the kenaf converter. In fact, much of the present difficulty in the industry involves the relationships between middlemen, and disagreements between them as to methods of grading. Kenaf is exported in 400 lb bales and this is an open invitation to include interior fibre or foreign matter within the bale. Even apart from frauds of this nature, the fact that grading of kenaf is, in practice, largely a matter of visual inspection, itself raises difficulties.

In passing from farmer to ultimate user, kenaf goes through several hands c.g. from farmer to provincial trader, to Bangkok trader, to exporter, to overseas buyer, to user. Each middleman seeks to maximise his profits and by so doing tends to reduce the farmer's return and to raise the price to the user. The Thai kenaf industry is still in its developmental phase and changes will probably continue to take place in the commercial structure

of the industry, but it is unlikely that the chain from farmer to user will be much shortened. If, therefore, the farmer could be induced to produce more high-quality kenaf, the question arises as to whether the premium thereby resulting would be passed back along the marketing chain to provide sufficient incentive to the farmer to continue his additional effort.

A separate line of advocacy has been that Thailand should endeavour to sell kenaf products rather than the fibre itself. This proposal has the obvious virtues that it would largely free kenaf from the vagaries of the jute market, would provide greater employment and earn more foreign exchange through local conversion of the fibre to products for export. The fact is, however, that gunny-sacks made in Thailand are dearer than those produced by India and Pakistan and there is a confusion of opinion as to their relative merits.

The role of government is equally important. Too early imposition of controls may destroy the viability of the infant industry and impede the development of inherent regulatory mechanisms. The Thai government has acted wisely in this regard by introducing a system of standard grades for kenaf, and the means for their observance, as well as requiring exporters to join the Thai Jute Association which, itself, has powers to discipline members.

What more the government should do is again incapable of assessment without a fuller knowledge, particularly of likely international trends in the demand for coarse fibres. On such knowledge also hinges decisions as to what assistance the government should give the industry - in the form of finance, research, demonstration and extension work, organization or inducement for participation from abroad, such as has already happened in the Thai corn industry.

In the succeeding sections, data already published together with the results of a recent survey of the industry by the authors, is presented and conclusions drawn as a guide to determining what further investigation should be made toward establishing a body of fact sufficient to enable action to be taken for the benefit of the industry.

2. GENERAL STATISTICAL PICTURE

THAILAND IN RELATION TO WORLD COARSE FIBRE SUPPLY AND DEMAND

Production

Over the past decade world supplies of both jute and kenaf have shown a distinct upward trend, 1966 production being of the order of 40 % up on the 1956-1960 average. (Table 1, Figures 1, 2 & 3). Pakistan was the major jute producer in 1966 and Thailand the major kenaf producer, with India the second largest producer of both fibres. In 1966, world kenaf production (841,000 tons) was about 25 % of total coarse fibre supplies compared with an average of only 13 % for the 1956-60 period. The contribution by Thailand to world supplies of coarse fibres rose from 7.4 % in 1962 to 16.5 % in 1966. (Table 2, Figure 4)

Both India and Pakistan plan to increase production of coarse fibres. Pakistan, aims at a production of 1,440,000 tons p.a. over the next few years, i.e. a rise of 28 % over 1966 production, while India plans a production of jute and kenaf, together totalling 1,700,000 tons p.a. by 1970, an increase of almost 25 % over 1966.

Burma expects shortly to become self-sufficient in jute and to begin export.

World consumption

At present only a few countries-Pakistan, India, Japan, and Thailand —are major users of kenaf and jute fibres. According to F.A.O., the demand for kenaf and allied fibres on the world market for 1966 was 3.87 million tons (21.53 million bales), while the estimated world production was 3.91 million tons (21.75 million bales). World demand is rising steeply because of the construction of new factories which use kenaf and jute and also because of increasing throughput of existing factories.

Comparative costs and prices

Precise comparisons are difficult because of different standards of grading and of the influence of subsidies on costs and prices. Table 3, however, indicates that yields of jute in Pakistan are significantly better than those in India (Thai kenaf yields are intermediate). These data point to the necessity India has to supplement its own kenaf production with fibre

imported from Thailand so as to achieve a mixture comparable in price with Pakistani jute.

PICTURE IN THAILAND

Production

Kenaf is by far the most important of the two coarse fibre crops in Thailand: jute contributed only 1.4 % to total supplies in 1966 (Table I).

Kenaf which, in Thailand, is almost wholly grown in the north-eastern region (Table 4), has rapidly expanded in area planted, and production as Table 5 shows, but yield per rai sharply declined in 1966 (Figure 5). The fact that variations in production bear little relation to fluctuations in price suggest that increasing popularity of the crop as a boost to farmers' income prevailed over any true elasticity of supply - elasticity is probably more appropriately measured by the proportion of crop unharvested.

Markets and prices

The percentage of kenaf exported has varied greatly - on two occasions, there were substantial withdrawals from stocks but the data can be misleading as harvesting and a good deal of export occurs at the close of one year and the beginning of the next (Figure 7). Nevertheless, the data for the last two years fairly clearly indicate that about 90 % of the crop was exported. (Table 6, Figure 8)

The export market.—India was the largest market for Thai kenaf in 1965, 1966, and for the first three months of 1967. (Table 7). India also pays higher prices per ton; prices paid by India in June, 1967, being quoted as £ 80 per ton for grade A, £ 75 for grade B, and £ 65 per ton for grade C, compared with a European top offer of £ 65 for grade A (Thai Jute Association). As the result of fraud by an exporter, involving 10,000 tons of kenaf, India has refused to buy Thai kenaf since April, 1967, but action within Thailand to eliminate similar frauds seems likely to result in a resumption of trade. Nevertheless, India has also reduced an import subsidy on Thai kenaf from £ 12 to £ 9 per ton from 1 April, 1967, and introduced a quota system favouring higher grades. The result of this action will be to lessen demand for C grade in contrast to A and B grades and thus to widen the price difference.

India, as noted above, requires Thai kenaf to supplement her indigenous

supplies; Pakistan does not. Pakistan has, on the other hand, supplanted Thailand to some extent in supplying the countries of Western Europe.

Prices in Bangkok.—Average export price in Bangkok in 1964 was 3.054 baht per kilogramme; in 1965, 3.476 baht per kilogramme; and in 1966, 3.374 baht per kilogramme.

The wholesale price of kenaf in the Bangkok market (published by the Ministry of Agriculture)(Figure 6) differs from the export price (derived from data published by the Department of Customs) and is lower but bears no consistent relationship. However, figures for the wholesale price are available in some detail (Table 8) and are quoted as the price of "good grade kenaf" which is taken as the price of grade A kenaf. Figure 9 indicates price fluctuations year by year, covering all grades of kenaf. Its main feature is the peak price in 1961 due to partial crop failures in both India and Pakistan and the subsequent price relapse of Thai kenaf as both countries came back into fuller production. Apart from this major fluctuation, the price-mechanism in relation to kenaf is so complex as to defy a true attribution of determinants. Figure 10, tends to reinforce this view. Furthermore it is interesting to note that there was little upward price movement in 1965 following India's cessation of purchasing from Pakistan and her turning to Thailand for supplies, thus doubling Thailand's export. (Tables 5, 6)

The domestic market.—In 1966, some 69,000 tons of kenaf was used by gunny-sack factories in Thailand. This is 12.5 % of production for the year (and suggests a 2 % withdrawal from stocks). Import of sacks carries a tariff of 1.20 bahts per unit, so that while the proportion of kenaf used domestically is small, it nevertheless represents a fairly stable and secure market. Thai sacks and hessian are made entirely from kenaf.

In 1949, the first gunny-sack factory was established at Nontaburi with a capacity of 2 million sacks p.a. Now there are 11 factories) (four of them government factories) with a total capacity of 82 million sacks p.a. requiring some 115,000 tons of kenaf, which, even if working to capacity would account for less than 20 % of Thailand's 1966 kenaf crop. According to a Board of Export Promotion report, however, annual demand in Thailand is for 40 million sacks and exports are running at only 6 million p.a. while current production is at the rate of over 50 million sacks p.a. so that a considerable surplus has accumulated.

As mentioned in Section 1, it would be most desirable if Thailand could convert much more of her kenaf into burlap-type products for export, rather than export the fibre as such. Table 9 however, shows that, despite the relative cheapness of the fibre in Thailand, the cost of a gunny sack in Thailand is considerably more than the price in India (33 % more in 1962-64), and the recent cost trend in Thailand does not encourage a more optimistic view.

Of course, the disparity is in part due to subsidies in India, but the residual disparity is still sufficiently large to suggest that a thorough review be undertaken of the Thai gunny sack industry by experts, and that an export subsidy be made available on converted kenaf products, if a cost-benefit analysis shows this to be desirable. The benefits already accruing to the nation from the present industry and those which could accrue from a much enlarged and efficient fibre-conversion industry, seem to make its further development, matters of supreme concern.

3. SURVEY OF THAI KENAF INDUSTRY

PREVIOUS SURVEYS

Two previous surveys of the industry were published by Chuchart et al. (1962, 1964). The former survey acted as a pilot survey for the latter which was published in Thai. Because of this, opportunity is now taken to incorporate some of the results in the present study, particularly those which afford a comparison between the two periods.

RECENT SURVEY

In the early part of 1967, approaches were made to farmers, provincial and Bangkok traders in kenaf, and to gunny sack factories for data on the industry. Provision of such data was on a purely voluntary basis so that a limit had to be set to the number and extent of questions asked. Moreover, in the provincial survey, 18 field officers were used to collect data so that a fairly formal and rigid questionnaire had to be devised.

This type of approach necessarily has its disadvantages. Interviewers cannot follow up apparently highly relevant leads which arise during the

course of the interview if results over-all are to be meaningful. Supplementation of the data thus obtained by one or several experts in fibre crop economics is highly desirable, the experts being given free rein to follow leads as they arise.

Information sought

The questionnaires in the present survey sought two types of data:-

1. Data on the interviewees personally, on their scale of operations, other activities, costs, problems, etc.

2. Information on several special facets e.g. the extent of fertiliser usage, the extent to which farmers use new land each year, and the attitude of farmers towards various previously published proposals concerning their industry.

Methodology and coverage of the survey

The survey comprises two major parts:-

1. A survey of farmers and buyers in the provinces.
2. A survey of traders and exporters in Bangkok.

The provincial survey was carried out by 18 field enumerators under the supervision of Dr. Chaiyong Chuchart.

In selecting the kenaf growers to be interviewed, a random sample taken from the list maintained by the village 'phuyaiban' was used and from 70 to 80 schedules were taken from each of 18 amphoes. The villages, more than 50 in total used in the survey, were selected arbitrarily following consultation with the district officer and other local officials. Information was gathered from 1,374 growers located in the 18 amphoes of 6 changwats as follows:-

<u>Changwat</u>	<u>Amphoe</u>
Chaiyaphum	Muang, Khon Sawan
Nakhon Ratchasima	Phimai, Bua Yai
Khon Kaen	Muang, Ban Phai, Chonnabot, Mancha Khiri, Nam Phong
Udon Thani	Muang, Phen, Nong Bua Lam Phu
Maha Sarakham	Muang, Borabu, Kosum Phisai
Ubon Ratchathani	Muang, Warin Chamrap, Muang Samsip

Buyers interviewed in the same six changwats numbered 78 and were arbitrarily selected on the basis of convenience.

There were 15 buyers selected from each changwat (Chaiyaphum, Nakhon Ratchasima, and Maha Sarakham) while 11 buyers were selected from Khon Kaen, Udon Thani, and Ubon Ratchathani.

The growers interviewed represented about 28 per cent of all kenaf growers in 18 amphoes, and for buyers, it represented about 56 per cent of all kenaf buyers in those surveyed areas.

The survey of traders and exporters in Bangkok was carried out by the staff of the Economic Evaluation Group of ASRCT. Questionnaires were sent to the major operators in the industry and this was followed up by one or more personal contacts in each case. Nevertheless, the response was relatively poor and satisfactory replies were obtained from only about 11 % of the firms in the industry. However, those firms were, in general, the larger operators, so that the sample represents considerably more than 11 % of the activities of this section of the industry.

Information obtained

Because of the diversity of information obtained, a graphical rather than a textual presentation has been chosen, so as to bring out more clearly the manifold facets involved.

In brief, our survey showed the following:-

Concerning farmers

(a) Farmers generally are educated only to primary school level, obtain most of their know-how from their family or from other farmers; over 80 % own their own land, which is mainly under 40 rai and farmed largely for rice and occasionally other upland crops as well as kenaf.

(b) Average income of farmers who grew kenaf (mostly with rice) was about 9,000 baht annually, and the cost was 1149 baht, excluding estimates for family labour and land rent. This is equivalent to 96 baht per rai or 0.58 baht per kilogram of kenaf.

(c) About 70% of farmers said they would continue to grow kenaf if the price dropped to 2 baht per kilo and 30 % would continue growing down to 1 baht per kilo.

Over half the kenaf grown in 1965/66 and 1966/67 was rated by farmers as grade B but there were wide disparities between changwats, suggesting farmers themselves have varying criteria of grading. In fact, farmers mainly sell their kenaf as "mixed grade". The divergence of farmers' gradings from proportions of grades exported is seen in Table 21.

(d) Although it was believed that farmers are moving cultivation further and further from good retting water to find virgin soil, so impairing retted quality, our survey showed that 94 % of farmers did not go further afield. Similarly, it was commonly held that kenaf farmers did not use fertilisers, but our survey showed that about 20 % do and use chemical fertiliser rather than animal manure; almost none used fertiliser six years ago.

Moreover, 60 % of farmers thought any government assistance should take the form of lowering fertiliser cost or helping pest eradication.

(e) Most farmers would welcome a government low-interest loan, 75 % of them asking for less than 3000 baht. (Table 25, figure 24). Roughly 50 % favour kenaf as against some alternative (unspecified) crop. (Table 26)

Provincial Traders

(a) About 90 % of farmers sell their kenaf to village and amphur buyers rather than directly to balers, money-lenders or brokers (Table 30). Such buyers are normally local store-keepers who can advance farmers goods against the kenaf harvest. In 1961, balers featured much more as the primary recipients of kenaf: 27 % of farmers sold directly to balers compared with 48 % in 1966. (Figure 30)

(b) Traders claimed that their profit per kilo was 0.33 baht in 1966 compared with 0.04 baht in 1961 (Figure 38), the difference being due mainly to a considerable decrease in buying expenses in 1966. It is interesting to note that whereas provincial traders claimed that their selling prices declined on all three grades as between 1965/1966 and 1966/67, the wholesale price in the Bangkok market for that period rose significantly (Table 5).

Bangkok Exporters and Merchants

(a) The majority of these traders derive most of their income from kenaf trading, with tapioca, maize, and kapok as common, but relatively minor, side-lines; almost a half had been established for more than 16 years. Some 50 % of the firms either owned, or were associated with, a balinghouse, and 14 %

with a gunny-sack factory. Legislation now requires all exporters to be members of the Thai Jute Association which has disciplinary powers. Almost 30 % were associated with an overseas organization.

(b) Most exporters draw supplies from middlemen (who may also be exporters as well) in Bangkok while about 20 % deal with a provincial trader and 20 % directly with the farmer. Kenaf is sold either to the agents of overseas firms in Thailand, through London brokers in the case of Western Europe, or directly to markets in other countries.

(c) Exporters claim that their "gross profit" is 2 % and this is whittled down by unanticipated rises in shipping freights and by claims from overseas buyers.

4. SUMMARY AND CONCLUSIONS

1. The Thai kenaf industry has developed rapidly and in 1966 was Thailand's third largest export industry. About 12 % of the crop is used domestically for making gunny-bags and hessian, thus saving foreign exchange. In addition, the crop has raised living standards in the impoverished North-East and provided employment in gunny-sack factories for some 14,000 people.

2. The industry has two types of problem. The first involves disagreements on matters of grading. Combined government and trade association action will probably minimise most of these difficulties but the essentially subjective nature of grading judgements in the field will remain as a relatively minor difficulty.

3. The other problem concerns action which should be taken further to develop and stabilise the industry. In general, there are three possibilities.

(a) to grow more high quality fibre at the expense of low quality.

(b) to increase production per rai for all grades.

or (c) to expand and make more efficient the present gunny-sack industry, so as to provide a larger home-market for the fibre, give further employment, earn more export revenue and lessen kenaf's dependence on the international jute market.

4. All three possibilities are not necessarily mutually exclusive but all three require much more data, especially upon trends in international

markets.

5. The most appealing possibility is, of course, the maximisation of kenaf-fibre usage within Thailand itself and export of burlap-type products. Despite the relative cheapness of kenaf fibre compared with jute, Thai gunny sacks are considerably dearer than those in India & Pakistan. This suggests that an expert appraisal should be made of the Thai gunny-sack industry and a cost-benefit analysis made of the advisability of subsidising its exports. India and Pakistan both use subsidies in various forms.

ACKNOWLEDGEMENTS

The authors wish to thank all those who so willingly gave their time in providing data and discussing various aspects of the kenaf industry during the preparation of this report, and to their assistants who helped in gathering and analysing the data.

In particular, we gratefully acknowledge the advice, encouragement and very practical help of Mr. Frank Nicholls, Special Governor of ASRCT.

TABLE 1

KENAF AND JUTE:
ESTIMATED WORLD PRODUCTION BY MAJOR PRODUCING COUNTRIES

	Average 1956-1960 tons	Year of harvest		
		1964 tons	1965 ¹ tons	1966 ² tons
Jute				
Pakistan	1,086,374	968,728	1,157,091	1,127,273
India	804,400	1,096,547	815,454	1,090,909
Brazil	32,870	45,454	59,091	48,100
Taiwan	17,712	16,532	12,181	17,045
Burma	2,724	11,200	10,182	11,364
Thailand	3,675	7,014	7,000	7,516
Nepal	28,182	42,909	60,727	41,818
Peru	260	4,008	3,977	4,045
Vietnam	569	2,004	1,966	2,000
Mozambique	74	501	645	668
Japan	892	521	331	160
Other ³	112,909	133,181	133,105	143,602
Total jute	2,090,641	2,326,599	2,261,750	2,494,500
Kenaf				
Thailand	60,125	244,727	370,774	541,129
India	236,727	286,564	226,181	272,727
Brazil ⁴	17,035	19,244	10,970	27,506
Total Kenaf	313,887	550,535	607,925	840,912
Total production	2,404,528	2,877,134	2,869,675	3,335,412

Source: United States Department of Agriculture Foreign Agricultural Service (1966).

1. Revised
2. Preliminary estimate
3. Includes estimates for mainland China, the Soviet Union, and other countries for which data are not readily available
4. Includes estimates for other allied fibre.

TABLE 2

CONTRIBUTION BY THAILAND TO WORLD SUPPLIES OF COARSE FIBRES

Year	World production	Thailand production	% of Thailand
	of coarse fibres tons	(mainly kenaf) tons	contribution (%)
1962	2,705,000	134,000	5
1963	2,861,000	211,700	7.4
1964	2,877,134	303,000	10.4
1965	2,869,675	363,000	10.6
1966	3,335,412	550,000*	16.5

* estimate

TABLE 3

COMPARATIVE DATA FOR PRODUCTION, AREA PLANTED,
YIELD, AND EXPORT OF COARSE FIBRES THAILAND, INDIA & PAKISTAN

	Thailand			India			Pakistan					
	Production (1000 tons)	Area (1000 rai)	Yield (kg per rai)	Export (1000 tons)	Production (1000 tons)	Area (1000 rai)	Yield (kg per rai)	Export (1000 tons)	Production (1000 tons)	Area (1000 rai)	Yield (kg per rai)	Export (1000 tons)
1962	134.0	712	192.0	231.8	1,287	1,380	174	6.7	1,143	4,182	275	741.2
1963	211.7	957	222.9	125.7	1,450	7,566	191	19.0	1,066	4,128	258	758.9
1964	303.0	1,365	225.2	164.1	1,370	7,200	190	36.1	967	4,032	238	791.1
1965	363.0	1,623	200.0	322.5	1,041	-	-	-	1,157	-	-	-
1966	550.0	3,322	158.8	490.8	1,363	-	-	-	1,127	-	-	-
1967	-	-	-	204.6*	1,691	-	-	-	1,395	-	-	-

Sources: Thailand: Production 1962-1966 from Agricultural Statistics of Thailand (1966 production is estimated)
Export, 1967, is for the period January-June.

India: Production 1962-1964, F.A.O. Production Year Book 1965-1966 World Agriculture.
1967 Daily Trade News 4 Aug. 1967.

Pakistan: Production 1962-1964, F.A.O. Production Year Book 1965-1966 World Agriculture.
1967 Daily Trade News 15 June 1967.

TABLE 4

KENAF: AREA PLANTED AND PRODUCTION
BY GEOGRAPHICAL ZONES, 1957-1966

	Northern		North-eastern		Central plain	
	Area planted 1,000 rai	Production tons	Area planted 1,000 rai	Production tons	Area planted 1,000 rai	Production tons
1957	1.0	199	76.1	20,559	0.5	99
1958	1.0	219	126.0	29,274	0.5	117
1959		9	272.8	49,162	5.5	829
1960	6.8	1,217	849.3	176,402	20.9	3,687
1961	22.8	4,122	1,631.8	324,208	65.8	10,954
1962	5.1	940	691.7	130,473	14.8	2,622
1963	11.7	2,251	924.8	204,290	20.9	5,145
1964	1.4	268	1,337.3	297,083	26.2	5,741
1965	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1966	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a. = not available

TABLE 5

ANNUAL PRODUCTION, VALUE, ETC., OF KENAF IN THAILAND, 1957-1966

Year	Area planted 1,000 rai	Area harvested 1,000 rai	Production 1,000 tons	Average yield kg per rai	Bangkok wholesale price baht per kg
1957	78	78	21.0	272.7	2.58
1958	127	127	29.6	233.1	2.30
1959	276	277	50.0	180.5	2.24
1960	377	870	181.3	208.4	3.17
1961	1,720	1,681	339.3	201.8	3.61
1962	712	700	134.0	192.0	2.33
1963	957	950	211.7	222.9	2.73
1964	1,365	1,346	303	225.2	2.75
1965	1,623	-	363	223.1	2.80
1966	3,322*	-	550*	165.5*	3.04

Source: Ministry of Agricultures

* estimates

TABLE 6

PRODUCTION AND EXPORT OF THAI KENAF 1956-1966

Year	Production (million tons)	Export (million tons)	Export value (million baht)	Export/production percentage on weight basis
1957	21,000	14,580	46.1	69
1958	29,600	27,587	69.4	93
1959	50,000	57,318	88.3	115
1960	181,000	61,768	230.0	34
1961	339,300	143,476	626.5	42
1962	113,900	238,718	580.8	212
1963	211,700	121,421	352.6	58
1964	303,000	162,095	495.0	53
1965	363,000	322,469	1,121.0	89
1966	550,000*	490,772	1,646.2	90

Sources: Department of Customs, Ministry of Agriculture

* estimate

TABLE 7

EXPORTS OF THAI KRNAP CLASSIFIED BY COUNTRIES OF DESTINATION

	1964		1965		1966 (Jan-Sept)		1967 (Jan-Mar)	
	Quantity millions of tons	Value (P.O.B.) millions of baht	Quantity millions of tons	Value (P.O.B.) millions of baht	Quantity millions of tons	Value (P.O.B.) millions of baht	Quantity millions of tons	Value (P.O.B.) millions of baht
India	1,425	3	118,358	405	160,229	594	44,878	
Japan	38,642	113	61,778	212	43,712	159	28,445	
U.K.	7,411	24	12,911	49	2,078	8	2,857	
Belgium	21,735	64	23,878	80	7,878	30	9,029	
France	11,007	34	11,188	40	5,878	23	3,795	
West Germany	16,304	52	12,365	47	5,079	19	5,569	
Italy	10,934	35	20,365	71	9,208	34	10,612	
Portugal	5,748	18	7,762	27	3,748	14	8,396	
Spain	5,504	17	3,729	14	3,652	14	2,173	
Poland	3,042	10	3,523	14	3,127	12	1,522	
U.S.A.	6,533	19	8,833	29	2,417	8	1,001	
Hongkong	6,315	16	277	1	110	-	-	
Taiwan	2,398	6	2,875	11	2,094	8	1,605	
Other	25,097	84	34,629	121	15,317	65		
Total	162,095	495	322,469	1,121	264,527 ¹	988	130,036 ³	
Average export price in baht/ton		3,053		3,476	490,772 ²	1,646		
								3,374

Source: Department of Customs

1 The total of 9 month period

2 The total of 12 month period is from "Board of Trade Bulletin" Jan. 6, 67

3 The quantity is from "Board of Trade Bulletin," value is not yet available Apr. 7, 67

TABLE 8

BANGKOK WHOLESALE PRICE BY MONTHS FOR GOOD GRADE KENAF 1957-1963
(in baht per picul of 60 kg)

Month	Average price											Average	Index (Average = 100)
	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966			
Jan.	168.75	137.50	126.25	147.05	275.00	150.00	203.50	152.22	179.75	203.38	174.33	103.9	
Feb.	157.50	155.00	123.81	154.12	219.41	133.75	196.71	164.64	177.63	195.13	167.77	100.1	
Mar.	149.50	125.00	122.50	157.50	325.00	126.82	170.83	164.8	153.90	222.90	171.88	102.5	
Apr.	148.50	122.50	130.50	166.97	243.00	118.69	161.63	162.48	164.53	228.13	164.69	98.2	
May	148.50	137.50	142.22	182.10	220.25	118.93	157.50	160.14	180	237.50	169.46	101.1	
June	147.50	157.50	147.50	214.09	164.45	131.45	169.50	155.88	181.10	237.50	170.65	101.7	
July	135.00	139.17	147.50	215.00	184.35	114.87	167.50	148.44	199.50	237.50	168.83	100.7	
Aug.	162.50	142.50	147.50	215.00	194.77	120.68	164.40	183.96	195.00	237.50	176.38	105.2	
Sept.	160.00	161.25	143.55	175.00	171.50	132.78	146.31	211.68	197.60	176.75	167.64	99.9	
Oct.	145.50	138.75	134.64	219.71	176.07	165.90	139.95	191.88	175.81	158.95	164.66	98.2	
Nov.	142.50	131.25	122.02	216.35	152.87	168.64	137.45	174.36	170.75	164.90	158.11	94.3	
Dec.	145.50	120.00	127.05	238.57	152.76	203.89	142.22	180.96	181.12	160	165.21	98.5	
Average	150.89	138.99	134.68	191.74	206.62	140.54	163.96	170.96	176.30	205.01	167.66	100.0	

Source: Ministry of Economic Affairs.

TABLE 9

COST OF PRODUCTION OF A GUNNY SACK IN THAILAND
 COMPARED WITH PRICES OF FOREIGN GUNNY SACKS

Period	Average cost of production for 3 Thai gunny sack mills (baht)	Price imported into Thailand CIF (baht)	Price of a gunny sack in India (baht)
1953-58	8.12	7.07	4.32
1959-61	7.68	8.16	5.81
1962-64	6.92	7.86	5.19
1965	7.73 *	7.52	-
1966	7.83 *	-	-

Source: From National Economic Development Board data (1953) except where marked with * which are data collected by ASRCT from two mills.

TABLE 10

GUNNY SACKS: PRODUCTION & CONSUMPTION, 1958-1965

Year (1)	Local production (1,000 units) (2)	Quantity imported (1,000 units) (3)	Total supply (1,000 units) (4)	Export, empty sack (1,000 units) (5)	Export, full sack (containing principle crops) (1,000 units) (6)	Apparent domes- tic consumption (1,000 units) (7)
1958	4,553.3	17,677.9	(2 + 3) 22,231.2	109.3	14,057.5	(2+3) - (5+6) 8,064.4
1959	5,060.0	19,722.3	24,782.3	28.4	15,007.7	9,746.3
1960	6,877.8	21,145.0	28,022.8	.8	19,721.6	8,300.4
1961	8,842.1	25,258.9	34,101.0	95.4	26,089.5	7,916.1
1962	10,815.9	30,826.9	41,642.8	54.0	24,105.0	17,483.8
1963	23,129.0	.3	23,129.3	134.9	28,837.0	- 5,843.4 (a)
1964	33,511.7	12,354.3	45,866.0	34.4	41,453.4	4,378.2
1965	40,022.5	641.0	40,663.5	152.5	38,648.5	1,862.5

Source: Economic Divisions, National Economic Development Board.

Note: Column 6 Calculated from export of rice, corn(maize), cotton seed, kapok seed, sesame seed, castor seed, lac, sugar, tapioca flour, tapioca chip, tapioca waste, chilli, pea, and beans.

Column 7 is the quantity available for local use plus stocks. Currently, stocks are accumulating — see text.

(a) Minus sign indicates that the consumption is got from the stock last year.

TABLE 11

AGE AND EDUCATIONAL STATUS OF KENAF GROWERS, 1966

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Total
Age (year)	Per cent							
20-40	"	42.6	33.3	34.8	42.9	39.3	37.0	38.3
41-60	"	49.8	58.6	51.8	51.5	55.0	56.5	53.8
61-80	"	7.6	8.1	13.4	5.6	5.7	6.5	7.9
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Minimum	Year	23	21	20	18	23	25	20
Average	"	44	45	46	43	44	45	44
Maximum	"	76	70	70	77	71	68	77
Educational level	Per cent							
Illiteracy	"	11.0	11.7	9.8	3.3	6.1	7.5	8.2
Able to read * and write	"	6.7	10.8	8.0	4.2	12.7	8.0	8.4
Prathom level	"	78.0	73.9	72.3	85.4	75.6	78.5	77.3
Mathayom level	"	4.3	3.1	9.4	6.6	5.2	5.5	5.7
Above mathayom	"	-	0.5	0.5	0.5	0.4	0.5	0.4
Total	Per cent	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Some farmers learned to read and write at wat schools

TABLE 12

TENURE STATUS OF KENAF GROWERS, BY CHANGWAT, 1966

Tenure status	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Total
Owner	Per cent	89.5	87.8	92.8	84.4	71.2	69.5	82.6
Part-Owner	"	5.3	8.5	3.6	6.1	14.4	13.0	8.3
* Operated for Others	"	3.8	2.3	3.6	5.7	10.5	8.0	5.7
Tenant	"	1.4	1.4	-	3.8	3.9	9.5	3.2
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Operated for father or father-in-law, in most cases.

TABLE 13
 PERCENTAGE OF FARM SIZE, CLASSIFIED BY TENURE STATUS, 1966

Farm size (rai)	Unit	Tenure status				Total
		Owner	Part-owner	Operated for others	Tenant	
Under 20	Per cent	29.2	34.8	36.1	61.9	31.2
20-39	"	39.0	42.0	36.1	23.8	38.6
40-59	"	19.1	13.4	20.8	9.5	18.3
60-79	"	7.8	6.2	2.8	2.4	7.2
80 and over	"	4.9	3.6	4.2	2.4	4.7
Total	Per cent	100.0	100.0	100.0	100.0	100.0

TABLE 14

AVERAGE CROP AREA OF KENAF GROWERS IN 1966

Land Utilization	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Total
Only Kenaf	Rai	20.8	13.6	12.0	26.1	3.0	12.1	13.9
Paddy and kenaf	"							
Paddy	"	37.3	28.4	22.9	24.7	16.8	26.3	26.1
Kenaf	"	11.9	16.3	9.8	15.2	15.7	7.7	12.8
Paddy, kenaf and other upland crops	"							
Paddy	"	-	26.7	33.3	20.8	22.0	-	17.1
Kenaf	"	-	14.6	10.6	15.2	10.3	-	8.5
Other upland crops	"	-	21.0	1.7	9.0	0.3	-	5.3
Total	"	-	62.3	45.6	45.0	32.6	-	30.9
Kenaf and upland crops	"							
Kenaf	"	-	17.7	6.5	13.7	28.0	5.0	11.8
Upland crops	"	-	16.7	1.7	10.2	2.0	3.0	5.6
Total	"	-	34.4	8.2	23.9	30.0	8.0	17.4
Average Total	"	46.6	39.8	31.4	37.8	32.1	27.8	35.9

TABLE 15

AVERAGE VALUES OF PRODUCTION PER FAMILY OF KENAF GROWERS IN 1966

	Chaiyaphum		Nakhon Ratchasima		Khon Keen		Udon Thani		Maha Sarakham		Ubon Ratchathani		Average	
	No. of families	Value of production (baht)	No. of families	Value of production (baht)	No. of families	Value of production (baht)	No. of families	Value of production (baht)	No. of families	Value of production (baht)	No. of families	Value of production (baht)	No. of families	Value of production (baht)
Only kenaf	11	7,121	41	5,187	25	2,611	24	10,584	3	1,179	53	9,564	157	5,447
Paddy and kenaf														
Paddy		6,429		5,961		4,283		4,801		3,005		3,148		4,605
Kenaf		4,703		5,223		3,086		4,240		4,933		3,920		4,351
Total	198	11,132	155	11,184	125	7,369	135	9,041	221	7,938	145	7,068	979	8,956
Paddy, kenaf and other upland crops														
Paddy		-		8,666		5,419		3,674		13,000		-		5,126
Kenaf		-		5,186		3,650		12,227		4,933		-		4,333
Other upland crops		-		4,053		468		2,438		233		-		1,199
Total		-	14	17,905	45	9,537	35	18,339	3	18,116	-	-	97	10,658
Kenaf and upland crops														
Kenaf		-		5,432		2,656		7,573		9,450		4,150		4,877
Upland crops		-		2,917		574		1,525		300		360		946
Total		-	12	8,349	29	3,230	18	9,098	2	9,750	2	4,510	63	5,823
Average Overall	209	10,546	222	10,428	224	5,751	212	985	229	7,991	200	7,742	1296	8,718

TABLE 16
KENAF PRODUCTION PER FAMILY AND YIELD PER RAI* , 1966-67

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Average per family	kg	1,939	2,167	1,267	2,253	1,457	2,049	1,855
Average per rai	"	157	137	123	150	145	231	157

Note: * Production per rai (i.e. yield) is calculated from the total area planted, not only from the area harvested.

TABLE 17

AVERAGE COST OF KENAF PRODUCTION PER FAMILY, BY CHANGWAT 1966

Item	Chaiyaphum (bahts)	Nakhon Ratchasima (bahts)	Khon Kaen (bahts)	Udon Thani (bahts)	Maha Sarakhm (bahts)	Ubon Ratchathani (bahts)	Total Average (bahts)	Per cent (bahts)
Clearing land	105.91	192.82	142.99	166.27	19.65	71.45	116.52	10.14
Plowing	192.82	439.92	96.11	264.88	80.41	146.75	203.48	17.71
Drilling	52.49	53.57	9.75	54.06	10.51	68.47	41.48	3.61
Seeds	4.14	23.17	3.32	38.15	1.97	8.74	13.25	1.15
Fertilizer	67.27	14.10	12.23	7.45	31.25	212.03	57.39	5.00
Insecticide	6.74	1.40	2.51	3.25	8.38	2.02	4.05	0.35
Rent	62.44	25.47	13.11	112.51	66.14	84.95	62.44	5.44
Weeding	258.59	139.32	7.35	5.19	115.69	155.23	113.56	9.89
Cutting & bundling	228.65	243.74	102.59	421.08	111.62	161.71	211.56	18.42
Transportation to retting place	-	-	6.22	20.21	79.13	126.72	38.71	3.37
Retting, washing and drying	313.48	362.13	83.14	388.14	147.05	214.21	251.36	21.88
Water for retting *	-	-	-	-	7.31	27.40	5.78	0.50
Other	-	-	13.12	113.17	29.03	19.90	29.20	2.54
Total average	1,292.49	1,495.66	495.53	1,594.36	708.24	1,299.58	1,148.78	100.00

* Expenses for kenaf cultivation equipment.

Note: Attempts were made to obtain estimates of costs of family labour but these proved futile; most farms (Table) grow multiple crops.

TABLE 18

COST OF KENAF PRODUCTION PER RAI BY CHANGWATS 1966

Item	Chaiyaphum (bahts)	Nakhon Ratchasima (bahts)	Khon Kaen (bahts)	Udon Thani (bahts)	Maha Sarakhom (bahts)	Ubon Ratchathani (bahts)	Average (bahts)	Per Cent
Clearing land	8.57	12.18	13.91	10.84	1.96	8.07	9.26	9.67
Plowing	15.60	27.79	9.36	17.27	8.01	16.57	15.77	16.47
Drilling	4.25	3.38	0.95	3.53	1.05	7.73	3.82	3.99
Seeds	0.34	1.46	0.37	2.49	0.20	0.99	0.98	1.02
Fertilizer	5.44	0.89	1.19	0.49	3.11	23.94	5.84	6.10
Insecticide	0.54	0.09	0.24	0.21	0.83	0.23	0.36	0.38
Rent	5.05	1.61	-	7.33	6.59	9.59	4.53	4.74
Weeding	20.92	8.80	-	0.34	11.52	17.53	11.52	12.03
Cutting & bundling	18.50	15.40	9.04	27.45	11.09	18.26	16.63	17.37
Transportation to retting place	-	-	2.78	1.32	7.85	14.31	4.38	4.57
Retting, washing & drying	25.36	22.88	7.15	25.31	14.37	24.19	19.88	20.77
Water for retting	-	-	0.61	-	0.73	3.09	0.74	0.77
Other *	-	-	3.28	7.38	2.97	2.25	2.03	2.12
Total Average	104.58	94.49	48.88	103.97	70.55	146.75	95.74	100.00

* Expenses for kenaf cultivation equipments.

The considerable differences between costs per rai among the changwats deserves detailed investigation. To some extent, it is a reflection of topography and farming practice, but probably mainly due to the differences in use of unpaid family labour.

TABLE 19

MINIMUM PRICE AT WHICH FARMERS WOULD CONTINUE TO GROW KENAF

Minimum Price	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Total
Not less than 2 bahts/kg	Per cent	75.6	54.5	74.1	57.1	59.4	96.0	69.0
Not less than 1 baht/kg	"	24.4	45.5	25.9	42.9	40.6	4.0	31.0

TABLE 20

GRADES OF KENAF GROWN BY FARMERS BY CHANGWATS 1965/66-1966/67

Kenaf Grades	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Total
Produced in 1965-66								
Grade A	Per cent	3.9	11.2	20.4	4.1	28.3	30.1	20.9
Grade B	"	94.7	56.1	54.8	90.7	43.7	43.6	56.6
Grade C	"	1.4	32.7	24.8	5.2	28.0	26.0	22.5
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Produced in 1966-67								
Grade A	"	0.5	13.5	21.4	2.8	27.3	29.1	19.9
Grade B	"	97.1	60.4	54.3	90.1	43.5	44.8	57.9
Grade C	"	2.4	26.1	24.3	7.1	29.2	26.1	22.2
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The widely different proportions as between grades grown from changwat to changwat is probably due mainly to differences in grading practice. The material may, of course, be subsequently regraded or bought as "mixed grade" by the buyer.

TABLE 21
EXPORT OF THAI KENAF BY GRADE, 1965-66

	1965		1966		% increase or decrease
	ton	%	ton	%	
Super	402	.15	1,596	.38	.28
Grade A	81,454	30.78	156,474	38.07	7.29
Grade B	90,873	34.34	138,976	33.81	(- .53)
Grade C	91,808	34.73	113,931	27.34	(-6.09)
	264,537	100.00	410,977	100.00	

Does not include tangle and cutting which represent only small quantity.

Source: Ministry of Economic Affairs, Bangkok.

TABLE 22

FARMER'S REASONS FOR NOT GOING FURTHER AFIELD TO FIND VIRGIN SOIL FOR GROWING KENAF

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Farmers who did not go further afield	Per cent	97.1	96.9	96.0	93.9	96.1	85.3	94.2
Farmers who did go	"	2.9	3.1	4.0	6.1	3.9	14.7	5.8
Reasons for not going further afield								
Limitation of land	"	68.5	62.3	80.5	86.4	100.0	100.0	82.9
Labour shortage	"	16.2	17.2	1.4	11.1	-	-	7.7
Too far away from retting place	"	15.3	20.5	18.1	2.5	-	-	9.4
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 23

USE OF FERTILIZERS BY KENAF GROWERS

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakhom	Ubon Ratchathani	Average
Using fertilizer	Per cent	19.6	6.8	8.5	5.2	34.1	43.0	19.5
Kinds of ferti- lizer used								
Chemical	"	44.3	100.0	73.7	100.0	40.0	92.0	72.5
Manure	"	55.7	-	26.3	-	56.5	6.8	26.8
Organic	"	-	-	-	-	3.5	1.2	0.7
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 24

FARMERS'S VIEWS ON WHAT THE GOVERNMENT SHOULD DO
TO ASSIST THEM REGARDING CREDIT AND MARKETING FACILITIES

Assistance sought	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Increase of income	Per cent	53.1	25.0	34.1	40.7	62.1	72.8	48.1
Additional credit availability	"	46.9	73.2	14.4	4.9	17.6	11.5	28.1
More convenience of sales arrangements	"	-	-	24.2	32.4	4.9	4.2	10.5
Elimination of middleman	"	-	1.8	12.2	17.1	15.4	11.5	9.6
Fair price	"	-	-	15.1	4.9	-	-	3.3
Total	"	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 25

AMOUNT OF LOAN PER FAMILY REQUIRED BY KENAF GROWERS

Amount of loan (baht)	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakhom	Ubon Ratchathani	Average
Less than 1,000	Per cent	20.5	8.4	40.0	22.6	55.3	36.8	30.4
1,000-2,000	"	30.4	33.5	29.5	25.3	20.2	28.4	27.9
2,001-3,000	"	18.6	23.1	12.0	18.9	8.5	16.1	16.2
3,001-4,000	"	2.5	6.9	6.0	7.9	3.7	5.2	5.5
Over 4,000	"	28.0	28.1	12.5	25.3	12.3	13.5	20.0
Total	"	100.00	100.00	100.00	100.00	100.00	100.00	100.00

It is remarkable that almost 75% of kenaf growers wanted a loan of no more than 3000 baht.

TABLE 26

FARMERS' VIEWS ON GROWING OTHER UPLAND CROPS
IF THERE WERE A MARKET FOR THE PRODUCE

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Favorable	Per cent	42.6	53.6	59.8	64.8	60.3	41.5	53.8
Favorable : reasons given:--								
Better price	"	68.0	71.0	40.2	65.3	59.7	59.0	60.5
Broader markets	"	32.0	29.0	16.2	*	23.4	21.3	20.3
Kenaf has low yield	"	1 *	*	43.6	34.7	16.9	19.7	19.2
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Unfavorable	"	57.4	46.4	40.2	45.2	39.7	58.5	46.2
Unfavorable : reasons given:--								
Not very good soil	"	34.6	51.8	33.2	26.1	49.6	53.9	42.4
Lack of growing experience	"	65.4	48.2	28.3	36.5	21.6	27.2	38.8
Not sure of setting high price	"	*	*	25.5	37.4	28.8	18.9	18.8
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Information not available.

The aim of this question was to try to sense the stability of out look of kenaf-growers rather than to measure quantitatively any specific tendencies. Mention of particular alternative crops by enumerators was avoided because of the inevitably in herent advocacy of such a form of questioning. Results show that farmers are about equally divided (53.8:42.4) in their "allegiance."

TABLE 27

PRICE RECEIVED BY KENAF GROWERS BY CHANGWAT 1965/66-1966/67

Price received by growers	Unit	Chaiyaphum baht/kg	Nakhon Ratchasima baht/kg	Khon Kaen baht/kg	Udon Thani baht/kg	Maha Sarakhm baht/kg	Ubon Ratchathani baht/kg	Average baht/kg
1965-66								
Grade A								
Max.	Baht	3.40	3.55	3.50	3.30	3.80	3.80	3.80
Min.	"	2.40	2.75	2.00	2.60	2.10	2.50	2.00
Grade B								
Max.	"	3.00	3.25	3.50	3.20	3.40	3.60	3.60
Min.	"	2.00	2.00	1.60	1.90	1.50	1.70	1.50
Grade C								
Max.	"	2.90	3.15	2.70	2.25	3.00	3.00	3.15
Min.	"	1.70	1.25	1.50	1.50	1.00	1.50	1.00
1966-67								
Grade A								
Max.	"	3.00	3.00	3.00	3.30	3.25	3.50	3.50
Min.	"	2.25	2.40	2.40	2.30	1.80	2.40	1.80
Grade B								
Max.	"	2.90	2.90	3.00	3.00	3.20	3.20	3.20
Min.	"	2.00	2.10	2.00	2.00	1.50	2.10	1.50
Grade C								
Max.	"	2.50	2.60	2.80	2.50	2.60	3.60	3.00
Min.	"	1.50	1.50	1.70	1.40	1.00	1.00	1.00

TABLE 28

GROWERS' DIFFICULTIES IN DISPOSAL OF KENAF, 1966

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Reports of difficulties	Per cent	31.6	24.3	62.5	68.9	78.2	86.0	58.6
Causes of difficulties	"	40.5	58.7	68.0	69.5	69.9	62.8	61.6
Price uncertainly	"	59.5	41.3	32.0	30.5	30.1	37.2	38.4
Short weight	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 29

FARMERS' VIEWS ON APPROPRIATE GOVERNMENT ASSISTANCE

Requirements	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Cultivation								
Lower price of fertilizer	Per cent	65.8	40.7	34.9	30.8	29.1	31.2	37.1
Assistance with pest control	"	9.6	4.5	28.8	33.4	34.0	37.2	24.6
Instruction in planting techniques	"	11.0	26.2	20.1	13.8	16.0	22.9	18.3
Assistance with retting facilities	"	23.6	28.6	16.2	22.0	20.9	8.7	20.0
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Distribution								
Collective sales	"	-	-	22.1	24.6	20.0	12.9	14.5
Proper measurement	"	19.7	30.2	19.9	15.8	12.9	7.8	17.4
Fair price from middlemen	"	80.3	69.8	29.1	22.5	37.4	35.9	45.8
Price guarantee from government	"	-	-	19.4	30.8	5.5	36.4	15.4
More communication facilities	"	-	-	9.5	6.3	24.2	7.0	6.9
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 30

TYPES OF KENAF BUYERS WHO BOUGHT KENAF FROM GROWERS DURING 1965/66 and 1966/67

Types of Buyers	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Village buyers	Per cent	93.6	79.0	56.4	49.5	57.7	13.2	59.6
Amphoe buyers	"	5.4	2.1	36.2	37.8	34.5	77.3	30.8
Balers	"	1.0	7.4	3.3	7.7	3.5	5.7	4.8
Money lenders	"	-	11.5	-	1.4	1.2	3.8	3.0
Local broker-buyers	"	-	-	4.1	3.6	3.1	-	1.8
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 31

TYPES OF KENAF TRADERS

Types of traders	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Village and amphoe buyers	Per cent	41.7	26.7	78.5	70.7	43.3	54.5	52.6
Balers	"	53.3	70.1	14.2	18.2	40.4	27.3	37.3
Local Brokers	"	-	-	3.3	2.0	6.3	-	1.9
Agents	"	5.0	3.2	4.0	9.1	10.0	18.2	8.2
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 32

VOLUME AND VALUE OF KENAF PURCHASED BY TRADERS, 1965/66-1966/67

Traders	Volume	Value
	(Metric tons)	(Thousand Baht)
1965-66		
Balers	32,695	81,172
Villager and amphoe buyers	5,552	14,790
Agents	950	2,815
Local broker-buyers	352	863
Total	39,549	99,640
1966-67		
Balers	35,338	89,138
Village and amphoe buyers	3,194	7,977
Agents	1,085	3,288
Local broker buyers	278	674
Total	39,895	101,077

Balers are by far the largest buyers of kenaf even though they are outnumbered by village and amphoe buyers (Table 30). Balers, of course, draw some of their supplies from the village and amphoe buyers.

TABLE 33

GROWERS' COMPLAINTS ON METHODS OF GRADING USED BY BUYERS

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Growers' complaints	Per cent	16.3	9.9	38.4	31.6	46.7	48.5	31.9
Causes of complaints	"							
Receiving unfair price	"	82.4	65.2	96.7	90.9	70.2	96.1	83.4
Disagreements about consistency of grading methods	"	17.6	34.8	-	7.1	17.7	-	12.9
Inability to know how to grade properly according to buyers' requirement	"	-	-	3.3	2.9	12.1	3.9	3.7
Total	"	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 34

PROVINCIAL BUYERS: OTHER ACTIVITIES APART FROM KENAF TRADING

	Village and amphoe buyers		Balers		Local Broker-buyers		Agents		Total Average	
	No.	%	No.	%	No.	%	No.	%	No.	%
Groceries and clothes trading	28	68.4	-	-	1	50.0	4	66.6	33	42.3
Forest-product trading	6	14.6	6	20.7	1	50.0	1	16.7	14	17.9
Paddy trading	5	12.2	-	-	-	-	1	16.7	6	7.7
Construction agent	1	2.4	-	-	-	-	-	-	1	1.3
Lending money	1	2.4	-	-	-	-	-	-	1	1.3
Gasoline station	-	-	13	44.8	-	-	-	-	13	16.7
Brick-making	-	-	1	3.4	-	-	-	-	1	1.3
Sugar factory	-	-	9	31.1	-	-	-	-	9	11.5
Total	41	100.0	29	100.0	2	100.0	6	100.0	78	100.0

TABLE 35

BUYING AND SELLING PRICES OF KENAF TRADERS, 1965/66-1966/67

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
1965-1966								
Buying price	Baht/kg	2.83	2.82	2.85	2.90	2.63	3.14	2.86
Grade A	"	2.53	2.58	2.51	2.54	2.37	2.63	2.53
Grade B	"	2.47	2.29	2.30	1.28	2.10	2.32	2.13
Grade C								
Selling price								
Grade A	"	3.34	3.68	3.05	3.00	2.86	3.71	3.27
Grade B	"	2.90	3.17	2.74	2.68	2.50	3.07	2.84
Grade C	"	2.67	2.84	2.44	2.30	2.31	2.67	2.54
1966-1967								
Buying price								
Grade A	"	2.70	2.81	2.66	2.62	2.88	2.97	2.77
Grade B	"	2.51	2.59	2.43	2.34	2.36	2.64	2.49
Grade C	"	2.33	2.32	2.14	2.04	2.06	2.26	2.19
Selling price								
Grade A	"	3.36	3.50	2.92	2.80	3.05	3.41	3.17
Grade B	"	3.00	3.08	2.60	2.52	2.50	2.95	2.78
Grade C	"	2.62	2.71	2.29	2.15	2.20	2.61	2.43

TABLE 36

AVERAGE PROFIT PER KOLO RECEIVED BY KENAF TRADERS

Item	Unit	Chaiyaphum	Nakhon Ratchasima	Khon Kaen	Udon Thani	Maha Sarakham	Ubon Ratchathani	Average
Selling price (Average all grades per kilo)	Baht	2.99	3.10	2.60	2.49	2.58	2.99	2.79
Buying price	"							
Kenaf price per kilo	"	2.51	2.57	2.41	2.33	2.43	2.62	2.48
Buying expenses per kilo	"	0.02	0.01	0.01	*	0.01	0.01	*
Selling expenses per kilo	"	0.01	*	0.01	0.01	0.01	0.01	*
Total buying expenses per kilo	"	2.54	2.58	2.43	2.34	2.45	2.64	2.48
Profit per kilo	"	0.45	0.52	0.17	0.15	0.13	0.35	0.31

* Less than 0.01

TABLE 37

DESTINATION OF KENAF FROM VARIOUS TYPES OF TRADER

	Balers		Village and Amphoe buyers		Local brokers		Agents	
	No. in sample	%	No. in sample	%	No. in sample	%	No. in sample	%
1965-66								
Gunny bag factories	6	23.1	3	6.5	-	-	-	-
General purchasers	12	46.1	9	19.6	8	80.0	2	50.0
Exporters	6	23.1	-	-	-	-	-	-
Self exporting	2	7.7	-	-	-	-	-	-
Traders in Bangkok	-	-	5	10.8	-	-	-	-
Baling factories	-	-	29	63.1	2	20.0	2	50.0
Total	26	100.0	46	100.0	10	100.0	4	100.0
1966-67								
Gunny bag factories	6	20.7	2	4.0	-	-	2	33.3
General purchasers	14	48.3	10	20.0	8	80.0	2	33.3
Exporters	7	24.2	-	-	-	-	-	-
Self exporting	2	6.8	-	-	-	-	-	-
Traders in Bangkok	-	-	6	12.0	-	-	-	-
Baling factories	-	-	32	64.0	2	20.0	2	33.4
Total	29	100.0	50	100.0	10	100.0	6	100.0

This table should be read in conjunction with Table 32 which shows that balers handle some 85 % of kenaf purchased in the provinces.

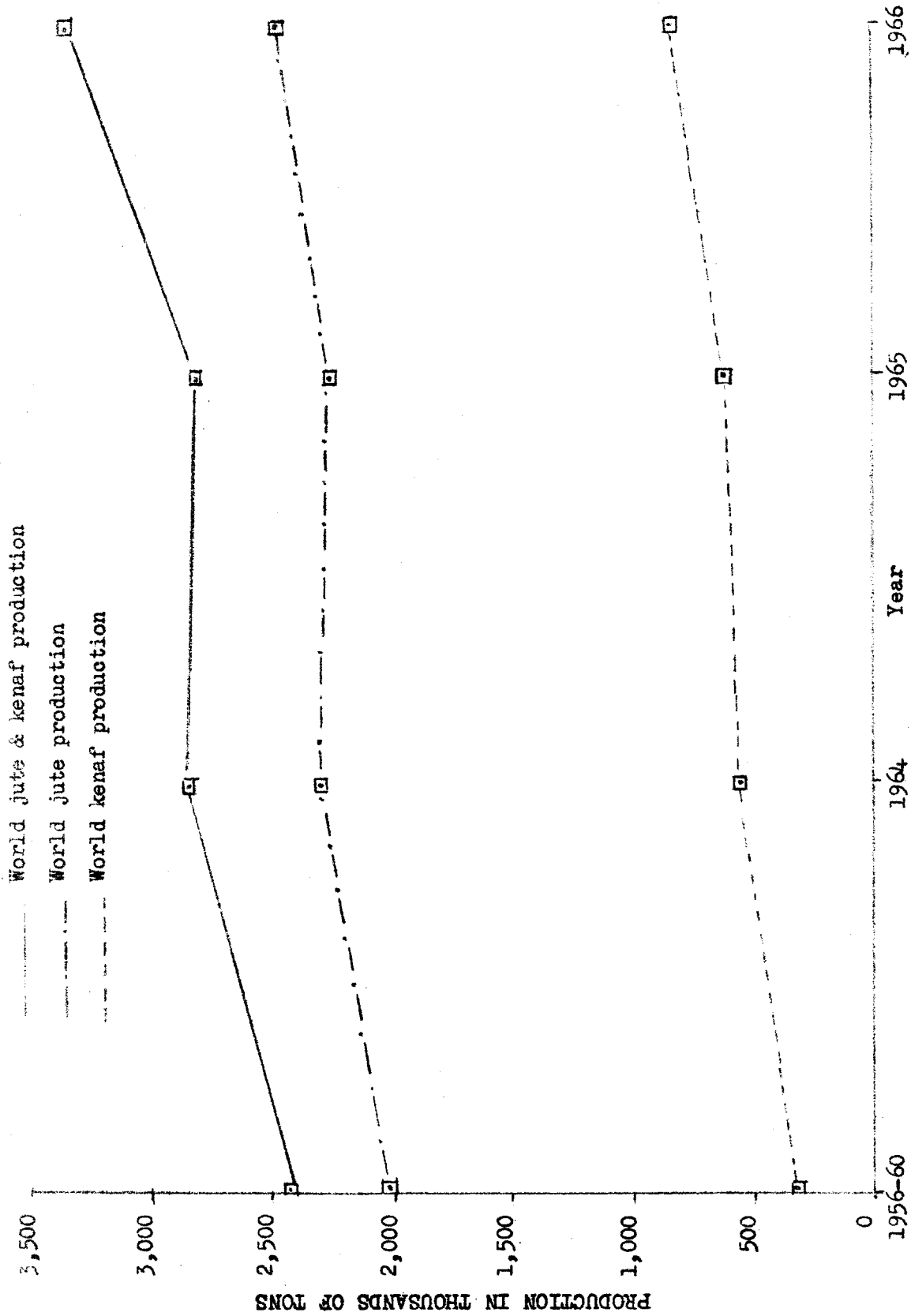


Figure 1. Total world jute & kenaf production (Data from Table 1)

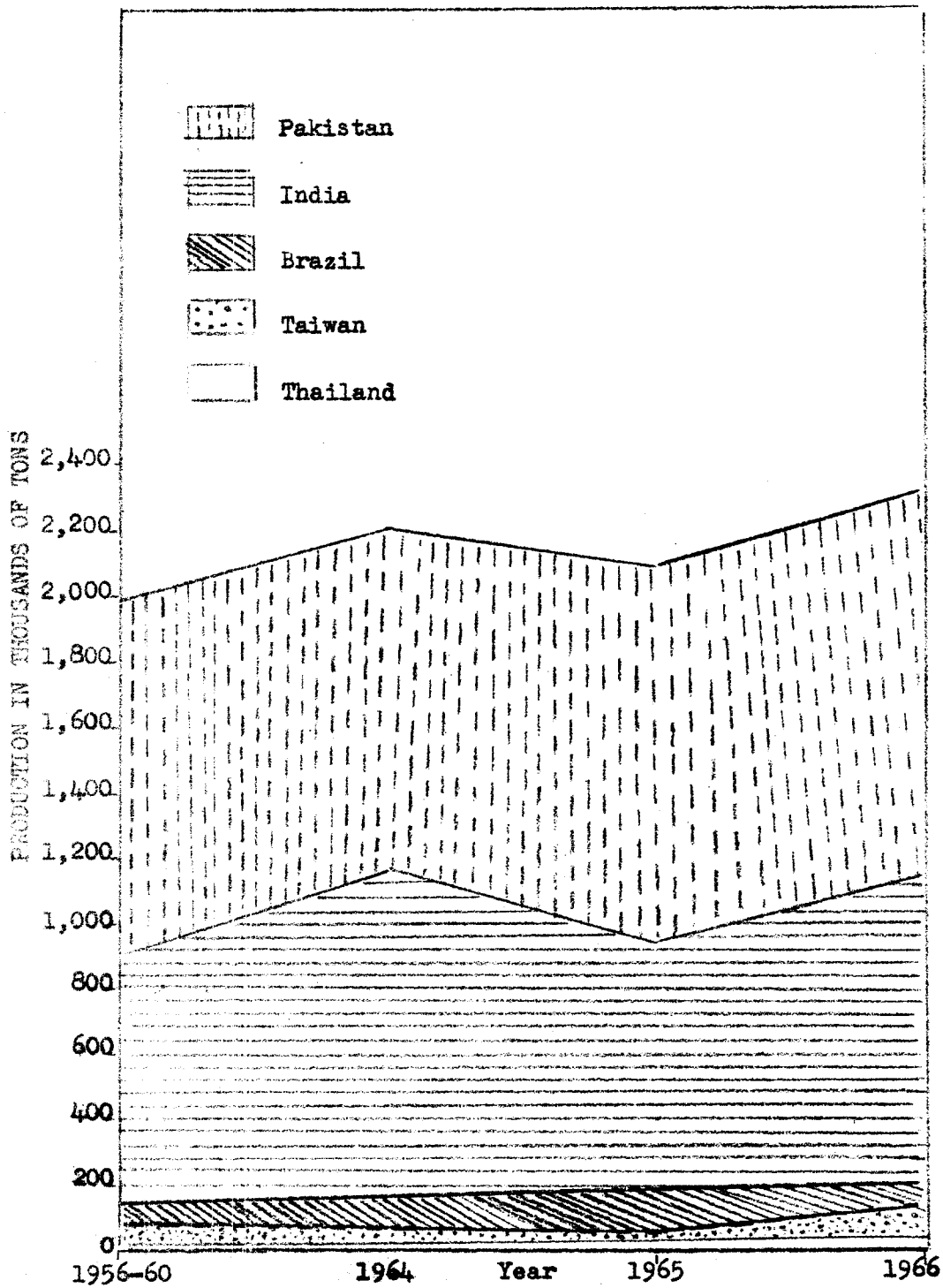


Figure 2.—Major countries: Production of jute. (Data from Table 1)

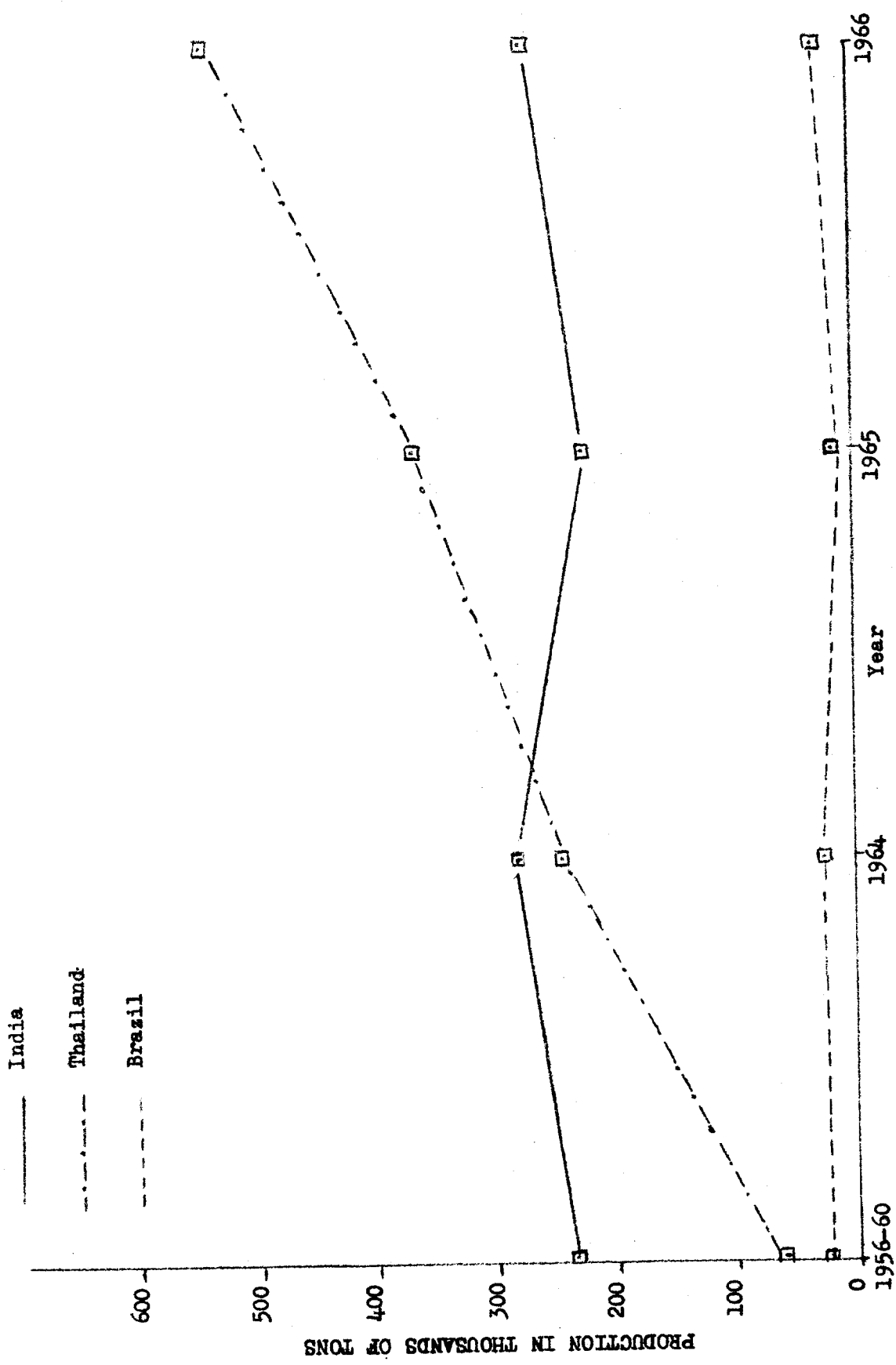


Figure 3.—Major countries: Production of kenaf. (Data from Table 1)

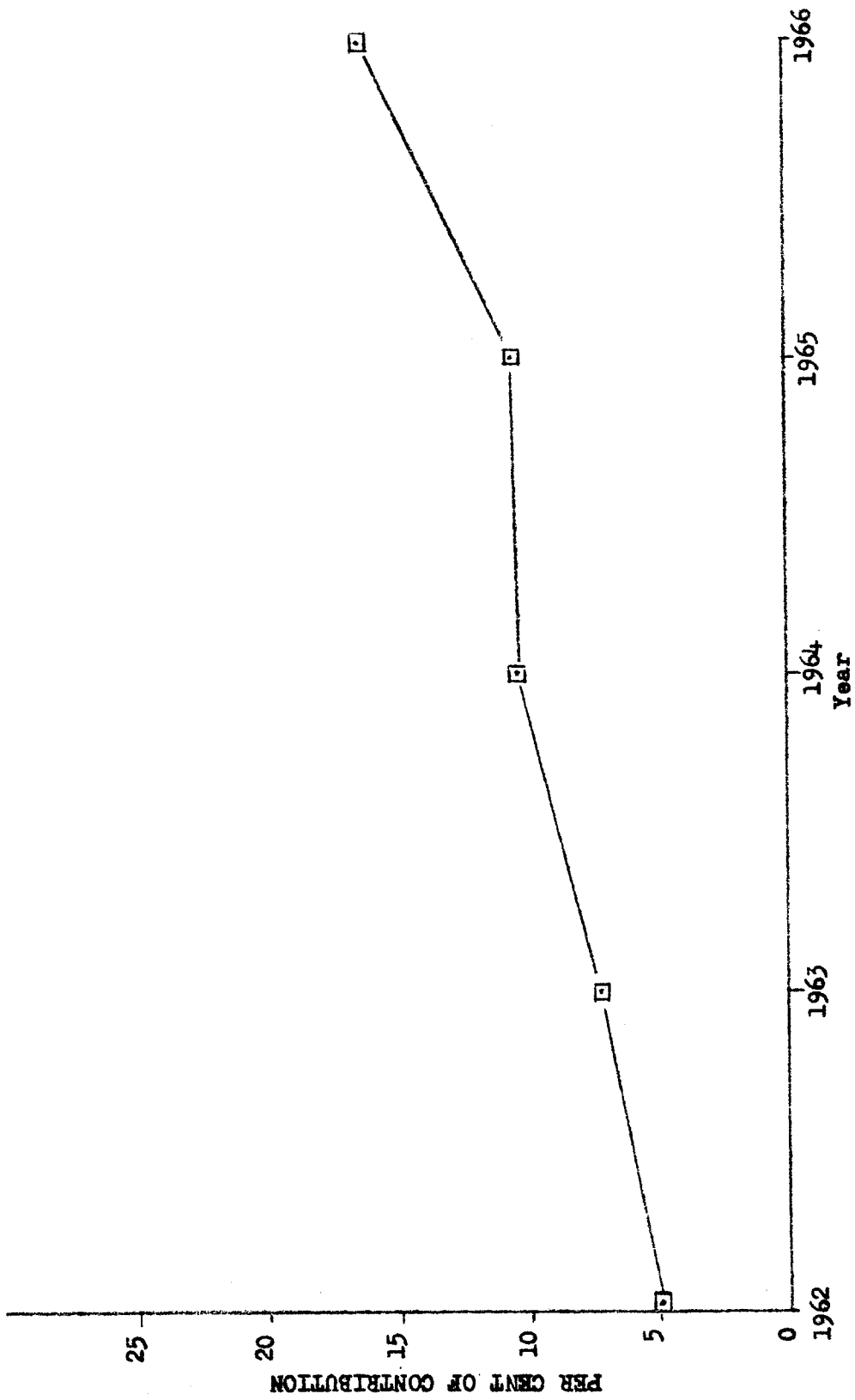


Figure 4.—Contribution by Thailand to world supplies of coarse fibres.
 (Data from Table 2)

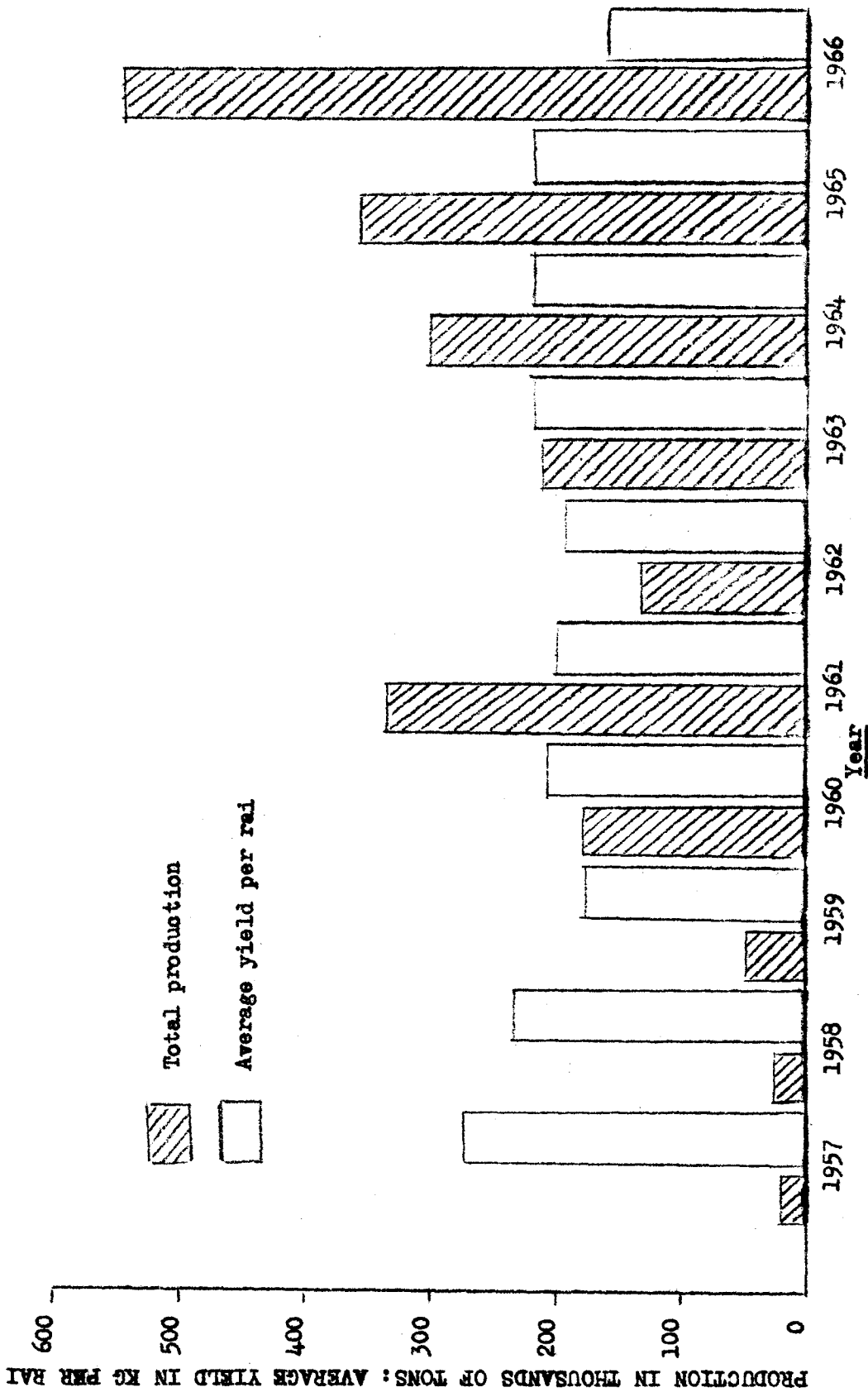


Figure 5.— Production and yield of Thai kenaf. (Data from Table 5)

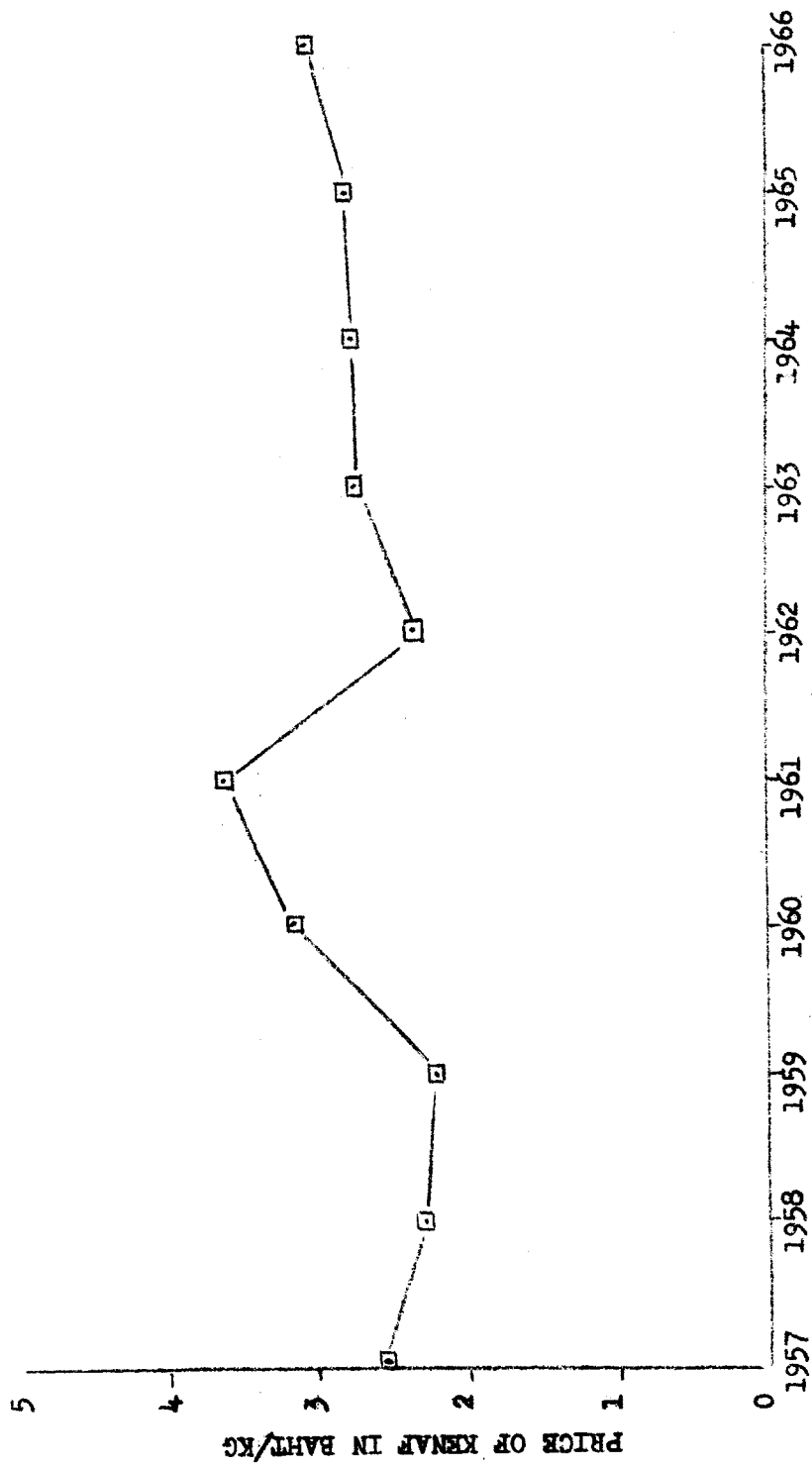


Figure 6.--Wholesale price of kenaf in Bangkok market. (Data from Table 5)

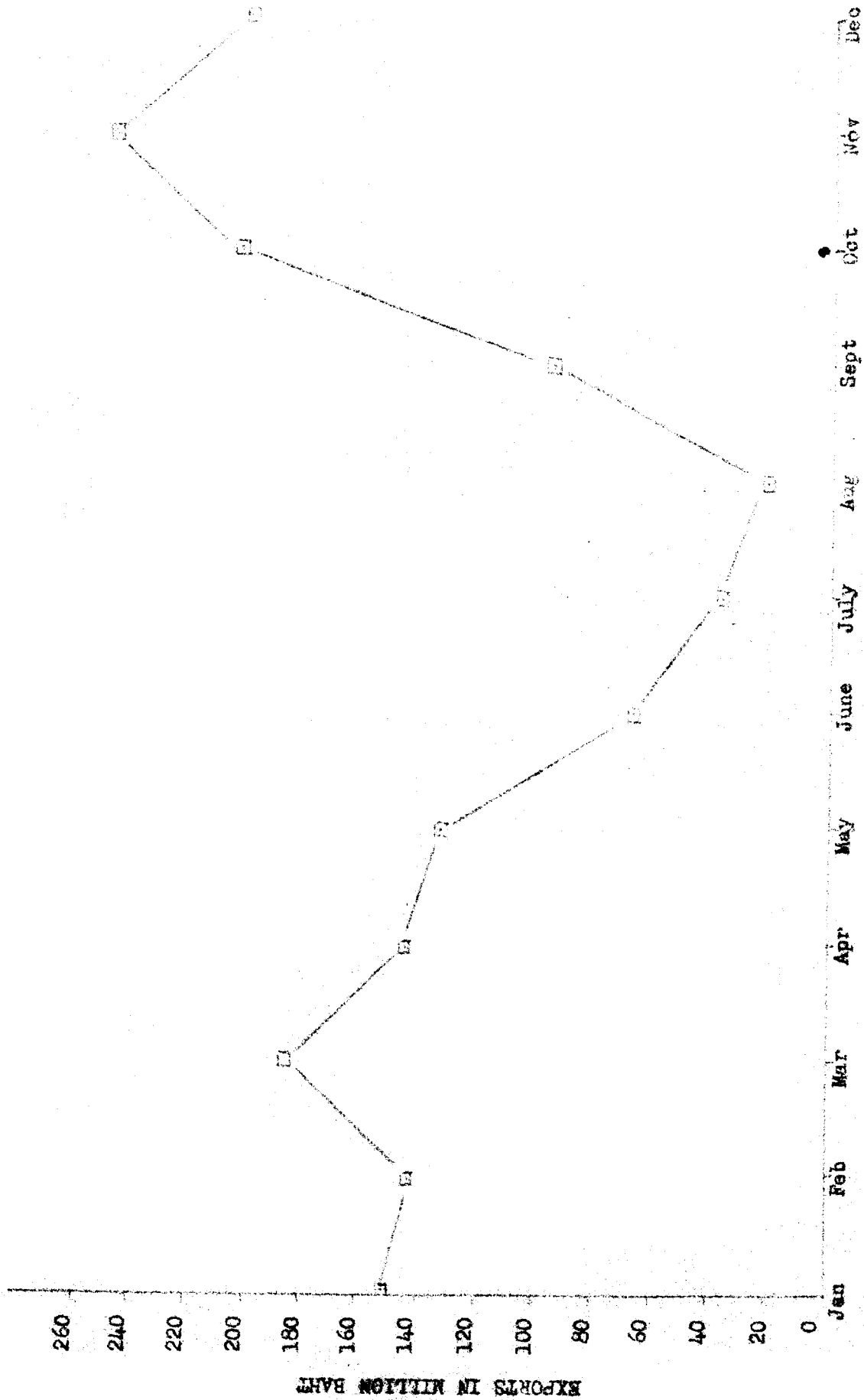


Figure 7.—Monthly exports of kenaf and jute from Thailand in 1966 (Source: Dept. of Customs)

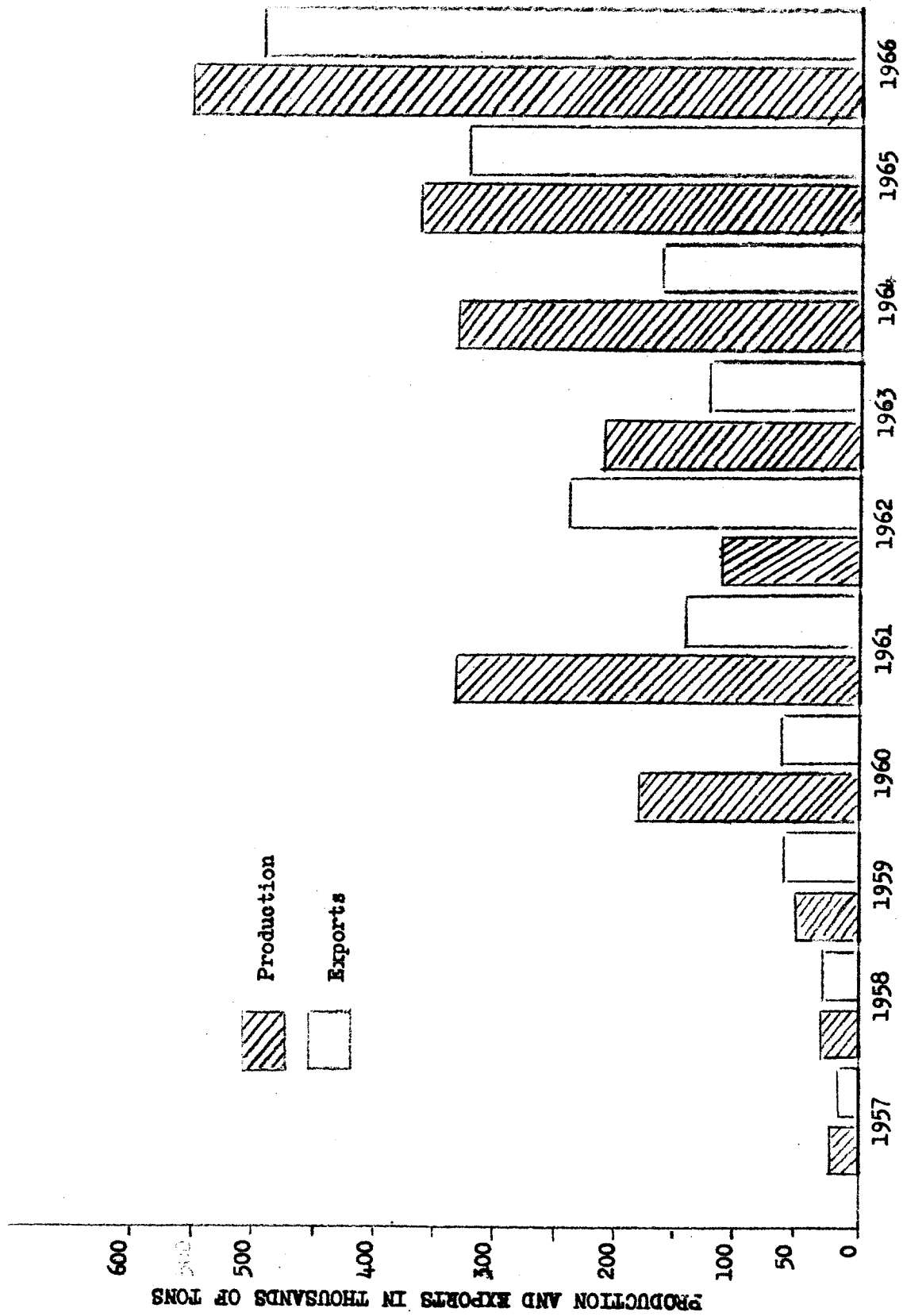


Figure 8.—Production and exports of Thai kenaf (Data from Table 6).

Baht per 60 kg

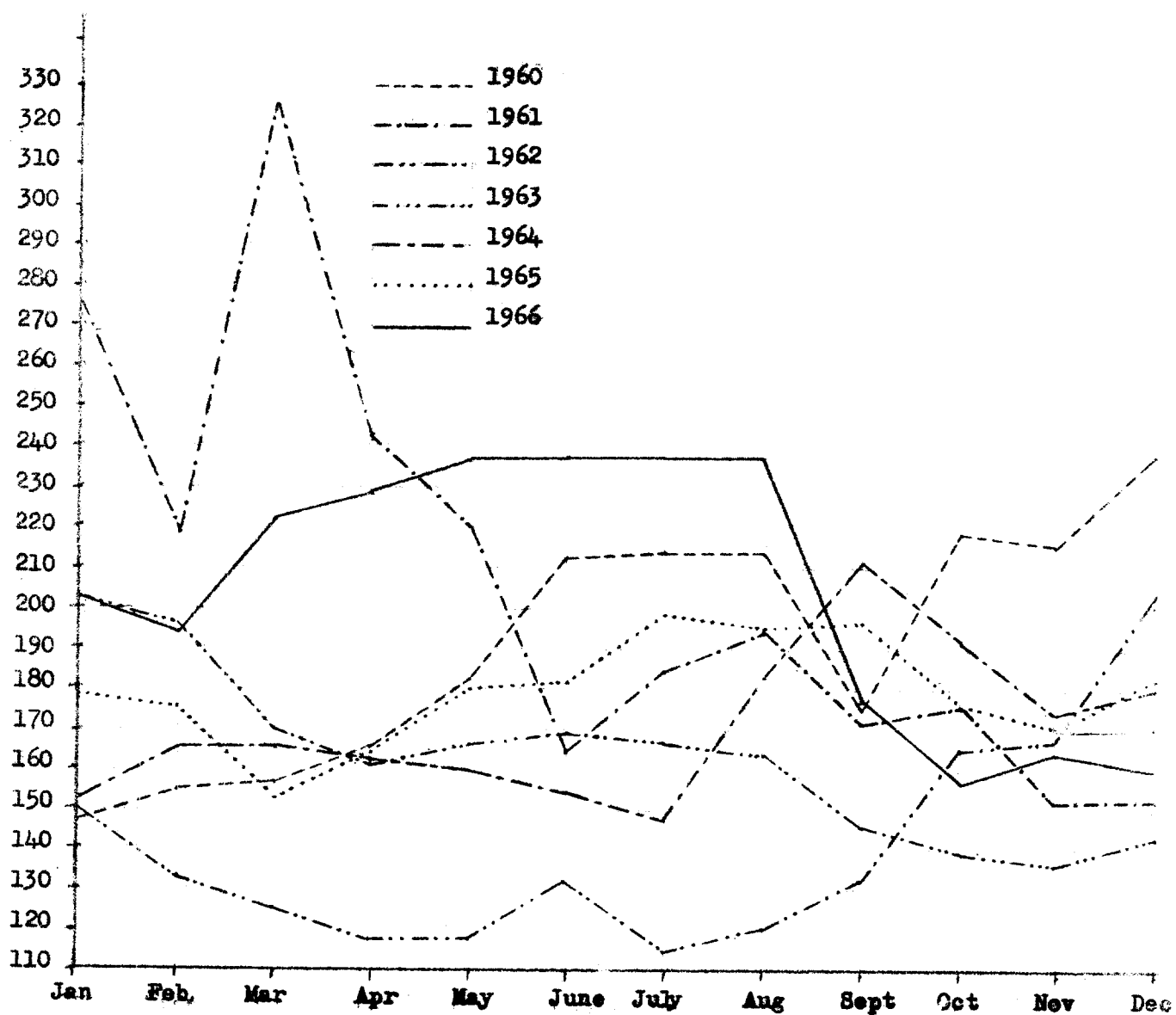
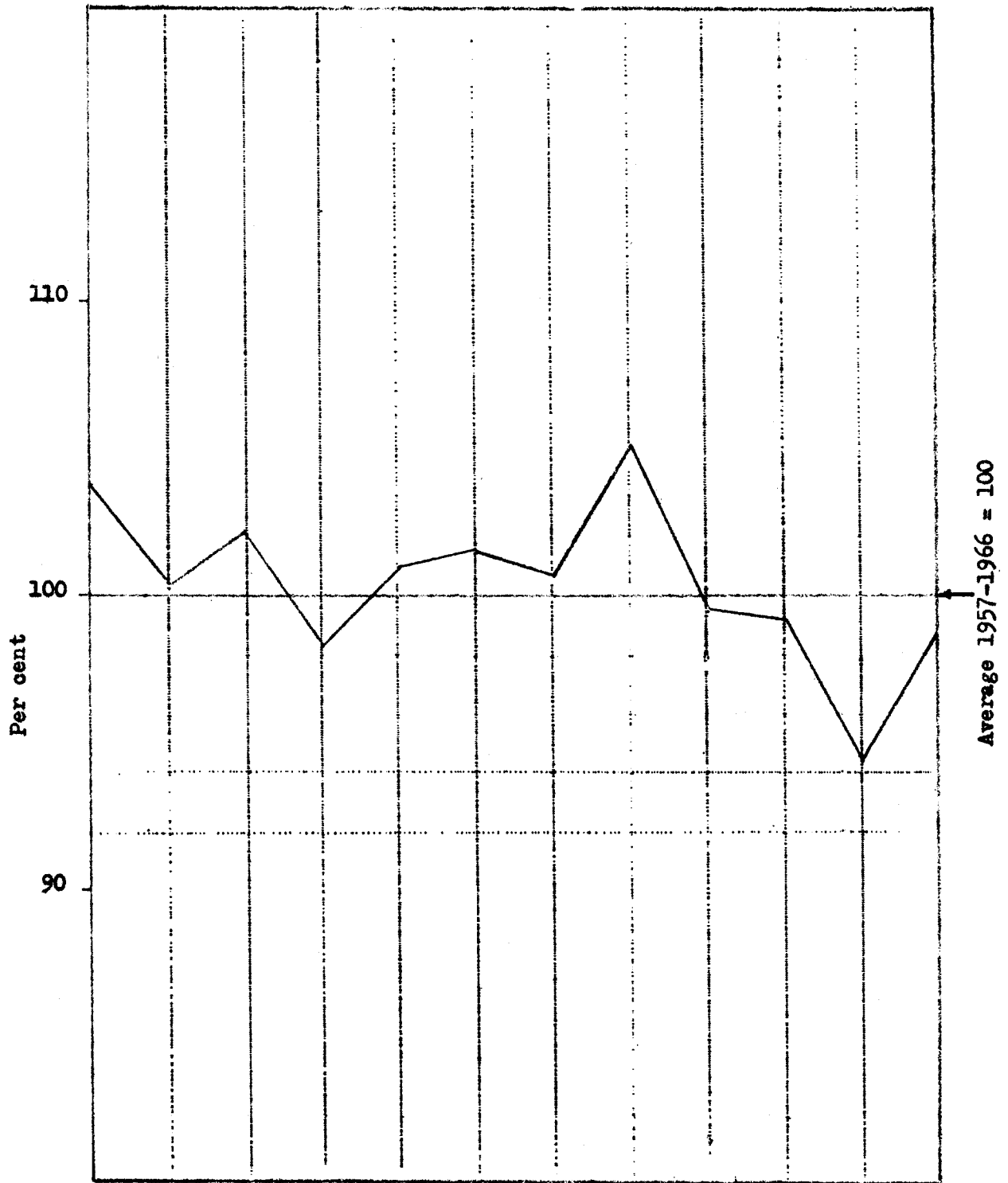


Figure 9.—Bangkok wholesale price by month for good grade kenaf.
(Data from Table 8)



Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec
 Figure 10.—Index of wholesale prices for good grade kenaf in Bangkok.
 Monthly average prices 1957-1966. (Data from Table 8)

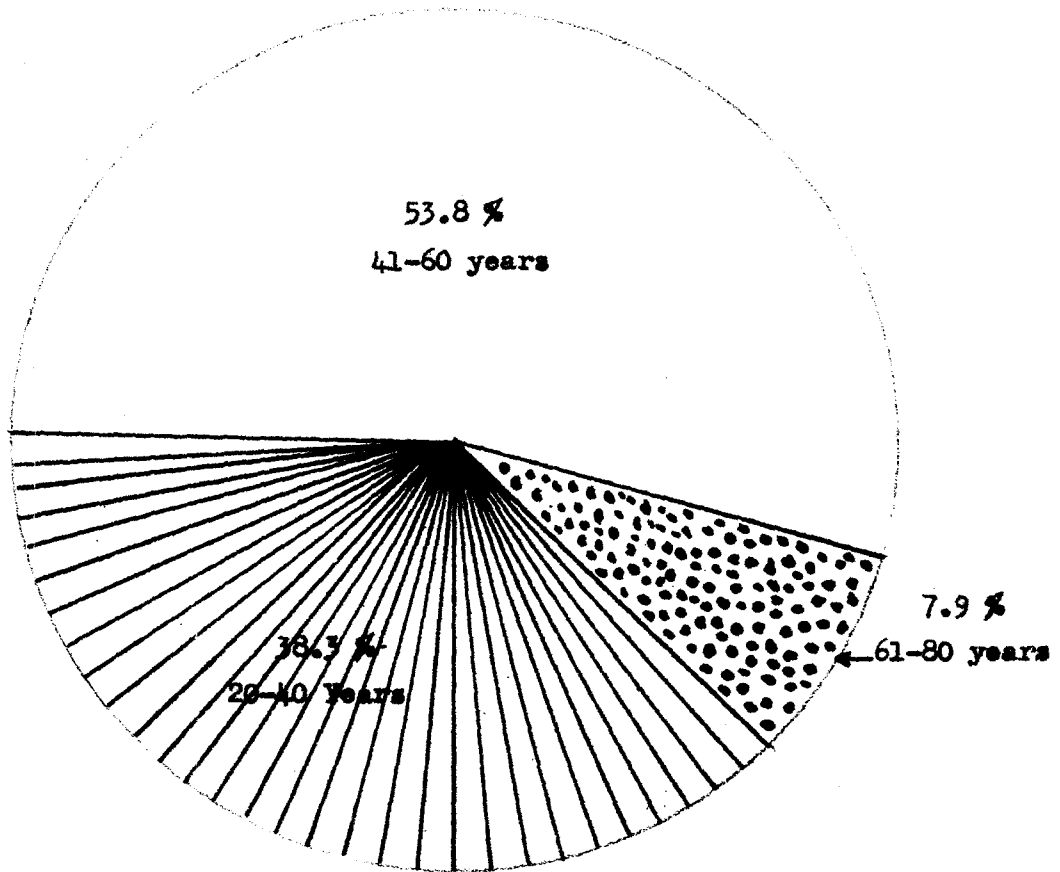


Figure 11.— Age of kenaf growers, 1966 (Data from Table 11).

The average age of kenaf growers is much greater than the median of the general male population in Thailand (18.4 years), but the difference can be accounted for by the family-system of farming. Average age of all kenaf workers would be much lower.

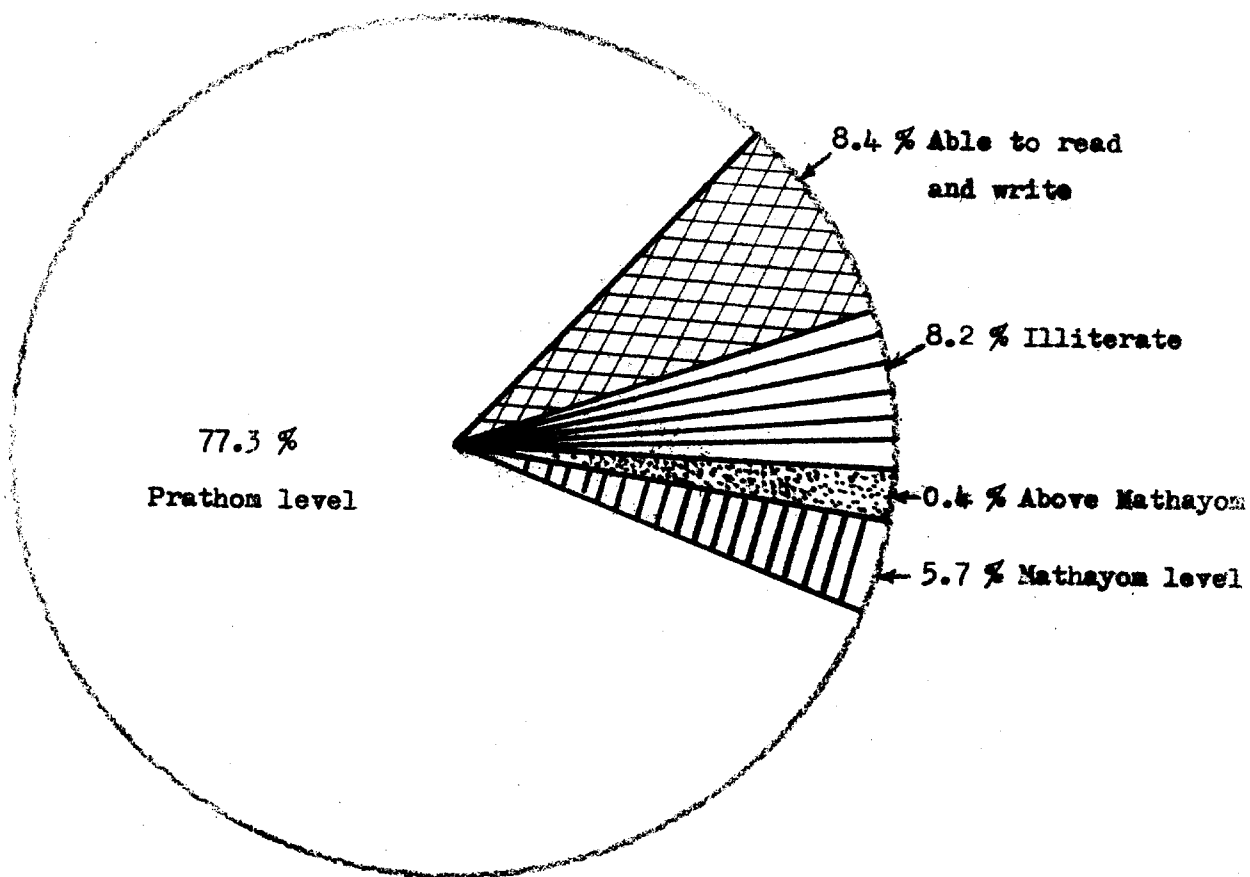


Figure 12.—Educational status of kenaf growers, 1966.
(Data from Table 11)

The vast majority of kenaf growers have received only a primary-school education. Earlier evidence showed also that most agricultural know-how is handed on by word of mouth. It could still be true that younger members of families are educated to higher levels. Educational level is important in planning extension services.

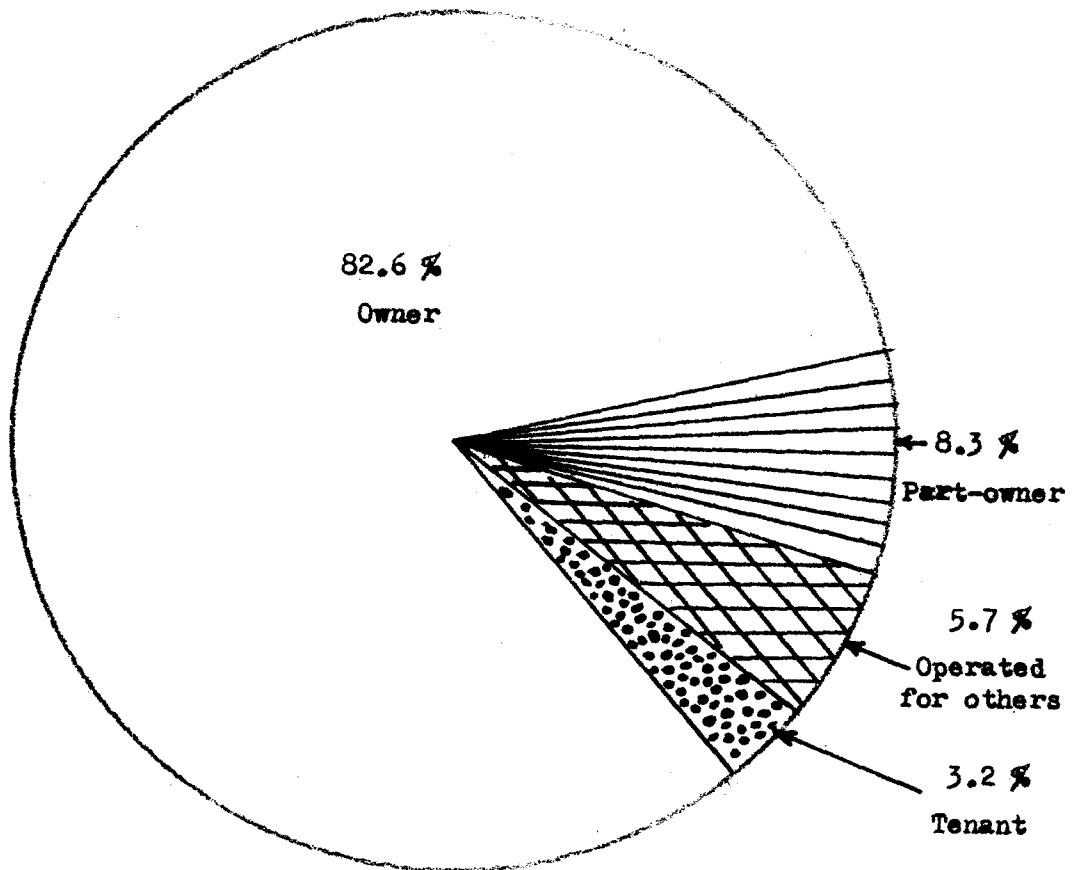


Figure 13.— Tenure status of kenaf growers, 1966 .
(Data from Table 12)

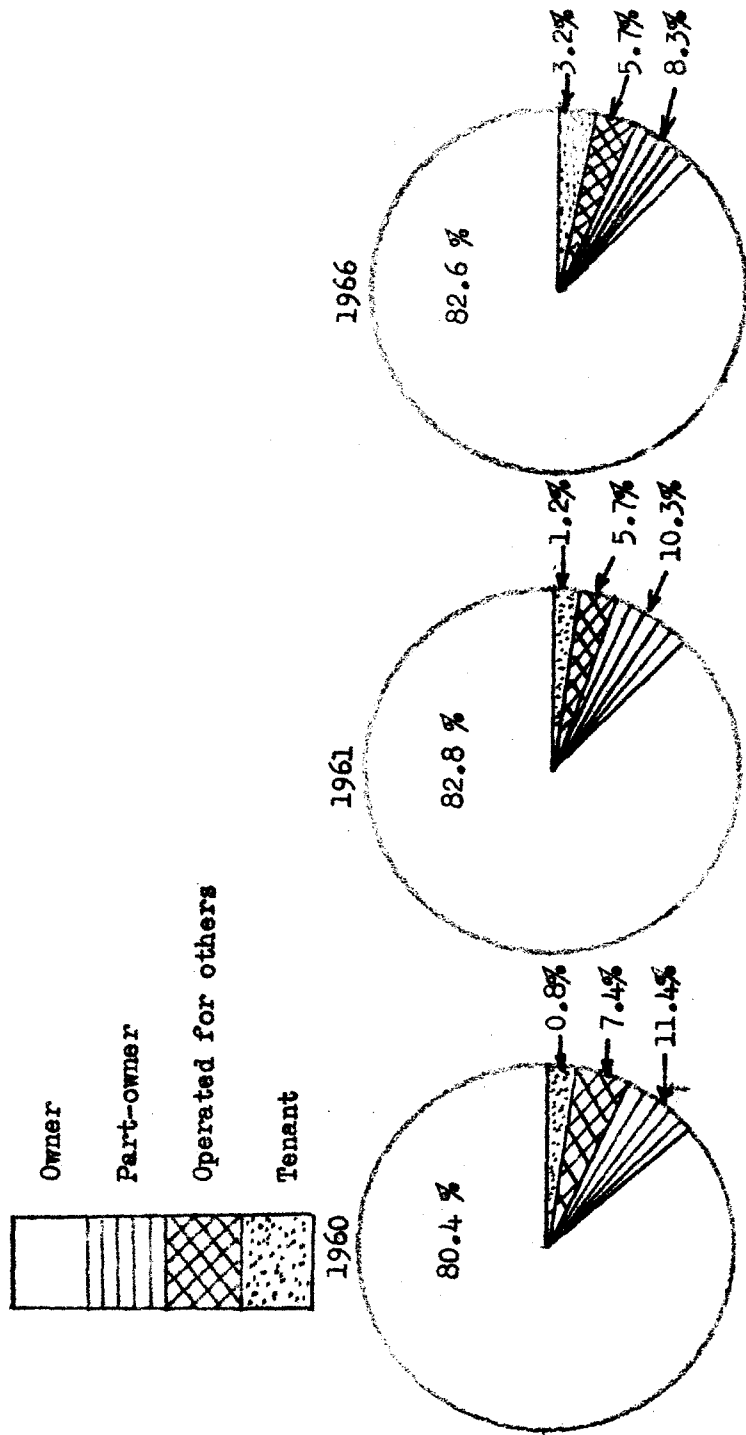


Figure 14.—Tenure status of kenaf growers 1960, 1961 and 1966.
(Data from Table 12 of 1966 report)

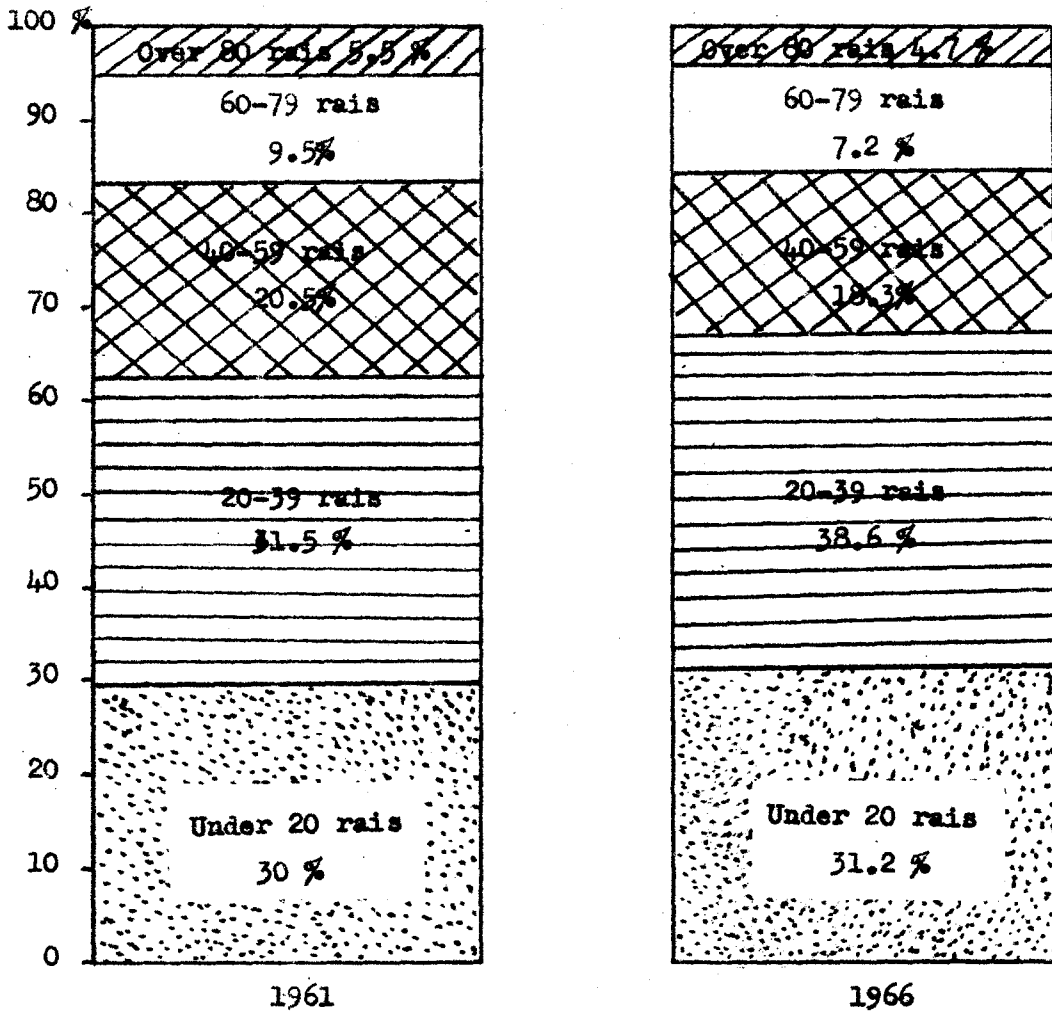


Figure 15.—Percentage of farm size, 1961 and 1966.
 (Data from Table 13 (1966)).

Unit - rai

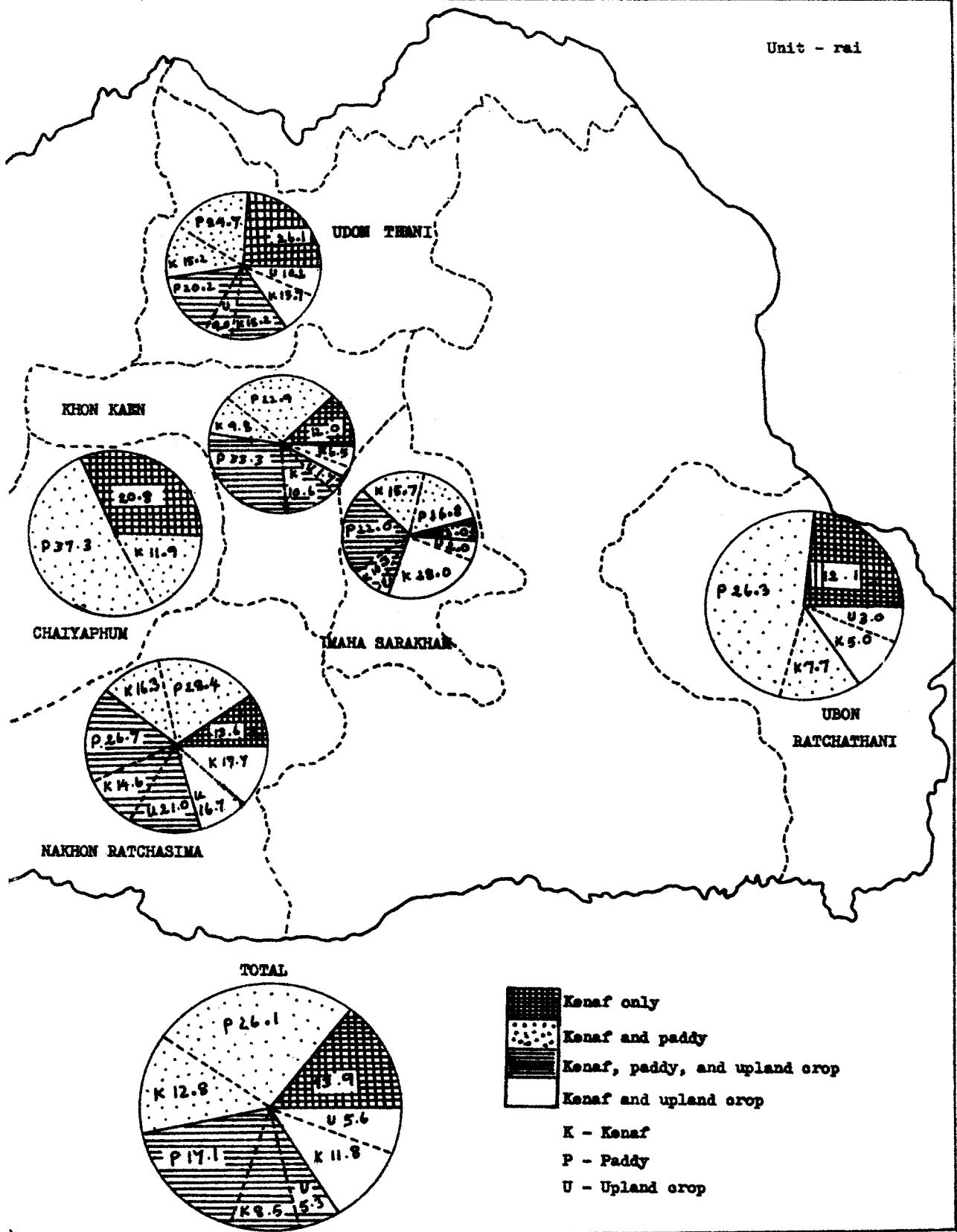


Figure 16.—Average crop area operations of kenaf growers in 1966.(Data from Table 14)

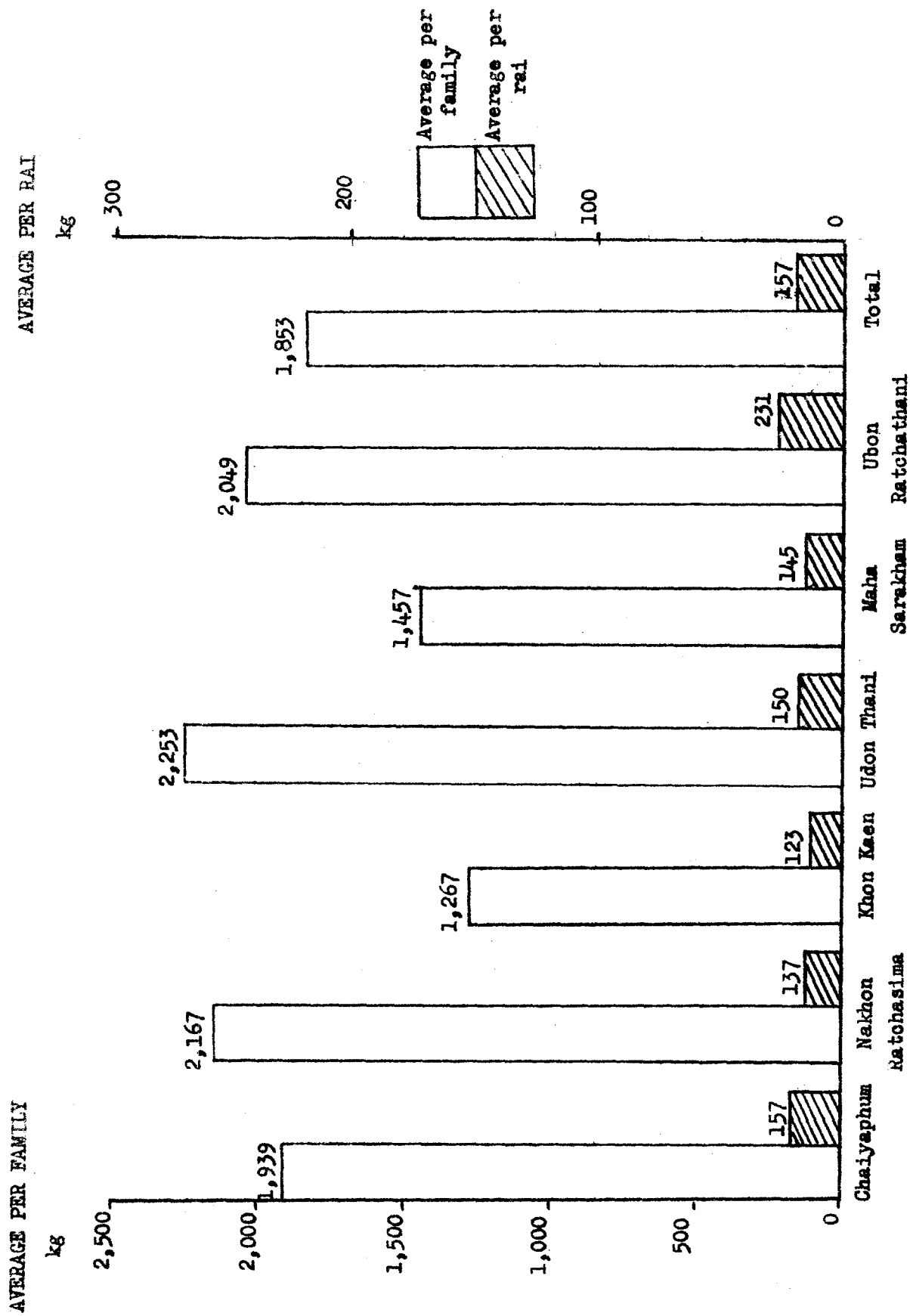


Figure 17.—Kenaf production per family and yield per rai, 1966-67, by changwats. (Data from Table 16)

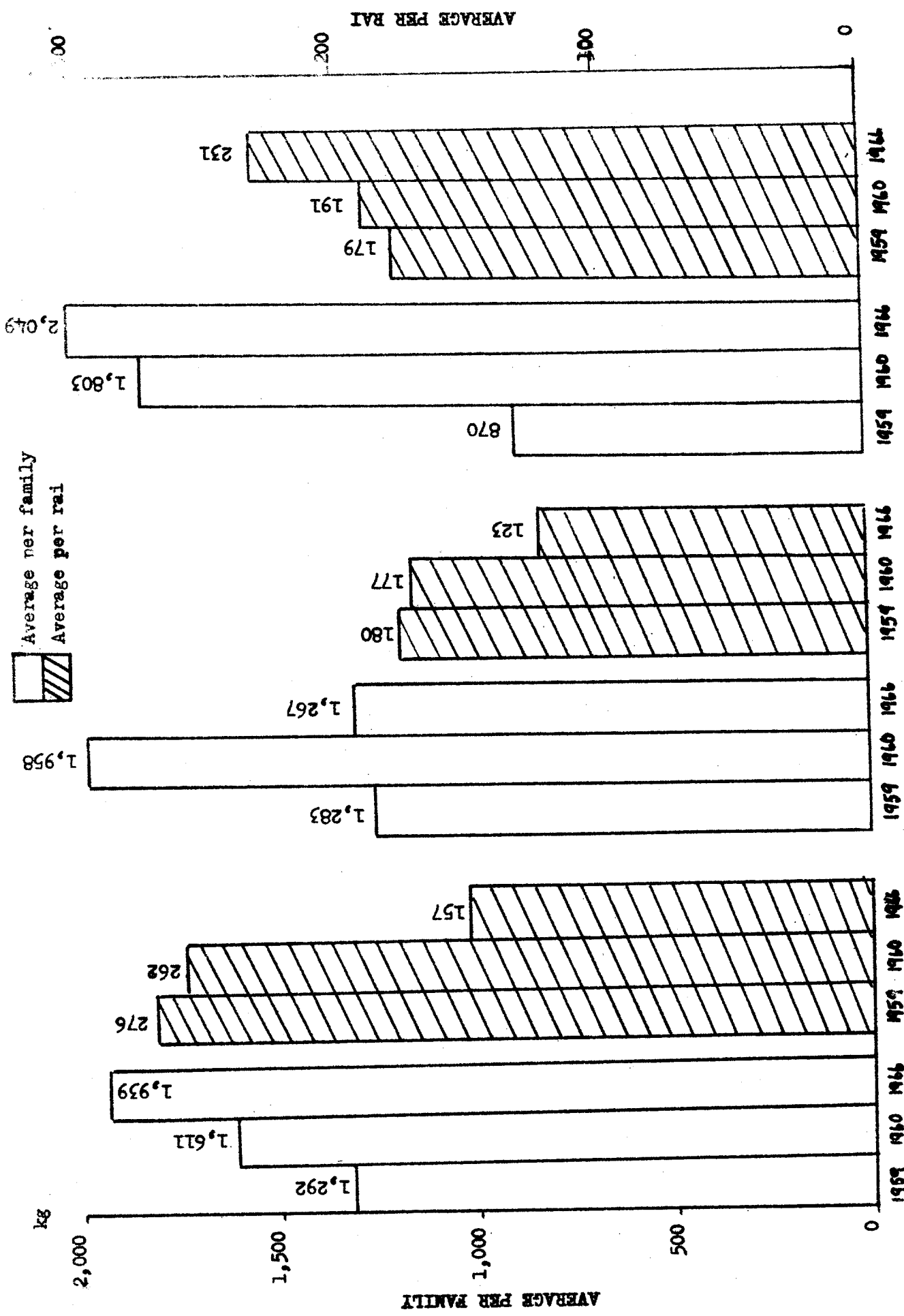


Figure 16. - Production per family and yield per rai, 1959, 60, and 66. (Data from Table 16(19...))

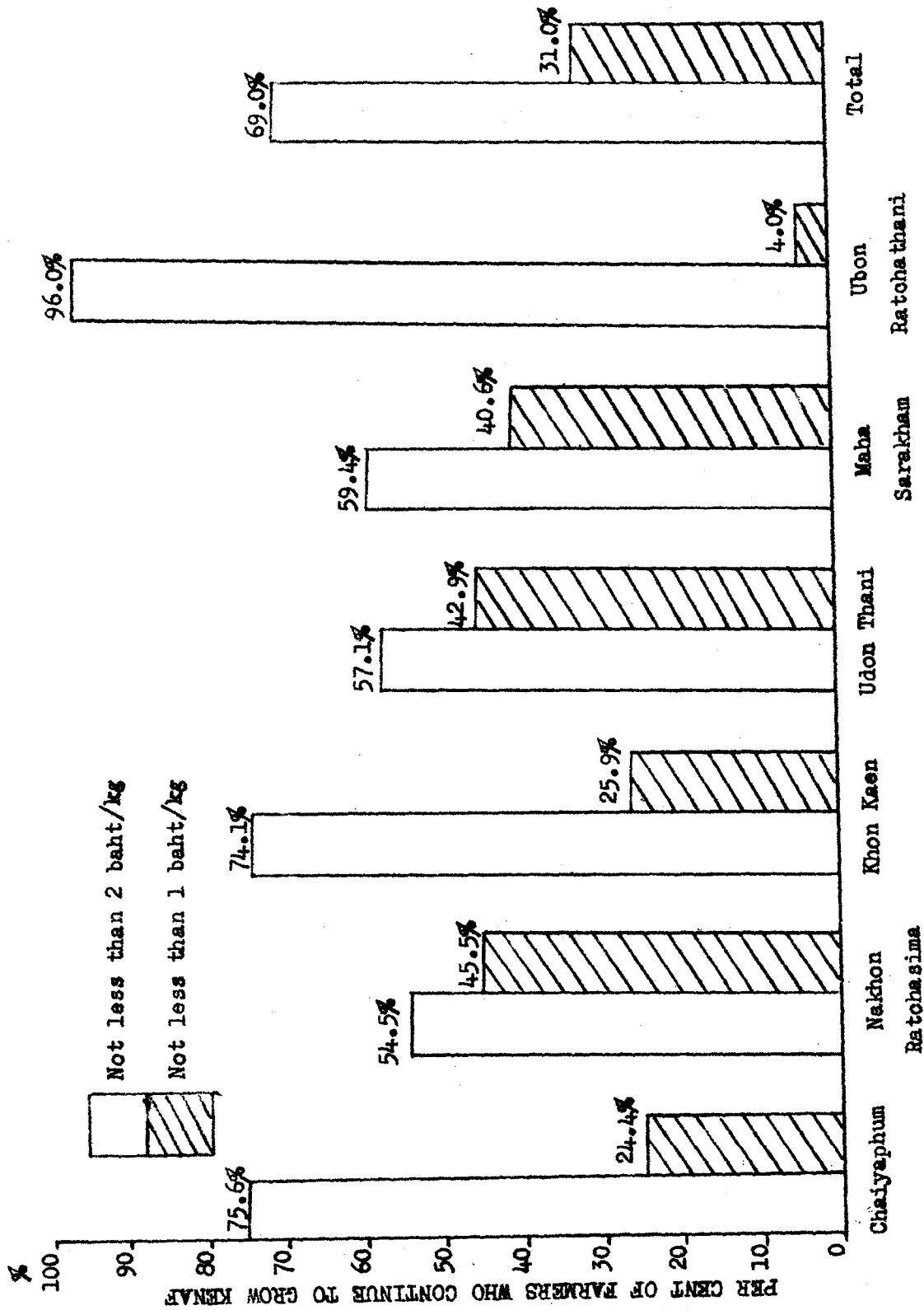


Figure 19.— Minimum price at which farmers would continue to grow kenaf.
 (Data from Table 19)

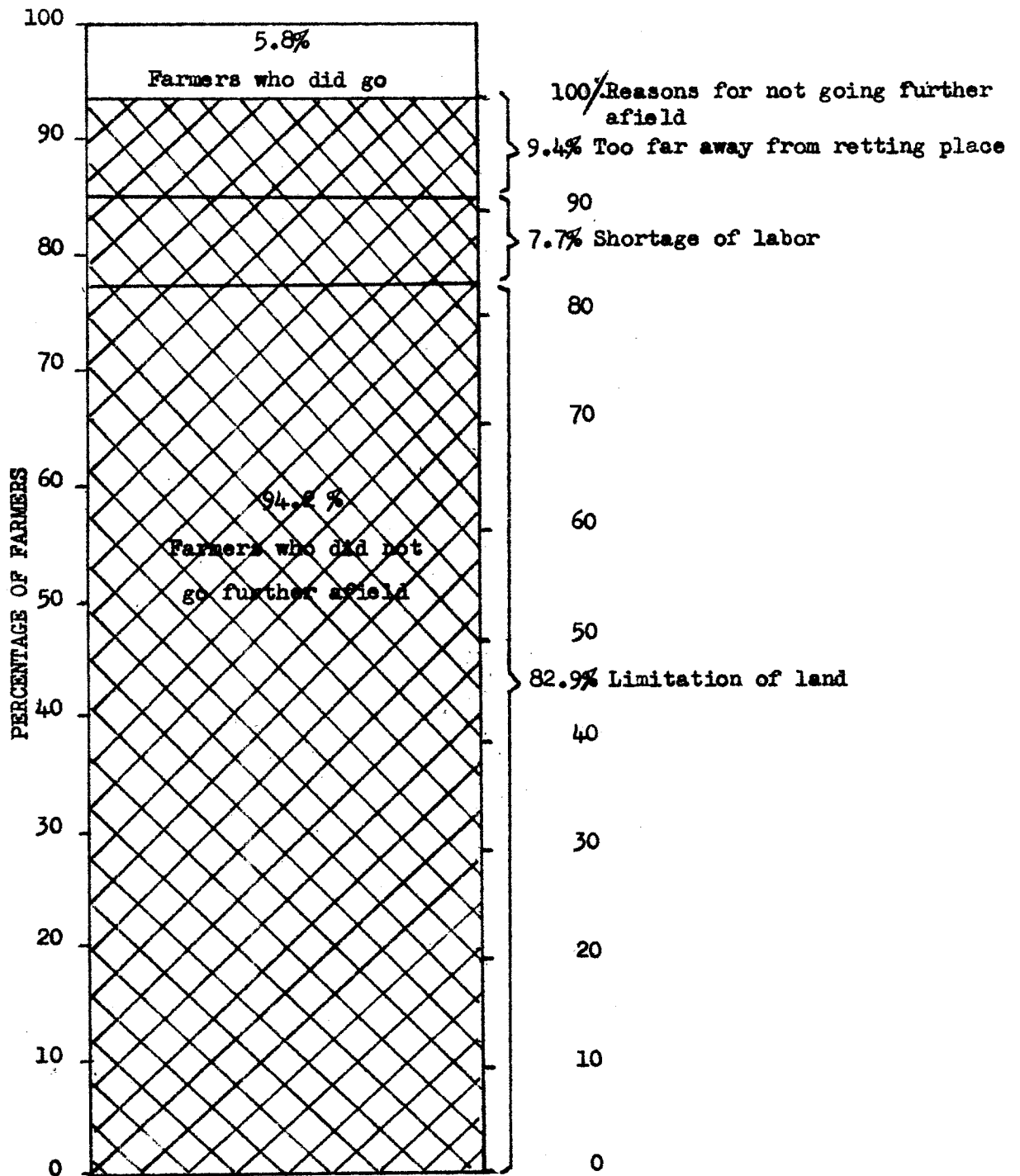


Figure 20.—Farmers' reasons for not going further afield to find virgin soil for growing kenaf (Data from Table 22)

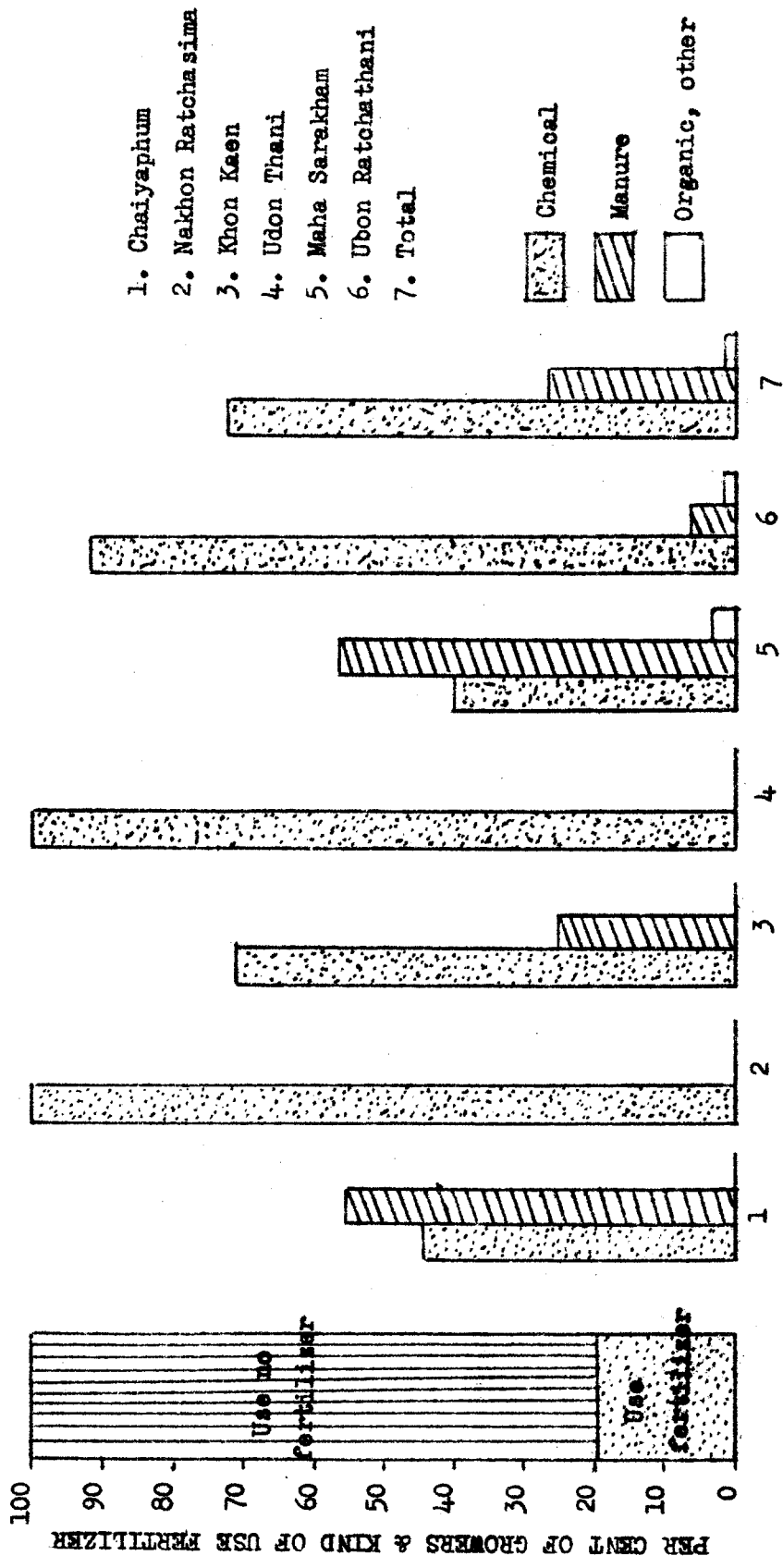


Figure 21.—Use of fertilizer by kenaf growers, by changwat. (Data from Table 23)

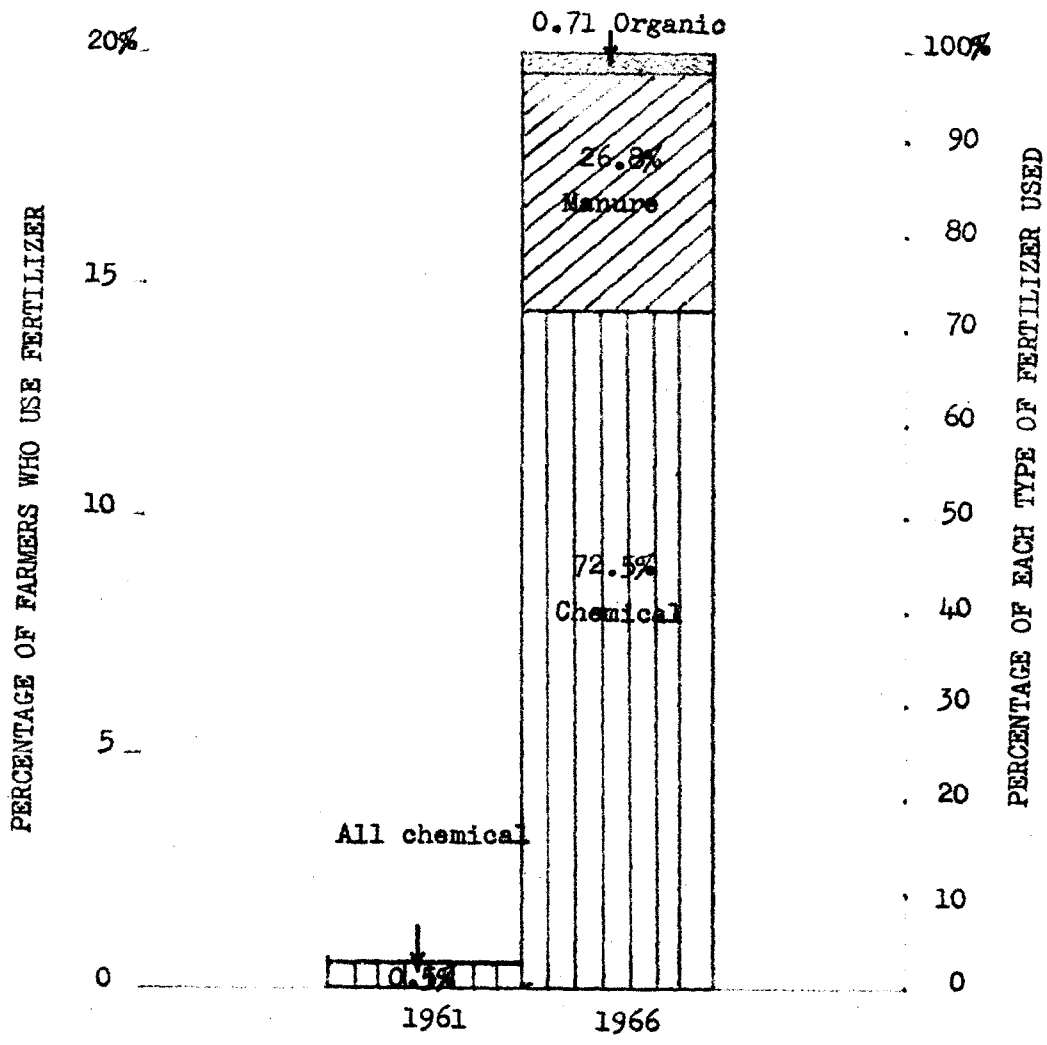


Figure 22.—Usage of fertilizer by kenaf growers 1961, 1966.
 (Data from Table 23)

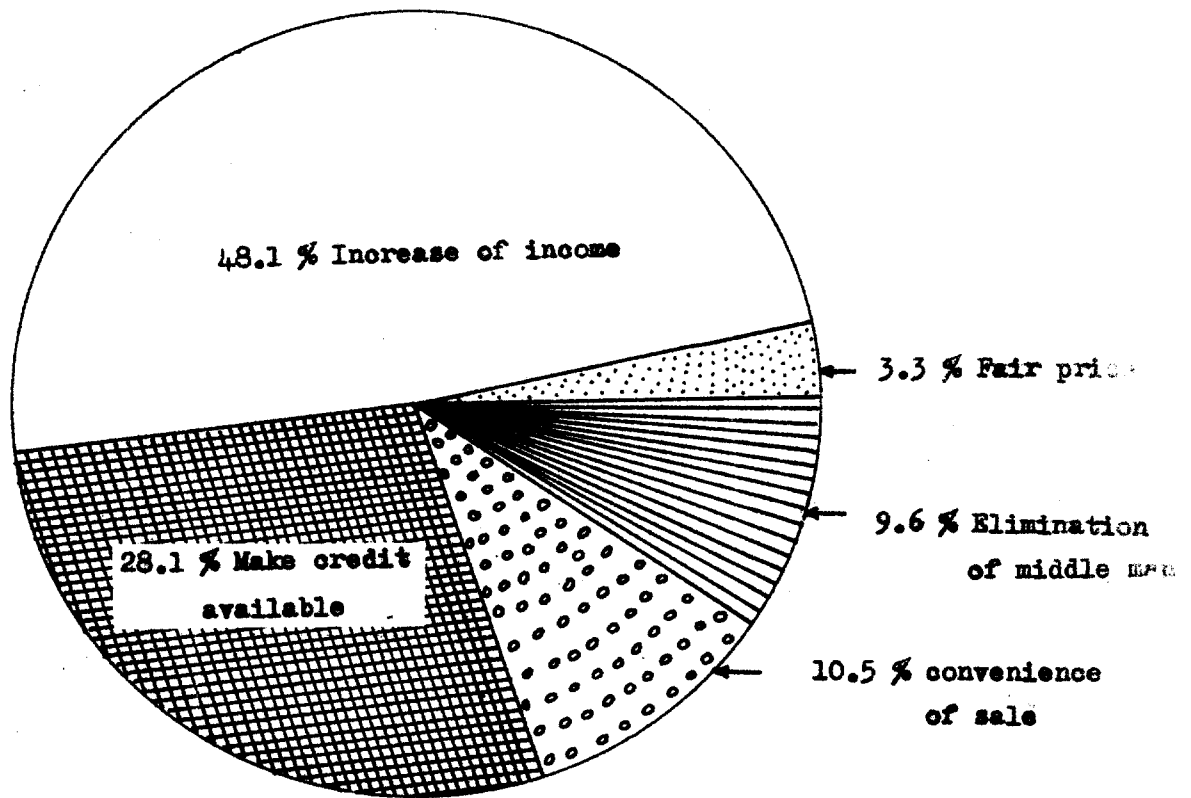


Figure 23.—Farmers' views on what the government should do to assist them regarding credit and marketing facilities. (Data from Table 24).

Note. In any survey of groups such as farmers, it is difficult to get 100 % to be specific about benefits they want from the government. In this instance it was felt better to record the 48.1 % as merely wanting "increase of income" than to try to force a choice of more specific alternatives, none of which may represent their true feelings.

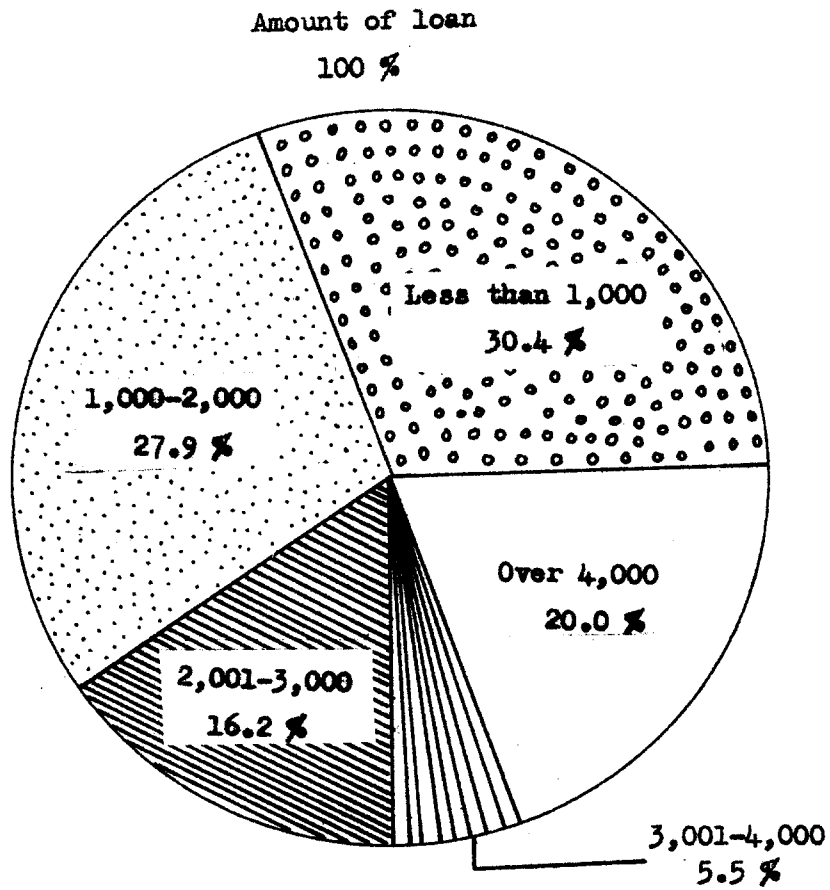


Figure 24.—Amount of loan per family required by kenaf growers.
(Data from Table 25)

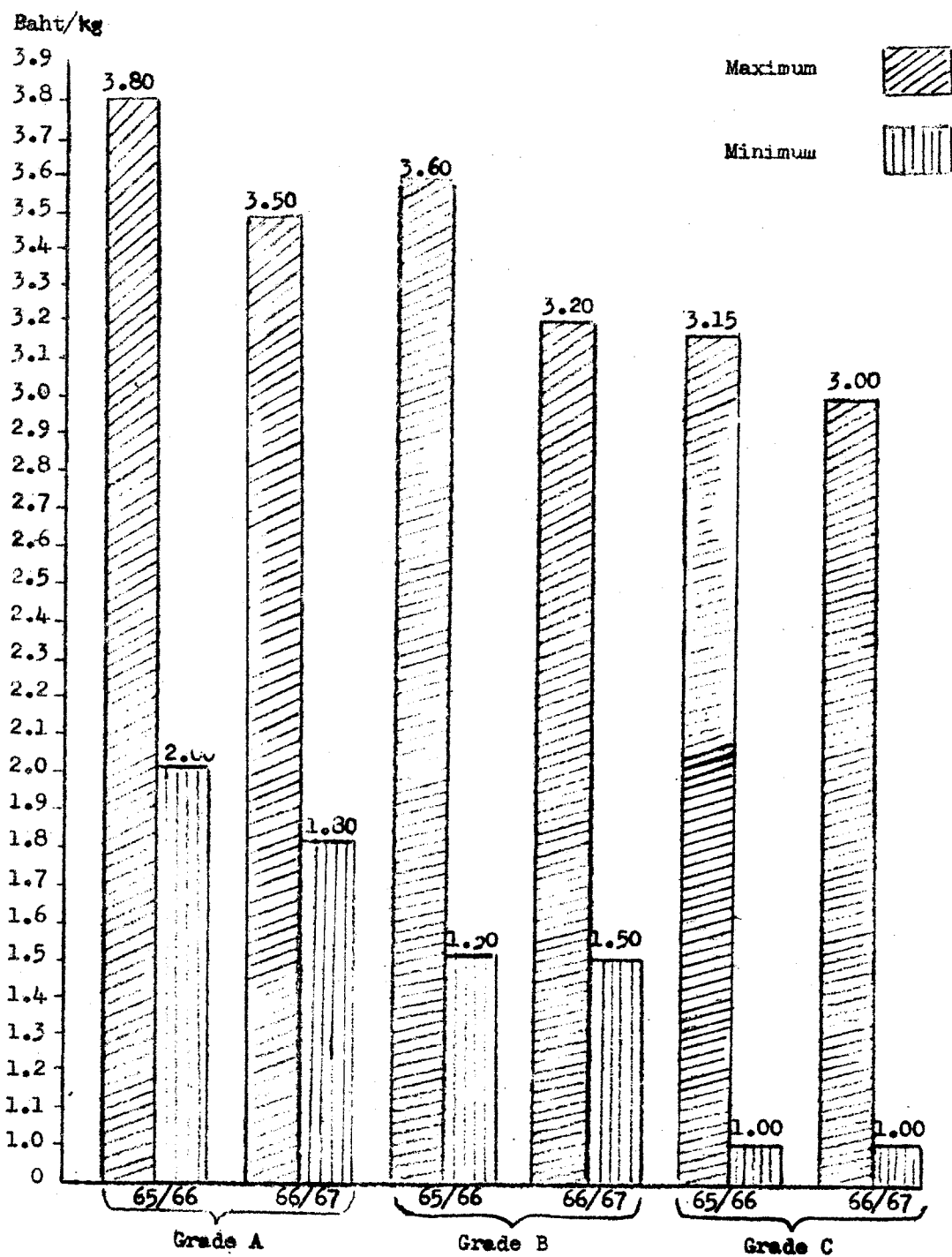


Figure 25.—Maximum and minimum prices received by growers in 1965-66 and 1966-67 for kenaf. (Data from Table 27)

Note. Growers, unfortunately, do not record all their sales systematically, but they usually remember their maximum and minimum prices. cf. Figure 35 re growers' buying prices.

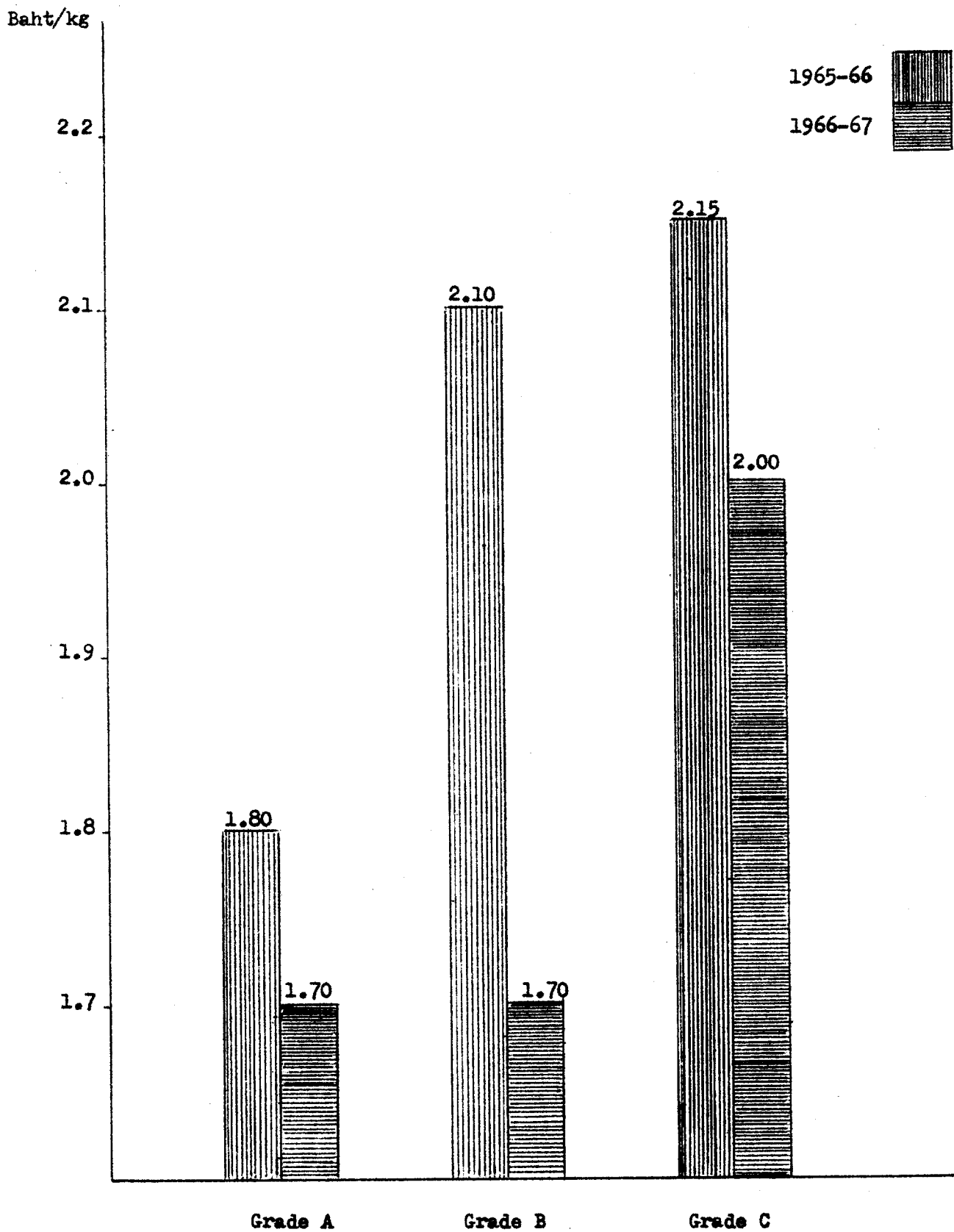


Figure 26.—Differences between maximum and minimum prices received by growers in 1965-66 and 1966-67 for various grades of kenaf. (Data from Table 27)

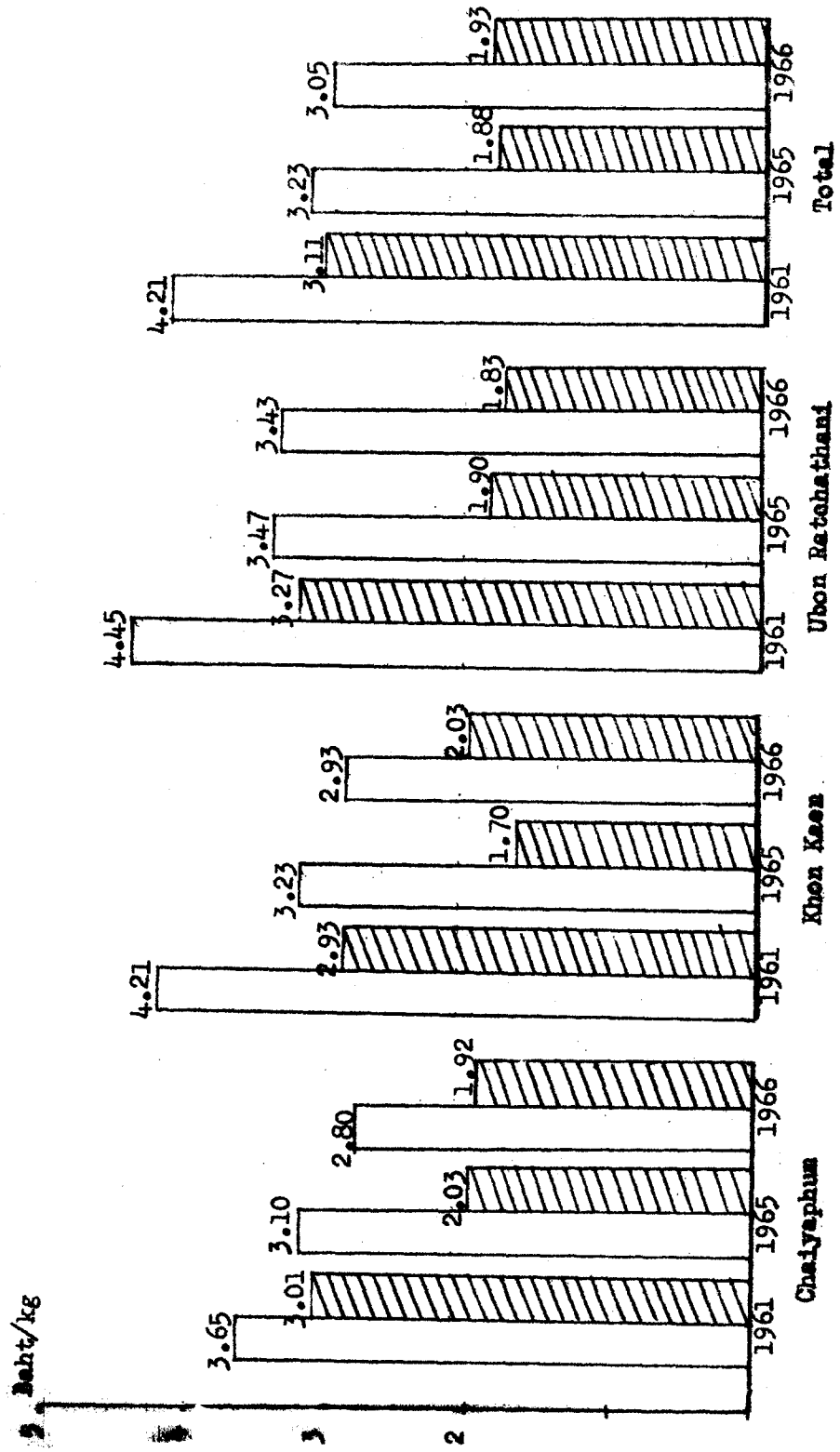


Figure 27.— Maximum and minimum price received by kenaf growers by changwat 1961, 1965, 1966.
 (Data from Table 27)

Each bar represents maximum and minimum price of mixed grade kenaf

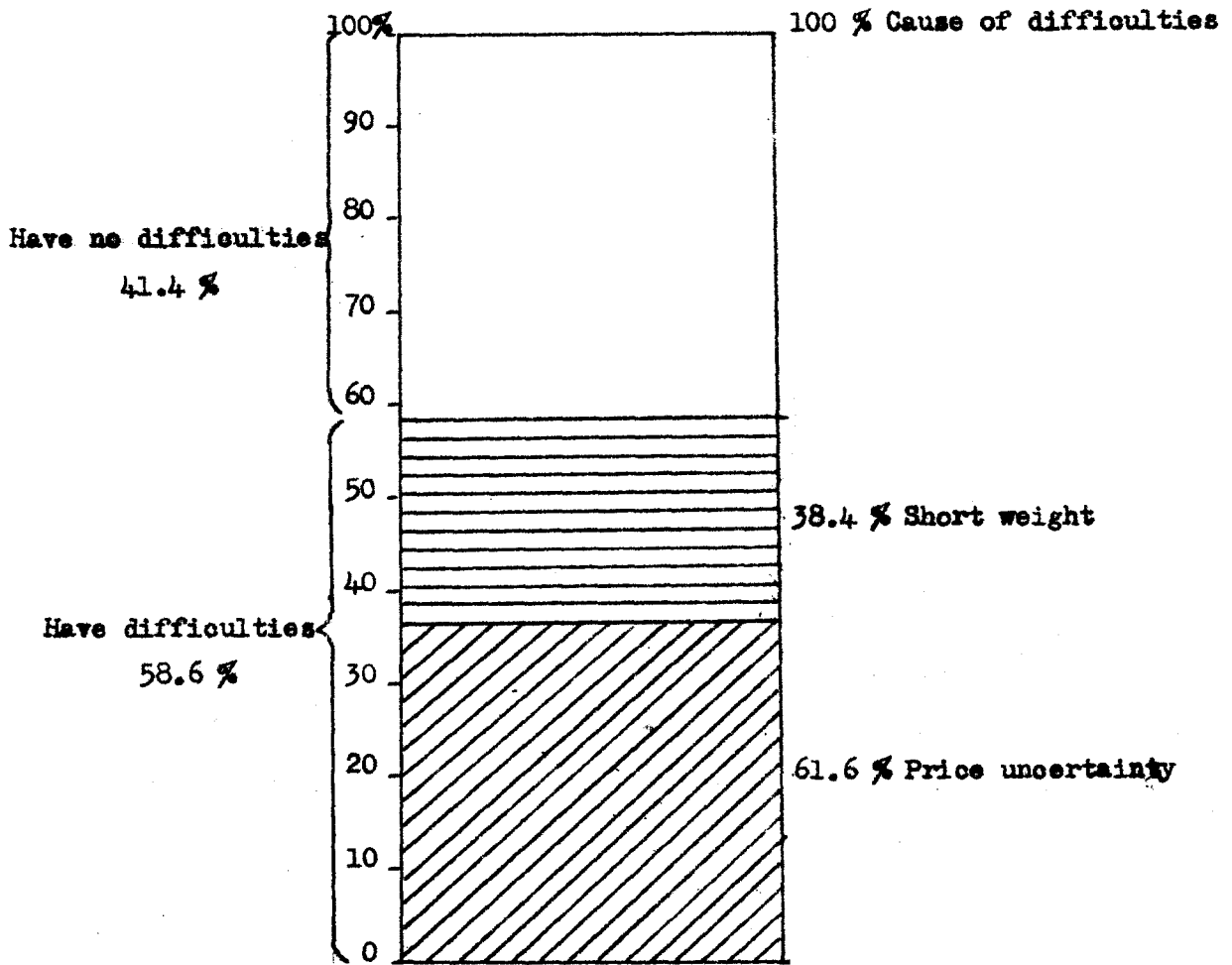


Figure 28.—Growers difficulties in disposal of kenaf, 1966.
(Data from Table 28)

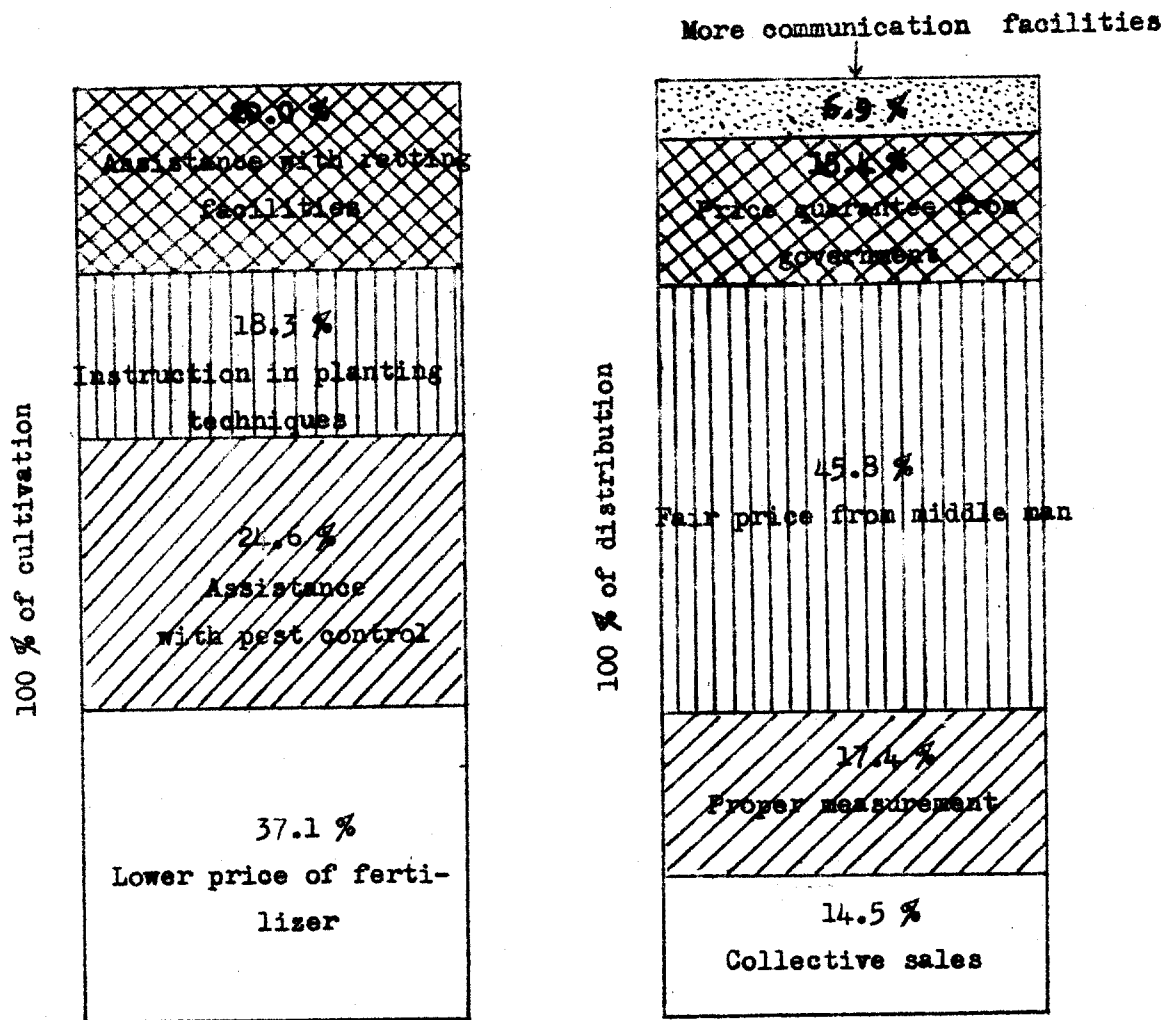


Figure 29.—Farmers views on appropriate government assistance.
(Data from Table 29)

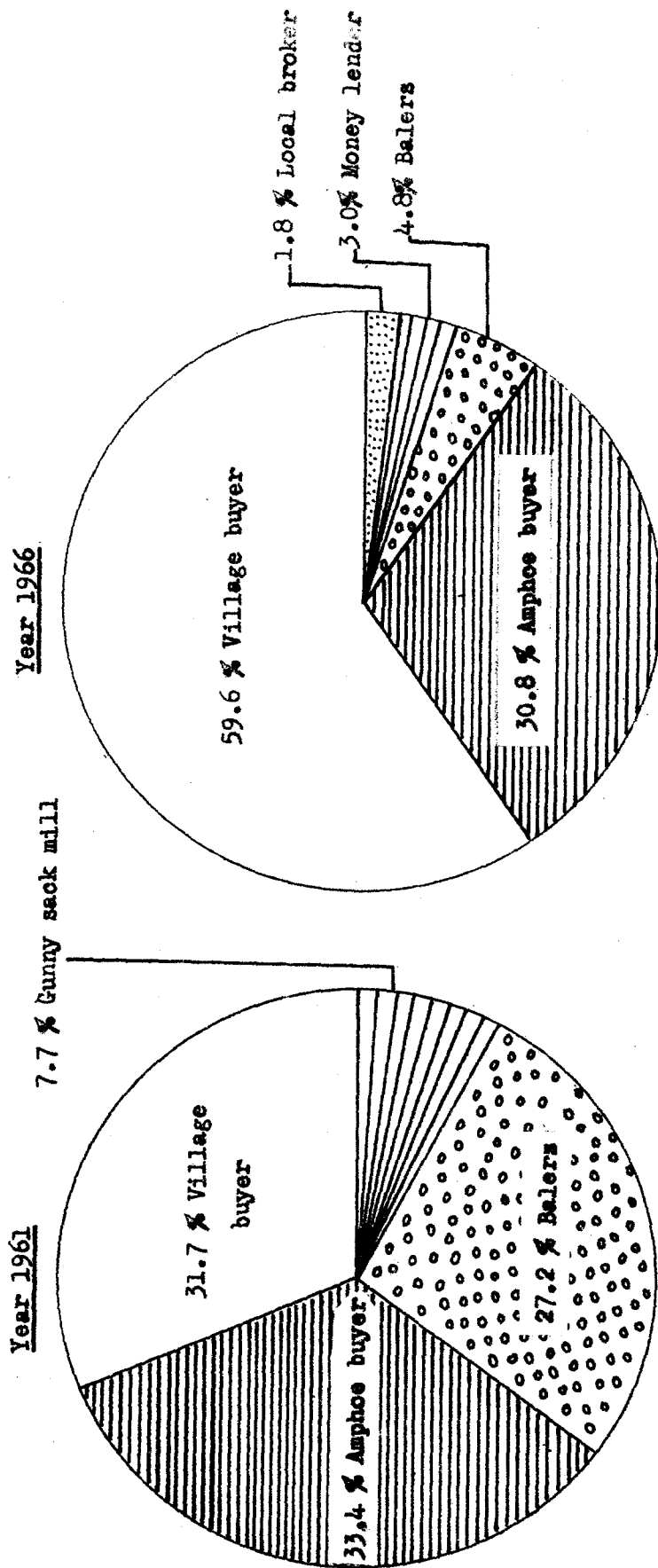


Figure 30.—Types of kenaf buyers who bought kenaf from growers during 1961 and 1968
(Data from Table 20)

Note. Although the number of balers has increased, sales by growers to local store-keepers (i.e. the chief type of amphoe and village buyer) have proportionately increased. The store-keepers, in turn, sell mostly to balers.

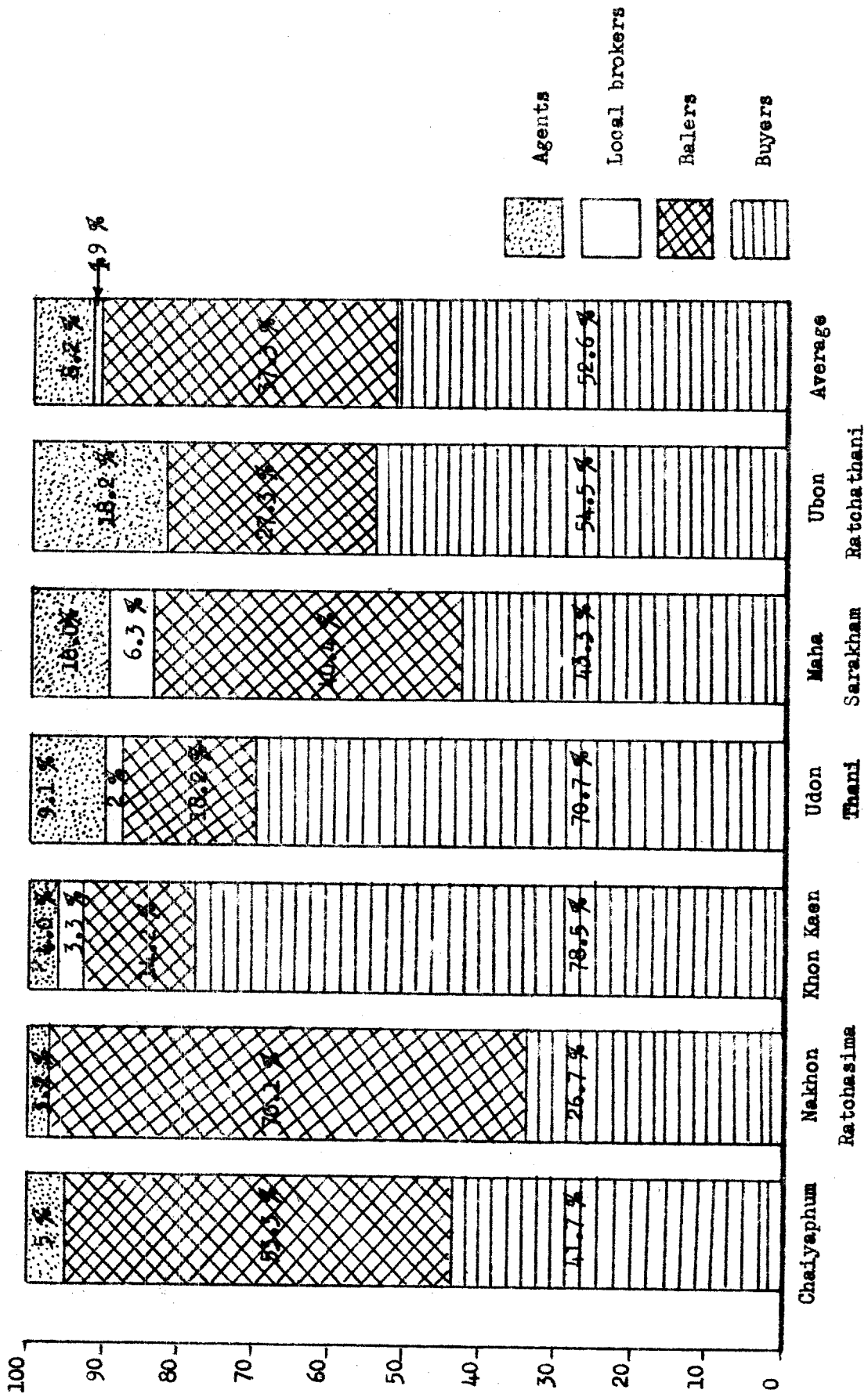


Figure 31.—Types of kenaf traders. (Data from Table 31)

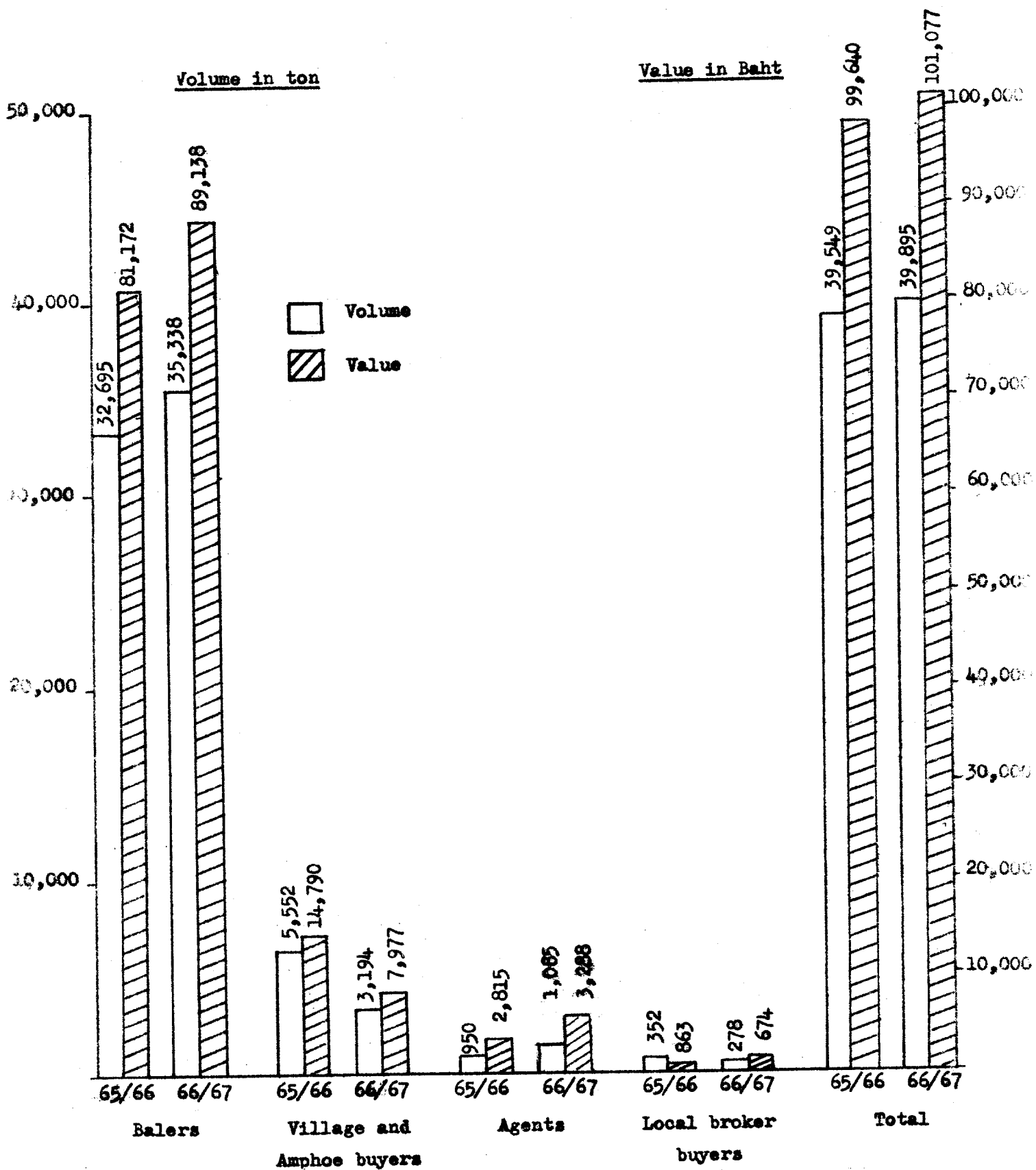


Figure 32.— Volume and value of kenaf purchased by traders, 1965/66-1966/67
(Data from Table 32)

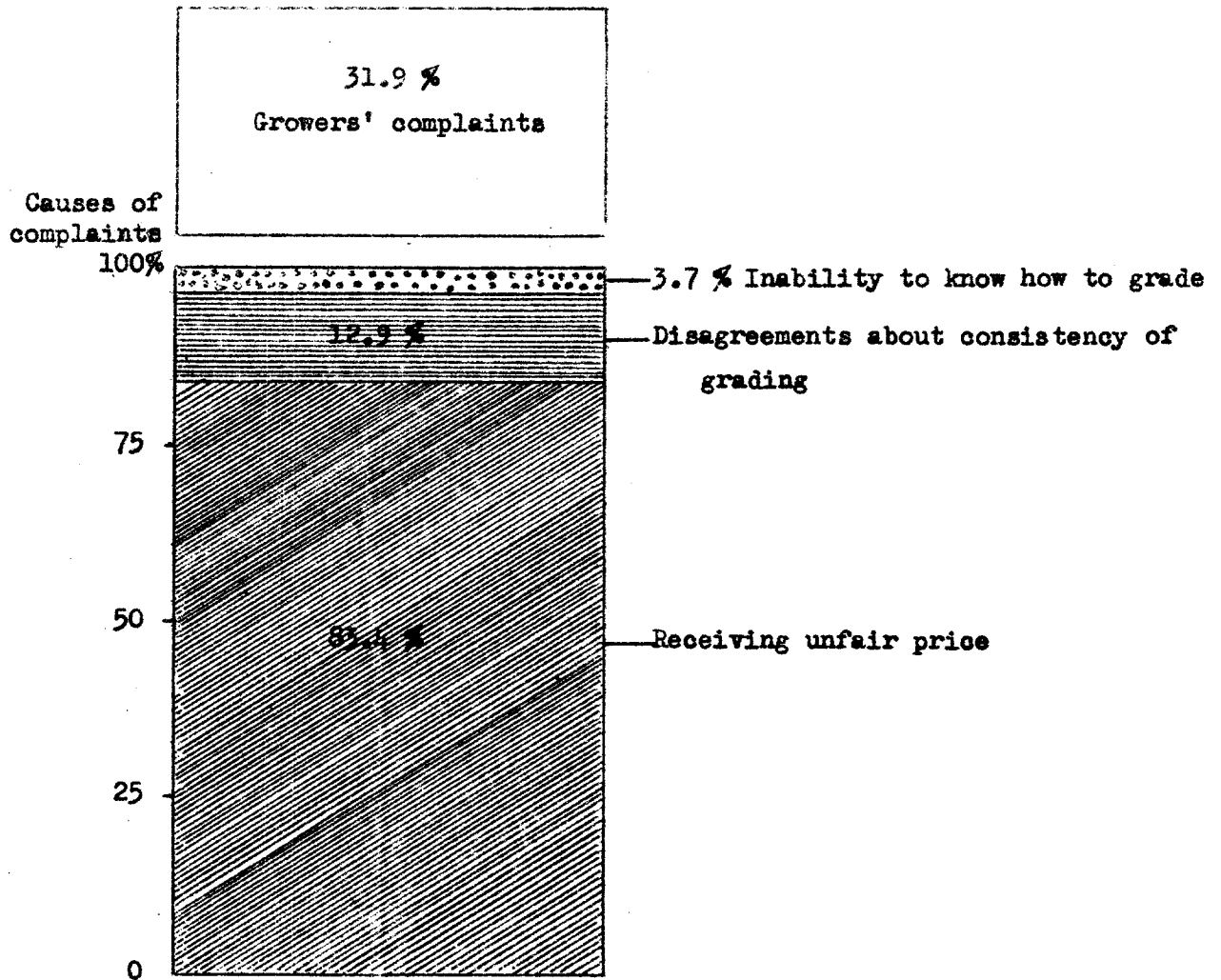


Figure 33.— Growers' complaints on methods of grading used by buyers.
(Data from Table 35)

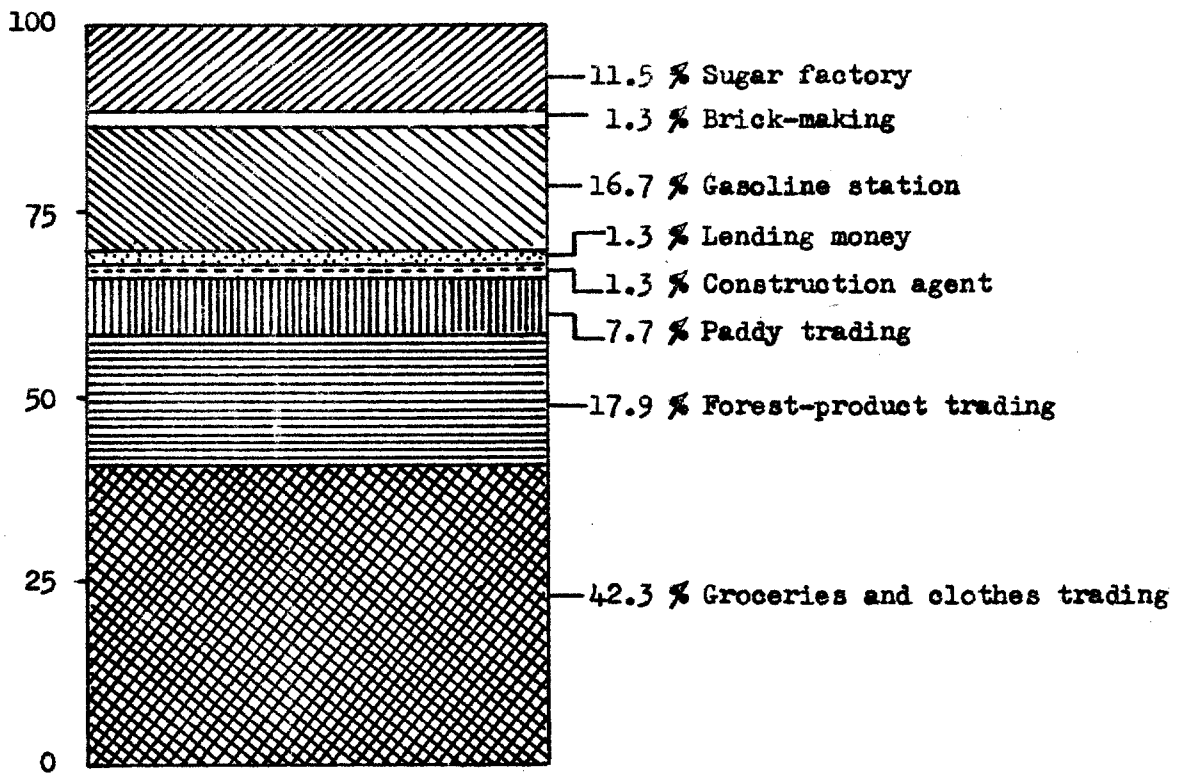


Figure 34.-Provincial buyers: Other activities apart from kenaf trading.
 (Data from Table 34)

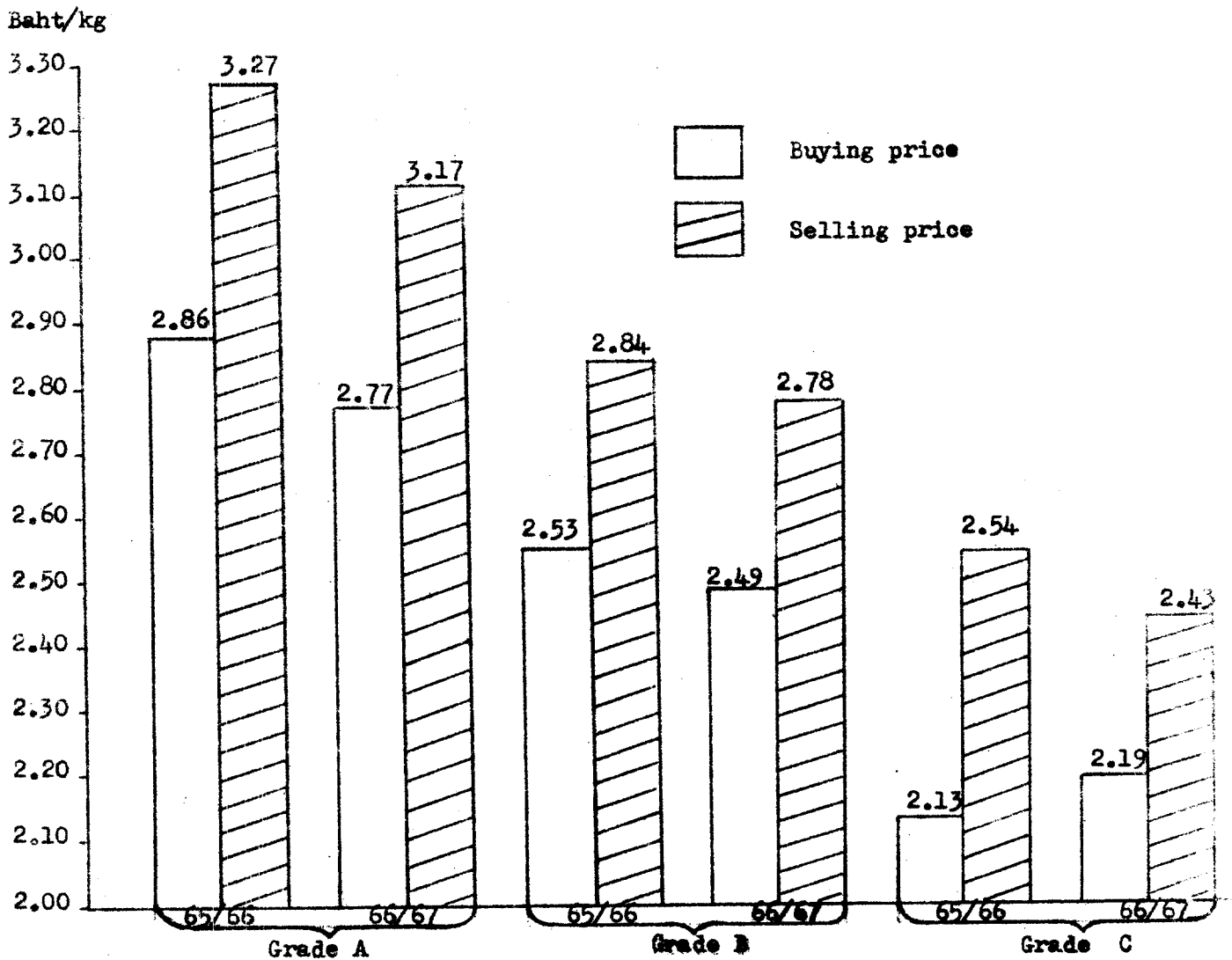


Figure 35.—Buying and selling price (by grades) of kenaf traders, 1965/66-1966/67 (Data from Table 3B)

Note: Grade C appears to give a higher return on outlay than the better grades. There also seems to be a relatively more rapid decline in buying price than in selling price as quality drops.

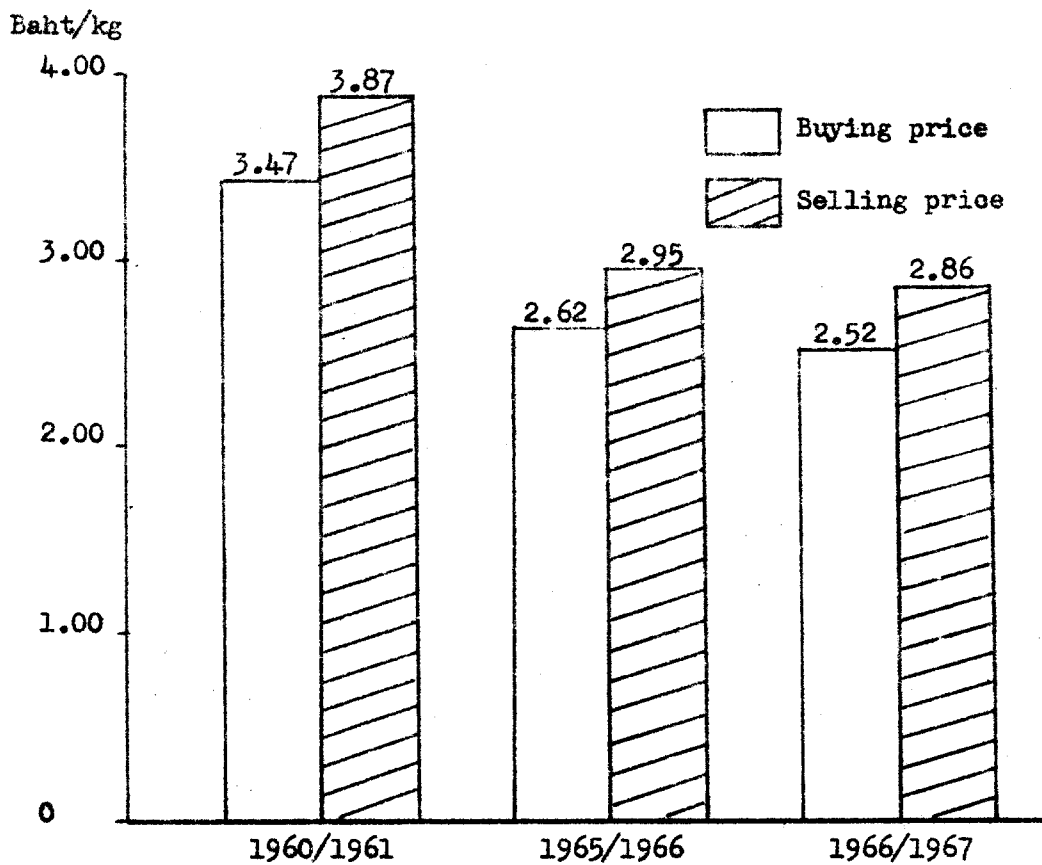


Figure 36.—Comparing buying and selling prices (all grades) of kenaf traders 1960/1961, 1965/1966, 1966/1967. (Data from Table 36 and Table 54 & 74 (1962 report) each bar represent average buying and selling price in 3 provinces; Chaiyaphum, Khon Kaen, and Ubon Ratchathani.

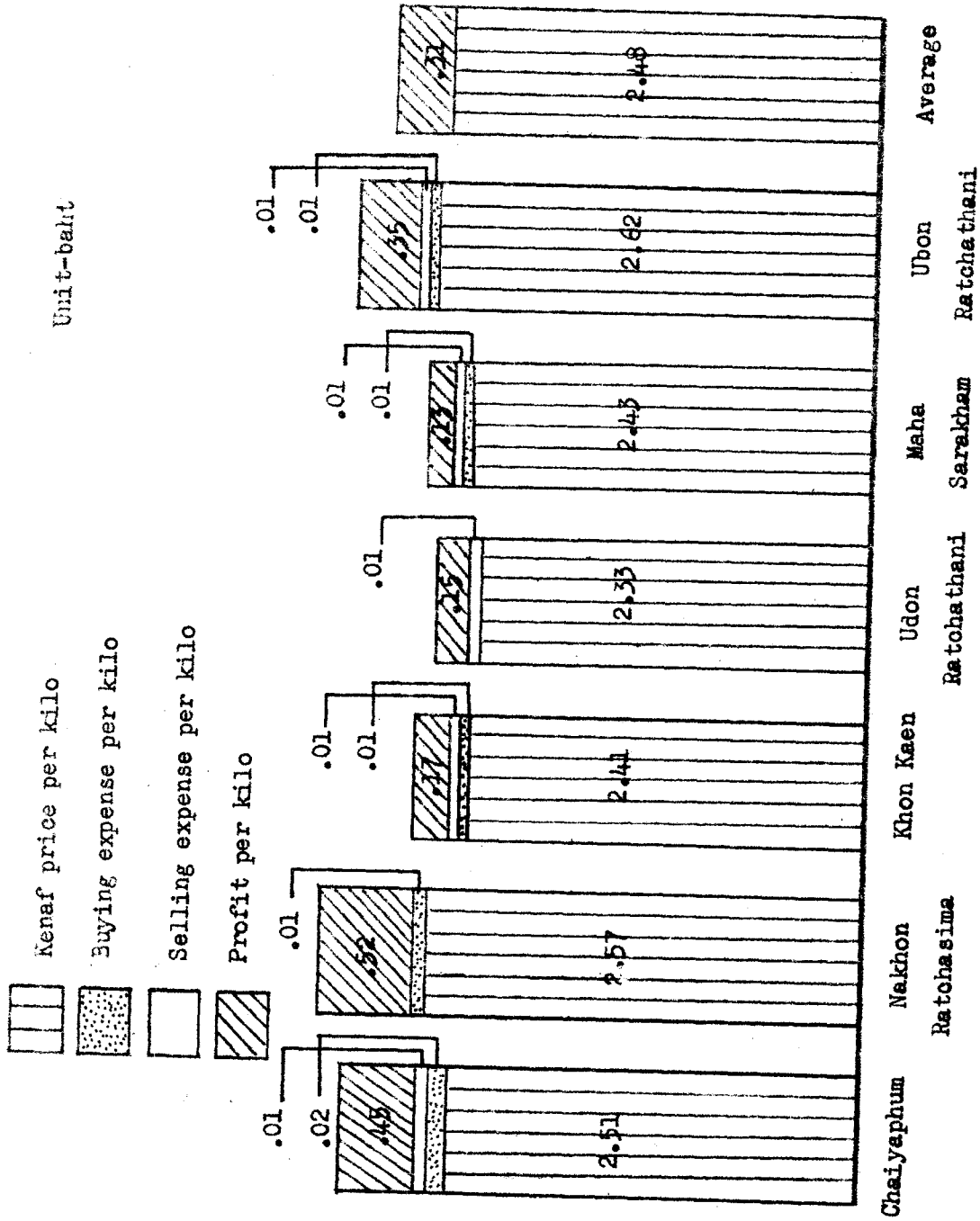


Figure 37.—Average profit per kilo received by kenaf trader, by changwats.
(Data from Table 36)

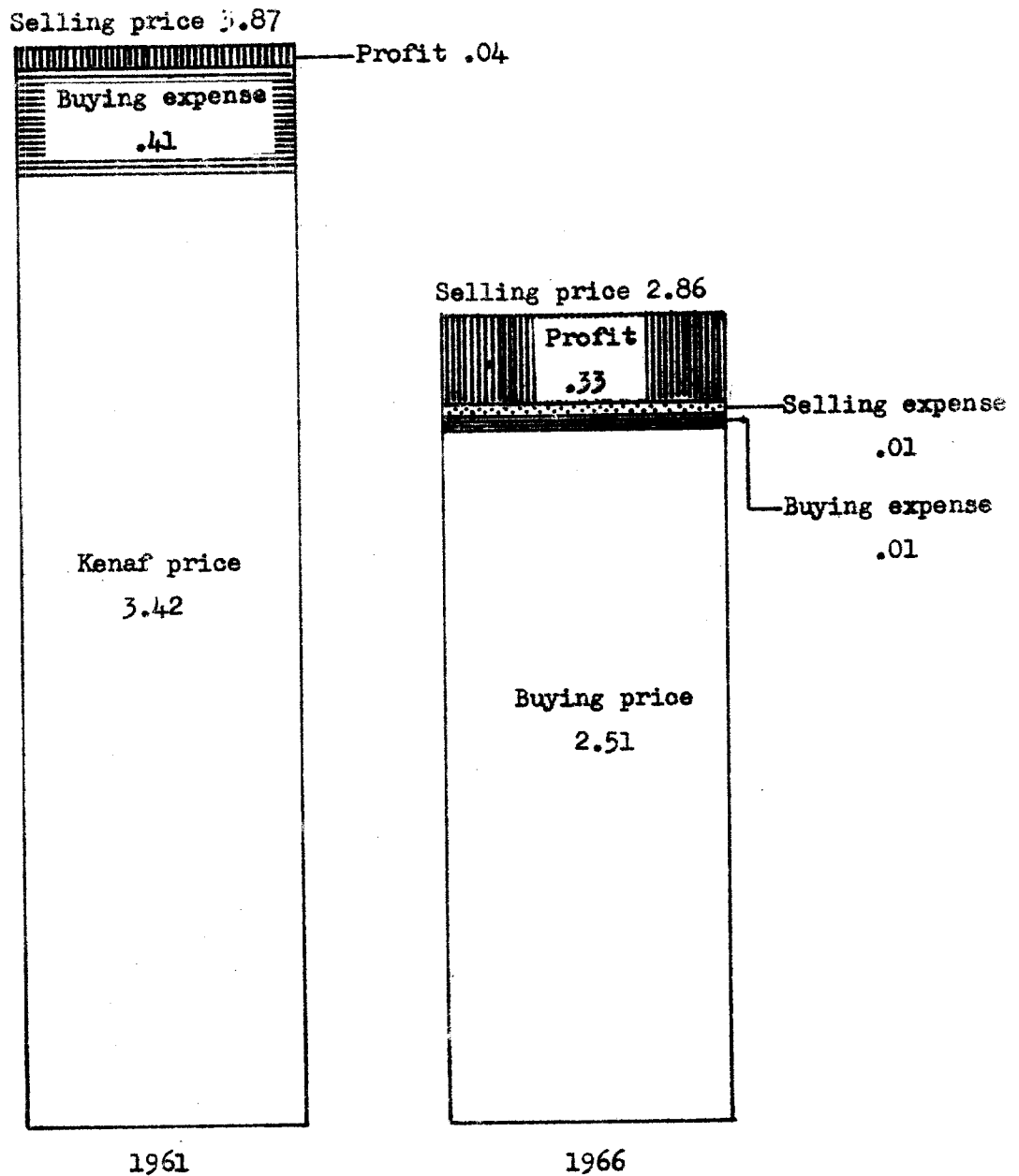


Figure 38.—Average profit per kilo received by kenaf traders 1961 & 1966
(Data from Table 36)

Note. Traders are understandably diffident about disclosing their profit margins. The profit margin of 13 % in 1966 is probably much more realistic than the margin of just over 1 % which traders claimed in 1961.

Each bar represents average profit per kg in 3 provinces: Chaiyaphum, Khon Kaen, and Ubon Ratchathani.

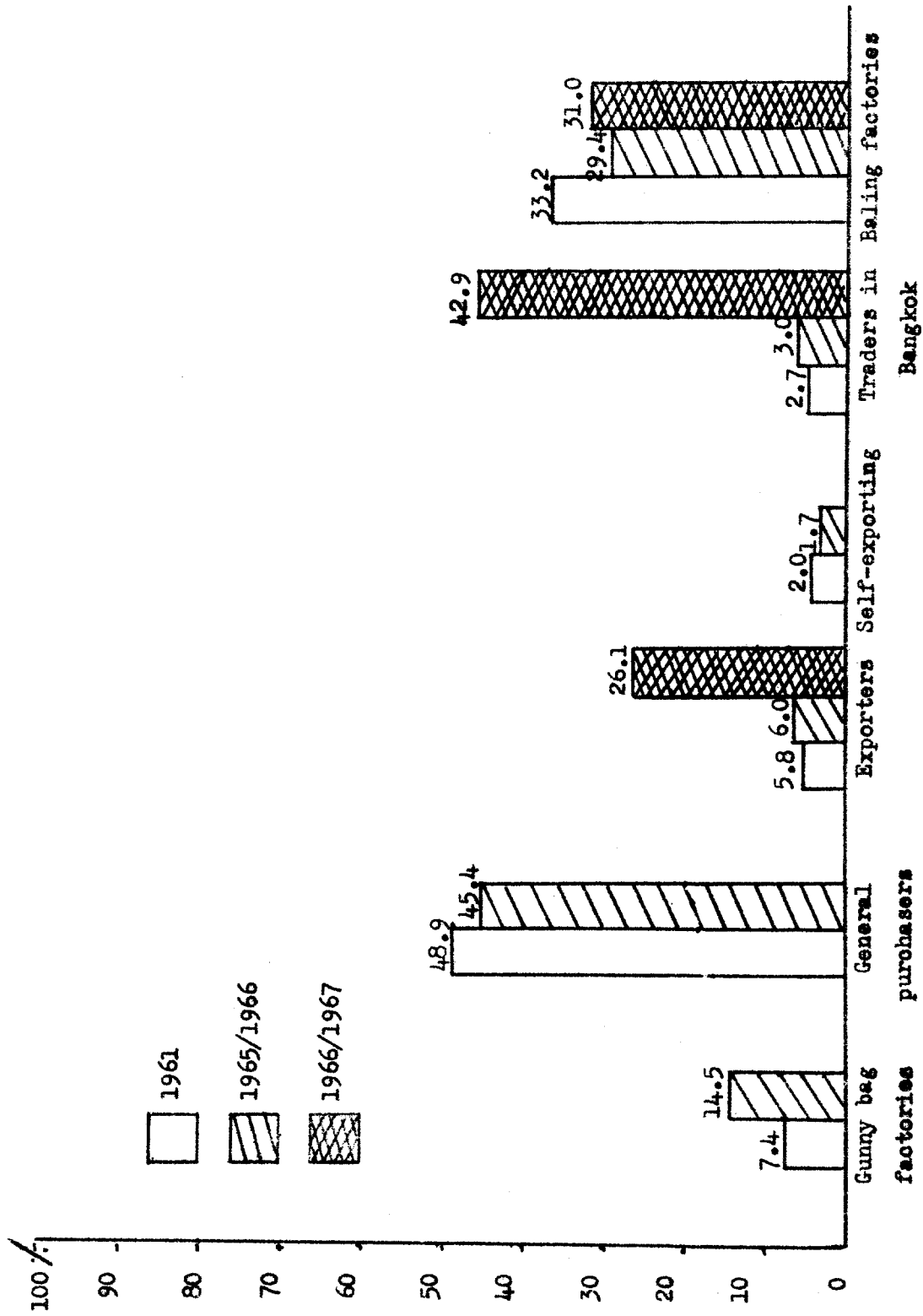


Figure 39.—Destinations of kenaf sold by traders 1961, 1965/1966, 1966/1967

(Data from Table 37)