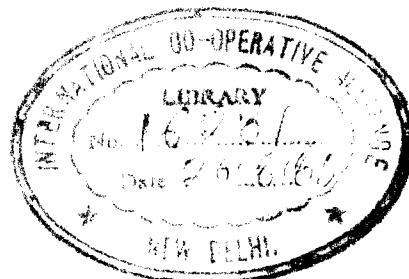


INTERNATIONAL COOPERATIVE ALLIANCE

PROCEEDINGS OF THE SYMPOSIUM ON INCREASING PRODUCTION AND
PRODUCTIVITY OF AGRICULTURE AND LIVESTOCK
THROUGH COOPERATIVES AND RATIONALISATION OF
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BACK GROUND PAPER FROM MALAYSIA
ON
INCREASING PRODUCTION AND PRODUCTIVITY OF RUBBER
THROUGH COOPERATIVES AND RATIONALISATION OF
DISTRIBUTION PROCESS WITH SPECIAL REFERENCE
TO RUBBER SMALLHOLDERS IN MALAYSIA.



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ABSTRACT

The growing importance of the small farm sector in raising agricultural productivity and farm income is well recognised today. Achieving higher levels of production depends, amongst others, on evolving suitable production programmes that are capable of securing the effective participation of the multitude of small farmers and improving the distribution and delivery mechanisms of modern farm inputs and services. The group replanting approach adopted by the Rubber Industry Smallholder Development Authority (RISDA) within the framework of its mini-estate concept seems capable of realising this objective. First introduced in 1979 as a strategy to spearhead the overall modernisation and development of the smallholder sector, the concept appears capable of offering several advantages of fairly large-scale operations that are conducive to increased production within a system of individual small rubber holding, and without involving high capital investment or sophisticated managerial and organisational arrangements. Drawing from the experience gained so far, it has been demonstrated that the mini-estate approach can help to give a greater sense of strength and participation to member smallholders and can even motivate them towards achieving higher results. More significant perhaps, is the impact of group replanting on the smallholder population as a whole in providing them with a forum to discuss and find collective solutions to their farming problems.

OBJECTIVE OF PAPER

1. The objective of this paper is to highlight the significance of group farming in rubber replanting under the mini estate concept which could be adopted by rubber smallholders cooperatives with the view of increasing production and productivity of rubber smallholdings in Malaysia.

INTRODUCTION

2. There is a growing realisation today that organised group or collective action has tremendous potential for improving the productivity levels and income of the small-farmer population of the developing countries. In most of these countries the production of a wide range of agricultural commodities is essentially in the hands of the small farm sector. The attempts these countries have made to increase the productivity and income levels of the vast majority of the small individually operated farms have, in many cases, given unsatisfactory results since most of them were not reached by the programmes so designed. Organised group action as is currently being undertaken by the Rubber Industry Smallholder Development Authority (RISDA) under its mini-estate or collective replanting concept appears to be capable of offering a suitable production and management organisation that can assist to improve the production levels of rubber smallholders, not only by realising the benefits accruing from large-scale operation but also by creating new production forces and possibilities in a situation

of small and scattered individual holdings. Group action particularly through cooperatives has thus a strong potential of stepping up technological development in agriculture, at least in the smallholder sector, by providing a more efficient framework for the distribution and delivery of various services and modern farm inputs for agricultural production. The expansion of external linkages of the cooperative farming approach in agricultural development along this direction would eventually increase its potential impact on the agriculture sector as a whole, enabling more and more of the hitherto individual farmers to participate more fully in the development process.

3. The present agrarian structure of Malaysia is characterised by a dominant small farm sector managed by small-farmers and a highly developed plantation sector managed and operated largely by private estate corporations. While the estates generally run on modern scientific lines, well served with infrastructure facilities, the smallholder sector had long been characterised by landlessness, fragmentation, uneconomic sizes of holdings, and related unfavourable tenurial arrangements such as absentee ownership, joint ownership and share tenancy. In addition, the small farm sector is beset with other problems like a lack of readily available capital, difficulties in obtaining the necessary agricultural inputs, etc. As a consequence, the productivity and income levels of the small farm sector have remained low. Because of these problems the small farm sector cannot make use of the technological innovations and mechanisation for improving production as in the plantation type operations. Small farm plots, more often than not, scattered in the village area, impede the introduction of modern production techniques and reduce the efficiency of the available labour. The marketing of the products of small farms is usually performed by dealers and middlemen who often provide the small farmers with the necessary credit. In most cases too the capital inputs of small farms are not sufficient to utilise fully the other resources and to reach the potential productivity. Thus, economic and technical factors set constraints on the income of small farmers. In view of these restricting factors, small farmers are unable to participate in the progress made by the

larger holdings and estates.

4. Fortunately, the problems of the small farm sector have received the attention of the government and several attempts were made to raise the productivity and improve the socio-economic status of the small farmers. Package programmes covering technical and institutional inputs including input subsidies, credit facilities, improved marketing and processing facilities, etc., have been implemented. Although the efforts by the government in this direction had some impact on the small farmers in raising agricultural productivity (for instance, the yield of rubber produced by the smallholder had increased from about 445 kg. per hectare in 1960 to 745 kg. per. hectare in 1970 and to about 2,190 kg per. hectare in 1980), the expected breakthrough could not be fully achieved owing to one reason or another. As a result, the majority of the farmers were not in a position to participate in the production process and to benefit from the various incentives and services offered by the government. Thus, what seems essential and appears practicable is to evolve appropriate production organisations ideally in the form of smallholders cooperatives that are capable of introducing efficient production technology within a system of individual smallholdings. One way through which this could possibly be achieved is through organised collective/group farming which has become increasingly popular in some developing countries. Introducing replanting on a group basis under the mini-estate strategy forms part and parcel of the overall effort to modernise and accelerate the rate of development in the smallholder sector. The way in which such a strategy is being implemented forms the central theme of this paper but, prior to a detailed presentation being given, it may be useful first to have some understanding of the dimension of the Malaysian Rubber Industry and the rubber smallholder sector.

THE DIMENSIONS OF THE MALAYSIAN RUBBER INDUSTRY

5. Since the end of the First World War the NR industry has been considered synonymous with the prosperity of the country. The industry's significance as one of the pillars of the economy is underlined by the fact that rubber continues to be the largest contributor of the agricultural sector's share to the gross export earnings (one-ninth of the total with rubber alone accounting for some one-third of the share in agriculture, Table 1), provides employment to a very substantial portion of the economically active population and occupies some 2.0 million hectares or about two-thirds of the total land area under agricultural crops.

6. With an output of some 1.5 million tonnes (Table 2) in 1982, Malaysia is the source of supply of some 40% of the world's NR output. It has been estimated that of the 2.0 million hectares under rubber in Malaysia, the estate sector accounts for some 482,400 hectares or 24% of the total planted area and smallholdings 1.5 million hectares or 76% of the total (Table 3).

7. Nevertheless, though Malaysia is the largest supplier of NR, its rubber-based industry is relatively small, consuming only about 58,500 tonnes or 4% of the total rubber produced in the country. In view of this the government is determined to see that the domestic consumption of NR for local manufacturing should increase to some 300,000 tonnes or at least 10% of the NR production in the 1980s.

THE RUBBER SMALLHOLDER SECTOR

8. Some three million people in Malaysia or about one-quarter of the total population are today dependent directly or indirectly on rubber smallholdings for their livelihood and welfare. Though the

smallholder sector is responsible for producing nearly one-quarter of the world's NR output, 60% of the country's production, and occupies 76% of the cultivated area under rubber, yet the sector as a whole constitutes the largest group in poverty in the country. According to the Mid-Term Review of Fourth Malaysia Plan, there were 247,900 rubber smallholder households in poverty in 1983, comprising 40% of poverty households in agriculture and 35% of poverty households nationally. The incidence of poverty among this group has been estimated at 61%. (Table 4)

9. Traditionally, the term 'smallholding' has been used to refer to an area planted with rubber totalling not more than 40 hectares, contiguous or noncontiguous, and under a single legal ownership. In practice, however, more than four-fifths of the smallholdings are below 4 hectares in size, with a medium figure ranging from 1.2 to 3.2 hectares. The registration records of smallholdings compiled by RISDA support these figures in that some 90% of the total applications registered are less than 4 hectares in size, 6% between 4 and 6 hectares, 3% between 6 and 12 hectares and only 1% exceeds 12 hectares (Table 5). Of those with less than 4 hectares, the majority (62%) have holdings of less than 2 hectares, comprising mainly those uneconomic holdings with extremely low productivity. This compares unfavourably with a 4 hectare holding lot which is generally accepted as being economically viable, and hence above the poverty line. Statistics indicate the magnitude of the smallholder problem that RISDA and other development oriented agencies are facing in the attempt to accelerate agricultural development in the country.

10. Rubber smallholdings in Peninsular Malaysia are not a homogeneous group in that three main categories can be indentified viz. the scattered, unorganized individual holdings that are the main concern of RISDA; organized holdings in land development schemes and holdings fragmented from estates. The characteristics profiles of each of

the categories of holding within the smallholder sector may range from a farmer engaging in uneconomic holdings with 0.8 hectare of rubber land and another 0.8 hectare of mixed crop land (mainly paddy of horticulture), to an absentee landlord residing in the city or a sharecropper, and to a Federal Land Development Authority (FELDA) settler enjoying some of the advantages of an estate type environment. Within this setting, the variations among smallholdings result from a wide range of physical, economic and cultural factors, all of which affect resource use. These in turn affect the present level of productivity of resources, as well as the acceptability and response to advanced innovations by smallholders. Such variability in the smallholder sector is significant because variability conditions response to programmes, the nature of the planning process and the administration and implementation procedures suitable to accelerated agricultural development.

11. The scattered individual holdings represent the largest category within the smallholder sector. A substantial portion of this category has been under individual or family ownership since their original alienation. The variations in size are greatest in this group, generally ranging from only a fraction of a hectare to just below 40 hectares. The characteristics of the ownership pattern within this group are just as varied. While the majority operate their own holdings, part-time, seasonal off-farm employment and share cropping are not uncommon. In many of the smaller holdings, including those made up of a number of parcel lots, rubber cultivation is normally not the sole source of farm income.

12. On the other hand, the organized holdings in land development schemes were mainly developed since the 1950s by both Federal and State Agencies to alleviate the plight of the rural landless. Holdings here are more uniform in size, ranging from 3 to 4 hectares which exceed the national registered average of 2.2 hectares.

13. The final category within the rubber smallholder sector relates to those holdings that were fragmented from large estates and this comprise relatively large units, the majority of which are owned by the larger and more progressive smallholders and by the absentee owners.

14. From the foregoing, it could be observed that within the smallholder sector the average land area and ownership patterns differ considerably. Unlike the individual holdings, the centralization of holdings into cluster of settlements in land development schemes such as those implemented by the Federal Land Development Authority (FELDA) has facilitate the smallholders in this category to adopt technological innovation faster than their counterparts on scattered holdings. What is interesting to note is that the complexity of the ownership pattern, differences in agronomic practices as well as differences in managerial skills, financial and manpower resources, have the effect of reinforcing and perpetuating variances in the adoption and diffusion of production, processing and marketing modes.

15. In addition to the variations in the size of holdings and ownership patterns (owner-operator, joint-operator, part-tenant, tenant and absentee landlord), the yields obtained from the categories within the smallholder sector also differ significantly. While yields from the organised holdings in land development schemes and those fragmented from estates approach those obtained in commercial estates, those obtained from scattered holdings are only about 70% of the estates yields.

16. From these heterogeneous structural characteristics of rubber smallholders, it is not difficult to visualize that their patterns of farming, the problems faced as well as the rate of progress are bound to vary considerably from one other. And if one superimposes on these the large difference in the qualities of lands held by

them in different regions, in infrastructural development, processing and marketing. In crop patterns, etc., these variations in patterns of farming are likely to be further accentuated. These structural heterogeneities arise from a large number of social, historical and natural factors such as the agrarian evolution of different regions, social, cultural and political organization, land-labour ratio, demographic patterns, etc. These diversities are however influenced by the competitive market mechanism which links all the small operating units into a unified agrarian system.

PROBLEMS FACED BY RUBBER SMALLHOLDERS

17. Although past attempts by the government to improve the socio-economic condition of the small farmers had some positive results, the expected breakthrough however could still not be fully realised. The problem of poverty among a sizeable proportion of small farmers continues to exist, as are structural inequalities in farm size and tenure, ownership of means of production and material wealth upon which the poverty is based. Various studies have indicated the broad magnitudes and geographical spread of poverty and concluded that poverty is essentially though not exclusively, a rural phenomenon. As a socio-economic malaise, poverty is closely related to employment opportunities. Apart from a highly skewed income distribution and a pervasive low level of productivity in the smallholder sector, the failure to utilize fully the available labour force lies at the root of the poverty problem. In the rural areas, this is due primarily to the large numbers of people being seasonally unemployed and/or underemployed.

18. Within the smallholder sector, the problems of the rubber smallholders have been generally diagnosed as small farm size, high tenancy, fragmentation, lack of production credit, inadequate

infrastructure, low level of education, lack of technical knowhow etc. However, it is apparent that though these problems may be common to many smallholdings, they may themselves be only accentuating factors for the root problem is more specific depending on the crop and locality. Some of the more specific and pervading problems concerning smallholders are summarized below:-

18.1 Small Farm Size in Scattered Locations

One of the major problems that has contributed to the persistence of poverty among rubber smallholders is that while the size distribution varies considerably, the overwhelming majority of operating units are small and uneconomic averaging 2.2 hectares in size and providing a means of subsistence to a substantial share of the agricultural labour force. As indicated earlier, the registration records of smallholdings compiled by the Rubber Industry Smallholders Development Authority show that some 90% of the total number registered are less than 4 hectares in size, and out of which about 62% possess holdings of less than 2 hectares, comprising mainly those uneconomic holdings with extremely low productivity. (Table 5). This characteristics phenomenon of the paucity of the farm holdings is compounded by the scatteredness and remoteness of many of these holdings.

18.2 Increasing Pressure On Land

Membership in the family is between 5 and 7 and as the family grew, the size of the farms did not increase

proportionately. This increase the pressure on the lands owned to the extent where it could not provide the family with sufficient income to sustain it at the level above the poverty line.*

18.3 Depleting Size of Farm Labour

Consequent to the above, effective labour tend to move away from the rubber smallholding to the more lucrative industrial sector among the bright city lights. What is left behind in the villages are the very young and the old. Statistics indicate that the average age of effective farm labour currently stands at approximately 49 years old.

18.4 Low Educational Levels of Effective Farm Labour

The average age of available farm labour which is 49 years old implies that this group was educated at a time when Malaysia (then Malaya) was involved in the second world war, a time of survival when education was obviously not a priority consideration.

* The fact of poverty is self evident in deficiencies in absolute standards of living in terms of calorie intake and nutrition levels, clothing, sanitation, health, education and other socio-economic variables. As these deficiencies are reflected to a large extent in income levels, poverty in the country has been measured by comparing absolute levels of household incomes with the required for minimum nutritional and other non-food requirements of each household to sustain a decent standard of living. This income level has been estimated to be M\$350.00 for a household of 5 members.

18.5 Poor Uptake of Farm Technology

With a poorly educated labourforce, the rate of technological diffusion becomes slow and consequently productivity on smallholding although increased, was not commensurate with potential.

18.6 Unorganised Smallholders

The smallholders are unorganised and thus cannot integrate themselves to obtain the benefits of economies of scale when developing their lands, purchasing inputs and marketing their produce.

18.7 Low Farmgate Prices

There is no coordination in input and output and inevitably a gap emerges between the supply and demand for smallholders' produce in terms of quantity, quality and consistency. The nett result is low farm gate prices.

18.8 Low Farm Income

It has been estimated that the real income that must be earned to sustain a person at a desired level of well-being providing for food, shelter, clothing, leisure, medical treatment, transportation and investment is about M\$70.00 per person per month. This adds up to approximately M\$500.00 per month for a family of seven making a total of M\$6,000 per year. In contrast however, the potential income from rubber based on current output or productivity levels indicate that for a smallholder to obtain M\$6,000.00 gross per year, he must own and properly manage a farm the size of which is not less

than 2 hectares at a farmgate price level of MS2.00 per kilogram of rubber (Refer to graph 1 and Table 5).

18.9 Decreasing Confidence in The Smallholding As A Primary Source of Income

Observations indicate a growing strength of evidence to the effect that the confidence of the typical rubber smallholder in the smallholding as a primary source of income is waning. The effect is that many of the smallholdings are now left unattended while the young and able seek jobs in the towns and send home part of their income to support aged parents and younger members of the families in the smallholdings.

RISDA's INTEGRATED APPROACH TO IMPROVE SMALLHOLDER SECTOR

19. Established in 1973 as a development oriented agency entrusted to serve and ensure the long-term competitiveness and viability of the rubber smallholder sector, it is the task of RISDA to effect a faster rate of development and modernisation in the smallholder sector. RISDA's main concern is to be associated with rubber as a commodity in terms of increasing its production and marketability. An integrated approach to development is essential if these small producers is to be brought into the mainstream of the rubber industry, thereby placing them in situations conducive to modernisation and change. RISDA's programmes and activities which are currently being implemented under this integrated development approach may be summed up as having the following objectives.-

19.1 To ensure that all replanted rubber land come to tapping status within a period of not more than 5½ years from the start of replanting.

19.2 To ensure that the yield or productivity from rubber smallholdings is not less than 1,500 kilogram per hectare per annum.

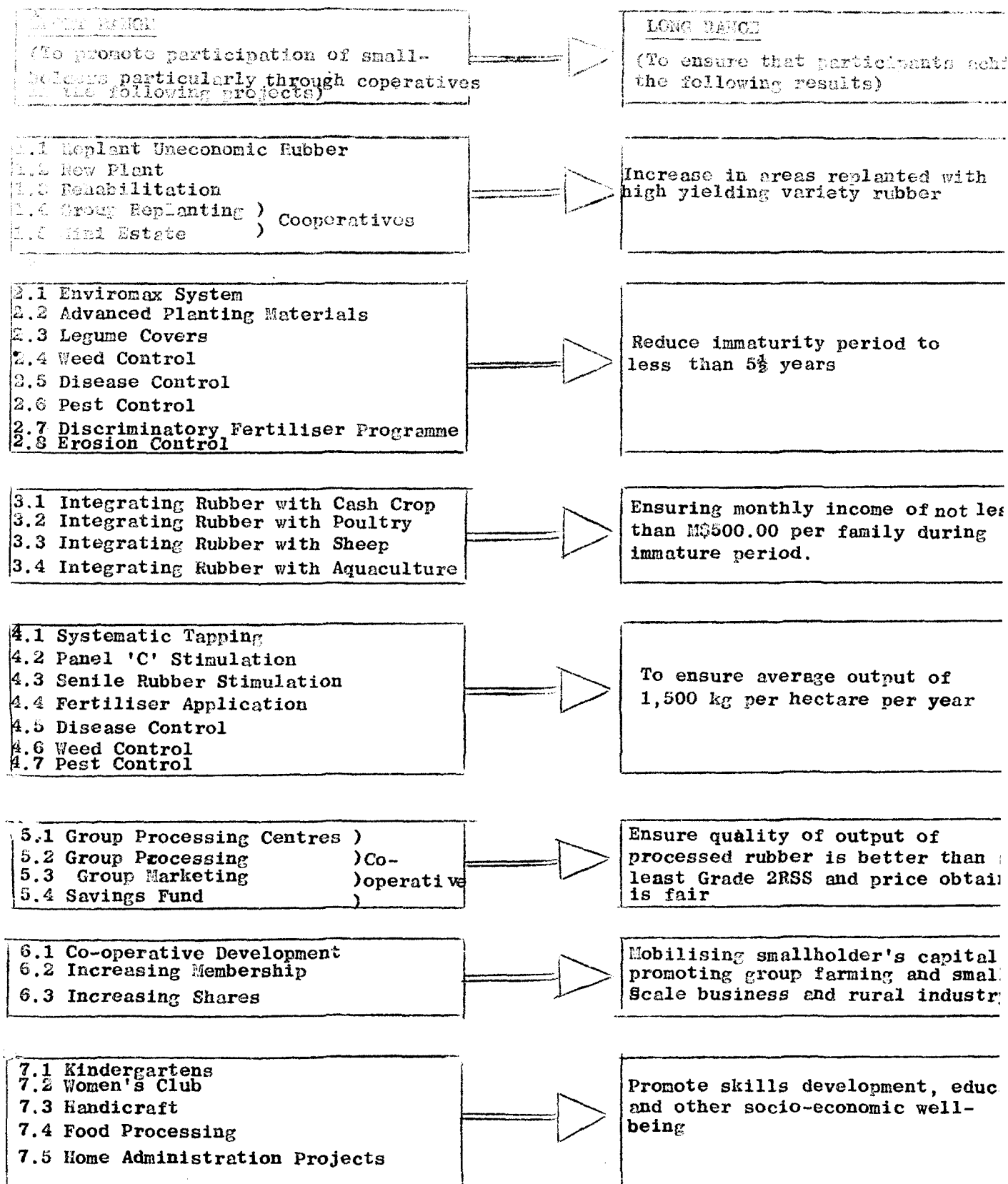
19.3 To ensure that the quality of rubber produced by smallholders is at least equal to grade 2 RSS.

19.4 To ensure that the price obtained by rubber smallholders is fair.

19.5 To ensure that marginal smallholders adopt and implement farm systems practices to increase farm productivity that will yield income levels of not less than M\$500.00 per month.

19.6 To ensure that rubber smallholders operate in groups through cooperatives to promote the utilization of available labour and resources in farming as well as in rural industrialization activities. Rubber smallholders cooperatives will also be utilized as sources for the provision of production and consumer credit, farm inputs, processing and marketing services.

20. The activities carried out by RISDA to achieve the above mentioned objectives are listed out as follows. -



21. It is apparent that if an integrated approach to improve the smallholders is to be successfully implemented, the need for an effective system of transmitting new and useful technologies and innovations into the smallholder sector will be of the utmost importance. This is crucial because the dissemination and adoption of modern agricultural and farm management practices depend greatly on the transfer of such technologies in a manner and form that could be easily received and understood by the smallholders. While it has been generally accepted that small individually operated holdings seem to impede the speedier attainment of production goals, through effective extension, holdings organised, operated and managed on a group basis especially under the cooperative concept can be instrumental in transmitting advanced technological/management inputs emanating from research agencies to the organised smallholders on one hand and in representing smallholders' desires back to these agencies on the other. In short, the formation of smallholders cooperative is the key ingredient for the overall development of rubber smallholders sector.

FORMATION OF RUBBER SMALLHOLDERS COOPERATIVES

22. Group activities among the rubber smallholders were initiated in the early sixties with the setting up of Group Processing Centres where smallholders were able to process rubber latex into rubber sheets using facilities that were available at the Group Processing Centres. Based on the Group Processing Centres concept, the Smallholders Development Centres were evolved where activities beyond the processing and the sale of rubber could be carried out. The smallholders Development Centres serve basically as nuclei of RISDA's efforts to help modernise farm production, processing and marketing of smallholders produce. These centres act as vital links between smallholders and RISDA in channelling support facilities like subsidies and credit for intercropping, fertilizer, weedicides, latex stimulant

and other relevant inputs as well as farm implements. As years go by these Smallholders Development Centres which were originally planned to be 'growth centres' began to function more like small cooperatives.

23. In late seventies, RISDA believed that the time was right to take the concept of smallholder Development Centre another major step forward by organising these centres numbering about 2,700 units as the core of the nation wide smallholder cooperatives. This helps to legalise and streamline the growth of group activities of the members of SDC's, as well as ensures the uniformity or complementary and supplementary growth of the individual unit of the SDC's. An effective organisation in the form of a cooperative movement to serve both members and non members would also broaden tremendously the base for all such activities mentioned earlier with the distinct advantage of having centrally planned policies or programmes and implementation strategies at national, state, district and even at village levels. Active steps were taken by RISDA during the 3 year period beginning from 1979 to 1982 to promote the formation of rubber smallholders multipurpose cooperative^t throughout Peninsular Malaysia. To date, 63 rubber smallholders cooperatives have been registered under the Cooperative Development Department of Malaysia, with a total membership of about 48,400 smallholders and having a share capital of M\$2.56m and assets valued at M\$4.9m (Table 7) .

ORGANISATIONAL STRUCTURE OF SMALLHOLDERS COOPERATIVES

24. The Smallholder Development Centres within a district are the elements which constitute the District multipurpose cooperatives. The 63 societies registered to date are vertically organised at two levels. All the 62 district cooperatives are directly affiliated to the National Cooperative. The organisational structure of the District Cooperatives is given in Chart 1 and the linkages between the District Societies and the National Level is given in Chart 2. The two-tiered

cooperatives is developed to provide an ideal structure to implement activities that are viable at their respective levels. Although their activities are interrelated, the administration and management of each individual cooperative at both levels is independent of each other.

25. Membership of the District societies is open to all rubber smallholders particularly members of SDCs. All District societies can apply to become members of the National Society by paying the relevant fees and paying the minimum shares specified.

26. The management of the societies at both levels is in the hand of rubber smallholders. They form the majority within the Board of Directors who are elected at the Annual General Meeting. However, because of RISDA's mandated role in the development of rubber smallholders, provision has been made in the by-laws of the societies to allow RISDA to elect representatives to be in the District and National Societies.

27. Being newly registered, all societies face difficulties in employing professional staff to manage the societies. To overcome this problem, RISDA has temporarily posted qualified officers with experience in administration, finance, marketing, credit, production etc., to the Board of Directors to manage their societies. This assistance is a short term measure and will be withdrawn when the cooperatives are firmly established and are able to finance the intake of their own professional staff.

ACTIVITIES OF THE SMALLHOLDER COOPERATIVES

28. Being societies of small rubber producers, the main objectives of setting up of the cooperatives are to look into production, processing and marketing problems of their members. As far as production and

processing are concerned, rubber smallholders in Malaysia are quite fortunate in the sense that the majority of them receive agricultural inputs such as fertilizers, chemicals planting materials and agricultural implements free of charge under RISDA's subsidy Scheme. Processing facilities such as mangles, coagulating tanks, formic acid and smoke houses are also provided free at the SDCs for all smallholders to use. Thus, as far as distribution of agricultural inputs and provision of agricultural credits are concerned, there is little scope for smallholders cooperatives to be heavily involved with at this juncture. Thus, many of the cooperatives are engaged in other development activities such as rubber marketing, undertaking group replanting, contract works on mini-estates, housing development, consumer activities and supply of agricultural production inputs to smallholders who do not qualify for the government subsidies.

29. Though still at their infancy stage, the district societies are now heavily involved in rubber marketing. Annual business turnover in this field is estimated to be in the region of M\$50 million. Agricultural contract works, undertaken by smallholders cooperatives especially in mini-estate development to date amount to a total of about M\$6 million.

30. The success of smallholders cooperatives to date, though all are still at their infancy stage, reflect the ability of rubber smallholders to pool their scarce resources of skill and funds to attain a common objective.

SIGNIFICANCE OF GROUP FARMING UNDER THE MINI ESTATE CONCEPT AS A STRATEGY FOR INCREASING PRODUCTION AND PRODUCTIVITY OF SMALLHOLDINGS

Concept and Objective

31. Collective replanting strategy organised under the mini-estate concept was first initiated in 1979 as yet another positive means of

complementing efforts at increasing the productivity of rubber smallholdings. The concept represents an evolutionary approach that seeks to incorporate the basic elements of estate type management into smallholder farm development. Based on evidence gathered through its constant and close rapport with the smallholders, RISDA has managed to identify a substantial number of 'hard-core' or difficult smallholders who, it feels, are completely incapable of managing their resources in anything like an optimum sense. It is essentially because of this lack of management ability and skills among certain smallholders such as the aged, widowed, absentee owners, etc., coupled with the various reasons that prevent them from managing their holdings properly, that has prompted RISDA to introduce group farming under the mini-estate concept as an additional avenue for facilitating the active participation of these smallholders in increasing rubber production.

32. Replanting on a mini-estate basis has two principal objectives, these being to raise yields and to reduce poverty. Though the incidence of poverty among rubber smallholders has declined from about 65% in 1970 to 40% in 1980, they still constitute the largest group in poverty in the country. While the Malaysian government has introduced various incentives including the recent increase in the replanting grant from \$2965 per hectare to \$5436 per hectare as well as various subsidies under the Dynamic Production Policy, the response from the hardcore poverty group has been poor due to their reluctance to forgo current incomes and other conditions not within their control.

Increasing Agricultural Productivity Through Transfer of Technology

33. The mini-estate strategy is based on the concept of providing a package deal to member smallholders. Apart from developing smallholders' lands and planting with crops such as rubber and oil palm, other activities also include the establishment of physical and institutional infrastructures conducive to both the economic

and social well-being of the smallholders. The strategy has the dual purpose of strengthening smallholder farm production and management operations. Apart from facilitating the adoption of agricultural innovation that has a high potential for raising productivity, the preparation and implementation of a common programme of operations and improved practices under effective extension advice would enable member smallholders to adopt improved agricultural practices. Resistance to innovations would be less pronounced when the majority of the smallholders organised in a mini-estate decide on the implementation of a common production programme. The productivity implications of group production are thus very considerable as the entire group would adopt a package of improved practices to undertake a common replanting or intercropping programme. The extreme inequalities in productivity found among individual smallholdings could therefore be reduced when the group as a whole adopts the same agronomic and management practices. The result is an overall increase in production and productivity. Such an increase will also have a direct effect on the smallholders operating in the vicinity. This is because while disseminating advanced technology to member smallholders in the mini-estate, smallholder in the periphery will also enjoy what can be termed as 'technological spillovers' as these will alter the physical production possibilities of the smallholders insofar as increased productivity can be assured by the adoption of new improved technology to raise yield. In other words, the establishment of mini-estate has demonstration effect in that replanting successfully carried out on a collective basis may serve to motivate other non-member smallholder to eventually participate in the programme. This will have the ultimate effect of pushing the production possibility frontier further outwards.

Integrated Marketing System

34. In addition, replanting operated and managed under the mini-estate concept can also increase the marketing capability of participants. The agreement by member smallholders to amalgamate

their lands for development on a fairly large contiguous scale will make it possible to produce relatively larger quantities of agricultural produce (for example, bananas, groundnuts, pineapple, etc., from group intercropping) of uniform variety and standard, thus ensuing a favourable bargaining position in marketing. This will overcome the problem of introducing new crops or the cultivation of intercrops by individual smallholders in an isolated manner, the cultivation of which will be difficult mainly because of the marketing problems.

Cost Reduction

35. Group activities organised under the mini-estate concept has also enabled member smallholders to obtain their requirements such as grants, subsidies, credits, agricultural inputs, etc., more effectively through the institutions or government agencies involved, with the result that every smallholder in the group will be able to obtain a fairly uniform yield. Certain items of cost can also be reduced through group action. Group transport of fertilisers and agrochemicals, group provision of agricultural implements and other related activities will make it the more feasible to reduce production and administrative costs. Further, group action by smallholders in mini-estate will enable them to secure better services from RISDA since they can act as a collective group in time of need.

Effective Delivery and Receiving Mechanism

36. Through group activity, government agencies will also find it easier to deal more effectively with groups of smallholders than with individually scattered holdings. The extension officer will be able to render better service and to contact more smallholders when they are organised in mini-estates rather than have to deal with a multitude of individuals, thus resulting in a more effective delivery and receiving mechanism.

Better Utilisation and Deployment of Farm Labour

37. A greater co-operation exhibited by participants in mini-estates will facilitate a better utilisation of available resources, for example, labour. Though a collective replanting strategy will not bring about major alterations in the land-labour ratio in the holdings, the employment implications are quite considerable. The uniform adoption of improved agronomic practices by participants will result in increased labour application (replanting, weeding, land preparation, etc., are very labour intensive tasks which may be beyond the capacity of some smallholders to perform individually). On the whole, the collective replanting approach through mini-estates has a valuable contribution to make in reducing the problem of acute under-utilisation of labour in some rubber smallholdings. Furthermore, since pooled holdings would not require as many smallholders to tend them as the individual parcels they were previously tending, this would free some of them to take up other occupations offering better incomes. The labour thus saved consequent upon the amalgamation of land resources can contribute to the expansion of farming scales and/or the diversification of farming operations. For instance, if the participants in a mini-estate engaged in rubber monoculture desire to diversify and introduce new activities such as livestock or poultry raising, or aquaculture, etc., the mini-estate strategy would be able to expedite this since the joint collaboration in farming operations would free some smallholders specifically for such purposes. Thus the concept besides resulting in a more rational deployment of labour on the holdings would also, at the same time, result in a better mobilisation of participants to work in the mini-estates so established, whether on their own lots or on others, thereby meeting the objective of providing gainful employment. This collaborative effort by participants is particularly important in areas faced with the problem of labour shortage.

Improving Smallholders Skill and Management Capability

38. Yet another advantage of replanting organised under the mini-estate concept is the provision of an additional avenue for the training of rubber smallholders on the schemes. In learning new methods of improved crop husbandry, improved agronomic practices, etc., participants as workers in the estates are in actual fact equipping themselves with a view to developing their capacities in such a manner that a more rapid rate of technological progress and of innovation becomes feasible. This is because it has been incorporated under the mini estate concept a built-in training-oriented mechanism through which on-the-spot instructional techniques are given to participants. It is the intention of RISDA as an extension agency to impart new ideas and methods to an increasing number of participants who will be able to stand on their own feet when RISDA extension and supervisory personnels pull out from the estates once the loan has been paid in full.

Promotion of Growth Centres

39. The development of mini-estate on vacant lands has resulted in group of people moving into hitherto uncultivated and undeveloped areas creating in the process new communities which have potential for further development into pockets of production and growth centres. It is envisaged that such centres once established will have increasing links with the surroundings areas and bringing advantages to them. The feasibility of integrating these areas with the mini-estates has opened the potential of increasing their impact as agents of change.

Summary of Advantages

40. From the foregoing, it can be observed that the activities pursued under the mini-estate concept are essentially directed towards the promotion among participants of an interest in scientific

fanning, the use of modern techniques in farm management, the organising and running of small enterprises on business lines, and the development of cooperative approach to agricultural development. The aim of the strategy is not only to make the maximum use of the smallholding resources but also to make the participants aware of their own potential and capacity to solve their problems. As a strategy to accelerate the rate of replanting, the mini-estate concept has several distinct advantages over those that are individually operated. In sum, the concept is seen to:-

40.1 Enhance group interaction and effect leadership development which is an integral part to human resource and community development.

40.2 Lead to faster achievement of the cooperative spirit among participants.

40.3 Create a beneficial long-lasting impact on participants in terms of enhanced income, commercial operation and the utilisation of modern agricultural practices.

40.4. Accelerate the diffusion of farm technology and innovation for the purpose of upgrading rubber yield through the adoption and use of modern scientific cultural practices.

40.5 Help improve rates of repayment of agricultural loans.

40.6 Increase market orientation of farming activities notably in the procurement of inputs and marketing of products.

40.7 Create greater employment opportunities on the holdings as well as to result in more rational deployment of labour utilisation

40.8 Make feasible planned and co-ordinated production programme and

40.9 Integrate the scheme so established with neighbouring areas through the various linkages with a view to increasing overall rubber production.

41. The current focus of using mini-estate to spearhead smallholder development is reflected in the progressive increase in the area replanted under the concept from 1982 ha in 1979, to 31,620 ha as at end of April, 1984. All in all, some 273 mini-estates have been established in all states in Peninsular Malaysia. (Table 8) A total of 15,899 smallholders have registered themselves as participants of the schemes whose sizes range from only about 24 ha to some well over 300 ha. This upward shift towards greater collectivisation of the smallholder activity from individual replanting to group replanting on a mini-estate basis becomes more meaningful when one examines the advantages of such a strategy under the frame work described above. In particular, the mini-estate strategy has, as its central focus, the need to redress the poverty issue by raising smallholder productivity from the current 340 kg. per hectare per annum in some areas to as high as 1,600 kg. per hectare per annum after replanting. This would narrow the wide gap presently existing between smallholder and estate yields.

MODUS OPERANDI OF MINI-ESTATE

42. The operation and management under the mini-estate arrangement is carried out by RISDA through a Committee specifically set up for

such purpose. The committee comprises seven members with two officers representing RISDA and five members selected from the participant themselves. Under this set-up, the replanting grant for which the participants are eligible are pooled for the purpose of defraying the costs of development. Normally this is done by appointing a contractor (in many cases, it is the smallholders cooperatives) who does the heavy work from felling, clearing, land preparation right up to the planting stage. Preference, however, is given to participants who may wish to be employed as hired labour in maintenance and the general upkeep of the consolidated holdings.

43. In addition to financing replanting and maintenance directly from the rubber replanting grant, RISDA also provides interest-free consumption loan ranging from M\$60- \$100 per month per family to the participants under the recently launched Replanting Incentives Scheme (SEPENTAS) over the immaturity period.

44. Participants of mini-estates are grouped under two categories, namely, those with holdings under rubber and who are eligible for the replanting grant, and those who have vacant land the development of which is funded solely from credit provided by the Agricultural Bank. For such holdings to be operable, whether on current old rubber land or on new land, a contiguous area is required. The participants are required to sign an agreement with RISDA enabling it to undertake the tasks of developing and managing their holdings. However there is no change in the ownership of the land as the titles remain with the participants. RISDA, nevertheless, requires a contractual agreement to ensure that the land will not be sold or its ownership transferred until its investment outlay on the mini-estates as well as the loans are repaid in full. The agreement to caveat the participants' lands to RISDA to develop will have the potential of elevating their production capacity to that level expected from commercial estate operations. It is envisaged that addition to an expected increase in net income in the

future following replanting, the participants are also assured of a minimum subsistence income for about six years before their trees mature through the loan scheme described earlier. The repayment of the loan and other credit facilities provided is expected to take about ten to fifteen years.

45. It is to be noted that though in essence RISDA plays a crucial role in the planning, financing and administration of the schemes besides providing the development costs for infrastructure and other amenities, the actual overall operation and management of these schemes is entrusted to the seven-member Committee. At the ground level RISDA appoints a manager to supervise the schemes established. The Committee is responsible for undertaking or arrange to undertake the supply of production inputs (fertilisers chemicals, etc.) and agricultural implements to participants, as well as to arrange marketing and extension services. The participants on their part will have to agree to adhere strictly to a cultivation calendar which specified the operations to be performed by themselves or through the contractor appointed for such purpose. Participants will also have to abide to the rules and regulations laid down by RISDA.

PROBLEMS AND ISSUES

46. The large-scale promotion and expansion of group replanting under the mini-estate concept raises several problems and issues that have implications on the future direction of this collective strategy for smallholder development. The experiences gained so far have revealed that the supply of agricultural production inputs through grants/credits is not a sufficient condition for the success of such a collective system. Much more needs to be done in terms of developing an optimal management and operational model covering extension and other supervisory

services.

47. Under the system of group replanting providing several incentives and subsidies, the question of larger participants reaping most of the benefits need to be given careful thought. The larger the holdings the greater would be the subsidies absorbed and profits made from the surpluses (of intercrops) produced. This will result in increasing the income disparities.

48. In contrast to traditional forms of mutual cooperation (for example, gotong-royong,) group replanting demands not only for a higher level of co-operation and collective decision-making but also a far higher degree and more sophisticated form of organisational and management ability. Such an organisational model should also be capable of dealing with the complex personal relations among members. This is because the successful operation of group replanting on a long-term basis calls for some built-in mechanism which will constrain the human weakness tending to revolt against co-operation while sustaining the benefits of large-scale operation.

49. While mini-estate have a number of advantages likely to be lacking in individual replanting, they are not without limitations. It may be postulated on the basis of experiences of group farming in other countries that member smallholders who are no longer independent tend to lose initiative and vitality. One can always say that the members should serve for all, but self-concern is a strong and over-riding human characteristic that is difficult to remove. Further, the characteristics of agriculture are that unlike manufacturing industries, farming operations cannot follow a fixed schedule of operation. Unexpected weather and other natural conditions may necessitate expeditious and sometimes very prompt decision-making regarding the timing and types of farm operations. While the management makes the

final decision, nor do smallholders have to be consulted and any decision among the few selected members (leaders) are likely to be criticised, whenever they go wrong.

50. To be successful, mini-estate development requires the active participation and dedication of selected smallholders as workers on the estate type operations. However, should these smallholders leave the actual farm operations to the management and find employment elsewhere, the shortage of labour will jeopardise the success of such schemes. Moreover, increased part-time farming will also cause discontinuance of certain joint farm operations although to what extent the operations will be affected depend on the progress of part-time farming and the pace of industrialisation in the locality.

Prospects of Smallholders Cooperatives Managing Group Farming Under The Mini-Estate Concept

51. As mentioned earlier, all the 63 smallholders cooperatives are newly established between 1980 - 1982. Being in existence for only the past one to three years, most of them are not yet able to embark on projects such as land development which demand substantial management experience, technological skills and funds (Most of the societies have considerable experience only in rubber processing and marketing which was gained through the management of group Processing Centres which later become Smallholders Development Centres that form the core of the cooperative movement).

52. However, many societies are now gradually involved in land development as an activity by taking up contract works in the mini-estates managed by RISDA. The types of work they carry out include felling, land clearing, planting, maintenance, construction of infra structure such as agricultural roads and culverts, and supply of agricultural inputs and planting material. Value of works

done by the societies up to date is estimated in the region of 100 million. Though this amount is small compared to the amount expended by RISDA annually for the development of group replanting, it nevertheless reflects a good start of societies in this venture. Participation of societies in this venture is expected to increase tremendously in years ahead because it is the current policy of RISDA to give preference to smallholders cooperatives in the awards of tenders.

53. With the experience and technological skill that could be gained by the societies in the development of mini-estates through contract works in several years to come, RISDA hopes that these societies will in the near future have the ability and capacity to undertake the management of group farming on their own. It is not the intention of RISDA to be directly involved in managing the group replanting forever. At the moment, RISDA's direct involvement in this field is out of necessity at the request of smallholders themselves in view of the many problems faced by smallholders as enumerated earlier. When the smallholders themselves are ready, capable and have the capacity to manage their farms on a group basis, RISDA would readily and happily withdraw from such a scheme. RISDA is looking forward to the day when smallholders cooperatives could organise smallholders to replant their senile rubber holdings on a group farming basis under the mini-estate concept and manage these estates themselves. When this is achieved, RISDA would then be able to concentrate its efforts and resources on its main function i.e. extension and grant administration.

54. According to smallholders registration records, about 370,000 hectares of land in Peninsular Malaysia are under senile rubber and are due for the first round replanting. Another 30,000 hectares of rubber land replanted in the fifties and sixties are due for the second round replanting, making a total of senile rubber in the country approximately 400,000 hectares

RISDA's strategy is to replant at the rate of 30,000 hectares per year. With about 30,000 hectares of rubber land replanted in the fifties and sixties becoming due for replanting annually, the total hectarage that will remain unreplanted will stand at 370,000 hectares every year. From the statistics given above, there is therefore a very wide scope and a good prospect and potential for the rubber smallholders cooperative societies in Malaysia to be actively and increasingly involved in group replanting under the mini-estate concept. It is gratifying to note that up to now, 5 smallholders cooperatives have started their own mini-estates project (rubber and oil palm).

CONCLUSION

55. The growing significance of the small farm sector in increasing agricultural productivity and farm income is well recognised today. Achieving higher levels of production depends, amongst others, on evolving suitable production programmes that are capable of securing the effective and active participation of the multitude of small farmers and improving the delivery mechanisms of inputs and services. The group replanting approach described in this paper under the framework of the mini-estate concept is capable of realising this objective. As a strategy to spearhead smallholder development, the concept offers several advantages of large-scale operations that are conducive to increased production within a system of individual holdings, and without the exigencies of high capital investment or sophisticated managerial and organisational arrangements. However, group replanting as is reflected in the mini-estate concept does not offer suitable solution to the structural problems of the farm sector such as share tenancy, joint-ownership, disparities in individual holdings, etc. They instead need to be resolved by appropriate legislative measures. Even the current approaches

involving land rehabilitation and consolidation, land settlement and others, have demonstrated that they may not offer a satisfactory solution to the hardcore type smallholder problems.

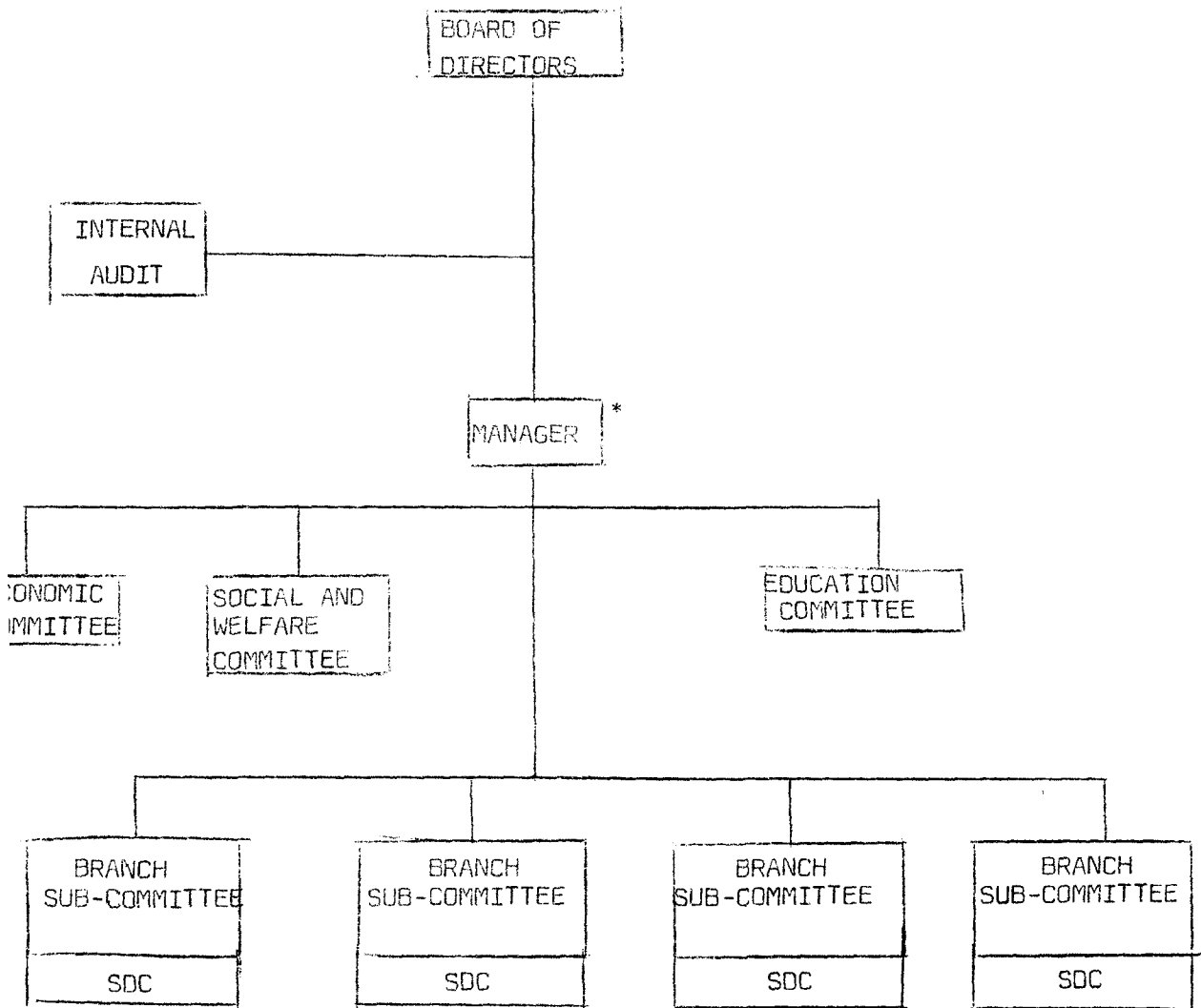
56. The socio-economic and cultural impact of the mini-estate approach for smallholder development could be quite considerable. The group or cooperatives approach helps to give a greater sense to achieve higher results. More important, perhaps, is the impact of cooperative farming on the smallholder population as a whole in providing them with a forum to discuss and find collective solutions to their farming problems.

57. Perhaps one of the highest pay-offs that is likely to accrue from such a controlled management system in group action are the participants themselves. It is through them that one can learn about the extent to which group action is or is not necessary for the widespread adoption of new technology. On the basis of this knowledge and with increased practical understanding of group action gained through such 'diagnostic experiment', effective strategies and organisational and managerial plans can be designed for the introduction of better agricultural innovations.

58. It is noted that the modern forms of group or cooperative farming, whether practised in the context described above or in other forms, must be able to stand the test of economic rationality, efficient management and technical efficiency. However, references to the traditional values of mutual co-operation and the actual utilisation of these forms are also necessary ingredients for meeting actual needs and providing social and psychological support in maintaining the continuity between the old and the new forms of rural life.

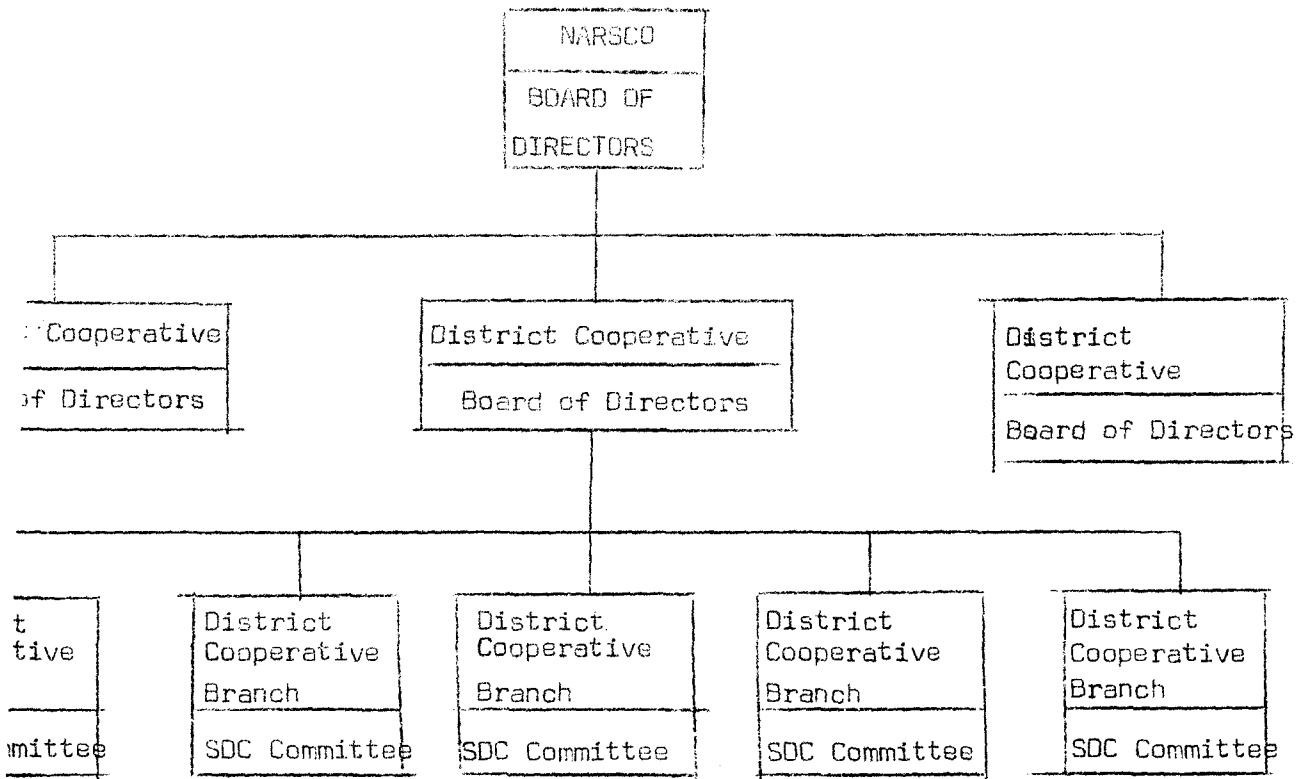
Chart 1

ORGANISATIONAL STRUCTURE OF RUBBER
SMALLHOLDERS COOPERATIVE AT DISTRICT
LEVEL



* Temporarily occupied by seconded RISDA officer with a Diploma in Agriculture.

AN ORGANISATION CHART SHOWING THE CONNECTIONS LINKAGE BETWEEN NARSCO AND DISTRICT/STATE COOPERATIVES



The linkages between National Rubber Smallholder Cooperatives and the District Cooperatives are the membership, shares and the management:-

- Membership : * The membership of the National Rubber Smallholders Cooperatives comprises of the district cooperatives or other cooperatives which have similar line of activities pertaining to rubber industry.
- * Membership at the district level is opened to all individual rubber smallholders.
- Shares : * All the accumulated shares of the National Cooperative are derived from its members at the district level. Every member is required to purchase the minimum of 500 shares worth \$5,000/-
- * Shares of the district cooperatives are derived from individual members. The price of 1 share is M\$1.00. The minimum share to be purchased is \$100.00.

FIGURE 2

PROJECTED CYCLIC ANNUAL INCOME FROM
 VARIOUS FARM TYPES (ASSUMING NUMBER
 PLANTED IS BETWEEN GRADE 2 AND 3
 WITH FAIRMARK PRICE AT \$1.00/SP.

LEGEND:

- \$6000 Desired Minimum Annual Income Line.
- \$3600 Annual Income Line (Approximate Government Poverty Line)

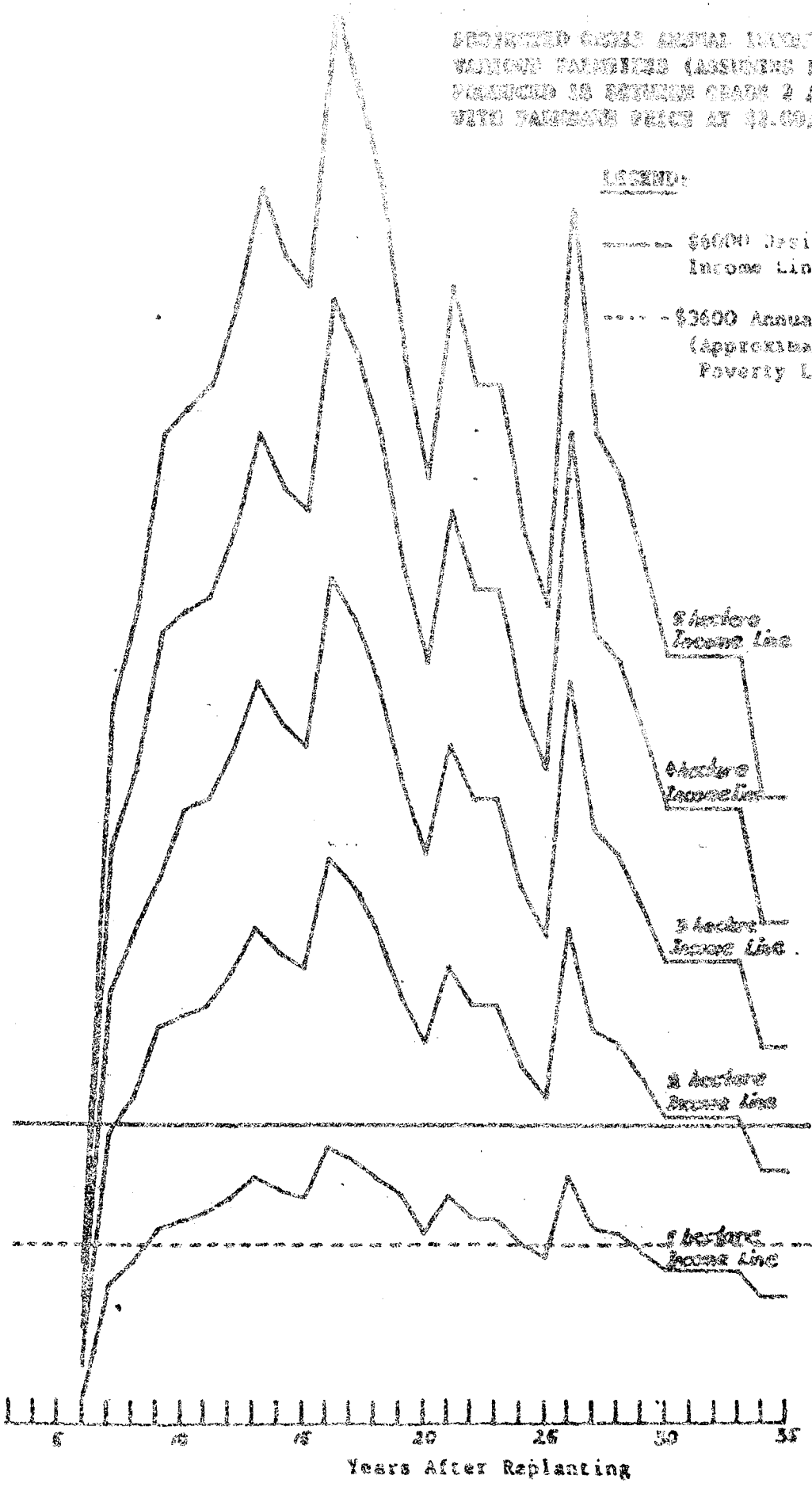


TABLE 3 : GRAND EXPORTS OF BASIC COMMODITIES, 1995^P

| Sector | US\$m | | % | |
|-----------------------|---------------|-------|--------------|------|
| | | | | |
| <u>Agriculture</u> | 12,082 | | 36.7 | |
| Rubber | | 3,664 | | 11.1 |
| Saw logs | | 2,797 | | 8.5 |
| Sawn timber | | 1,352 | | 4.1 |
| Palm Oil ¹ | | 3,006 | | 9.1 |
| Palm Kernel Oil | | 480 | | 1.5 |
| Other | | 783 | | 2.4 |
| <u>Minerals</u> | 10,825 | | 32.9 | |
| Tin | | 1,718 | | 5.2 |
| Petroleum | | 7,871 | | 23.9 |
| LNG | | 977 | | 3.0 |
| Other | | 259 | | 0.8 |
| <u>Manufactures</u> | 9,797 | | 29.7 | |
| Other | 218 | | 0.7 | |
| Total | 32,922 | | 100.0 | |

1 - includes processed palm oil

P - preliminary

Source : Department of Statistics, Malaysia.

Table 2 : PRODUCTION OF NATURAL RUBBER ON ESTATES AND SMALLHOLDING
IN MALAYSIA, 1970 - 1982 ('000 TONNES)

| YEAR | PENINSULAR MALAYSIA | | | | EAST MALAYSIA | | | GRAND TOTAL | |
|------|---------------------|------------|---------------|------------|---------------|-------|---------|----------------|---------|
| | ESTATES | | SMALLHOLDINGS | | TOTAL | SABAH | SARAWAK | | TOTAL |
| | Production | % of Total | Production | % of Total | | | | | |
| 1970 | 621.0 | 51.1 | 594.7 | 49.9 | 1,215.7 | 31.8 | 21.8 | 53.6 | 1,269.3 |
| 1971 | 661.6 | 52.1 | 608.8 | 47.9 | 1,270.4 | 28.6 | 19.6 | 48.2 | 1,318.6 |
| 1972 | 659.3 | 52.4 | 598.8 | 47.6 | 1,258.1 | 26.3 | 19.9 | 46.2 | 1,304.3 |
| 1973 | 673.6 | 45.9 | 791.5 | 54.1 | 1,465.1 | 35.4 | 42.0 | 77.4 | 1,542.5 |
| 1974 | 659.5 | 45.5 | 801.0 | 54.5 | 1,460.5 | 31.6 | 32.7 | 64.2 | 1,524.8 |
| 1975 | 580.6 | 41.5 | 817.5 | 58.5 | 1,398.3 | 32.0 | 29.0 | 61.0 | 1,459.3 |
| 1976 | 651.7 | 42.4 | 884.6 | 57.6 | 1,536.3 | 35.8 | 40.4 | 76.2 | 1,612.5 |
| 1977 | 627.6 | 41.5 | 883.9 | 58.5 | 1,511.5 | 36.8 | 37.7 | 76.5 | 1,588.0 |
| 1978 | 518.0 | 41.0 | 888.0 | 59.0 | 1,506.0 | 36.8 | 39.6 | 76.4 | 1,582.4 |
| 1979 | 607.9 | 41.8 | 890.1 | 59.4 | 1,497.3 | 33.2 | 39.6 | 72.8 | 1,570.2 |
| 1980 | 609.1 | 41.0 | 377.1 | 59.0 | 1,486.2 | 30.8 | 66.2 | 66.0 | 1,552.2 |
| 1981 | 594.7 | 40.3 | 882.3 | 59.7 | 1,477.0 | 25.4 | 28.1 | 53.5 | 1,530.5 |
| 1982 | 576.7 | 39.0 | 902.3 | 61.0 | 1,479.0 | 21.7 | 15.9 | 37.6 | 1,516.6 |

Notes: For Sabah and Sarawak, production has been taken equivalent to exports.

- Source: 1. Rubber Statistics Handbook Malaysia, Department of Statistics Malaysia
 2. Rubber Monthly Statistics of Malaysia, Department of Statistics Malaysia.
 3. Annual Bulletin of Statistics, Department of Statistics Malaysia.
 4. Sarawak Annual Bulletin of Statistics, Department of Statistics Malaysia.

Table 3 : PLANTED HECTARAGE OF RUBBER ON ESTATES AND SMALLHOLDINGS
IN MALAYSIA, 1970 - 1982

('000 Hectares)

| YEAR | Peninsular Malaysia | | | Sabah | | | Sarawak | | | Total (MALAYSIA) | | | | |
|-------|---------------------|---------|---------|-------|------|------|---------|-----|-------|------------------|-------|---------|---------|------|
| | E | SH | T | %SH | E | SH | T | E | SH | T | E | SH | T | %SH |
| 1970 | 646.6 | 1,077.3 | 1,723.9 | 62.5 | 27.4 | 78.0 | 105.4 | 3.0 | 187.1 | 190.1 | 677.0 | 1,342.4 | 2,019.4 | 66.5 |
| 1971 | 531.6 | 1,086.5 | 1,718.1 | 63.2 | 24.6 | 80.4 | 105.0 | 3.0 | 189.9 | 192.9 | 659.2 | 1,365.8 | 2,016.0 | 67.7 |
| 1972 | 610.3 | 1,002.0 | 1,702.3 | 64.1 | 24.7 | 79.7 | 104.4 | 3.0 | 189.9 | 192.0 | 638.0 | 1,361.7 | 1,999.6 | 68.1 |
| 1973 | 589.4 | 1,104.6 | 1,694.0 | 65.2 | 20.0 | 84.0 | 104.0 | 2.8 | 190.1 | 192.9 | 612.3 | 1,378.6 | 1,990.9 | 69.2 |
| 1974 | 574.2 | 1,117.6 | 1,691.8 | 66.1 | 19.6 | 84.5 | 104.1 | 2.8 | 190.1 | 192.9 | 596.6 | 1,392.2 | 1,988.8 | 70.0 |
| 1975 | 563.3 | 1,131.6 | 1,694.0 | 66.8 | 17.4 | 86.4 | 103.8 | 2.7 | 190.2 | 192.9 | 603.4 | 1,408.2 | 1,991.6 | 70.7 |
| 1976 | 553.3 | 1,130.7 | 1,604.0 | 67.1 | 17.1 | 86.7 | 103.78 | 2.7 | 190.2 | 192.9 | 573.1 | 1,407.6 | 1,980.7 | 71.7 |
| 1977 | 538.9 | 1,145.3 | 1,684.2 | 68.0 | 16.8 | 86.7 | 103.5 | 2.8 | 190.1 | 192.9 | 558.5 | 1,422.1 | 1,980.6 | 71.8 |
| 1978 | 523.2 | 1,175.7 | 1,698.9 | 69.2 | 16.5 | 88.7 | 105.2 | 2.8 | 190.1 | 192.9 | 542.5 | 1,454.5 | 1,997.0 | 72.8 |
| 1979 | 508.1 | 1,155.1 | 1,703.2 | 70.2 | 14.6 | 92.5 | 107.1 | 2.9 | 190.1 | 193.0 | 525.6 | 1,477.7 | 2,003.3 | 73.8 |
| 1980 | 492.0 | 1,206.0 | 1,698.0 | 71.0 | 15.0 | 93.1 | 108.1 | 3.5 | 193.2 | 196.7 | 510.5 | 1,492.3 | 2,002.8 | 74.5 |
| 1981 | 479.0 | 1,217.0 | 1,696.0 | 71.8 | 16.5 | 92.1 | 108.6 | 2.4 | 199.0 | 202.2 | 497.9 | 1,508.9 | 2,006.8 | 75.2 |
| 1982* | 466.0 | 1,228.0 | 1,694.0 | 72.5 | 14.3 | 94.9 | 109.2 | 2.1 | 201.6 | 203.7 | 482.4 | 1,524.5 | 2,006.9 | 76.0 |

* Estimate E=Estate SH=Smallholder T=Total

- Source:
1. Rubber Statistics Handbook Department of Statistics Malaysia.
 2. Annual Bulletin of Statistics Sabah, Department of Statistics Malaysia.
 3. Annual Bulletin of Statistics Sarawak, Department of Statistics Malaysia
 4. Malaysian Rubber Research And Development Board.

TABLE 4

INCIDENCE OF POVERTY BY RURAL-URBAN STRATA, 1950 AND 1963

| Strata | 1950 | | | 1963 | | |
|-------------------------|------------------------|-----------------------------|-------------------------------------|------------------------|-----------------------------|-------------------------------------|
| | Total households (000) | Total poor households (000) | Incidence of poverty among poor (%) | Total households (000) | Total poor households (000) | Incidence of poverty among poor (%) |
| Rural | 1,443.5 | 542.1 | 37.4 | 1,489.5 | 639.7 | 43.0 |
| Agriculture | 774.0 | 422.5 | 54.7 | 806.6 | 497.6 | 61.6 |
| Rubber smallholders | 609.0 | 400.9 | 65.8 | 600.9 | 397.9 | 66.2 |
| Oil Palm smallholders | 23.6 | 1.0 | 4.2 | 23.0 | 1.3 | 5.7 |
| Consew smallholders | 32.8 | 12.0 | 36.6 | 31.0 | 13.1 | 42.3 |
| Padi farmers | 105.0 | 76.4 | 72.7 | 130.9 | 75.0 | 57.3 |
| Others agriculture | 165.6 | 86.7 | 52.4 | 161.7 | 87.3 | 54.0 |
| Fisheries | 41.1 | 18.6 | 45.3 | 40.5 | 18.1 | 44.7 |
| Estate workers | 300.0 | 37.9 | 12.6 | 353.7 | 57.7 | 16.3 |
| Other industries | 524.9 | 119.6 | 22.8 | 582.9 | 122.4 | 21.0 |
| Urban | 743.5 | 93.6 | 12.6 | 681.2 | 97.9 | 14.4 |
| Mining | 5.2 | 1.7 | 33.0 | 5.2 | 2.1 | 40.0 |
| Manufacturing | 175.0 | 23.5 | 13.4 | 222.2 | 26.0 | 11.7 |
| Construction | 23.6 | 9.7 | 41.1 | 38.0 | 5.2 | 13.7 |
| Transport and utilities | 81.6 | 19.7 | 24.1 | 92.3 | 14.4 | 15.6 |
| Trade and services | 458.1 | 47.2 | 10.5 | 523.5 | 48.2 | 9.2 |
| TOTAL | 2,187.0 | 635.9 | 29.0 | 2,170.7 | 737.6 | 33.9 |

Estimates for 1960 for a target group in the rural sector excluding oil palm smallholders, estate smallholders, fishermen and estate workers had been revised. Estimates for the total number of households had been revised on the basis of the Population and Housing Census, 1960.

Source: Mid-Term Review Of The Fourth Malaysia Plan.

TABLE 5

**NO. OF APPLICATIONS AND HACTARAGE REGISTERED WITH
NIDA BY FARM SIZE AS AT 31/12/1982**

| (FARM SIZE) (HA) | NO. OF APPLS. REGISTERED | PERCENTAGE | HACTARAGE REGISTERED | PERCENTAGE |
|---------------------|-----------------------------|------------|-------------------------|------------|
| 0 < 2.0 | 299,170 | 61.7 | 368,509 | 53.6 |
| 2.0 < 2.4 | 53,950 | 11.1 | 130,807 | 11.9 |
| 2.4 < 2.8 | 26,798 | 5.9 | 77,280 | 7.1 |
| 2.8 < 3.2 | 19,343 | 4.0 | 60,141 | 5.5 |
| 3.2 < 3.6 | 16,485 | 3.4 | 61,305 | 5.6 |
| 3.6 < 4.0 | 19,242 | 4.0 | 74,168 | 6.8 |
| 4.0 < 6.0 | 26,815 | 5.5 | 120,803 | 11.0 |
| 6.0 < 12.0 | 113,401 | 5.0 | 108,879 | 10.0 |
| 12.0 < 40.0 | 6,540 | 1.4 | 92,951 | 6.5 |
| TOTAL: | 484,744 | 100.0 | 1,095,922 | 100.0 |
| AVERAGE FARM SIZE | | | 2.26 | |

Table 4

PROJECTED GROSS CASH INFLOW FROM PINE (00)
 OVER 30 YEARS ASSUMING CONSTANT YIELD OF 20.00
 BETWEEN GRADE 2 AND 3 AND LATELITE SELLING
 PRICE IS 102.00/5g.

| 1 hectare | 2 hectare | 3 hectare | 4 hectare | 5 hectare |
|-----------|-----------|-----------|-----------|-----------|
| 649.60 | 1,299.20 | 1,948.80 | 2,598.40 | 3,248.00 |
| 2,889.60 | 5,779.20 | 8,668.80 | 11,558.40 | 14,448.00 |
| 3,292.80 | 6,585.60 | 9,878.40 | 13,171.20 | 16,464.00 |
| 3,787.20 | 7,574.40 | 11,961.60 | 15,948.80 | 19,936.00 |
| 4,099.20 | 8,198.40 | 12,297.60 | 16,396.80 | 20,496.00 |
| 4,188.80 | 8,377.60 | 12,566.40 | 16,755.20 | 20,944.00 |
| 4,502.40 | 9,004.80 | 13,507.20 | 18,009.60 | 22,512.00 |
| 4,995.20 | 9,990.40 | 14,985.60 | 19,980.80 | 24,976.00 |
| 4,704.00 | 9,408.00 | 14,112.00 | 18,816.00 | 23,520.00 |
| 4,592.00 | 9,184.00 | 13,776.00 | 18,368.00 | 22,960.00 |
| 5,689.60 | 11,379.20 | 17,068.80 | 22,758.40 | 28,448.00 |
| 5,398.40 | 10,796.80 | 16,195.20 | 21,593.60 | 26,992.00 |
| 4,995.20 | 9,990.40 | 14,985.60 | 19,980.80 | 24,976.00 |
| 4,300.80 | 8,601.60 | 12,902.40 | 17,203.20 | 21,504.00 |
| 3,808.00 | 7,616.00 | 11,424.00 | 15,232.00 | 19,040.00 |
| 4,592.00 | 9,184.00 | 13,776.00 | 18,368.00 | 22,960.00 |
| 4,188.80 | 8,377.60 | 12,566.40 | 16,755.20 | 20,944.00 |
| 4,188.80 | 8,377.60 | 12,566.40 | 16,755.20 | 20,944.00 |
| 3,606.40 | 7,212.80 | 10,819.20 | 14,425.60 | 18,032.00 |
| 3,292.80 | 6,585.60 | 9,878.40 | 13,171.20 | 16,464.00 |
| 4,995.20 | 9,990.40 | 14,985.60 | 19,980.80 | 24,976.00 |
| 3,987.20 | 7,974.40 | 11,961.60 | 15,948.80 | 19,936.00 |
| 3,808.00 | 7,616.40 | 11,424.00 | 15,232.00 | 19,040.00 |
| 3,494.40 | 6,988.80 | 10,483.20 | 13,977.60 | 17,472.00 |
| 3,091.20 | 6,182.40 | 9,273.60 | 12,364.80 | 15,456.00 |
| 3,091.20 | 6,182.40 | 9,273.60 | 12,364.80 | 15,456.00 |
| 3,091.20 | 6,182.40 | 9,273.60 | 12,364.80 | 15,456.00 |
| 3,091.20 | 6,182.40 | 9,273.60 | 12,364.80 | 15,456.00 |
| 2,508.80 | 5,017.60 | 7,526.40 | 10,035.20 | 12,544.00 |
| 2,508.80 | 5,017.60 | 7,526.40 | 10,035.20 | 12,544.00 |

| STATE | REGISTERED SOCIETIES | MEMBERSHIP | ACCUMULATED SHARES | FIXED ASSETS | INVESTMENT |
|---------------|----------------------|------------|--------------------|--------------|--------------|
| Massachusetts | 11 | 7,846 | \$369,994.28 | 399,782.90 | 229,545.71 |
| Puerto Rico | 1 | 328 | 10,661.00 | - | 5,600.00 |
| Florida | 14 | 4,160 | 345,462.00 | 463,351.84 | 342,630.00 |
| California | 8 | 2,282 | 199,471.44 | 74,301.08 | 41,515.00 |
| New York | 1 | 1,817 | 140,057.50 | 176,513.70 | 137,071.35 |
| Illinois | 1 | 2,309 | 116,026.15 | 1,269,755.50 | 100,700.00 |
| Ohio | 6 | 10,615 | 651,941.44 | 1,391,323.20 | 290,995.33 |
| Indiana | 8 | 4,151 | 176,776.18 | 132,326.30 | 72,384.54 |
| Michigan | 6 | 3,703 | 118,563.00 | 593,208.64 | 79,157.87 |
| Kentucky | 9 | 11,124 | 493,371.25 | 305,350.60 | 200,974.87 |
| | 62 | 48,337 | \$2,556,524.25 | 4,605,913.90 | 1,500,574.10 |

Total

Investment includes purchase of company shares and fixed deposits.

Table C : DETERMINATION OF NUMBER OF PARTICIPANTS
IN THE STATE OF MALAYSIA

| STATE | NO. OF H/E | NO. OF PARTICIPANTS | HECTARE |
|-----------------|------------|---------------------|----------|
| PULUH | 3 | 156 | 189.0 |
| NEGARA | 36 | 2,150 | 3,747.0 |
| PERAK | 22 | 1,306 | 2,312.6 |
| SELANGOR | 7 | 377 | 646.4 |
| NEGERI SEMBILAN | 23 | 1,533 | 2,098.0 |
| MELAKA | 15 | 810 | 1,000.6 |
| JOHOR | 20 | 1,386 | 2,886.1 |
| PAHANG | 77 | 3,962 | 9,552.3 |
| TERENGGANU | 38 | 2,229 | 5,622.0 |
| KELANTAN | 20 | 1,030 | 3,507.7 |
| TOTAL | 273 | 15,999 | 31,621.9 |

A. TYPE OF CROP - OIL PALM

| <u>NO. OF H/ESTATE</u> | <u>NO. OF PARTICIPANTS</u> | <u>HECTARE</u> |
|------------------------|----------------------------|----------------|
| 23 | 2109 | 4065.2 |

B. TYPE OF CROP - RUBBER

| <u>NO. OF H/ESTATE</u> | <u>NO. OF PARTICIPANTS</u> | <u>HECTARE</u> |
|------------------------|----------------------------|----------------|
| 245 | 13790 | 27536.7 |