
Theory and Practice in Plantation Agriculture:

an Economic Review

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and
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Overseas Development Institute

ODI Development Policy Studies

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00014340



Overseas Development Institute

170 FEB 1990

Overseas Development Institute

British Library Cataloguing in Publication Data:

Tiffen, Mary, 1931-

Theory and practice in plantation agriculture: an economic review. — ODI development policy studies).

1. Plantations. Economic aspects

I. Title II. Mortimore, Michael, 1937- III. Series 338.1

ISBN 0-85003-124-9

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Published by the Overseas Development Institute,
Regent's College, Inner Circle, Regent's Park, London NW1 4NS

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Printed and typeset by the Russell Press Ltd, Nottingham

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Acknowledgements

This book originated in a review of the recent literature on plantations carried out at the Overseas Development Institute, London. It has been very much a joint activity. In addition to the main authors, Michael Davenport wrote chapter 8. Particular chapters also had the benefit of comments or contributions from John Farrington, Charlotte Harland, Elizabeth Hawksley, Adrian Hewitt, Tony Killick, and Chris Stevens, all Research Fellows at ODI and from Dr Charles Kemp, University of Bath and Dr Rajes Brown, London School of Economics. Jyoti Bhardwaj and Kate Cumberland coped with the sequence of revisions through which the present text emerged. Andrea Siemsen, formerly ODI librarian, provided essential support to the literature search. We are also grateful to the International Labour Office for the use of its reports prepared for the 9th meeting of the Committee on Work on Plantations, April 1989. The University of Bradford, Project Planning Centre for Developing Countries, gave permission to quote from the MPhil thesis of C G Goldthorpe (1983). However, the views expressed in the study are the responsibility of the authors (except, of course, where we are quoting opinions of others).

Abbreviations and Currency Conventions

The following abbreviations are used in the text:

ACP	African, Caribbean and Pacific
CAP	Common Agricultural Policy (EC)
CDC	Commonwealth Development Corporation
CPE	Centrally planned economy
DME	Developed market economy
EC	European Community
FAO	Food and Agriculture Organisation of the United Nations
FELDA	Federal Land Development Authority (Malaysia)
GATT	General Agreement on Tariffs and Trade
IDS	Institute of Development Studies
ILO	International Labour Office
IMF	International Monetary Fund
KTDA	Kenya Tea Development Authority
LDC	Less developed country
OAU	Organisation of African Unity
ODA	Overseas Development Administration, UK
ODI	Overseas Development Institute, London
OECD	Organisation for Economic Co-operation and Development
SDR	Special Drawing Rights
TNC	Trans-national corporation
UNCTAD	United Nations Conference on Trade and Development

The following currencies are referred to:

£	pounds sterling
US\$	US Dollars
M\$	Malaysian dollars
Ksh	Kenya shillings
N	Nigerian naira
R	Indian or Sri Lankan rupee

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Introduction

The purpose of this study is to review the theoretical and actual role of plantations in economic development, in comparison with smallholder production of plantation crops. We believe that such a review is necessary because the political, social and economic environment of plantation agriculture in Third World countries is constantly changing. Moreover, the progressive integration of the global economic system, in which the historic plantation played an important part, is increasingly affected by the activities of the transnational corporations (TNCs). Some TNCs are deeply involved in the production, processing and marketing of plantation crops. They, the national governments and donor agencies are confronted with policy decisions to direct investment into the plantation mode of production, or into smallholder alternatives.

The political issues that bear upon such decisions have exercised a strong influence on the theory of plantations, and are directly relevant to economic management. We therefore include them within the scope of this review. We have not, however, attempted a review of the social impact of plantations and the question of workers' conditions. This is because these are monitored by the Committee on Work on Plantations of the International Labour Organisation, and well covered in recent publications of the Organisation (ILO, 1985, 1986a, 1986b, 1989; Sajhau and Von Muralt, 1987); they were also the subject of a recent study by the Institute of Development Studies, Sussex (Kirk, 1987b; *IDS Bulletin*, 19/2, 1989).

Definitions

Plantation crops

Discussion of plantations is beset by difficulties of definition (see

ILO, 1989, III). The term has always been restricted to the cultivation of a limited number of crops. For example, in its first Plantations Convention in 1958 the International Labour Organisation defined plantations as any undertaking employing hired workers to cultivate listed crops.

Plantation crops are sometimes equated with tropical export crops or even with cash crops. Both terms (export crops and cash crops) are misleading, since they suggest farmers always grow crops for a single purpose, rather than allocating parts of their production to different purposes. Palm oil from a single farm may be destined for home use, and for internal and external market sale. We therefore define plantation crops as crops that may be (not must be) grown on plantations. Typical plantation crops are perennial tree or shrub crops such as tea, coffee, cocoa, oil palm, citrus, banana, rubber and coconuts; and certain field crops such as pineapples, sisal, and sugar.

The characteristics of plantation crops are:

- a) they are tropical or sub-tropical products for which there is an export market. Nowadays there may also be an internal market.
- b) most of them need prompt initial processing.
- c) whether exported or sold internally, the crop is funnelled through a single or a few intermediate marketing points for the purpose of bulking, processing or standardisation before reaching the consumer. This facilitates, though it does not make essential, vertical integration of production and marketing by a single company. It also facilitates taxation of the crop.
- d) they typically require large amounts of fixed capital investment (e.g. tree crops, processing/packaging plants). In the past this often extended to some of the infrastructure necessary to satisfy export demand and to sustain the labour force. Most of this would be on the plantation (e.g. plantation roads) but some might be off the plantation (e.g. special port facilities).
- e) they generate some activity for most of the year, so that economic efficiency is not incompatible with a large permanent labour force.
- f) Mono-cropping is characteristic, though not universal, since it makes possible standardised management practices and marketing channels.
- g) These characteristics reduce the possibility of rapid change in either product or processes, making them very vulnerable to

changes either in commodity prices or in factor prices. The high degree of risk gives an advantage to companies with a capital reserve.

Most of the crops under discussion occupy land for more than six months. Tobacco, which is often included as a plantation crop, is an exception, and in some respects is more conveniently considered a field crop like grain or beans, except that its processing requirements link it to the plantation crop group. The shorter the time for which the crop occupies the land, and the shorter the timespan between planting and first harvest, the more likely that production will shift into the hands of smallholders, unless processing demands rule otherwise. However, even the tree crops are not grown only on plantations. They have been, and are increasingly grown by smallholders. While a substantial proportion of the traded production is, or has been, exported they are also produced to meet internal demand. In the case of some crops the domestic demand is satisfied after local factory processing; in the case of others, the bulk of local demand may be satisfied without processing, and often through the medium of a multitude of small-scale transactions which escape government statistics. When crops such as bananas and pineapples are produced mainly for the local fresh food market, they are not generally thought of as being in the plantation sector. Some of the processing to satisfy domestic demand for palm oil and sugar is carried out in large-scale enterprises in the formal economy, i.e., on plantations, and some processing is by smallholders in the informal, unrecorded economy. In some cases the same producers may grow the same variety for two different markets, internal and external; in other cases, different producers grow different varieties for different markets.

When we examine the economic impact of plantations and plantation crops, we should expect that the effects on economic growth of producing these crops will depend in part on where and how they are sold, as well as on whether they are produced by plantations or by smallholders. The analysis of the literature has been complicated because not all authors differentiate between types of plantation crop either by types of producer or by types of market.

The plantation

A plantation is generally considered as a specialised type of large

farm. However, there are different opinions on the minimum size to qualify an undertaking as a plantation. In 1982 the ILO amended the 1958 Plantations Convention to exclude holdings of less than 5 ha and ten workers. However, in common parlance plantation estates are conceived as considerably larger than 5 ha. Malaysia and some other countries define them in law as having a minimum size of 40 ha. Those owned by TNCs, or by national parastatals, are typically several hundred or even thousand hectares. A rough classification is therefore:

- a) Smallholdings; typically less than 10 ha, on which a plantation crop may be either the main activity, or one of several activities.
- b) Small plantations, frequently family owned or belonging to small companies operating only in the country concerned; typically 10 — 500 ha.
- c) Large plantations (or estates), from 100 ha to several thousand ha, typically owned by a TNC, a large national company, a state organisation or an exceptionally large landowner. The minimum economic size required to support a processing plant has been quoted as 15,000 ha for sugar, 7,500 ha for oil palm, 6,000 ha for bananas, 3,000 ha for rubber and 600 ha for tea (Goldthorpe, 1983).

A plantation is not simply a large farm; it is distinguished from large farms or ranches because: it generally cultivates only one, or less frequently two, of a restricted range of crops; it has a higher capital to land ratio, due to its investments in tree crops, processing plants, and in large companies, research and development; it has a large labour force, which includes a large proportion of permanent employees, unlike ranches or mechanised cereal farms.

This book focuses on *estates over 100 ha*, though most of the literature we review offers no size definition. To emphasize the size dimension, which has important implications for organisation and income distribution, we refer to plantation estates, to distinguish them from small holdings and small plantations under family ownership.

A further definitional complication is that one school of thought defines plantations by their management characteristics, rather than by size. For example, Graham and Floering (1984) and Goldthorpe (1983) define plantations as agriculture with an industrialised management system (specialised management

methods, systems of production control, well-defined responsibilities and close delineation of purpose, hierarchical authority relationships and a supervised/disciplined labour force). This is a helpful distinction, since plantations characteristically have a small specialised management team supervising a large labour force. The labour force may include skilled workers but they are not required to take managerial decisions. In this the plantation is strikingly different from the small family farm, where there is a managerial element in the work of a large proportion of the labour force, and where the managers do not specialise in a single crop, but divide their attention between several complementary activities.

Historical background

While it is possible to trace sugar plantations far back in history, the plantation first became a noteworthy agricultural system in parts of the Americas, from about 1550. Between then and 1850 the distinguishing features were the use of slaves, production for export, initial processing on the farm, and a marked difference between the standard of living of the owners or managers, who were usually of European descent, and the workers. The major plantation crops were tobacco, sugar and cotton. These were frontier institutions, established where land was plentiful, and except for sugar in the islands, tending to move west with the settlement frontier as older land lost fertility. African slaves were imported because there was no local labour and European indentured labour was insufficient. With the abolition of slavery, many of the plantations in the southern United States went over to share-cropping, and/or mixed farming. In Brazil, from the late 18th century, coffee became the important plantation crop, with cocoa joining it in the 19th century. Low paid immigrant labour replaced slaves on the coffee plantations. In the West Indies some of the freed slaves became smallholders on abandoned estates or on vacant land, but in others they became wage labourers.

By contrast with the Americas, the tropical products of Asia were mainly indigenously produced and sold to European traders until the late 19th century. The rapid expansion of demand with the growth of European population and prosperity, and the improved transport links, coincided with and in part caused European competition to establish control not merely over the ports but also the hinterlands of southern Asia and the Pacific islands.

Grigg (1974) contrasts the estates of the New Plantation System from the Old Plantation System of the Americas on several grounds:

- a) They were generally larger.
- b) They were financed by companies located in Europe rather than by locally-raised capital.
- c) They were directed by expatriates rather than by settler families.
- d) They sponsored research in cultivation methods and processing.
- e) While they also depended on imported labour, being established in areas hitherto underpopulated, they used indentured labour rather than slaves. The transfer of labour from India and China to Sri Lanka, Malaysia, Indonesia and the Pacific Islands was later to generate political problems.
- f) They were generally an important but not dominating feature of the local economy, in which indigenously operated agriculture remained the predominant mode.
- g) Tree crops were the most important crops, especially tea, coffee, rubber and copra, although there were some plantations for other crops such as sugar and tobacco.

Plantations came even later to West Africa, except for those areas under German control before 1914, and Liberia, where American-owned rubber estates date from 1926. Neither the British nor the French encouraged European farming, and in any case malaria was a deterrent. The oil palm was indigenous and European traders collected palm produce from local growers and collectors. A huge expansion in the growing of cocoa began in the 1890s and made Ghana and southern Nigeria the leading producers from about 1910 to the 1950s, through the savings and enterprise of indigenous farmers and traders. Only the final collection for export was in the hands of competing European trading companies. The mechanisms of this expansion have been well described (e.g., Hill, 1963; Webster 1963). After self-government, a few plantations were promoted as state or joint state and foreign enterprises (Udo, 1965), the smallholder mode remaining dominant.

In eastern and southern Africa, by contrast, crops such as tea, coffee, and tobacco were initially grown by white settler farmers on large farms or estates. These might be financed either by companies (e.g. Brooke Bond and other tea groups) but were

perhaps more usually financed by private capital and run as large family farms, rather on the model of the frontier plantation of the southern United States. Hired labour was the norm, but in the early days, various forms of forced labour might also be used. In this part of Africa, it was smallholder production that expanded after independence.

Changes in ownership and structure since 1960

A retreat of foreign companies from estate ownership¹ from about 1960 to 1980 was encouraged by a wide range of influences which will be discussed in later chapters. They include increasing pressure on access to land, a pressure reinforced by populist governments eager to meet local demands for land for food-crop cultivation; the increasing unionisation and politicisation of estate labour forces, which can make estate production less profitable or more difficult; the introduction of more stringent labour legislation; the increasing need for flexibility in cropping patterns, a flexibility more easily met through smallholders than through estate agriculture; the increasing need for flexibility in investment decisions. In a world of considerable price instability, it is easier for a foreign company to withdraw from short-term contractual relations with smallholders than to withdraw from estate ownership and management. In other countries it is the political uncertainties over nationalisation, tax regimes or foreign exchange repatriation that makes companies prefer the limited investment associated with an outgrower contract to the commitment of fixed capital in land, trees and buildings. There is also the argument that in abandoning estate management and entering into contractual arrangements with smallholders, foreign companies can concentrate on those commercial functions at which they are most suited and experienced — that is in technological development, marketing and processing. The problems of production organisation are left to contracted smallholders, with the details of the contractual arrangements varying between place and time. Such arrangements appear to be welcomed by many Third World governments for they are seen as a means by which cultivating populations may be brought into commodity

1. It is not possible to quantify the ownership of plantations on a global basis because in some countries the statistics do not exist and, where they do exist, definitions may differ.

production and on financial terms more favourable to themselves than employment as estate labour (Swainson 1986, pp.39-40). A wide range of intermediate forms between the estate and the independent smallholder have been developed and expanded: for example, the nucleus estate with outgrowers. These new management structures will be analysed in Chapter 5.

While foreign ownership was in retreat, the locally-owned estate sector expanded. In some countries foreign owners were to an increasing extent bought out by local companies. By 1981 foreigners controlled only 41 per cent of Malaysian plantations; since then this has been further reduced by takeovers of the foreign held Harrison and Crosfield and Dunlop interests. In Latin America local private estate production, which has always been important, expanded at the expense of small farmers. In Brazil tenant farmers and sharecroppers have often been replaced by labourers as estates increased direct production with wage labour.

The advance of the smallholder sector and the locally-owned estate sector has not been the only, or even the main way, in which the plantation sector has been brought under local control. Foreign or expatriate ownership was terminated in the 1960s and 1970s in many countries through nationalisation, for example in Sri Lanka, Indonesia, Tanzania, Benin, Mozambique, Cuba, the Dominican Republic, Guyana, Jamaica, Peru and Nicaragua. Thus, in Sri Lanka, almost all large estates (and approximately one third of the plantation crop area), became state-owned. Private owners were restricted to 20 ha. Other countries, such as Nigeria and Côte d'Ivoire, inaugurated new state-owned plantations.

In Cuba, the Dominican Republic, Jamaica and Peru, nationalisation, particularly of sugar estates, has transformed the ownership situation. Thus, in the Dominican Republic, only one very large plantation is foreign owned, two large plantations are privately owned, and the rest are nationalised. In a few cases, such as Nicaragua and Jamaica, there has also been some redistribution of estates to small private farmers.

The experience of nationalisation has not always been happy; there was often a decline in managerial efficiency, profitability, and investment levels, as for example, in Tanzania and Sri Lanka. In some cases this has also affected the standard of workers' conditions, although the improvement of these was an initial motive for nationalisation. Many African countries are now inviting back foreign or indigenous private sector owners either for

complete or partial control, or are arranging management contracts with TNCs.²

The shift in attitude in the 1980s, which has occurred in other sectors as well, is due partly to creditor pressure, but also to changes in economic and political conditions, and fashions in economic theory. As many plantations are now owned by nationally based companies or by the state, countries no longer see the plantations as colonialist relics. The growing acceptance of economic liberalism, disillusionment with the outcome of state enterprises, the need to attract new investment flows, and to compete vigorously for market share, particularly in countries that have accumulated large debt burdens, are factors in a change of attitudes. Many tropical countries have now put investment in plantations at the head of their list of opportunities for foreign investment (Unilever, 1988). Plantations as agents of development also have supporters within aid agencies: Britain's Overseas Development Administration and the EEC have both funded plantation developments.

2. The ILO cites Tanzania (especially for sisal), Benin, Cameroon, Côte d'Ivoire, and Madagascar (ILO, I, 1989). In Uganda, major sugar estates have now passed back to their former Asian owners. The trend is not confined to Africa. Bangladesh is encouraging private interests in jute. The Indonesian government, which nationalised plantations in the 1960s, is now promoting local private investment in palm oil and encouraging overseas companies to develop large-scale plantations in Kalimantan. One agricultural consultancy group, Booker Tate, now has management contracts in more than 20 countries.

2

Theories on the Role of Estate Agriculture in Economic and Agricultural Development

Mainstream views on agriculture's contribution to development and recent critics

The establishment of a consensus

During the 1950s and early 1960s what may be termed the mainstream view on agriculture's contribution to development was enunciated. This saw agricultural advance as contributing to general economic development in four principal ways:

- (a) By increasing the supply of food and of raw materials to the urban, non-agricultural sectors of the economy; the supply of food is seen as especially important since scarcities will drive up prices and hence wage levels, reducing any competitive edge developing economies may have in lower labour costs.
- (b) by providing a surplus of *capital* (through taxation and/or savings) which may then be invested in urban non-agricultural sectors; similarly *labour* can be transferred out of agriculture into other sectors.
- (c) by increasing foreign exchange earnings (through expanding exports) or saving foreign exchange (through import-substitution of foodstuffs and raw materials) which then makes possible an increased import of capital goods to sustain the expansion of local non-agricultural production.
- (d) by raising rural incomes, and thus providing an expanding market for local non-agricultural sectors; in addition to this forward linkage, multiplier effects on local industry and services will also be felt as a more complex agriculture demands a higher level of inputs, additional transport services, etc.

This standard economic viewpoint sees development primarily as the growth of GDP and per capita incomes. The ability to accumulate capital so as to introduce new techniques or exploit new resources is seen as one of the main keys to economic growth. Hence, in the first three of the four roles of agriculture shown above, agriculture is seen as the sector to provide resources for industrialisation.³ The fourth view sees a rather more positive role for agriculture; it draws both on Adam Smith's insight into the size of the market as a determinant of production methods (for an enlarged internal market created by a prosperous rural sector stimulates industrialisation and specialisation), and on Keynesian insights into the multiplier effect of raised income levels through consumer demand. It was developed by Myint (1964) in his vent for surplus model which indicated how export demand could create the market stimulus for increased agricultural production.

The theories reviewed above assume that the agricultural sector is integrated with the other sectors of the economy and that the motivations of rural and urban people are basically similar. There is a market in agricultural goods, even if not all agricultural products are sold, and agricultural workers want and buy industrial goods and services. Capital generated in agriculture can move through savings or taxation, directly or through the banking system, into other sectors. However, some economists have argued that some countries have a subsistence agricultural sector which is basically uninfluenced by the market, and which neither uses nor generates capital to any large extent. Boeke (1953) was one of the best known exponents of this view of a dualistic economy, and through it justified the use of foreign capital and enterprise to develop 'western' enclaves, such as plantations. This led to a school of thought, now generally outmoded, which proposed a 'backward-sloping supply curve' for labour in such countries, since it held people would only work for a particular target good; the higher wages were, the more rapidly they would attain their target and return to the subsistence economy.

A dynamic model was developed by Lewis (1954). Lewis' model of 'economic development with unlimited supplies of labour' was formulated with regard to African and Caribbean examples of development where rapid population growth in relation to resources meant that the marginal productivity of additional

3. The extreme case was the Soviet development model.

workers in the subsistence sector was negligible. The capitalist sector, which can be either industry or plantation agriculture, and which may be using imported capital (though this is not an essential element of the model) can attract labour from the subsistence sector at a wage equal to the average production per man in the subsistence sector plus a margin (Lewis suggested 30%) to compensate for the loss of familiar surroundings and a more easy-going life-style. This was termed the 'institutional wage rate'. According to Lewis, despite the productivity of the sugar industry, the wages of sugar workers remained low because tropical food production per head was low. To raise the price of sugar (or any tropical export crop) it is necessary to increase the productivity of tropical subsistence food economies.

In practice it may be difficult to determine the marginal productivity of labour in agricultural employment, partly because of seasonality and partly because different types of labour are involved, some family labour, some hired. Lewis' model was developed by Jorgenson (1961) and Ranis and Fei (1961) to identify a critical commercialisation point, where the marginal productivity of labour remaining in the agricultural sector rises to equal the institutional wage rate. At this point, a rise in the industrial or commercial or capitalist wage rate is required if the plantation or industrial sector is to compete effectively with the subsistence sector, and the economy can no longer be characterised as dual.

Changing views on the efficiency of government investment

Whether agriculture is regarded as a source of capital or labour, or as a growing market for industrial goods, agricultural advance was seen by most theoreticians of the 1950s and 1960s as simply underpinning the modernisation of the economy, essentially through the transfer of capital from agriculture into industry. It was industry which would eventually alleviate poverty and underdevelopment. Lewis was not alone in thinking that the essential problem was how 'a community which was previously saving and investing 4-5% of its national income or less, converts itself into an economy where voluntary saving is running at about 12-15%'. Many would only have disagreed with Lewis on the word voluntary; development could equally be effected by government planning to invest agricultural taxation in infrastructure and industry.

There was at first a surprisingly unsophisticated view on the role of capital investment in development. The emphasis was on raising the level of investment, not on methods of seeing that investment was made in such a way as to raise profits, incomes and productivity. While it was realised that taxation could depress peasant incentive to invest, this was thought a minor disadvantage, as they would in any case not invest much. Thus Helleiner (1966) in considering Marketing Board pricing policy in Nigeria in the 1950s and early 1960s (which taxed peasant production quite heavily) concluded that Marketing Board expenditure of peasant surplus was more beneficial than peasant expenditure because of the difference in the proportion saved and invested. Helleiner admitted that the Marketing Board record in profitable investment had been patchy, and even as his book was published, the corruption which induced some very unprofitable investments was uncovered. Helleiner assumed that peasants would only save a small part of any extra income they received; evidence from northern Nigeria (Tiffen 1976, pp.93,107) referring to the same period showed that they in fact invested considerable amounts in aggregate, on the whole wisely.

Economists are now much more conscious that government investment is not necessarily productive; Killick (1980, p.93) wrote of Ghana that 'far from counteracting the alleged myopia of private decision takers, government decisions tended to be dominated by short-term expediency and were rarely based upon careful appraisals of their economic consequences'. An accumulation of micro-level and national level studies during the 1970s tended to show that peasants were economically rational decision-makers, and were frequently deterred from increasing production by heavy taxation, administered prices and unreal exchange rates and that government investment might be in unproductive prestige projects, or be orientated towards their (mainly urban) supporters without considering the interests of a less politically important rural majority. At the same time, in India and other parts of Asia, experience was showing the production effects of peasant readiness to invest in green revolution techniques when these were available and within their reach. The consequence was a World Bank-led reaction in favour of private sector investment, and 'getting the prices right'. This was accompanied by a renewed stress on the possibility of export-led growth, and the advice, particularly to Africa, that agricultural exports could not only

provide foreign exchange for essential inputs for infrastructure and industry, but could also, in some cases, through comparative advantage, be a means to import foodstuffs needed by growing populations. The Bank has, however, been accused of failing to realise that if all cocoa exporters (for example) increase their exports, the price is likely to fall, and none will gain.

Redistribution and basic needs: a positive role for agriculture

Amongst many development theoreticians in the 1970s, the perception of the meaning of development shifted. Their aim became economic growth with redistribution of incomes in favour of the poorest, who were seen as not having benefited from big projects, industrialisation, or even green revolution technology. Rural development was defined as 'improving living standards of the mass of low-income population residing in rural areas' (Lele 1985, p.20). The aim was to see that 'basic needs' of the whole population (which include women) are met.

Others have set additional social objectives including increased control over the national economy and personal destinies, the latter reflected in current emphasis on participation. Thus, amongst many academics, agricultural advance is now widely seen to have an important, direct role to play in confronting the principal symptoms of underdevelopment, notably depressed rural incomes, extreme inequality in income distribution both between urban and rural areas and within rural districts, unemployment and underemployment, and the powerlessness of the poor. Insofar as the new objectives require a restructuring of the economy, they imply a greater role for government, and a smaller role for the market. However, it is not certain that all the moral objectives of this school of thought are shared by all developing country governments.

Since food expenditure forms a high proportion of all expenditure amongst the poor, the cultivation of non-food crops was seen as possibly taking resources that should be given to food, and increasing its price. Therefore, some theoreticians argued for a high priority for food self-sufficiency. According to Matthews (1988), the three main arguments used to support this policy objective are (1) that export agriculture has for too long received priority in investment, subsidies, research and other policies that now should be switched to food production; (2) export agriculture weakens the position of the poor by competing with domestic crops

for scarce resources and by encouraging land concentration; and (3) export production develops weak linkages with the rest of the economy, restraining general growth. Even such linkages as may develop (employment, fiscal, consumption, technological, social and infrastructural links) often act to favour the export enclaves at the cost of the subsistence, indigenous sector of the economy.

The dependency school and its critics

A more radical criticism was developed by the 'dependency school' which was much influenced by Latin American experience and neo-Marxian structuralist theory. It aims to explain underdevelopment by a new overall concept or paradigm to replace that developed by the orthodox modernising school. The essence of the new paradigm, in the words of a recent textbook by two of its proponents (Blomström and Hettne 1984, p.6) is that:

- a) Underdevelopment cannot be considered as the original condition in an evolutionary process.
- b) Development and underdevelopment are different aspects of the same universal process.
- c) Underdevelopment is intimately connected with the expansion of the industrialised capitalist countries.
- d) Dependency is not only an external phenomenon but is also manifested in the internal social, ideological and political structure.

The TNCs are seen as self-seeking agents of international capitalism using monopoly powers to distort markets in their own favour and to thwart the legitimate aspirations of developing country governments.

The first statement is related to the belief that before European influence, many countries had, in the relatively recent past, a subsistence economy which was more egalitarian, and in some way in greater harmony both with their culture and their environment, than is their present cash economy. An idealisation of the subsistence economy leads to arguments in favour of a food self-sufficiency strategy and a reduced dependence on international trade. As a national strategy, food self-sufficiency is not seen simply as a legitimate national objective to reduce vulnerability to hostile pressure for which some economic gains should be sacrificed. Rather, it is argued that the best development strategy is to give priority to food production to meet local consumption needs and that only subsequently should less

developed countries (LDCs) engage in export crop production (George, 1976; Lappé and Collins, 1988). The prospect of declining international terms of trade against the primary commodities, and the risks of relying on world markets for food supplies, combine to outweigh any static gains from specialisation in export crops. This argument is therefore linked with the observation of a fairly constant deterioration in the terms of trade between agricultural commodities and manufactured goods. Authors like Prebisch and Singer had originally used the terms of trade as an argument for industrialisation; the food self-sufficiency argument is more recent.

The theories of the dependency school have been applied to circumstances in which the environment is being degraded, whether through the pressures of poverty or war in developing countries, or through greedy or careless increases in demand in rich ones, or to deficiencies in the planning or execution of particular projects, to argue against the whole case for economic growth as an engine of development and improved welfare. One view is that resource depletion and unsustainable development are a direct consequence of growth itself (Redclift 1987, p.5), and are also directly connected with export crops and TNCs. These negative criticisms are not usually accompanied by implementable recommendations or policies to meet the needs of rising populations with rising expectations.

Recent critics of the dependency school

While the dependency theorists have drawn attention to undoubted problems which exist in certain circumstances and countries, such as monopoly control by one or more TNCs, and the dangers of relying on a single or few export staples, they often tend to argue from a few cases to the general. Reviewing the theory in 1980 Killick remarked 'it appears to mark a retreat from rigorous thought and careful empirical research, whose main value is to remind us of the strength of the frustrations and injustices still felt in Africa and elsewhere' (Killick 1980, p.383). However, it influenced the thinking of some governments, for some time. Some of these are now returning to the need to attract external private sector investment and to develop their exports.

These governments see the TNCs as agents of rural development and transformation (Truitt 1981). Kiwanuka (1984) rejects the negative view on behalf of Nigeria, and argues a case for government policies to persuade TNCs to increase their

involvement, in order to introduce appropriate technologies for increasing agricultural output and provide incentives for research. Economic liberalisation, the breaking of the link between the TNCs and Western Europe or North America (many are based in Japan or Hong Kong), reduced inflows of investment funds, the need for access to advanced technology, the growth of protectionism in traditional markets, and the fall in the real value of aid, have contributed to this rehabilitation. Meanwhile, some TNCs have become cautious of investing in Third World countries (Michalet, 1987) where fears of debt remission, and high production costs, and the need to achieve scale economies in manufacturing are bringing about a shift of priorities from producing activity to valorisation.

Theories of development related to plantation estates

It is now useful to look at some of the theoretical studies developed specifically in the plantation context.

Lewis's model was to some extent based on plantation experience, which he knew from his Caribbean background. However, he did not work through all the linkages between plantations and development. He belonged essentially to the school of thought that sees the prime need for economic development to be an increase in the rate of capital investment (Lewis 1954, p.416). He also believed the most productive investments are those which open up rich, easily accessible natural resources, including fertile soil, and that this was why most exported capital in the period 1850-1950 went to the Americas and Australasia, rather than to the more well-populated India and China. He saw the export of capital as a natural result of the temptation for investors to stick to the field in which they have specialised knowledge, and as opportunities are used up in one area, to use their profits to establish the same industry in new countries (Lewis 1954, p.438-9). He saw the gains to tropical countries of this foreign investment as being limited, since in the early stages the benefits of increasing productivity in the commercial sector go to the foreign consumer. However, the plantation country makes some gains in additional employment, and an easily taxable resource with which to build up infrastructure. It does not gain a rise in real wages except in the long run if the terms of trade move in favour of subsistence

production, or if the peasants manage to imitate capitalist techniques and improve productivity (Lewis 1954, p.443).

Baldwin (1956) then explored the different development paths likely to follow from the technological nature of the production function for different export commodities, taking as his examples, wheat or some other commodities for which a family size farm gives an efficient scale of production, and a plantation crop, where for a wide range of labour/capital price ratios the most efficient mode of production is on a relatively labour intensive basis, and where there are significant returns to scale in cultivation and processing. The net result is that in the first example there is a spread of capital, income and entrepreneurial qualities amongst a wide section of the population, which leads both to a market for, and the skills to develop, a range of locally manufactured goods, and a diversification of the economy. In the second case, capital and entrepreneurial ability are concentrated; the consumer requirements of the wealthy few are most easily met by imports, and capital and skill barriers prevent labourers breaking into small-scale farming or industry. The economy remains export-orientated and many businesses remain foreign-owned. North (1959) used a similar model to explain the different patterns of growth between the northern and southern regions of the United States.

In the 1970s the contribution of estate agriculture, in particular, to the processes of economic and agricultural development became the focus of passionate controversy in the development literature as the dependency school elaborated its ideas. Thus Beckford (1972, p.215) identifies the plantation structure as a primary cause of persistent underdevelopment:

- (a) It denies the majority of the people of plantation society a real stake in their country.
- (b) It creates a legacy of dependence because the focus of decision making concerning fundamental economic issues resides outside the plantation society, so that a chronic dependency syndrome is characteristic of the whole population.
- (c) The majority of people are not sufficiently motivated toward the development effort because of the first two considerations.

For economic growth to be sustained, there must be: continuous increase in agricultural output; downstream linkages with industry; upstream linkages in demand for farm inputs; and

transfers of labour and capital to other sectors, as labour productivity rises in agriculture. Beckford (1972, Chapter 7) argues these things do not happen in a plantation economy, largely because most of the linkages are with an external economy. His conclusion is blunt: the plantation system must be destroyed if the people of a plantation society are to secure economic, social, political and psychological advancement.⁴

In contrast, Edgar Graham with Ingrid Floering (1984) have argued that the problems of agriculture in the contemporary Third World (notably the fact that the growth of agricultural production is failing to keep pace with population growth) can be solved *only* by the systematic management supervision and organisation of advanced, more productive technologies that is the 'modern plantation' structure.

These divergent perceptions derive in part from the background and ideological persuasion of their advocates. Beckford is a West Indian academic, drawn from the victim plantation society; Graham was a Director of Unilever and Chairman of its Overseas Committee, closely involved with Unilever's plantation interests in the Third World.

Beckford's arguments derive from Caribbean experience, which may be influenced by the fact these are small island economies. It has been suggested that because the plantation form so easily dominates a small island economy, islands become more specialised, more dependent and less flexible than economies in which there have always been a greater variety of economic activities and structures. It is also more likely that the plantation interests will become political vested interests, who will delay the adjustment to the decline in the marketing position by various short-run expedients to save the uncompetitive crop (Crusol and Crusol 1980).⁵

Graham's argument suffers from the assumption that estate management is universally efficient. We shall see that this is not so, particularly in relation to state-owned plantations and privately-owned plantations that have a shortage of capital resources (the latter was one of the reasons Baldwin gave for the

4. Beckford's study, which is cited widely and will be referred to again below, was reprinted unrevised in 1983.

5. This combination of economic and political vested interests may also apply in inland small economies, like Malawi (Hawksley, in ODI, 1988a).

difficulty smallholders have in growing to the optimum size for plantation activities). Graham also assumes there are returns to scale in agriculture, and that therefore, smallholder agriculture is unlikely to be as efficient as large-scale agriculture.

Micro-economic theory and plantations

Since the latter assumption is so fundamental to the argument for the plantation as an efficient form of agricultural organisation, we must examine it in some detail. It might be assumed that since tropical plantations have been successfully organised on a large scale for several centuries, economies of scale are indisputable. This is not so. A controversy continues as to whether such economies are obtainable in plantation estate agriculture and, if so, what their basis is. The resolution of this controversy has obvious importance for policy choice between estate and smallholding development alternatives.

According to Berry and Cline (1979), agriculture in developing countries does not yield increasing returns to scale in terms of the inputs used. The main reason for this is that indivisibilities are unimportant in farm operations — output can be expanded by replicating identical units — and even the evidence for a minimum threshold size for the efficient operation of such units — for example, the area needed for full use of farm machinery — is weak. Thus, 'by far the majority of the studies in the quite substantial body of literature containing empirical production-function estimates reach the conclusion that observed returns are, in fact, nearly constant' (p.6).

Plantation estates are a special case of the large farm. They were traditionally labour-intensive, and remain so where perennial tree crops are concerned; even sugar is rarely completely mechanised. 'In terms of actual practices, it is common to observe even large plantations repeating many-fold the operations carried out by the single farmer on a small family establishment' (*ibid*, p.5). No general case can be made, therefore, for economies of scale in the production operations of plantation estates.

Processing is a different matter, however, and the more capital-intensive the factory, the greater the economies of scale that can be achieved (see Chapter 4). It is therefore necessary to concentrate producing units within an economic distance of the factory, and traditionally this problem was solved by integrating production and processing under unified ownership and

management on a single plantation estate (or *plantation industrielle*). Clearly such integration is not a *sine qua non*, if equally efficient alternative linkages between producer and processor can be designed. The economies of scale in processing have an important effect: if the volume of throughput is diminished, the cost of processing per unit of production rises. This reduces the possibility of responding to a downturn in prices by a cut in production since this simply increases unit costs; estates with a processing plant are locked into a large minimum volume of production.

Barlow (1978, pp.383-9), writing of the rubber industry in Malaysia, disaggregated internal scale economies into technical, managerial, and pecuniary economies. The first of these refers to indivisibility of inputs, and Barlow showed that, given the same quality of planting material, no cost economies resulted as the area planted was increased from one to 1,000 ha (p.276). The second type — managerial economies — are achieved on larger estates because new techniques are not available to smallholders. The third type — pecuniary economies — are achieved on larger estates which tend to receive better prices for their output and to pay less for inputs and credit. Barlow goes on to argue that managerial and pecuniary economies are not intrinsic to large-scale producing units, and could be extended to smallholdings given appropriate forms of organisation.

In this position he is followed by De Silva (1982, pp.275-300), who cites experience in Malaysia, Indonesia, Kenya and Malawi as evidence that smallholders can compete in terms of managerial efficiency, and argues that breaking the link of ownership between cultivating and processing units allows processing economies to be extended to smallholders. According to this argument, the size of the historical plantation had nothing to do with economies of scale but arose from 'the framework of extra-territoriality in which the plantation system developed', or more precisely, to a high level of overheads arising from absentee investment. 'The view that they are a modern, efficient form of organisation is illusory'.

Goldthorpe (1983), however, while conceding that the economies of scale in growing tree crops are negligible, vigorously advocates the plantation mode of production on the basis of the managerial and pecuniary economies, especially the former.

'Economic arguments alone do not afford a sufficient explanation why large-scale producers are more efficient than small ones...The explanation for these differences, it is suggested, lies in organisation

theory and the hypothesis that the ideal organisational model for tree crop production is a bureaucracy'.

Centralised control, specialisation of labour, close supervision, and hierarchial management (the essential features of such a bureaucracy) are the more necessary, the larger the investment per ha, the newer the crops, the more demanding the technology and the less commercialised the settler. This view of the plantation as essentially defined in terms of its management structure is echoed by Graham and Floering (1984) in their defence of the modern plantation. It should be noted, however, that Goldthorpe's argument is based on the technological requirements of perennial tree crop production, and should not be automatically extended to seasonal field crops (pineapple, sugar, sisal).

In a subsequent publication, Goldthorpe (1985) has quoted data from plantations in Papua New Guinea, showing that costs of production in the copra industry in 1973 declined from \$185/t in estates producing less than 50t to \$138 in those producing over 400t. Labour and management costs accounted for the variation. Similarly, the costs of production of cocoa were significantly lower (in 1974) on estates producing more than 70t than on those producing less than 70t. Saragih (1980), on the other hand, concluded from a study of plantations in Indonesia that small and large plantations do not differ significantly in efficiency. The difference in findings may be due to differences in management efficiency. Ch.5 shows that estates are not always efficiently managed. Therefore, they may not realise managerial economies, even if they enjoy pecuniary economies, such as cheap credit or subsidised fertilisers. In the absence of such pecuniary economies, the case for economies of scale rests on the nature of plantation management being different from that of other large farms.

Management becomes critical where major problems of co-ordination exist between producing and processing units. The most extreme case is that of export banana production, where ripening, harvesting, transport and shipment must be scheduled so that the fruit reaches cold storage within 24 hours of cutting. Cane sugar must be crushed within 12 hours on pain of substantial losses. Oil palm fruit also require rapid processing. Binswanger and Rosenzweig (1986) argue that the conjunction of *both* scale economies in processing *and* co-ordination problems creates the greatest likelihood that the large-scale plantation will be the

preferred production mode. The co-ordination requirement thereby functions as a feedback loop from the processing operation (which yields returns to scale) to the production operation (which normally does not yield returns to scale). The effect is weaker for crops requiring less co-ordination, which by this argument are more susceptible to smallholder production.

Making a case for plantation estates today

In subsequent chapters, we shall be looking at the record of experience of estate agriculture, and its relationship with smallholder agriculture, as revealed by recent literature. There are certain questions we shall need to ask to establish whether plantation estates have a worthwhile developmental role in modern conditions. Precisely what these questions are will depend on the weighting we give to the different theoretical arguments discussed in this chapter. They will also depend on what we regard as the final objectives of development.

The applicability of theory to a particular country is also likely to vary according to the stage of that country's development. The role of agriculture in providing capital to finance infrastructural development and investment in other sectors is most important when agriculture is the source of over 70% of GDP. As an unproductive agriculture will not yield much surplus without damage to itself, the introduction of a plantation sector could be important for the generation of capital, foreign exchange and new raw materials for an industrial sector. Whether the new plantation sector displaces existing activity or adds to it will depend on whether there is under-utilised fertile land and underemployed labour. However, once the economy has become more diversified, the speed and intensity of diversification will depend in part on whether the agricultural raw materials are locally manufactured, and on how far an increased rural demand for goods and services for inputs and consumption is met from local sources.

If we accept mainstream economic theory as discussed above, we need to consider how far the estate form of agriculture has advantages over smallholder agriculture for the particular crops we have under consideration and whether this group of crops have advantages over other crops for which conditions in a given country, including its markets, may be suitable.

As far as the provision of food and raw materials to the other sectors of the economy is concerned, it is at first sight immaterial

whether these are produced on smallholdings or estates. However, the mix of crops is important for the needs of the internal market. Foods such as tea, sugar and cooking oil, whose processing and packaging can be carried on by a newly industrialising economy, have become an important part of urban diets and have an effect on the cost of living and workers' wage levels.

Estate development is more likely to provide funds, through taxation or savings for investment, both on the grounds that these are more easily taxed (not only on production but also through income and corporation taxes), and because they may be inclined to re-invest a higher proportion of their profits than smallholders. If they are foreign-owned, or in a country which has built up an indigenous capitalist class, they will be able to bring in equity capital, which means that the government concerned does not risk incurring a debt for an unproductive investment. A foreign-owned company is also likely to be able to bring in the required technical knowledge and management abilities for the industrial process, and to be able to use the advantages of vertical integration to guarantee markets for the finished products.

It is worth adding that the taxation potential of plantation crops may be important not only for investment, but also for the revenues that enable governments to maintain and expand essential services, including social and welfare services such as health and education. Because plantation crops almost invariably need processing or bulking, there are, as we have already seen in Chapter 1, points at which they can easily be taxed even if they are produced by smallholders. However we now know that government investment is not all productive and that smallholders can be deterred by heavy taxation. Smallholders are less able to defend themselves against exploitative taxation than TNCs, who may be able to negotiate with a small government on more equal terms.

Insofar as plantation crops are exported, they will provide foreign exchange that will certainly be needed for fuel, fertilizer for food crops, spare parts, raw materials and incentive goods. However, their success in this will depend on the terms of trade between the exported commodity and imports. If new production techniques, or the simultaneous decision by several countries to increase their exports of a single crop, leads to a glut on the market, the ability of the plantation sector to generate foreign exchange will diminish. However, it may still remain a better alternative

than either substituting food production for export crops (since this will not provide the other essentials needed) or substituting manufactures for export crops (since government-induced investment in import-substitution industries does not have a universally good record). Terms of trade between plantation crops and wheat and rice have been less adverse and a strategy based on food imports and plantation crop exports could have advantages for some countries. A careful assessment is needed for long term comparative advantage and consistency between cash crop policy, food policy and rural development policy.

The controversy between the conflicting policy objectives of food self-sufficiency and export crop promotion forms an essential part of the context in which governments have to make choices between promoting estate and smallholder production of plantation crops, and between plantation crops and other crops. In Africa, this has polarised between the Lagos Plan of the OAU (which commits its signatories to achieve self-sufficiency in food production), and the World Bank's Berg Report, advocating export-led growth on the basis of comparative advantage. There are reports that food crop production is neglected in plantation economies, particularly in the Americas. Plant (1987), in a study of Haiti and the Dominican Republic, concludes that despite the decline in demand for cane sugar, World Bank and IMF policies tend to result in the movement of land and labour out of food production and into export-oriented production (which is often seasonal, relies on fluctuating commodity prices and is founded on under-paid labour). In Guatemala, the dualistic agrarian structure and the promotion of export agriculture are held to blame for declining per caput food production, and a decline in the average size of small farms, generating severe rural poverty (Hintermeister, 1984). However, a careful study in Nyanza, Kenya, showed that sugar farmers grew much the same area of foodcrops for household use as non-sugar farmers; they tended to be the farmers with bigger farms with an average of 5.6 ha as opposed to non-sugar growers with 3.7 ha. For each 1% increase in sugar income, household energy intake increased by 24 calories (Kennedy and Coghill, 1987).

Many countries need foreign exchange to finance fuel and capital goods imports; for example, in 1980, Kenya's fuel bill absorbed the whole value of its coffee exports (Currie and Ray, 1987). It has frequently been argued that export agriculture is dependent on imported inputs, and plantation estates especially so. In this

respect, there is considerable interest in Sharpley's (1988) finding that the Kenyan export crop sector is both a net earner of foreign exchange and a more efficient user of imported inputs than the food crop sector. Many African countries are already net importers of food and are caught in a balance of payments treadmill (Picard, 1986); increasing agricultural exports may be viewed as a more practical policy objective than overcoming the structural and environmental factors that are limiting food production.

Other intersectoral linkages are the demands for inputs made by agriculture, and the demands for services and consumer goods made by farmers. Initially, we might expect estate agriculture, which has greater access to capital and to technical knowledge, to exert greater demands for inputs. However, whether this will stimulate the local economy will depend on whether these demands are satisfied by local provision or by imports. On the consumer side, one may expect Baldwin to be correct in anticipating a greater stimulus to local industry and services from a class of prospering smallholders than from an estate sector that comprises a small managerial class with a demand mainly for imported goods, and a large labouring class paid very low wages. However, we have seen that orthodox theory indicates that plantation wages will rise either when food-producers improve their productivity, or when there are competing demands for labour from industry or other sectors of commercialised agriculture, and this has in practice happened in some countries. The theory also indicates that family labour on a smallholding may be remunerated at less than the commercial wage. Therefore the stimulus given to other sectors of the economy from rural consumer demand will depend on the level of plantation wages, and the degree to which smallholders are commercialised and are producing a surplus for sale and exchange. In both cases the total size of the sector will also be important, since purchasing power is a function of incomes and numbers involved. In general, the consumer stimulus is more likely to come from the smallholder sector, since with the present trend in crop prices, plantation estates depend for their profitability on either minimising wage costs, or substituting machines for labour.

Theories which are based on a dual economy in which a subsistence sector behaves differently and is unaffected by other sectors have to a very large extent been overtaken by events. There are now very few countries where the great majority of farmers are

not involved in marketing either part of their crops or part of their labour. They have acquired permanent wants and aspirations that can only be satisfied by products and services produced off the farm. In their farming practices those with small resources put a higher value on risk avoidance than those who have more resources, but there is no doubt that economic rationality is widespread. Since in most cases tropical agriculture shows little return to scale, smallholder management is theoretically equally capable with large-scale farming of good management, provided it has similar access to capital and new technology. In practice we may find that these conditions are not always realised. In any case, experience in the diffusion of technology has shown that it is the somewhat larger than average farmer, or the one who has best access to non-farm resources and capital, who is most easily able to take the risk of investing in new technology. Smaller farmers follow only when it is well proven. We therefore expect estates to be best placed to take the risks of generating and introducing new technology, and to gain their profit from being at the leading edge. We would also expect them gradually to lose this advantage to smallholders if the new technology is divisible according to scale, unless they constantly generate improvements.

Some of the early theories on plantations assumed there was either much fertile idle land which could be exploited by the introduction of new capital, or that there was labour whose marginal productivity in its existing occupation was nearly zero. We have already seen that smallholder agriculture is now at least partly commercialised, and it follows that the marginal productivity of its labour is likely to have risen, either because it has itself introduced technological improvements, or because the spare labour has migrated into other sectors. The number of countries with fertile idle land is now much reduced. It follows that in the more densely populated countries we should expect the price of land to rise, either in purely commercial terms, or in terms of the political and social costs of displacing existing users. With labour no longer cheap, and large areas of land difficult to obtain, the remaining advantage of estate agriculture is likely to be in its access to capital, technology and distant markets and on its management ability in these respects.

A whole range of social, economic and technical factors dictate the balance of advantage between small-scale and large-scale

production units. As Baldwin realised, much depends on the crop production function and whether optimum methods are labour-intensive or capital-intensive. This can change over time, in response to changes in the external economic environment, as witness the fact that cotton is now more often a smallholder crop than a plantation crop. Agricultural efficiency is often measured by yield/ha, which is indeed the major indicator for a company specialising in the production and marketing of a single crop. However, management efficiency is that combination of the available factors of production and that combination of crops and livestock which leads to the highest income (or the highest income with an acceptable degree of risk) and in these terms a smallholder who opts for a low-input low-output strategy, or a combination of crops which prevents him obtaining the maximum yield in any single crop, may be acting efficiently and rationally.

While accepting the orthodox view of the relationship between agriculture and economic growth, we should not ignore the insights which other strands of thought have generated. The distribution of wealth is important, not only on the grounds that the concentration of wealth in few hands is less likely to stimulate economic growth, but also because helping the poorest is part of the moral objective of most development agencies. While it is the responsibility of each country to set its own objectives for the development of its society, it is a constraint on those who accept aid that they usually have to accept also the objectives of the aid-givers. Under certain circumstances plantations may meet basic needs by generating more jobs on a given area of land, and creating more off-farm employment, than smallholder agriculture. This will depend partly on the crop production function, partly on the existence of linkages with other sectors of the economy, and partly on whether the crop has many uses in manufactures. If assisting the poorest and creating new income-earning opportunities is part of our development strategy, then we have to look at the circumstances of particular economies to decide if the target is best reached through assistance to smallholder agriculture or plantations.

We do not need to accept all the tenets of the dependency school to agree that it is risky for any country to become dependent on a few export crops, given the uncertain trends in the world market. If a country is already in this position, it is a wise strategy to diversify into other types of agricultural production or into

industry, as far as it is economically efficient. It is also clear that there are occasions when there is a conflict of interest between a foreign-owned company and one or more groups in indigenous society. The best interest of a vertically-integrated company may be to maintain its plantations of an existing crop when national interest indicates a switch into a new area. The status quo may also be defended by politicians or unions with vested interests, particularly where sectoral interests dominate a small economy.

To recognise these situations is one thing; to accept all the linkages of the dependency theory is another. To a certain extent this theory emerged from a colonial background; it is a poor guide to independent governments that have to take responsibility for the many institutions and policies which are within their control. It is even less appropriate where the plantation sector is now under national control, either through nationalisation or through private investment by indigenous individuals and companies. The dependency paradigm is contradicted by the fact that many countries have experienced growth in the last three decades (ODI, 1988). These include economies formerly dominated by plantations, such as Malaysia, and countries in which plantation crops, whether produced by smallholders or estates, remain important, such as Côte d'Ivoire and Kenya. On the other hand, the experiences of Burma, Tanzania or Madagascar seem a poor recommendation for self-sufficiency.⁶

Some environmental arguments also rest on a selective choice of evidence. Mankind does need to conserve the environment in a state capable of continuing its yield of income in the future. This is a normal objective of a family-based agriculture where parents wish to hand on an asset to their children. To this extent we expect families to take greater care of the resource base than foreign-owned firms with a more limited time-commitment to a given location. However, if families lack capital and knowledge, high rates of population growth may lead to ever smaller farms, increasing poverty and environmentally degrading practices. If estates are occupying large areas of the most fertile land, and are

6. There is no incontrovertible historical evidence for the belief that there was more equality in societies before they were touched by European influence. The pyramids of Egypt, the Great Wall of China, the temples of the Aztecs and of Java and the massive stone constructions of Great Zimbabwe are standing monuments to societies in which there was unequal distribution of wealth and power.

not exploiting it in such a way as to create a larger number of incomes than if the same land was divided into small family farms, they add to the population pressure in the remaining agricultural areas.⁷

However, development can rightly be considered to be more than a matter of income. Another moral view is that a fully developed society should offer its citizens more choices and more control over their own lives. Thus in looking at either the plantation itself, or at some of the new organisational forms of plantations in which there are contractual arrangements with smallholders, the following questions may be asked (Kirk, 1987a):

Entitlement: to what extent do smallholders receive a fair price for their production, or labourers for their work, after taking into account fluctuating world prices for primary commodities?

Participation: to what extent do smallholders participate in decision-making, with respect, most importantly, to choice of crops and cultivation methods? To what extent do workers share in the profits and have opportunities to share in decision-making, or to rise to decision-making positions?

Uneven development: to what extent do foreign companies contribute to the development of a local infrastructure beyond that which would be required to sustain export production? And to what extent do contractual arrangements disturb local markets for land, labour and food?

Equality: to what extent is the income to smallholders or to workers and share-holders spread through the rural population as a whole?

7. It could be the case that the monoculture practised by plantation estates has detrimental effects; this, however, is not a matter of economic theory but depends on technical matters connected with particular crops and particular agronomic practices, and these will be examined briefly in Chapter 6.

3

The Plantation Estate Subsector

Leading producers and exporters of plantation crops

Statistics on production and exports of plantation crops do not differentiate between estate and smallholder production. Table 3.1 gives the 9 leading producers or exporters of each crop. Where producers and exporters are very similar, we have only given one of these rankings. Not surprisingly, the larger tropical countries tend to be the larger producers, although in some cases they consume most of their production and export relatively little. Smaller countries specialising in exports do, however, feature in the lists. Thus, Cuba is the third largest producer of sugar as well as the leading exporter; the next island economy to feature is Mauritius at rank 17. Swaziland is the tenth largest sugar exporter, but ranks 22nd in production. It will also be seen that some countries, with widely different economic records, feature in several of the lists, which augments the importance of their plantation crop sector by comparison with countries with one dominating crop. These include Brazil, Colombia, Malaysia, Indonesia and the Philippines. The figures should be interpreted with care because of possible definitional differences between the commodity as produced and as exported, because of the carry-over of stocks from one year to the next and because not all types of production have been listed. For example, in the case of palm oil, there is also production and export of palm kernel oil and palm oil cake.

In the remainder of this chapter we endeavour to trace trends in the plantation estate subsector⁸ and to differentiate it from the

8. An evaluation of the size of the estate subsector relative to either the plantation crop subsector, or the agricultural sector as a whole, would be

smallholder sector. Its size will be evaluated in terms of area, output, and employment, and its importance to the national economy is reviewed in terms of export earnings and its contribution to revenues.

Sector size

Area

Countries that have a significant estate subsector vary widely in the amount of land allocated to it, both absolutely and relatively to the smallholding subsector. We shall see that there are probably different economic and social effects when the estate sector is a relatively small part of the agricultural sector, as in most large countries, and when it dominates it, as in some small countries. There are also variations in the direction of change, both between countries (because of differences in policy objectives) and between crops (because of the world trading environment). These variations, and the reasons for them, are illustrated by the following examples:

- (a) **Declining area under plantation estate agriculture.** In the old sugar plantation economies of the Caribbean, the area under estate agriculture peaked a long time ago. Even though large-scale land redistribution has rarely been attempted, government policies tend to try to reduce the skewed distribution. In Jamaica, land reform programmes have emphasised smallholder needs, and the area occupied by the major export crops declined by 33% between 1971 and 1981 (Clarke, 1986). In Sri Lanka, the percentage of estates over 40 ha in the land under the major plantation crops (tea, rubber and coconuts) fell between 1948 and 1972. Under the ensuing land

impossible in many countries, owing to the inadequacies of the data available. As plantation crops may no longer be grown solely or even principally for export, trade statistics do not provide a reliable indicator of the importance of the plantation crop subsector. When they are grown by smallholders, the factors of production are shared with other crops, and cannot often be reliably estimated for the plantation crops alone. Finally, the definition of an estate, as we have seen, varies both in official statistics and in academic literature. The size criterion used in this study (100 ha or more — see Chapter 1) is different from those used by some authors. While every precaution has been taken to eliminate confusion in the review that follows, some imprecision is unavoidable.

Table 3.1
Leading producers and exporters of plantation crops
(Production and Export in '000 tons)

<i>Palm Oil (1986)</i>	<i>Production</i>	<i>Exports</i>
Malaysia	4,532	4,305
Indonesia	1,351	683
Nigeria	760	—
China	195	—
Côte d'Ivoire	187	100
Zaire	155	4
Colombia	140	—
Papua New Guinea	130	129
Thailand	105	5
Ecuador	98	5
<i>Sugar Cane (1986)</i>	<i>Production</i>	<i>Exports</i>
Brazil	7,999	2,554
India	7,594	44
Cuba	7,467	6,703
Mexico	4,068	219
Australia	3,439	2,710
USA	2,772	412
Thailand	2,718	2,049
South Africa	2,248	874
Indonesia	2,149	0
Philippines	1,514	230
Colombia	1,272	212
Pakistan	1,129	0
Argentina	1,100	54
China	970	200
Dominican Rep	894	481
Egypt	850	0
Mauritius	748	662
Guatemala	651	373
Venezuela	650	—
Peru	585	55
Sudan	550	—
Swaziland	537	498

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<i>Coffee (1987)</i>	<i>Production</i>
Brazil	2,112
Colombia	654
Indonesia	330
Mexico	315
Côte d'Ivoire	260
Uganda	205
Ethiopia	178
Guatemala	159
El Salvador	139
Costa Rica	138

<i>Cocoa (1987)</i>	<i>Production</i>
Côte d'Ivoire	570
Brazil	405
Ghana	210
Malaysia	175
Nigeria	130
Cameroon	120
Ecuador	85
Colombia	51
Mexico	45
Dominican Rep	38

<i>Tea (1986)</i>	<i>Production</i>	<i>Exports.</i>
India	624	202
China	484	181
Sri Lanka	211	208
Turkey	144	1
Kenya	143	133
Indonesia	130	79
Japan	94	0
Iran	40	0
Malawi	39	40
Bangladesh	35	29

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<i>Bananas (1986)</i>	<i>Exports</i>
Ecuador	1,400
Colombia	989
Honduras	931
Costa Rica	885
Philippines	856
Panama	660
Guatemala	330
Martinique	174
USA	163
Guadeloupe	128

<i>Pineapples (1987)</i>	<i>Production</i>
Philippines	2,222
Thailand	1,781
Brazil	958
India	780
Trinidad & Tobago	628
Vietnam	399
Indonesia	390
China	387
Mexico	306
Côte d'Ivoire	274

<i>Rubber (1986)</i>	<i>Production</i>	<i>Exports</i>
Malaysia	1,542	1,516
Indonesia	1,109	961
Thailand	811	821
China	210	16
India	201	1
Philippines	154	15
Sri Lanka	138	110
Liberia	90	90
Nigeria	60	37
Côte d'Ivoire	48	47

Source: For all except sugar, *FAO Yearbook: Production*, Vol 41, 1987 and *FAO Trade Yearbook*, vol 40, 1986. For sugar, International Sugar Organization, *Sugar Yearbook* 1986.

reform programme, most of these estates became government property, and 10% were redistributed in smallholdings. In Tanzania, the area under sisal fell from 260,000 ha in 1964 to 160,000 in 1980, of which 70% was in estates (Msambichaka and Bagachwa, 1986). Partial nationalisation of privately owned estates took place after the Arusha Declaration of 1967, though not affecting other plantation crops. Government policies subsequently emphasised village production of domestic crops. In Java (Indonesia), as the result of an Intensified Smallholder Cane programme, the area harvested by estates decreased by about 50% between 1976 and 1980 (ILO, 1989, III). In other countries, reduced plantation areas have resulted from changes in the policies of transnational corporations (TNCs), cutting back on the direct production of bananas and other crops in favour of increased contract growing. In Honduras and Panama, for example, the area under direct production fell both absolutely (from 56,300 to 39,800 ha) and relatively (from 86.4 to 68.7% of the planted area) between 1947-51 and 1972-76 (Ellis, 1983, quoted in Torres-Rivas, 1986).

(b) Expanding area under estate agriculture. Some governments, on the other hand, have directed resources into the plantation subsector. Between 1970 and 1980, the number of tobacco estates in Malawi increased by factors of three (flue-cured) and ten (burley tobacco) and several new sugar estates were set up (Hawksley in ODI, 1988a). Financial resources were deliberately channelled from the smallholder sector into estate agriculture, and public and commercial credit made available (Kydd and Christiansen, 1982). In Côte d'Ivoire, a major extension of plantation agriculture has been achieved since Independence, both in estates and smallholdings, under the auspices of a set of purpose-designed parastatals. Industrial oil palm plantations increased from 3,072 ha in 1963 to 52,004 ha in 1978. Estates of 35 ha or over produce 63% of the country's bananas (Boni, 1986). Some 62% of the area planted with oil palm, 65% of coconut, and 94% of rubber are found in large estates with foreign or majority state ownership (Kouadio, 1986), although cocoa and coffee remain largely smallholder crops. In India, between 1971 and 1980, the area under tea in estates of 100 ha or more increased by 10% while the total area under tea grew by only 7%. In coffee, the corresponding rates

were 5.5% and 4.6%, and in rubber, for estates of 40 ha or more, 24% and 19 % (computed from data in Sajhau, 1986). In Kenya, large farms increased their share of the area planted with coffee, tea and sugar between 1968 and 1979. The latest figures suggest the estate sector now accounts for 33% of the tea area (Ozanne, 1989). The only major crop to decline was sisal (Lugogo, 1986).

Output

Estate production of the plantation crops also varies from country to country both absolutely and relatively. Few attempts have been made to estimate estate production as a contributor to GNP or GDP, an exercise made difficult by the definitional problems already referred to. Rubber alone is estimated to contribute 10% of GDP in Malaysia (Smit 1982,p.233). The sugar industry contributes 25% of GDP in Mauritius (Manrakhan and Sithaven, 1984). Such estimates are limited to one crop and include both estate and smallholder subsectors. The contribution made to GDP by the estate subsector tends to be larger than its planted area would suggest. In Indonesia, rubber estates operate 20% of the planted area but contribute 40% of total output (Sen, 1985). In Malaysia, the estate sector operated 34% of the rubber and oil palm crop area of the country in 1986 but contributed 45% of the total output (Lim, 1987). In Kenya, estates operated 35% of the area under tea and produce 60-65% of total output in the early 1980s (Dinham and Hines 1983,p.47; Currie and Ray, 1987). By 1987 improving smallholder yields meant that estates were producing just under half the total production from 33% of the area (derived from Ozanne, 1989). In Brazil, coffee farms of over 100 ha operate 17% of the planted area but produce 47% of output (De Graaff 1986,p.112). In Côte d'Ivoire, the 'village sector' (which may be assumed to consist of holdings of less than 100 ha) accounts for 37% of the oil palm area and only 11% of recorded output; 35% of the coconut area but only 13% of recorded output; and 6% of the rubber area but 2% of the output (Kouadio, 1986). But in both palm oil and coconuts smallholders are likely also to be making unrecorded sales to local markets.

Whether the greater proportion of production is from smallholders or estates reflects government policy as well as economic forces. In Peninsular Malaysia, smallholder rubber production overtook that on estates in 1972 (Smit 1982,p.212), the result of large-scale government programmes of smallholder

settlement. In Tanzania, export production on estates declined by 33% between 1969-72 and 1976-79, but peasant production by only 14% (Dinham and Hines 1983,p.120).

Employment

The numbers directly employed in the plantation crop subsector are commonly large both in absolute terms and relative to other sectors, and when their dependents are also taken into account, the contribution of the subsector to total national employment and incomes may be substantial, especially in small sugar-producing countries. In 1983 over a million people were employed on plantation estates in India, and some 250,000 in Kenya and Malaysia (ILO, III, 1989). There is additional indirect employment, examined in Chapter 6. When only processing is included the sugar industry employs 13% of the labour force in Swaziland (1984-87: Stevens, 1988), not less than 22% in Fiji (1982: Brookfield et al, 1985) and 23% of the economically active population in Mauritius (Sajhau, 1986). How much of the direct employment is on the large estates of 100 ha or more in which we are particularly interested cannot be derived from the sources reviewed. Individual projects may be impressively large. The Del Monte pineapple operation alone employs 6,000 directly in Kenya (Dinham and Hines, 1983p.105).

Export earnings

Export dependence

Such dependence, traditionally associated with plantation economies, may take two forms:

(a) **Dependence of export earnings on plantation crops.** Examples of such dependence are: (1) Guyana, which obtained 96% of its export earnings from sugar in the 1970s (Thomas, 1984); (2) Malawi, where tobacco, tea and sugar contributed 80% of earnings in 1984 (estate production accounting for 52, 15 and 9% respectively: Hawksley in ODI, 1988a); (3) Swaziland and (4) the Dominican Republic, for whom sugar provides about 40% (Stevens 1988; Grasmuck 1982). By contrast, rubber and palm oil together only contributed 19% of Malaysian earnings in 1986 despite the fact that it was the leading producer of both (Lim 1987).

The trend in most countries is towards reduced dominance of plantation crops in national export earnings. In Sri Lanka the

contribution of the tree crop plantation sector fell from over 90% before 1965 to 47% in 1980-2 (Wickremasinghe, 1983). Ecuador reduced its dependence on banana, cocoa, coffee and sugar exports from 88% of total earnings in 1965-71 to 18% in 1982 (41% of non-oil exports: Chiriboga 1986).

Declining export dependence may be due to several causes: sectoral decline (Sri Lanka); the growth of internal demand (Nigerian palm oil); government policies to promote diversification (Malaysia) or a policy orientated towards self-sufficiency (Tanzania); or to price movements and reduced quotas in traditional markets. An extreme example is provided by the Philippines' sugar exports, which fell in value from \$737m in 1974 to \$399m in 1983, an average decrease of 5% per annum, precipitating a major crisis in the industry. This fall, which resulted from a reduced quota in the US market, reduced sugar's contribution to dollar export earnings from 27% to 8% (Ofreneo, 1985a).

(b) **Dependence of plantation crops on export markets.** Some countries continue to depend on export markets. For example, Swaziland exports 91-97% of its sugar in most years; Tanzania exports over 90% of its sisal (Stevens, 1988; Lawrence, 1974). Such dependence reflects a weak development of internal demand and of local downstream linkages. There are many reasons for such weaknesses. But the strengthening of domestic demand and of local downstream linkages, although a policy objective, is not easy to achieve in small economies. By contrast, the growth of domestic demand, motored by increasing population and rising real income, has turned Nigeria from a major exporter into a net importer of palm oil. Smallholder production is declining under the impact of labour shortages, although total output is being maintained by an increasing contribution from estates (Moll 1987, pp.211-34). New oil palm developments are now being justified on import substitution arguments: the Risonpalm Nucleus Estate, for example, may be able to produce 11% of Nigeria's 1984 output, saving substantial imports (Gyasi, 1987). India consumes half its tea. Reduced dependence of plantation crops on export markets characterises the larger and more dynamic plantation economies. The differences between production and exports in some crops and countries are illustrated in Table 3.1.

Contribution to revenues

It is not difficult to find examples of governments which depend quite heavily on the estate sector for an essential part of their revenue. Fiscal policy designed to transfer investment funds from export agriculture to other sectors conforms with an orthodox view of the developmental function of plantation agriculture (see Chapter 2 above).

The most important instrument of taxation is the export levy. Sugar exports from the Dominican Republic, which constituted 75% of export earnings in 1976, generated 20% of government revenue (Grasmuck, 1982). The sugar export levy in Swaziland contributed an amount equivalent to 20% of the government's planned capital expenditure in 1975-81, and in some years, up to 35% of current revenue (Stevens, 1988). The following examples show tax revenues in a broader perspective. In Costa Rica, two banana companies (United Brands and Standard Fruit) paid about \$14m each in rent, import and export taxes and other dues to the Government, compared with the \$40m and \$60m they paid into the private sector for wages, goods and services (Torres-Rivas, 1986). In Honduras, United Brands paid \$14m to the Government, and Standard Fruit \$9 million, compared with \$56m and \$45m to the private sector.

Governments may use taxation policy to discriminate between crops, between sectors, or between markets (export or domestic). With regard to sectors, the government of Malawi taxed the smallholder sector through producer price manipulation and used some of the revenue to subsidise inputs for the estate sub-sector (Hawksley in ODI, 1988a). Marketing Boards have been much criticised in the development literature for transferring resources from smallholder agriculture to other sectors of the economy. Revenues used for rural infrastructure may benefit the agricultural sector, but urban projects are more questionable (see, for example, Olatunbosun, 1975 for a critique of the Nigerian marketing boards). In Côte d'Ivoire in 1979-80, producers were only paid 40% of the selling price of coffee and 52% of that of cocoa (Boni 1986, p.438), and other countries have at times taxed producers even more heavily.

With regard to markets, India taxes tea in excise duties on leaving the gardens, wholesale and retail sales taxes, and by a cess on tea, but has only occasionally imposed an export tax (Sircar,

1985). Kenya refrained until 1982 from imposing an export tax on tea, a policy that materially assisted Kenyan tea in gaining entry to world markets.

Governments that become dependent on export revenue may be unable to lift the tax burden even when it reaches disincentive levels, as exemplified by Sri Lanka, where a World Bank report estimated that the tax burden on tea, at 30%, is far higher than its competitors (Terpend et al, 1986). There is a FOB tax of 35%. An even higher FOB tax on rubber (50%) compares unfavourably with Malaysia (27%), Indonesia (14%), and Thailand (25%) — Sri Lanka's competitors, and coconut is also heavily taxed (Gooneratne and Wesumperuma, 1984). Underinvestment has been the inevitable corollary and the lack of compensating fiscal support has meant that the sector has had to subsidise other sectors of the economy. Here and elsewhere, 'the capacity of the plantation sector to generate an investable surplus has been affected adversely by the unfavourable prices of most plantation crops in recent years' (ILO 1989, III:25).

4

Land, Labour and Capital

This chapter reviews the factors of production, land, labour and capital, in relation to plantation estate agriculture, in order to assess the relative efficiency of estate and smallholder production of plantation crops.

Land

Yields on large and small farm units

According to Berry and Cline (1979), where land is unequally distributed between large estates on the one hand and smallholdings on the other, output tends to fall below its potential on large farms because land is underused, while output tends to be higher on smallholdings because labour is abundant. This is primarily because a dual labour market characterises economies where large and small scale farming are juxtaposed. That is, whereas large farms have to employ labour at wages above its opportunity cost, and will cease to apply labour when its marginal product falls to this wage level, small farmers rely on family labour which may be valued at or even below such opportunity cost, and may continue to apply labour until its marginal product approaches zero. They can therefore be relatively labour-intensive and achieve higher yields per ha. A second reason for the difference is land and capital market imperfections, whereby large farms benefit from lower effective prices for land (land is cheaper when purchased in large blocks) and capital (cheap credit, subsidised inputs). They will therefore tend to substitute land and capital for labour.⁹ Berry

9. In the specific context of plantation estates it is relevant to note, in relation to the dual labour market, that labour costs are raised above the actual wage rate by the indirect costs of housing and servicing the

and Cline support their theoretical argument with analyses of data from various parts of the world.¹⁰ For all six areas, the statistical tests 'confirm the negative relationship between farm size and output per unit of land available. This negative relationship holds, even when removing the influence of land quality' (p.126).

A study of agricultural development in Kenya (World Bank, 1983) concluded from a comparison of very large farms and small settlement scheme farms that gross output per acre is strongly and inversely related with holding size. On settlement farms of less than 10 acres (4 ha), output per acre was 2.5 times greater than on farms between 10 and 19.9 acres and approximately six times greater than on farms over 40 acres (16 ha). About half the variation was due to higher cropping intensity on smallholdings. The smallest large farms (under 250 acres or 100 ha) also had significantly higher output per acre than the larger large farms, which was due to a higher proportion of land under crops. While advocating cautious interpretation of these results the authors of the study nevertheless conclude that on average, small farms produce *at least* as much output per hectare as large farms.

The primary reason suggested by Berry and Cline (1979) for lower productivity on larger farm holdings is the under use of land. There is evidence that some plantation estates may not make full use of all the land they control, especially in the early stages of their development. Burbach and Flynn (1980, p.211) reported that on the Del Monte plantation in Guatemala, only 9,000 acres were cultivated, the remaining 48,000 acres being grazed by a herd of 7,000 cattle. According to a company official, this was not primarily

plantation labour force; and in relation to land and capital market imperfections, that plantations commonly benefited in the past from privileged access to large tracts of undeveloped land at very low cost, and from preferential taxation policies, access to local or international capital, or input subsidies.

10. For Northeastern Brazil (1973), the tests show that output per farm area declines as farm size rises, even after taking account of land quality; and that labour is replaced by land and capital as farm size increases. For India (1955-70) they show a negative relationship between the gross value of output per acre and farm size, though the relationship weakened in the 1960s with the impact of the Green Revolution technology on larger farms. In a rice-growing area of Malaysia (Muda River, 1972-73), land productivity — measured by value-added per relong — falls by two-thirds between the smallest and the larger farm size groups. Other tests were carried out in Colombia, Pakistan and the Philippines.

to produce meat, but a tactic to keep squatters off the property and prevent the Government from expropriating it as idle land.¹¹ The sisal estates in Tanzania cultivated a proportion of the holding, moving on when soil fertility became depressed (Lock, 1969). In Malawi, tobacco is grown on a four-year rotation with fallow (and some maize), and extensive areas of cultivable land controlled by the estates are not used for agriculture.

On the other hand, in terms of yield per ha *planted*, estates, having access to advanced technologies, generally achieve higher productivity than smallholdings. Table 4.1 brings together a number of comparisons cited in recent publications.¹² Since the distribution of these examples, with one exception, is confined to Africa and Asia, it may be mentioned that in the Brazilian state of Bahia, Monteiro et al (1985) also report that cocoa yields generally increase with farm size, in the range 439-754 kg/ha.

Since yield differences are attributable to many factors, it is not difficult to find exceptions to the pattern suggested by Table 4.1. Using the best clones available and stimulation techniques, Federal Land Development Authority (FELDA) rubber smallholders in Malaysia achieved yields of 2,400 kg/ha, which compare favourably with 1,428 kg/ha achieved on the average estate (Barlow 1978, p.236; 1986). Trained and supervised FELDA smallholders achieve

11. Beckford (1972) gave six reasons for United Fruit's policy of obtaining more land in Caribbean countries that it could use: (1) to maintain continuity in the plantation tract, (2) to control rights of way, (3) to reserve an option on the development of marginal land should a price rise make it profitable, (4) land speculation, (5) to exclude competitors, and (6) because some bad land inevitably goes with good. To these, he argued should be added three more considerations: (7) land ownership provides political power, (8) inclusion of land as capital stock allows the flexible accounting of profits, and (9) compensation could be claimed in the event of nationalisation.

12. The significance of such comparisons is not as simple as it appears. For example, the two authorities cited for rubber yields in Peninsular Malaysia (Smit, 1982, and Barlow, 1978) give different figures. Barlow's yield figure is for mature rubber, which highlights the need to take age of trees into account. Webster and Watson (1988) give lower rubber yields for smallholdings: 1,000 kg/ha in Malaysia and 317 kg/ha in Indonesia. The age structure of trees on smallholdings is commonly older than those on estates, owing to slow replanting (see below). Planting material also affects yields.

Table 4.1
Average yields on estates and smallholdings (kg/ha)

Crop	Country	Year	Estates	Smallholdings	Source
Cocoa	Papua New Guinea	1984	440	330	Goldthorpe, 1985
Coconut	Papua New Guinea	1984	900	500	Goldthorpe, 1985
Coffee	Papua New Guinea	1984	2,000	700	Goldthorpe, 1985
	Kenya	1984	1,372	539	Mwauro, 1988
Palm fruit	Papua New Guinea	1984	21,490	11,900	Goldthorpe, 1985
	Côte d'Ivoire	1980s	10,200	5,800	Terpend <i>et al</i> , 1986
	Malaysia	1980s	24,100	15,700	Terpend <i>et al</i> , 1986
Rubber	Sri Lanka	c1984	950-1,025	565	Dissanayake, 1984
	Papua New Guinea	1984	5-600	2-600	Goldthorpe, 1985
	Peninsular Malaysia	1980	1,428	1,103	Barlow, 1986
		1980	1,218	725	Smit, 1982
	Indonesia	1978	610	338	Smit, 1982
Sugar	Guyana	1982	5,430	4,450	Thomas, 1984
Tea	Sri Lanka	c1984	918	667	Dissanayake, 1984
	Kenya	1970s	900-1,200	500	World Bank, 1983;
		1980s	2,654	838	Lugogo, 1984
					Terpend <i>et al</i> , 1986

average yields of 1,480 kg/ha rubber and 17,000 kg/ha palm fruit, better than smallholders in general (Goldthorpe 1983, p.228).¹³

These apparent contradictions are resolved as follows. The plantation is a special case of the large farm, having a higher ratio of capital to cultivated land. This applies both to sunk capital in tree crops and processing plants, and also to the amount of working capital required for inputs and labour payments. Therefore, in the plantation, an incentive to maximise productivity per planted hectare is present. Where the capital:land ratio is high enough to ensure good research and development, management, and application of the latest technology (fertilisers, pesticides, agronomy and regular replantings with higher yielding varieties), yields may be expected to be higher than on smallholdings having a lower capital:land ratio. Where smallholders, through institutions such as FELDA, gain access to new technology and management, their yields may equal those of estates. Where estates are short of capital, yields may be expected to be lower. High yields are therefore associated with high capital:cultivated land ratios rather than with size of holding.

Yield trends

There is a long way to go before average yields, even on estates, approach demonstrated potentials, which are of the following orders: for coconuts (hybrids), up to 8,000 kg (Gooneratne and Wesumperuma 1984); for cocoa and coffee, 2,000-3,000 kg (Alvim and Kozlowski, 1977, p.296); for copra, 300-400kg (Nayar, 1982); for oil palm fruit, 30t or more (Goldthorpe, 1983; Corley et al, 1976); for rubber (peak tapping years), 4,000-6,000 kg (Moraes, 1977); for tea 3,000 kg (Webster and Watson, 1988); and for palm oil, 6-8t (Hartley, 1977).

The introduction of improved production technologies to estate agriculture and smallholdings alike has generated a long term improvement in yields. For example, rubber yields on estates in Peninsular Malaysia increased from 365 kg/mature ha in 1920 to 738 in 1960 and 1,428 in 1980; and on smallholdings from 496 kg in 1920 to 511 in 1960 and 1,103 in 1980 (Barlow, 1986). The new technologies include superior planting material, more efficient

13. The smallholder sugar growers of Cuba are reported to achieve higher yields than those of the government-owned estates (Graham and Floering, 1984).

planting methods, better tapping techniques and stimulation. In India, increased tea yields had a greater effect than increased area on the rise in total production between 1956 and 1978, and were attributed to fertiliser use and other practices (Misra, 1985). These increases were from 1,104 kg/ha in 1968 to 1,363 in 1982 (in North India) and from 1,302 kg/ha in 1968 to 1,668 in 1982 (in South India: Sircar 1985). Several other plantation crops behaved similarly. However, the improvement has generally been more noticeable in estates than in smallholdings.

A number of cases of long term yield deterioration have also been documented. The best known of these is that of sugar. The old plantation economies of Barbados, Guyana, Trinidad and Jamaica registered a decline from average yields of 6.24t/ha of *sugar* in 1969-71 to 4.86t in 1975-81 (Graham & Floering 1984, p.151). Yet declining yields are not found everywhere in the Caribbean. Cuba raised its cane yields from 41 t/ha in 1959 to 55t/ha in 1982 (Edquist, 1985). In all these countries, estates still operate the greater part of the sugar area. Decline in yields has been even steeper in the Philippines, by 40% between 1959 and 1972 (Ofreneo, 1985a). For other crops, there are scattered reports of decline, such as cocoa yields in Fiji (Fowler, 1985) and pineapple yields in Malaysia (Navamukundan, 1985), which are both ascribed to labour shortages. Declining coffee yields in Brazil have been put down to climatic, phytosanitary and economic factors. Stagnating sisal yields on Tanzanian estates were due to insufficient use of fertilisers (Lock, 1969; Msambichaka and Bagachwa, 1986. See Chapter 7 below). Finally, tea yields on Sri Lankan plantations are reported to have declined since 1977 (Gooneratne and Wesumperuma, 1984).

Smallholder systems are also prone to declining yields in certain circumstances. Côte d'Ivoire coffee yields fell from 370 kg/ha in the 1960s to 240 kg/ha in the 1980s, for example (Terpend et al, 1986). Stagnating smallholder sectors have been reported in Sri Lanka (tea, rubber, coconut), and Nigeria (rubber, oil palm). The reasons for declining yields include: recurrent drought (Côte d'Ivoire); the spread of diseases and pest infestation; soil exhaustion; an increasing proportion of old trees, and of low yielding varieties owing to slow replanting; the extension of planting on to unsuitable land; and diminishing profitability owing to tax disincentives and marketing difficulties (Krug and Quartey-

Papafio, 1964; Gooneratne and Wesumperuma, 1984; Vidanagamachchi, 1987).

Land supply

In the historic plantation, abundant land was a precondition for the establishment of large-scale enterprises specialising in sugar and tropical perennial tree crops. An imbalance between land and labour supply led to the importation of labour by means of slavery, the indentured labour system, or voluntary migration. Further growth of the population has subsequently eliminated the supply of free land in the residual areas not already appropriated by the plantations. Further extension of estate agriculture is therefore out of the question in the old plantation economies, except by expensive purchases, coercive resettlement or dispossession.

Suitable land still exists for estate agriculture in several countries, but is becoming generally increasingly scarce. Opportunities for new projects seem confined to countries (such as Papua New Guinea) where such an optimal land:population ratio exists that vacant land is available in adequate quantity and quality, and adequate labour can be recruited locally without having to resort to international migration. In such a situation, the infrastructure and services which accompany estate development may provide government with a means of regional development, financed partly by external sources.

In countries which have a rapidly growing domestic demand for tropical perennial crops, estate development may be advocated locally as a method of maintaining export earnings or achieving import substitution. In India, the Central Government's attempts to encourage new tea plantation development in non-traditional areas in the North have, however, been seriously hampered by inadequate infrastructure, and the lack of skilled labour (Sircar, 1985) — precisely the shortcomings which the first plantations had to overcome. In Nigeria, new oil palm developments have run into acquisition difficulties owing to the absence of registered title to land, and discontent over rates of compensation (Gyasi, 1987).

The land issue therefore subdivides into three questions: the availability of physically suitable land for estate agriculture; the valuation of such land in relation to present and planned output; and the existence of prior claims to use rights, and the extinguishment and compensation of such rights. The second and third of these questions can only be resolved by decisions on the

part of government (acting in the name of the 'public interest'), which are likely to be contested or at least locally resented by those dispossessed. In countries where population density is already high, the satisfaction of social justice, on the basis of the full potential value of land, seems likely to raise development costs to a level that will jeopardise the viability of an estate agricultural project. If so, smallholder development is a preferable policy objective.

Labour

Labour use

Labour intensity diminishes as the size of holding increases. The data analysed by Berry and Cline (1979, pp.44-67) for Brazil and Colombia show declining labour inputs per ha as farm size increases. In Kenya (World Bank 1983, p.366), employment per acre is over 10 times greater on the smallest settlement scheme holdings (less than 10 acres) than on the largest farms, and among the large farms, employment per acre also declines as the size of farm increases. These examples are averages for all crops.

The same rule applies to plantation crops. On plantations in Nigeria, Essang (1974) found that the intensity of labour use declined with increasing size from 95 man-days/ha on estates of less than 400 ha to 80 on estates of 1,400-1,900 ha. In Ecuador, labour inputs per ha are more than twice as high on banana holdings of less than 10 ha than on plantations of more than 100 ha, and for cocoa, 50% higher (Chiriboga, 1986). Barlow (1978) analysed labour use in the Malaysian rubber industry, and found a tendency for labour intensity to fall on smallholdings as the number of planted hectares increases. The average labour intensity on smallholdings is more than double that found on estates, and 50% higher when rubber only is taken into account.

The higher labour absorptive capacity of smallholdings is shown by the fact that, in Malaysia, in 1979, half a million smallholders produced 55% of rubber output (Webster and Wilson 1980, p.264), compared with about 200,000 employed on estates. Moreover, full potential employment on estates is reached only when profitability is high — unemployment on Indian tea plantations, for example, has increased during times of recession (Sircar, 1985).

However, labour requirements vary from crop to crop, and to illustrate the range of variation reported in the estate subsector,

Table 4.2
Labour inputs on estates growing different crops

<i>Crop</i>	<i>Region</i>	<i>ha/worker</i>	<i>Source</i>
Cocoa	Malaysia	3.25	Goldthorpe, 1983
Cocoa/coconut	Malaysia	2.5	Goldthorpe, 1983
Coconut	Sri Lanka	4.5	Gooneratne and Wesumperuma, 1984
Coffee	Java	1.83	Goldthorpe, 1983
Oil palm	Malaysia	4.0	Goldthorpe, 1983
Oil palm	Malaysia	3.6	Hartley, 1977
Oil palm	Nigeria	3.8	Gyasi, 1987
Oil palm	Africa	5.0-7.5	Hartley, 1977
Rubber	Malaysia	2.85	Goldthorpe, 1983
Rubber	Malaysia	2.1	Barlow, 1978
Rubber/oil palm	Indonesia	3.3	Goldthorpe, 1983
Sisal	Tanzania	3.4	Lock, 1969
Tea	Java	0.63	Goldthorpe, 1983
Tea	Kenya	0.52	Goldthorpe, 1983
Tea	Malaysia	0.8	Goldthorpe, 1983
Tea	Sri Lanka	0.2-0.8	Sinnathamby and Wickramasekara, 1984

some examples are given in Table 4.2, many of them derived from Goldthorpe (1983) who used individual estate accounts from the years 1979-82.¹⁴

On the basis of the table, the crops may be tentatively arranged in a continuum from high to low labour intensity as follows: tea, coffee, cocoa, rubber, sisal, oil palm, coconuts. The most

14. The usefulness of such data for comparative purposes, however, is limited by the different methods employed by authors to arrive at estimates of labour inputs. To measure man-days/ha gives no direct indication of labour absorptive capacity in terms of employed persons. If the ratio between the permanent labour force and the estate area is used, no account can be taken of seasonal labour (if any). Coefficients of the number of workdays/worker/year vary from 230 to 300 in different studies.

noteworthy conclusion to emerge is the high employment potential of some of these crops, especially that of tea, which compares favourably with the most intensive forms of agriculture found elsewhere in the world.

Wood and Lass (1985) collected data on labour use in several cocoa plantations and smallholdings. Labour use is much higher at the commencement of the establishment phase, falling by 60-65% in year two, both on estates and smallholdings. While smallholdings appear to be more labour-intensive during the establishment phase than estates (no doubt because less use is made of labour-saving equipment), the position is reversed in the mature phase (owing to less frequent harvesting).¹⁵

In southern Nigerian plantations (rubber, cocoa, oil palm), labour use was found to rise significantly in the 11-20 years age bracket and then to fall gradually, averaged for all three crops (Essang, 1984). Such a pattern corresponds with the yield cycle of perennial trees. Oil palms, for example, yield 50 kg/palm/yr three years after field planting, rising to 150-160 kg from 5 to 10 years after planting, and falling slowly thereafter to 80 kg after 26 years (Corley and Gray, 1976).

Labour intensity is also dependent on the choice of a management system on the continuum from high input-high yield to low input-low yield options. This applies both to estates and smallholders, though generally, smallholders choose lower points on this continuum than estates. Wood and Lass, citing Galetti et al (1956), point out that in Nigeria, labour inputs on cocoa smallholdings vary according to the frequency of harvesting rounds (which range from 2 to 11 per year); and in Togo, the number of man-days/yr varies with yield, from 48-50 man-days for a yield of 270-90 kg/ha to 34 man-days for one of 140 kg/ha.

In Sri Lanka, quite remarkable variations of labour inputs with yields of tea have been reported (Sinnathamby and Wickremasekara, 1984; Dissanayake, 1984:Table 4.3). If we assume 230 working days/yr, the relationships between labour inputs and yields are similar on estates and smallholdings, when yields are at the lower end of the range (1,500 kg/ha). However, estates achieving 4,500 kg/ha employ 5 workers/ha. For rubber, the labour requirements in Sri Lanka rise from 0.8 workers/ha for a yield of 15. These relationships may not hold for other crops or other areas (all of the smallholdings in this sample were in West Africa).

Table 4.3
Tea yields and labour inputs, Sri Lanka

Yield (kg/ha)	Estates ¹		Smallholdings ²	
	Labour inputs (workers/ha) ^a		Yield (kg/ha)	Labour inputs (workers/ha) ^c
	High & mid-country ^b	Low country ^b		
500	1.56	1.69	667	1.6
1,500	2.62	2.76	1,000	2.1
2,500	3.46	3.61	1,330	2.5
3,500	4.20	4.37	1,660	3.0
4,500	4.90	5.07	2,000	3.5

a. male and female

b. Altitudinal zone

c. assuming c230 working days per year

Source: 1. Sinnathamby and Wickremasekara, 1984

2. Dissanayaka, 1984

565 kg/ha to 1.4 for a yield of 1,100 kg/ha (Gooneratne and Wesumperuma, 1984).

The logic of the preceding paragraphs is that the labour absorptive capacity of plantation agriculture — disregarding the labour demands of processing — is maximised where smallholdings take precedence over estates, where more labour intensive crops (especially tea) are favoured over less labour intensive ones, where new planting and replanting are vigorously pursued, and where high input-high yield management options are preferred. With regard to the last, lower labour costs per unit of output imply greater profitability under a high input-high yield option. Where capital access, technology and management are limiting, however, the third and fourth of these desiderata conflict with smallholder options.

Labour Costs

Studies in Peninsular Malaysia (Barlow, 1978) show that labour costs per unit of rubber produced were similar for most of the main operations on either estates or smallholdings (Table 4.4). But on both estates and smallholdings, they fell as the annual yield level

Table 4.4
Labour costs by scale of operation and yield level, for rubber in Peninsular Malaysia

Scale of operation	Yield range (kg/ha)	Tapping and collection	Labour costs (cts/kg) Processing	Maintenance
Smallholdings ^a	Low	41.4	11.1	7.8
	Medium	25.0	6.9	4.4
	High	21.0	5.5	3.1
Smallholdings ^b	Low	46.6	4.6	14.1
	High	28.7	6.3	4.2
Estates ^{c,d}	Low	45.4	6.9	11.0
	High	30.9	7.0	7.3

Source: Barlow 1978

Note: Yield figures are an average, or a range.

a Original data referred to 1963 (22,74 and 27 low, medium and high yielding smallholdings respectively).

b Original data referred to 1963 and 1964 (about 1,000 smallholdings)

c Original data referred to 1970 (7 low yielding and 63 high yielding estates)

d The costs given do not distinguish labour from other costs and 'maintenance' includes weeding, manuring, and field maintenance.

increased. These results implied that scale of operation did not significantly affect labour costs per unit of output. But the choice of a high-input, high-yield management option did reduce overall costs (i.e., costs including labour and other inputs) irrespective of scale of operation. These interesting conclusions need testing for other crops, other countries, and more recent years.

Today, labour costs comprise 40%-66% of the operating costs of estates (Table 4.5). Because of the use of family labour, comparable data are not available for smallholdings.

Table 4.5
Labour costs as a percentage of operating costs (1975-82)

<i>Country</i>	<i>Crop</i>	<i>Percentage</i>
Java	tea	33
India	tea	52
Kenya	tea	54
Sri Lanka	tea	66
Malaysia	tea	60
	rubber	60
	cocoa	40
	oil palm	40
Tanzania ^a	sisal	66

Source: (except a): Goldthorpe, 1983:88-9 (estate records and other sources)

a Lawrence, 1974

Estate agriculture can no longer recruit labour directly from other countries, and so the costs of labour are controlled by factors endogenous to the national economy. In general terms, agricultural wages may be directly affected by government policies affecting the terms of trade between agricultural and non-agricultural products, the rate of rural-urban migration, and the rate of capital accumulation in the rural sector, as well as by international prices, as a recent study of Colombia has shown (Garcia and Llammas, 1988). More specifically relevant to the plantation subsector are:

- a) Minimum wage legislation and the increasing effectiveness of worker unions in pressing for a larger share of plantation

profits in some countries, such as India, Malaysia, Peru and Tanzania. Estate workers are now usually paid according to a combination of timework and piecework rates which allows the minimum wages decreed by labour legislation to be reconciled with the employer's need to link remuneration with output (Sajhau, 1986). But the minimum wage is usually only a subsistence wage and tends to fall behind inflation; deduction may reduce take-home pay, and it may not protect workers from considerable hardship (Coote 1988).

b) The need to compete in the labour market with the urban sector. An example is Nigeria, where even in the 1960s, government-owned plantations had to pay wages well above the social opportunity cost of labour (Saylor and Eicher 1970). During the ensuing oil boom (1970-78), urban employment opportunities multiplied, government pay scales were raised, and the minimum wage increased. Against a background of rural-urban migration, labour costs are considered to have been a major factor in the long term decline of the subsector (Ndubizu 1985). In Malaysia, the wage of agricultural workers on private estates (M\$8.28/day) compares unfavourably with those of urban factory workers (M\$19/day: Terpend et al, 1986). But the provision of free housing and services to resident estate workers should be taken into account. In Kenya, estate tea pluckers' monthly wages of Ksh481 may be compared with the minimum civil service wage in Nairobi of Ksh550 in 1985 (Davies 1987). Wage rates are also affected by international prices; thus in Colombia, rural wages were 69% of industrial wages at the height of the coffee boom in 1977, but had fallen to 52% of industrial wages in 1982 (Garcia and Llamas 1988).

c) The need to compete with incomes available in the smallholder sector. On some smallholder development schemes, these may be relatively good. Some settlers on a Malaysian oil palm scheme achieved Malaysian \$25/day in 1985 (Terpend et al 1986), more than urban factory workers. In Kenya, a study of sugar outgrowers on the South Nyanza scheme showed that sugar farmers earn a net return to family labour three times higher than the daily agricultural wage rate (Kennedy and Coghill 1987, p.57). Sugar growers also did well on the Mumias scheme (Graham and Floering 1984, p.120). But sugar prices are controlled by the Government. Tea

smallholders' incomes rose between 1980/81 and 1983/84 (Ksh3,850 to Ksh10,293/yr); and tobacco contract growers' incomes (Ksh5,225/harvest) also compared favourably with wages available on coffee estates (Ksh4,200/yr) and in the agricultural sector generally (Ksh4,290/yr) in 1980-81 (Davies 1987, Currie and Ray 1986). Such examples, however, are not representative of smallholder incomes in general, since small farmers growing plantation crops enjoy higher incomes than small farmers who are unable to grow them. Furthermore, such comparisons ignore or assign arbitrary values to several components of critical importance.¹⁶

Trends in the real wages of estate workers have been calculated for only a small number of countries. Worst off are the sugar workers, in countries adversely affected by reduced quotas in the US market, and the collapse of the free market price of sugar in the early 1980s. In some countries, e.g., the Dominican Republic, the sugar crisis came on the heels of at least a decade of deteriorating real incomes (Grasmuck 1982); in others, e.g., Fiji, real incomes had been improving before 1980 (Ellis 1988). For some other crops, the ILO (1988, p.46) calculated positive trends in real wages (between 2.3 and 5.6%) during the 1970s and early 1980s for Malaysian and Sri Lankan (tea) plantation workers, and negative ones for Burmese and Indonesian. Another study indicates an improvement in the real wages of tea and rubber estate workers in Sri Lanka from R2.10/day in 1960 to R3.41 in 1980 (Gooneratne and Wesumperuma, 1984). Indian tea plantation workers' wage rates improved by about 400% between 1966 and 1984, during which time the All India Price Index rose by 230%, which suggests a substantial improvement in real income (Sircar, 1985).

No compatible estimates are available of trends in smallholder incomes. In reality, there are not two groups (estate workers and smallholders) but three: workers employed by smallholders or contract farmers may be the most disadvantaged of all. In Malaysia, rubber tappers on estates were paid M\$328/month in 1980

16. Permanent estate workers are usually landless, have few opportunities for off-farm income, but benefit from free housing and services and escape from the risks of independence. Smallholders use under-valued family labour, but supplement family income from other sources, and retain rights to land, an asset of incalculable value at the present time; they are more independent but bear economic risks and managerial responsibilities.

compared with M\$201 for those on smallholdings — a difference that had widened since 1960 (Barlow, 1986). In Mexico, contract farmers producing sweet corn, peas and asparagus for Del Monte employ field workers for less than the legal minimum wage (Burbach and Flynn 1980, p.180f); this is not unusual.¹⁷

Labour Shortages

Labour shortages have been reported in estate agriculture in many countries (Sajhau and Von Muralt 1987, pp. 108-12). The case of Malaysia is well known. The average labour shortage on plantations was 6% in 1980 and 20%-30% on some, causing a loss of export earnings estimated at US \$23.5m. Urban migration is held to blame, together with the unpopularity of oil palm harvesting work (Webster, 1983). On the sugar estates in northern Malaysia, there is a labour shortage notwithstanding a high density of population (188/km²), and a high proportion of families designated below the national poverty line (Courtenay, 1984). The shortages affect smallholdings as well as estates, and have recently spread from the Peninsula to Sabah (Navamukundam, 1985; Terpend et al, 1986). In Nigeria, another urbanising economy, labour shortages were reported in every one of 23 plantations sampled in 1973, causing 30% of the land acquired to lie idle (Essang, 1974). The situation worsened thereafter. In Fiji, cocoa production on estates on Vanna Levu has declined, both absolutely and relative to smallholdings, owing to labour shortages (Fowler, 1985). In Swaziland, labour shortage in the sugar industry results from competition with the South African mining industry for labour (Stevens, 1988). Even in labour-surplus countries, plantation estates may experience labour shortages. Sri Lanka has labour deficit areas (Sinnathamby and Wickramasekara, 1984; Navamukundam, 1985). Of estates surveyed in 1980, 45% reported shortages, resulting in the loss of yields estimated to be worth over \$13m. Shortages were also reported on Sri Lankan smallholdings (36%). In Mauritius, despite a high unemployment rate, there is a shortage of cane cutters (Sajhau, 1986).

The continuing scarcity and rising costs of labour present estate agriculture with a choice between five options.

17. The concept of a unitary 'agricultural wage', which is compared with urban wages in standard intersectoral models, is misleadingly simplistic in plantation economies.

(a) **To continue to rely on migration** — free and uncontrolled rather than directly recruited as in the past — from other regions of the country, or from other countries in the region, where the opportunity cost of labour is lower than in the plantation locality. For example, over 80% of the workers on the Côte d'Ivoire plantations are non-Ivoirians (Terpend et al, 1986). Seasonal labour migration is tolerated or even encouraged by governments; the best known example was the movement of an estimated 50,000 sugar workers from Haiti to the Dominican Republic each year until 1986, when intergovernmental agreements came to an end (Grasmuck, 1982; Plant, 1987; ILO, 1989, II).

(b) **To shift priority from permanent to casual labour.** Sugar has a notably seasonal pattern of labour demand. But even in the cultivation of perennial tree crops, arguments that formerly favoured the creation of a skilled, committed and permanent workforce are giving way in some estates to the temptation to profit from the relative cheapness, docility and non-unionised status of casual labour. Furthermore, 'some employers may circumvent their obligations under existing labour law by reducing the size and relative importance of the permanent wage labour force' (ILO 1988, p.36). The costs of providing housing and ancillary services are reduced.¹⁸ But casual labour from local sources has been welcomed in Sri Lanka as indicative of increased village participation in the estate subsector, lessening the dualism generated by the traditional plantation system (Sinnathamby and Wickramasekera, 1984). Tanzanian sisal workers may prefer to live in shambas off the estate where subsistence farming can be combined with casual labouring (Lawrence, 1974). Seasonal labour in some countries may fit into slack periods in the smallholders' farming year.

(c) **To employ women, and the young,** who may be paid lower wages, on an increasing scale. On tea and tobacco estates in Malawi, women have had to overcome male labour prejudices and

18. The trend is viewed with concern by the ILO (1988:36): 'The growing use of seasonal workers could create significant social problems, reducing the few traditional advantages offered to plantation workers, and might even make the legislation applicable to plantation workers inoperative'. It has been called a de-skilling of the labour force, as temporary work increasingly acquires the features of a secondary labour market (ILO, 1989, III).

are generally regarded as cheap seasonal labour and inferior to men for most operations, according to Vaughan and Chipande (1986).¹⁹ Female employment has long ago proceeded to its full extent in the tea industry in India and Sri Lanka, and women are said to be better pluckers; 37% of Indian and over 50% of Sri Lankan estate workers are women (ILO, 1989, II). In India, 11% are minors. Female employment may have further scope for expansion in coffee, cocoa and perhaps rubber; but it seems improbable from the nature of the work that it will progress far in oil palm, sugar and sisal estates.²⁰

(d) To move out of estate production and into contract farming with smallholders. This option is now recognised as a major trend amongst TNCs, and will be discussed further in Chapter 5.

(e) To introduce labour saving technologies. These may be mechanisation or management technologies. The first has proceeded much further in field than in tree crop production. Mechanical land clearance and preparation, weed and pest control, and the transport of harvested produce offer the most general economies (e.g., Southworth, 1976). The field crops sugar, sisal and pineapple can also be harvested by machines. But obstacles to the introduction of labour saving mechanical technologies are (a) the high capital, recurrent and fuel costs of much equipment, usually payable in foreign exchange (e.g., sugar cane cutters); (b) the limited progress in research (e.g., in respect of harvesting tree crops); and (c) the superior quality of hand labour in some operations, especially harvesting.

Mechanical operations in the sugar industry may displace large numbers of workers. For example, mechanical drain and canal digging in Guyana replaces 75 and 20 workers (respectively) with one each (Thomas, 1984). A mechanical cane loader replaces about ten workers and a mechanical harvester at least 20. The implications for employment in the estate subsector appear

19. However, the question is more complicated in Guatemala, where estates differ in their policies. Bossen (1979) suggests that employing women may strengthen union solidarity, and weaken the role of the peasant sector as a reserve of temporary labour, thereby raising costs for the large estate.

20. This trend also has serious implications for welfare, since labour legislation may not yet offer adequate protection for women and the young.

obvious. Mechanical cane cutting would reduce employment in the Fiji sugar industry from 42,000 to 25,000 and the Government of Fiji opposes the use of harvesters for this reason (Forsyth, 1985; Ellis, 1988). But Edquist (1985), in a comparison of the Cuban and Jamaican sugar industries between the 1950s and 1980s, argues that, whereas in Cuba, unemployment in the economy declined from 12-15% to 5% notwithstanding the mechanisation of cutting and loading (reducing over 700,000 cane cutters in 1970 to 70,000 in 1985: ILO, 1989, III:17), in Jamaica general unemployment increased from 15% to 27% while sugar cutting remained almost completely manual. (Unemployment in the agricultural sector in 1981 was, however, only 5%; Clarke, 1986). Edquist goes on to argue that the level of employment is not primarily determined by technology, and that countries which fall behind in the introduction of advanced techniques of production will lose out in international competition.

Alternatively, economies in labour use may be achieved by improvements in management, including agronomy (high yielding varieties, fertilisers, pesticides and weedicides, etc), and the more efficient organisation of production operations. For example, in rubber harvesting, labour requirements can be reduced by 20-50% by less frequent tapping, the use of yield stimulants, and by alternating periods of regular tapping with puncture tapping, which requires less skilled labour, (Webster, 1963). Such changes in management tend to further routinise and specialise labour operations, consistent with the industrial model of estate agriculture.²¹

Labour Productivity

Estates have steadily increased labour productivity in the longer term. In Peninsular Malaysia, ha/worker in the rubber estates increased from 2.5 in 1920 to 2.8 in 1960, and 3.0 in 1980, and output in t/worker increased from 1.0 in 1940 to 3.0 in 1980 (Barlow, 1986). In India, labour productivity in the tea gardens of the North

21. Critics suggest that industrial methods, accompanied sometimes by piecework payment, create a more subservient as well as productive labour force (Burbach and Flynn, 1980). Teams have to keep up with machines and targets in the field. The need for less labour strengthens the hand of management against unions, inducing the moderation of wage demands, according to Scott (1985) though the new skills required would be expected to increase the bargaining power of skilled labour.

increased from 512 kg/worker in 1968 to 634 in 1981; in the South the change was from 612 to 773 — although in neither did the number of workers per hectare fall significantly (Sircar, 1985). In Tanzania, sisal estates improved from one ha/worker in the early years of the century to 3.4 in 1969, and remained at about 3.4 in 1978; while output per worker went up from 0.8 worker per ton of fibre to 0.23 per year in 1969, deteriorating thereafter to 0.6 in 1978 (Lock 1969, p.324; Msambichaka and Bagachwa, 1986). US banana companies are reported to have increased worker productivity on their Caribbean estates by about 400% in the last 20 years (Burbach and Flynn 1980, p.157; see also Torres-Rivas 1986, p.25).

There is a worldwide trend to reduce the size of the permanent work force on estates, under the pressure of rising wage levels and improving opportunities for mechanisation. Only where new plantations are being developed rapidly can a net increase in permanent employment be expected. Côte d'Ivoire, for example, increased employment on its industrial plantations fivefold between 1970 and 1984 (Kouadio, 1986), though from a small base.

It seems doubtful whether smallholders have generally done so well. In Peninsular Malaysia, where the level of smallholder management is high, rubber output per worker increased from 0.9 to 1.8t between 1960 and 1980, while the area cultivated per worker did not change significantly (Barlow, 1986). But there are grounds for suspecting stagnating or declining productivity in some smallholder economies, if replanting has not taken place on a scale adequate to maintain average yields, or if the intergenerational growth of the residential population has not been matched by an increase in the size of holdings.

Capital

Investment is linked to the introduction of new technology. According to critical theorists, technological stagnation occurred on foreign-owned plantations, because large investments in recruiting, housing and servicing labour discouraged investment in labour saving technology; monopolistic tendencies in the market for plantation crops reduced competition and the need to cut production costs; and management by agency firms — vertically integrated with input suppliers and shippers — whose profits depended on quantity of output rather than on operating margins, discouraged economies in the production process (De Silva, 1982).

According to this view, the TNCs which now dominate the plantation system defend their position by the control of markets and of technology, which is only rarely transferred to the producing organisation, and never diffused beyond it. The plantation, no longer necessarily foreign owned, continues as a labour-intensive production system manipulated by international capital, which is able to spread risks among geographically separated areas, and, by means of transfer pricing, can declare its profits in the country of its choice.

The contrary view of apologists (Graham and Floering, 1984) is that the modern plantation is owned by public or private indigenous interests, so the capital sunk in fixed assets (land, housing, processing equipment, infrastructure) must 'sink or swim with the country in which it is situated'. Profits, incomes, linkage effects, and foreign exchange earnings benefit the host economy. The market is no longer monopolistic because national marketing boards are now interposed between producers and the market to control price and quality. The management system, which is based on expert training and direction of the workforce and the use of a technology of detailed routine working and supervision, plans and directs research and development consistent with the objective of increasing efficiency.

Capital operations are the least public aspect of plantation crop production, and the literature is conspicuously lacking in empirical studies. We draw attention to five aspects.

Sources of capital. If apologists are correct to emphasise the indigenous ownership of most modern plantations, the question arises of finding the finance for new estate developments, rehabilitation projects, and modernisation. Given price uncertainties and the impoverished condition of some national economies, especially in Africa, it seems probable that external funding will continue to be necessary. It has been suggested that some governments are attracted to large-scale agricultural projects because of the comparative ease of finding aid finance, and the TNC's intermediary role with western governments furthers their acquisition of management contracts. However, if risk capital is provided by TNCs, or if their management contracts are performance related, there should be as mutual benefit, as with foreign investment in developed countries, which is usually welcomed for bringing in new capital and improved management. Moreover, the vertically integrated TNC offers a means of injecting

capital into smallholder agriculture via new-style organisational forms (see Chapter 5).

Levels of investment. There is little public literature on the levels of investment per ha required to establish a modern plantation and an associated processing plant. Unilever reports it as approximately £7500/ha for a 10,000 ha oil palm estate (Unilever, 1988). By contrast, the investment costs of smallholder developments may be quite low if the land, a proportion of capital and direct work are provided by the farmer. The Kenya Tea Development Authority (KTDA) spent less than £250 each on more than 151,000 existing smallholdings, whereas a settlement scheme in Zambia required £25,000 per settler (*CDC Magazine*, 1988). In Malaysia, the development costs per ha on settlement schemes were 30-50% higher than on corporate plantations (Goldthorpe 1983, p.261f.).

Profitability. Investment in estate agriculture and factory facilities has tended to fluctuate historically with the level of profitability, and therefore the prices, of plantation crops. In Sri Lanka a persistent drop in producer margins during the 1970s is held responsible for reduced rates of fertiliser application, vacancy filling, replanting, soil conservation, land development, and building, factory, house and sanitation improvement (Gooneratne and Wesumperuma, 1984). Smallholder investment is equally related to price levels and profitability.

Maturation. Where tree crops are cultivated, whatever the scale of operation, one function of capital is to tide the producer over the period of maturation. On smallholdings this is a major disincentive to replanting obsolescent stock, unless financial assistance is available. In Malaysia, such government programmes achieved the replanting of 90% of rubber smallholdings with higher yielding trees by 1981 (Smit, 1982).

Scale. Processing units are expensive and increasingly so, demanding larger throughputs to guarantee efficient operations. Inflation increased the capital cost of a sugar factory in Africa by 300% between 1971 and 1976 (Graham and Floering 1984, p.138), and the minimum catchment area required to make a sugar factory economic is stated by Goldthorpe (1983, p.87) to be 15,000 ha. This is because machinery and infrastructural costs do not increase directly with the size of the factory, and the technical skills needed in a small plant are the same as those in a large one (Moody-Stuart, 1983). For other crops, Goldthorpe quotes minimum economic

sizes of 7,500 ha for oil palm, 6,000 ha for bananas, 3,000 ha for rubber and only 600 ha for tea. In rubber, trends in the technology of production in Malaysia — quality guaranteed Malaysian rubbers (SMR) and crumb rubber — favour larger production units (Courtenay, 1981). However, large-scale processing need not imply large-scale producing units if it is possible to integrate smallholders into catchment areas for factories of economic size.

Research and development

Technical developments in the growing and processing of the plantation crops are beyond the scope of this review, and several points have already been made above. Sajhau and Von Muralt (1987) subdivide technological developments into genetic improvements, agronomy and plant protection, and mechanisation.

Genetic improvements. Higher yielding varieties appear to hold the key for future profitability as they have in the past. For example, new oil palm strains increased average yields in one plantation in Johore, Malaysia from 1.8t oil/ha and 0.5t kernels/ha in 1951 to 4.6t oil/ha and 0.9t kernels/ha in 1980 (Graham and Floering 1984, p.65). The introduction of insect pollination increased fruit yields by up to 20% and reduced costs (Webster, 1983). Further advances are anticipated from the introduction of tissue culture, which may save time formerly spent in germinating seed, save the costs of nursery growth and transplanting, and reduce the risk of suboptimal characteristics in plants. But whether this technique will fulfil commercial expectations remains to be seen.

Improvements in agronomy and plant protection, such as changes in tree spacing, irrigation, fertiliser use, and maintenance methods, have contributed to improved yields on estates and are particularly suited to the system of management which is identified with plantations.

Mechanisation of production, as mentioned earlier, holds greatest promise for the field crops. Cane cutting machines not only increase labour productivity but improve schedule maintenance (which is critical for efficient factory operations), reduce field wastage, and lessen fire risk (Barnes 1969, p.380); but they depend on capital availability, maintenance, and fuel, and may not reduce costs in all circumstances (Moody-Stuart, 1983). Even if they do, employment policy may over-ride, as in Fiji. By

contrast, the mechanisation of tree crop production, such as cocoa, will not be easy and special equipment will have to be developed; even pod opening machines have not yet been made to operate satisfactorily (Wood and Lass, 1985). Tea plucking machines have been developed, but are operated in conjunction with manual plucking, e.g., in Nigeria's new tea estate, where incidentally there is abundant local labour (Forrest 1985, p.91).

Much of the research carried out on high yielding varieties (such as the recent development of the oil palm), and on agronomic methods, has been financed by the private sector of the plantation industry, including the TNCs. Government research and extension therefore assume critical importance where smallholder production predominates. R & D expenditure, in such circumstances, may not always receive an appropriate share of revenues, or avoid falling victim to downward trends in government resources.

Factor efficiency

We have reviewed the factors of production under various heads and, where possible, compared the efficiency of factor use on estates and smallholdings. Economic efficiency is maximising the return to the scarce factor, and the efficient combination of productive assets — land, labour and capital. Smallholders normally operate a low input-low yield strategy because they are most short of capital. While some older estates are short of capital, modern plantations in diversifying and urbanising economies are short of labour. Since plantations and smallholdings use very different factor proportions, comparisons of individual factor productivities tell us little about their relative efficiency. What is needed for this purpose are empirical analyses of total factor productivity. The present review has not uncovered examples of such total analyses, and they seem a priority for research into the comparative efficiency of smallholders and estates.

5

Forms of Management for Plantation Crops

Estate and smallholder management strategies

We have seen that, generally speaking, smallholders have not only less land, but also a lower ratio of fixed and working capital to land owned. If so, economic efficiency for them indicates a strategy of lower purchased inputs, and lower output. They have lower wage costs, both because they reward family labour below general wage levels, and also because if and when they employ, they can often ignore legislation that may exist on minimum wages. They may therefore compensate for lower capital intensity with greater labour intensity, though this contrast is less apparent in the plantation crop sector than it is in regard to large farms in general. They tend to value stability of income, and avoid dependence on a single crop by maintaining a mix of activities. Because they have a smaller proportion of capital in fixed assets such as processing plants, they have greater flexibility when the market turns down to switch labour to these other activities. However, because they have less capital, they are also less able to invest in replanting with upgraded material when the market improves. If they are judged solely by yield per hectare, they perform on average less well than estates, but economic efficiency should not be judged only in terms of returns to land. Smallholders may be maximising the returns to their labour or to their capital, depending on which is for them the scarce factor. In some conditions a low input-low output strategy enables them to continue producing at a profit at a price at which an estate would make a loss.

The plantation mode of management

Plantation crops have high value, require routinised and careful husbandry and some degree of processing or packaging on site,

must be produced to constant quality standards, and need assured access to markets, and to capital. In addition, some are perishable and must be processed and/or marketed quickly. These requirements have generated the plantation mode of management, whose classic attributes are a relatively large-scale of operation, a disciplined and skilled labour force, a substantial part employed throughout the year, the use of new technology, an efficient harvesting and crop delivery system, on-site processing facilities, reaping economies of scale, quality control, an efficient marketing system, and access to capital (Binns, 1955; Wickizer, 1958; Ruthenberg, 1980). Certain crops — cocoa and coffee — are less demanding in terms of production and processing technology and a less convincing case can be made for the plantation mode. The greater part of world output comes from smallholdings (Krug and de Poerck, 1968; Wood and Lass, 1985). Certain other crops — oil palm, rubber, tea, pineapples, bananas and some other fruit — are especially dependent on quick processing or efficient evacuation, and a strong case has been made for plantation management. However, even these crops have proved amenable to smallholder production under favourable conditions.

According to Goldthorpe (1983;1985), there is a close link between the technology of production and organisational structure. The characteristics of tropical perennial tree crop husbandry and processing favour production in rigid bureaucratic organisations. The distinguishing features of such an organisation are an hierarchical authority structure and the division of labour according to functions and tasks. Such an organisation is most efficient in a stable ecological environment, where yields are predictable, the crop quality unvarying, the end product standardised, the tasks routine and repetitive, the production run long (25 years or more) and the size of the enterprise large. The need for such an organisation is more pronounced, the greater the investment per ha, the newer the crops that are being introduced, the more demanding the technology and the less commercialised the settlers. The efficiency of such a bureaucracy is measured in strictly financial terms, and is highest where returns per worker and per ha are maximised.²²

22. It should perhaps be emphasised that the use of the term 'bureaucracy' by Goldthorpe to identify the plantation mode of management should not be confused with the use of that word to describe over-manned and

Graham and Floering (1984) endorse a view of the plantation as essentially a management system based on industrial methods of production and processing. These authors argue that effectiveness of management determines the efficiency of plantations, rather than ownership or other structural characteristics. The case for oil palm plantations in Nigeria (Lucas, 1984; Ndubizu, 1985) is being made on the same ground now as it was 20 years ago (Udo, 1965) — namely that plantation management alone can produce the quantity and quality of output required, then for the export market, but now for domestic demand. Some crops have not been produced on a significant scale outside the plantation system for many years, notably pineapples, where a review of the older producing countries showed a trend towards 'corporation agriculture' (central control and coordination of all related farming, processing, marketing and research activities), and the disappearance of the independent farmer, nearly three decades ago (Collins 1960, p.264).

Goldthorpe's prescription is strongly influenced by experience with oil palms and rubber in Malaysia and Papua New Guinea. Its applicability elsewhere may be limited for the following reasons: the seasonal ecology, variable patterns of labour demand, and annual yield variations of some other plantation crops — such as sisal, sugar and coffee in some countries — violate the stated preconditions for the bureaucratic organisation; the old plantation economies of the Caribbean, South America, India and Sri Lanka have not yet shaken off all attributes of an earlier type of management in which inefficiency and resistance to technical innovation may sometimes have been widespread; it assumes good management is associated with large-scale production, whereas, particularly on nationalised estates, the necessary incentives for efficiency may not be present.

Nevertheless, a case for plantation estates is now being made on grounds of management efficiency: 'with the removal of the limitations that associated it with a colonial economy... plantations would seem to offer excellent bases for modernisation in rural areas' (Courtenay, 1981). The question that must now be addressed

inefficient organisations. In that sense, 'bureaucray' has sometimes been blamed for the lack of profitability of state-owned estates, for example in Nigeria, Tanzania and Sri Lanka.

is whether, given the right conditions, the management of smallholder production can be comparably efficient.

Smallholder alternatives

Smallholder alternatives can be arranged on a spectrum ranging from independent farmers making all their own production arrangements, and organising the sale to an outlet of their choice, through the acceptance of an increasing level of both assistance and restriction, which may increase their output but reduce their choices. The main distinction is between arrangements which affect only their access to inputs and to processing facilities and markets, and those which provide them also with developed land, under varying degrees of control. In the first group we have contract growers and processing co-operatives; in the second, controlled settlement schemes and nucleus estates with tenants. Producer co-operatives and nucleus estates with outgrowers are less easy to categorise. Owing to the variable definitions used in the literature, the categorisation employed below is necessarily arbitrary.

The independent smallholder

Smallholders can be more flexible in their allocation of the factors of production than estates which include a processing unit. Smallholder capital is normally restricted to their investment in trees; they are therefore aware of a high exit cost. However, if they reduce output by temporarily reducing their inputs into weeding, fertilising, pest control, pruning, etc, they do not suffer the penalty of increases in the per unit cost of processing which is felt by estates. Smallholders are less sensitive to increases in labour production costs, because of their access to family labour (Wickremasekera, 1984). They may be able to change to new crops or new land more readily. A smallholding in West Africa not infrequently has a mix of tree crops planted or replaced as market prospects change.

The independent smallholder making all his own production, processing and first sale arrangements does exist. He can choose whether or not to take the advice of an extension service, if that is available to him. He is, however, heavily dependent on good access to markets, which estates may be able to organise for themselves through vertical integration strategies. This may necessitate organised marketing through state boards, with the

associated temptation to divert part of the profits to other state purposes, and risks of bureaucratic inefficiency, both of which diminish incentives to produce and to invest. Prices may also be manipulated for political reasons, to favour important groups of supporters. However, Marketing Boards are not a necessary condition in countries where there is an active or potential trading class. In West Africa the cocoa industry initially developed through indigenous traders collecting for onward sale to foreign exporting firms.

However, independence carries some disadvantages. Some reasons for low output on smallholdings have been already been listed. The replanting of tree crops, in particular, tends to be neglected because of such factors as poor infrastructure, labour shortages, lack of capital to tide over the period of maturation, co-, absentee or untitled ownership, price uncertainty, low skills, a lack of credit and of market access (Thomas, 1982). Some people believe higher output can be accomplished only with a very comprehensive programme of rural development. In the Malaysian and Indonesian rubber sector, for example, the transfer of appropriate technology to smallholders, requires, according to Sen (1985) and Ibrahim (1985), an efficient system for providing technical, financial and organisational inputs (the latter to stimulate co-operatives or groupings), and motivation amongst smallholders to increase output. The latter is probably the most important and is dependent on prices. Other governments have put the emphasis mainly on the supply of credit. Thus in 1981 the Government of Thailand created a Rubber Replanting Aid Fund which has considerably increased replanting rates amongst the country's 700,000 smallholders (Serier, 1989).

An additional problem is that where expensive processing facilities have to be provided, investor doubts concerning the reliability of crop supply and quality may have to be overcome (Hartley 1977, p.20). Some crops are less suitable for smallholder production, according to this view, because they are technically demanding and perishable (e.g., pineapples) or bulky and offering relatively low returns per ha (e.g., sisal: Lock 1969, p.328).

In general, smallholders have achieved well when operating under conditions which give them improved access to capital, technology, management advice, and marketing facilities.

Contract farming

Under this arrangement farmers are given credit and technical assistance in order to produce a crop on their own land for sale on a quota basis to a central processing unit (Abeysekera, 1985; Burbach and Flynn, 1980; Currie and Ray, 1986, 1987; Glover, 1983; Kirk, 1987). It is widely favoured by TNCs and their local subsidiaries as a means of controlling quality, and ensuring a regular supply, without being encumbered with the ownership of land and possible labour problems. Investment funds can often be attracted from aid donors, and sometimes, government credit supplied to growers amounts to an indirect subsidy for the TNC. Risks involved in the production process (bad weather, pests, etc.) are borne by the producers, and those involved in marketing by the TNC. The subsidiaries of the British American Tobacco Company (now BAT International) have operated contract farming schemes in such countries as Kenya, Nigeria and Sri Lanka for many years, and similar arrangements are increasing with other crops. According to Kirk (1987), this system of production raises questions of smallholder entitlement, participation and equality (see page 33). Concerning inequality, agribusiness may prefer larger farmers where they are available, unless government policy favours smallholders or they are willing to accept lower prices (Glover, 1983). Del Monte's contract growing in Mexico is reported to favour the larger farmer, who is able to provide collateral and entry capital, and from the company's point of view, 'it is easier to supervise a contract with one grower who owns 50 acres than with five growers who each own 10 acres' (Burbach and Flynn 1980, p.184). Where the company advances credit and deducts repayments from producer prices, there is a risk of growers becoming locked into debt (Glover, 1983); yet credit availability may attract growers in the first place. Contract farming, therefore, makes good sense for TNCs and probably also for the producers. It is not a comprehensive rural development strategy unless it raises a majority of rural incomes and adds to the diversity of the local economy.

While contract growing is normally for a commercial organisation, there are cases where the services are provided by a parastatal. The most well known and successful is the Kenya Tea Development Authority (Lewis, 1984; Akali, 1988). Since 1960, the KTDA has registered 150,414 tea growers where previously,

smallholder production was virtually unknown and considered incapable of achieving exportable quality. Presently, however, 87%-90% of output (32m kg/year) is Grade I tea, which commands premium prices on the world market. The success of the KTDA has been attributed to effective control at all levels of the operation (Akali 1988): of the quality of planting material through control of the nurseries; of the quality of production through selective registration; of the effectiveness of extension, through supervision and by expanding staff in step with the tea area; of leaf tea quality, through exercise of a buying monopoly and strict control at the factory gate; and of manufactured tea quality by technical monitoring of the 39 factories under the Authority. Payments to the farmer have reflected the quality premiums received at auction, so that farmers pursuing better management and/or benefitting from a favourable climate receive the highest prices. There is farmer representation in policy making, and 8% of registered farmers are shareholders in tea factories. Having invested in tea, the farmers are aware of an exit cost. Problems faced, however, include low yields (an average of 700 kg/ha of mature tea, compared with 2,000 on estates), infrequent plucking, and variable daily deliveries at the factories. Commentators have pointed out that the KTDA benefited from an exceptionally favourable physical environment for tea and a high degree of external autonomy; tea exports were not subject to tax until 1982; and no price stabilisation was attempted, the benefits of rising world prices being passed to the producers. A high provision of extension workers (1:190 growers) compares favourably with, for example, Côte d'Ivoire's provision of 1:650 coffee growers (Terpend et al 1986, p.41). More recently the board's independence as a managing authority has been weakened by a State Corporations Act which gives responsibility for key appointments to the President, and its pricing policy has been attacked as discriminatory since many of the high quality areas happen to be Kikuyu (Ozanne, 1989).

Nucleus estates with outgrowers

The addition of a nucleus estate to a smallholder scheme guarantees a minimum throughput for the processing unit and generates skills and awareness of modern methods. The original model (Phillips, 1965) was to provide smallholders with controlled credit, technical assistance and management, and processing and marketing facilities, provided that they use advanced planting

techniques and material, fertilizers, spray chemicals, quality processing methods, and the market outlet provided. Regimentation is often seen as essential during the settler's period of indebtedness; settlers are selected, and can be evicted. The scheme provides a method of concentrating scarce resources (capital, management, extension workers) in order to obtain results. In their other role as food producers, the outgrowers supply their own subsistence requirements and sell to the factory workforce. According to Goldthorpe (1985), nucleus estate projects combine the advantages of low cost family labour with plantation management, high standards of crop husbandry and processing. They benefit from pecuniary economies (*ibid.*, p.28), which would otherwise be restricted to estates, and from economies of scale in processing. The market monopoly is essential for the recovery of the credit advanced. Crops such as cocoa, copra and coffee, which are relatively easy to process, and therefore to market independently, are less suitable.

In practice, the eviction sanction proposed by Phillips has been dropped and many projects are based on landowning outgrowers, and rely instead on economic incentives to secure compliance with management directives. When this is the case, they resemble contract-farming schemes.

The Mumias sugar scheme in Kenya is commonly cited as a successful example of a nucleus estate with independent outgrowers (Graham and Floering 1984, p.114f.). There is an estate of 3,400 ha and there are 23,000 outgrowers on their own land with 29,000 ha under sugar; a participating farmer had to have 1.2 ha of suitable land within 21 km of the factory in order to qualify, and has a contract with the Company. All operations are supervised and the Company may enter, weed and charge for it if necessary. Factors contributing to the success of this scheme are considered to have been: careful project planning; the positive attitude of the population; good relations between government, company and management; adequate financing; the profit-based operation of the Mumias Sugar Company (BeEVERS and Glasford, 1984). The outgrowers at Mumias own their land and are not subject to the possibility of eviction. According to Mulaa (1982), central control has helped to restrain economic inequality by restricting opportunities for the wealthier participants to gain control of the process of production or to reinvest their profits locally in agriculture. Food production is reported to have declined at

Mumias, but not among sugar growers at the South Nyanza scheme (Kennedy and Coghill 1987, p.25). Choices in this respect may vary according to local prices and food market conditions.

Elsewhere, successful oil palm schemes have been implemented in Papua New Guinea (Goldthorpe, 1985; Adamson, 1984). In Nigeria, the Risonpalm Nucleus Estate does not enter into production contracts with outgrowers, but instead contracts with middlemen for the supply of palm fruit from communally owned palm groves (Gyasi, 1987), thereby avoiding any need to disturb traditional land tenure. The mill derives 52% of its fruit from this source, 28% from the nucleus estate and 15% from an older estate incorporated into the scheme. Average yields from 'wild' groves are, however, low.

Ellman (1986), in a review of nucleus estate and outgrower schemes, concludes that they work best when the crop is new to the area and the estate takes the initial risks, farmers coming in later; where hand labour can be used, crop deliveries are flexible and year-round; and there is a single market outlet. Problems have arisen, however; (1) there may be a conflict between food and plantation crops — the extension package should therefore include *all* crops; (2) prices fluctuate — either price support or crop diversification may become necessary; (3) dependency may be created among the participating farmers; (4) although machines are more efficient, outgrowers must participate fully and not be passive recipients; (5) management must balance control with the need for farmer participation in decision making; (6) the factory should share its profits as well as minimise producer payments; co-operative ownership with regular dividend payments can achieve this. It is also clear that the model does not eliminate conflicts between the management and outgrowers; outgrowers may not trust management's accounts, and if prices fall for the factory crop, they will divert effort to the other part of their farms, leading to management charges of inefficiency. This can be deduced from the history of Vuvulane, a smallholder sugar scheme in Swaziland (Tuckett, 1977).

However, as remarked already, there is an essential difference between schemes, with or without a nucleus estate, where the farmer is utilising his own land and can decide for himself at the end of a given contract period how much land he will put to the crop in future (in the case of sugar), or how much effort and inputs to assign to his trees, and the tenant who may be penalised if he

does not follow a prescribed method of production over a prescribed area. The tenant farmer is exposed to more of the marketing risk than the independent outgrower.

Tenant settlers on developed land

Settlers on newly allocated land may be given tenancies which carry the implication that project management has the ultimate sanction of eviction in the event of unsatisfactory performance. The absence of such a sanction in the schemes based on small owner-farmers weakens the project management and strengthens the possibility that farmers' and management's objectives may diverge. The cost of stronger management may be the loss of the owner's incentive to farm according to long-run objectives, and of operational flexibility. In Vuvulane, according to Stevens (1988), farmers, although tenants, cannot in practice be evicted; if farmers are inefficient, the management has to enter their farms to secure the harvest; but the low yields may not cover the costs (deductible at the factory), so the farmers may get into debt and lose interest in their sugar area. On the other hand, the Fiji sugar industry has been based entirely on tenancies since the company owning the estates was forced to subdivide them in the 1920s, when the cancellation of indenture contracts provoked a labour shortage (Ellis, 1988). Tenants obtain cane yields of 60-65 t/ha, which compare favourably with estates elsewhere.

The experience of FELDA in Malaysia is worth outlining in some detail since according to Goldthorpe (1983), yields/ha are comparable to those achieved on corporate plantations and superior to those achieved by nucleus estate outgrowers. The achievements of FELDA have also been enthusiastically advanced by Graham and Floering (1984) as an example of the extension of the plantation mode of management to smallholdings. Average rubber yields, for example, on Malaysian smallholdings were slow to improve between 1929 and 1973 and fell behind the rate of improvement on estates (Barlow 1978, Appx 3.2), but FELDA smallholders now achieve yields equal to the average on estates (1,480 kg/ha: see pp 46-7). FELDA smallholders are further behind average estate yields of oil palm fruit (17 t/ha compared with 24 t/ha). In Indonesia, smallholder rubber yields have increased from an average of 400 kg/ha to about 1,000 kg/ha since 1973, according to Sukarja (1985).

On FELDA schemes settlers arrive 18 months after planting and are allocated 4 ha each, arranged in blocks of 100 ha for co-operative work. For this work they are regimented as labourers under the supervision of a field assistant (1:100 ha), and learn the necessary management skills. On maturity the holdings become the responsibility of individuals and the field assistant's role is translated into that of extension worker. Loans for the cost of development work, inputs, housing and subsistence costs during maturation have to be repaid over 15 years after maturity. Title to the land is only given after repayment is completed.

Goldthorpe (1983, pp.210ff) found that smallholder development costs were 30-50% higher on the FELDA scheme than on a corporate plantation and 10-30% higher than on a nucleus oil palm estate (Hoskins) in Papua New Guinea, where the farmers are not tenants and provide the labour for development work. But yields on the FELDA scheme were equal to those on the plantation and 30-300% higher than those of the outgrowers. He concluded that the stronger the bureaucratic control, the higher the yields; autonomy and 'executive authority' are essential for the success of project management; the form of organisation should be flexible according to technological requirements; the FELDA block system ensures sound husbandry and substitutes the peer-group pressure of the co-operative for the less preferable administrative pressure; monoculture based on proven crops and technology is preferable to risky diversification; regimentation although distasteful to liberal values is more relevant to the settlers' practical needs; the high development costs nevertheless compare favourably with the costs of creating industrial jobs; and the high costs per settler are compensated by high yields over the project's 25-year lifetime.

FELDA schemes are not without their critics: 'the settlers are not even *participants* but are mere *recipients* of the government development projects...the settlers find that they can no longer work as and when they feel they like to...If their work is not up to standard they will be warned and even penalised' (Mansor, quoted in Barlow 1978, p.240). It is obvious that a very rigid form of monoculture has been substituted for smallholder flexibility, without providing a risk-bearing capability in the form of financial resources comparable to those of the corporate plantation. Although the creation of this group of medium-size farmers has improved rural income distribution — half a million ha and nearly 60,000 families are involved (Horii, 1984) — the schemes have

concentrated a large proportion of national resources on a relatively small number of beneficiaries, have high costs per settler and high overheads. The high costs of some settlement schemes have already been quoted in Chapter 4.

Two opposite solutions have been proposed:

(a) Webster (1983) argues for less ownership and more tenancies, on the grounds that owner-farmer schemes are likely to encounter increasing difficulties because of poor husbandry, labour shortages, high development costs, inadequate soil conservation, and scarcity of suitable new land. At the same time, intensification on the plantation estates will reduce the area they require to maintain output at the present level. It will be a more efficient use of resources to subdivide redundant mature plantations into small tenancies, to be operated under close supervision.

(b) Barlow (1978, pp.389-92), on the contrary, argues for greater emphasis on independent smallholders owning their own land. He suggests a cheaper alternative to the FELDA scheme based on smaller holdings (3 instead of 4 ha), reduced development costs, and lower expected productivity per ha, but having a wider social distribution. This proposal is supported by evidence that the cheaper and technically inferior fringe schemes are just as profitable as the FELDA ones. To minimise the possibility of suboptimal management, he proposed a land tax, which would discriminate against absentee and large owners.

Co-operatives

Production co-operatives, in which the land is held in common, have a long history in socialised agriculture. They appear to offer an alternative mode for the large-scale production of crops. But they have been tried, and failed, in several countries. In Jamaica, three Government-owned sugar estates were turned into workers' co-operatives in 1972. They lasted for six years, and failed because of underinvestment in the years preceding state acquisition, capital shortage afterwards, and technical and management problems (Frölander-Ulf and Lindenfeld, 1984; Clarke, 1986; Coote, 1988). This is consistent with the thesis that adequate capitalisation and industrial management are critical for the success of the plantation mode, requirements which co-operative organisation seems weakly placed to provide.

Co-operative ownership of processing plants by independent producers who control their own land has a different logic and can further both producing and processing efficiency. In Maharashtra State in India, village sugar producers own and operate co-operative sugar factories efficiently and innovatively with notable success (Attwood, 1985; Attwood and Baviskar, 1987). The key to this success was the resolution of the competition between the factory and the artisan *gur* sugar manufacturers for the supply, and the successful balancing of the interests of the larger and smaller producers in the operation of the factories. There were also special environmental factors in favour. The authors, therefore, caution against expecting similar methods to work elsewhere²³. However, on economic grounds the co-operative processing plants seem better placed than co-operative land ownership.

Choice of organisational structure

We have seen the argument for the plantation mode of production is based on the management efficiency achieved on the best-run estates. However not all plantation estates achieve this potential. In particular, the type of ownership (TNC, state corporation or private) has a bearing on efficiency. Essang (1974) found that Nigerian state-owned plantations were least efficient, and company-owned plantations most efficient in terms of labour use; and Saragih (1980) concluded that private Indonesian plantations were more efficient than state-owned ones on economic, price, and technical efficiency measures. The literature is weak on this point, but it is intuitively plausible that TNCs (with their access to international capital and advanced technology) should be most efficient, while state-owned plantations may be subject to over-manning and private indigenous estates to undercapitalisation.

But the matter is unlikely to be settled on grounds of efficiency alone. Some governments have sacrificed efficiency to secure indigenous control of estate agriculture, or public ownership, or the wider dispersion of wealth found in smallholder production. Powerful economic and social arguments favour the contemporary shift in emphasis towards smallholder production (see Chapter 7). However, management efficiency varies, in practice, independently from organisational structure. This is partly because

23. We do not consider here the large literature on credit and marketing co-operatives since this has no specific bearing on *plantation* crops.

the choice between high input-high yield and low input-low yield production systems can, to some extent, be made within any form of organisation; variable factor inputs create different intensities of production with perennial crops as with any others (Andreae, 1980).

Contract farming, nucleus estates and settlement schemes have been argued to create a complementary relationship between TNCs and 'farmers of limited resources', (Truitt, 1981; Goldsmith, 1985). The capital costs of these developments have often been ignored; we have seen they can be high and a greater social and economic benefit might be found from spreading the investment amongst a larger number of people individually receiving a smaller amount of assistance.

A mix of organisational structures and ownership may be the most appropriate solution in many countries (Terpend et al, 1986). Hinderink and Sterkenburg (1987, p.90) consider that 'after the preference for large-scale production units [in Africa], the pendulum of donor support now swings to the other extreme...the reaction to past failures, however, should not be a simplistic glorification of smallholder production, but rather the promotion of a variety of types of production units in individual countries, in accordance with the specific ecological and sociological conditions prevailing'. This would contribute to the development objective of increasing choices (Chapter 2). It may also provide one mechanism for responding to price fluctuations and variability of export income, with the estate sector maintaining a steady volume of production when prices fall, and the smallholder sector increasing and decreasing output by varying its inputs according to price signals.

Commercial viability

The profitability of plantation crops *viz a vis* other crops varies a great deal from country to country and from time to time, and no generalisation can be made. To cite two opposite extremes, in Kenya (Sharpley, 1988), export crops (including those grown on estates) generate an average value per ha ten times greater than domestic food crops, while in Nigeria (Okorji and Aghimien, 1986), the monetary returns from food crop enterprises compare favourably with those from other economic activities, while that from rubber does not. At South Nyanza (Kenya), sugar outgrowers

earn Ksh550 per capita more than non-growers (Kennedy and Coghill 1987, p.30).

Producer margins on estates and smallholdings

Barlow (1978, pp.260-3) warns that direct comparisons of performance between rubber estates and smallholdings in Malaysia 'must be carefully qualified', but offers the data reproduced in Table 5.1.

The range of private profit from 43 cts/kg on estates to 23 cts/kg on smallholdings is consistent with the thesis which attributes the highest efficiency to the plantation mode of management. However, profits after tax on the higher yielding estates (Barlow 1987, pp.199-200) were not much different from those on high yielding smallholdings (\$348/ha compared with \$321/ha). This supports the view that smallholdings are not intrinsically inefficient, and is consistent with the possibility that capital is limiting. The difference between low yielding estates and low yielding smallholdings is predictably greater (\$95/ha compared with \$36/ha).

Table 5.1
Average performance on Malaysian estates and smallholdings (1970s)

	<i>Estates</i>	<i>Smallholdings</i>		<i>Other</i>
		<i>FELDA</i>	<i>Fringe</i>	
1 Output (kg/ha)	1,278	1,720	1,191	998
2 Gross revenue (M\$/ha*)	1,343	1,517	919	835
3 Costs (M\$/ha*)	792	863	609	605
4 Profit before tax (M\$/ha*)	552	654	310	230
5 Private profit (cts/kg)	43	38	26	23
6 'Social' profit (cts/kg) ^a	79	na	na	56
7 'Family return' (M\$/ha*) ^b	na	1,119	721	649

* Mature ha

na Not available or applicable

a After evaluating 'social' costs of production

b Gross revenue less material inputs, i.e., returns to labour, management and investment.

Source: Barlow, 1978

Note: Samples included 3-4% of estates but 0.2% of smallholdings.

Data of comparable quality are scarce for other crops and countries. Dissanayake (1984) estimated that at 1982 prices and assumed yields, the net annual profit on a smallholding producing 3,000 kg of green tea in Sri Lanka was very low — R540; and on rubber smallholdings, R1.94-5.16/kg, inversely related to size (owing to the greater use of family labour on the smallest holdings). However, they were doing better than estates. Athukorala (1984) calculated that producer margins as a percentage of production costs for rubber in 1980 were -0.8 for estates compared with 39-42 for a sample of smallholdings, discounting the price of family labour. One possible interpretation of this case is that where estates are short of capital, they do no better than smallholdings. Smallholders were using family labour, escaping direct taxes and the costs of machinery and factory maintenance; on the other hand they received lower prices. In Fiji, Brookfield et al (1985, p.171) conclude that 'in straight cash terms the smallholder can produce copra at a far lower cost than is possible for even small estates', because productive labour is not paid for in cash — still less that employed in producing food and shelter.

The significance of such comparisons is limited, therefore, by the differential valuation of labour and the inclusion as internal costs on estates of various items which are considered external to smallholdings. It is also limited by the question of economic or commercial versus social returns. Little and Tipping (1972) estimated social profitability by converting all costs — including labour — into foreign exchange terms (or 'shadow prices'), and calculating net social benefits as sales of produce (at foreign exchange value) less social costs. In an analysis of the Kulai oil palm estate in west Malaysia, they calculated that while the commercial rate of return (from 1950 to 1969) projected to infinity was 8%, the social rate of return (or 'benefits to Malaysia') was 19-20%. Such an exercise, in which in any case the outcome depends on the method used, would probably be impossible for smallholdings.

Pressures on producer margins

The pressures which appear to be affecting producer margins at the present time and which have a high level of generality are as follows:

(a) World price trends for plantation crops, at worst falling and at best rising very slowly, and the stagnation of demand in North

America and Western Europe, the traditional markets, which is not being adequately compensated for by rising demand in Japan, the Soviet Union and Eastern Europe, and in Third World countries (including the producer countries themselves). This implies less investment and affects both estates and smallholdings. Price trends are further examined in Chapter 8.

(b) Rising labour costs, which affect both estates and smallholdings that use hired labour, and again reduce investment. In many countries agricultural labour is being diverted into other types of agriculture, industry or services.

(c) Falling or stagnating yields on estates in countries, such as Sri Lanka, where underinvestment, especially in replanting, has continued for many years for other reasons.

(d) Rising costs of inputs, especially imported ones. Since smallholdings may simply postpone inputs such as fertiliser and use little fuel, this affects estates most seriously.

(e) Social and other non-operational expenditures, which affect smallholdings only. A price windfall may not immediately be invested, but channelled into such expenditure, which has been traditionally regarded as 'unproductive' but can be viewed alternatively, in the light of undervalued family labour, as a delayed wage payment. For this reason, there is likely to be a time lag in smallholdings before high prices are translated into investment.

Additional factors, either ecological (such as drought, pests, or diseases) or economic (such as over-valued currency) may affect producer margins in specific countries.

Raising profitability by diversification

Research in several countries is now actively pursuing diversification and intercropping strategies in order to use labour and land more profitably on estates.

(a) *New crops* are being introduced or proposed for estate production. In Malaysia, cocoa has rapidly gained popularity as an alternative to, or intercrop with rubber and oil palm, increasing in area from 10,000 ha in 1960 to 307,000 ha in 1980 (Lim, 1987).

(b) *Intercropping*. Top favourite for improved mixtures is the relatively unprofitable coconut, whose wide spacing and limited light interception allow other crops to be added without

any loss of copra yields. Banana, cashew, citrus, cocoa, coffee, ginger, pawpaw, pepper, pineapple, vegetables and yaqona have been tried (Alvim and Nair, 1986; Brookfield et al, 1985; Ditablan and Astate, 1985; Margate and Magat, 1983; Mathes, 1986; Tilakaratna, 1984). In Sri Lanka, only 24,000 of 147,000 ha of coconuts are presently intercropped, and it is estimated that intercropping the remainder would create an additional 60-75,000 jobs by the end of the century (Tilakaratna, 1984; Gooneratne and Wesumperuma, 1984; Liyanage, 1985).

- (c) *Livestock* have been tried for coconut (Brookfield et al, 1985; Sahasranaman et al, 1982) and rubber plantations — cattle, sheep, broilers or bees (Tajuddin, 1986). Weeding costs can thereby be reduced (Arope et al, 1987).
- (d) *Use of byproducts*. In a traditional sugar-producing country, Guyana, notwithstanding the use of trash for fuel, little progress has been made in exploiting the full range of byproducts — such as wood, paper, textiles and cellulose — according to Thomas (1984). The costs of removing large quantities of residues may be a disincentive on estates, whereas it can be disregarded on a smallholding.

The main obstacle to intercropping and diversification, it has been suggested, may be the unwillingness of estate managers accustomed to monocropping to innovate and experiment, compared with smallholders who are already used to growing subsidiary crops and livestock (Hartley 1977, p.589). The logic of the plantation mode of management appears to contradict the idea of diversification, although it is reported that diversification has been tried successfully on a number of estates.

Vertical integration

According to critical theorists, the profitability of plantation estates was adversely affected by vertical integration with processing, shipping and distributing firms, whose control over markets allowed producer prices to be manipulated, and whose profits from value-added and distribution were greater than those available from the production process. Plantation managers saw their remit on behalf of the foreign owners chiefly in terms of maximising output. The TNCs, which now control the world market for most plantation crops, can transfer production between territories, withhold technology, and, by means of transfer pricing, declare most of their profits in the countries of their choice. The host

government, according to this view, is deprived of effective control of its export agricultural sector.

In order to escape the risks of land ownership and rising labour costs, some TNCs have divested themselves of production commitments and concentrated instead on obtaining management contracts, setting up processing subsidiaries, controlling technology transfer, and cornering as much of the market as possible. According to Dinham and Hines (1983) and Ho Kwon Ping (1982), 8 companies control 76% of world cocoa sales, 8 companies control 94% of world tea sales, 8 companies control 85% of measured coffee output, 3 companies control 69% of world banana sales, and 6 companies control 89-95% of world leaf tobacco purchases. Producing country enterprises, so it is often argued, therefore find it difficult to penetrate the marketing channels where the greater part of total value-added is generated. Thus in the Philippines, the concentration of the banana trade in fewer hands has resulted from the failure of small or poorly managed companies to cope with problems of production and marketing (Krinks, 1983).

The dominance of the TNC in world markets may have strongly negative implications for producer countries where the interests of the two parties diverge. Banana companies, for example, are in a position to shift fruit volumes from one market to another in response to changes in demand, or natural disasters in producing countries; and they can withhold fruit from the market in order to support prices (Stover and Simmonds 1987, p.410). For smallholders and estate labourers alike, the effect of intensified vertical integration is that price improvements may be passed on to them, if at all, only fractionally, even when the industry is profitable (Thomson, 1987; Philippines, 1981).

The critical view tends to ignore the significance of competition amongst the TNCs, in emphasising potential conflict between their interests and those of producers. Nor is there any evidence that small national companies or parastatals would be able to market their products internationally more cheaply, to enable higher payments to be made to producers or labourers.

While critical comment on the activities of the TNCs continues, a revolution has occurred in their standing with many Third World governments, as we have seen in Chapter 2. There are now more ldc advocates of closer links between agribusiness and the farmers. Agro-industrial investments in some African countries, however, have proved risky (Eussner, 1986). Some TNCs have become

cautious in making fixed investments in developing countries. With regard to plantation estates, management agreements, most often with governments, are increasingly common.

6

Regional and Environmental Impact

This Chapter reviews the impact of plantation estates on the economy and ecology of the region. The amount of empirical evidence on these types of impact is small. This may be the result of the difficulty of separating the estate subsector from other subsectors of agriculture for analytical purposes. In many countries, estates are long accepted features of the economic and ecological landscape. New ones, being less intrusive and capital intensive than many dams or irrigation schemes, are less likely to attract impact studies. With regard to regional impact, the theory has been articulated but there is need for it to be tested in more countries. With regard to environmental impact, perennial tree crops are thought to be ecologically benign and there is not much evidence to the contrary. The economic and ecological impact of smallholdings, as opposed to that of estates, has also received little attention.

Plantations as economic growth points

The issue here is whether plantations stimulate general economic growth in the region where they are located, and if so, whether they have a greater or lesser impact than other types of agricultural development. Surprisingly few studies have been done of the upstream linkages of agricultural development, or of the relationship between a plantation and other types of farming system with which it may co-exist.

The theoretical case made against the classic plantation system is that its export dependence and vertical integration with foreign enterprises are antithetical to the growth of the local economy. According to Beckford (1972, Chapter 7), writing particularly of sugar economies, output growth does not take place because of the low demand for sugar; downstream linkages tend to generate

employment in the metropolitan country because vertically integrated enterprises prefer to locate there; inputs are imported; profits are repatriated rather than reinvested locally; and labour productivity gains benefit consumers in the industrial economies, not labour. His last three points all relate to the stimulus given to other sectors of the local economy and will be briefly discussed in turn.

Downstream linkages

Some processing nearly always takes place locally and there may also be local manufacture. Some 90% of Malaysian palm oil exports leave the country as refined, fractionated or manufactured oil, and local industries manufacture soap and edible products (Webster, 1983). By the end of 1984 there were 54 refineries, in addition to a larger number of palm oil mills and palm kernel crushers (ILO, III, 1989). The rubber industry likewise supports the manufacture of tyres, footwear and other products. Malaysia consumes 70,000 t/yr of its own rubber, increasing at 10%/yr (Goldthorpe 1983, p.269f). There were 150 rubber product manufacturers in 1983, employing over 16,500 workers. Even with cocoa, about 17% of production in 1984 was utilised within the country for manufacture into cocoa powder, paste, butter and chocolate for local consumption and export (ILO, III, 1989).

According to an ILO review of the employment effects of Multinational Enterprises (MNEs) in developing countries (ILO, 1981), there are 'strong backward linkages of manufacturing MNEs to the agricultural sector. There is an increasing trend for MNEs to obtain raw materials through subcontracting arrangements with local producers or intermediaries'. Such linkages are stressed among the beneficial effects of 'core-satellite farming' by Goldsmith (1985). In Mexico (in 1975), 40,480 workers in the fruit and vegetable farming industry generated direct employment for 3,134 in processing and manufacturing plants (ILO 1981, p.17).

Contrary to Beckford's thesis, local industries linked to sugar are becoming more and more important. Between 1977 and 1984 there was a sevenfold increase in world production of ethanol. One estimate is that ethanol had created over 600,000 jobs in Brazil by the mid 1980s, with linkages ranging from the construction of distilleries, to the manufacture not only of fuel but of a variety of chemicals and beverages. Sugar production for ethanol uses an estimated 1m ha and employs 24,000 more than the less

labour-intensive crops displaced. The byproducts of sugar, bagasse and molasses are also important, with 27 countries using bagasse for pulp and paper production. Other products are animal feed, plastics and chemicals, rum and other alcoholic drinks (ILO, III, 1989). Zimbabwe is an African example of a country where ethanol production and use of sugar byproducts is important.

Upstream linkages

In Malaysia, expenditure on inputs such as fertilisers, pesticides and weedicides, processing chemicals, hardware, building materials and services, fuel, transport and professional services flows into the local economy, having a significant impact on the growth of the urban system, even where wholesalers merely transfer the demand elsewhere (Courtenay, 1981). Elsewhere, the change to pre-packing bananas has generated a new demand for packaging materials in the producing countries. But there may be resistance to purchasing local inputs. Castle and Cooke imported tinsplate from an affiliated company for canning pineapples in Thailand, rather than making use of tinsplate manufactured locally, providing themselves with an opportunity for transfer pricing according to Ho Kwon Ping (1982). Unwillingness to take trouble to deal with potential local small-scale suppliers occurs with tea estates in Malawi (D Wright, personal communication).

Intersectoral transfers

Plantation estates and nucleus estates with outgrowers may make a significant contribution to other sectors in the locality. For example, a sugar project may generate subsidiary industries, and a pool of skilled labour and management (Moody-Stewart, 1983; Courtenay, 1984). Chiredzi in Zimbabwe is an example of an area growth point based on sugar (Stevens, 1988b). A new sisal industry (Lock, 1969, p.328) can bring settlement, trade, services, communications and water supply to an area previously unproductive, although the Tanzanian plantations are weakly integrated with the rest of the economy, according to Lawrence (1974). Goldthorpe (1983, pp.215f,269f) states that the Hoskins oil palm project had a massive impact on the economy of West New Britain Province, transforming an economically disadvantaged and poorly serviced area in just over a decade. Improved port facilities and infrastructure generated exports of other agricultural crops and timber, and urban services developed. Such benefits may not

be restricted to new projects in previously underdeveloped regions. In North Sumatra there was a general economic improvement following successful plantation rehabilitation in the 1970s.

By contrast, in Sri Lanka, Gooneratne and Wesumperuma (1984) found that the plantations developed as 'enclaves alongside the village without any productive interaction between the two'. Devi (1986) found the backward and forward linkages of plantation agriculture in Kerala more limited than those of general agriculture and animal husbandry. This appears partly to be because plantation earnings are low and mainly spent on rice.

Plantations seem to make least stimulus to economic growth in the small economies, particularly the sugar economies of the Caribbean. A Commonwealth Secretariat study (Persaud 1988), which does not appear to draw on the Beckford thesis, nevertheless confirms some of his criticisms. Because they are small islands, specialisation on sugar was initially necessary to provide the volume that would attract buyers and transport facilities, etc. However, because a large part of the agricultural land then became devoted to large sugar estates, smallholder agricultural development was inhibited by lack of access to land. Vested interests maintained the sugar sector even after world market signals were for diminished production and diversification, and when local demand for food and for supplies to the increasing tourist industry was growing. The needed adjustment to a more intensive agriculture based on new high value crops and a more labour absorptive type of family farming did not happen. The result was a declining trend in agricultural export values, and an increasing trend in growth rates of agricultural import values.

There have also been relatively few studies of the regional impact of smallholder output, whether this is based on a plantation crop or mixed farming. Attwood and Baviskar (1987) document the remarkable impact of co-operative sugar factories in Maharashtra State of India: profits were reinvested in another factory, an industrial alcohol distillery, village irrigation and water supply, credit and technical assistance for intensive sugar, wheat and rice schemes, veterinary centres, a dairy co-operative, infrastructural improvements, research, social welfare and drought relief programmes. In Malaysia state investment in irrigation for a rice producing area led to the generation of 75cts upstream for every M\$1 of production on scheme, mainly through increased demand

by the rice producers for goods and services (Bell et al, 1982). In Nigeria, the rapid expansion of smallholder cotton in Gombe Emirate between 1948 and 1963 led to two local towns becoming thriving commercial centres, trebling in size (Tiffen, 1976).

In summary, we conclude that the evidence shows that successful agricultural development, whether based on plantations or not, leads to spin-off developments in other sectors. Multiplier effects may be less in the case of plantations, as their vertical integration with input supply and manufacture in external countries leads to more of them being felt elsewhere. There is a particular danger in failing to respond to market signals to diversify in small economies where plantation estates may have monopolised most of the good land and where vested interests are entrenched. However, the possibilities of creating centres of secondary industry in larger countries are demonstrably good, and the concentration of production in an area of high-yielding estates which have already attracted or created a certain level of infrastructure and a pool of skills may be the catalyst that leads to a diversified economy in which industry and services become as important or more important for employment than agriculture.

Environmental impact

Nutrient removal

Yields of plantation crops can only be maintained at high levels by means of systematic fertilizer applications, and the absence of these is one factor causing relatively low output on many smallholdings. The nutrients removed in the plantation crops are known. This study is not concerned with technical aspects, and the examples given in Table 6.1 are for illustrative purposes and do not represent the latest research. However they do suggest the cost implications of a high input-high yield strategy, and the size of the input supply problems which are met where an attempt is made to up-grade productivity in a large number of scattered smallholdings, as opposed to spatially concentrated estate agriculture.

Fertilisation has often been ignored or given insufficient priority in the early cropping cycles of the plantation system. Examples are the sugar plantations of the Caribbean in the 17th and 18th centuries, the coffee plantations of Brazil in the 19th and 20th, and the sisal plantations of Tanzania in the earlier 20th century. In

Table 6.1
Nutrients removed in some plantation crops

Crop	Output	Nutrients (kg/ha)				Source
		N	P	K	Ca	
Banana (fruit) ^a	46t/ha	101	11	330	na	Stover & Simmonds, 1987:252
Coconut	not given	70 ^b	15 ^b	87 ^b	13	Child, 1974:130
Coffee (berries) ^c	1,000 kg/ha	35	6	50	na	Wellman, 1961:211
Oil palm (fruit) ^d	1,060 kg/ha	430	90	500	65	Webster and Wilson, 1980:297
Plaintain ^a	2988/ha	70	9	242	11	Stover & Simmonds 1987:232
Rubber (latex)	1,700 kg/ha	12	3.5	10	2.5	Webster and Wilson, 1980:297
Sisal (fibre)	2t/ha	62	10	158	76	Lock, 1969:201
Sugar (cane)	50t/ha	30-40	23-27	68	na	Barnes, 1969:207
Sugar (cane)	88t/ha	45	22	120	na	Webster and Wilson, 1980:297

a Where peduncles are also removed, an addition applies

b Average of three studies

c Coffee pulp removes from a quarter to a half more of N, P and K

d 20-22 years old

na Not available

most countries, land scarcity now compels the adoption of a stable fertility régime. The replanting of tree crops in successive cycles is becoming increasingly common as plantations grow older and new varieties become more widely available. There are examples of soil deterioration between cycles *both* on smallholdings and estates. In Uganda (Kavuma, 1987), a decline in average plantain yields to 6-10 t/ha on smallholdings is reported, notwithstanding a doubling of the planted area, since 1964, and part of this decline is attributed to soil deterioration under repeated cropping. In Côte d'Ivoire (Caliman et al, 1987), soil degradation on sandy ferralitic soils has caused poor growth and a big drop in yields of oil palm after replanting.

The implications of under-fertilization for soil nutrient status, for example during a period of disinvestment when prices are low, are therefore obvious. Smallholdings under low input-low yield management strategies, in conjunction with a mixture of crops, or trees with fallow vegetation, stand less risk of harmful 'soil mining'. Since fertilization regimes are influenced by capital supply, this should be borne in mind when introducing programmes to raise productivity on smallholdings, especially if it involves increasing the degree of crop specialisation. In the medium and longer term, incentives must be provided both on smallholdings and estates. The implications of new organisational structures, such as TNC management contracts or smallholder tenancies, for the maintenance of a stable fertility régime require careful investigation.

Examples of management

Both positive and negative examples of the environmental impact of management practices have been cited in the literature for most of the plantation crops on either estates or smallholdings. The following examples do not comprise an exhaustive review.

(a) *Banana*. The heavy use of pesticides, often by aerial spraying, has raised questions of health among plantation workers in the Philippines; and allegations that insects take refuge in pesticide-free smallholdings nearby (David, 1982; Ho Kwon Ping, 1982). The use of fertilizers by smallholder contract farmers puts them in debt to the company, but failure to do so results in soil exhaustion and the production of substandard fruit. Contract growers producing high value crops for TNCs may be put under pressure to adopt practices harmful to soil fertility, according

- to Feder (cited in Glover, 1983). The TNC does not have any interest in the land and it is easy to terminate contract farming agreements and relocate if yields fall, leaving farmers and soil alike impoverished, according to Ho Kwon Ping (1982).
- (b) *Cocoa* is grown on many soils, some of them unsuitable, but the availability of forest leaf litter on sloping surfaces helps to minimise erosion. In some hilly areas terracing and erosion control are carried out. Mulching of young plants may be practised (Krug and Quartey-Papafio, 1964).
- (c) *Coconut*. Soil erosion is not usually a major problem because the trees are normally found on flat, low-lying ground but intercropping can nevertheless improve soil water retention and fertility, and control weed growth, and erosion where it occurs (Child, 1974; Liyanage, 1985).
- (d) *Coffee*. One of the recognised limiting factors in the permanency of plantations is soil exhaustion, and in some countries, notably Brazil, large areas used to be abandoned every year (Wellman 1961, p.345f; Krug and de Poerck 1968, p.436). What amounted to a system of shifting cultivation was possible where suitable land was abundant: forest clearance followed by planting, maturation and good yields for several years: then the loss of humus, declining yields, and efforts to restore fertility; then renewed decline and finally abandonment and transfer of the land to some less productive use, such as pasture or eucalyptus plantations. The 'coffee cycle' might last for 20-30 years, or less. The best course for improvement lies in replanting with high-yielding, disease-resistant varieties that justify more intensive management of a smaller area, especially where suitable land is becoming scarce, as in the high potential coffee areas of Kenya, and Colombia (De Graaff, 1986). When densely planted or planted along the contours, coffee can be grown on slopes without undue erosion. Smallholders in Rwanda and Kenya make use of mulching to conserve soil, moisture, and fertility, but it was reported still to be rare, even on estates, in 1968 (Krug and de Poerck 1968, p.440), along with the use of fertilizers.
- (e) *Oil Palms*. The ecological impact of clearing extensive areas of primary or high secondary forest, along with the wildlife, food and medicinal plants associated with it, is considerable (Gyasi, 1987). The most economic method is by burning, and the soil nutrient levels of burnt and unburnt plots have been found not

to vary significantly after 9-20 years (Hartley 1977, p.362). Soil erosion associated with oil palm plantations has been intensively studied in Côte d'Ivoire (Caliman and Kochko, 1987; Hamel, 1986; Prioux, 1987; Quencez, 1986). Planting on slopes steeper than 5% may lead to soil compaction, erosion, and excessive run-off unless countered by ground cover techniques, and on slopes steeper than 15%, bunds and terraces are necessary. Research has also been carried out on suitable ground cover (Corley et al, 1976).

- (f) *Pineapples*. The use of paper mulches in Hawaii allows pineapples to be grown year after year without rotations or green manures but soil erosion, although imperceptible, is significant even on flat fields (Collins 1960, p.265).
- (g) *Sisal*. Lock (1969, pp.197f, 329) wrote that sisal growing in Tanzania 'has not yet been placed on a proper agricultural basis. Up to the present the industry has relied almost entirely upon the reserves of soil fertility in virgin land'; estates used little fertilizer or manure but relied on access to new land to maintain a constant output. 'On fully developed plantations this era of expansion is now over, and the stage has been reached when soil exhaustion has become perceptible'. But the economics of fertilization had not then (1969) been resolved, particularly in view of the relatively low yields expected from this crop. Higher yielding agave varieties offer the possibility of moving to a more intensive system of management (Lawrence, 1974).
- (h) *Sugar* is a highly efficient converter of solar energy and competes powerfully with alternative crops even on the poorer soils (Chardon, 1984). Declining yields are, however, commonplace. At Perlis in Malaysia the yields on a new sugar scheme fell from 75 t/ha to 35 t/ha in less than ten years (Courtenay, 1984), and topsoil erosion is a major hazard. In Mauritius, soil erosion is being controlled by minimum tillage, and soil properties improved by the use of soil amendments and intercropping with food crops (McIntyre, 1984). The use of farmyard manure, together with lower yield expectations, before the introduction of modern intensive and mechanised production methods, may have maintained a more stable supply of minor and trace elements whose occurrence is now often deficient (Barnes 1969, p.233) — calcium, magnesium, iron, manganese, copper, zinc, boron and molybdenum. This

draws attention to one of the implications of a change to high input-high yield management.

- (i) *Tea*. Plantation practice in hilly areas often used to destroy potential fertility by burning and then accelerated erosion by planting in straight lines down the slopes (Eden 1976, pp.40-110). Now, terracing, contour planting between grass strips, drainage of impermeable soils, fertilization and the use of shade trees — such as *Albizzia* spp, which fixes nitrogen and provides forage for green manure — help to stabilise the environmental conditions. But in Sri Lanka, soil conservation was neglected in the years of disinvestment before the Land Reform programme of the 1970s (Gooneratne and Wesumperuma, 1984). Soil improvement is now identified as the most critical factor requiring attention in the tea sector (Wickremasinghe, 1983).
- (j) *Tobacco*. The use of wood fuel for flue-curing tobacco has strongly negative implications for the environment in areas subject to deforestation and erosion (e.g., Sri Lanka: Abeysekera 1985). This problem is more relevant to smallholdings than to estates.

Well run estates should avoid the environmental risks listed above. According to Webster and Watson (1988), better soil management, conservation measures, and the use of leguminous ground covers have contributed significantly to the advances that have been made in the productivity and efficiency of tropical tree crops. Conservatory management is consistent with the growing scarcity of land in many countries, and the longer economic perspective of estates based on perennial tree crops, and having investments sunk in processing plant and infrastructure.

Ecological advantages of smallholdings

Since smallholdings tend to be viewed negatively in comparison with the better run estates, it is worth reviewing their advantages from an ecological standpoint.

- (a) Multiple cropping of trees with other crops may offer the most efficient and economically productive use of solar energy for photosynthesis (Nair, 1979), and may be more amenable to smallholder management than to the plantation mode.
- (b) Smallholdings with multiple cropping are less disruptive than estates with monoculture of the ecology of tropical forest areas. The impact, for example, of the tea plant on the hitherto

unspoilt rain forest of Ceylon (Sri Lanka) in the 19th century was dramatic (Marby, 1972). The natural vegetation of more than 200,000 ha was destroyed and a foreign plantation system introduced, based on the monoculture of tea (originally exotic to the island) and associated with introduced shade trees, garden plants, bushes and vegetables from Europe, South Africa and Australia. The farms of smallholders in the humid zones of West Africa, with their mix of cocoa, kola, palm oil, citrus and bananas etc, have modified the virgin forest over a huge zone, but maintain greater ecological diversity.

- (c) Ground cover, essential for soil protection, may under some circumstances be more economically provided by smallholder food crops than by controlled weed growth or cover crops under estate conditions. This is a complex matter because ground cover plants compete with the plantation crop for nutrients and water (Corley et al, 1976; Webster and Watson, 1988).
- (d) The scale of smallholding is more appropriate to the exploitation of ecologically or topographically complex areas, since it is not subject to the estate's requirements for large-scale contiguous holdings, uniformity of management and use of machinery for some operations. Such complex areas represent an increasing proportion of unexploited land in countries where all the suitable land has already been appropriated for estate agriculture. This advantage may be combined with a smallholder's detailed knowledge of local soil and water conditions.
- (e) Smallholdings are more labour-intensive and therefore need depend less on the use of weedicides having potentially harmful side effects.

Of course, not all smallholdings realise these advantages.

No general judgement is possible on the environmental impact of plantation or smallholder management *per se*. We also need to differentiate between two types of ecological impact: practices causing permanent soil degradation, and the conversion of natural forest into planted land, leading to loss of species diversity but not necessarily to soil degradation. Loss of species diversity is associated with any form of intensive agriculture, whether by smallholders or estates. The key to conservationary management lies in creating the right economic conditions for the intensive

systems of cultivation that become necessary as population density rises and human expectations increase.

7

Political and Policy Aspects

Political acceptability of plantation estates

The choice between smallholder production and estates depends not only on economic efficiency but also on the social and political order desired. The choices of governments are not always in harmony with theorists. Those who favour equity of income distribution in rural areas will prefer the smallholder alternative. However, if smallholders have to be specially encouraged to grow plantation crops, governments may create a class of privileged growers with favoured access to land and inputs. Those who want to build a rural middle class between plantation labourers and managers will support measures that enable smallholders to reach higher productivity levels. Some politicians maintain or create a supportive class of large estate owners, and this can lead to stark contrasts in living standards. In other societies, unions may be an important part of the political structure, and plantations are accepted if working conditions are satisfactory by local standards.

Political and legal systems in developing countries

It is difficult to separate economic and political aspects since economic systems lie at the base of political power and of political philosophy. Plantation estates occur in countries as politically diverse as India, Burma, Malaysia, Tanzania, Kenya, Guyana and Brazil, as well as in countries outside the Third World (USA, Australia). Comparative studies, however, are rare, and judgements depend on the view taken of the final goal. Edquist (1982), in a comparison of socialist Cuba with capitalist Jamaica, argues that Cuba, since the 1950s, has managed its economy more efficiently, with regard to technical change in the sugar industry (the mechanisation of cutting and loading), and employment in the

economy as a whole (the level of unemployment is lower than in Jamaica). The plantations are owned and run by the State, and his analysis brings into question the view that the plantation mode of management only works well in a capitalist environment. On the other hand, a comparison of Sri Lanka (where, since nationalisation, most of the estates belong to the Government) and Malaysia (where privately owned estates are dominant), appears to support the pro-capitalist view. Average productivity is low and management inefficient in Sri Lanka whereas productivity is increasing under efficient management and advanced technology in Malaysia.

The efficiency of plantations may depend less on the political system (defined in terms of the traditional dichotomy between centrally-planned socialism and capitalistic democracy) than on the legislative framework of land and labour laws. Land law must facilitate the acquisition, under freehold or on long lease, of large continuous tracts of good land. Labour laws must be sympathetic to the operation of a 'rational-legal authority' over large workforces on corporate plantations (Goldthorpe 1983, p.139). If such provisions are in conflict with the prevailing political philosophy or practice, more flexible smallholder programmes, such as contract farming, are preferable. The disciplinary sanction of eviction which is implied in some justifications of the nucleus estate and tenant outgrower model is often politically impossible.

A further aspect of the legislative framework which is relevant to plantation estates is migration policy, and the constitutional rights of migrant workforces and their descendants. International migration is no longer significant in recruiting permanent plantation labour in most countries, but the constitutional or economic status of communities descended from such migrants (notably Indian workers in Sri Lanka and Malaysia, and in Fiji — where they have become smallholders) remains a controversial issue. Neither should it be assumed that labour recruited from within the national territory is free from such problems. Fears of political or economic discrimination, restriction from obtaining property rights, or even of physical danger are not unknown among inter-regional migrants in some countries where plantation estates provide significant employment opportunities.

The legislative climate seems therefore to be more important than the colour of the political system in determining whether the

plantation mode of management is possible; its success will depend on whether incentives for efficient management are present.

Foreign ownership and political issues in developing countries

Foreign ownership of plantations was the cornerstone of the critical theorists' position from which many negative characteristics are perceived to have derived (Best, 1968; Beckford, 1972; De Silva, 1982). Apologists for the 'modern plantation' have therefore been at pains to stress the indigenisation of ownership in recent years, whether by nationalisation or by sale and transfer (Graham and Floering, 1984; Goldthorpe, 1983). None of the literature reviewed has produced statistical evidence of this trend, but it seems incontrovertible nevertheless.

The reply of critical writers to the evidence of diminishing foreign ownership is to stress the intensification of vertical integration under the TNCs, which has made ownership of the plantation itself irrelevant to effective control of the whole process of producing and marketing plantation crops. The TNCs are thus portrayed as being in a position to call the tune not only to the plantation subsector but, also by virtue of their increasing penetration of the economy, by means of 'core-satellite' farming schemes, their control of processing plants and technology, and their branded food distribution subsidiaries within as well as outside the producing countries, to their governments as well. The opposite view is to stress that they offer market access and new opportunities to smallholders. Recent studies tend to show that export crop production is complementary to food crop production, not competitive with it (Maxwell, 1988), thus adding to choice.

We have seen that critical views of the TNCs are much less influential now than ten years ago within Third World governments themselves (see Chapter 2). However, the lag between a government's decision to court greater foreign participation in the economy and the transformation of public opinion may generate internal political contradictions, which potential investors may need to take into consideration. For example, Nigeria, which has long embraced a capitalist ideology, began in the 1980s to solicit agricultural investments from TNC subsidiaries in the country as an alternative to the repatriation of profits which exchange control policy had made increasingly difficult. Foreign firms are now allowed to own 60-80% of agricultural enterprises (they are restricted to 40% in most sectors);

there is a 7-year grace period on some agricultural loans, tax exemption for interest payments and three-year tax holidays for agribusinesses (Akinola, 1987). However, large-scale agricultural developments are contrary to the spirit, if not the letter, of the Land Use Act of 1978, which imposed a ceiling on agricultural landholdings in order to further equity amongst a nation of small and medium scale farmers.²⁴

Foreign ownership and political issues in developed countries

The continuing involvement of private interests and TNCs based in the industrial market economies in the ownership of plantations, or in controlling market outlets for their produce (and by implication its price), has attracted criticism within developed countries. The basis of such criticism is that a section of the public believes that 'their' companies are responsible for low prices, low wages, poor housing and social welfare, unjust land appropriation or other unacceptable practices. The best known example is that of the tea estates (see Kirk, 1987b for references to the large literature), and tea companies have been made to feel political pressure from consumer countries. Nestlé, though not involved directly in production, publicises its support for international product agreements in coffee and cocoa in order to achieve equitable earnings and market stability (Société d'Assistance, 1985a, b). A new brand of higher-priced coffee was successfully launched in the Netherlands recently by various groups and agencies concerned to provide higher rewards to peasants and workers (The Times, 19.7.1989). Del Monte was obliged to demonstrate to a Swiss development pressure group that its pineapple plantations in the Philippines provide welfare conditions above the average (by local standards), for fear of a consumer reaction (Sajhau, private communication). In the current climate of opinion in the western world, environmental criteria are also becoming important for judging plantations. By definition, such pressures can be less effectively applied to nationalised or locally owned estates, or to a multitude of smallholders.

24. The issue of land distribution found a place in at least one party political programme (People's Redemption Party).

Policy choice in plantation economies

Optimal resource allocation between estate and smallholder sectors

We have seen (Ch.2) that Beckford argues that the duality between the Caribbean sugar sector and the rest of the economy is such that resources are inefficiently allocated. This is seen as a political as well as economic issue because there is foreign control, which may be in alliance with local political elites. Labour is underused because there is too much of it available. There is a:

'combination of resource underutilisation alongside underconsumption and poverty among the majority of people in a plantation society', and '... low productivity among peasants within the plantation economy is really a consequence of the fact that peasants are denied an opportunity to exercise their obvious managerial and entrepreneurial abilities because (of) ... limited access to the necessary resources of land and capital'.

There has been much discussion of this view (for example, Bernstein and Pitt, 1974; Young, 1976; Pantin, 1980; Pryor, 1982; Graham and Floering, 1984). The crucial economic question is whether land, labour and capital could be put to more productive use under smallholder alternatives and if so, whether this solution is politically blocked by external interests. Some critics have tried to show that the Best-Beckford model applies only to the small sugar economies and island states of the Caribbean. Crusol and Crusol (1980) — although making no reference to these authors — argue that suboptimal use of land arises from unequal distribution between estates and smallholdings: there is overuse of labour and low productivity on the latter, and underuse of land on the former. Thus, 'because of limited land and labour resources on the islands, the functional relationships between the two sectors (large and small) is one of opposition', with local political interests supporting the estate owners. Outside the Caribbean, it is comparatively rare for the agricultural sector as a whole to be dominated by the plantation estate subsector. In larger countries, more land is available and there is likely to be more diversity in economic activity. The relatively small proportion of the national territory under estate plantations in South American, African and Asian countries is too fundamental a difference to be dismissed lightly.

Binns observed long ago (1955, p.34) that 'the effects of the plantation system on the rural economy must be judged, primarily, not by any peculiarity of plantation agriculture itself, but by the relations between plantations and the other agriculture of the area'. However, this review has uncovered no recent systematic empirical studies of the relations between estate and smallholder subsectors of agriculture in plantation economies. In particular, there have been few studies of the interrelationships between a plantation estate and local farmers producing other crops, who perhaps sell both food and seasonal labour to the estate. The few studies that have been done in sufficient depth or with a sufficiently wide sample, have been mainly on plantation crop smallholders vis-à-vis smallholders not producing the crop in question. One study showed that irrigation made possible sugar cane production in one village, leading to a consequent diversification of economic activities within both that village and in a neighbouring dryland village that obtained a better market for its food crops (Epstein, 1962). We are left, therefore, with a controversy between theoretical and commercial arguments. On the one hand, the critical theoretical argument summarised above is ideologically based, though supported by a certain amount of case-specific evidence. On the other hand, an apologetic argument, also ideologically based, emphasises actual or potential performance of the estate subsector, and its indispensability for earning foreign exchange, whether for beleaguered African economies (e.g., Bates and Lofchie 1980, p.4), or for long established exporters like Indonesia (Economist, 1987). Much less attention has been given to the role of the estate in providing raw materials for local industry and in generating downstream employment, which we have seen to be important in countries as diverse as Malaysia, India, Zimbabwe and Brazil.

The economic case for smallholdings rests on three arguments which have been stated by the ILO (1988, p.63):

- (a) Small farms tend to use more labour and produce more output per unit of land than estates;
- (b) Owners tend to use more labour and produce more per unit of land than tenants; (according to Berry and Cline, 1979, this is not supported by the evidence).
- (c) Income inequalities tend to hinder technology diffusion, while encouraging mechanisation on estates in labour-surplus

countries where labour-intensive technology would be more appropriate.

To these we may add the flexibility of smallholders with respect to the allocation of land, labour and capital between plantation and other crops, livestock, and non-agricultural sectors. Such flexibility offers the possibility of efficient resource allocation in response to the diversification of economic opportunities in developing and urbanising economies, as well as being a form of insurance against the uncertainties inherent in world markets.

We have seen there is also an economic case for estates, based particularly on their ability to provide efficient management and new technology (provided they are adequately capitalised). From a given area of land, they are likely to produce a higher volume of output, whether for export or local use, and in this sense, they are land-saving. The higher output from a concentrated area can generate more jobs downstream in processing, manufactures and distribution than a similar area of land under smallholder management.

The political case for smallholdings rests on the equity consideration in the distribution of land. This is relevant in countries where rights to land are fluid, in the sense of not legally registered on an individual basis; and in countries where land is unequally distributed, or scarce, and access to land is considered to further social and political stability, and conversely, landlessness is something to be minimised. Equity in land distribution may contribute to diminishing polarisation in the rural social structure, but on a national scale, polarisation can also be diminished by increasing the numbers able to find better paid opportunities in industry and commerce. The right choices, from both a political and economic view point, will therefore depend on a country's comparative advantage in building up local industries based on plantation crops.

Nationalisation

It appears that the movement to nationalise plantation estates has passed its high-water mark for the following reasons:

- (a) Fewer countries have a major element of foreign ownership in the estate subsector.
- (b) The private ownership of estates, where it is allowed, is predominantly indigenous (e.g., Malaysia).
- (c) Nationalisation has a poor record with regard to maintaining

or improving productivity and efficiency (for example, Sri Lanka and Tanzania). But private Malaysian acquisition of plantation equities under the New Economic Policy of the 1970s (Ismail, 1984) has been followed by improvements in productivity.

- (d) Uncertainty in the period preceding nationalisation may cause disinvestment, as in Sri Lanka in the 1960s. The average age of tea bushes is now 70-80 years, compared with those in Kenya which are 10-40 years old (Terpend et al, 1986).
- (e) Government owned estates often perform less efficiently than privately owned ones (e.g., Indonesia: Saragih 1980, p.101).
- (f) Nationalisation may not even achieve its social objectives — unless state farming aids social transformation in Guyana, for example, 'a mere change in property form will not affect the content of plantation-peasant relations' (Thomas, 1984). Inefficiency may impede the improvement in workers conditions that was a main objective in nationalisation. The experience of the International Federation of Plantation Agricultural and Allied Workers is that conditions, while nowhere satisfactory, tend to be worst on small, locally-owned plantations, less bad on nationalised estates, and least bad on estates owned by TNCs which are most likely to manage efficiently the limited resources they put into the maintenance of services for workers (General Secretary, IFPAAW personal communication).
- (g) Demands for the nationalisation of plantation estates have insufficient weight. In India, 'although there have been occasional demands for the nationalisation of the tea plantations, neither the Central nor the State Governments have shown any serious inclination towards that objective' (Sircar, 1985). Further nationalisation of the Mauritius sugar industry is not being recommended in the foreseeable future, 'unless it becomes manifestly clear and obvious that there is no other way to proceed in the country's interest' (Manrakhan and Sithaven, 1984).

Land reform — the redistribution of large estates in smallholdings — has also lost impetus in the world as a whole. Its economic rationale is based on productivity (Berry and Cline, 1979) as well as equity and employment considerations, but owing to the mixed results of various programmes, 'redistributive land reform has been a less favoured policy instrument in the 1970s and 1980s

than in the 1950s and 1960s' (ILO 1988, p.66). Of Sri Lanka, where 40,500 ha of plantations were converted into smallholdings in the 1970s, Peiris (1984) concludes that the plantation sector was characterised by improvement and upward mobility before the reform and by stagnation and deterioration afterwards; many of the redistributed smallholdings were merely converted to residential use; and co-operative schemes were abandoned as unworkable. Redistribution, however, only affected 10% of the area under plantations; almost all the large estates (30% of the area) came under State control, and private ownership was restricted to 20 ha (Fernando, 1984; Gooneratne and Wesumperuma, 1984). A caution against generalising from this experience, however, is provided by Fiji, where the entire plantation area under sugar was redistributed in tenancies to former indentured workers in the 1920s. According to Ellis (1988), until the recent constitutional crisis threw some doubt on the status of Fijians of Indian origin, the sugar industry was labour-intensive, socially stable, economically efficient and participatory from the farmers' standpoint.

Wherever land is in short supply, there is liable to be conflict if attempts are made to expropriate it either to benefit estates, or to benefit small peasants or landless labourers. According to Mulaa (1982), the President of Kenya had to intervene in order to keep the Mumias sugar scheme's nucleus estate on schedule; land was being compulsorily alienated from 1,000 families, some of them reluctant. In the Philippines, according to Burbach and Flynn (1980, p.202), peasants might find themselves encircled and denied access to their land until they signed contracts with Del Monte, allowing the company to take over management entirely if technical requirements were not fulfilled. Physical violence and dispossession in connection with the development of plantation estates have been alleged (Holly, 1984). The Philippines remains a country where political power conflicts centre very much on competition for land between peasants and traditional large-scale owners allied to the political establishment. This has traditionally been an issue in Latin American politics, where, however, population density is much less than in the Philippines and Kenya. Land reform may be desired not only for economic reasons, but also to destroy the powerbase of a traditional elite.

Economic and political effects of unionisation

'In most countries plantation workers are now organised...and in

all regions there are examples of successful, viable and effective plantation unions' (Sajhau and von Muralt, 1987). However, the position of unions and their capabilities for organized action varies from country to country. In general, since wages are low, subscriptions are also low, leading to organisational problems. In Sri Lanka they have worked in close association with the leading political party (Kemp 1987). When plantations are nationalised the effectiveness of unions may be limited since the state may control wages in the interests of national economic objectives. Workers may be no longer able to employ the leap-frogging technique of negotiation developed against a multiplicity of owners. Whereas in the past some unions had political objectives such as nationalisation, this is less often the case now. Their political importance and influence depends on the size of the plantation sector within the total national work-force. There are examples of strong unions both where the plantation sector is in private hands (e.g. Malaysia) and where there is substantial ownership by TNCs (e.g. Bangladesh).

Even when unions have limited official membership, the existence of widespread grievances can lead to successful strike action. As an example, in Brazil in 1984 sugar workers started a wages campaign that resulted in 38,000 workers in 7 villages striking. Shortly they were joined by other workers in the province, so that eventually 240,000 workers, believed to be 90% of the sugar work-force, were on strike (Sajhau and von Muralt, 1987). Occasionally, unions may have been able to force up wages beyond what the market can bear, e.g., in Mauritius. But unions are not generally able to do this, partly because of the existence of unemployed labour, and the use of seasonal labour. On the contrary, the greater danger is that companies may press too hard on their workers for the sake of profits, and therefore governments have tended to insist on minimum legal standards of wages, welfare and trade union rights. Political issues will therefore include whether management operates double standards, accepting as normal for their workers conditions they would not tolerate themselves. In countries where politics are dominated by the managerial classes, workers may have difficulty in fighting for better conditions. However, companies in their turn are limited by their need for a healthy, productive and motivated workforce. Because the majority of the work-force is resident on the estate,

this normally entails some provision of housing, and educational and health facilities.

As we have seen, a major influence on wages is non-political, the rise and fall of commodity prices in world markets.

Sectional interests and plantation policy

The sectional interests which stand to gain or lose from any change in national policy with regard to plantation development are quite diverse (Kemp and Little, 1987). They include, besides the Government itself and the parties controlling it, the following: opposition and regional political interests within the country; the TNCs and other business interests, especially those involved in international trade; workers and their unions, if any; other socio-economic groups, especially smallholders; consumers, both local and overseas; and international agencies, especially the World Bank, the IMF and aid donors. It is unlikely, therefore, that commercial criteria alone will be allowed to determine the choice of policy.

National governments of countries with a plantation sub-sector are therefore faced with choices which have political implications. Such choices include:

- (a) In economic planning, priority may be given to the plantation sub-sector, because of its importance as the major earner of foreign exchange, or instead to tackling population growth, land shortage and unemployment by consolidating the smallholder sector. The opportunity cost of capital needs to be considered in choosing between contract farmer and developed settlement strategies. The implications for industrial and service sector growth must be kept in mind.
- (b) With regard to ownership, a choice must be made, or a balance struck, between nationalisation, the encouragement of foreign investment, and the promotion of local investment in the plantation sub-sector.
- (c) With regard to the profitability of the plantation sub-sector, backing may be given either to employers or to unions in the event of an industrial dispute. Minimum wages may be advanced or allowed to stagnate in real terms. Legislation to further the basic needs of plantation workers — better housing, health, education and amenities — may be advanced, but at the expense of commercial profitability, and at risk of a decline in the size of the sector when prices fall.

- (d) In countries with a migrant work force, decisions must be made about the citizenship, enfranchisement and socio-economic well-being of migrants and their descendants, whose advancement may conflict with other political interests.

8

Issues in the Outlook for Plantation Crops

(Michael Davenport)

The future role of the plantation estate must be considered against the medium-term outlook for plantation crops. The purpose of this review of the most important plantation crops is to identify the critical trends and policy issues which affect the prospects for growth in production or income. The outlook for the producers of plantation crops up to the end of the century depends partly on trends in exogenous factors, such as world income or population growth on the demand side and investment in land and capital and labour productivity on the supply side. Temperate country policies, which may seek to protect producers of substitute commodities in the principal importing nations, or to mitigate existing protection, and policies in producing countries, particularly those which look to achieve social or political goals through discriminatory fiscal regimes, may be of equal importance.

Price movements, 1950-88

Plantation crop prices have always been characterised by volatility because of the difficulty of making small adjustments in supply in an industry in which there is so much investment in tree crops, land development and processing plants. In the 1950s and 1960s there was no consistent pattern in underlying trends, but a majority of commodity prices, including those of plantation crops, failed to keep abreast of the prices of manufactured exports. In the 1970s, while the price of petroleum soared by a factor of 23 in nominal dollar terms and certain hard commodities, such as aluminium, tin, lead and zinc rose by as much as five-fold, the prices of plantation crops rose, but less strongly. This is also the case if the prices are deflated by an index of the prices of manufactured goods (see Table 8.1).

Since 1980 the international markets for the plantation commodities have been less robust than in the 1970s. In real terms, that is relative to the export price of manufactures, commodity prices fell about 30 per cent in the period, 1980-86 (IMF, 1987, 94ff.), although some half of this fall can be attributed to the depreciation in the US dollar. Real commodity prices were some 15 per cent below their levels of the 1970s.

Because of the food self-sufficiency versus export crop argument, the table also shows nominal and real prices for rice and wheat. Clearly no broad generalisations can be made about the terms of trade between plantation crops and grains — they vary from period to period, for different plantation crops and between rice and wheat. However, unprotected sugar exporters who are grain importers, have had, in recent years, the worst of every world. In the period 1980-86, by comparing average price changes in Table 1, it can be seen that the price of sugar relative to that of rice fell by over 11% per year on average, and relative to that of wheat by some 20%, in both cases inverting relative price gains for sugar in the previous decade. (However, certain countries have the advantage of exporting to Europe under the EC Sugar Protocol, receiving European prices which are much higher than the world level.)

Prices used are as follows: bananas — Latin American (US ports), cocoa — Ghana (London), coffee — Brazil (New York), palm oil — Malaysia (Europe), rubber — all origins (New York), sugar — Caribbean (New York), tea — average auction (London), rice — Thai, white milled (Bangkok), wheat — Canada (Thunder Bay, from 1985 St Lawrence, export).

The weakness of the prices of plantation crops in recent years has been partly attributable to the sluggishness of the world economy, and partly to structural changes in the industrial countries. Both have tended to weaken demand for non-oil primary commodities as a whole. In the last two decades there has also been accelerated progress in producing substitutes in the developed economies. In some, such as oilseeds, these have been the by-products of agricultural policies, and, in particular, agricultural protection in the developed countries, rather than a conscious effort to find substitutes for tropical oilseeds. In others, for example, synthetic rubber, the goal was specifically to find an alternative to natural rubber that was cheaper, in more reliable supply and of dependable technical specification.

Table 8.1
Changes in prices of plantation crops, rice and wheat,
1950-1987 (average annual rates; percentages)

	1960/ 1950	1970/ 1960	1980/ 1970	1986/ 1980
I. US dollar index				
Coffee	-3.19	4.32	14.12	1.71
Cocoa	0.85	1.62	14.33	-4.04
Tea	-0.72 ^a	-2.68	7.39	-2.37
Sugar	-4.57	1.86	22.54	-22.84
Bananas	2.29	-1.92	8.48	0.88
Palm oil	-2.06	1.46	8.43	-12.76
Rubber	-0.79	-5.77	13.30	-9.18
Pm rice	-1.84	1.41	11.72	-11.36
Wheat	-0.61	0.44	11.16	-2.81
II. SDR index				
Coffee	-3.19	4.32	17.16	1.60
Cocoa	0.85	1.62	17.39	-4.14
Tea	-1.43	2.29	10.26	-2.48
Sugar	-4.57	1.86	25.81	-22.93
Bananas	2.29	-1.92	11.38	-0.77
Palm oil	-2.06	1.46	11.33	-12.85
Rubber	-0.79	-5.77	16.32	-9.28
Pm rice	-1.84	1.41	14.71	-11.46
Wheat	-0.61	0.44	14.13	-2.91
III SDR deflated by index of prices of manufacturing exports				
Coffee	2.51	2.50	-1.34	
Cocoa	-0.13	2.69	-6.91	
Tea	-4.36	-3.54	-5.29	
Sugar	0.10	10.06	-25.15	
Bananas	-3.62	-2.56	-2.14	
Palm oil	-0.29	-2.60	-15.37	
Rubber	-7.40	1.76	-11.90	
Pm rice	-0.35	0.35	-14.01	
Wheat	-1.29	-0.15	-5.72	

Sources: International Financial Statistics, 1987 Yearbook, United Nations, Monthly Digest of Statistics.

a 1960/1951

However supply factors have also tended to weaken prices. Many exporting countries, encouraged by relatively high real prices in the 1970s and, in some cases, under pressures from international organisations concerned with debt-service difficulties, have undertaken programmes to increase the output of their primary production. This has meant that even where demand has not actually fallen but simply stagnated, there has been downward pressure on prices.

Demand and supply side factors

As regards the medium-term outlook for plantation crops, on the demand side, the most critical factor is the rate of growth in aggregate world income. However population growth may have a separate, identifiable impact. Next is the distribution of that increase in income and population among different groups of countries, with their different propensities to spend on plantation-grown commodities.

For the purposes of our analysis it is appropriate to adopt, as a background assumption, a central view concerning the growth of world income and population as well as the main regional differentials in the growth rates. The synthesis of United Nations agency projections for GDP growth, recently adopted by the FAO for their study of world agricultural trends to the end of the century (FAO, 1987), seems, in its optimism, rather outdated. Between 1986 and 2000, world GDP is projected to grow at an average rate of 3.7%, while the rate for the developing countries is given as 4.9%. This is faster than in the recent past. During the period 1980-85, which incorporated both a world economic slump and a recovery, actual growth rates were 2.7% for the world, 3.5% for developing countries (excluding China), and 2.2% for the DMEs.

Many forecasters foresee an acceleration of the growth of imports by the developed countries at the turn of the decade. However secular growth in commodity imports, assuming unchanged agricultural and trade regimes, is likely to be below that of trade in manufactures. The Inter-American Development Bank takes 2.4% for its forecast of average commodity export growth over the period 1988-2000 (Lord and Boyd, 1987). This is their estimate for growth in commodity exports from Latin America to Japan, the European Community and the United States. For an assumption on world exports of commodities, their estimates should be shaded up to reflect the somewhat stronger predicted growth in Europe

than in the United States (which weighs heavily in Latin American export markets), and relatively high growth in the European centrally planned economies (CPEs).

The CPEs of Eastern Europe together with the Soviet Union continue to have consumption levels per capita for a number of plantation crops considerably below those of the DMEs. On average in 1983/84 consumption per capita of coffee was 0.6 kg per year in the former against 4.4 kg per year in the latter. For cocoa the respective figures were 0.6 kg and 1.2 kg, for bananas 0.4 kg and 7.1 kg and for natural rubber 1.1 kg and 7.1 kg. As long as official policy is accommodating, increased incomes will stimulate imports for these commodities, whose income elasticities have in the experience of the DMEs been high. In the case of natural rubber the growth in imports is likely to accompany more widespread car ownership and the demand for tyres.

The expansion of trade amongst the developing countries themselves, together with their prospects for somewhat higher GDP growth than that of the developed economies, should also lead to some upward adjustment. All in all, it is probably reasonable to assume an annual rate of expansion in world commodity exports from the developing countries of some 3 % over the balance of the century. This assumption compares with an actual annual growth rate of only 2.5% in the decade of the 1970s, which was characterised by the recession triggered by the petroleum price jump of 1973-74. In the period 1980-86, the volume of commodity exports from the developing countries actually rose 4.3%, though this period could also be deemed atypical since it was dominated by an unusually prolonged recovery from the 1980-81 recession in the developed countries.

As regards population growth, we can take the medium variant projections of the United Nations (1986). In these projections, the world population grows at an annual rate of 1.6% between 1985 and 2000, with a rate for the developing countries of 1.9%, and one for the developed countries of 0.6%. The corresponding rates for 1970-80 were 1.9%, 2.3% and 0.8% and for 1980 to 1985, 1.7%, 2.0% and 0.7%. Thus the generalised slowdown in population growth is projected to continue.

Besides these general demand and demographic factors, long-term structural factors are likely to exert generally depressing influences on commodity prices. Problems of saturation for particular plantation crops among the DMEs are becoming acute.

As per capita income increases, the rate of expansion of demand for most agricultural goods slows down and eventually demand fails to respond to further income increases. In the cases of the tropical beverages and sugar this point may be close for the majority of households in certain DMEs, though income increases lower down the income distribution may still induce further increases in overall demand.

On the supply side, the past and present efforts of many producing countries to increase yields by improving cultivation techniques and shifting to higher-yielding cultivars will continue to increase the supply for many commodities, including plantation crops, for some years to come.

Efforts to support prices through international commodity agreements incorporating both producers and consumers or through simple producer cartels have had a generally unhappy history. Buffer stock operations have frequently come to an end, either because funds for purchasing have been exhausted or the authorised stock has been reached, or, in the case of rising prices, the stock has run out. The former has happened particularly where prices have been driven by supply disturbances or 'excess' production. Where the goal has been limited to reducing the volatility of the commodity price while explicitly allowing for secular price trends, the results have been less unsatisfactory. Recent arrangements, for example the newly-negotiated cocoa agreement, tend to embody a quasi-automatic adjustment to the target range whenever the market price has been at or outside the floor or ceiling for a certain period.

Disillusionment with the experience of past and present commodity agreements, and in particular the debacle of the International Tin Agreement, has been a major factor undermining the proposals for a common fund to finance buffer stocks and to regulate prices, discussed by the 'Integrated Program for Commodities' by the United Nations Conference on Trade and Development (UNCTAD). It now appears that the 'Integrated Program', at least for the foreseeable future, will be limited to research, the dissemination of information and such matters.

All in all, to the extent that generalisation is warranted (since there are important differences between commodities), the outlook for plantation crops is marred by the likely continued expansion of output in the face of sluggish demand. In some cases, policy decisions to expand output have already been taken and the capital

investment in the form of plantings has been implemented. Even if prices remain low, or fall further, they are still likely to cover the variable costs of exploiting existing plantations. This is the general pattern for tropical beverages and palm oil.

For bananas, the outlook benefits from prospects of rising demand in the developed and the developing countries, while, for sugar, demand in the developing countries and certain centrally planned economies is set to expand (though not in the Soviet Union, where consumption per capita already exceeds that in the United States and the European Community). On the other hand, as has happened in the past, producers are likely to respond to firm markets by expanding production, and thus prevent any substantial increase in real prices.

The Uruguay round of the GATT

The European Community submitted some proposals for discussion at the mid-term meetings of the Uruguay Round, in Montreal in December 1988. However, sugar was excluded because of the CAP regime, and pineapples and bananas were excluded because of the interests of particular exporting countries. Of the commodities included in the Community offer, trade barriers in the case of rubber and tea are minor, so that, among the plantation crops, only coffee, cocoa and tropical oils were serious candidates for liberalisation by the Community.

However, the community has bowed to demands of the Associated African, Caribbean and Pacific (ACP) States, who are concerned about losing their tariff preferences.

There have been some minor tariff concessions on processed goods, such as cocoa powder. More substantial liberalisation in the latter half of the Round will depend on whether the ACP States can be persuaded that their interests are not being seriously compromised.

Certainly the implementation of the Punta del Este Ministerial Declaration (which inaugurated the Uruguay Round) on 'standstill and rollback' would be a welcome (and overdue) result of the Montreal meeting (1988). Certain GATT-illegal practices are currently damaging markets in the plantation crops discussed here. For example the United States Export Enhancement Program sales of soybeans clearly prejudices the markets for palm and other tropical oils. Other arrangements that are clearly outside the spirit

of the GATT, if not proscribed, also damage plantation crop markets, directly such as the US and EC sugar import quotas.

In recent years the DMEs have, largely for budgetary reasons, made moves to reduce the level of protection they afford their agricultural sectors. The whole question of the liberalisation of agricultural trade is now under tortuous debate within the context of the Uruguay Round of trade negotiations. Among the commodities that are likely to be affected by generalised reductions in protection in the developed countries is sugar. This will be of benefit ultimately to the cane sugar producing countries both through increased imports of cane sugar and a rise in the world price.

In the meantime in the developed countries the output of substitutes to plantation crops will continue to grow, encouraged by high prices. Of course, close substitutes are not available for tropical beverages and fruits, but cane sugar and oilseed producers in the developing countries will suffer from the protection of beet and oilseed farmers in the developed countries.

Technological change

Finally, in a medium-term discussion of the prospects for agricultural commodities, developments in agricultural science, technological or socio-economic change affecting cultivation practices, the development of synthetic or natural substitutes and the discovery of new uses for existing products, all have to be taken into account and an assessment made of their significance. Particularly important for a number of plantation crops is the explosion of biological techniques, which may be as important on the demand as on the supply side. Technological change, which, for example, enables the production of cheap sugar substitutes or biotechnological processes to permit temperate climate oilseeds to replace tropical seeds, will continue to bedevil particular plantation crop markets. The impact of technological change is frequently impossible to foresee, given the unpredictable nature of R and D breakthroughs.

Prospects for further technical advances with potential for maintaining competitive production costs for a number of plantation crops have been the subject of an optimistic review by Webster and Watson (1988). Such advances include enhanced yield performance, disease resistance, and adaptability to local conditions. The genetic base of breeding is still comparatively

narrow and its widening may have significant results, especially for disease resistance. Tissue culture, although unproven commercially, has enormous possibilities. The economic impact of such technical advances, if applied relatively quickly by a large proportion of producers, may be to induce overproduction.

Many alternative tree crops appear to lend themselves to plantation production such as various palms, the Brazil nut, the mango, and other fruits (Webster and Watson, 1988). Market demand is the limiting factor. The most significant development in recent years appears to be the growing market in the DMEs for out-of-season fruit and vegetables and new exotic fruits.

9

The Future of Plantation Agriculture as an Agent of Development

Both critics and supporters of plantations tend to think in terms of stereotypes that are out of date. For critics, plantations are typically seen as enclaves owned or dominated by TNCs, imperfectly integrated into the local economy, producing mainly for export, disruptive of smallholder agriculture producing mainly food crops, and offering poor conditions and low wages to their workers. None of these conditions is universally true, and many of them do not hold in the larger countries with plantation sectors.

By contrast, supporters see them as well-managed, capital intensive large farms, introducing the latest technology, achieving higher yields than possible under other forms of agricultural management, and contributing vital foreign exchange. This image is also partial, since it assumes good management, which is not always present.

Despite past criticisms, there are now many supporters of plantations within Third World governments. This change in attitude is due in part to changes in economic conditions, and in part to a change in the dominant schools of economic thought. Contributory factors have been the breaking of the link between the TNCs and Western Europe or North America (many are now based in Asia), reduced inflows of investment funds, the growth of protectionism in traditional markets, the fall in the real value of aid and the growth of economic liberalism. Some third world writers are arguing for government policies to persuade TNCs to increase their involvement, to introduce appropriate technology and to provide incentives for research. Plantations as an agent of development also have supporters within aid agencies.

While the general climate of opinion is thus now more favourable to plantation investment, some of the TNCs most closely involved in the sector have become cautious in investing in land in the third

world. Some now have a preference either for management or technical service agreements for estates owned wholly or partially by government, or for contract arrangements with independent farmers.

Given the changes that have taken place in the structure of the plantation industry since about 1960, it is worthwhile to review the advantages and disadvantages of large-scale and small-scale production of plantation crops, and at their effects on employment generation. In the larger economies there is evidence that the plantation model has some advantages, particularly a high output of a valuable crop from a relatively limited area of land. The same volume of production could only be secured from smallholders from a larger land area, except under conditions of quite intensive investment, generally but not always by government, in efficient central services. However, despite this advantage, the plantation sector is unlikely to expand substantially, because of the state of demand for its products, and because of increasing limitations in the supply of cultivable land in countries where populations have increased rapidly.

Demand for plantation crops

The level of future demand for plantation crops must be a governing factor in deciding whether to increase production through either estates or smallholdings. The outlook is for slow growth in the demand for most plantation crops, which will partially be met by existing rehabilitation and replanting programmes, and partly by the introduction of improved technologies in the near future, and which may be threatened by the development of substitutes. The main increase in demand is likely to come from the developing countries themselves, and in some cases from centrally planned economies.

While the trend in the terms of trade between agricultural products and manufactured goods has been generally unfavourable to agriculture during the present century, the terms of trade between plantation crops and the principal food staples, rice and wheat, have been much more variable. For some countries, the comparative advantage is to export a plantation crop and to import a food staple. Fewer imported inputs may be used in some types of plantation crop compared with the production of a food crop of comparable value grown under a high input high output regime typical of 'green revolution' technology. However, for

sugar, the terms of trade with food have recently been such that it would be advantageous to switch out of sugar exports and into food production. This is particularly so in the case of Caribbean countries, where demand for high value foodstuffs is increasing as a spin-off from their growing tourist sector. However, the market for sugar is complicated by the existence of special production quotas for favoured countries under EEC arrangements. When sugar is being used as a raw material for local industry different considerations apply.

While the general price trend has been downwards, prices are also characterised by volatility, the consequence of the difficulty in making small adjustments of supply in response to price changes, as well as non-economic factors such as weather variability. Well-capitalised TNCs may be better placed than smallholder producers to ride out periods of low price. TNCs that control marketing arrangements in developing countries may also be best placed to stimulate demand and to pay attention to changes in demand (e.g. between fresh pineapples, canned juice and pieces, or in the end products of rubber, or in the substitutability of palm oil for other types of oil), and to transmit this information back to producers. Smallholders, whether independent or outgrowers, are more likely to be bankrupted by a period of low prices, but, because they often retain a diversity of interests, they may have flexibility to move resources into other aspects of their agricultural enterprise. The converse of this is that TNCs, because of their capital commitment to processing plants and large-scale land development, are more likely to continue production of a crop for which world demand is falling, when greater economic benefit would be gained by switching the resources into another area of production. The return to scale in processing limits their ability to respond to price falls by reducing inputs and the total volume of production. Their main response, therefore, is to seek economies in labour costs. While smallholders have also sunk capital, especially in tree crops, their capital:land ratio is lower, since they seldom have processing plants. They can afford to make gradual adjustments to lower prices, by reducing both inputs and volume of production. On a national basis, it is probably advantageous to have a mix of smallholder production and well capitalised estate production. When prices fall, some smallholder production will switch out, but estate production is more likely to continue and to contribute continued foreign exchange earnings, and a basis for

recovery when prices improve. This seems likely to smooth out over-reaction to low prices, and extremely fluctuating supply.

The role of plantations in the early stages of economic growth, and changes in person:land ratios

It seems likely that plantations play their most positive role in the early stages of economic growth, when they provide an important source of foreign exchange and a taxable capacity, which can be used to build up general infrastructure and services. At this stage there is likely to be under-utilised land and labour in the traditional agricultural sector.

However this situation is long past in most developing countries. Population increase has caused the supply of uncultivated but fertile land to diminish. Indeed the current situation in most developing countries is rising demand for a relatively fixed amount of land so that its price is probably rising. Given the price and marketing situation, this may render a new plantation uneconomic. On the social side, the establishment or even the retention of a large estate may deprive a large number of families of the opportunity to own land and derive a living from it. This may be partly or even in some cases wholly balanced by the number of jobs created on the plantation and in associated industries, but the situation will vary according to local land/labour ratios, the type of crop grown, and the local capacity to develop an industrial base.

Such outcomes are not decided on purely economic considerations. Even in countries without freehold or some near equivalent, there is increased political opposition to the transfer of land from those who have customary rights of use to plantation estates. In some countries, such as the Philippines, there is growing political pressure to undermine the power-base of large landowners.

Plantations as a stimulus to secondary and tertiary sector growth

Once the economy has developed to a point where agriculture contributes around 70% or less of GDP the multiplier effects on the domestic economy of raising agricultural production, whether from estates or smallholdings become increasingly important. The diversification of the economy is stimulated by a successful agriculture's demands for local inputs and services, its supply of

raw materials for local processing, and the multiplier effects from the demands of more prosperous rural producers for a wider range of locally-produced consumer goods and services. In countries such as India, Malaysia, Nigeria and Brazil, the plantation sector is already orientated towards the local economy, and there is no doubt it has contributed to regional economic growth. However, for reasons discussed in Chapter 2, it is likely that there is greater demand from the smallholder sector for consumer goods and services which can be produced locally, and that the demands from the estate sector may, at any rate initially, be more orientated towards foreign sources. The stimulus given to local industry will depend partly on the number employed in the plantation labour force and their incomes in comparison with the size and income levels of the smallholder section.

There are also important upstream effects, particularly in large countries where the estates are producing an industrial raw material (sugar, rubber, palm oil). The concentration of production from high-yielding estates can stimulate the development of a successful industrial sector, producing for the local home market as well as for export. In large countries there is also likely to be a substantial home demand for the beverage and food crops, and jobs associated with packaging and distribution for the local market.

The corollary is that estates may become less important, or at any rate, less visible, as foreign exchange earners and this is shown for some of the crops in Table 3.1. However, if estate production increases, as is likely given existing investment in new technology, it will be possible to maintain some exports as well as supplying local industry.

Managerial efficiency and estates

The advantage of the estate form of production does not lie in economies of scale for agricultural operations, though these are important for processing plants, but in managerial efficiency combined with adequate capitalisation. This can result in adequate research funding, the swift introduction of new technology, responsiveness to market conditions, greater attention to product quality, maintenance of a replanting programme, and maximum use of the land resource. There are also pecuniary advantages of large-scale, through the negotiation of good prices for inputs and outputs. Good management enables the estate to operate profitably

at a high input, high output level, with higher yields per hectare planted than with smallholder production.

The corollary is that where management is not highly efficient, the estate form loses much of its economic advantage. Not all estates are efficient. The incentive for good management may be lacking in the case of nationalised estates, and small individually-owned estates may lack adequate capital resources. The size required to make a modern processing plant viable now runs to several thousand hectares for most crops (except tea). As a general rule, large farms typically have a lower output per ha controlled than smallholders who plant either one or a variety of crops on every scrap of land controlled. This is less so with plantations than with other types of large farms, because the high ratio of capital committed to every hectare normally induces managers to ensure high productivity. Where land is becoming a scarce resource, estates cannot be economically justified if they use land as a substitute for capital in combining their factors of production. They should not be operating at the low input-low output level, which may be an appropriate strategy for the smallholder with limited capital resources.

When estates bring access to international research, good managerial techniques and marketing power, giving high yields and high earnings per hectare from fully utilised land they can bring significant benefits to developing countries. If this is combined with a deliberate policy to train and develop indigenous managers it can have an even greater development impact. Even if they subsequently leave the plantation, new skills will have been added to the national stock.

This applies even more in nucleus estate and outgrower operations, and with contract farming, since these spread access to new information and techniques amongst a wider segment of the population, very often in combination with improved access to capital through credit schemes. However, where the inputs of research and extension are provided by a state organisation, the charge to governments will be higher costs than in situations where these are provided mainly by the private sector. In efficient organisations such as the KTDA and the Malaysian schemes for smallholders, these are recovered over time. Where the service includes land development, the capital cost per family assisted can be very high; it is much more moderate in organisational forms such as contract growing.

Smallholder production versus estates: sharing risks and profits

One of the chief advantages of smallholder production is its flexibility. As the market changes, the production mix can be changed. This is, of course, a disadvantage for those who have invested in a processing plant which needs a large throughput to operate profitably when prices fall. Tenant outgrower schemes and contract farming are both methods by which companies can attempt to maintain production as prices fall. The tenant outgrower system leaves a large part of the production and the market risk with the smallholder, if his land rights depend on his agreement to produce a certain crop. The contract farming system puts more of the market risk on the TNC, since contracts are generally renegotiated annually, and the contract farmer can vary the proportion of his land he undertakes to devote to the crop concerned. In the estate system, the company takes all production and market risks, and guarantees a wage to its employees.

It needs to be recognised that smallholders necessarily use a different combination of land, labour and capital from an estate, and that if they operate a lower yielding system than the estate, this is not necessarily economically inefficient.

Where crop prices are very volatile, the balance of social advantage is in favour of an estate system with wage earners, since the company is best able to shoulder the risks, provided that average prices and costs are such that a minimum wage of an acceptable level in the country concerned can be paid (taking into account both money wage and plantation services).

Differences between large and small economies

In very small economies, specialisation on a single crop may have advantages in attracting processing and marketing facilities, but it may also create rigidities, undue dependence on a single crop, and a reluctance to switch out. Multiplier effects are reduced, since the economy is not large enough to supply either inputs, or mass-produced consumer goods. The fact that a high proportion of the cultivable land has been captured by estates affects the entire social and political structure, and means that a growing rural population has no means to develop enterprise in smallholder management and the supply of services of the kind demanded by smallholders. It is easier to become a carpenter supplying rural

needs for furniture than to become a supplier of office furniture to an estate. The result, too often, is a polarisation of the social structure into a wealthy elite and an impoverished mass. The inherent rigidities may lead to land being maintained in, for example, sugar production long after it would have been nationally advantageous to switch into other crops.

While economic disadvantages are associated more with the difficulties of small economies than with the form of production itself, the social and political drawbacks are directly related to the estate structure, and it is this which has given rise to much of the literature critical of plantations.

Labour absorptive capacity

Population growth forces many countries to be concerned with the labour-absorptive and income-generating capacity of different types of agriculture. The available data we have found suggest that for the same crop smallholder production is on average more labour intensive than estate production, though this depends partly on the type of crop, and partly on the frequency of replanting and intensity of harvesting. Tea, and to a lesser extent sugar, are very labour absorptive. However, the volume of production generated by estates is probably important in the establishment of industries based on plantation crops. In some countries, particularly where the economy is already diversified, a shortage of agricultural labour can have negative implications for plantation operations.

Environmental considerations

The environment can be well or badly managed under both smallholder and estate conditions. There does not seem to be evidence that well-managed properly capitalised estates lead to the degradation of soils, though where the estate owner does not have a long term lease or an interest in the resale value of the land, this could happen. Tree crops are generally environmentally benign, because of the canopy and permanent root structure. Some estates have been through more than one cycle of replanting and yields are rising. However, there does not seem to be much analysis of the effect of long established estates on the soil resource under modern conditions. When either estates or smallholders are short of capital for reinvestment, degradation can occur. Estates by their nature lead to less ecological diversity, but this has to be considered

in the context of the national economic advantages they may bring. In any case, intensive smallholder agriculture also leads to less species diversity.

Social and political considerations

The estate system has the inherent danger of polarising social structure which can lead to political tension. This is less likely to occur when it is operating as a small part of a larger economy, where it may increase the choices open to rural people. Not every one desires to take on the risks of managing a small farm, and some prefer the security of local wage labour. In countries with a rural landless class, a plantation may offer an alternative to urban migration. But estates are vulnerable to criticism for a poor level of social services provided to residential labour, since there is a tension between profitability and good amenities for labour.

This study does not support the dependency school's arguments that plantations inevitably suppress development. However, most of the literature is of the case study type, with little attempt to see either how representative the case is of global conditions in the industry, or how far the characteristics of the case are really due to the condition of the wider national economy in which it is situated.

The choice between smallholdings and estates is dependent not only on economic criteria, but also on assessment of the type of social and economic order desired. Governments may be aiming for greater equity in income distribution, or the development of a rural middle class or even the development of a supportive plutocracy. In some countries, a plantation working class is acceptable if it has reasonable conditions, and unions may be an integral part of the local political structure. These political choices lie not with outside observers, but with the leaders of the countries concerned.

Conclusion

The plantation has proved to be an adaptable institution in the face of major changes in its global environment. The plantation economies have passed from colonial status to independence, ownership structures have been transformed, production operations have been penetrated by new technologies, new hybrid forms of organisation have been developed combining the plantation and the smallholder modes, and the trading and

marketing of plantation crops have been increasingly integrated under the control of TNCs. This adaptability is itself the strongest indication that the plantation mode of production is unlikely to disappear in the foreseeable future. Advanced technology, specialised management and a high level of capitalisation will continue to be required, not only for intensifying the production of traditional plantation crops, but also for the development of new horticultural crops and fruits whose demand in the developed market economies is relatively dynamic. Vertical integration, by linking the market with the producer in its various forms, offers a means of providing these requirements.

Given recent changes, it is far less easy today than in the past to pass judgement for or against plantations *per se*. The case-studies we have reviewed caution one against making sweeping conclusions about the merits of plantations or other forms of agricultural organisation as a means of furthering development, or underdevelopment. Debate about the plantation system as an instrument of development would be most fruitfully conducted by narrowing down discussion to the appropriateness or otherwise of maintaining or introducing, such a system within the particular development needs and objectives of particular countries. More work is needed on a country-specific basis to analyse the parameters around which to judge the merits of estate or smallholder development, but we hope that this publication provides a framework for undertaking such work.

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What contribution does plantation agriculture make to Third World economic development? In this new study Mary Tiffen and Michael Mortimore review the theory and practice of plantation agriculture, comparing it with alternative smallholder production. Beginning with an outline of the history of plantation agriculture, the authors review various theoretical perspectives on plantations and development. They identify the countries with a significant estate sub-sector and consider changes in the balance between estate and smallholder sectors, and foreign and local plantation ownership.

The authors assess the relative efficiency of plantation and smallholder agriculture, evaluate different forms of plantation management, and look at the regional and environmental impact, and political and policy issues. Michael Davenport reviews the outlook for plantation crops, and Mary Tiffen and Michael Mortimore conclude with their assessment of the future of plantation agriculture as a agent of development.

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ISBN 0 85003 124 9



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