
TOBACCO FARMING: SUSTAINABLE ALTERNATIVES?



Volume 2

INTERNATIONAL TOBACCO GROWERS' ASSOCIATION

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For those who advocate the eradication of tobacco production, crop substitution seems the obvious answer. But even the phrase 'crop substitution' is an inadequate, simplistic slogan, implying the mere replacement of one crop with another or others. The real question to be asked is surely 'Are there practicable, sustainable, and economically equivalent alternatives to tobacco farming?'

The research presented here was designed, analysed, and is reported by David M. Patchett, B.A., M.Litt., assisted by James Tuttle, a post-graduate student at the Institute of Agricultural Economics, University of Oxford.

David Patchett, himself a farmer, is an agricultural economist who has worked as a consultant to a number of international organisations, including the Food & Agriculture Organization of the United Nations and the World Health Organisation.

In this report, the results of a major international survey, sponsored by the International Tobacco Growers' Association, are presented in respect of five of the countries studied: Brazil, India, Kenya, Zambia and Tanzania. As the authors conclude, 'it is highly unlikely that growers would want to switch to other crops or other farm activities, particularly as demand for tobacco is currently buoyant and is forecast to remain so for the foreseeable future'.

On behalf of the 33 million people throughout the world engaged in tobacco growing, I am pleased to bring this work to your attention.



ALBERT BOUW
CHAIRMAN, INTERNATIONAL TOBACCO GROWERS' ASSOCIATION

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INTRODUCTION

The research reported here in Volume 2 continues and concludes the study "Tobacco Farming: Sustainable Alternatives?", which was published in April 1992.

The countries examined in Volume 1 represented a variety of situations; namely two major tobacco producing countries in the developing world – Zimbabwe and Malawi, and two of the wealthiest and most economically advanced nations – the United States of America and Canada.

It was shown, in both Zimbabwe and Malawi, that any switch to alternative crops is virtually limited to high value horticultural products, such as fruit, vegetables and cut flowers. In most instances, however, the high value of the possible alternatives is more than likely to be significantly diminished by the disadvantage of perishability which necessitates rapid transport. Moreover, in these two countries and those nearby, air transport is expensive, often unreliable or unavailable, due to the fact that north-bound freight is directly related to the flow of goods to the south. Furthermore, although sea transport is an option for less perishable commodities, the Beira route remains unreliable.

Given these factors, it is hardly surprising that considerable constraints are placed on the production of alternative crops. Whereas, in contrast, the physical properties inherent in tobacco, its relatively low volume and storability, combined with its high value, allow it to bear the high cost of transport from these two landlocked countries.

In respect of the United States of America, the study concluded that although the profitability of a few crops may actually exceed those of tobacco, the overall lack of knowledge of the market effects of an increase in their output would lend an unattractive element of risk. For example, an increase in the production of a particular crop, such as tomatoes, could significantly reduce farm-gate prices, thus adversely affecting established growers as well as those entering their production.

In Canada, the study found that a range of products could, theoretically, replace tobacco. However, these crops such as tomatoes, groundnuts and melons have not been taken up, to any extent, by former tobacco farmers. This seemed to be due to a number of infrastructural problems associated with marketing,

processing and transport which proved to be either inadequate or non-existent.

The countries examined in Volume 2 again represent a varied mix of situations. The first two, Brazil and India, are amongst the world's leading tobacco producers and also substantial exporters, particularly Brazil.

Kenya is a country which has become self-sufficient in tobacco after being a significant importer. Tanzania's tobacco sector is of paramount importance to the economy, as it is a source of much needed foreign exchange. In contrast, Zambia represents a country in which tobacco production, and consequently exports, have dramatically declined over the past two decades.

The research for Volume 2 was based, as in Volume 1, on information collected by personnel, either in the various member organizations of the International Tobacco Growers' Association, or by representatives of other national tobacco organizations, using official published information. This information was supplemented by data from International Organizations and the United States Department of Agriculture. In addition, a literary search was conducted by the Commonwealth Agricultural Bureau which identified academic articles and other published information on the alternative crop debate.

The researchers in each of the countries studied were asked to provide comprehensive information on the tobacco sector, both quantitative and qualitative. This covered such aspects as tobacco production levels, farm size and employment and seasonal labour utilization. The economic importance of tobacco was ascertained through data on the value of tobacco exports and imports, and its domestic market value in relation to other crops. The respondents also provided information on self-sufficiency issues, possible import substitution and potential export crops. To enable comparisons to be made between tobacco and its alternatives, specific information concerning income and costs was provided. This allowed a gross margin analysis to be conducted for both tobacco and potential alternatives. In addition, information was provided which dealt with the likely effects on farm structure and employment as well as other socio-economic effects which may occur as a result of diversification away from tobacco production.

BRAZIL

Overview

Brazil is the fifth largest country in the world and covers an area of 8.5 million square kilometres, which is slightly less than half the land mass of the South American continent. Between extreme points the country extends 4320km from north to south and 4328km from east to west spread between 4°N and 35°S latitude, and 34°W and 74°W longitude which places the country almost entirely within the tropical zone. Physiographically, Brazil can be divided into two highland and three lowland areas. The elevated portions include the important Central Highlands which virtually extend over the whole country south of the Amazon Basin, and the Guiana Highlands on the northern border. The lowland areas include the vast Amazon Basin, the north of which contains the greatest expanse of tropical rain forest and the largest river system in the world. The other areas are an extremely narrow strip of coastal plain in the east and a small area in western Matto Grosso. However, the Brazilian Highlands in the south, and the Amazon Basin in the north, so dominate the landscape that all the other areas are defined by their relationship to these two features. For practical purposes the country is treated as five geographical regions, the north, north-east, south-east, south and centre-west, which are differentiated by variations in topography, climate, general ecology, population and economy.

In 1989 the population was estimated at some 147 million and the GNP per capita was just over US\$2,500. In that year, agriculture had fallen to just under 9 per

cent of GDP compared with about 14 per cent in 1980 and 30 per cent in 1960.

Brazil is one of the world's largest producers of tobacco leaf and its second largest exporter. In recent years, its annual tobacco harvest has been surpassed only by China, the United States and India. Tobacco's share of the total value of agricultural exports is substantial. In the early 1970's, leaf exports amounted to only 1.5 per cent of all agricultural shipments, but by the later 1980's the proportion had increased to some 6 per cent (Table 1).

As is the case in virtually all tobacco producing countries, the area of land devoted to the crop in Brazil is extremely small; the tobacco area has not exceeded 0.7 per cent of the total cultivated area.

Compared with maize and soybean, tobacco's relative contribution to the value of output of temporary crops is small. Despite this, tobacco is highly regarded by farmers for the value of production it offers per unit of area. Furthermore, it is also a significant source of employment, and is mainly produced in areas where non-farm employment opportunities are limited.

Production trends

Since the 1960's, there has been a dramatic growth in total output. During the years 1960-64, production averaged 152,000 tonnes per year; by 1980-84 output had more than doubled to an annual average of 369,000 tonnes. A further increase was registered in 1986-90 when an average of 427,000 tonnes was

Table 1: Brazil

Selected agricultural exports (FOB, US\$'000)

	TOTAL AGRICULTURAL EXPORTS	TOBACCO LEAF	TOBACCO PRODUCTS	SOYA STOCKFEED	COFFEE	COCOA	COTTON
1986	6,785,219	400,733	12,476	1,495,337	2,005,902	134,692	16,756
1987	7,417,669	416,530	15,005	2,020,243	1,959,196	143,482	160,179
1988	8,557,789	527,250	26,002	2,751,273	2,008,945	215,495	31,297
1989	N/A*	512,549	57,045	3,290,237	1,560,301	134,324	157,741
1990	N/A*	551,277	72,330	2,520,245	1,185,778	127,785	127,938

*Not Available

Sources: Associação dos Fumicultores do Brasil (AFUBRA); IBGE – Anuario Estatístico do Brasil

Table 2: Brazil

Tobacco production by region and type – farm sales weight (tonnes)

	1986	1987	1988	1989	1990	1991*
RIO GRANDE DO SUL						
Virginia	114,985	117,190	135,379	142,686	141,010	123,640
Burley	6,043	6,315	9,371	12,471	12,990	11,440
Amarelinho	6,179	5,893	6,111	8,762	9,260	8,260
Galpao Comun	3,004	3,170	4,055	4,906	4,920	4,480
SANTA CATARINA						
Virginia	108,631	112,820	101,509	109,929	103,020	90,330
Burley	29,601	31,745	34,340	40,546	36,920	32,520
Amarelinho	14,182	14,061	13,717	14,605	14,890	13,280
Galpao Comun	1,537	1,655	2,566	3,566	3,080	2,790
PARANA						
Virginia	8,686	9,033	8,254	11,202	14,140	16,290
Burley	5,061	5,427	8,858	7,567	7,480	6,690
Amarelinho	11,113	10,055	15,054	17,006	12,180	11,610
Galpao Comun	6,465	7,331	8,601	8,314	8,090	7,580
OTHER REGIONS						
All Types	95,000	73,451	84,000	80,430	80,000	78,400
Total	410,487	398,149	431,709	461,990	447,980	404,310

*Estimated

Source: Associação dos Fumicultores do Brasil (AFUBRA)

produced. The data in Table 2 gives output level by type and state during the period 1986-91.

This substantial increase was due to rising demand in both the domestic and export markets. In 1970, total domestic consumption was 101,000 tonnes; by 1990 it had grown to 160,000 tonnes. Of more significance has been the rise in exports which have experienced a four-fold increase over the past thirty years.

Tobacco types

Tobacco production in Brazil is centred in two distinct regions; in states both in the south and in the north-east of the country. In the south, both Flue-cured and Air-cured tobaccos are grown which are utilized in cigarettes. In the north-east, dark tobaccos are produced for use in cigars, twist and dark cigarettes.

The types produced in the south are Virginia and Amarelinho, both of which are Flue-cured, and Burley and Galpao Comun which are Air-cured. Virginia tobacco was introduced into the state of Rio Grande do Sul in the 1920's; output rose steadily as cultivation spread to the neighbouring states of Santa Catarina and Paraná. Output of Virginia annually averaged around 247,500 tonnes during 1986-90 compared with around 50,000 tonnes over the period 1964-75.

Amarelinho is a derivative of Galpao Comun and production commenced during the latter half of the nineteenth century. This tobacco is cultivated in the same areas as Virginia and also has a parallel growing season. In recent years, output levels have remained more or less constant. Over the period 1986-90, output averaged over 34,000 tonnes per year.

The bulk of Burley is produced in Santa Catarina with smaller quantities being grown in Rio Grande do Sul and Paraná. Output has risen dramatically since the early 1970's, rising from an average of some 13,000 tonnes during 1970-74 to an annual average of just under 51,000 tonnes in the period 1986-90.

Galpao Comun was introduced into the country by German settlers during the first half of the nineteenth century. This Air-cured tobacco is grown in the three tobacco producing states in the south. Output levels in recent years have averaged slightly over 14,000 tonnes.

The production of cigar tobacco is located in the north-eastern state of Bahia where it has been grown for several centuries. Since the early 1980's output has continually declined, resulting from a fall-off in demand for dark cigar tobacco in overseas markets which have historically accounted for the bulk of

Table 3: Brazil

Farm size and employment indicators 1990

REGION	NUMBER OF TOBACCO FARMERS	AVERAGE SIZE OF FARM (ha)	AVERAGE AREA OF TOBACCO (ha)
Rio Grande do Sul	53,880	18	1.7
Santa Catarina	51,430	25	1.7
Paraná	16,290	24	1.3
Other Regions	72,000	21	1.0

Source: Associação dos Fumicultores do Brasil (AFUBRA)

production. In 1980, production amounted to some 22,000 tonnes but by 1990 it had declined to around 8,000 tonnes; of this, some 6,000 tonnes were exported.

Dark Air- and Sun-cured tobaccos are cultivated in a number of states in the north-east. Twist tobacco is grown in Minas Gerais and Alagoas, as well as in other states. It is principally used in the manufacture of *roll-your-own* cigarettes and is usually processed and consumed in the areas where it is grown.

Production of dark cigarette leaf is concentrated in the Arapiraca area in the state of Alagoas. For many years, this type of tobacco was utilized in the production of twist for localized consumption but now it is used in the manufacture of dark cigarettes as well as, to a lesser extent, in the production of twist.

Total output of the Dark Air- and Sun-cured crop in 1991 is estimated at some 71,000 tonnes, of which 40,000 tonnes were twist tobacco. In the same year, around 10,000 tonnes were exported.

Trade

For many years, Brazil has been one of the world's foremost exporters of tobacco leaf. Previously an exporter of cigar and dark tobacco, Brazil is now a major supplier of Virginia which currently accounts for more than 80 per cent of total shipments. During the past three decades, exports have consistently increased. For instance, during the period 1965-69 average annual exports were some 47,000 tonnes, by 1981-85 they had substantially increased to an average of 170,000 tonnes, rising again to 187,000 tonnes per year during the period 1986-90. In tandem with increases in volume, the value of tobacco exports has risen sharply, from around US\$31 million in 1970 to an estimated US\$551 million in 1990. Similarly, exports as a proportion of total output have increased sharply. In the late 1970's, exports constituted some 36 per cent of domestic production, by 1990 the proportion had risen to some 60 per cent.

The principal destinations for Brazilian tobacco are the United States, followed by the United Kingdom and other countries within the European Community.

Farm structure

The structure of tobacco farming in Brazil is characterized by small family holdings with a high proportion of labour being provided by members of the farm household, supplemented to some extent by seasonal assistance. In the south, where the vast bulk of tobacco is produced, the average farm size is 22 hectares on which tobacco is grown on an average of 1.6 hectares. In the north, the respective figures are 21 hectares and 1.0 hectare (Table 3).

In recent years, the number of farmers growing tobacco has fluctuated. For example, in 1980, there were 158,831, and by 1991, the number had increased significantly to an estimated 193,600. When farmers and members of their families are combined, the number of people who actually participate in tobacco cultivation is considerable.

Participation can also be gauged by multiplying the number of tobacco units by the average number of people who take part in the various stages of production throughout the year. In 1991, as noted, there were 193,600 farms growing tobacco and, assuming that on average four people were involved in the production process, then 774,400 persons were engaged in that year.

Prices

In the Southern states, the tobacco crop is marketed under a contract system. The tobacco companies organize the seasonal contracts at the end of the previous season, under which they agree to buy a farmer's total production and provide technical advice. Fertilizers, pesticides, and some tools are often provided by the companies at prices which are usually low due to large-scale purchase. Seeds are distributed in order to assure quality. Often, interest on loans for

capital investments such as barns or equipment is also financed by the companies. The estimated total cost of assistance to producers may be somewhere around 30 per cent of the total price of the tobacco paid to producers.

Normally, though not always, price negotiations are held just before planting, during May. These negotiations must attempt to balance government policy requirements, changing production costs and continue to encourage producer interest.

The contract system does not apply in the north-eastern tobacco states. In Alagoas, tobacco from the Arapiraca region is grown without assistance from the tobacco companies. In essence, farm-gate prices are determined by the interplay of supply and demand. In recent years, there has been some involvement by the tobacco companies in Bahia. Although they do not offer technical assistance or have contracts with individual farmers, they do offer production inputs and provide some finance. This mainly takes the form of limited supplies of fertilizers and preferential production loans. However, there is no generally negotiated price; farmers receive what is basically a free market price applicable on the day of delivery.

Gross Margins

The gross margins for tobacco given in Table 4 are for the southern tobacco regions only. The three states involved in tobacco production in this area account for over 80 percent of the total volume, their output is of more market-orientated varieties, and the contract system in operation in these areas renders prices more stable, predictable, and applicable across the whole of the region.

Surprisingly, there appears to be a large gap between the gross margins per hectare for the most popular type, Virginia, and the three other types of tobacco produced in this area. Where the gross margins for

Table 4: Brazil

Gross incomes, variable costs and gross margins for tobacco 1990 (in US \$ per hectare)

TYPE	GROSS INCOME	VARIABLE COSTS	GROSS MARGIN
Virginia	2,739	2,544	195
Burley	3,147	2,616	531
Amarelinho	3,241	2,661	580
Galpao Comun	1,529	1,074	455

Source: *Sindicato da Industria do Fumo (SINDIFUMO)*

Table 5: Brazil

Gross incomes, variable costs and gross margins for selected alternatives in Rio Grande do Sul 1990 (in US \$ per hectare)

CROP	GROSS INCOME	VARIABLE COSTS	GROSS MARGIN
Manioc	780	185	595
Beans	270	191	79
Sweet Potatoes	1,761	1,721	40
Maize	457	455	2

Source: *Associação dos Fumicultores do Brasil (AFUBRA)*

Amarelinho, Galpao Comun and Burley all register above US\$450 per hectare, Virginia gross margins are considerably lower at US\$195. Further inspection of the table reveals that, although the sales value per hectare is either comparable or even much higher than some of the other varieties, labour costs are also relatively high and costs of fuel are, for this type, the most significant at US\$401 per hectare.

Amarelinho seems to be the most profitable type, with gross margins per hectare of US\$580. Sales values for Amarelinho are the most remunerative at US\$3,241 per hectare and this income is able to override the higher labour costs and also significant fuel outlays amounting to US\$380 per hectare. Though gross incomes for Galpao Comun and Burley are rather lower, the absence of fuel costs and the very low labour requirements for Galpao Comun result in very favourable gross margins overall.

Alternatives

Upon examination of the gross margins of several alternative crops for the southern region using data from the state of Rio Grande do Sul, it is apparent that few choices are suitable (Table 5).

In fact, only manioc showed a profitability comparable with that of tobacco in general. With a gross margin for the 1990 crop year of US\$595 per hectare, manioc exceeded all four types of tobacco, due to very low costs across the board and very high quality yields. The rotation pattern of tobacco growing, however, always includes at least one year and sometimes two of manioc in a six-year rotation cycle. Additionally, residuals of fertilizers applied to tobacco lands may be an important reason why these costs are very low for other crops, such as manioc, though maize is the most common beneficiary.

Of the other crops for which gross margin information was provided, none approaches the profitability of tobacco production. High costs for sweet potatoes, once thought to be a viable alternative, reduce gross margins to only US\$40 per hectare. Low sales values for beans and maize also result in low gross margins for these two crops at US\$79 and US\$2 per hectare, respectively.

A few factors which remain undiscovered in simple gross margin analysis may serve to make tobacco a more attractive crop and provide reasons why its production is so widespread. The assurance of prices and the input assistance provided by the tobacco companies, as addressed in the previous section, are significant advantages to farmers in the more productive southern regions. Moreover, the importance and long establishment of the Brazilian tobacco industry have contributed to a high degree of organization and season-to-season stability.

In the late 1980's, the World Health Organization conducted a study which attempted to estimate the net social benefit of tobacco production and manufacture in Brazil and examined the question about labour in depth (Ref. 1). It revealed that the assumptions made about labour may become extremely problematic when attempting to compare crops for which the labour supply is predominantly outside the market. One important conclusion is that the net social benefit of tobacco may be underestimated by a significant amount when the labour supply is addressed in market terms.

It is evident that tobacco requires a much greater labour commitment, at an average of 207 man days per hectare, than the alternatives included in the study. Sweet potatoes come the closest at 48 man days, followed by manioc with 34 man days, then beans with 21 man days, and soya and maize both with 11 man days. It is clear that almost all labour used in the production of these crops is family labour, with limited utilization of the day labour market. Therefore, the valuation of labour in the analysis at, say, minimum agricultural wage, assumes that all labour freed by a switch from a more labour intensive to a less labour intensive crop would be able to find employment at that rate.

Experience suggests that the absorption capacity of the labour market, either in agricultural or non-agricultural occupations, is inadequate to absorb many workers, though it is probably greater in the south. The resulting under- and unemployment effects would presumably be substantial and contribute to a

worsening of the financial situations of many small farmers. It is also highly likely that during peak times of production, workers are brought into production who are not normally available to the labour market, such as children or the elderly. This labour time, though useful or even necessary for tobacco production, has no opportunity cost.

Part of the study, using cost of production and labour input data for 1986, also revealed that a full-scale replacement of tobacco with combinations of the four major crops would result in an overall reduction in economic benefit (Ref. 2). For instance, a substitution of maize and beans for tobacco, each covering half of the tobacco area and without considering price effects, would result in a significant reduction in economic activity and employment. Such a scenario, in terms of labour alone, would involve a reduction in local employment of 165,446 man years.

The same situation, but with a substitution of sweet potato and manioc each covering half the tobacco area, would result in an employment reduction of 142,819 man years. In simplistic terms, the conclusion reached was that the replacement of a single hectare of tobacco with the next most labour intensive crop, sweet potato, would lead to a minimum reduction of employment of 20 per cent.

Aside from these considerations, it is apparent that the large tax revenue provided by the Brazilian tobacco industry is another advantage of a very general nature. Although taxes on consumption are merely transfers within the overall economy, it would be erroneous to assume that a decline in the taxation revenue of a particular product could simply be balanced by an increase in taxes on other goods. This is particularly the case in developing countries where governments encounter a multitude of problems in raising fiscal revenues from domestic sources. Direct taxes are difficult to implement due, in part, to the fact that a high proportion of the population have undocumented incomes. Indirect taxes are generally regarded as inequitable and can, as in the case of taxes on agricultural products, have a disincentive effect, whereas taxes on tobacco products are usually seen as equitable. Furthermore, due to the inelastic nature of demand, the revenue raised from tobacco products can be substantial and relatively easy to collect.

Cigarettes in Brazil are taxed heavily, with over 70 per cent of the final retail price going into taxes. In 1991, the total Industrial Product tax raised from cigarette sales amounted to US\$1.8 billion. This represented 2.6 per cent of total Federal Government revenues. The

loss or significant reduction of such a source of government income would have a disastrous effect on an already precarious Brazilian economy.

These facts may go some way towards explaining the significant amount of tobacco grown in Brazil. With gross margins which exceed most major crops and considerations of labour corrected for a *'family labour'*

scenario, it is not difficult to see why many farmers choose to produce the crop. As a stable and dependable source of foreign exchange and significant tax revenues, it is obvious why its production, and even expansion, is encouraged. Consequently, the production of tobacco appears likely to remain an established integral part of Brazilian agriculture.

INDIA

Overview

India, covering over 3 million square kilometres, is the world's seventh largest country and the second most populated, with about 833 million in 1990. Its culture is rich and varied. Disparities in wealth are a well-documented characteristic of Indian society, compounding the paradox of the world's largest working democracy.

Geographically, India can be divided into three major regions. To the north, the Himalayas dominate the landscape. The great Indo-Gangetic Plain which covers most of central India, comprises the basins of the three major rivers – the Indus, the Ganges and the Brahmaputra. In the south, separated by mountains and hill ranges, the Deccan Plateau takes up much of the surface area of the peninsula.

Virtually every soil type is represented in the country. Alluvials and arid desert soils, mountain and hill soils, red and black soils are distributed with a vague relationship to rainfall. From 10,795mm per annum along the west coast to less than 102mm in the Than Desert, the variation in precipitation patterns is great.

As one might expect, the differences in soil, altitude, rainfall and temperature, result in the production of a variety of agricultural commodities; from grains, pulses and oil-bearing plants to fruit and nuts, tea, coffee, cotton and tobacco. Consequently, the agricultural sector is a vital component of the overall economy, contributing about 30 per cent of GDP. During the period 1986-89, the export value of agricultural products as a proportion of total exports ranged from 18 per cent to 26 per cent. Exports of

tobacco and products during these years accounted for between 4 per cent to just under 7 per cent of the value of exports derived from agriculture. The data in Table 6 lists the principal agricultural exports.

Production trends

India is one of the world's foremost producers of tobacco and its annual output is surpassed only by China and the USA; it is also a significant exporter, primarily of Flue-cured. Despite its sizeable output, India has never had more than 0.29 per cent of total cultivatable land under tobacco.

Total output reached a record level in 1983 when nearly 591,000 tonnes were produced on 503,000 hectares. This level was nearly surpassed in 1990 when production reached 564,400 tonnes. During the intervening years, output fluctuated markedly: in 1988, a nadir of some 367,000 tonnes was reached.

Although production is estimated to have declined somewhat in 1991, it is apparent that tight world supplies will ensure a strong demand for India's tobacco in the foreseeable future; consequently, total production levels are forecast to remain high. Recent production levels by type are given in Table 7.

Tobacco types

India produces a diverse range of tobaccos which are consumed in many different ways. Dark Air- and Sun-cured tobaccos dominate production, accounting for nearly 80 per cent of total output. Production has steadily increased during the past two decades; in 1970, 245,000 tonnes were produced, and by 1990 output had risen to over 451,000 tonnes. Tobacco

Table 6: India

Principal agricultural exports (FOB, in millions Indian Rupees)

	ALL AGRICULTURAL EXPORTS	COFFEE, TEA, MATE & SPICES	COTTON	EDIBLE FRUIT & NUTS	CEREALS	OILSEEDS & OLEAGINOUS FRUIT	LEAF TOBACCO & PRODUCTS
1986	24,697	11,694	5,090	2,910	2,453	853	1,695
1987	27,865	11,480	7,349	3,937	2,346	899	1,851
1988	32,594	11,583	10,957	3,931	3,766	1,005	1,351
1989	30,599	11,321	9,370	3,819	3,368	1,654	1,259

Source: Economic Intelligence Service, Foreign Trade Statistics of India

Table 7: India

Tobacco production by type – farm sales weight (tonnes)

	1986	1987	1988	1989	1990	1991*
Flue-cured	81,000	112,500	59,340	116,210	100,840	109,710
Burley	1,550	1,000	1,530	2,560	8,200	12,700
Light Air-cured	1,700	3,100	3,600	10,500	4,000	6,000
Dark Air- & Sun-cured	337,810	342,500	302,900	363,530	451,360	381,590
Total	422,060	459,100	367,450	492,800	564,400	510,000

*Estimated

Source: United States Department of Agriculture, Foreign Agricultural Service

utilized in the manufacture of bidis (cigarettes rolled in tendu leaf), accounts for about half of Dark Air- and Sun-cured tobaccos. Output is centred in the state of Gujarat which supplies over 80 per cent of the tobacco used in bidi production: the balance is made up in the states of Karnataka and Maharashtra. Dark Air- and Sun-cured tobaccos are also utilized in chewing tobacco and as paste in hookahs. Production of the former is concentrated in the states of Uttar Pradesh, Tamil Nadu, West Bengal, Gujarat, Bihar and Orissa. The latter is grown in Gujarat, Bihar, West Bengal and Uttar Pradesh.

Production of Flue-cured reached a peak of over 188,000 tonnes in 1982. Since then, output levels have significantly declined, annually averaging some 94,000 tonnes during the period 1986-90.

More than half the crop is exported, while the balance is consumed in the domestic market in either pure Virginia or blended cigarettes.

The Tobacco Board, which controls output, is currently attempting to reduce output in the traditional black soil growing areas in Andhra Pradesh and increase production in the light soils of that state as well as in Karnataka. The motive behind this is the fact that light soil tobaccos have a greater demand on the world market. Over 80 per cent of Flue-cured is currently produced in Andhra Pradesh, and the balance is grown in Karnataka.

Burley tobacco is cultivated exclusively in Andhra Pradesh. Over the past two decades production has trended upwards, particularly since the mid-1980's. Output in 1986 was a mere 1,550 tonnes and by 1990 it had grown dramatically to 8,200 tonnes. This dramatic increase is due, in part, to buoyant export demand as well as to its increased usage in the manufacture of blended cigarettes for the domestic market.

Small quantities of a light Air-cured variety, which resembles Burley, are also cultivated. This type, Harvell Se Baexo Rio Grande, is grown solely in Andhra Pradesh. Production levels have slumped in recent years due to factors relating to changing demand, prices and weather related conditions. A peak of some 51,000 tonnes was attained in 1982. Since then, however, output has declined dramatically. In 1990 production had fallen to 4,000 tonnes. This tobacco is either utilized on its own or in blended cigarettes. Table 8 shows total tobacco output by state.

Virtually all of India's tobacco is produced by small scale farmers utilizing family members and seasonal employees. For example, the average size of farms

Table 8: India

Tobacco output in major producing areas by area planted and weight 1989/1990

	AREA (ha)	PRODUCTION (tonnes)
Andhra Pradesh	162,600	202,200
Gujarat	112,600	182,900
Karnataka	56,200	38,900
Bihar	15,400	15,800
Maharashtra	9,200	9,900
Tamil Nadu	7,300	9,200
Uttar Pradesh	15,800	70,700
West Bengal	17,900	19,900
Total	421,100	564,400

Source: United States Department of Agriculture, Foreign Agricultural Service

which grow tobacco range from 0.2 hectares to 2.3 hectares for Burley and Dark Air- and Sun-cured tobaccos, respectively. In Andhra Pradesh, Flue-cured is cultivated on farms which average 2.0 hectares, whilst in Karnataka, the average farm size is 1.5 hectares. The available information shows that tobacco production is combined adequately with other farming occupations in terms of labour and input availability and requirements. This is achieved because the cropping calendar of tobacco production is matched with that of other crops; for instance, cotton, millet, oilseeds, pulses and groundnuts.

Production policy

There is no government policy which seeks to regulate the production of Dark Air-, Sun- and Light Air-cured tobaccos, although, in 1990, the Tobacco Board embarked on trial auctions for bidi tobacco in Gujarat and Karnataka in a move to control output of Dark Air- and Sun-cured tobaccos. However, it appears that the Tobacco Board lacks the necessary infrastructure and resources for continuing this scheme. Moreover, the Indian Government has not sanctioned the expansion of the Tobacco Board's activities beyond their involvement in Flue-cured.

Both the area and production of Flue-cured is controlled in the two producing states. The Tobacco Board regulates the size of the crop annually after assessing domestic demand and export requirements; the aim being to balance supply with demand and ensure adequate farm-gate prices.

Trade

Although the bulk of output is consumed in the domestic market, India is still a significant exporter of tobacco leaf. Annual shipments in the period 1979-84 averaged over 84,000 tonnes compared with 56,700 tonnes during 1985-90. In the latter period, leaf exports accounted for between 7.5 per cent and 15 per cent of total output. Despite this, exports of both leaf

and tobacco products are still a considerable source of foreign exchange. In 1989, leaf shipments amounted to US\$85 million. In 1990 they rose to US\$104 million. The substantial increase was due to increased purchases by the former USSR, depreciation of the Indian rupee and an overall improvement in the quality of Indian tobacco. The vast majority of exports are made up of Flue-cured, which in 1990 accounted for two-thirds of all shipments, with Dark Air- and Sun-cured tobaccos virtually making up the balance. The principal markets for Indian leaf in that year were the former USSR, the United Kingdom, Belgium, Germany, North and South Yemen, Nepal and Egypt.

It is forecast that leaf exports will continue to expand in the near future as a consequence of tight world supplies and a continuing demand for tobacco, particularly from markets in Eastern Europe and the Middle East.

India is also a sizeable exporter of tobacco products. These include, *inter alia*, cigarettes, bidis, chewing tobacco and tobacco paste for use in hookahs. In terms of value, cigarettes are the principal exports: in 1990, shipments amounted to 2,164 tonnes valued at US\$10.3 million, followed by tobacco paste at US\$9.6 million, netted from the sale of 7,700 tonnes.

Although cigarettes are imported, the amount is negligible, as are imports of tobacco leaf.

Gross margins

The gross margins in Table 9 were recorded for the Andhra Pradesh region, in which most of the market-orientated tobacco crop is grown. Given the long history of tobacco's predominance in the region, farmers might be slightly more efficient than those in newer production regions such as Karnataka.

According to Table 9, the Flue-cured gross margins, at Rs.21,430 per hectare, far exceed the next most profitable variety, traditional Burley, at Rs.13,750. The

Table 9: India

Gross incomes, variable costs and gross margins for tobacco in Andhra Pradesh 1990 (in Indian Rupees per hectare)

TYPE	GROSS INCOME	VARIABLE COSTS INCLUDING LABOUR	LABOUR COSTS	GROSS MARGIN
Flue-cured	36,300	14,870	6,170	21,430
Burley (light soil)	18,500	11,345	6,160	7,155
Burley (traditional)	27,000	13,250	6,500	13,750
Dark Air- & Sun-cured	20,800	11,000	5,900	9,800

Source: ITC Ltd., India

Table 10: India

Gross incomes, variable costs and gross margins for selected crops 1990 (in Indian Rupees per hectare)

CROP	GROSS INCOME	VARIABLE COSTS INCLUDING LABOUR	LABOUR COSTS	GROSS MARGIN
Chillies	26,000	14,420	6,920	11,580
Soybean	18,000	6,525	2,900	11,475
Cotton	25,500	14,274	5,520	11,226
Mustard	17,100	6,141	3,080	10,959

Source: ITC Ltd., India

difference in costs between these two varieties is not great, with Flue-cured requiring greater outlay for fuel and seed and lower costs in fertilizer and curing. The great advantage in Flue-cured is in its significantly greater marketability, realising Rs.33 per kilogram compared with Burley's Rs.18 per kilogram.

The lower gross margins for the other two varieties, Dark Air- and Sun-cured and Burley grown in light soil with Rs.9,800 and Rs.7,155 per hectare, respectively, may be attributed to very similar causes, although the costs associated with the Dark Air- and Sun-cured are sufficiently lower across the board and yields are high enough to offset its low value per kilogram at Rs.13.

Alternatives

Although the alternatives shown in Table 10 have gross margins which exceed those of the two least profitable varieties of tobacco, none of them approaches the profitability level of Flue-cured or exceed traditional Burley tobacco gross margins.

The profitability of the chilli and cotton alternatives seems to lie mostly in their high market value. In both cases they are able to overcome the levels of variable expense which are higher than most of the tobacco varieties. The gross incomes from soybeans and mustard, on the other hand, are, compared to the other crops, low. Low costs, in these cases, are responsible for the relatively high gross margins. It is worth noting, for instance, that labour expenses for both these crops are only around Rs.3,000 per hectare.

This advantage, however, may be a disadvantage in the longer term as will be later shown to be the case in Zambia. Only 148 and 156 man days per year are required to cultivate a hectare of soybeans and mustard, respectively, which may leave many underemployed, thereby dropping the market wage in the substitution area and cutting deep into the economic advantages of these two crops. Additionally, the figures do not recognize a difference between

labour which has no opportunity cost, such as children or the elderly who are utilized during peak times of the year, and hired day labour valued at the hourly wage.

A further problem exists with these two alternatives. Both crops have insufficient marketing and support infrastructure; thus many farmers are reluctant to enter production, thereby leaving behind a more stable and secure tobacco industry. Even in the more established cotton industry, the delay between the sale of the crop and payment is an important drawback especially when the high interest rates are considered.

Although the chilli market appears to be relatively stable, the world cotton trade is noted for its price volatility. Under precarious economic conditions such as those many Indian peasant families suffer, a farmer would probably seldom hold adequate savings for insurance against very low prices in a single year. Given that the level of cotton quality normally attained in India often puts further restrictions on market possibilities, it may be surprising that cotton is as important a crop as it is. Additionally, a 1988 study completed by the Indian Agricultural Research Institute, demonstrated that tobacco had a greater increase in export value, as well as a greater increase in domestic wholesale prices, than raw cotton (Ref. 3). It was also shown to surpass oilcakes and sugar, demonstrating its relative success in export performance.

One may still reasonably question the persistence of the less profitable types of tobacco while more profitable alternatives appear to exist. The answer in many cases lies in the topographical difficulties which rule out many crops and restrict cultivation to some of the less profitable varieties of tobacco. Although the labour may have an associated opportunity cost, this land does not. In a labour surplus economy such as that of India, it is easy to understand the continued cultivation of such crops.

KENYA

Overview

The Republic of Kenya, situated on the equator, is bordered to the north by Ethiopia and the Sudan, by Uganda to the west, and Tanzania to the south at Lake Victoria. Somalia and the Indian Ocean combine to form the eastern frontier.

Kenya's land area, which extends to over 582,000 square kilometres, can be divided into five contrasting geographical regions. The Lake Victoria Basin, in the south-west corner, comprises rolling grasslands, the fertile soil of which plays host to cotton, sugar cane and subsistence crops.

The Central Rift and Highlands combine their dark brown loamy soil with a variety of relief to make the country's most fertile region. By contrast, the traditional famine region is located on the Eastern Plateau where periodic droughts add a severe risk factor to crop cultivation; little cultivation is possible in the arid and semi-arid regions which cover most of northern Kenya.

The coastal strip which runs up the shores of the Indian Ocean for about 400 kilometres expands from a narrow belt of 3 to 20 kilometres in the south to about 150 kilometres wide in the north and is covered by dense, high bush dotted with forest and open areas.

The Kenyan population, estimated in 1989 at 23.3m, with a 3.8 per cent growth rate through to the year 2000, is one of the more educated in Africa, with a 65.0 per cent adult literacy rate. The GNP per capita was US\$370 in 1989.

Kenya has the strongest economic performance in sub-Saharan Africa with agriculture being the principal

economic activity, employing 75 per cent of the workforce, contributing 60 per cent of export earnings, and accounting for some 31 per cent of GDP.

Tobacco accounts for a relatively minor portion of Kenya's agricultural output when compared with crops such as coffee and tea, which are both traditional bases of the economy. The crop is, however, of vital importance to many as it provides income for some 12,000 farmers and their families who are involved in its cultivation.

Tobacco types

The majority of tobacco produced in Kenya is Flue-cured. This type accounted for about 4,500 tonnes, or 70 per cent of the estimated crop in 1991. The proportion had remained around 70 to 75 per cent over the preceding five-year period, except for a drop to 3,602 tonnes, or slightly over 50 per cent, in 1990. Nearly all of the production of the Eastern zone, about two-thirds that of the Bungoma and Busia zones, over half that of the Kuria zone and just under half that of the Migori and Sare zones are accounted for by Flue-cured (Table 11).

The proportion of Dark Fire-cured has remained largely constant at 24 to 26 per cent of national production since 1986, except for the 1990 season, when a drop in Flue-cured caused the percentage associated with Dark Fire-cured to rise to 40 per cent of total production. Although the quantities produced in 1989 and 1990 were around 2,500 tonnes, the 1991 figures are estimated at a more normal level of 1,696 tonnes. These latest figures indicate output at between 500 and 600 tonnes grown in each the Migori/Sare zone, the Kuria zone, and the

Table 11: Kenya

Tobacco production by type – farm sales weight (tonnes)

	1986	1987	1988	1989	1990	1991*
Flue-cured	4037	5211	6173	7635	3602	4500
Dark Fire-cured	1439	1657	1950	2473	2587	1696
Burley	134	123	149	260	228	240
Total	5610	6991	8272	10368	6417	6436

*Estimated

Source: Agriconsult, Nairobi

Table 12: Kenya

Principal agricultural exports (FOB, in US \$ millions)

	ALL EXPORTS	AGRICULTURAL EXPORTS	COFFEE	TEA	PINEAPPLES	MAIZE	PYRETHRUM	LEAF TOBACCO	TOBACCO PRODUCTS
1986	1152.86	851.40	470.46	209.22	29.31	17.76	14.01	0.99	3.07
1987	810.17	553.67	209.22	175.67	27.71	20.92	10.49	1.19	3.48
1988	849.70	578.99	226.42	171.53	23.21	20.06	10.69	1.84	2.74
1989	925.74	621.09	188.71	251.75	34.32	14.41	15.78	1.66	3.14
1990	1047.55	645.86	192.17	273.48	33.74	17.97	18.20	2.61	3.71
1991*	894.62	608.86	161.00	218.94	29.15	15.68	13.03	2.28	3.09

*Estimated

Source: Central Bureau of Standards, Government of Kenya

Bungoma/Busia zone, with a minimal quantity from the Eastern areas.

Production of Burley tobacco has not risen above 260 tonnes since the mid-eighties. This type normally accounts for less than 4 per cent of the quantity produced nationally and is grown exclusively in the Eastern zone. The data in Table 11 gives recent production levels by type of tobacco.

Production trends

The quantity of tobacco produced in Kenya was relatively insignificant until the mid-seventies. At this point, annual production levels, which had remained around 100 tonnes in the early seventies, jumped to nearly 1,400 tonnes in 1976 and then rose at an increasing rate. By 1986, annual output had grown to over 6,000 tonnes. A peak of nearly 10,500 tonnes was reached in 1989, largely due to a dramatic increase in the planted area from 8,330 hectares in 1988 to 10,335 hectares in the following season.

Although the area under tobacco has been closely and directly related to the levels of production over the years, yields per hectare have improved significantly. This is especially apparent when considering the figures for the early and mid-seventies, which imply a very inefficient use of land resources.

In 1990 and 1991, a reduction in plantings has resulted in overall production levels being closer to those before the 1989 peak harvest. Estimates for the 1991 crop indicate that output was about 6,400 tonnes.

Trade

The Kenyan tobacco industry neither accounts for a large portion of world trade, nor for a large part of Kenya's exports. The latest estimates for 1991 value leaf and tobacco products exports combined at

US\$5.37 million or only 0.88 per cent of the country's total agricultural exports. In comparison, coffee exports were expected to total US\$161 million even though coffee production has declined from the high levels of the mid-eighties. Tea exports were expected to reach an even more significant US\$218.94 million. Kenya's other three principal agricultural exports are pineapples (US\$29.15 million), maize (US\$15.68 million), and pyrethrum (US\$13.03 million). Together, exports of these five crops are expected to account for 72 per cent of all agricultural exports and nearly 50 per cent of the country's total exports (Table 12).

Although Kenya does not rank as one of the world's major tobacco exporters, its contribution to the economy in the role of import substitution and foreign currency earner is significant. A rise in domestic production contributed to the steady decrease in import levels during the eighties and Kenya was able to reach complete self-sufficiency in 1988. This accomplishment is more noteworthy when one considers the steady increase in domestic consumption of tobacco products over the same period. According to the United States Department of Agriculture, tobacco consumption in Kenya nearly doubled during the eighties. If self-sufficiency had failed to improve simultaneously, a painful drain of foreign exchange would have undoubtedly resulted. Instead, the international tobacco market is able to provide a helpful boost to the balance of payments (Table 13).

Yet another factor which sets Kenya apart from other sub-Saharan African countries involved in this study is the presence of a sizeable processing industry. Indeed, tobacco products have normally accounted for a significantly larger share of exports than

Table 13: Kenya

Development of self-sufficiency in tobacco (tonnes)

	IMPORTS	EXPORTS	DOMESTIC CONSUMPTION
1970	2,795	277	2,426
1975	2,395	2	3,425
1980	975	212	4,005
1985	17	410	4,950
1990	-	1,600	8,210

Source: United States Department of Agriculture, Foreign Agricultural Service

unmanufactured leaf. During the late eighties, the gap began to close. It is estimated that in 1991, leaf tobacco exports valued at US\$2.28 million were exported, or 0.37 per cent of total agricultural exports, an increase from US\$990,000 only five years earlier. In the same period, tobacco product exports only increased from US\$3.07 million in 1986 to US\$3.09 million, or 0.51 per cent of agricultural exports in 1991.

Gross margins

The similarity of growing conditions and cultivation between the eastern and western regions of Kenya is such that a single gross margin figure for each type is sufficient, as shown in Table 14. This table shows a wide difference between the most and least profitable varieties. The gross margins obtainable for Dark Fire-cured at KShs.5,922.00 per hectare equals only about a quarter of the same figure for Burley at KShs.19,220.50 per hectare.

Fertilizer is the most significant cost for each type of tobacco, with Burley at 49 per cent, Flue-cured at 42 per cent and Dark Fire-cured at 39 per cent of total costs. Labour costs at 25 per cent, 38 per cent and 37 per cent respectively, account for the second highest proportion of costs. Thus, the large differences in gross margins may then be attributed to the greater sales value of Burley along with its great advantage in labour costs.

When contrasting these figures with those of Tanzania, it should be noted that these gross margins denote crops near production potential with an optimum application of inputs.

Alternatives

Information concerning gross margins per hectare for some possible crops are given in Table 15. According to these figures, the gross margins which accompany

sugar cane production at KShs.24,748 are slightly greater than those for Burley, the most profitable tobacco variety at KShs.23,432. All of the crops in the table seem to surpass the least profitable variety, Dark Fire-cured.

The potential for large scale substitution of sugar cane for tobacco is highly unlikely, however. The bulkiness of the product requires that it be grown near a crushing plant, but the limited capacity of plants in Kenya has prevented further production increases. More important, perhaps, is the high production cost which prevents Kenyan cane sugar from competing effectively with beet sugar on world markets. Expansion of cane production would entail the application of additional production subsidies, as the government is already contributing about KShs.20,000 per hectare in crop finance, compared with KShs.5,000 for tobacco.

Profitability aside, opportunities to expand other successful cash crops are also limited. The erratic price fluctuations associated with the coffee market and the agronomic limitations to expanding tea production, which must be grown in humid highland areas, largely rule out these possibilities. Pyrethrum production is restricted to higher altitudes of 1800m to 2900m and is limited by labour availability. Low market prices for fibre coupled with long delays in payment have discouraged many farmers from becoming more heavily involved in cotton production.

Horticultural products

Kenya is well-known for its ability to produce high quality fruits and vegetables at very opportune times of the year and, although established producers in South America and the Far East may have the global advantage, Kenya leads the African countries and has, to some extent, the advantage of proximity to the European and Middle Eastern markets. The most

Table 14: Kenya

Gross incomes, variable costs and gross margins for tobacco 1990 (in KShs. per hectare)

VARIETY	GROSS INCOME	VARIABLE COSTS	GROSS MARGIN
Burley	38,563	15,132	23,431
Flue-cured	31,861	12,641	19,220
Dark Fire-cured	17,590	11,668	5,922

Sources: Ministry of Agriculture, Government of Kenya; Agriconsult, Nairobi

Table 15: Kenya

Gross income, variable costs and gross margins for selected crops 1990 (in KShs. per hectare)

CROP	GROSS INCOME	VARIABLE COSTS	GROSS MARGIN
Sugar Cane	45,000	20,252	24,748
Finger Millet	17,500	6,390	11,110
Cotton	15,000	5,830	9,170
Sorghum	13,000	4,685	8,315
Maize	13,050	5,525	7,525

Source: Agriconsult, Nairobi

important items in this category are french beans, mangoes, avocados, chillies and pineapples.

The high level of capital inputs involved in, for example, pineapple production, such as soil fumigation, polythene mulch, and heavy fertilizer application, prevent their cultivation being taken up by small-scale farmers.

Cut flowers could present a more likely substitution opportunity, as in the Zimbabwean situation, which was examined in Volume 1 of this study. They are high value and many varieties are well-suited to the Kenyan climate. Indeed, Kenya is already a significant exporter of cut flowers. However, the heavy investments required in cold storage and packaging facilities prohibit the involvement of all but a few commercial farmers.

With regard to horticultural markets, the familiar problem with availability of northbound cargo space surfaces. Kenya transports a high proportion of its fruit and vegetables and all its cut flowers by air. The

Table 16: Kenya

Air transport rates from Nairobi to London, March 1989 (per kilogram)

CROP	SCHEDULED SERVICES		CHARTER SERVICES	
	K.Shs.	£	K.Shs.	£
Fruits and Vegetables	16.70	0.52	21.00	0.66
Flowers	27.50	0.86	21.00	0.66

Source: British Overseas Trade Board Department for Enterprise, 'Kenya Sector Report: Horticulture', 1989

decline in the use of Nairobi as a stop-over point by B747s en route to South Africa and the increasing use of medium range aircraft such as the Airbus or B767, which have limited cargo capacity, have meant that Kenya, in particular, has suffered from a reduction in air cargo space and increased prices. Kenya, and indeed Africa in general, is not a priority region for charters and there is insufficient south to north traffic from Kenya to European destinations to balance the north to south trade. Consequently, charter companies are not particularly interested in this market. As an indication of costs the data in Table 16 compares scheduled and charter airfreight rates from Nairobi to London in 1989.

In addition, the perennial problems of grading and packaging are long-standing. An acute shortage of forestry products results in manufacturers having to add a significant portion of recycled material. This weakens the packages, thus increasing packaging costs, and frequently results in the arrival of damaged produce. These difficulties are aggravated by the fact that exporters do not provide an extension service to their growers and grading and packaging of Kenyan produce generally takes place on the farms where it is grown. The absence of sufficient standardization or quality control is especially problematic when dealing with large supermarket chains in Western Europe which demand high levels of consistency.

Food crops

In view of Kenya's deficit in many food crops, such as vegetable oils and fats, wheat, rice, refined sugar, fruits and vegetables, there have been numerous attempts to increase production levels. Attention has traditionally been focused on the staple crops. In the case of wheat, competition from more lucrative enterprises such as dairy and barley limit its hold in the highlands, the only regions suited to its production.

Furthermore, continuing subdivision has broken land down to sizes too small for the application of modern mechanization in many areas, and small-holders tend to prefer to grow maize when given the choice.

Rice is another crop in deficit, but expansion would involve the construction of expensive irrigation networks. Unfavourable combinations of altitude and rainfall prevent widespread cultivation of rain-fed rice, although there do appear to be some prospects for the cultivation, to a limited extent, of upland rice.

Provided the correct type is grown, there could be a significant market for sunflower by-products. Sunflowers could be cultivated as a rotation crop with

tobacco, since they both require similar agronomic conditions. Moreover, they are relatively easy to grow and could contribute to the economy through import substitution, as did tobacco nearly a decade earlier.

It is worth noting that the ill-informed claim that cash crop production necessarily interferes with the increased production of much-needed food crops was countered by an important article which focused on tobacco in the Migori District (Ref. 4). The study, examining the economic influence of tobacco cultivation on the production of food in the area in the early eighties, supported two conclusions. Firstly, tobacco had no significant negative effect on production of food crops, maize in particular, and secondly, and not surprisingly, tobacco was the most

profitable per unit of land of the four enterprises examined: tobacco, beans, maize, and dairy. By producing tobacco, farmers would most effectively increase the level of cash income vital for acquiring inputs for food crop production. The '*complementary relationship*' with food enterprises in utilization of land resources was thereby revealed.

Under the current circumstances, it seems unlikely that Kenyan farmers will choose to move out of tobacco production. As long as the high, relatively stable income gained from a small part of the farm and support from the tobacco marketing network in the form of inputs and extension continue, tobacco production in Kenya may be expected to continue at least at its current level.

ZAMBIA

Overview

Zambia is a landlocked republic in South Central Africa covering about 752,014 square kilometres. Bordered on the west by Angola, in the north-west by Zaire, by Tanzania in the north-east and Malawi in the east, the southern frontiers are shared by Mozambique, Zimbabwe and Botswana. In 1989, the population was estimated at just below 8 million with a GNP per capita of US\$390; agriculture provided about 14 per cent of GDP.

Most of the landscape is dominated by a 900 metre to 1,500 metre plateau with flat or gently undulating terrain. This is covered, for the most part, by a wooded savannah and the lower regions are taken up by mopane tree forests and annual grasses. There are also some valuable evergreen forests in the Kalahari area to the south-west. The soils of the plateau are acidic, low in humus, and of indifferent agricultural value. Those below the main plateau are often more fertile as are the alluvials in the river valleys and lake basins.

The climate is highly variable and the year is easily divisible into four seasons. The cool season lasts from May to August and is followed by a hot and dry season until November. Most of the year's precipitation takes place between November and April but the so-called post-rainy season, which lasts until May, is marked by occasional showers.

After twenty-seven years of rule by Kenneth Kaunda the country is beset by a multitude of social and economic problems. In October 1991, the Multi-Party Democracy movement gained a landslide victory under

Frederick Chiluba. One of the most controversial reforms initiated by the new government has been to remove the subsidies on maize meal, the country's staple food. The consequence of this action has been a price rise of some 200 per cent. However, its removal has, to some extent, relieved the overburdened budget and this and other reforms have encouraged some foreign investment in Zambia. This has been only one of many controversial actions as the government attempts to please Zambians, international aid organizations, and business interests at home and abroad simultaneously.

Although the agricultural sector has long been recognized as the key to economic recovery, it is only recently that attempts have been made to increase output and productivity. Tobacco is likely to play a key role in this strategy as it holds out most of the hope of enhanced export earnings and will help to provide a more diverse export base which Zambia requires urgently.

Production trends

The levels of tobacco produced in Zambia are insignificant on a global scale. The latest figures for 1990 show the total for unmanufactured leaf at 3,270 tonnes (Table 17). The quantity had varied between 2,500 tonnes and a peak of 3,840 tonnes in 1988 during the five-year period ending in 1990. This shows a dramatic fall from the much higher production levels achieved during the mid-sixties. The departure of many large-scale commercial farmers, the failure of many of the farm schemes and the lack of support services and price incentives over the years were responsible for this decline.

In recent years, production has stabilized somewhat, yet a regional comparison reveals some difficult periods for some farmers. For example, production of Virginia in the eastern region dropped to around 50 tonnes in 1988 and 1989. The same situation befell the southern region farmers in 1989. This is most likely attributable to climatic fluctuations which result in periodic droughts.

Tobacco types

Two types of tobacco are produced in Zambia, of which Flue-cured accounts for virtually all of output. During the period 1986-1991 Flue-cured production annually averaged just over 3,000 tonnes, whereas output of

Table 17: Zambia

Tobacco production by type – dry weight (tonnes)

YEAR	TOTAL	FLUE-CURED	BURLEY
1986	3110	2976	134
1987	2970	2847	123
1988	3989	3840	149
1989	2770	2510	260
1990*	3270	2939	331

*Provisional

Source: Tobacco Association of Zambia

Burley has never exceeded the level attained in 1990 of 331 tonnes. In the preceding years, output has been too small to record.

Tobacco cultivation is spread throughout the country. For example, the southern region of Choma produced 724 tonnes of Flue-cured in 1990 and a minute quantity of Burley. The southern region of Kalamo yielded 513 tonnes of Flue-cured and a similar quantity was grown in the Lusaka area. Small quantities of both Flue-cured and Burley are cultivated in the northern areas of the Copper Belt, Luapula, and the northern regions. The bulk of Burley output is produced in the eastern region of Chipata.

Trade

In terms of the overall value of marketed crops, tobacco falls far short of Zambia's most important crops. In 1990, for example, maize sales netted K31,979 million. Tobacco sales were worth only K399 million, or 1.2 per cent of the value of maize.

However, Zambian tobacco's export figures reveal its importance as a vital cash crop. In 1988, exports of tobacco leaf and products accounted for 24 per cent of total agricultural exports, which is a significant increase from 16 per cent in 1987 and 11.5 per cent in 1986. Such performance is especially important considering the great reduction in the value of coffee exports and poor performance of beef and veal.

According to the United States Department of Agriculture, exports are down significantly, though, from 1987 when 5,600 tonnes were sold abroad. After dipping to 1,600 tonnes in 1988, the level moved slightly back up to about 2,000 tonnes in 1990 and is estimated at about the same level for 1991.

Imports of leaf tobacco are negligible, with all domestic consumption, usually about 1,500 tonnes per annum, covered by Zambian production.

Gross margins

Information concerning gross margins of tobacco and alternatives obtained from Zambia is presented in Table 18. It appears that differences in ownership of production resources, production technology levels and economies of scale play significant roles in profitability. For instance, the most common type of operation, the smallholder Flue-cured producer, is able to obtain a gross margin of K38,930 per hectare. At the same output prices, the large-scale commercial Flue-cured farmer has a gross margin of K70,119 per hectare. This is due to the vastly improved yields in commercial farming of 50 per cent higher than small-scale operations with similar costs in most inputs. An important difference may also lie in the fact that small farmers must hire their machinery while commercial farmers often have an area large enough to justify purchase.

The gross margins for Burley production are much less due to the much lower yields which accompany a more intensive labour requirement. Small farmers, again with hired machinery, may expect a profitability level of around K26,370. Those Burley producers entitled 'emergent' for the purpose of the study showed much lower yields – only 75 per cent of smallholder yields – and higher labour costs. This is almost certainly due to the level of technology at which they must operate with hired oxen. Their gross margins are K12,434 per hectare.

Alternatives

Among the alternative crops for which gross margin information is available, even the most profitable per unit area had substantially lower gross margins than the least profitable form of tobacco production (Table 19). The fact that the price support programme for maize, the crop with the highest gross margins at K9,836, is being cut makes the substitution scenario even less optimistic. Sorghum and cotton both fall far

Table 18: Zambia

Gross incomes, variable costs and gross margins for tobacco 1990 (in Zambian Kwacha per hectare)

	GROSS INCOME	VARIABLE COSTS	GROSS MARGIN
Flue-cured (Large-scale farms) ¹	131,175	61,056	70,119
Flue-cured (Small-scale farms) ²	87,450	48,520	38,930
Burley (Small-scale farms)	68,800	42,430	26,370
Burley (Emergent farms) ³	51,600	39,166	12,434

¹utilizing own machinery; ²utilizing hired machinery; ³utilizing hired oxen

Source: Ministry of Agriculture, Government of Zambia

Table 19: Zambia

Gross incomes, variable costs and gross margins for selected crops 1990 (in Zambian Kwacha per hectare)

CROP	GROSS INCOME	VARIABLE COSTS	GROSS MARGIN
Maize	20,000	10,164	9,836
Sorghum	9,500	7,759	1,741
Cotton	11,081	9,460	1,621
Sunflower	7,050	6,376	674

Source: Ministry of Agriculture, Government of Zambia

short with gross margins per hectare of less than K2,000 and sunflower, at its best, only registers K674 per hectare. It should be realised that these are only the most favourable figures for these alternative crops taken from a much wider collection with different regions, and various levels of production technology ranging from hired oxen to large-scale mechanised farming.

A survey of possibilities for import substitution among Zambia's main agricultural imports is no more optimistic. Climatic disadvantages exist for apples, rice, wheat and barley. Large-scale irrigation requirements are beyond the investment capabilities of most farmers and the government. The higher quality of imported tinned foods combined with the newly liberalised market makes competition for Zambian producers difficult here as well.

Expansion of the main export crops is equally problematical. The markets in Europe, Japan, and North America are closed to Zambian livestock products due to the dangers of Foot and Mouth Disease and African Swine Fever. Although there may be outlet possibilities in the Middle East, Asia or the rest of Africa, high quality feedstuffs are perennially

difficult to obtain. Price volatility in cotton, groundnuts and soybeans, coupled with long delays in receiving payment, discourage many producers from these crops. The machinery plant and irrigation requirements, which must go along with sugar cane production, would be a material demand on Zambian foreign exchange resources.

As in the study of the other African countries examined in this research, the focus eventually falls on horticultural alternatives. Unfortunately, the obstacles faced in this arena are much the same, if not even more difficult to overcome. There are more acute shortages of northbound cargo space, slower internal transportation routes, and general lack of sufficient cold storage or packing facilities. In addition, the traditionally small quantities of Zambian horticultural goods exported place marketers in a very weak bargaining position. Fragmented efforts by individual farmers contribute to the difficulties.

Zambian fruits and vegetables have a poor reputation among European importers due to the inconsistent quality and need for better grading. As mentioned in the case of Kenya, packaging materials are costly, poor quality and come in a too great a variety of sizes to compete effectively with more advantaged exporters. Although there may be a great deal of potential for horticultural alternatives, the requirements of substantial investment and increased organization are very great.

Rather than a decrease in tobacco production in Zambia, many are expecting that output will increase significantly in the near future. If this proves the case, then the foreign exchange earned from increased exports of tobacco will not only assist the import of necessary inputs to increase domestic food production and other cash crops, but also alleviate the chronic indebtedness of the country and help to reverse a decade of economic stagnation.

TANZANIA

Overview

The United Republic of Tanzania was formed in 1964 by the unification between the Republic of Tanganyika on the East African mainland and the island state of Zanzibar and Pemba. Since the beginning of this century its political history varied from a German colony to a British-administered League of Nations mandate to a UN trust territory under British administration. Tanganyika was granted independence in 1961.

Tanzania is located just below the Equator and extends south to a latitude of 12°S, and from 29°E at Lake Tana to 40°E at the Indian Ocean. The landscape is mostly plain and plateau, but there are some outstanding features, including Kilimanjaro, portions of the Great Rift system and Lakes Victoria, Nyasa, and Tana. Tanzania has a wide and diverse range of soils, contributing to a great variety of vegetation, with the most fertile soils in highland areas, river basins and the north and north-western plateaux.

Rainfall, brought generally by south-eastern airstreams from the Indian Ocean, is confined mainly to two seasons in the north (March to May and October to December) and one in the south (from December to April). In addition, areas along the narrow coastal belt and around the Lakes receive more rain than the great Central Plateau. The remaining months of the year are drier, due to the north-eastern air currents which originate in Asia.

In 1989, Tanzania's population was estimated to be about 25.6 million, with a growth rate of 3.8 per cent per annum projected until the year 2000. Of the population, nearly 70 per cent live in rural areas. The GNP per capita was estimated at US\$120 and agriculture contributed about 63 per cent of GDP.

Tanzania is a prime example of a developing country confronted with chronic social and economic problems, compounded by a severe shortage of foreign exchange. Policy-makers face a delicate situation in the need to build food self-sufficiency without undermining the important contributions to the balance of payments made by cash crops, of which tobacco is of great importance.

Tobacco types

Three types of tobacco are grown in Tanzania – Flue-cured, Dark Fire-cured and Burley. The areas of their

production are differentiated distinctly from region to region. The most abundant variety, Flue-cured, is grown in seven regions with most of the production in Tabora and Urambo. A national total of 14,239 hectares under Flue-cured in 1989/90 yielded some 8,300 tonnes, which comprised 71 per cent of the total volume and 75 per cent of the total value of Tanzanian tobacco (Table 20).

Dark Fire-cured is a distant second in terms of both quantity and value. In the 1989/90 season, around 3,300 tonnes were harvested from 6,920 hectares in the Songea region, accounting for 28 per cent of the volume of output, and 25 per cent of the value.

Burley tobacco is grown in small amounts in the Handeni and Biharamulo regions and contributes less than one per cent of national output, in terms of either volume or value.

Production trends

Throughout the seventies, the area under tobacco in Tanzania grew considerably from about 19,000 hectares in 1970 to a peak of some 37,000 hectares in 1979. Production levels followed much the same trend but were given to more severe annual fluctuations caused by adverse weather conditions. From around 8,600 tonnes in 1970, production rose to above 17,000 in 1976 and 1979. Except for a difficult season in 1984, in which over 19,000 hectares yielded only 8,600 tonnes, production during the eighties fluctuated rather erratically between 10,000 and 15,000 tonnes with the latest estimate for the 1990/91 season at 15,500 tonnes.

Clearly the bulk of this activity is dictated by the Flue-cured situation. With the exception of a few years which saw reduced plantings, the area devoted to this type varied around 20,000 hectares from the mid-seventies to the mid-eighties. Since then, the area has hovered between 15,000 and 18,000 hectares and production levels have moved between 10,000 and 15,000 tonnes except for 1989/90 when output declined to 8,400 tonnes. Estimates for the 1990/91 crop indicate output at around 10,500 tonnes.

As expected, the area under Dark Fire-cured is much less substantial, peaking at 13,000 hectares in 1979 but dropping to around 6,000 hectares and below in the late eighties. The estimate for the 1990/91 season shows the area nearly doubled to 13,700 hectares.

Table 20: Tanzania

Tobacco production by type – farm sales weight (tonnes)

	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91*
Flue-cured	15010	11224	10188	9589	8373	10490
Dark Fire-cured	1442	1802	1335	1540	3338	5005
Burley	14	7	12	7	4	6
Total	16466	13033	11535	11136	11714	15501

*Estimated

Source: Tobacco Processing and Marketing Board, Government of Tanzania

Table 21: Tanzania

Labour requirements and average farm size 1990/91

	MAN DAYS PER HECTARE	NUMBER OF FARMS	AVERAGE SIZE OF FARM (ha)
Flue-cured	533	28,105	0.63
Dark Fire-cured	428	31,349	0.44
Burley	349	N/A	0.53

Source: Tobacco Processing and Marketing Board, Government of Tanzania

Until the last two years, production of Dark Fire-cured was below 2,000 tonnes, but a jump to over 3,000 tonnes in 1989/90 and an estimated 5,000 tonnes for 1990/91 denotes an increasing significance of this tobacco.

According to the United States Department of Agriculture, the area under Burley has not risen above 200 hectares and has more recently remained well below 100 hectares.

Employment

Nearly all Tanzanian tobacco is grown on a small-holder basis using exclusively family labour. In total there are over 59,400 tobacco farms in the country, but the labour-intensive and capital-extensive nature of production means that areas devoted to tobacco on each farm are kept low. The policy of 'villagization' of the rural population in the mid-seventies led to the reorganization of much of the farming population. Land is not, therefore, limited by tradition or by family wealth but rather by the family's labour capabilities and, in some cases, by the distances of new lands from the population centre (Table 21).

According to the figures for 1990/91, a family seems to be able to work an average of 0.63 hectares of Flue-

cured, with a larger average area per farm of 0.83 hectares in the Tabora region. The estimated labour requirement for this variety is an average of 533 man days per hectare. There are about 40 large-scale commercial farmers engaged in Flue-cured production in the Iringa region, with most having holdings of between 5 and 20 hectares each. According to the Tobacco Processing and Marketing Board (TPMB), these operators have pushed outputs to near potential yields using hired specialized labour and more modern production methods.

The 31,349 Dark Fire-cured farms in Songea devote a smaller average area of about 0.44 hectares to tobacco production. The time commitment with the production of this type is less demanding at 428 man days per hectare.

With significantly lower labour requirements of 349 man days per hectare, the Burley farms can afford to be slightly more extensive. An average 0.53 hectares per farm is devoted to Burley tobacco.

Trade

Although an important cash crop for the Tanzanian economy, tobacco has remained far behind coffee and cotton in terms of export value. Table 22 shows that

Table 22: Tanzania

Principal agricultural exports, 1985-89 (FOB, in US \$ millions)

	ALL AGRICULTURAL EXPORTS	COFFEE	COTTON (RAW & PRODUCTS)	TEA	CASHEWNUTS	SISAL	TOBACCO LEAF	TOBACCO PRODUCTS
1985	217.19	121.04	31.99	17.35	13.43	11.53	13.89	1.50
1986	270.76	184.70	29.46	13.60	15.77	7.62	12.70	0.99
1987	211.85	109.40	44.12	17.70	13.96	8.66	11.90	1.01
1988	247.30	96.39	77.69	16.30	19.48	13.16	15.35	2.06
1989*	238.55	108.39	66.73	16.16	12.69	14.27	12.02	3.35

*Provisional

Sources: Customs and Excise Department, Government of Tanzania; Bank of Tanzania

since the mid-eighties, tobacco contributed between 4 and 7.5 per cent of the value of mainland agricultural exports.

Coffee, meanwhile, commanded a large share of the total agricultural export value, varying between 39 per cent and a peak of 68 per cent in 1986. The second most valuable agricultural export, cotton, rose to nearly 30 per cent of the total value in the late eighties. Tobacco was also surpassed by tea, but had begun to overtake cashewnuts and their by-products.

The bulk of tobacco exports are in leaf form, although cigarettes have become more important in recent years (up to around 28 per cent of leaf value), whilst imports of tobacco products into Tanzania are negligible.

Gross margins

From a first glance at the gross margins, in Tables 23 and 24, for the two major tobacco varieties and a selection of possible alternatives for the 1988/89 crop year, it appears that tobacco is one of the less profitable options available to the Tanzanian farmer. Presented without explanation, the gross margin information can be very misleading. In this case, the gross margins for all the crops except rice, beans, cassava, and maize grown under certain conditions are negative. Virginia registers a deficit gross margin per hectare of TShs.8,744 and Dark Fire-cured of TShs.14,364.

Closer examination reveals that the reason for the associated unfavourable gross margins lies in the high labour costs incurred by the labour-intensive production methods employed. The requirements of 533 and 428 man days per hectare for Flue-cured and

Dark Fire-cured, respectively, are much higher than even the next most labour-intensive crop, rice, with 217 man days per hectare. The figures for labour costs in the 1989/90 season show a rate of TShs.58.30 per day, setting total labour costs at TShs.31,074 per hectare for Flue-cured, and TShs.24,952 for Dark Fire-cured. Labour costs alone, then, account for 43 per cent and 54 per cent of production costs for Flue-cured and Dark Fire-cured, respectively.

Labour requirements clearly cannot be ignored. There are, after all, considerations of the available amount of time for the household and its opportunity costs. Yet in a peasant farming system, where all labour is provided by family members, valuation of hours at the prevailing day labourer's wage is, at best, impractical. If all household members were to be released from their obligations to enter the day labour market, the wage would be altered profoundly. This makes the inclusion of wage rates in the above situation highly questionable.

It should be noted that these gross margins were calculated using average small-holder yields of 700kg and 450kg per hectare, respectively, for Flue-cured and Dark Fire-cured. According to the TPMB the potential yields using similar levels of inputs are much higher. The more commercial farmers of the Iringa region may obtain well above 1,000kg per hectare. Using the same cost information and a yield of 1,000kg, one obtains a positive gross margin of TShs.18,256 per hectare for Flue-cured.

In addition, the more recent gross margin information for 1990/91, given in Table 25, shows a much-improved situation, even when significantly higher labour costs of TShs.115.15 per day are used for the calculation.

Unfortunately, gross margins for the potential substitutes were not available for this period of time.

Alternatives

The Tanzanian authorities have stated that the country should aim to increase food self-sufficiency, particularly that of maize, rice and wheat. This should be accomplished without a drop in the level of cash crop cultivation. The difficulties associated with directing investments to increase the standard of living to areas without a cash crop basis have even pushed the Tanzanians towards increasing the production of new crops but, as a spokesman of the TPMB stated, this should be achieved by '*...not replacing the already established cash crops, but parallel with them*'.

Some possible crops include coconuts and oil palms, fruits, vegetables, and spices. Yet difficulties abound in the form of inadequate marketing facilities, unreliable

transportation networks for perishable products, limited investment capabilities on the part of the government and individual farmers, and technological difficulties. Furthermore, the recurring obstacle in the form of shortages of northbound cargo space for highly perishable and bulky fruits and vegetables presents itself again.

Even in the light of such difficulties, the introduction of coconut and oil palm would seem to be more optimistic for the Kigoma and Rukwa regions. Neither of these regions is involved in the production of tobacco.

As the data in Table 24 shows, some staple crops have positive gross margins. However, it would be erroneous to assume that farmers could simply replace tobacco with them, especially when labour costs are put into proper perspective. If, for example, labour costs are deleted, only rice, at a gross margin of TShs.19,402,

Table 23: Tanzania

Gross incomes, variable costs and gross margins for tobacco 1989/90 (in TShs. per hectare)

	GROSS INCOME	VARIABLE COSTS INCLUDING LABOUR	LABOUR COSTS	GROSS MARGIN
Flue-cured	63,000	71,744	31,073	(8,744)
Dark Fire-cured	31,500	45,864	24,952	(14,364)

Source: Tobacco Processing and Marketing Board, Government of Tanzania

Table 24: Tanzania

Gross incomes, variable costs and gross margins for selected crops 1988/89 (in TShs. per hectare)

CROP	GROSS INCOME	VARIABLE COSTS INCLUDING LABOUR	LABOUR COSTS	GROSS MARGIN
Maize:				
High Potential Areas	20900	15429	7928	5471
Medium Potential Areas	7150	7015	5247	135
Low Potential Areas	5500	6361	5247	(861)
Rice	22800	16049	12651	6751
Beans	16380	11584	7404	4796
Cassava	7630	5657	5013	1973
Cotton	11564	12047	8803	(483)
Sunflowers	6600	7511	6646	(911)
Sorghum	3625	7411	6646	(3786)

Source: Tobacco Processing and Marketing Board, Government of Tanzania

Table 25: Tanzania

Gross incomes, variable costs and gross margins for tobacco 1990/91 (in TShs. per hectare)

	GROSS INCOME	VARIABLE COSTS INCLUDING LABOUR	LABOUR COSTS	GROSS MARGIN
Flue-cured	171,500	124,992	61,374	45,507
Dark Fire-cured	75,600	84,054	49,284	(8,454)
Burley	38,800	70,232	40,187	(31,432)

Source: Tobacco Processing and Marketing Board, Government of Tanzania

approaches that of Flue-cured at TShs.22,329; whereas all the other sampled crops fall far short.

Moreover, increased production of staple crops is inhibited by a number of factors. For example, rice cultivation is restricted to areas which have adequate rainfall and to a few government run farms which have irrigation facilities. In addition, there is an inadequate road transport network compounded by the country's low milling capacity. The latter two factors, accompanied by an overall lack of storage, hamper any significant increase in maize production. Other considerations must also be taken into account, such as the tobacco rotation by which maize and cassava

benefit from residual fertilizer. It is also significant that price volatility experienced in local food markets discourage many farmers from replacing tobacco with other crops.

According to The Tobacco Processing and Marketing Board, the agronomic differences between the major cash crops conveniently place them in different regions. This is certainly true of Tanzania's two major cash crops, coffee and tea. For many farmers, the stability of the tobacco market, the investments already made for the production of the crop, and the support from tobacco extension services combine to keep them firmly in tobacco production.

CONCLUSION

As in the case of the countries studied in Volume I, the research here has revealed that there are limited options available for farmers to diversify from tobacco. Even though the gross margins for some crops exceed those for tobacco, it would be wishful thinking to suppose that farmers can easily replace tobacco with these other crops.

The section on Brazil has shown that apart from manioc, none of the major staple crops had gross margins which approached anywhere near those of tobacco. Moreover, tobacco is not subject to volatile fluctuations in price which affect most other crops. For instance, in 1986, sweet potatoes produced in the state of Rio Grande do Sul had a gross margin which exceeded that of tobacco. However, in 1990 this was not the case and the gross margin for sweet potatoes was well below those of the four tobacco types. A factor which is not evident in the gross margin analysis is the assurance of price and input assistance provided by the tobacco companies, which provides stability and renders confidence to the tobacco farmers.

The situation in India differs in that the alternatives examined have profitability levels which exceed two of the tobacco types. However, they fall far short of Flue-cured and are slightly below traditional Burley gross margins. It would be erroneous to assume that farmers could simply switch to these crops. Firstly, the marketing and support structure for the two most profitable crops – chillies and soybeans – have not yet reached the sophisticated level which tobacco enjoys; as such, many farmers are reluctant to enter production. Secondly, the delay between the sale of the crop and payment is an important drawback. Although the marketing structure for cotton is more advanced, its price is subject to extreme movements, thus placing a considerable financial burden on small farmers in years when low prices prevail. Against these factors one must take into account the more stable and secure income farmers receive from the production of tobacco.

Although the horticultural sector in Kenya is, by African standards, large and diversified, the capital required to switch into the production of most horticultural crops is beyond the means of all but a handful of large commercial farmers. Kenya also faces an overall lack of sophisticated grading techniques and, due to an acute shortage of forest products, of

well constructed packaging. These shortfalls result in inconsistent and damaged products which significantly reduce their acceptance by importers in Western markets. However, the overriding problem, perhaps the main one, is the shortage of sufficient air freight space, particularly in the peak period of the European winter months. In fact, it is not uncommon for fresh produce to be left in Nairobi airport as shippers compete with each other for the limited space available. Although some large exporters have contractual arrangements which guarantee space, the problem can be acute for the smaller exporters.

Another factor, other than space availability, is the cost of air freight. This is a major element in the total cost of horticultural exports and consequently affects the types of product which can be exported at a profit. Thus, as air freight costs increase, the attractiveness of shipping low to medium value items diminishes and exporters are forced to concentrate on very high value products such as cut flowers, asparagus and strawberries.

The problems encountered by farmers in Zambia for producing and exporting similar high value horticultural products are even more acute, not only due to the constraints associated with exporting from Africa, but also to the low reputation of Zambian produce in Western markets. Moreover, the low volume of products from Zambia and the lack of a coherent marketing strategy place exporters at a disadvantage in terms of bargaining power with importers.

As regards other crops, any switch to, for example, cotton, groundnuts, soybeans and sugar cane, is problematical: not only are the gross margins for these crops below those of tobacco, but they are also subject to the vagaries of volatile price movements. This problem is often coupled with long delays in payment, neither of which is conducive for farmers to embark in their production.

The Tanzanian government has the declared aim of increasing food self-sufficiency but without affecting the production of cash crops, including tobacco. Against this background and with labour cost placed in perspective, it is highly unlikely that farmers currently producing tobacco will switch to food crops, other than for subsistence purposes. A number of cash crops which have potential have been identified – oil palms,

coconuts, fruit and vegetables and spices. Some of these, particularly fruit and vegetables, are likely to have profitability levels which exceed those of tobacco. However, it is extremely unlikely that many farmers will diversify from tobacco to these crops as there are too many constraints to deter them from their production. These range from inadequate marketing and infrastructure services, and the low investment capabilities of most farmers, to an overall lack of relevant farm inputs, as well as the associated risks of producing new crops. The latter consideration is especially relevant to peasant farmers preoccupied with day-to-day problems and whose very existence is often tenuous.

A number of salient points have emerged during the course of this study, some of which are often ignored in the crop substitution debate. It is obvious that tobacco is an important export commodity and a substantial source of foreign exchange for many developing countries. It is also a crop which provides the means for peasant farmers to break away from mere subsistence agriculture and it is a major generator of rural employment. It has been shown that tobacco cultivation utilizes more labour than most other crops. For example, the production of Flue-cured in Tanzania required 533 man days per hectare compared with 217 man days per hectare for rice, the next most labour-

intensive crop. As a consequence of its high labour requirements tobacco has been instrumental in stemming the flow of under-employed and unemployed people from rural to urban areas. Thus tobacco is frequently seen as a means to partially alleviate the socio-economic and political problems associated with surplus labour which currently beset policy makers in developing countries.

It has also been noted that the cultivation of tobacco represents no more than a minor use of agricultural land. Consequently, the argument, often put forward, that it should be replaced by food crops is irrelevant. In fact, it can be argued that its production assists in facilitating the spread of improved crop husbandry techniques which benefit the production of other crops.

Finally, tobacco holds the attraction, unlike most other cash crops, that farmers are paid for their output almost immediately, at prices negotiated at the beginning of the crop year. This, together with the fact that few agricultural commodities either match or exceed the returns generated by tobacco, explains the reason why it is highly unlikely that growers would want to switch to other crops or other farm activities, particularly as demand for tobacco is currently buoyant and is forecast to remain so for the foreseeable future.

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ITGA

The International Tobacco Growers' Association

The ITGA was launched in Brazil on 26 November 1984 when representatives of Argentina, Brazil, Canada, Malawi, the United States and Zimbabwe met at their first general meeting to promote and develop common interests of member tobacco grower organizations throughout the world.

The Association's primary goals and policies are to foster international co-operation among member organizations; to assist in the dissemination of producer information among member organizations; to contribute to the international debate on tobacco issues.

An information service is provided for ITGA members. Details on crop conditions, market reports, climatic conditions, public affairs issues and costs of production, are collected from members and published quarterly in the Association's newsletter *Tobacco Courier*.

In addition to the six Founder Members of the Association, a number of countries have become Associate Members. Membership is open to any national tobacco growers' association. Enquiries should be sent to:

David J. Walder,
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PO Box 125, Forest Row,
East Sussex RH18 5FA, England



Philippines: Burley Tobacco Farmer of the Year Florentino Frigillana, with wife Nenita, and Extension Officer Jane Rellosa. La Union, Northern Luzon.

