NON-TRADITIONAL AGRICULTURE IN JAMAICA: MORE QUESTIONS THAN ANSWERS

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Section I

Problems and Prospects in Traditional Agriculture; The Road to Non-Traditional Agriculture (NTA)

The fact that the Jamaican economy has for several years been in what could easily be described as its worst economic crisis to date, is by now widely known, at home and abroad. Indeed, ever since the mid-seventies when it first manifested itself, its analysis and the prospects for recovery has been the source of considerable debate, both at the economic and at the political levels.

Among the many specific issues at stake has been the perennial question of what role, if any, can traditional agriculture play in the much-hoped-for *economic recovery*. But as expected, a single concensus is yet to obtain. Before examining the various sides of this debate however, let us attempt to look briefly and objectively, at the recent performance of this sector.

It is to be noted that traditional agriculture in Jamaica is composed of two distinct sectors, namely the Traditional Plantation sector and the Domestic (Peasant) sector; the former producing almost exclusively for export, the latter historically oriented towards the local market.

Firstly, the period of the 1970's has gone on record as a period characterised by significant decline in our economic fortunes in which Gross Domestic Product (GDP) peaked at J$2,265m in 1973 and fell every year thereafter to an accumulated decline of over 18 per cent by 1980. Since then there has been a mild reversal of that trend, but indications are that this brief reversal might not be sustained, due partly to significant contractions in the bauxite-alumina sector.

During the turbulent period of the seventies however, agriculture was one of the few sectors that actually recorded real growth, with its real value added increasing from J$150m or 7.5 per cent of GDP in 1970 to J$187m or 9.5 per cent of GDP in 1978. Deeper analysis indicates however that the admirable performance of the domestic sector had been the real engine behind such growth, to the extent that whereas production for the domestic market grew by over 74 per cent in the 10-year period, export agriculture actually declined by approximately 25 per cent. To a large extent the relatively good performance of domestic agriculture during the period was the direct result of favourable farmgate prices, coupled with restrictive food import policies, along with marginal increases in the amount of land available to domestic food producers under the government's Project Land Lease (PLL) programme.

As Table 1 indicates, the period 1972 to 1980 was characterised by dramatic increases in farmgate prices paid to domestic producers, which no doubt had a significant impact on the output of domestic food production. In relation to imports, the period between 1975 to 1980 saw the government imposing ceilings on total

TABLE 1: Domestic Food Crop Prices, 1972-80 (1972 base yr.)

Year		% Change previous year
1972	100	-
1973	136.6	+36.6
1974	181.3	+32.7
1975	228.6	+26.1
1976	247.8	+ 8.4
1977	335.2	35.3
1978	329.7	- 1.6
1979	433.3	+31.4
1980	688.6	+58.9

Source: Data Bank and Evaluation Division, Min. of Agric.

imports, which served to stagger food imports considerably, again providing an additional incentive to domestic food producers. Table 2 gives an indication of the pattern of imports during the period 1971 to 1978, emphasising the effects of import restrictions put in place after 1974.

On the export side, agriculture's performance during the period of the seventies was nothing short of poor. Such performance is most easily illustrated by looking at the two major export crops, sugar and bananas. In the case of sugar, exports fell from a high of some 275.7 thousand tons in 1972 to a mere 131.8 thousand tons in 1980.

TABLE 2: Value of Import Limitations and Total Imports 1971-80 (J$m)

Year	Import Limitation	Total Imports	Food Imports
1971	0	559	93
1972	0	611	113
1973	0	677	127
1974	0	935	193
1975	990	1,123	196
1976	930	912	183
1977	880	860	136
1978	800	916	163
1979	906	992	128
1980	0	1,177	197

Source: Bolling, H.C.(1983): Jamaica: Factors Affecting its Capacity to Import Food.

Similarly, banana exports fell from 127 thousand tons in 1972 to a low of 33 thousand tons in 1980, a 74 per cent decline. Indeed, so badly had been the performance of banana, that whereas in 1976 Jamaica controlled a 25 per cent share of the UK market, by 1980, only four years later, its share had fallen to a mere 11 per cent, falling even further to 5 per cent in 1981.

In the main, such overall weak performance on the part of the export agricultural sector during the seventies was directly related to a number of specific factors, chief among which were shortages of critical inputs and other raw materials, due to foreign exchange constraints, various production and marketing inefficiencies, coupled with the negative effects of bad weather and disease. But to make matters even worse the period of the 1970's was characterised by significant upward movements in the prices of imported commodities, which were out of line with more moderate increases in the price of agricultural exports, leading to a marked deterioration in terms of trade. Indeed, although export values from the two main agricultural exports, sugar and bananas, more than doubled between 1972 to 1980, import prices rose more

Table 3: Income Terms of Trade Re: Sugar & Bananas 1972-80 (Base yr. 1972=100)

Year	Export Value Index	Import Price Index	Income Terms of Trade
1972	100	100	100
1973	113	165	68
1974	188	240	78
1975	388	231	167
1976	148	227	65
1977	193	215	89
1978	257	301	85
1979	298	437	68
1980	249	531	46

Source: Calculated from selected issues of Social & Economic Survey and from Bolling, H.C.: Jamaica: Factors Affecting Its Capacity to Import Food, p.10.

than five-fold, rendering a considerable worsening of the income terms of trade of these two earners of foreign exchange.

Arising directly out of the problems faced by traditional agriculture in the 70's and before, the continuing debate in relation to its role in the future development of the country, has over time produced three different, but not entirely exclusive, schools of thought on the issue. For the convenience of simple classification we will describe these schools of thought as follows:

1. the *Traditionalist*
2. the *Structuralist*
3. the *Non-traditionalist*

Since the paper is concerned specifically with the *non-traditionalist* perspective in agriculture, only a brief comment on the other two is needed here.

Exponents of the *traditionalist* school hold the view that despite the relatively weak performance of agriculture over the last decade, particularly traditional export agriculture, the future well-being of the economy still rests critically upon the revival of this sector, along the historically established patterns of resource allocation in agriculture - emphasising the continued dominance of the plantation economy structured around the export of sugar and bananas, along with a few other crops. At best, they argue for greater efficiency in production, to permit the achievement of specified quota levels in protected foreign markets. For them, the domestic sector is still, and should continue to remain, a mere periphery in the agricultural sector, producing for the domestic market.

On the other hand, we find the so-called *structuralists*, for whom the fundamental problem in traditional agriculture is that of the historically given pattern of agricultural resource allocation and use. This perspective came to the forefront during the Manley regime of the 1970"s, when attempts were mad to transform both the character of land tenure and the existing patterns of land control. The critical problem was that of making more and better resources available to the domestic (peasant) sector, while at the same time attempting to change the nature of the *relations on the land*. The change in political administration saw an abrupt end to such initiatives in agriculture.

Though it would have been useful at this stage to present a critical appraisal of the two approaches, such an exercise is not within the scope of this paper. Our explicit concern herein lies with the third approach, as it represents the current direction of thought on the issue. The upcoming sections of the paper will therefore focus attention on the *non-traditionalist* perspectives on agricultural development in Jamaica.

Section II

From Traditional to Non-Traditional Agriculture: Context and Content

The Economic Climate Since 1980

In October 1980, a new political administration led by the Jamaica Labour Party (JLP) came to power, against the background of several years crisis in the Jamaican economy; a crisis that was characterised by several years of negative growth, chronic foreign exchange shortages, high and rising unemployment and unprecedented high rates of inflation. From the very outset, therefore, the new administration indicated that its main objective was that of regenerating positive growth within the context of a free enterprise private sector led economy. Under the central theme of *Economic Recovery* it outlined its basic strategies as follows:

1. The *deregulation* of the economy consistent with the spirit of a free market organisation in which the private sector would be the main engine of growth.

2 The propulsion of the economy along an export-led path of development consistent with the overriding goal of maximising foreign exchange earnings. (The road to Singapore.)

3. The rejuvenation of the famous *Industrialisation by Invitation* model, in which it was hoped that with the injection of a new 'confidence' in the economy, foreign (US) capital investments would once again be called upon to stimulate growth and development.

But, despite the fact that agriculture, more than any other sector within the economy had demonstrated its ability to weather the crisis of the 1970's, the initial position of the Government towards this sector was somewhat ambivalent, at least up to the end of 1981. On the other hand, the hasty curtailment of Project Land Lease (PLL), pending reorganisation, coupled with the government's liberal *open door* import policies dealt a telling blow to domestic agriculture, as food and livestock producers scrambled to compete with foreign substitutes. By July 1981, whereas exports were up 20 per cent over the same period for 1980, imports were up by 30 per cent.*

On the other hand, the government vocally embraced traditional export agriculture as a natural part of its expressed orientation towards the maximisation of export earnings. By year end (i.e. 1981) it was clear that some growth in GDP had taken place, in the region of 2.6 per cent, though export earning of the two dominant traditional agricultural crops, sugar and bananas, continued to slide downwards. These early indications of growth were however destined to be short-lived, as by mid-year 1982, indications were that despite expected upturn in tourism and traditional agricultural exports, there was to be significant shortfalls in bauxite and alumina earnings, due primarily to depressed conditions in the international market. By year end bauxite and alumina earnings had fallen to J$ 862.3m against J$ 1,353.9m. in 1981, and despite positive achievements in other areas, GDP grew by a mere 0.17 per cent. The prospects for 1983 look grim. If bauxite and alumina earnings continued to fall, coupled with sluggish growth in traditional agricultural exports, the country's foreign exchange position would be the critical constraint on further growth in the economy.

It was therefore, within this context, particularly after 1981, when the economy seemed poised again to decline, that serious consideration were once more focussed on the need to look to agriculture, this time with a new perspective, namely, the development of a non-traditional agricultural sector, particularly with a view of enhancing the country's foreign exchange earnings. It is critical to note however, that this new initiative was not designed to create a non-traditional sector, since it existed before. The main aim was to develop this sector, bringing it to the forefront of agriculture in Jamaica. Although this new thrust was evident as early as 1982, the real machinery by which it was to be propelled to the forefront, came only in 1983, with the announcement of AGRO-21. Only within this context can we proceed to examine this new thrust in agriculture.

The Institutional Context and The Role of the State

As we have indicated before, AGRO-21 stands as the central framework within which this new agricultural strategy will be developed and this new agricultural strategy is explicitly geared towards the *commercialisation* of agriculture via

*Bank of Jamaica Report, July 1981.

the extensive use of advanced technology under the management of the private sector, whether local or foreign. It is hoped that AGRO-21 will serve to *target* certain specific investment opportunities, and mobilise private and institutional capital and technology into viable commercial projects for exports and/or import substitution. The key word is *commercial production*, particularly export-oriented production.

What is the real role of the State in this undertaking? Although the government is to serve as the prime mover in bringing about the proposed changes, it has defined for itself a rather limited and distinct role. In the first instance, it is not expected to be directly involved, except in the case of some pilot projects - as a means of showing the way to potential investors. Over and above this, it is the view of the government that in the long run its basic role will be limited to that of providing the necessary infrastructure, such as access roads, water supplies and electrification; and in addition to providing technical support services, relating both to investment and marketing via certain quasi-government agencies. Among these agencies, the bulk of this kind of servicing will be carried out by three important organisations, namely, The Jamaica National Investment Promotions Limited (JNIP), The Jamaica National Export Corporation (JNEC) and The Jamaica Export Trading Corporatoin (JETCO). (See Appendix for description of specific roles.)

In the final analysis therefore, while the AGRO-21 Secretariat along with these three institutions seem to form the real hub of the government's indirect involvement in the proposed development of the non-traditional agricultural sector, it should be noted that other traditional institutions such as the Ministry of Agriculture, the Bank of Jamaica and the Agricultural Credit Bank, will all jointly provide the institutional framework for its development.

The Concept of Non-Traditional Agriculture

We could easily define non-traditional agriculture as any situation involving:

1. A change in output profile designed to produce *new* crops for *old* markets;
2. A change in market orientation alone, designed to produce *old* crops for *new* markets;
3. A change in both output profile and market orientation designed to produce *new* crops for *new* markets;
4. A change in the traditional structural dichotomy of *plantation peasant* agriculture, without any significant changes in either output profile or market orientation. For example, the introduction of new forms of agricultural organisation such as cooperatives or the creation of a new class of *commercial/capitalist* agriculturalists on medium size land holdings.

To a large extent, it would appear that the government's new thrust in non-traditional agriculture places heavy emphasis on (1) and (4) above, to the extent that it is designed to create a new class of commercial/capitalist producers on medium to large scale holdings, whose basic orientation will be towards the production and export of a new range of commodities destined for sale in the traditional market places of Europe and to an even greater extent, the USA and Canada. But over and above this, the development of non-traditional agriculture under the broad umbrella of AGRO-21 will play a leading role in the proposed modernisation of the entire agricultural sector via the introduction of new and advanced technology combined with anticipated inflows of foreign capital. Indeed, on the basis of those projections contained in the main AGRO-21 document published by the National Planning Agency, it is expected that

non-traditional output in four to five years, would equal or surpass traditional output under the assumption that traditional output would increase in value terms by about 20 per cent by 1986/87.

While the commercial and technological aspects of the new non-traditional thrust are designed to represent significant departures from traditional agriculture is themselves, perhaps the most important aspect in the introduction of new products and/or the revival of some old crops that may have lost their competitive edge in the market for a variety of reasons. Here the main traditional crops considered for revival are bananas, coffee, citrus, coconuts and cocoa.

The table below indicates the basic product profile of Jamaica's agriculture as identified under AGRO-21. It is important to note that sugar, the leading export crop is conspicuously absent.

In passing we should note that the AGRO-21 programme visualises an implementation in two basic phases. Accordingly, the various products identified for attention have been divided into List A and List B. List A identifies products for which profiles and necessary groundwork has already been accomplished. The development of these products will form the first phase of the programme. For List B items project profiles are still being prepared and are therefore not yet ready for implementation. The two lists are detailed below:

List A: winter vegetables, bananas, coffee, plantain, tobacco, coconut, rice, afforestation, citrus, pineapple, dasheen, yams, honey, aloe vera, ornamental horticulture, cassava, orchard crops, shrimp/fish, dairy, been, cocoa.

List B: cotton, spices, small ruminants (goats), peanuts, macedonia nuts, mushrooms, strawberries, jojobas, winged beans, corn, soya, sunflower, sorghum bamboo, grapes.

If one adopts a narrow product-based definition of the term *non-traditional* then products included under non-traditional agriculture would be those given in columns (2) and (4) of Table 4. However, if one adopts a broader definition of the term, even some of those traditional products given in Table 6 that are being handled in a non-traditional way, vis-a-vis, marketing and technology may be covered under the non-traditional programme. In such a case, a *residual* definition of the term non-traditional may perhaps be the best practical definition, particularly as it is currently used by the government. As far as crops are concerned therefore, the term non-traditional agriculture can be taken to mean all crops other than sugar, bananas and coffee (or merely all crops other than sugar).

On the Significance of the New Non-Traditional Emphasis

If this broader definition is adopted, then the projected impact of non-traditional agriculture on the overall agricultural output is likely to be significant. This idea may be obtained simply by comparing the gross agricultural output in the economy in 1980, 1981, and 1982 with the projected output of AGRO-21 List A items for the years 1983/84 through 1986/87. This is summarised in Table 5.

As Table 5 indicates, it is apparent that if these projections were to materalise, in terms of output contributions, even if we exclude banana and coffee, in four years or so, the non-traditional sector is expected to play a leading role in the island's agricultural profile. Here it is critical to note that the expected result of this new initiative will in fact be achieved by rapid growth of only a few sub-sectors. Indeed, although a total of 21 product groups have been listed for implementation in this phase, seven of these taken together are expected to account for about 85 per cent of total projected

TABLE 4: *Product-Profile of Jamaica's Agriculture*

Exports		*Import Substitutes*	
Traditional	*Non-Traditional*	*Traditional*	*Non-Traditional*
Bananas	*Winter vegetables*	*Coconut*	*Cotton*
Coffee	*Tobacco (filler)*	*Corn*	*Soyabean*
Cocoa	*Pineapple*	*Cassava*	*Sunflower*
Citrus	*Honey*	*Afforestation*	*Sorghum*
*Spices**	*Aloe vera*	*Dairy*	*Rice*
Yam	*Shrimp / fish*		
Plantain	*Orchard crops+*		
*Orchard crops***			
Tobacco (cigar)			

Source: AGRO-21 (Main document) 1983.
Notes: * Pimento, ginger
** Ackee, mango, guava (processed)
+ Fresh fruits as opposed to processed 'traditional' exports.

TABLE 5: *Projected Contribution to Output of AGRO-21 List of Items (1983/84 - 1986/87)* (J$m)

Actual Output Values	*1980*	*1981*	*1982*	
GDP origination in agriculture, forestry and fishing	385.1	389.9	398.8	
Projected output values (re AGRO-21)	*1983/84*	*1984.85*	*1985/86*	*1986/87*
AGRO-21 List A Items	35.50	169.23	351.04	502.35
AGRO-21 List A Items excluding banana and coffee	34.40	164.80	335.78	477.93

Sources: 1. National Income & Product, Dept. of Statistics, 1982
2. AGRO-21 (Main document), April 1983.

TABLE 6: *Projected Relative Shares in Output and Investment of Major Non-traditional Agricultural Products (1983/84 - 1986/87)*

Products	*% Share in Gross output*	*% Share in Capital**
Winter vegetables	50.77	31.49
Shrimp/fish	12.26	13.97
Ornamental horticulture	6.10	9.99
Beef	4.47	9.28
Dairy	4.35	12.24
Yam	3.91	1.07
Rice	2.69	1.74
Total	84.55	79.78

Source: AGRO-21 (Main document) 1983.
*Includes on-farm establishment costs and working capital requirements.

output value. In addition, the overwhelming importance of these seven sub-sectors is also indicative of the fact that together they are expected to account for about 80 per cent of total capital investments (excluding land and machinery costs). The relative importance of these seven product groups is brought out in Table 6.

Section III

Non-Traditional Agriculture: A Preliminary Analysis

Land Mobilisation and Utilisation

As part of the preview to our analysis, we would like to make a brief comment on land, as an indispensable factor in any agricultural programme.

Land, perhaps more than any other singly agricultural resource, has been the centre of an intense and almost continuous struggle between the traditional plantocracy and the peasants, ever since emancipation in 1838. Indeed, the major problem here has not so much been one of an absolute inefficiency of land for agricultural use, but rather the continued monopolization of virtually all good agricultural land by the plantation sector, and the resultant alientation of the peasantry from such lands. The central question from the start has been one of distribution. Even the most recent census data indicates the clear persistence of this problem, to the extent that of the approximately 190,000 farms on 1.5 million acres of agricultural land, 79 per cent of such farms were small holdings of under 5 acres in size, but accounted for only 15 per cent of the total acreage. On the contrary, farms of over 100 acres, while accounting for less than 10 per cent of all farms in the island, occupied over 53 per cent of the agricultural land. Notwithstanding such severe land alienation, these small scale cultivators have nevertheless performed creditably, in providing

food for local market. Indeed, indications are that productivity levels on these small farms have been consistently higher than those obtaining on larger plantation-type farms.

But despite all this, plantation agriculture still dominates, and in accordance continue to absorb the most fertile lands in farms.

Table 7 indicates the basic character of land use as it existed in 1970; and very little has changed since then. But behind these statistics lie a considerable amount of underutilised land capacity, indicative of the fact that current levels of agricultural production could be significantly elevated, even without increasing the intensity of farming. What is significant though, is the well-known fact that the vast majority of these underutilised land resources lie outside of the control of the domestic (peasant) sector, and is therefore not immediately available for domestic food crop production.

It is against the foregoing that the government's new initiatives in agriculture ought to be seen, in the first instance. Indeed, as stated by the Prime Minister himself, the first basic objective of AGRO-21 is that of *"putting a possible 200,000 acres of land into commercial production over the first four years"*. Of the projected total incremental acres to be put into production over the next four years, six of the 21 identified sub-sectors will account for 81.6 per cent. This is given in Table 8.

Following closely behind these six sub-sectors, we find bananas (9,050 acres), winter vegetables (8,000 acres) and rice (6,800 acres) over the four year period.

It is interesting to note however, that the majority of these incremental acreages will in no way significantly affect or infringe upon the historically dominant plantation sector. Indeed, the programme does not contain any significant land reform aspects - and to a large extent by-passes the traditional peasant sector. On the basis of early indications, it would seem that the main emphasis will be on medium to large scale holdings.

TABLE 7: Distribution of Land in Farms by Major Types of Uses, 1970

Type of Use	*Acreage*	*% of Total*
Sugar	*167,700*	*11.2*
Bananas	*84,000*	*5.6*
Coconuts	*100,000*	*6.7*
Coffee	*15,000*	*1.0*
Citrus	*25,000*	*1.7*
Cocoa	*27,000*	*1.8*
Pimento	*24,000*	*1.6*
Domestic food crops	*91,000*	*6.1*
Improved pasture	*250,000*	*16.7*
Commercial forests	*16,000*	*46.5*
Other	*700,300*	
Total	*1,500,000*	*100.0*

Source: Five-Year Development Plan (1978-83).

TABLE 8: Incremental Acreage to be Put in Production 1983/84 - 1986/87

Sub-sector	*Gross Incremental Acres*	*% of Total*
Coffee	*10,000*	*4.0*
Coconuts	*21,000*	*8.3*
Afforestation	*53,000*	*21.3*
Orchard crops	*10,000*	*4.0*
Dairy	*71,665*	*28.5*
Beef	*39,000*	*15.5*
Sub-total	*205,165*	*81.6*
Overall TOTAL	*251,515*	*100.0*

Source: AGRO-21 (main document) 1983.

Capital

For an economy where capital is a major constraint on the expansion of production, it should firstly be noted that in many cases the capital requirements of the programme seem quite high. Indeed, such requirements might even be substantially higher, since the sector-wise capital requirements given in the AGRO-21 document does not include the cost of land and machinery. Indeed, the given fixed cost primarily include on-farm

establishment costs, such as land preparation and planting material costs.

For the programme as a whole, the estimated cost of machinery and equipment together is J$30m. As a proportion of total on-farm establishment and working capital requirements, this represents approximately 20 per cent.

An analysis of the projections for the four year period 1983/84 through 1986/87 indicates that the sectors characterised by high fixed capital to output ratios are citrus, orchard crops, dairy, coffee, honey, ornamental horticulture, beef and bananas. These capital output ratios are given in Table 9. In addition to this per unit output, some of these sectors have substantial working capital requirements. These sectors may be listed as tobacco, beef, orchard crops, bananas, dairy and winter vegetables.

In the four year perspective therefore, when both fixed and working capital requirements are taken into account, desirable investment activities appear to be the following: winter vegetables, plantain, rice, pineapple, dasheen, yam, cassava, and cocoa. All these sectors are characterised b a capital-output ratio that is less than one, thus indicating *positive* benefits in the four-year period. In contrast, sectors such as coffee, citrus and orchard crops have very high capital-output ratios and as such positive returns will be considerably delayed because of a longer gestation period. However, these activities might be attractive to the extent that they tend to have more stable and assured foreign markets and neglible working capital requirements except in the case of orchard crops.

Finally, it may be noted that whereas the overall capital-output ratio of 1.397 for the first phase of the programme seems relatively low, it is an underestimate as it does not incorporate the capital costs of land and machinery and the capital cost to the government for the provision of infra-structure and technical support service.

Impact on Employment

It has been claimed that non-traditional agriculture as operated through AGRO-21 would make a significant reduction in unemployment. In the first four-year period of its operation, the AGRO-21 programme is expected to generate 76,986 jobs, the major impact being felt in the latter two years of this period. The employment potential of the AGRO-21 programme in the fourth year of its operation is estimated to be 22,942 jobs. This represents annual employment in the programme after it has attained some maturity. This, however, represents only 2.19 per cent of the 1982 labour force. It is clear from Table 10 that the average rate of unemployment in the country is 27 per cent of the labour force.

Total employment provided by the sector agriculture, forestry, and fishing has been in the range of 270,000 jobs. Thus although the AGRO-21 programme would be providing as much output as the present agriculture, forestry and mining sectors by 1986/87, it would be providing only 8.5 per cent of the employment that is currently provided by this sector. This indicates in some measure the extreme capital intensity of the programme.

The average capital-labour ratio for the AGRO-21 programme appears to be around 19,212 in Table 10. This figure, however, would need to be upgraded to 19,601 to include investment in machinery and equipment. This indicates the amount of dollars needed to create one additional job.

Perhaps the main advantage in the employment scene is that jobs will be created in the rural areas, and that apart from jobs directly created in the sub-sectors identified in the AGRO-21 programme, there will also

be a significant number of jobs in related agribusiness activities as well as in additional activities in the transport, shipping, handling, packaging and other allied activities related to export agriculture.

The main sectors contributing to employment (see Table 11) are winter vegetables (24,000) banana (13,575), dairy (11,551) and plantain and ornamental horticulture (4,000 each). This does not, of course, mean that these activities are highly employment intensive. An appropriate indication of their employment generating potential may be obtained by a comparison of the capital-labour ratios. From Table 11 it can be observed that winter vegetables, as well as ornamental horticulture require a relatively large capital input for the creation of an additional job.

Impact on Foreign Exchange

The primary purpose of the development strategy via the growth of non-traditional agriculture is to generate foreign exchange earnings by exports and foreign exchange savings, in the case of a few items like rice, dairy and beef, by import substitution. The impact on foreign exchange in gross terms is more or less equal to the gross output value of the non-traditional agricultural items. The output of export items are likely to be fully exported while that of the import substituting items is likely to save foreign exchange by an amount equal to the output value.

However, it is not sufficient to look at gross foreign exchange earnings/savings as most of the non-traditional agricultural items are highly import intensive, especially with respect to fixed investment, and to some extent with respect to working capital requirements. Estimates of foreign exchange earning/savings for the four year period 1983/84 to 1986/87 are given in Table 12.

The net foreign exchange earning/saving as a ratio of the foreign exchange input indicates the extent of foreign exchange

TABLE 9: Estimated Capital-Output Ratios: 1983/84 to 1986/87

Items	Fixed capital output ratio	Working capital output ratio	Total capital output ratio
Winter vegetables	0.034	0.833	0.867
Bananas	1.011	0.948	1.959
Coffee	9.648	0	9.648
Plantain	0.061	0.528	0.589
Tobacco	0.250	1.518	1.768
Rice	0.239	0.666	0.905
Citrus	29.357	0	29.357
Pineapple	0.221	0.643	0.864
Dasheen	0.072	0.5	0.572
Yam	0.048	0.333	0.381
Honey	1.616	0.658	2.274
Aloe vera	0.882	0.717	1.599
Ornament horticulture	1.589	0.701	2.290
Cassava	0.126	0.799	0.925
Orchard crops	28.917	1.346	30.263
Shrimp/fish	0.756	0.837	1.593
Dairy	3.002	0.930	3.932
Beef	1.422	1.479	1.901
Cocoa	0.291	0.267	0.558
TOTAL	0.567	0.830	1.397

*For coconut and afforestation, no output has been reported in the four-year projection period.
Source: AGRO-21 document.

TABLE 10: Labour Force and Unemployment.

('000)

Year	Total labour force	Unemploy labour force	Col. (3) as % of Col. (2)
(1)	(2)	(3)	(4)
1979	953.6	264.7	27.8
1980	991.2	270.8	27.3
1981	1014.9	262.5	25.9
1982	1043.1	286.4	27.4

productivity per unit of foreign exchange investment that will produce an equal amount of foreign exchange in addition to recovering the unit investment. From this point of view, the activities that appear viable in a four-year perspective relate to:

(i) plantain
(ii) tobacco
(iii) rice
(iv) pineapple
(v) dasheen
(vi) yam
(vii) aloe vera
(viii) cassava
(ix) shrimp/fish.

Winter vegetables do not appear to be high in the ranking according

to foreign exchange productivity. In this case, the gestation period is also not long but working capital requirements are high. Dairy and beef are ranked below winter vegetables in terms of foreign exchange productivity.

Yields from coconut will begin to be positive in a much longer time horizon than the four-year period for which projections are available. In the case of banana and ornamental horticulture the foreign exchange productivity is very low. In these cases, a longer term assessment has to be made.

It may be noted that the foreign exchange productivity of rice, which is the main import substituting item in the first phase of the programme, is much higher than most of the export promoting items.

Considering the first phase of the programme as a whole, the overall productivity of a unit of foreign exchange investment appears to 0.57 cents, i.e. from each dollar of foreign exchange investment, $1.57 is expected to be recovered. This productivity figure would be considerably lowered if we also took into account the foreign costs of necessary machinery and equipment, and the foreign exchange cost to the government of providing necessary infrastructure to the projects under AGRO-21 as well as the cost of providing technical support services. If from the reduced aggregate foreign exchange productivity figures, one were to further deduce repatriation of profits in foreign exchange, the overall net positive effect on foreign exchange is likely to amount to a very marginal amount.

Operational Constraints on the Growth of Non-Traditional Agriculture

The discussion in the previous section regarding the viability and suitability of the AGRO-21 programme is predicated on whether the projections provided by the AGRO-21 secretariat in fact materialise. There

TABLE 11: Employment Potential of the AGRO-21 Programme (1983/84 to 1986/87)

Sub-sector/ project	Total Capital (J$000)	Incremental Employment (Nos.)	Capital Labour ratio ($x 10^3$)
Winter vegetables	465,819	24,000	19.409
Bananas	79,096	13,575	5.827
Coffee	46,262	4,000	11.566
Plantain	10,774	2,000	5.387
Tobacco	2,620	2,800	0.963
Coconut	24,078	1,500	16.05
Rice	25,728	1,340	19.20
Afforestation	19,143	1,200	15.953
Citrus	8,807	603	14.605
Pineapple	9,707	667	14.553
Dasheen	15,800	800	19.75
Yam	15,800	800	19.75
Honey	2,990	140	21.357
Aloe vera	23,425	1,580	14.826
Ornamental horticulture	147,710	4,000	36.928
Cassava	22,006	720	30.564
Orchard crops	24,725	1,600	15.453
Shrimp/fish	206,558	750	275.411
Dairy	181 041	11,551	15.673
Beef	137,253	1,560	87.983
Cocoa	9,725	1,800	5.403
TOTAL	1479,058	76,986	19.212

TABLE 12: Estimated Impact on Foreign Exchange Earnings/Savings (1983/84 to 1986/97) (J$000)

Sub-Sector/ Projects	Gross foreign earnings	Foreign exchange input	Net foreign exchange earnings	Foreign exchange productivity (col. 4 as a proportion of col. 3)
(1)	(2)	(3)	(4)	(5)
Winter vegetables	483,490	324,131	159,359	0.4916
Bananas	86,183	84,723	1,460	0.0172
Coffee	5,510	17,471	-11,961	-0.6846
Plantain	16,457	3,633	12,824	3.5299
Tobacco	7,500	660	6,840	10.3636
Coconut	0	3,740	- 3,740	-1.0
Rice	28,127	6,300	21,827	3.4646
Citrus	260	1,097	- 837	-0.7630
Pineapple	20,160	1,913	18,247	9.5384
Dasheen	34,500	5,980	28,470	4.7692
Yam	51,750	8,280	43,470	5.25
Honey	562	0	562	-
Aloe vera	35,000	7,375	27,625	3.7458
Ornamental horticulture	58,050	51,918	6,132	0.1181
Cassava	19,040	6,825	12,215	1.7897
Orchard crops	3,001	6,235	-3,234	-0.5187
Shrimp/fish	87,182	41,612	45,570	1.0951
Dairy	23,694	16,557	7,137	0.4311
Beef	34,400	24,532	9,868	0.4023
Cocoa	407	2,908	-2,501	-0.86
TOTAL	995,273	630,164	365,109	0.57938

Source: Basic data from AGRO-21.

are in fact a number of major operational constraints in promotion of the AGRO-21 programme in particular and the non-traditional agriculture strategy in general. These may be grouped into five categories: domestic supply constraint, cost of production constraint, marketing constraint, domestic resources constraint and a foreign resources constraint. These are obviously interlinked.

1. *Domestic Supply Constraint* - For creating and sustaining a successful hold in the foreign markets, a regular and reliable supply of goods is considered to be sine qua non. It is important to ensure that products are of competitive quality and supplies are available at the right time to enable marketing intermediaries to fulfill contractual obligations and to create an image of reliability. In the case of non-traditional agricultural products, the markets are likely to be highly sensitive to changes in tastes and fashions and unless the feedback of information is speedy, domestic supplies may not always meet the requirements.

   Domestic producers, on the other hand, need to be assured of some kind of price stability and reasonable profit margin. International prices are highly volatile especially for the non-traditional products. It is also difficult to see whether any government agency would attempt to act as a buffer against price instability, especially in view of the unsuccessful attempt by JETCO in the seventies in the case of citrus.

2. *Per Unit Cost of Production Constraint* - The per unit cost of production for Jamaican non-traditional exports is likely to be high compared to that for their competitors from Latin America, and for domestic producers in the US who have a longer experience in these products, and who may be in a position to reap some economies of scale; and may in fact have to contend with lower freight and transportation costs.

   In Jamaica the wages and the cost of other domestic inputs are likely to be high. If the products are, therefore, intensive in use of domestic inputs there would be a comparative cost disadvantage. On the other hand, if the products are intensive in the use of imported inputs, there may not be an assured and timely supply of the relevant inputs, thus upsetting production. Productivity falls considerably if fertilizers and pesticides are not applied on time, if seed plants are not available on time, and if machinery lies idle for lack of spare parts.

   An appropriate tax/subsidy package needs to be worked out to keep the per unit cost of production competitive.

3. *Marketing Constraint* - The main agencies that are slated to play a key role in the marketing and promotion of non-traditional agricultural items are JNEC, JETCO, JAMCO, JNIP, etc. The role of agencies has already been discussed in an earlier section.

   The main foreign market that Jamaica is expected to deal with is highly competitive and for the kind of non-traditional products in question, it is also likely to be highly volatile. The US markets as well as markets of other developed countries will have highly specific requirements regarding the shape, size, colour and taste regarding most of the non-traditional agricultural items and domestic producers will have to be well informed regarding these. Also, these requirements would differ from market to market.

Due to a multiplicity of agencies dealing with the markets along with many private organisations, it is difficult to develop a coordinate approach to the external markets.

4. *Resource Constraint* - Resources constraint may be divided into a domestic resources, and a foreign resources, constraint. Most of the non-traditional agricultural items are highly capital intensive especially with regard to imported inputs. The initial capital requirements are high and in many cases the working capital requirements are also high.

Since the AGRO-21 programme is one of 'commeralising' agriculture, it is the task of the 'catalytic' agencies like the JNIP and JNEC to bring domestic and foreign enterpreneurs together. Apart from private sector capital inflows, the government has also to find funding for investment in infrastructure and technical support services. The main sources of funding as well as the relative position of demand and supply of funding are brought out in Table 13.

Sector-wise financing position is indicated in Table 14. It would appear that firm commitments have been secured only for winter vegetables, bananas, coffee, plantain, tobacco and citrus. In most other cases, a significant portion of the the required financing is still lacking. The government has, however, committed funds that are not sector or crop specific. These may be used to partially offset the gap.

At this stage, we would like to round off the paper by turning out attention to two specific issues, namely:

1. the general desirability of this new strategy; and

TABLE 13: Demand and Supply of Finances for AGRO-21

Demand	*1983/84*	*1984/5 to 1986/7*	*Supply*	*1983/84*	*1984/5 to 1986/7*
On-farm works	*81.0*	*406.5*	*Gros budget*	*9.7*	*30.8*[1]
			World Bank	*1.5*	*3.6*
On-farm Mach. & Equip.	*6.0*	*24.0*	*US/AID(CB)*	*50.0*	-
			CIDA[2]	*6.0*	*34.0*
			EEC	*0.4*	*5.2*
			ACB	*26.2*	*65.8*
			IBRD	*1.4*	*6.4*
			Other[5]	*12.0*	*232.2*[3]
TOTAL	*90.0*	*430.5*	*Total Finances*	*107.2*	*380.0*
			Gap	*(17.2)*[4] *Surplus*	*50.5*

Notes: 1. Includes counterpart to bilateral funding only.
2. $30m of total CIDA input is still under negotiation.
3. $162.2m still under negotiation (JNIP etc.)
4. $17.2m surplus will be carried forward to 1984/85.
5. Other includes financial arrangement with parts of Japan.

Source: AGRO-21 (main document).

TABLE 14: Profile on Projects for Commercial Agriculture (J$'000)

Sub-sector/ project	*Total 4-year requirements*	*Commitment*	*Under Negotiation*	*Gap*
Winter vegetable	*20,711*	*5,577*	*35,110*[1]	-
Bananas	*40,018*	*53,279*	-	-
Coffee	*20,260*	*50,680*	*23,874*[1]	-
Plantain	*1,120*	*3,560*	-	-
Tobacco	*720*	*2,119*	-	-
Coconuts	*4,490*	*636*	-	*3,854*
Rice	*6,700*	*3,560*	-	*3,140*
Afforestation	*12,936*	*2,000*	-	*10,936*
Citrus	*7,908*	*9,442*	-	-
Pineapple	*2,481*	-	-	*2,481*
Dasheen	*2,000*	-	-	*2,000*
Yam	*2,000*	-	-	*2,000*
Honey	*2,428*	-	-	*2,429*
Aloe vera	*12,925*	*11,570*	-	*1,355*
Ornamental horticulture	*102,500*	*6,172*	*25,693*	*70,635*
Cassava	*1,450*	-	-	*1,450*
Orchard crops	*23,625*	-	*364*	*23,261*
Shrimp/fish	*98,028*	*8,830*	*43,609*	*45,589*
Dairy	*66,737*	*12,478*	*12,700*	*41,550*
Beef	*55,500*	*4,377*	*20,905*	*30,218*
Cocoa	*5,067*	-	-	*5,067*
TOTAL	*491,675*	*174,280*[2]	*162,255*	*245,965*[2]

Source: AGRO-21 (main document).
Notes: 1. Includes working capital element - the crops working capital can be capitalised in 1.
2. Total funds committed to programmes is $325m. Funds not crop or sector specific - total $150.220m. These and other funds will be applied to offset the gap.

2. the feasibility of the strategy based on the government's own projections and within their stated terms of reference.

On the Question of 'Desirability'

In this relation there are a number of general questions that should be brought to the fore.

1. what exactly is the novelty of this new approach, and on that basis, how non-traditional is such an approach to agricultural development in Jamaica?
2. on the basis of its orientation and proposed mode of implementation, what implicit explanation does it offer for the persistence of agricultural backwardness in Jamaica?
3. to the extent that it has been claimed that this new strategy will *blaze a new trail of prosperity*", to whom this new prosperity come?

In looking at the first question, the Prime Minister himself claims that the real novelty of this new approach has to do with the commercialization of agriculture based on the combination of the *"most advanced technology available with sizeable capital and land"** Indeed he further argues that this is distinct from previous agricultural plans which relied on government involvement. Implicitly therefore, AGRO-21 and its emphasis on non-traditional agricultural development is by definition designed to facilitate maximum private sector participation. But is this altogether really new? The answer is no. Indeed, except for a few instances in the past in which government actually participated in direct production, the entire history of agricultural development in Jamaica has been distinctively private sector oriented. But if the real emphasis is on the commercialization of agriculture, and if by commercial we mean production for the market with a view of profit maximization, then here we find a different issue.

On this basis the traditional plantations would qualify, but not the peasantry, since the chief concern of the latter has always been biased in the direction of maximising family welfare. One would expect therefore that the commercialization of agriculture would involve a reorientation of traditional peasant agriculture. But this is not to be, since the proposed programme is not directed toward this group of producers, but rather towards a new class of producers operating on medium to large scale holdings and comprising of mainly foreign as well as domestic entrepreneurs, who are more likely to come from the urban elite than from the rural peasantry. As such, apart from employment opportunities provided, the major share of profits to be derived from such programmes is likely to make its way out to urban areas as well as foreign shores.

Turning our attention to the second part of the first question, (i.e. how non-traditional is this approach), we need, firstly, to recall that from the government's point of view, non-traditional simply implies the production of a range of new crops, particularly for export, by a new class of commercial producers. But while this no doubt represents a marked departure from the past practice of placing emphasis on a much narrower range of agricultural exports, it is our view that the concept of non-traditional agriculture should as well include other aspects of change such as attempt to tap new markets, hence reducing our dependence on a few traditional markets, and simultaneously attempt to change the internal patterns of resource allocation in agriculture, giving more resources to the much neglected peasant sector.

In attempting to address the second question, it is clear that given

*See Preface to AGRO-21 pamphlet.

the general perspective of AGRO-21, it is the government's view that the persistent state of agricultural underdevelopment in Jamaica resides in a combination of factors, chief among which are technological backwardness and non-commercially-oriented produciton.

Indeed, according to one AGRO-21 secretariat official, the real problem in Jamaican agriculture is management. But while no one will deny that these are critical factors, AGRO-21 would tend to suggest that other factors such as the existing patterns of resource allocation and control are of no real significance. Indeed, even in the face of the well known alienation of peasant producers from critical resources, such as land, AGRO-21 makes no attempt to rectify this situation. So glaring is the neglect of these producers that organisations like the Jamaica Agricultural Society have been calling on the government to implement a programme similar to AGRO-21 specially tailored to meet the needs of the small farmers.

Turning to the third question, (ie. to who will the anticipated prosperity come?) we need only to recall that AGRO-21 is by design focussed on an entirely new class of agriculturalists, many of whom will invariably be foreign. As indicated before, it is to this new class that the majority of direct benefits will flow. For the rural poor some employment benefits will be derived, but this will fade into insignificance when we consider the potentially negative impacts that this new programme is likely to have on the peasantry as a whole. Indeed, peasant agriculture is likely to suffer in two critical respects: Firstly, peasant producers may find it increasingly difficult to find part-time and seasonal labour, and in some cases even full-time labour, since such labour might be attracted to the higher wage commercialized sector. Secondly, many export-oriented products, such as vegetables produced on these commercial farms might find their way into the local market, depressing prices and forcing traditional peasant producers out of business. This is quite possible, since these commercial farmers equipped with better technology and deriving certain economies of large scale production are likely to out compete smaller higher cost peasant producers.

Yet, it must be also acknowledged that if those projections upon which the programme is based materialise then, minimal though it may be, the increased employment and foreign exchange earnings would no doubt be quite beneficial.

Still on the question of desirability, but this time from a more micro-level, perspective and within the specific terms of reference set by the government, we need again to revisit some of the implications of the new strategy, particularly, in the light of our earlier discussions in Section III. As we have seen, even on the basis of data contained in the AGRO-21 projection, which are likely to be biased in the direction is presenting the programme in the best possible light, the programme is highly capital intensive, has a relatively low employment potential per unit of output, and can at best provide very marginal net earnings/savings of foreign exchange, which in fact would depend on a number fo highly unpredictable factors. It would be recalled that at the end of the first four year period it would be possible for the programme to contribute as much output to GDP as is currently provided by traditional agriculture, however, the employment generated from the non-traditional programme would be only 8.5 per cent of the employment currently provided by the agricultural sector for a comparable level of output.

Further, it would also be recalled that the foreign exchange earnings/savings has been estimated to be approximately 57 cents per one

dollar of investment in foreign exchange. These estimates however, do not incorporate the foreign exchange cost of machinery and equipment, as well as the foreign exchange cost of providing the necessary infrastructure and technical support services. In addition one has to take into account the likely and inevitable repatriation of profits by foreign investors in foreign exchange. The net foreign exchange productivity is therefore likely to be low.

In the final analysis, when we consider the fact that by its very design, AGRO-21 is bound to utilize sizeable amounts of our prime agricultural resources, including land, if its implementation turns out to be wasteful and expensive, in addition to having negative effects on domestic peasant production, then it is clear that the social cost of such a programme would be exceedingly high. It is therefore against this background that we need to inquire into the feasibility of such an exercise.

On the Question of Feasibility

The critical question here is that even if this new strategy, despite its negative features, is declared desirable, to what extent is it feasible? Here the crucial factor has to do with whether or not those non-traditional agricultural products identified for export will be able to achieve the required levels of productivity to render then competive on the international market. Indeed the real issue is not so much whether markets exist for these commodities, but rather, whether we can or will be able to carve out a reasonable slice for ourselves in these market places. We have already identified a number of operational constraints that could possibly impede our progress in this direction.

It is worthwhile emphasizing that there are indications that adequate resources, both domestic and foreign, can perhaps be attracted for the programme, but that given the risk and uncertainties associated with a number of crops, such financing would be available at highly costly terms. Whether the productivity in non-traditional agricultural sector in Jamaica would make these investments worthwhile is a highly speculative issue. This issue needs to be examined project-wise and crop-wise rather than for the programme as a whole.

Here, there are more questions than answers; and the need for more research in this direction is evidently clear.

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