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## SOME ASPECTS OF RATIONALIZATION AND LIVESTOCK DEVELOPMENT IN THE COMMONWEALTH CARIBBEAN

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Since 1968, there has been much talk and concern in the Caribbean on the rationalization of agriculture, and this area of interest appears to be joining the debates on agricultural diversification and import substitution which started about a decade ago. The recent aims of the agricultural policies of all the territories have been to increase local food production and reduce the imports of agricultural commodities, wherever import substitution was technically feasible. At the same time, there was hope for increased production of major export crops thereby providing employment, providing raw materials on which to base agro-industries, while achieving a satisfactory level of income and improved standards of living for producers and their families. It was felt that to diversify agriculture in this way would be to constitute the basic activity of agricultural development. However, attempts at diversification have met with setbacks mainly due to high production costs, over-production for the domestic markets and high competition in the foreign markets.

We must first ask ourselves: What actually do we mean by the term *rationalization* and how does it fit in with current diversification policies? Are they mutually exclusive and does rationalization complement diversification or vice versa, or can they be achieved together? First, we can define *rationalization* according to the CARIFTA Secretariat as *the process in which every territory in the CARIFTA union concentrates on the production of crop or crops for which it is most suited or has some comparative advantages*. Presumably, the definition is also intended to include livestock. The Secretariat also suggests that *rationalization does not mean and must not mean a regional return to monoculture nor regional specialization of crop production* (and presumably livestock production as well), and states categorically that *what rationalization proposes is the planned diversification of agricultural production, not at the territorial or sub-regional level, but at the regional level.*<sup>1</sup>

If the question of *rationalization for what* is asked, one may look back at Caribbean agriculture in colonial times and conclude that it was highly rationalized for what it was intended to achieve. The production of sugar for metropolitan markets, for example, was the prime objective, and it was left to the peasantry as entrepreneurs to initiate a system of diversified agriculture. Since rationalization must not mean a return to monoculture and specialization, then it must be primarily concerned with the development of a peasant or small farm sector, designed to satisfy the needs for domestic food production and the substitution of imported food commodities. If, as the definition suggests, each territory should produce the crop or crops for which it is most suited, it would seem that Barbados for example, should continue to produce sugar, cotton, and food crops. Sugar and cotton may be better suited to plantation production and food crops to small farm producers. The next question to be considered is the optimum level for the various crops, but this question could hardly be answered at the present time due to lack of farm management studies and data. The same is true for most of the Commonwealth Caribbean territories.

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<sup>1</sup> Much of the original ideas on rationalization have come from the Commonwealth Caribbean Regional Secretariat and appears in their Bulletin TID 18/71.

It may be possible for one territory to produce crops for export outside of CARIFTA markets, while importing all of its food from another CARIFTA territory. Similarly, it might be possible for another territory to produce food crops only for the local, CARIFTA, and export markets. The latter may not fall under the rationalization umbrella, as it is proposed that root crops should be excluded from a regional plan since each country is expected to achieve self-sufficiency in the production of those crops. It is difficult to understand how a rationalization programme would exclude food crops when production of the latter is the basis for all of the diversification programmes. Moreover, such crops are primarily produced by the small farmers.

It is worthwhile to consider to what extent it is possible to achieve rationalization when diversification at the territorial levels is still premature for reasons mentioned earlier. Current thoughts on rationalization seem to suggest that so long as a regional plan is worked out, the individual diversification programmes will fit neatly in place and the region will benefit as a whole. Though this result may be true in theory, another question to be asked is what is the basis on which a regional plan can be established, when the only known fact is that diversification programmes have been generally unsuccessful and import substitution has given way in many cases to import replacement.

One of the most vital areas in Caribbean agriculture today is marketing, both at the local and CARIFTA as well as at the export level. At the export level, marketing expertise has developed over a long time period and even though many international problems appear, we are able at least to identify these problems and gear ourselves to tackle them. The same is not true for domestic food crops. Not only are they many, but they are all perishable and relatively little or no research has gone into production, transportation, storage, and handling. When one considers that over 300 years of research has been undertaken for sugar -- one crop -- then we must concern ourselves as to how effective we can be in attempting to produce and market new series of varying crops, particularly for export.

The Marketing Boards throughout the region have all been engaged in a variety of activities and have attempted to lay the groundwork for improving production and trade both inter-CARIFTA and extra-CARIFTA. They have operated in the absence of market intelligence and so were at times unaware of what quantities they were likely to buy as well as to sell. Many varieties of the particular crop, for example carrots, were planted and at varying times of the year there was little knowledge of expected yields and expected time of harvest. In some cases, marketing boards offered to take certain quantities of a particular kind of produce, but they accepted only a small proportion, so that the producers have lost confidence. In one country, the marketing board is attached to the Ministry of Trade rather than to the Ministry of Agriculture and its operations suggest that due consideration is not given to the producer. Emphasis appears to be given to setting unrealistic and at times unnecessary price controls, whilst at the same time freely importing basic food commodities. It would seem that there are difficulties in developing a Regional Plan for agriculture when the marketing of basic food commodities is so varied and generally inefficient. Indeed, it is thought that a first approach should be to rationalize the policies of the various marketing boards, then to determine how such policies would generate a regional plan. It is difficult to implement a regional plan at the present time, as the marketing boards are looking after their individual interests.

The concept of rationalization must be considered along with that of the Agricultural Marketing Protocol (AMP). The establishment of the AMP has met with many problems since its inception and to date does not appear to be functioning satisfactorily. There are many reasons for this situation; but the main ones seem to be that all of the countries produce the same commodities, and no country is as yet

prepared to *give and take*. What appears to be needed is the rationalization of production before the AMP can function properly; and it seems that too much emphasis is being given to regional plans without first sorting out the production problems. It is for this reason also that at the present stage of development in the region, the marketing boards must be primarily concerned with the producer. As production becomes organized, marketing boards can, through their operations, induce greater efficiency in production, then attempt to wrestle with the problems of the consumer. Indeed, for the AMP to be a success, the various marketing boards should first rationalize production, before attempting to deal with consumption.

Taking a closer look at livestock products, it is observed that the disparities between the diets of the more developed countries and the Caribbean are very marked. For example, whereas total food consumption in the less developed countries measured in terms of calories averages about 70 per cent of the average for the more developed regions, the corresponding figure for total protein is approximately 65 per cent, of which animal protein is only 20 per cent and of the main sources of animal protein, milk is estimated at about 14 per cent of the average, eggs about 12 per cent and meat about 20 per cent. Whereas in 1970, the average per capita consumption of the ten greatest meat consuming countries averaged 226 pounds, the corresponding value for the Commonwealth Caribbean was 54 pounds. These broad averages can be no more than indicative, but nevertheless bring out the salient facts that consumption levels in the Caribbean are not only low in quantitative terms, but also lacking in the essential nutrients. The distribution of the limited supplies is also uneven and thousands of people consume only small quantities of livestock products mainly because of low incomes and small production. At low incomes, the greater proportion is spent on starches in order to satisfy hunger. After the basic needs are met further income is spent on livestock products and more expensive foods.

One point of significance is that not only are the income elasticities of livestock products high, but also are the price elasticities. In most cases, they all exceed unity; which means that if the cost of livestock products could be reduced by improvements in production and marketing, the volume of consumption would increase for a given rise in income. At present, neither production nor marketing is very efficient in the Caribbean and livestock products tend to be expensive.

Apart from the great nutritional need for larger supplies of livestock products, there appears to be justification on economic grounds for special efforts to raise livestock output, at least in proportion to population increases and per capita income. The Caribbean has failed to approach this target with the result that there has been constant increases in the price of livestock products, and large foreign exchange payments are made because of the need for imports. In fact, meat imports to the Commonwealth Caribbean rose from 51m. pounds in 1956 at a c.i.f. value of EC\$27m. to 160m. pounds in 1970 at a c.i.f. value of EC\$66m. Furthermore, meat imports in 1956 were approximately 65 per cent of the total consumption and by 1970 this proportion has increased to 75 per cent. The fact that Caribbean imports of meat and milk have been increasing over the past 15 years (both in absolute values and as a percentage of total consumption) suggests that the area of livestock production is of high priority in any regional plan for agricultural development and rationalization.

The main methods of increasing livestock production in the Caribbean will lie in the regions of disease control, better feeding, and improved breeds. It will be pointless to devote research time and energy towards the production of improved feedstuffs if the animals are prone to disease. Similarly, it will be pointless to improve breeds without a ready availability of satisfactory feeds. It will be necessary

to concentrate more research initially on disease control, but there will also be the need for improvement in management, nutrition, breeding, reproduction physiology, and the processing and handling of meat and milk.

As the means of increasing milk production, some Governments in the region have turned to the importation of cattle from overseas. There have been, however, limitations to this procedure, as the introduction of such cattle did not always result in the spectacular progress which was anticipated, and in no part of the Caribbean have they produced to the same extent as in their native territories. Besides problems of disease, the managerial skills required to maintain these animals were, in many cases, not available in the Caribbean. Up to the present time, imported animals have made only a small impact on meat and milk production in the Caribbean.

Inadequate nutrition is one of the most important reasons for the slow growth of animal production in the Caribbean. Much work has been done on animal nutrition, with emphasis being given to the integration of livestock production with crops and grassland management, and much of the developments in animal production over the last decade was as a result of the increased production and utilization of grass and forage and/or grain and legumes, combined with proper livestock management. There is much work still to be done on pasture legumes for the Caribbean, but the principal impediment to good quality nutrition has been the poor nutritive value of the forage. In the vast expanse of the Guyana savannahs, for example, the soils are extremely poor, the ecological conditions bad, and the forage poor in feeding value. Introduced grasses do not even stand up to the local conditions. Furthermore, there are the problems of foot and mouth disease, bat-transmitted rabies, and limited communications.

Experiences from other tropical areas have shown the need for a closer relationship between plant and animal production, and production potential can no longer be assessed solely on the basis of the individual animal. The need is for research into total production per acre in terms of both animals and crops. It should be possible, for example, to use legumes as fodder crops in the drier areas, provided irrigation is available. In the low rainfall areas it may be wiser to produce a combination of livestock and feed production, rather than to produce livestock only. There will be the need for increased supplies of organic matter and nitrogen from animals, leading to increases in fodder production. Range management of the natural grasslands is important if fodder supply is to be maintained, particularly when there is a short rainy season. In such areas, pastures will grow quickly and heavily until the dry season approaches, leaving only shrubs and dry grass available for feeding. Thus, there is need for increasing as well as conserving fodder supplies.

One of the reasons for the slow development of livestock in the Caribbean has been, in most cases, the unsatisfactory arrangements for marketing. Improvements have taken place in the independent countries particularly with the marketing of milk, but the marketing of meat needs considerably more attention. If meat production is to be increased in order to meet the growing demand, then the need for adequate marketing services will increase, especially in those areas where the population growth is fastest. There will be the need for proper hygienic standards and improved packaging, transport and processing facilities. The method of selling livestock will have to be considerably improved if producers are to have the necessary incentives to expand the volume and improve the quality of their output. It is vital for future plans, for livestock production programmes to pay particular attention to the processing and marketing requirements.

Throughout the region, the livestock industry has been subjected to price controls

from time to time, the emphasis being on cheap milk and meat. This measure has caused the industry to remain stagnant throughout most of the region, since controls have often been imposed with little or no consideration given to local costs of production. A recent example comes from Jamaica where, after lifting the control price of beef early in 1970, it was without apparent reason reimposed within two years. The beef industry is being crippled by the controls and it is reported that only black market sales have enabled the industry to stay alive. In the midst of these operations, beef is being imported cheaply from New Zealand and Australia and sold for profits in excess of what local producers obtain even at black market prices. Local beef production is declining and the small farmer in particular is shifting from beef.<sup>1</sup>

Another area where the dampening effect of price controls is evident is in the poultry industry, as the imposition of the retail price control, for example Barbados, appears to bear little or no relation to the cost of production, especially when it is realized that some 70 per cent of this cost is for manufactured feed; all of which is imported at uncontrolled prices. It would seem that for any sector of the livestock industry to develop, price controls as a policy measure should never be adopted, at least in the early stages of development. At a later stage, price controls may be imposed to encourage greater efficiency of production, but the persons responsible for introducing price controls should also know within limits, the costs of production of the items they intend to control.

As regards dairying, it is estimated that imports of dairy products in the Commonwealth Caribbean in 1970 were approximately 240 pounds of fresh milk equivalent per person, and that if these imports were to be replaced by locally produced milk, some 160,000 cows with an average yield of 6,000 pounds per year would be required. It does not seem likely that the region will ever become self-sufficient in milk production; nevertheless, milk production must be allowed to develop and compete with imports even if Government is required to subsidize production. Governments may also raise the price of imports to encourage local production. The price for locally produced milk varies widely throughout the region, with the highest price paid in Barbados.

A dairy industry also makes a contribution to the beef industry and were it possible to reduce the imports of dairy products by 25 per cent then this would lead to a reduction in beef imports by about 20 per cent. It would seem, therefore that much effort should be given towards the production of milk particularly in the smaller territories, rather than attempting to produce beef as a specialized operation. There seems to be adequate potential for the specialized production of beef only in Belize, Jamaica, and Guyana; and hopefully, these countries will satisfy the requirements within the next decade. Guyana has the land to supply the other countries of the region, but apart from possibilities of foot and mouth disease, there are many other problems hindering the development of specialized beef production.

In Jamaica, nearly half a million acres of improved grasslands go to waste. This figure represents about 70 per cent of the total area under pasture. The carrying capacity on improved pastures (properly fertilized and managed) ranges from one-half to one and a half acres per mature animal. The implication is that if the natural grasslands were renovated to improve grass, the production of beef and milk could be trebled leaving a surplus for export. Beef production from feed lots have been steadily increasing since 1964, and now there are well over 1,000 units in operation. It has been found that though it is cheaper to fatten on grass, the greater throughput makes the feedlot a more profitable operation, and the greatest potential is in farms of over 500 acres.

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<sup>1</sup> Since the date of writing, price controls on beef in Jamaica have again been lifted.

Within the past two years, a new method of animal feeding has developed in Barbados, which may provide the break-through in animal feeding and production in the Caribbean. The system is based on the separation of cane pith from the outer rind. The creamy palatable pith is referred to as Comfifth and when cane tops are minced and added to it, the feed is then referred to as Comfifth-CT. Cane tops and cane stalk represent 30 per cent and 70 per cent respectively of the weight of whole cane and the rind is approximately 15 per cent of the weight of the whole cane. If we assume, therefore, that one acre of sugar cane produces 29.0 tons of sugar cane,<sup>1</sup> then the weight of whole cane may be calculated as follows:

$$29.0 + \frac{30 \times 29}{100} = 37.70 \text{ tons of whole cane,}$$

and the weight of Comfifth-CT would be

$$\begin{aligned} 37.70 \times 0.85 &= 32.05 \text{ tons of Comfifth-CT} \\ &= 71,790 \text{ pounds of Comfifth-CT} \end{aligned}$$

Recent experiments with beef cattle have demonstrated that approximately 40 pounds of Comfifth-CT per animal per day is required; thus about five beef animals can be fed from one acre of sugar cane, shown as follows:

$$\frac{71,790}{40 \times 365} = 5 \text{ (approx.)}$$

What is of greater significance is that one acre of sugar cane can produce 3,000 pounds of beef (approx. 2 pounds per day) which is an extremely high value by any standard when compared to other feeding systems. It will be necessary, of course, to supplement Comfifth-CT with protein, minerals, and vitamins; but the same is true for all other basic feeds.

The Comfifth system of feeding has considerable advantages, the most important being that it does not depend on sugar production as in the case of molasses feeding; and the nutritive value does not decline with yield as is the case with other forages. In fact yield is highly correlated with maturity and the energy can be stored for long periods. Maximum sucrose content is not important in animal feeding as it is for sugar production. A relatively uniform supply of readily digestible energy throughout the year is more important and cane can support this.

There are numerous systems of livestock production applicable to Comfifth-CT feeding. For example, in addition to specialized beef feedlot operation, it may also be utilized with partial grazing; also with dairy beef operations, etc. As regards pig production, trials have indicated a limited use of Comfifth to young pigs, but for larger pigs (70-200 pounds liveweight) it may replace up to about one-third of the concentrates used. With poultry feeding, it can replace about 25 per cent of the grain in the feed.

It is certainly true that there has been a technological break-through in Comfifth feeding, and that

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<sup>1</sup> 29.0 tons of sugar cane per acre is the five-year average (1966-70) for all of the member countries of the West Indies Sugar Association.

a Red (meat) Revolution could follow the Green Revolution. However, there are still many questions to be answered regarding the economics of Comfifth production and feeding, which together with other areas in nutrition should form the basis for considerable research over the next decade.

The field of livestock production in the Commonwealth Caribbean is open for considerable development. Some progress has been made in nutrition, breeding and husbandry, but there is still a great need for financial resources, trained personnel, and research. It is the author's view that no regional master plan will solve the problems of livestock production, but that each territory must attempt to use its own resources to maximum advantage. For example, St. Lucia may use coconut meal and banana rejects for producing pigs, whereas Barbados may utilize marginal sugar lands for beef production. It is important that we think in terms of producing the badly needed animal protein rather than concentrate on any specific type of production which may be unsuitable to the local conditions.