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WHAT OF AN
AGRICULTURE/RURAL AGRO-INDUSTRIES
CONTINUUM ?

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FOREWORD

This is follow-up to the paper CARIB/INT.R. 84/1 "Critical Review of the Rural Agro-based Industries Project Proposal".

The context remains within the general or long-term objective of establishing rural small-scale agro-based industries with emphasis on artisan-type operations, to serve as incentive to increase primary production, and to allow for the mobilization and participation of rural people in their own development.

This paper places the proposal reviewed in the earlier text in a wider perspective, by expanding the conceptual frame and setting it against actual experiences and such empirical information as can be drawn upon. The purpose is to narrow the range of conjectures by identifying actions, inter-actions and motivations. The treatment is entirely theoretical.

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INTRODUCTION

Agro-industry in the sense of a processing plant which is part of a large estate or plantation is a familiar characteristic of the sugar plantation system that has been common throughout the Caribbean. With the adoption of policies to achieve wider crop diversification and a greater measure of agro-industrialization other patterns have evolved.

The first major efforts to establish agro-industries were on the basis of an entrepreneur setting up a processing plant with his raw materials purchased on the open market. To get the plants started and to keep them running, governments granted concessions for the importation of raw materials, which it was hoped would have been a temporary measure, and that an indigenous raw material supply would have evolved. This has not materialised even after two decades, and most of these enterprises continue to import the bulk of their raw materials. Not only has this system failed to generate an indigenous raw material supply, but it also suffers from having no guarantee of continuous supply, nor of uniform quality, nor of price of the raw material.

Subsequent attempts more oriented to the stimulation of locally supplied agro-industries were on the basis of the entrepreneur establishing a processing plant and contracting with local produce merchants for the raw material supply. These have not been any more notably successful. In times of scarcity of the raw material, the produce merchants tended to sell on the open market where a better price would be obtained, while in times of glut they would buy more widely from farmers at the lower prices in the hope of forcing the processors to take all that they can supply. The processors on their part have reacted by offering lower prices and limited their acceptance of supplies on the grounds of poor quality or lack of processing capacity.

Such experiences stimulated the establishment of a few producer/processor co-operatives, thus helping producers of raw materials to benefit from an assured and stable market created by the purchases of the processing plant, (with the added advantage of sharing in the profit). The processing unit in turn is assured of an adequate supply of raw material. These co-operatives

of producers/processors operate formally as Associations, concentrating on meeting the needs of their members. They tend to be linked to some particular crop/product, and by their nature develop into centralised systems for those products.

These four patterns share the common feature that they are distant from the rural small farmer. To the extent that the operations of the one or the other relate to agriculture it is mainly to large and intermediate sized farm operators practising a fair degree of crop specialization.

It is to the question of establishing agro-industrial units at the level of rural small farming that this paper is addressed. The purpose is to examine innovations that involve rural small producers in enterprises that are likely to improve their income and thus their standard of living. Any such innovations should, in their effects, be additive to the farming effort, and stimulative of it, thereby being generative in rural development.

I. A CONCEPTUAL FRAME

In the previous paper the area of activity was identified as having been set within the context of non-commercial small scale, part-time, primarily female operations, based on periodic surpluses of uncertain quantum and products mix, and dependent on stable farm family situations. It was deduced also, that it had to be oriented to equipment already on farms, with processes within the skill capabilities of the participants, (mainly primary school leavers or dropouts). Consequently, it was necessary to take account not only of the economic and technological aspects, but also a range of sociological considerations. The problem now being addressed is the identification of a probable evolutionary path that would result in realization of the general long term objective, commencing from the position of no/or low economic viability of such initial operations.

The drafters of the original idea very correctly stressed a range of observable characteristics that underlay much of current agro-industrial operations, and which in part explain the mediocre performance and prospects. To a large extent the trend has been to base agro-industrial activities on imported semi-processed raw materials, with the consequences that viability of such activities are affected by prices for imports, and the level of operations dependent on the availability of scarce foreign exchange. In addition the potential linkage(s) and incentives to promote primary agricultural production are denied, as also are linkages through agro-industries from agriculture to the other economic sectors. Inevitably, commercialised high volume processing becomes increasingly dependent on importation to ensure the continued throughput required for economic operation. And furthermore, removed from the rural small farm operator, no/or few opportunities are generated for using indigenous technical expertise, nor are linkages with rural artisans created, to draw on application of their traditional skills.

These several characteristics do not exhaust the list, but provide sufficient background to consider alternative scenarios that may be postulated as eminently more desirable to the process of economic and social development and growth. One likely alternative that would be more integrative of the economy would have characteristics such that:

- (i) Agro-industrial activities are based on local raw materials, in terms of both products and packages;
- (ii) Such activities drawing on domestic agriculture for its inputs would in turn provide inputs to other economic sectors, thus not only would agro-industry serve as linkage between agriculture and the other economic sectors, but it also could be a promoter of primary production;
- (iii) There could be reduced dependence on imports, thereby generating a higher level of self-reliant economic activity;
- (iv) There would be direct involvement of indigenous technology and artisans, thereby providing a basis for the further development of technical expertise and technology.

This frame accords with the orientation of the general long-term objective, and may be regarded as a more detailed articulation of some ideas fundamental to that general objective.

Whether this scenario or some alternative modified form is postulated it is readily apparent that in the long-term all the usual conditions pertaining to financially viable economic operations should be deemed to apply. This means that the operation must be profit-making with a cost structure sufficiently flexible to allow the products to be competitive; meeting market requirements for product quality and acceptability; providing a remunerative return to labour; and having an opportunity cost that attracts the agriculture inputs at levels such as to sustain expansion of commercial operations. Labour productivity, business management, and the organization and flow of production will all have to meet adequate efficiency standards.

The contrast between the initial concept proposed as a set of farm-based activities of no/or low economic viability, and the scenario postulated above is immediately evident. It follows then that the larger concept would be: starting from the concept idea to stimulate a process that would result in a measure of fundamental restructuring of the agro-industries subsector, and in the relationships of agro-industries to the rest of the economy. The Challenge therefore is to construct a continuum that leads from economic non-viable situations to economically viable situations, which would become part of the overall dynamic for rural growth and development.

Logically, this is achievable only by progressively reversing the basic conditions that underly economic non-viability. But can such a probable evolutionary path be identified? If so, then how could it be made to evolve? And what would be the stimulants and motivations? A priori it would very much seem that the generator for this evolution has got to be in socio-economic terms, with heavy emphasis on the sociological elements. If that is so, then a prior requirement would be the generation of a strong motivation to achieve some immediately realizable social end.

II. SOME OBSERVED SITUATIONS

On-farm agro-processing

It is commonly the case that extra on-farm activity of the kind proposed, can be stimulated by the participation of farm families in fairs, exhibitions and bazaars. Usually they are conducted in some wider context, be it agricultural show, or church or community associations' events, but they invariably provide an outlet for food products and handicrafts which are processed and fabricated at small-farm level. Participation by farm families over extended periods have in the past resulted in development of a consumer product-familiarity, accompanied by a product reputation attaching to the particular farm or family. In such cases the initial "stimulant" is mainly social with the by-product of some pecuniary return.

There are also cases where on their own farm families have done some agro-processing, vending the products at roadside stalls or at local shops. Where this occurs the activity is usually carried on by one family member as a supplementary part-time activity. Attached as such activity is to a particular individual, the prospects for continuity are determined by a whole matrix of related considerations including the decision to remain resident on the farm.

Unfortunately there is not sufficient definitive information to judge the scope of operations of either of the two quoted cases, or to determine whether they offer real possibilities for larger-scale more continuing operations. Nevertheless they do offer the most realistic examples for any theoretical formulation built around on-farm, "self-induced" agro-processing part-time activity. Many of the indigenous product lines in current agro-industry operations emerged through precisely such initiatives and mechanisms.

Rural off-farm agro-processing (i)

Parallel with these rudimentary on-farm agro-processing activities, one finds also a range of off-farm agro-processing activities. In fact the majority of rural agro-industry activities have been off-farm operations, mainly of "co-operative" type or "community" type. Invariably most efforts

to stimulate agro-industries in the Caribbean have gone directly to one of these types of operation.

"Co-operative" type agro-processing operations have tended to be more commercially oriented than those that are of "community" type; but for the general purposes of this paper they can be treated together. The important characteristic of both these types of operations is that they stem from society building motivations and impetus. In either of these cases the sociological cohesion needs to be sufficiently strong to bring together a group of persons to engage in an economic activity which is expected to be financially profitable. It may well be that the economic motivation outweighs the social motivation, on which case the life of the enterprise would very much depend on the degree of its financial success.

By and large these rural enterprises are based on indigenous materials, but rely on the purchase of equipment (sometimes a little more sophisticated than is found on farms), and on the purchase of containers. To an extent they meet some of the criteria for relying mainly on rural resources, but the degree to which they do this is usually less than occurs in on-farm agro-processing operations. Generally the materials inputs are purchased locally and only little tends to come out of on-farm residuals.

Perhaps because these types of rural off-farm operations did not grow out of "on-farm" agro-processing they are not very closely knit to the agricultural operations. In addition, being more market-oriented, somewhat more attention is given to "accepted" consumer requirements and packaging considerations, in some cases even including additives for flavouring and/or to increase the life of the product (particularly when the product is canned).

Even so, the available information based on various assessments of small-scale "co-operative" type and "community" type agro-processing activities point up a range of common deficiencies. On the operations side the equipment and the processes are in the majority of cases only a little less rudimentary than in the similar "on-farm" activity. Invariably the operating funds are low/inadequate, combined with little ability for organizing the operation in the sense of co-ordination of the production steps,

resulting in low output and high production costs. When this is added to poor management of the enterprise and poor marketing the overall result is an unviable or just barely viable operation.

Rural off-farm agro-processing (ii)

In contrast to the small-scale type of operations considered at (i) above, there are more highly commercially oriented, larger scale, agro-processing plants located in rural areas, which in their operations and characteristics are not dissimilar to agro-processing plants located in suburban and urban areas. This last group, the suburban and urban agro-processing plants, account for the bulk of such activities in the islands, and exhibit the characteristics (in varying degrees) to which attention was drawn by the drafters of the original project idea. That is, considerable reliance on imported inputs, not only for equipment and technology, but also for much of the materials that go into processing. Accordingly there is only a loose linkage to agriculture and rural indigenous know-how.

Summing up

The observed situation is that rural agro-processing can be seen at several levels and in various organizational forms. However, except for on-farm processing activities, there is not the close linkage to agriculture which one would normally expect - that is in the sense of the processing activity drawing directly on farm output and in turn having some potential to stimulate increases in farm production. In addition small-scale rural agro-processing shows much evidence of low economic viability deriving from a range of frequently observed deficiencies. This is the background against which the project proposal has to be considered, and some strategy for change devised.

III. OF MOTIVATIONS AND LINKAGES

In the previous section which sketched briefly some observed characteristics of "on-farm" agro-processing and rural "off-farm" agro-processing, the focus was to highlight the empirical situation and draw attention to the lack of continuity between "on-farm" and "off-farm" agro-processing activities. There are however some very fundamental elements that need to be taken into account in any consideration of measures that might act as stimulants towards the restructuring which is required to achieve the ultimate long-term objective.

From the economic standpoint it has to be noted that at the "on-farm" level agro-processing operations are conducted in a fashion different from what obtains for a commercial operation. There are elements like recovery/recycling of containers (e.g. bottles) which may be deemed to have little or no cost, in addition to which there is not much imputation of costs for raw materials, use of utensils, fuel and labour. It is almost certain that if all the costs were taken explicitly into account the frame of operations would be substantially modified.

An essential element in moving from a non-viable to a viable economic situation, would be to gradually commercialise the "on-farm" operation. The purpose would be to achieve a more realistic relationship between the overall costs of inputs and the selling price of the product. This in turn places a higher capability demand on the farm family, as it implies some budgeting and accounting of the agro-processing activity, however rudimentary that might be. This step calls for a mix of socio-economic measures, taking particularly into account the need for raising the quality of the human resources component. It should therefore be expected that many of the farm families may not achieve this step, unless the motivation that initially stimulated the part-time processing activity remains strong, and the measures for upgrading their capabilities are effective. Such measures it would be recognized, must be properly socially oriented to achieve the effective level of communication.

Parallel with this must come a more regularized system of marketing the products. There may be some opportunities for larger quantities of the processed products to be marketed through the same channels as fresh products. But this cannot be depended on and other avenues would have to be found. Here

one perceives another key element to achieving the long-term objective. Easy movement of the products from the farm, at remunerative prices, is a very necessary stimulus for the farm family to decide to expand into an economic operation. Without this motivation there is not a strong requirement to expand primary production of the raw materials inputs. It is precisely these incremental changes that lay at the heart of the restructuring process.

It is very probable that sales off the farm of the processed products would still largely be made directly to consumers (regular customers); but, as the quantity of output rises there is increasing need to widen the market and seek access to more formal distribution outlets. Many farm families may endeavour to handle the marketing aspects themselves, while others may prefer to rely on extra-farm facilities. The latter alternative would normally prove the more fruitful course as there would not be the necessity for the farm family to acquire yet another area of expertise, and incur an additional element of competition for the time that has to be devoted to farming operations.

From the basis of either "farm family" involvement or a "single family member" involvement, it is evident that upgrading to more commercialized types of operations would result in a wide range of levels of efficiency. At the top end of the range would be the operations that have the best possibilities for evolving eventually into permanent agro-processing enterprises. To the extent that they remain within the framework of the farming operations they would continue to be part-time small-scale activities. Where they become a further and more independent activity, in the sense of being a separate enterprise, they might constitute a basis for growth into full-fledged rural agro-industries. In fact achievement of this breakthrough is critical to realizing the long-term objective.

However, it is far from clear what additional motivations are required to build this momentum for expansion. At the input end it would seem that agro-processing operations could be a means for reducing post-harvest losses on the farm. The making of this decision is within the control of the farm family; and it would seem that to the extent that sales become more lucrative there could be gradual development of the processing operations and its linkages on the farm. At the output end it would seem that some kind of rural

market could be developed to handle larger quantities. The initial one-to-one relationship of producer to consumer would, however, have to be broadened; and this could well suggest some kind of collective distribution mechanism. The bits of available information indicate that attempts at collective distribution have not been very successful. Not the least of the problems are those of achieving a measure of product quality predictability and standardization in product presentation.

If the kind of "on-farm"/"off-farm" evolution in rural agro-processing that has been sketched is acceptable, then there also must be acceptance that the prime motivations would be shifting in successive stages from being mainly social to being mainly economic. (This is not to imply that economic success is not itself a social motive). If this is so, then the cycle of primary production and agro-processing activity should become somewhat more continuous. There should also develop some improvement in technical ability, some refining of processing operations, better predictability of product quality, and greater familiarity with consumer taste preferences.

Going one step further to contemplate the possibility for emergence of "on-farm" (cottage type) agro-processing operations to small-scale "co-operative" type of "community" type operations, the empirical evidence is that it is very hard to realize. A fundamental change is that the farm family is no longer the basic nucleus. Instead, these collective types of operations are based on some deliberate endeavour to bring together a group of similarly motivated persons. Theoretically at least, it would seem that "single family member" agro-processing operations might be amenable to combining for purposes of expansion of operation and consolidation of resources. Equally it would seem that where the "farm family" is the unit basis of the agro-processing activity, combinations into larger groups would be more difficult to achieve.

The essential point however is that the establishment of a business enterprise for agro-processing, being conducted jointly by a number of small farm producers, based on the processing of their own products, should be possible. Not only would it provide agriculture/agro-processing linkage, but

it should also hold out the prospects for small agro-processing units to coalesce, giving rise to larger units. A no less important consideration is the fact that this approach to the establishment of rural small-scale agro-processing units would be a new innovation.^{1/}

The scale of the operations would depend on the quantity of raw material available, and the "sophistication" of processing would be at the level of capability. While technical aspects can be supported by a measure of extra-rural assistance, it has to be borne in mind that "importations" whether of materials or technology have the effect of excluding participation of local people in the development process, thus making it superficial.

In this context one must then consider the other dimension of the nature and extent of the agro-processing effort. And it would appear to be evident that the effort should be of a nature that draws on materials commonly available on small farms, which are subjected to fairly simple processes, and are of a nature to permit for product quality standardization. Ideally too, the product should act as link in a chain to wider and more sophisticated situations.

It is easy to contemplate small-scale rural agro-processing as a first stage of processing to provide inputs to more technologically sophisticated agro-industry enterprises. The basis for such a thought is that many of the product lines from existing agro-industries share a range of common items as inputs. If one takes the case of vinegar for example, then why are the local sauces, condiments etc., based on imported vinegar? It is an ingredient for a very wide range of sauces, pickles and condiments. Vinegar itself can be made from a wide range of fruits and vegetables commonly found on small farms, (mango, manie-apple, passion fruit, etc.) the process is not complex and it is known in the countryside. What is more, many small offerings can be blended to obtain a consistent predictable product line in larger

^{1/} Mention of producer/processor co-operatives and the manner in which they differ from such small-scale rural-based units was made in the introduction.

quantities, either for sale for direct consumer use, or as input to larger and more complex processing operations. This latter aspect therefore offers a second stage of linkage to the small farm operator.

This principle of rural small-scale agro-industry operations being essentially a first processing stage providing inputs to larger plants, could also be applied to non-food agro-processing. In fact some elements of this have been evident, though isolated, in the area of straw handicrafts, where some initial processing of the material is done on the farm and that product sold as input to urban handicraft centres.

The identification of product lines, (amenable to simple processing on small-scale in rural areas), which are basic things needed for a wide range of products would be integral to the kind of agriculture/agro-industry evolution postulated here. In short, a key step in building an agriculture/agro-industries continuum, is the devising of such direct linkages to farming activity. Until this is done, the agro-processing does not generate increased primary production and gradual expansion of farm output.

In considering whether such a model is feasible, it is worth recalling an interesting historical aspect of Caribbean agriculture, that up to three or four decades ago it was normal for some agro-processing to be done on small farms.^{2/} While this tradition is not entirely lost, with the increased emphasis on export cash crops, coupled with the steady rural-urban migration, agro-processing at the small-farm level has almost disappeared.

^{2/} Yankey writing on the problems of small-scale farming in Dominica pointed out that the local production of bay oil through the use of primitive distilleries had been a long standing village enterprise peculiar to the "closed" geographic societies. From those areas perishable crops had neither easy nor quick access to the outside market. Consequently, the bay leaf crop became the most important market crop of small-scale farmers in those communities, except in some cases where this was overshadowed by the crude processing of locally grown root crops such as cassava which was processed and converted into farine. In the case of bay oil, the product was normally sold to the "middlemen" who exported the commodity to either Great Britain or the USA, whereas the latter was confined mainly to the domestic and inter-regional markets. See also An Economic Survey of the Colonial Territories, 1950. p.226.

CONCLUDING REMARKS

It would therefore seem, at least theoretically speaking, that small-scale rural agro-industry of the kind proposed might be contemplated within a conceptual frame that in the long term could be integrative of the economy. The important qualifications are that the achievement of successive short-term objectives would have to flow in a given direction, and that at each stage there are the appropriate strong motivations.

In Section I it was deduced that the initial motivations would have to be of a nature directed to the achievement of some immediately realizable social end. In Section II it was pointed out that in the observed situations where small-scale rural agro-processing operations occur, they have stemmed mainly from society building motivations and impetus. In Section III it was suggested that to move such operations to greater economic viability, would call for a mix of socio-economic measures - initially socially-oriented shifting to a more economic bias.

In short, while the focus of attention has been to enquire into the possibilities for establishing rural small-scale agro-industries in a context of long-term viability and self-sustaining growth, sufficient has emerged to demonstrate that this cannot be viewed simply as an exercise of setting up units for agro-processing. It impinges on the whole broad area of rural development, embracing sociological as well as economic engineering, and agro-processing technology.

It is sobering to keep in mind the empirical evidence that approaches to rural agro-processing at "co-operative" level or "community" level which in the main have been oriented to society/community building, have not proved markedly successful in terms of being economically viable enterprises - at least not so far. And this in its turn poses questions about the appropriateness of certain types of evaluation at different points in time, if such endeavours are seen as part of a dynamic to stimulate structural change.

A whole range of questions remain to be answered. What is the stimulus that can galvanize the farm family to take on the additional chores of agro-

processing? Or to expand such agro-processing as they already do? What are the infrastructural demands at that stage? What further stimulus and infrastructure is required to build the momentum? And so on - all of which can be capsuled into one question - WHAT STRATEGY?



