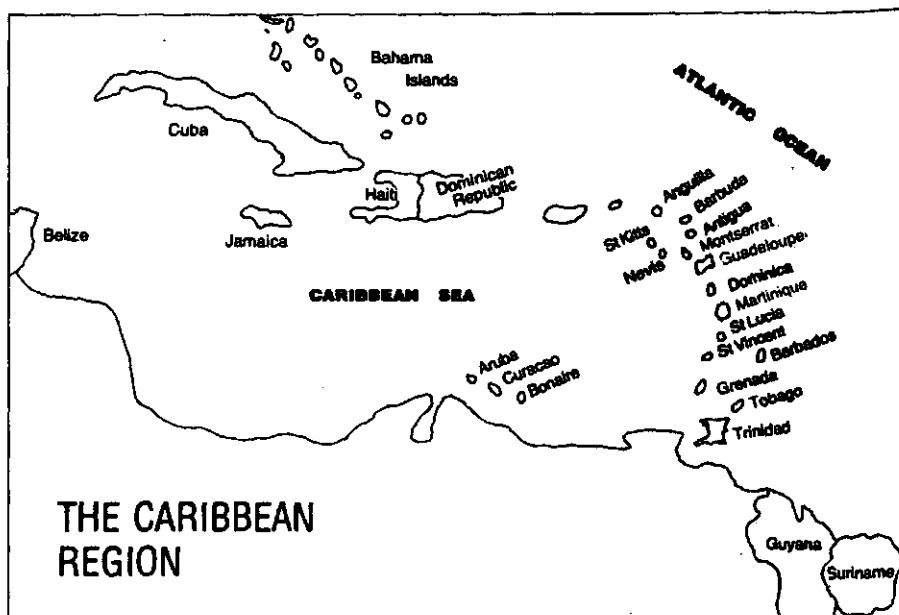


CARIBBEAN
DEVELOPMENT
 AND
CO-OPERATION
COMMITTEE



THE CARIBBEAN REGION

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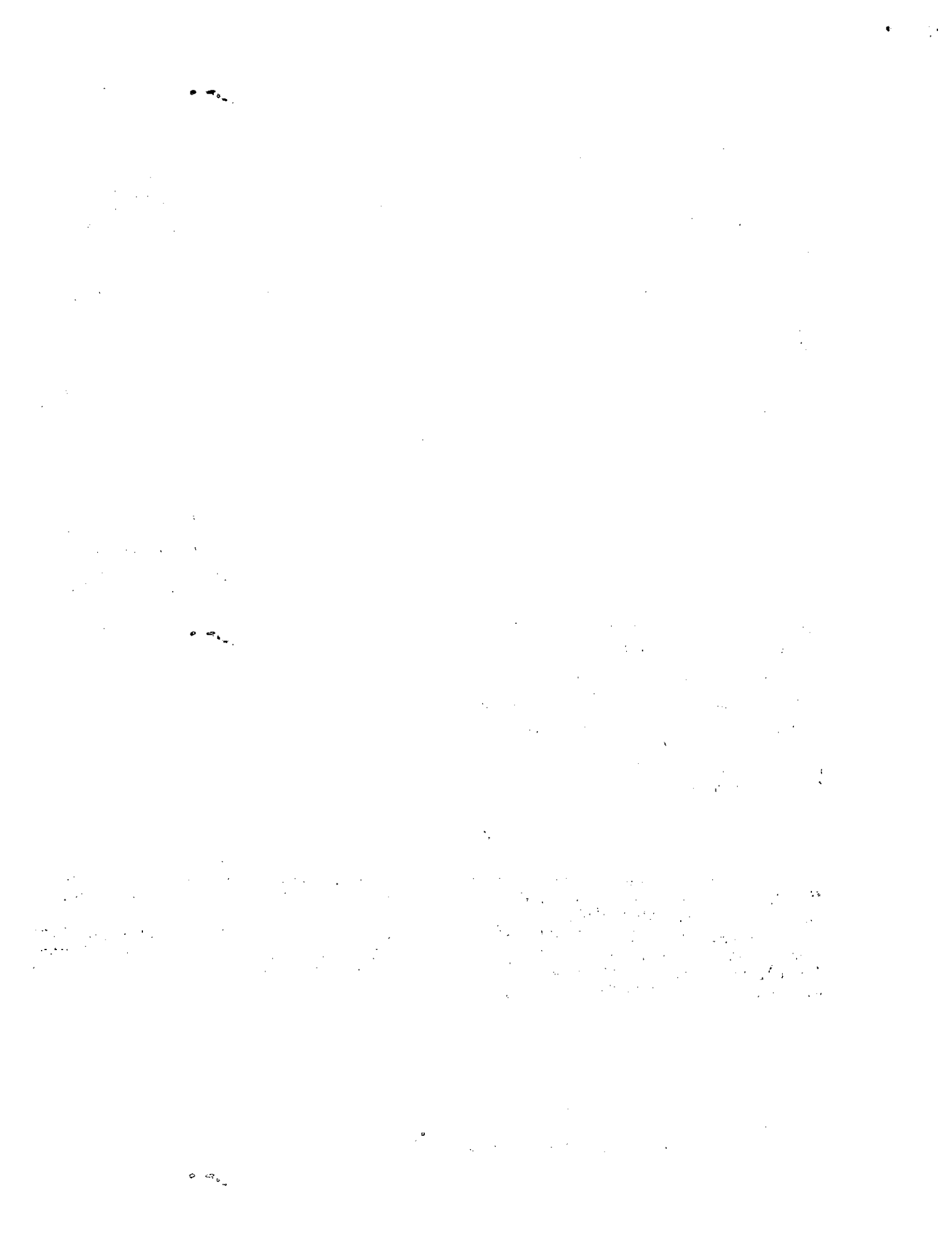
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UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA Office for the Caribbean



POLICY CONSIDERATIONS TOWARD ALLOCATION OF RESOURCES AND THE INTEGRATION OF AGRICULTURAL RESEARCH INTO NATIONAL DEVELOPMENT PROGRAMMES

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What follows is an economist's approach to the issue, sketched with severe time constraint.

1. We begin with a few primitive assumptions:
 - (a) CDECC member countries would wish other things being equal, that the level of material welfare of their populations be increased;
 - (b) that other things equal the agricultural industry, because of its absolute and relative size in these economies and its importance to the social economy is key to the objective of assumption (a) above.

The key question is therefore how could agriculture be pressed into service.

2. Next, we state the orthodox position of the discipline on the role of the agricultural sector in economic development to be:
 - (a) Because of the logical and primacy of the agricultural industry as a generator of income and wealth expanded output (the extensive margin) and increased factor productivity of land, labour, capital (the intensive margin) would of themselves be developmental;
 - (b) Increased agricultural production would widen the market for goods from manufacturing industry and that both would generate demand for services - thereby stimulating further economic growth;
 - (c) That agricultural industries must provide a flow of food and raw materials necessary for the development of manufacturing industries.
 - (d) That productive resources necessary for use in manufacturing and service industries must be 'released' through the process of improved factor productivity in agricultural industries.

3. Thirdly, we assume that the economic actors engaged in agricultural industry are rational and subject to the constraints of their wider social objectives, and taking into account their perceptions of risk, evaluated in international and historical context, seek to optimise some objective functions. Evidence of the rational behaviour of economic actors in the agricultural industry abounds but we did not permit its documentation.
4. The discipline captures the productive process in all economic activities by the concept of a production function. Thus in the agricultural industry, productive inputs (land - the original and indestructible properties of the soil, labour - brain, brawn and experience stored up and institutionalised in various cultural practices, capital - improvement to land, seed, fertilizers, tools and machinery, working capital, technology - knowledge embodied in machinery, cropping practices, organization, management systems and enterprise - the drive to do things with the objective of making economic returns) are combined and converted into outputs. The production function is simply the technical relationship between a flow of inputs through a production process and the flow of outputs at the end of the process. However, the process has an economic evaluation since the inputs incur costs (financial costs and opportunity costs) and the outputs earn revenues. An economic productive process is such that revenues earned yield an excess over costs incurred. This and only this is the economic return of the productive process.
5. The crux of the matter is the assumption that capital injections in the form of research expenditures will raise the level of technology used and yield a higher level of output for the same level of input of the other factors. Put another way, total factor productivity will increase. As with all other expenditures, those expended on research must show a benefit/cost ratio at least as high as the ratio for other capital expenditures. But perhaps in this statement lies the hub of the problem. To begin there is the issue of the accurate measurement of benefits. Because the benefits of research show themselves indirectly through other variables e.g. quality of labour, organisation, type of tools/machinery or systems, separating out the effects of research expenditure is most difficult. The gestation period is also problematic

as the time shape of the beneficial impact of research expenditure is unknown and may be characterised by an extremely long tail. But if this is so the time element of the benefits would be heavily discounted. Not unexpectedly on account of these imponderables, policy makers sometimes take a very lukewarm posture on research expenditure and they tend to be grudgingly agreed to in times of plenty, placed under tight control, and if not cut nominally in times of scarcity, at best maintain their nominal but not real levels.

6. In our attempt to focus on policy considerations, it would be well to recall the broad outlines of agricultural organisation in Caribbean Countries viz.:

Plantation agriculture largely for export,
and small scale agriculture producing partly
for export and partly for domestic/regional
consumption.

7. The ownership structure of the agricultural industry is also of relevance. Increasingly agriculture is passing from being exclusively a private sector owned industry to being partly public sector owned, and there are extremes in the size distribution of holdings.

Trinidad and Tobago

(8) It would be important to grapple with the problem of policy towards agricultural research for CDCC member countries in general. Because however of their diversity as regards size, history, socio-political organisation and policy perspective, such an approach should be prefaced by a specific study of each and time did not permit this. For this reason the rest of this presentation draws on the Trinidad and Tobago experience only.

The concrete situation in Trinidad and Tobago is that export agriculture is rapidly on the decline, there have been serious alternative foreign exchange earning industries, the state has recently purchased the sugar industry and parts of the rest of export agriculture, and small farming is exclusively in private hands. Of relevance also is the political structure which traditionally has separated on rural/urban/ethnic lines.

Agricultural research in Trinidad and Tobago is conducted by three sets of agents -

- The University of the West Indies
- The Ministry of Agriculture
- Private agricultural establishments.

By and large the first two do basic and applied research while the last does developmental research.

- (9) From a policy perspective there must be for effectiveness clarity and focus in the research effort. Two broad approaches are identified:

Research should solve an existing problem: specific research; or Research should enhance understanding and aid in the formation of a policy towards problems in agriculture: general research.

The first corresponds to a micro-approach while the second is a macro-approach. Alternatively it might be argued that the first type of research should emanate from the production unit and should have very rigid and quantifiable benefits and incur identifiable costs. The second type of research should be a part of the overall planning process, seeking to inform broad developmental policy choices. This latter type of research activity of necessity is more difficult to control, both achievable goals and measurable costs being less amenable to specific identification.

- (10) On the assumption that privately funded research will, by focusing more closely on the bottom line in the long run, regulate itself, the rest of this presentation will treat public funded research.

- (11) First and foremost is the decision on the importance of the agricultural sector vis a vis other areas of economic production, and the social importance of each. Assuming this to have been resolved, the next question is what distribution of resources will there be to various agriculture promoting activities: infrastructure development, direct physical production, support services, research and what is the optional time sequencing of priority treatment of each of these. Despite general statements the inference must be from public expenditures that manufacturing industry has had priority over agricultural industry and that research in agriculture has not had priority over the other ingredients of agricultural promotion, and that such agricultural research as there has been has lacked the degree of focus which would enable it to be effective and to be scientifically evaluated.
- (12) With fullest cognisance of the fact that agricultural research is but one of several activities vying for public funding and that a judgment on the quantum of resources allocated to this activity might be evaluated comparatively (with countries of similar endowments now or historically, or against the background of the study of the policies pursued in other countries and with their positive or negative consequence) the development of a policy towards funding agricultural research should address the following:

- (a) What are the objectives of the research
(e.g. to solve a technical production problem, lead to a policy, make a system more effective, or develop the level of skill in the human resource);
- (b) What types of research will attain these objectives and what is likely to be the minimum research effort and the minimum research output and the maximum time in which this can be achieved.
- (c) Research not likely to bear fruit in the foreseeable future or whose minimum cost could not be afforded should be given no support rather than token support. In other words the research effort should be tailored to be effective both from the viewpoint of the use of resources and the attainment of objectives.
- (d) Careful assessment should be made as to the channel of effectiveness of research expenditures i.e. whether priority should be for developing soft macro-systems (e.g. land tenure, credit or marketing), or hardware (e.g. tractors),

or invested in the human resource,
developing thereby a nation of persons
both socially responsive and skilled
in the hardware and software of using
agricultural industries to meeting
material needs/objectives.