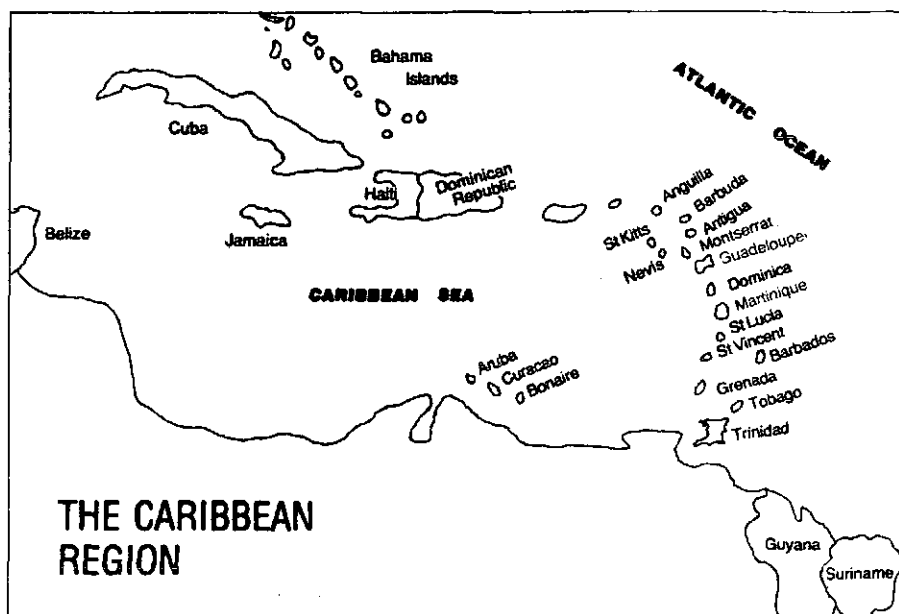


CARIBBEAN
DEVELOPMENT
 AND
CO-OPERATION
COMMITTEE



GENERAL
 E/CEPAL/CDCC/107
 2 December 1983
 ORIGINAL: ENGLISH

ECONOMIC COMMISSION FOR LATIN AMERICA
 Subregional Headquarters for the Caribbean
 CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE
 Port of Spain, Trinidad and Tobago
 26-30 September 1983



REPORT OF THE WORKSHOP
 ON
 AGRICULTURAL RESEARCH POLICY AND MANAGEMENT
 IN THE CARIBBEAN



UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA Office for the Caribbean



INTRODUCTION

1. This report summarizes the main discussions, the findings and recommendations of the Workshop on Agricultural Research Policy and Management in the Caribbean, which was held in Port of Spain, Trinidad from 26-30 September 1983.
2. The Workshop was organized jointly by the United Nations Economic Commission for Latin America (UNECLA) Subregional Headquarters for the Caribbean and the Caribbean Council for Science and Technology (CCST) with support from the International Service for National Agricultural Research (ISNAR), the Swedish Agency for Research Co-operation with Developing Countries (SAREC), the International Development and Research Centre (IDRC), the Commonwealth Foundation and the Government of Trinidad and Tobago.

Background

3. The agricultural sector is important in the economy of the member countries of the Caribbean Development and Co-operation Committee (CDCC).^{1/} In recent years, earnings from export agriculture have declined while the volume and cost of imported foods have increased.
4. Caribbean Governments have expressed increasing concern about such trends and have recognized the urgent need to revitalize the sector.
5. The fundamental role of agricultural research in increasing production, and its contributions to the economic development of the Caribbean are well known. However, agricultural research in the Caribbean is facing a number of problems which limit, to critical levels, the contributions which are required of it for the development of the subregion. This has resulted in a crisis of confidence in agricultural research in the region.

^{1/} The member countries of the CDCC are Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Guyana, Grenada, Haiti, Jamaica, Montserrat, Netherlands Antilles, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.

6. Limitations of funding, technical capability and inadequate linkages to facilitate application of research results are easily identified. It is increasingly recognized that inadequate organizational and management practices impose further, if not extreme, limitations on the efficiency of agricultural research institutions and on the usefulness of their programmes.

7. Concerted efforts are required to increase the efficiency of national and subregional agricultural research systems. The co-ordination of such efforts would contribute much towards effective agricultural research in the Caribbean, promote reciprocal co-operation between the countries and accelerate the process of generation and dissemination of improved technologies for increased agricultural production.

8. During recent years considerable attention has focused on the potential benefits to be derived from placing greater emphasis on policies and management, and the co-ordination of national and subregional efforts for the solution of common agricultural research problems.

9. At the first meeting of the Caribbean Council for Science and Technology in June/July 1981, a decision was taken to establish a Working Group on Agricultural Research for the CDCC countries. Having had favourable responses from a number of the member governments, the CCST considered it opportune to convene a workshop to be attended by high ranking officials and experts concerned with policy formulation, policy implementation and the management of agricultural research in CDCC countries.

Objectives of the Workshop

10. The long-term objectives of the Workshop were:

- (i) to strengthen the relationship between activities at the policy level and at the research programmes level so that the programmes would focus on national priorities;
- (ii) to facilitate, to the maximum, reciprocal co-operation among national research agencies; and

(iii) to encourage their participation in international programmes.

11. The immediate objectives were:

- i. To examine the relationship between policy, decision-making and research activities;
- ii. To identify and/or suggest mechanisms for consultations between the policy-making and the research communities during the formulation of agricultural research policy guidelines; and
- iii. To examine existing research programmes and facilities of regional and national institutions with a view to the possible collaboration between the various institutions which may eventually lead to a network of agricultural research within the region.

Participants

12. Given the objectives of the Workshop, it was necessary to ensure the participation of high level policy-making and management/policy implementation personnel of the Ministries of Agriculture in CDCC countries, and also senior personnel of agencies concerned with both agricultural research and development in those countries. Consequently, the participants invited were the Permanent Secretaries and Directors of Research for Agriculture and senior policy and management personnel, researchers, academics and advisers from appropriate national, subregional and international agencies.

A list of the participating countries and organizations is given at Annex I.

Structure of the Workshop

13. The Programme of the Workshop and the titles of the documents presented are given in Annex II.

14. The opening address was delivered by the Honourable Kamaluddin Mohammed, Minister of Agriculture, Lands and Food Production in the Government of Trinidad and Tobago.
15. The first two days were devoted to issues relating to policies, the critical role of institutional and programme management for the effective conduct of research, and interaction with the international agricultural research institutions.
16. During the following three days attention was given to (a) the preliminary identification of common agricultural research needs which could indicate possibilities for co-operation in specific research activities; and (b) mechanisms which would facilitate co-operation.
17. Working groups formed an important part of the Workshop activities. One group which consisted only of Government Permanent Secretaries and Directors of Research recommended policy outlines towards agricultural research and collaboration and also criteria and strategies for collaboration.
18. A special task force consisting of senior administrators and scientists with experience in the management and co-ordination of agricultural research programmes recommended specific mechanisms for collaboration in agricultural research. Five other working groups consisting of Directors of Agricultural Research and other participants with interest and experience in the subject, carried out a preliminary sorting of priority research needs of specific commodities which are of high ranking importance to various CDCC countries.
19. The final plenary session considered and accepted the reports of all the various working groups with amendments where appropriate. At this session, the participants also drew up and formally accepted a number of recommendations designed to strengthen national agricultural research systems, to impact on the management of agricultural research institutions and agencies in the subregion and to promote reciprocal co-operation among the CDCC countries in agricultural research.

PROCEEDINGS

20. The opening address was given by the Honourable Minister of Agriculture, Lands and Food Production, Trinidad and Tobago, who noted that the theme of the Workshop had identified issues which are critical to the current national and regional efforts to increase food production. In his opinion, the increasing dependence on imported food indicated the need to establish and maintain a critical mass of research capability within the Caribbean, and further the research establishment should ensure the development of improved production technologies compatible with the needs and capabilities of the farming community.

21. The Minister considered it important for the research scientists to intensify consultations and to co-ordinate activities in order to increase the efficiency of research efforts at both the national and international levels. However, priority should be given to the evolution and implementation of effective systems for the formulation of policy and the efficient management of the resources allocated to agricultural research. Finally, the Minister urged the participants to ensure that the outputs from the Workshop include recommendations and proposals that were relevant and which could be implemented with significant impact on agricultural research and ultimately on agricultural production in the region.

22. The Director of the ECLA Subregional Headquarters for the Caribbean summarized the background and objectives of the Workshop. He pointed out that it was an unprecedented opportunity for the agricultural research policy and management personnel of CDCC countries to meet and also to have representatives of international agricultural research agencies participate in their discussions with the objective of improving co-operation in Caribbean agricultural research.

23. The first part of the Workshop concentrated on an overview of agricultural research policy and management with relevance to the Caribbean. It was noted that there was a serious crisis of confidence in Caribbean agricultural research, as well as divergent views in some official and scientific establishments concerning the value and the achievements of agricultural research carried out in many countries of the region.

24. Inadequate technology transfer systems, low level support services and in particular poorly developed marketing systems imposed constraints on the potential benefits which could be realized from the application of agricultural research findings. Consequently, the value of the research and its potential contribution to agricultural development were often considered to be minimal.

25. With respect to the role of agricultural research in the development process, it was emphasized that agricultural research was an integral part of agricultural development, the scope and required function being determined at the national planning level. This was particularly important when a country derived a large part of its income from agricultural production. The research policy should be compatible with the national agricultural plan and should also form a part of the general development programme for the country.

26. Improvements in the agricultural research systems could be facilitated by establishing mechanisms for consultations between the policy-makers and research communities, during the formulation of agricultural research policies. Continued consultations would also facilitate feedback, evaluation and necessary adjustments to programmes.

Economic aspects of agricultural research

27. Seldom does the agricultural research scientist become concerned with the economics of research activities. However, the basic economic factors influencing policy considerations in the allocation of resources within the framework of national development, often determine the organization, scope and continuity of agricultural research. The participants were reminded that agricultural research is only one of several activities which compete for funds from limited resources. Research activities should be considered as a productive process required to yield economic returns on inputs with a cost/benefit ratio at least similar to that of other investments. Past experience and also perceptions of anticipated benefits from proposed research had had major influences on resource allocation and consequently research funding.

Management

28. Although the allocation of funds impose basic constraints on research programmes, there was growing concern that the organization and management of research institutions and of the research conducted could be the most critical elements which determine the efficiency of resource use and the utility value of the research findings. The participants were of the view that the management of a research institution should ensure clear objectives for the research activity; the types of activities required to attain the objectives; the minimum possible research required; the minimum research output and the maximum time that should be allowed for the activity. Further, the effective use of the resources required careful analysis of options to ensure that resources were channelled to priority areas for maximum contribution to national development.

29. The role of management in the planning and evaluation of agricultural research were considered to be important functions without which research could not be directed towards the resolution of specific problems which imposed constraints on the agricultural production system.

30. Management should necessarily include administration, and considering the role of administration in agricultural research, one speaker stressed that "an effective and efficient administration component is absolutely necessary to a research institution, without adequate administration ... a research institution cannot function". However, it was stressed that "the role of administration is to facilitate the work of the scientists, ... to create the conditions in which scientists work most effectively (as) only the scientists produce new technology".

31. Reference was made to comments and the writings of a number of eminent persons who at various times, as heads of successful agricultural research institutions, had "recommended strongly that the head of a research institution should himself be a trained scientist as people trained exclusively in management without a research background do not understand the potentialities of research ... or how research has to be carried out". It was also noted that, in general, scientists were often deficient in the basic principles of management.

Policy

32. Discussions relating to agricultural research policy and research activity at the national level indicated the need to strengthen the national institutions, and that a restructuring of the organizational framework and orientation of research activity might be necessary in some cases.

33. The Workshop found that clearly defined national policies and the objectives of research programmes were often lacking. Participation at various levels of the research community to develop a framework for national agricultural research systems was considered desirable. However, as noted at an earlier session, the basis for allocation of resources to agricultural research, and the competition with other sectors for a share of limited resources was not always apparent to researchers.

34. Strengthening national research could be achieved through the careful evaluation of research needs, identification of areas for collaboration between various national agencies and co-ordination of research efforts by a single national council or institute.

35. At the subregional level, the participants endeavoured to find a basis and to identify mechanisms for establishing links between the research establishments of the subregion. Increased consultations and the exchange of information on common problems could constitute initial steps towards regional co-operation activities.

Existing framework for agricultural research

36. There are at least 25 agricultural related research institutes and agencies in the English-speaking Caribbean. Of these, some 15 are funded exclusively from public funds, two from both public and private funds and six from private funds. The eight privately funded institutions are commodity research units, three of which are monodisciplinary and have extension units separate from the national extension service. A significant feature of the institutions financed from public funds is the separation of teaching and research functions and their exclusion from extension function.

37. In the four large non-English-speaking states, viz., Cuba, Dominican Republic, Haiti and Suriname, research is conducted mainly in commodity or resource-oriented institutions funded by the public or private commodity organizations.

38. Many of the states whose economies rely heavily on agriculture do not have the resources to support an effective national agricultural research service. The larger states may have, or are in the process of putting into place, the basic framework on which an effective national service can be developed but in others, notably the small islands forming the Organization of Eastern Caribbean States, existing agricultural research services are small or non-existent with uncertain prospects for improvement.

39. Throughout most of the subregion, systems for technology transfer and programmes for human resource development are very limited; and this imposes constraints on efforts to improve the efficiency of research and the application of improved technology in production systems.

40. The subject of effective functioning of available personnel, and indeed, the effective use of resources allocated to agricultural research and development was common to all discussions. This focused attention on goals for regional agricultural research and development; the integration of research and training; and the principles and suggested approaches for the development of an alternative framework for agricultural research in the Caribbean.

Proposed alternative framework for agricultural research in the Caribbean

41. The number of agricultural research agencies and institutions which have varying responsibilities for one or more functions related to agricultural research in the Caribbean, indicate that there is a substantial scientific research capability in the subregion. It also suggests that there is potential for considerable contribution by the various institutions and researchers to agricultural and scientific development. Further, it seems reasonable to expect that the co-ordinated efforts of these agencies and institutions, with support from the many technical assistance and funding agencies which are active in the Caribbean, could significantly increase the capacity of the subregion to resolve its worsening food and nutrition problems.

42. Since the desire to co-operate in agricultural research became firmly established during the Workshop sessions, it was recognized that the immediate objectives were then to identify activities and define mechanisms toward realizing subregional co-operation in (a) research; and (b) related activities which impact directly on the research efforts and on the application of research findings.

43. The basic characteristics and general objectives of regional co-operative research activities were discussed at length using existing and planned co-operative programmes in Latin America serving as models for these discussions.

44. The basic concept of the co-operative programme is to share scarce resources for the resolution of common problems. The objectives were to use available resources in an organized manner, with the effect of mutually strengthening the national research programmes of the participating countries and enhancing their capability to develop and deliver useful technology for increased productivity in agriculture.

45. The participants recognized that the successful functioning of a co-operative research network would require careful planning, clearly defined objectives and adherence to the principle of mutual benefits to the co-operants. Most importantly, co-operative programmes were not substitutes for effective national programmes specific to the needs of the particular country. Indeed, as noted earlier, the co-operative programmes should be based on efficient national programmes in most, if not all, participating countries.

Research programmes in the Member States

46. Each country participating in the Workshop, presented a brief outline of its national agricultural research policy; the management organization; the structure of the national system; the links with other national; regional and international services; the resource base; the major programmes and projects; and also priority needs of the research system.

47. Representatives of the commodity and other research institutions of the subregion and the international agencies made brief presentations also.

48. These presentations indicated extensive commonality of research needs and research activity; widely varying national capability to carry out research; the importance of the commodity research institutions to the commercial agricultural sector and to the economy of many of the states; the dependency of the smaller island states on regional and (ad hoc) international support. The requirements even for high priority research and in particular the transfer of technology to the farmers remain unsatisfied. Research policy, programming and linkages with national development objectives continue to be lacking notably in the smaller island states. No institution appears to have established formal procedures to monitor and evaluate research projects or to have guidelines that would provide indicators to assist in making decisions as to the continuation or termination of specific activities.

Working Groups

49. During the course of the Workshop, the following Working Groups were formed to consider specific topics:

- i. A Working Group consisting only of the Permanent Secretaries and Directors of Agricultural Research considered policies toward collaboration and criteria for collaboration in Agricultural Research.
- ii. A Special Task Force of senior researchers and administrators, considered complementary views on collaboration.
- iii. Working Group on Bananas
- iv. Working Group on Livestock.
- v. Working Group on Rice.
- vi. Working Group on Sugar-cane and alternate uses of Sugar-cane.
- vii. Working Group on Under-exploited crops - including Tropical Fruits.

The reports of these working groups are attached to the present report.

Recommendations

50. The reports of the Working Groups were discussed and formally adopted by the Final Plenary Session which also drafted and formally accepted a number of recommendations which are attached.

51. The most important recommendation from the Workshop was the unanimous support for a proposal to set up a Caribbean Co-operative Agricultural Research Network by promoting reciprocal co-operation between research institutions and agencies, by carrying out collaborative commodity research, promoting the exchange of information and consultations between the research scientists of the subregion by seeking to have the international agricultural research centres increase their research activities and support for subregional agricultural research and development, and taking other measures as may be necessary to meet the research needs of the subregion.

52. Finally, the Directors of Agricultural Research present nominated, from among themselves, six persons to be members of a Working Group of Directors of Agricultural Research which was given the responsibility to formulate detailed proposals for the establishment of the Caribbean Co-operative Agricultural Research Network.^{2/} It was recommended that the Faculty of Agriculture of the UWI, with support from ECLA/CCST, should co-ordinate the activities of the Working Group of Directors of Agricultural Research by acting as Secretariat.

^{2/} Jamaica, Dominican Republic, Dominica (on behalf of the OECS), Barbados, Suriname and Trinidad and Tobago were nominated as the initial members of the Group.

LIST OF PARTICIPATING COUNTRIES AND ORGANIZATIONS

Bahamas

Barbados

Dominica

Dominican Republic

Grenada

Guyana

Haiti

Jamaica

Netherlands Antilles

Saint Lucia

Saint Christopher/Nevis

Saint Vincent and the Grenadines

Suriname

Trinidad and Tobago

University of the West Indies (UWI)

St. Augustine

Trinidad

Caribbean Agricultural Research and Development Institute (CARDI)

St. Augustine

Trinidad

Caribbean Industrial Research Institute (CARIRI)

St. Augustine

Trinidad

Organization of American States (OAS)

Inter-American Development Bank (IDB)

Caribbean Community Secretariat (CARICOM)

Association of Caribbean Universities (UNICA)

Banana Company of Jamaica

Caribbean Food Corporation (CFC)
Port of Spain
Trinidad

Caribbean Project Development Facility

International Centre for Tropical Agriculture (CIAT)

Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT)

Caroni (1975) Ltd.
Trinidad

Commonwealth Institute of Biological Control (CIBC)

Commission of European Communities (CEC)
(Delegation to Trinidad and Tobago)

International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)

International Potato Centre (CIP)

Inter-American Institute for Co-operation on Agriculture (IICA)

International Service for National Agricultural Research (ISNAR)

North Carolina State University (NCSU/INIPA)

National Academy of Sciences/NRC
Washington D.C.

Sugar-cane Feeds Centre
Trinidad

Sugar Industry Research Institute of Jamaica

University of Guelph
Canada

U.S. Department of Agriculture

Windward Islands Banana Growers Association (WINBAN)

West Indies Sugar-cane Breeding Station

United Nations Food and Agriculture Organization (FAO)

United Nations Development Programme (UNDP)

United Nations Economic Commission for Latin America (ECLA)

TITLES OF DOCUMENTS

Agricultural research policy and management

The role of agricultural research in the development process.

T.A. Taylor (ISNAR)

Organization and management of agricultural research in the

Caribbean - a viewpoint (L. McLaren (IICA)

Agricultural research policy and management in the Caribbean.

B. Muller-Haye (FAO)

The relationship between research policy and research activity

at the national level. P. Alleyne (Trinidad and Tobago)

Policy considerations toward the allocation of resources and
the integration of agricultural research into national develop-

ment programmes. E. St.Cyr (ECLA)

Agricultural Research Management. J. Nickel (CIAT)

Decentralised Agricultural Research: The CARDI Experience.

St. C. Forde (CARDI)

Toward the future: an alternative framework for agricultural

research in the Caribbean. L.A. Wilson (UWI)

The job ahead and institutional capacities for agricultural re-

search and transfer of technology in the Caribbean. E.J. Wellhansen,

UNICA Consultant.

Characters of agricultural technology transfer systems in the English-speaking Caribbean. W. Forsythe (IICA)

Research and transfer of technology in Latin America. M. Segura (IICA)

Regional policy perspectives for agricultural research. W.J. Phillips
CARICOM Secretariat

Regional networks - the Southern Cane Project in South America
J.A. Pino (IDB)

Papers relating to the role and contribution of regional and international research organizations, agencies and institutions in Caribbean agriculture

Collaborative activities of the Centro Internacional de Agricultura Tropical - CIAT - with national and regional agricultural research institutions in the Caribbean: proposed strategy. G.A. Nores (CIAT)

ICRISAT sorghum program in Latin America. V. Guiragossian. (ICRISAT)

CIP and potato improvement in the Caribbean. R.L. Sawyer (CIP)

Statement from the Association of Caribbean Universities and Research Institutes - L. Marcano (UNICA)

The role of universities in developed countries in the agricultural research activities of developing countries. D.G. Howell, University of Guelph.

The role of the Commonwealth Institute of Biological Control in the Caribbean and Latin America. F.D. Bennett and M. Yaseen.

The U.S. Department of Agriculture and agricultural research and management in the Caribbean: selected comments. D. Coutts (USDA)

Statement by the Director of the IICA Office in Trinidad and Tobago at the Workshop on Agricultural Research Policy and Management. C. Brathwaite (IICA)

Commodity Research - papers prepared for use by Working Groups

Banana research in the Windward Islands - an example of indigenous commodity research in the Caribbean. J. Edmunds (WINBAN)

Research and development in the Jamaican Banana Industry. I.M. Muirhead.

Sugar-cane variety research for the Caribbean. D.I.T. Walker
Windward Islands CSCBS Barbados.

The sugar industry and research practice in Jamaica. J. Allen, Jamaica.

Research on sugar-cane and rice/fruit/food crops conducted by Caroni research station, T.W. Carr, Caroni (1975) Ltd.

Sugar-cane as an animal feed. F.A. Neckles, Sugar-cane Feeds Centre, Trinidad and Tobago.

The rice industry of Trinidad and Tobago, Ministry of Agriculture, Trinidad and Tobago.

Report on cultivation of rice in the Dominican Republic, Ministry of Agriculture, Dominican Republic.

Rice research and production in Suriname, M.J. Idoe, Suriname.

Rice cultivation in Haiti. F. Cadet and L. Richard, Haiti.

Project proposal: Caribbean Rice Research Network. Paper prepared by CIAT.

Commodity paper on coffee research policy and management in Trinidad and Tobago. Ministry of Agriculture, Trinidad and Tobago.

Cocoa research policy and management in Trinidad and Tobago. Cocoa Research Unit (UWI) Trinidad.

Coconuts in Jamaica - Research Policy and Management. Coconut Industry Board of Jamaica.

Red Ring Research 1956-1983. R. Griffith, Ministry of Agriculture, Trinidad and Tobago.

Country papers relating to national agricultural research systems

Bahamas
Barbados
Dominica
Dominican Republic
Grenada
Guyana
Haiti
Jamaica
Montserrat
Netherlands Antilles
Saint Christopher/Nevis
Saint Lucia
Saint Vincent and the Grenadines
Suriname
Trinidad and Tobago

Conference Room Papers

Agricultural research projects submitted by Caribbean countries at the Puerto Rico Conference on Agricultural Research Priorities in the Caribbean Basin: 15-21 August 1982; Corroman Hotel, Puerto Rico.

Final Report of the Workshop on Agricultural Research Management, Bogota, March 21-23 1983, (IDRC)

Some notes on improving agricultural technology delivery systems in the Eastern Caribbean and Belize: The CAEP Project. P.I. Gomes, (UWI) Trinidad.

WORKSHOP ON AGRICULTURAL RESEARCH POLICY AND MANAGEMENT

26 - 30 September 1983
Holiday Inn Hotel, Port of Spain, Trinidad

DRAFT PROGRAMME

MONDAY 26 SEPTEMBER 1983

- 09.10 A.M - 10.00 A.M OPENING SESSION
- Chairman: Mr. L. Wiltshire, Head,
Science and Technology Unit, Ministry
of External Affairs
- OBJECTIVES OF THE WORKSHOP: Mr. J. A. Spence,
Director, ECLA Subregional Headquarters for
the Caribbean
- OPENING ADDRESS: The Hon. Mr. K. Mohammed,
Ministry of Agriculture, Lands and Food
Production, Trinidad and Tobago
- 10.00 A.M - 10.30 A.M COFFEE BREAK
- 10.30 A.M - 12.30 P.M FIRST PLENARY SESSION
- OVERVIEW OF AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT
- Theme: The Role of Agricultural Research
in Agricultural Development: -
Dr. T.A. Taylor, ISNAR
 - Theme: The Organization and Management of
Agricultural Research in the Caribbean:
- Dr. Lynden McLaren, Director IICA,
Toronto
 - Theme: UN-FAO Policies and Programmes for
Agricultural Research in the Caribbean:
Mr. B. Muller-Haye, FAO, Rome
 - Theme: The Relationship between Research Policy
and Research Activity at the National
Level: - Dr. P. Alleyne, Permanent
Secretary, Ministry of Agriculture,
Lands and Food Production, Trinidad
and Tobago
- 12.30 P.M - 02.00 P.M LUNCH

02.00 P.M - 03.30 P.M

SECOND PLENARY SESSION

OVERVIEW OF AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT (continued)

Theme: Policy considerations towards allocation of resources and the integration of agricultural research into national development programmes: - Mr. E. St. Cyr, ECLA Subregional Headquarters for the Caribbean

Theme: Agricultural research management: - Dr. John L. Nickel, Director General, CIAT, Colombia

Theme: The management of agricultural research programmes in a decentralized, multi-island system: - CARDI, Trinidad

03.30 P.M - 04.00 P.M

COFFEE BREAK

04.00 P.M - 05.00 P.M

THIRD PLENARY SESSION

OVERVIEW OF AGRICULTURAL RESEARCH POLICY AND
MANAGEMENT (continued)

Theme: Toward the Future: An alternative framework for agricultural research in the Caribbean: - Professor L. A. Wilson, Dean, Faculty of Agriculture, University of the West Indies.

TUESDAY 27 SEPTEMBER 1983

09.00 A.M - 10.30 A.M

FOURTH PLENARY SESSION

OVERVIEW OF AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT (continued)

Theme: Regional institutional capacity in research and transfer of technology for the execution of co-ordinated programmes: - Dr. Edwin Wellhausen, UNICA Consultant

Theme: The role and contribution of regional and international research organizations, agencies and institutions in Caribbean agriculture:- CIAT, CIMMYT, CIP, ICRISAT, USAID, USDA, Universities, UWI, CARDI

10.30 A.M - 11.00 A.M

COFFEE BREAK

11.00 A.M - 12.30 P.M

FIFTH PLENARY SESSION

OVERVIEW OF AGRICULTURAL RESEARCH POLICY AND MANAGEMENT (continued)

Theme: The role and contribution of regional and international research organizations, agencies and institutions in Caribbean agriculture (continued)

12.30 P.M - 02.00 P.M

LUNCH

02.00 P.M - 03.30 P.M

FIRST SESSION FOR WORKING GROUPS:

1. Working Group of Permanent Secretaries meet

Theme: Policies towards agricultural research and collaboration

2. Working Group of Directors of Agricultural Research meet

Theme: Criteria for collaboration in agricultural research

CONSULTATIONS:

ECU/A/COBI with Agencies, visiting and resident researchers, etc.

03.30 P.M - 04.00 P.M

COFFEE BREAK

04.00 P.M - 05.00 P.M

SIXTH PLENARY SESSION

PANEL DISCUSSION:

Report of Working Group of Permanent Secretaries

Report of Working Group of Directors of Agricultural Research

WEDNESDAY 28 SEPTEMBER 1983

09.00 A.M - 10.30 A.M

SEVENTH PLENARY SESSION

Theme: Characteristics of agricultural technology transfer systems in the English-speaking Caribbean:- Dr. W. Forsythe, IICA, Trinidad

Theme: National agricultural research programmes of CDCC countries

10.30 A.M - 11.00 A.M

COFFEE BREAK

11.00 A.M - 12.30 P.M

Theme: National agricultural research programmes of CDCC countries (continued)

12.30 P.M - 02.00 P.M

LUNCH

02.00 P.M - 03.30 P.M

SECOND SESSION FOR WORKING GROUPS

Commodity and other specialized Working Groups

03.30 P.M - 04.00 P.M

COFFEE BREAK

04.00 P.M - 05.00 P.M

THIRD SESSION FOR WORKING GROUPS

Commodity and other specialized Working Groups

THURSDAY 29 SEPTEMBER 1983

09.00 A.M - 10.30 A.M

EIGHTH PLENARY SESSION

CONCEPTS TOWARD CO-OPERATION AND COLLABORATION IN AGRICULTURAL RESEARCH

Theme: The REDINA Network concept and its relevance to the Caribbean:- Dr. John Pino, IDB, Washington

Theme: Concepts for co-ordination of agricultural research in the CARICOM countries:-
CARICOM Secretariat

Theme: Panel Discussion of the potential and scope for complementary activities

10.30 A.M - 11.00 A.M

COFFEE BREAK

11.00 A.M - 12.30 P.M

NINTH PLENARY SESSION

Reports of Working Groups

12.30 P.M - 02.00 P.M

LUNCH

02.00 P.M - 03.30 P.M

TENTH PLENARY SESSION

Reports of Working Groups

03.30 P.M - 04.00 P.M

COFFEE BREAK

04.00 P.M - 05.30 P.M

ELEVENTH PLENARY SESSION

Preliminary sorting of priority collaborative programmes and projects

FRIDAY 30 SEPTEMBER 1983

09.00 A.M - 12.30 P.M

FOURTH SESSION FOR WORKING GROUPS

Meeting of Chairmen of Working Groups to consider mechanisms for implementation of recommended priority projects - session open to all participants, representatives of agencies asked to attend

Optional Field Trip - to be arranged

02.30 P.M - 05.00 P.M

FINAL PLENARY SESSION

Follow-up actions:

(a) Recommended regional collaborative programmes and projects - Report from Chairmen of Working Groups

(b) Other activities

CLOSING SESSION



REPORT OF WORKING GROUPS OF PERMANENT SECRETARIES AND
DIRECTORS OF AGRICULTURAL RESEARCH ON POLICIES TOWARDS
AGRICULTURAL RESEARCH AND COLLABORATION AND CRITERIA
FOR COLLABORATION IN AGRICULTURAL RESEARCH TO THE
PLENARY SESSION OF THE WORKSHOP ON AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

ISSUES

A. National Level

1. Conflict of views on research appreciation between policy makers and researchers:

Policy makers: not convinced that investment in research is matched by contributions to agricultural production and productivity; impact of research results not evident in the agricultural economy especially in the area of the small farm domestic sector; questioning the relevance of current research.

Researchers: underrating of agricultural research in national policy, consequent underinvestment; lack of appreciation of the need for indigenous research; impatience over development of new technology and its time perspective; general lack of a climate for research; unclear policy perspectives.

2. Despite this, in recent times, there has been a growing recognition that well directed research and technological change can be an efficient source of growth in the agricultural sector.

3. Within several of the countries of the region there are a number of agencies - Ministries of Agriculture, commodity organisations, teaching and training institutions and international organisations - spanning a spectrum of research or research related activities and competing for limited available manpower and financial resources. Consequently, there is isolation, duplication and weaknesses in capability to impact

effectively on the sector as a whole. Important issues are the rationalisation of the conduct of research by these agencies, and the existing separation of teaching and research, research and development, and extension and farmer training in different institutions.

B. Regional Level

1. Limited links between national research agencies even on areas of common problems and exchange of information.
2. Regional research organisations have tended to work in isolation of each other, or at best on competing terms. Goals and work integration must be more clearly defined in relation to national efforts, regional efforts or common objectives for the regional agricultural sector. Greater collaboration is required, and a division of labour established which would more effectively and efficiently utilise the capabilities of these agencies.
3. An increasing dependency on external funding with serious potential for external determination of research programmes.
4. Generally limited scope for discussion and exchange of experiences and results among researchers on the wider problems of the agricultural sector; limited access of professional societies to decision makers.
5. An inability to effectively link with international research agencies and to utilise their resources and research results for regional benefit, in part due to the absence of collaborative mechanisms within regional groupings.

GROUP RECOMMENDATIONS

A. National

The Group agreed to the following as goals for national and regional agricultural research and development:

- a. increasing food production and productivity, improving methods of handling, storage, processing, distribution and marketing of local foods;

- b. encouragement of regional trade in food; realisation of food security;
- c. increasing productivity and production of traditional export crops;
- d. development of non-traditional commodities as sources of foreign exchange earnings.

Towards achieving these goals, the Group recommended:

- 1. Continuous dialogue between researchers and policy makers on means, priorities and focus in relation to national goals. Further, particular technical research results should be continuously assessed for impact on the farming sector and must be supported by appropriate socio-economic research relating to possibility for adoption, adoption rates, associated physical and economic requisites for success, etc;
- 2. Governments to agree to, and be assisted in the establishment of co-ordination mechanisms at the national level, and to the strengthening of national research and extension capabilities as a matter of urgency;
- 3. While available external resources for so doing should be tapped, due regard must be paid to the need to preserve national direction in research;
- 4. Within the context of co-ordination, Governments to give serious consideration to:
 - i. the degree of operational autonomy which would allow research institutions to function effectively;
 - ii. the functional integration of research and teaching, research and development, and extension and farmer training possibly under Research Training and Policy Councils or Agricultural Research and Training Institutes;

- iii. training of less specialised extension personnel by subject matter specialists (as against development of extension on subject matter lines).

B. Regional

1. The region to examine its commonality of research needs so as to determine areas for national agency research collaboration. This would serve as a basis for establishing linkages between national research agencies towards collaboration and exchange of information on common problems.
2. The work and capabilities of regional research organisations must be rationalised towards supporting national efforts, filling research gaps, working on common or collaborative programmes. The roles and capabilities of these organisations should be urgently and critically reviewed within the context of national and regional agricultural goals and resources to determine a division of labour, areas of collaboration, functional relationships, etc;
3. The establishment of networks for collaboration in research between countries and across the region should be encouraged. Donor agencies should continue to fund activities aimed at fostering research collaboration and linkages with two considerations in mind:
 - i. the desirability and longer term efficacy of strengthening national systems without which regional networks would be weak;
 - ii. encouragement of the countries themselves to organise their own networks assisted by donor agency backstopping.

In the first instance, the networks may concentrate on establishing the bases for co-operation (meetings, exchange of information/materials) and on a few commodities, with expansion to other commodities as the network system demonstrates benefits, experience gained, and the weaker national systems strengthened.

4. Follow-up meetings of the nature of this current Conference to review and discuss experiences in collaborative work and establishment of networks.

CRITERIA FOR COLLABORATION

The following considerations relate to collaboration both within countries and between countries. No ranking is intended.

1. Common problems and interests.
2. Voluntary initiation.^{1/}
3. Mutually acceptable benefits in relation to needs to be satisfied.
4. Goals, objectives and programmes must be clear and acceptable.
5. Use of flexible mechanisms in devising and executing programmes.
6. Where joint actions promise maximisation of use of limited resources, and are cost and results effective.
7. Mechanisms should serve to strengthen existing institutions rather than establish new ones.
8. General good faith between collaborators.
9. Continued political and financial support for sustaining successful collaborative efforts.

This report was formally adopted at the Sixth Plenary Session.

^{1/} It is recognised that where national co-ordination agencies or mechanisms are in place, collaboration may not be all that "voluntary". The criterion, however, holds good in relation to collaboration between countries and between national and international agencies.



REPORT OF THE SPECIAL TASK FORCE ON COLLABORATION IN
AGRICULTURAL RESEARCH TO THE PLENARY SESSION ON THE
WORKSHOP ON AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

The Economic Commission for Latin America (ECLA) Subregional Headquarters for the Caribbean organized a meeting in Port-of-Spain from 26-30 September 1983 under the aegis of the Caribbean Development and Co-operation Committee (CDCC)/Caribbean Council for Science and Technology (CCST). The meeting considered agricultural research policy and management in the Caribbean, more specifically in CDCC countries.

It examined a series of presentations including:

- The Role of Agricultural Research in Agricultural Development
- The Organization and Management of Agricultural Research in the Caribbean
- Agricultural Research Management
- Toward the Future: An Alternative Framework for Agricultural Research in the Caribbean.

Later, a Working Party of senior administrators and senior agricultural scientists met as a Committee of the Whole and deliberated on "Policies Towards Agricultural Research and Collaboration" and criteria for collaboration.

The Group recognized: a crisis of confidence in agricultural research in the region; the existence of a conflict of views between policy makers and research scientists as to the value and the achievement of research undertaken in the region whilst admitting of the need for regional and technological change.

It further identified the urgent need for rationalization of the conduct of research by the many agencies currently operating in the region and the need for examining the existence of the separation of teaching and research, research and development and extension and farming training in different institutions with a view to making adjustments for more effective execution of these functions.

In the light of these observations the group recommended that:

1. "the region examine the commonality of its research needs so as to determine areas for national agency research collaboration. This would serve as a basis for establishing linkages between national research agencies towards collaboration and exchange of information on common problems".
2. "The work and capabilities of regional research organizations must be rationalized towards supporting national efforts, filling research gaps, working on common or collaborative programmes. The roles and capabilities of these organizations should be urgently and critically reviewed within the context of national and regional agricultural goals and resources to determine a division of labour, areas of collaboration, functional relationships, etc."
3. "The establishment of networks for collaboration in research between countries and across the region should be encouraged. In the first instance, the networks may concentrate on establishing the bases for co-operation (meetings, exchange of information/materials) and on a few commodities, with expansion to other commodities as the network system demonstrates benefits, experience gained, and the weaker national systems strengthened."

The criteria established for collaboration are shown at Appendix I.

Commodity Groups such as the Rice Subgroup which have advanced proposals for co-operation could with advantage proceed with these immediately.

The Special Task Force now proposes that a small Working Group of not more than five persons be immediately established. These individuals should be made responsible for elaborating a proposal for regional co-operation based on the guidelines mentioned earlier and design the steps necessary for its implementation. This should be completed within six months of the actual initiation of the group's activities, which ought to be almost immediately.

In order to carry out this task it will be necessary to seek interim funding from appropriate Donor/Technical Assistance Agencies.

The meeting mandates the University of the West Indies in collaboration with CDCC/CCST to continue the initiative to establish a network system for collaboration in agricultural research in the wider Caribbean (CDCC member countries) by acting as Secretariat. In discharging this mandate it will prepare a background document for discussion by the working group, consultation with regional and international agencies operating in the agricultural sector of the region being mandatory. After the working group has prepared a final document the proposal should be presented by the University of the West Indies in collaboration with the CCST to funding agencies.

The proposal was formally adopted by the Directors of Research.

Introduction

The purpose of this document is to provide a comprehensive overview of the project's objectives, scope, and methodology. The project aims to develop a robust system that addresses the challenges of data management and analysis in a dynamic environment. The scope of the project includes the design, implementation, and testing of the system, as well as the documentation of the process. The methodology employed is a combination of agile development and traditional software engineering practices, ensuring flexibility and thoroughness in the development process.

The project is organized into several phases, each with specific tasks and deliverables. The initial phase involves requirements gathering and analysis, followed by system architecture design. The implementation phase includes the development of the core system components, while the testing phase focuses on verifying the system's functionality and performance. Finally, the deployment phase involves the installation and configuration of the system in the production environment.

The project team consists of experienced professionals in software development, testing, and project management. The team is committed to delivering high-quality results and maintaining open communication throughout the project. The project's success is contingent upon the active participation and collaboration of all team members.

APPENDIX I

CRITERIA FOR COLLABORATION

The following considerations relate to collaboration both within countries and between countries. No ranking is intended:

1. Common problems and interests
2. Voluntary initiation
3. Mutually acceptable benefits in relation to needs to be satisfied
4. Goals, objectives and programmes must be clear and acceptable
5. Use of flexible mechanisms in devising and executing programmes
6. Where joint actions promise maximisation of use of limited resources, and are cost and results effective
7. Mechanisms should serve to strengthen existing institutions rather than establish new ones
8. General good faith between collaborators
9. Continued political and financial support for sustaining successful collaborative efforts.

REPORT OF THE WORKING GROUP ON BANANAS TO THE
PLENARY SESSION OF THE WORKSHOP ON AGRICULTURAL RESEARCH
POLICY AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

The participants of the Working Group were:

J. Edmunds - WINBAN
G. Van Loo - St. Vincent and the Grenadines
I. Muirhead - Banana Company of Jamaica
T. Ferguson - University of the West Indies

Banana and Plantain Breeding

In the four Windward Islands of Dominica, Grenada, Saint Lucia and St. Vincent and the Grenadines, bananas contribute some 70 percent of export earnings amounting to approximately EC\$100 million each year. Approximately 20,000 banana farmers in these islands are dependent on the crop which is also an important staple food.

In Jamaica, bananas rank second as the most important agricultural export and, as in the Windward Islands, are a source of livelihood for thousands of farmers, an important employer of labour and a major food commodity.

Specific information relating to this crop in Belize and other CDCC countries was not available to the Working Group. However, it is known that it is an important economic crop in Belize and a major crop in some other countries.

The highest item of production cost in the Windward Islands and Jamaica relates to the control of yellow Sigatoka (Leafspot), the estimated total expenditure being J\$12 million in Jamaica and EC\$8 million in the Windward Islands. The global estimate of expenditure on the control of yellow Sigatoka is in excess of US\$100 million.

Recently, a very virulent strain of the fungus (black Sigatoka) has been spreading through Latin America and Africa, affecting both bananas and plantains. The estimated cost to control black Sigatoka is more than twice the cost to control the yellow strain. The spread of black Sigatoka to the Caribbean is a real possibility and should this occur, there will be devastating effects on the Caribbean banana industry which is so vital to the economy of the region.

In this connection, it is important to note that the Banana Breeding Research Scheme in Jamaica has been carrying out research to improve varieties through breeding and selection for some 30 years. This scheme has a proven capacity to produce tetraploids which are:

- resistant to black and yellow Sigatoka;
- resistant to Race 1 of Panama disease;
- as resistant as Cavendish clones to Race 2 of Panama disease;
- comparable to Cavendish clones in yield;
- as a cooking banana, better in eating quality than Cavendish clones;
- better performers under un-irrigated conditions than Cavendish clones.

In 1960 all banana breeding work in the Caribbean was concentrated in Jamaica under the general supervision of the Banana Board. At that time, the Windward Islands Banana Industry entered the Scheme as a contributor, the remaining costs being met by the British and Trinidad Governments. Today, the Jamaican Government is the only source of financing to this Scheme, which is believed to have the best banana germplasm collection in the world.

The resources now available to the Banana Breeding Scheme are inadequate to carry out the activities which could result in the production of a variety having the necessary resistance to pathogens and the ability to produce high yields of fruit with desirable qualities.

It is therefore recommended that the international agencies consider, very urgently, funding a revitalised banana breeding programme for the Caribbean. Such funding should include collaborative work by the existing banana research stations of the region to evaluate new clones produced by the breeding programme.

Moko Disease

A bacterial disease called "Moko" disease of bananas is at present causing significant losses in the production of bananas, plantains and blugoe in Grenada. It is recorded that this disease has been responsible for the decline of the banana industry in Trinidad. Because of the importance of bananas to the economies of a number of Caribbean countries, it is most important that this disease be contained and not allowed to spread to other countries.

Therefore, it is strongly recommended that the existing programme to eradicate Moko disease in Grenada, which is funded by the EDF, be extended beyond the present phase scheduled to end in April 1984. A Phase II of this programme should include the introduction and evaluation of:

(a) substitutes for the existing blugoe and (b) advanced tetraploids from the Jamaica Banana Research Scheme.

Fertilizer Placement

The second highest input cost in banana production is fertilizers. Limited research on fertilizer placement has been carried out in Jamaica. More recently, a well-defined programme at WINBAN has shown that when fertilizer is placed about 45 cm. from the banana pseudo stem and 5 to 8 cm. deep, distinct advantages accrue.

Three fundamental findings in this fertilizer placement research are worthy of note:

1. the nutrient supply to the plant can be improved by placement without increasing the amount of fertilizer i.e. the fertilizer use efficiency is improved;
2. higher yields were produced by placement using the same amount of fertilizer, and under some circumstances, with a smaller amount of fertilizer than used in broadcast application;
3. there was less toppling with fertilizer placement.

These observations have been made under a limited range of agro-ecological conditions in the Windward Islands.

Considering the advantages of increased fertilizer use efficiency mentioned above, the associated economic benefits that accrue from reduced fertilizer costs, conservation of scarce foreign exchange, and savings in labour, it is recommended that a programme of fertilizer placement and fertilizer evaluation trials be carried out in a number of agro-ecological conditions, not only on research stations, but most importantly through carefully conducted and monitored on-farm trials. It is further recommended that funds be obtained to carry out this programme as a collaborative project in which WINBAN, the Banana Company of Jamaica, Belize and other Caribbean countries participate.

Research Collaboration - Exchange of Personnel and Information

At the present time research programmes and projects are developed in Jamaica, the Windward Islands and other Caribbean countries without any consultation; also there are no mechanisms whereby research results are shared for mutual benefit although some countries produce for the same market on a complementary supply basis. For example, the Windward Islands and Jamaica share in the United Kingdom market and any shortfall in production or marketability of fruit from any one island adversely affects the market security for fruit from all of the islands. These factors indicate the urgency to ensure that research and development programmes are developed in close collaboration.

It is therefore recommended that the Banana Company of Jamaica and WINBAN formulate jointly a banana research strategy which would minimize duplication of efforts and it is further recommended that formal channels of communications be established for the flow of research information, exchange of personnel from time to time and for on-the-spot observations of new research innovations which could be of mutual interest.

Funding is being solicited to make this possible.

Shortfalls in WINBAN Research and Development Budgets due to Natural Disaster

The major constraint to the implementation of the WINBAN research and development projects is one of finance. In the Windward Islands, the financial responsibility for research and development rests with the banana growers, who contribute a cess for every pound of bananas they sell. Part of this cess goes towards administration and the other to research and development.

In recent times, major disasters have adversely affected production and hence the finances of local associations and their ability to contribute to a prescribed research budget. For example, in 1978 and 1979 Dominica suffered from a leafspot epidemic resulting in a fall in production by 42 percent below the previous year; in August 1979 Hurricane "David" totally wiped out the banana industry of Dominica resulting in 64 percent below estimated production for that year; in April 1979 St. Vincent suffered a series of volcanic eruptions reducing projected exports by 29 percent; in August 1980, Hurricane "Allen" destroyed the industry of St. Lucia by 100 percent, St. Vincent by 95 percent, Dominica by 90 percent and Grenada by 40 percent. In September 1983 a windstorm damaged approximately 40 percent of Saint Lucia's bananas. These events have interrupted research programmes, destroyed valuable work and have limited WINBAN's ability to carry out necessary research.

In view of the expressed need for collaboration in Caribbean banana research efforts and recognition of the adverse effects which funding interruptions have on both individual research programmes and collaboration, it is recommended that new measures be devised to: (a) ensure necessary continuity of research efforts; and (b) to alleviate the existing financial difficulties of banana research stations in the Caribbean.

Non-traditional Banana Cultivars

At present, almost all banana research efforts in the Caribbean are directed to the production of fresh fruit for export. Neglected areas include the possible use of selected cultivars in agro-based industries and also alternate uses of traditional cultivars. The need for research and development activities in these two broad areas has been highlighted by the Faculty of Agriculture of the University of the West Indies.

It is recommended that urgent attention be given to: (a) the non-traditional banana cultivars as sources of food and for possible agro-industrial uses; (b) the non-traditional use of present commercial banana cultivars. It is further recommended that this programme should give special attention to the member countries of the Organization of East Caribbean States and that the UWI be asked to co-ordinate the research.

ACORBAT - Latin American and Caribbean Networking in Bananas

The University of the West Indies, University of Puerto Rico, WINBAN, the Government of Trinidad and Tobago, IRFA and Jamaica are founding members of the Association for Collaboration in Banana Research in the Caribbean and tropical America (ACORBAT). ACORBAT has, so far, from 1964 served as the only linkage of banana technologists from the Caribbean and Latin America.

The need to maintain this linkage is vital for technological interchange and the bridging of technological gaps that may exist between and within banana-growing countries in the Caribbean and Latin America. This organization now encompasses banana researchers in Latin America and the Caribbean and is in contact with researchers in North America, the United Kingdom, Africa and the South Pacific. Consequently, a global network between banana researchers has been fostered. The broad objectives of the Association are:

1. to recommend any study, research, survey or trial with respect to bananas in the Caribbean and tropical America designed to improve their cultivation, management, packaging or processing. To this end the Association is mandated to:
 - (a) subsidize scientific institutions concerned with the improvement of the banana industry;
 - (b) reward research workers whose studies on banana are of value to the industry;
 - (c) grant scholarships and bursaries to students wishing to specialize in banana research;

- (d) promote exchange of information and contacts between research workers;
 - (e) facilitate the practical application of the findings of research workers.
2. to promote by all available means, the adoption of methods and techniques designed to improve the quality of the fruit and to stimulate consumer acceptance of bananas produced by the member countries of the Association.

The General Assembly of ACORBAT in Guadeloupe in 1983, mandated its President to seek to establish the organization under the umbrella or within the structure of an existing institution or international organization.

It is therefore recommended that an appropriate base or facility be identified and created for the present and future development of ACORBAT.

Assistance in identifying such a base and modest financing for the same should be considered by countries and aid donors represented at this Workshop.

Studies on Leaf Spot Organisms

At the meeting of banana researchers in Guadeloupe in 1983, under the umbrella of ACORBAT, it became evident that there was very little in-depth research in progress on the epidemiology, pathogenicity and variability of leaf spot organisms, or mode of action of fungicides presently used in their control in the region or, indeed, in Latin America.

Such a study is vital in forecasting changes in populations or in determining the development of resistant strains of the fungus.

Knowledge gathered from the above, can be of enormous value in determining disease control strategies, which could result in savings to the respective banana industries and the development of disease resistant banana cultivars.

Since leaf spot control costs the Caribbean banana industry (Windward Islands, Jamaica and Belize) over US\$9 million per year, it is recommended that a comprehensive comparative study be made of different populations of the leaf spot organisms in the region, to determine their natural variability and pathogenicity on different banana cultivars in the region, with particular reference to the tetraploids produced by the Jamaica Banana Breeding Scheme.

Such a study would best be done at a University and funding for such a research programme needs to be found.

ACORBAT - Research Priorities requiring Networking

At the meeting of ACORBAT in Guadeloupe in 1983, a listing of research programmes which would best be carried out on a collaborative basis between member countries was considered and accepted by the General Assembly of scientists.

It is recommended that the programmes which are of relevance to the Caribbean region be studied with a view to implementation through this present grouping. An outline of these programmes will be submitted to CCST.

This report was formally adopted at the final plenary session of the Workshop.

REPORT OF THE WORKING GROUP ON LIVESTOCK TO THE
PLENARY SESSION OF THE WORKSHOP ON AGRICULTURAL
RESEARCH POLICY AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

The participants of the Working Group on Livestock included:

- D.S. McLeod - Jamaica
- K.E. Archibald - UWI, Trinidad
- D. Dolly - UWI, Trinidad
- D.G. Howell - University of Guelph, Canada
- F.A. Neckles - SFC, Trinidad
- W. Cateau - SFC, Trinidad
- S. Howard - Ministry of Agriculture, Lands and
Food Production, Trinidad

The Working Group on Livestock found that development of viable
livestock industries in the Caribbean suffered the following constraints:

- a. the low animal population of the Caribbean countries;
- b. poorly developed grazing and feeding systems;
- c. the need for improved systems of management;
- d. inadequate marketing systems.

As a basis for collaboration, the Group considered that in order
to realize progress in livestock research, it is necessary to:

1. Have clearly defined priorities to determine the choice
of research projects.
2. Have a viable organizational framework for conducting
research so that necessary long-term activities can be
initiated and maintained.
3. Develop functional co-operation between research institutions
and co-ordination between institutions funding research.

The Group took special note of the existing Regional Livestock Development Programme and also the Committee of Directors of Livestock Research for the CARICOM region which provide a framework for co-operation in livestock research and development in the CARICOM countries.

Recommendations

1. Institutions which have comparative advantages to carry out certain research should be encouraged to concentrate on such work and should be given necessary support e.g. the Sugar Cane Feeds Centre in Trinidad and the Bodles Research Complex in Jamaica.
2. Increased attention should be given to the evaluation of local/regional materials to supply both the protein and energy requirements of different classes of livestock.
3. Particular attention must be given to the evaluation and use of local raw materials as feed ingredients for non-ruminants. The involvement of the private sector and their support to finance this needed research and development is considered to be important.
4. Specific research programmes should be directed towards the use of local ligno-cellulose material for use as animal feeds.
5. Early attention should be given to the development of production systems based on well conducted comparative studies.
6. Breeds of livestock suitable for Caribbean conditions must be identified or produced.
7. Research is needed to develop relevant systems of using animal power for farm operations. This research may be usefully incorporated into programmes related to the use of energy in agriculture.

8. Efforts should be made to maximize the use of animal by-products including hides, hair and wool.
9. Systems and programmes in land use and land management are needed in order to realize effective application of research results and development of a viable Caribbean livestock industry.

The final plenary session of the Workshop accepted the report and recommended:

1. That the Regional Livestock Development Programme and the Committee of Directors of Livestock Research in the CARICOM grouping should be examined as possible models on which to build co-operation activities in livestock research by linking with other organizations and institutions including IICA and CIAT. The mechanisms for Caribbean-wide co-operation need to be developed.
2. That in view of the limited land resources of most Caribbean countries, increased attention should be given to non-ruminants and to land-efficient production systems.
3. That attention be given to improvements in the management of livestock research and livestock production.

REPORT OF THE WORKING GROUP ON RICE TO THE
PLENARY SESSION OF THE WORKSHOP ON AGRICULTURAL
RESEARCH POLICY AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

1. Participants:

The representatives present were from:

Dominican Republic

Suriname

Guyana

Trinidad and Tobago

Haiti

CIAT (Resource person)

2. Proposal

The participants accepted in principle the project proposal presented by CIAT and agreed with its objectives, and that a workshop of rice research personnel and others directly involved in rice production should be the first step in implementing the proposal. It was agreed that the development of a Caribbean Network on Rice Research is essential and urgent for the future development of rice production by countries of the Caribbean. The Network should be open to voluntary participation by Caribbean countries.

3. Workshop

The main objectives of the Workshop will be:

- a. To characterize the individual countries' Rice Research and Production Profile.
- b. To identify common region-wide researchable problems and priorities.
- c. To identify training needs, and training capabilities within the region.
- d. To identify the project base, and research project sites in selected countries.
- e. To identify germplasm to be included in the initial nurseries.

- f. To identify seedrice production needs in terms of training, infrastructure and programmes.
- g. To determine and Project Steering Committee and define its Terms of Reference.
- h. To detail a Final Project Profile in terms of Network Activities

4. Workshop Preparatory Stage

The Working Group discussed and agreed on the following preparatory steps to organize the Workshop:

- a. That the organizing institution be a regional institution such as ECLA/CCST, or possibly IICA, UWI, CARDI or CARICOM, working in close collaboration with CIAT.
- b. That the organizing institution and CIAT jointly seek funding for the Workshop and for necessary preparatory work.
- c. That a Technical Rice Consultant be selected from the region to assist in preparation of the technical aspects of the Workshop including the preparation of the country documents dealing with the above objectives. For this purpose the initial funding should include provision for travelling and 3-4 months consultancy.
- d. That the Workshop location be within the region at a place to be identified by the organizing institution and CIAT.
- e. The May-June period of 1984 was agreed as the most appropriate time for the Workshop for participants engaged in the Rice Industries.

REPORT OF THE WORKING GROUP ON SUGAR CANE AND
ALTERNATE USES OF SUGAR CANE TO THE PLENARY SESSION OF
THE WORKSHOP ON AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

The participants of the Working Group were:

John Allen - Jamaica
D.I.J. Walker - West Indies Central Sugar Cane Breeding Station,
Barbados
Jerome Thomas - St. Kitts

1. Conventional research associated with the sugar cane has been concentrated on the sugar component of the sugar cane plant.
2. It is imperative that urgent attention be given to:
 - (a) research into alternate uses of the sugar cane plant, including possible industrial uses; and
 - (b) alternate use of raw sugar for both human consumption and industrial purposes.
3. It is equally important that research directed toward increasing efficiencies in the use of the sugar cane plant for the production of sugar must not suffer, in order to pursue research into alternate uses.
4. Increasing demands for energy in the Caribbean islands are causing an increasing drain of foreign exchange. It is now realized that sugar cane fibre is an indigenous renewable energy resource. Pilot schemes of energy conservation in sugar factories, using excess fibre to generate electricity for sale to the national grid, exist. A vigorous expansion of this approach would be of economic benefit nationally, and to the sugar cane industry itself.
5. There is growing interest in the use of sugar cane fibre as a building material to replace declining timber supplies. This is of special interest to the Caribbean, since most of these countries import the major part of their requirements. Aid-assisted work on the industrial uses of fibre is proceeding, but research on agricultural production systems with emphasis on fibre production must now be started.

6. Agricultural research into total biomass production of the plant involves breeding varieties, optimization of inputs, appropriate harvesting systems and further investigation of industrial uses of components of the plant, be it for energy, building materials, animal feed or fermentation or combinations of these with or without sugar production. This is of vital interest to all countries with an existing sugar industry or with a potential to grow the plant.

7. The industries themselves are not at present in a position to undertake more than a fraction of the needed research. A region-wide interest justifies external assistance to the scheme, and we hope that research in the agricultural and industrial fields can be intensified immediately.

8. The small working group present is of course not fully mandated to speak for the countries here and now. They will attempt to catalyse a regional proposal from interested countries and industries.

9. The CCST should provide the organizational mechanisms to promote interest in regional work on the alternate uses for sugar cane.

This report was formally accepted at the final plenary session of the Workshop.

REPORT OF THE WORKING GROUP ON UNDER-EXPLOITED CROPS
TO THE PLENARY SESSION OF THE WORKSHOP ON AGRICULTURAL
RESEARCH POLICY AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

The participants of the Working Group were:

| | |
|----------|-----------------|
| Bahamas | St. Kitts-Nevis |
| Dominica | Saint Lucia |
| Grenada | |

Observers were:

| | |
|------|----------------------|
| CIP | ICRISAT |
| CDPF | UWI |
| FAO | University of Guelph |

The Working Group on under-exploited tropical crops agreed that:

1. Research institutions in the Eastern Caribbean have neglected or moved away from research on the non-traditional and under-exploited crops in the region - especially tree crops - because of the long-term nature of these crops.
2. If these institutions are to live up to their objectives - service the needs of the region - they must start work on the non-traditional and under-exploited crops.
3. We have lost or are rapidly losing any competitive advantage that we earlier had in the production of the traditional crops such as bananas, coconuts, citrus and sugar cane.
4. We have to move up from the ranks of the followers and join the band of leaders and get involved in work on non-traditional and under-exploited crops where we can gain comparative advantage, before countries with large production capability and vast resources, once again push us out of the market place.

5. The UWI could develop post-graduate programmes, so that students work on the various aspects of these crops. Over the years several students can contribute to the development of the expertise on a single crop.

6. To that end, the group identified a number of non-traditional and under-exploited crops, which we believe could be produced both for intra and extra-regional trade to the economic benefit of the region. A list of the crops identified and some research needs are given toward the end of this report. as Appendix 1.

OBSERVATIONS

1. The Group was not satisfied with the level of co-operation so far between regional organizations, (UWI, CARDI) and other tropical research organizations e.g. AVRDC which has developed very good varieties of crops suitable to our conditions e.g. all season tomatoes, high protein sweet potatoes. Connected to this, there is no reliable system for the screening of new varieties in the Eastern Caribbean, each territory carrying out its own work programme at different levels of competence. In the past much research work has been done and expertise developed on certain crops, but no provision was made for the commercialization of the results in the Caribbean e.g. pigeon peas and calypso tomato seed production. Seeds were not available commercially for these crops so the huge research effort put into developing these varieties was practically wasted.

2. The Group recommends that a working group of three to five persons be formed to make more specific recommendations and to develop research priorities, proposals and projects to present to various agencies for funding.

It is recommended that the UWI co-ordinate this working group. The desirability of having Mr. T. Beddoe, an FAO Expert, and also Mr. U. Martin of Dominica assist with the work of this group was noted.

The final plenary session accepted the report and recommended:

That the UWI and CARDI, acting jointly, should co-ordinate a working group to make specific recommendations with respect to priority research needs of under-exploited crops, which are of specific interest to the CDCC countries.

SUMMARY OF COMMODITIES

| <u>COMMODITIES</u> | <u>AREA OF RESEARCH NEEDED</u> |
|-----------------------|---|
| 1. <u>Food Crops:</u> | |
| Aroids | <ul style="list-style-type: none">- need to diversify the varieties- increase screening for known diseases- increase screening for better yield- increase information and improve the availability of such information- diversify the utilization of this group |
| Breadfruit | <ul style="list-style-type: none">- need to build information base- need to broaden germplasm base- need screening for specific physical properties |
| Irish Potatoes | <ul style="list-style-type: none">- need screening of true seeds for the region- need information collection system- specific screening- develop agronomic and production practices |
| 2. <u>Legumes</u> | |
| Chick Peas | <ul style="list-style-type: none">- protein substitution especially in the Northern Caribbean |
| Pigeon Peas | <ul style="list-style-type: none">- screening for photo insensitive cultivars- commercial seed production for distribution to farmers- screening for pest and diseases- develop agronomic and production practices- intercropping |
| Peanuts | <ul style="list-style-type: none">- information collection system- varietal studies; screening for pest and disease- commercial seed production for farmers |

COMMODITIES

AREA OF RESEARCH NEEDED

Cow Peas

- screening for pest and diseases
- screening for increased yields
- screening for seed and vegetable material
- commercial seed production

3. Cereals

Sorghum

- screening (for varieties)
- intermediate heights - dual purpose - forage and flower
- cost of production studies

4. Fruits

Avocado

- screening for early, middle and late maturing varieties for local use and export
- screening for early, middle and late maturing varieties for local use and export
- development of pest and agronomic practices
- post-harvest studies and quality control
- agro-industrial potential and utilization
- inter-cropping studies

Carambola

- agro-industrial potential; harvesting methods

Bilimbi

- agro-industrial potential; harvesting methods

Sour Cherry/Goose Berry

- agro-industrial potential; harvesting methods
- selection of germplasm; interest in large fruit with small seeds
- utilization in livestock feeds

Passion Fruit

- agro-industrial utilization

COMMODITIES

AREA OF RESEARCH NEEDED

Sweet Sop

- varietal screening for less seeds
- rapid propagation
- post harvest/quality and agro-industrial utilization

Sour Sop

- varietal screening for less seeds
- rapid propagation
- post harvest/quality and agro-industrial utilization

Cheirimoya

- varietal screening for less seeds
- rapid propagation
- post harvest/quality and agro-industrial utilization

Guava

- varietal screening for less seeds
- rapid propagation
- post harvest/quality and agro-industrial utilization

Cashew

- varietal trial to identify large nuts
- screening for germplasm collection

5. Vegetables

Onion

- needs varietal studies to select appropriate varieties for various areas
- post harvest management drying/curing
- pest and disease management

Other Vegetables

- the need to co-operate with other research groups which have voluminous data on improved varieties, etc. for example, AVDRC in Taiwan should be used more for tomatoes, sweet potatoes and some other tropical varieties.

THE FOLLOWING RECOMMENDATIONS WERE FORMALLY ACCEPTED BY
THE PARTICIPANTS AT THE FINAL PLENARY SESSION OF THE
WORKSHOP ON AGRICULTURAL RESEARCH POLICY
AND MANAGEMENT IN THE CARIBBEAN

Port-of-Spain, Trinidad, 26-30 September 1983

1. CDCC Governments are urged to examine their national agricultural research programmes with a view to strengthening national systems and to enhancing functional integration of agricultural research, training and extension, possibly by the appointment of a Council.
2. CDCC Governments should lend full support to the mechanisms which have been agreed at this meeting to establish regional collaboration in research on particular commodities (see Annexes).
3. In view of the fact that research results, however worthwhile, may not be by themselves adequate to increase production and productivity, and since any weakness in the continuum between agricultural policy, land use management, production, credit, training, extension and marketing may result in ineffectiveness in the whole system, governments are urged to assess comprehensively the whole agricultural system in relationship to research.
4. Governments are urged to devise and establish functional mechanisms for evaluation of agricultural research results and as a separate exercise, evaluate the contribution of research to agricultural production and productivity. Regional and International Agencies are urged to assist national governments in the evaluation of their research results.
5. Every support should be given by CDCC Governments to the activities of the Working Group, that the meeting has established, to prepare a set of recommendations regarding the creation and operation of a network mechanism for regional co-operation in agricultural research.

6. That every support be given to the convening of an annual workshop of Directors of Agricultural Research of CDCC countries.
7. Directors of Research and Permanent Secretaries are urged in the management of the national agricultural research systems to make every effort to enhance regional co-operation.
8. International agricultural research centres and other international agencies and regional institutions are urged to give their support in the discharge of their responsibilities to the governments of the region to the advancement of the concept of regional co-operation in agricultural research.
9. The international funding agencies are also urged, in association with regional governments and regional institutions to integrate more fully their support toward the realization of regional co-operation in agricultural research.
10. The educational and training institutions in the region are urged to give serious consideration to the mounting of programmes at all levels in agricultural research programmes.

