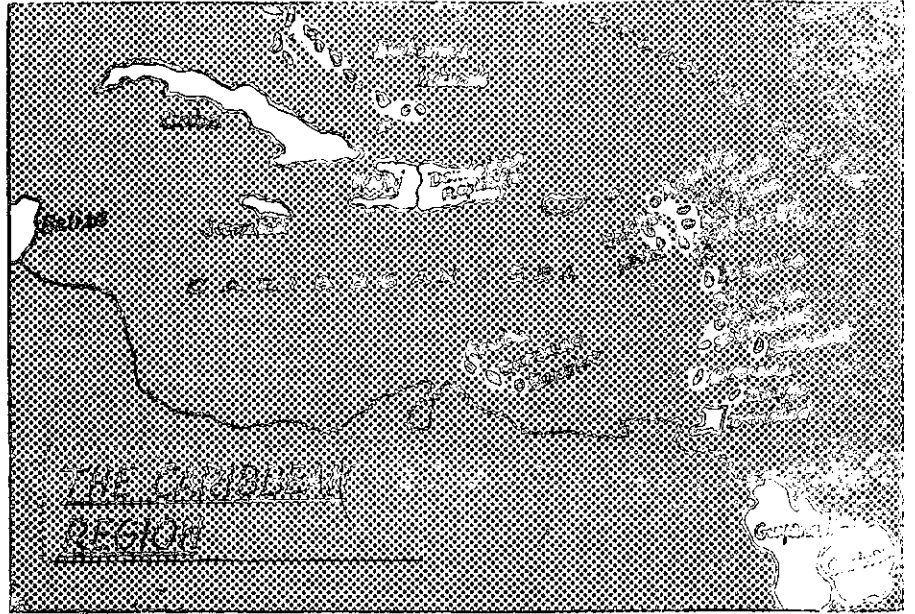


CARIBBEAN
DEVELOPMENT
AND
CO-OPERATION
COMMITTEE



CDCC/WP/78/11

12 January 1978

SECTION 1: A PROJECT FOR THE STUDY OF SUGAR CANE GUMMOSIS

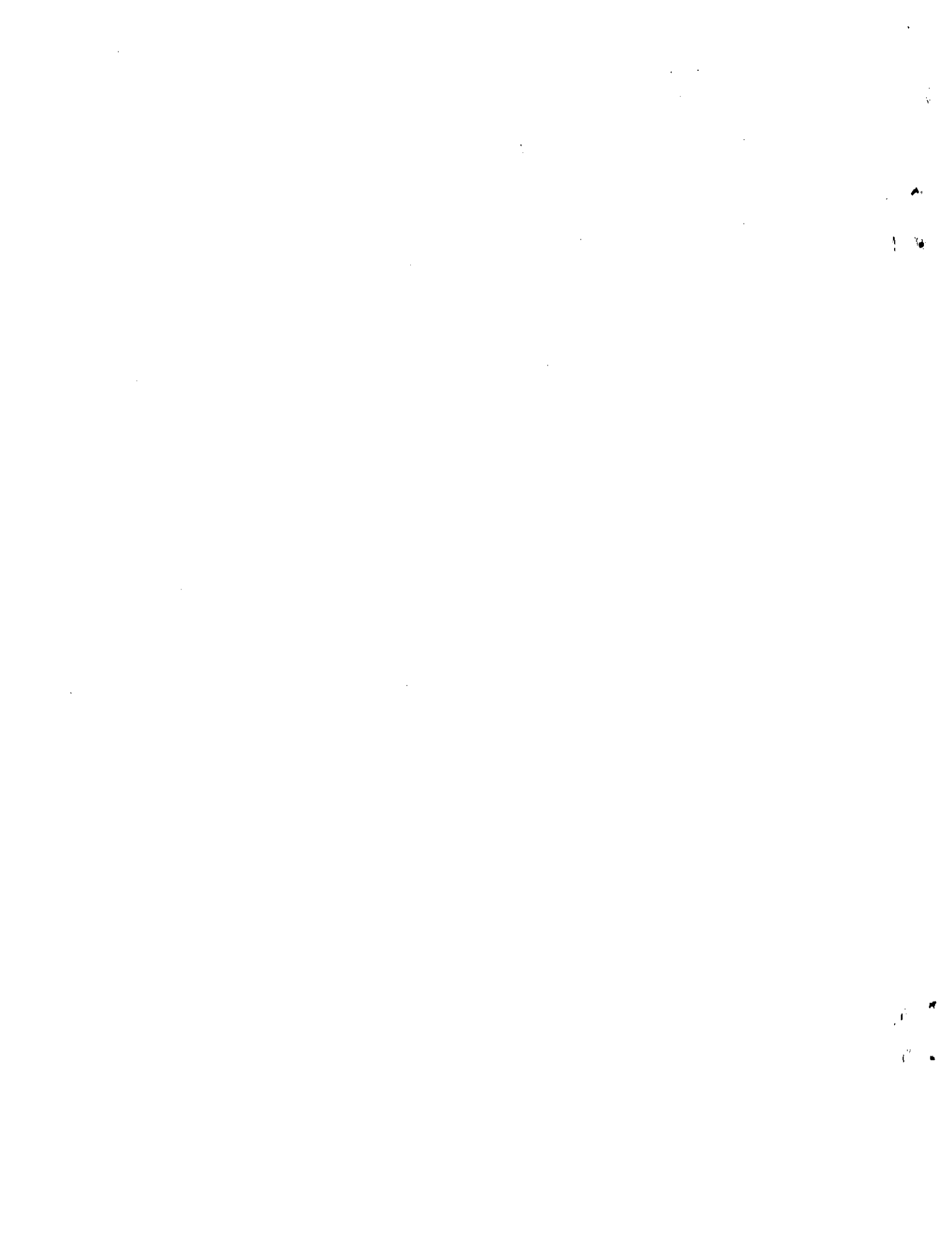
Submitted by the Dominican Republic Delegation
to the Second Session of the CDCC, Santo Domingo,
16 - 22 March, 1977

SECTION 2: NOTE BY CDCC SECRETARIAT ON THE PROPOSAL



UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA Office for the Caribbean



SECTION 1

STUDY OF SUGAR CANE GUMMOSIS

Background

On 15 January 1975, a contract was signed between the State Sugar Council (CEA) and the National University "Pedro Henríquez Ureña (UNPHU), whereby the University undertook to carry out a scientific study aimed at the investigation, prevention, eradication and avoidance in all forms of sugar cane gummosis, which, according to conservative estimates by the members of the Department of Agricultural Research of the CEA, currently reduces the production of sugar in the Dominican Republic by at least 10 per cent.

The State Sugar Council financed part of the research, and the University submitted the report covering the period February 1975 - December 1975, confirming the presence of a bacteria which is consistently found in sick sugar cane but not in healthy cane.

Although the CEA has only been able to make contributions covering the first stages of the product, the UNPHU has decided to continue with the project in spite of its limited economic resources while action is being taken to secure financing from other sources, since the advances made so far are of incalculable scientific and practical value for the economy of the Dominican Republic and of other cane sugar-producing countries.

Objectives

The purpose of continuing this project is to carry out a programme of collaboration and exchange of findings between the universities of the Dominican Republic - the National University "Pedro Henríquez Ureña", the Autonomous University of Santo Domingo, the Catholic University "Madre y Maestra", the Central University of the Eastern Region, and the Technological Institute of Santo Domingo - with a view to continuing the research work designed to eradicate sugar cane gummosis from the country, thus bringing benefits to the sugar-growing countries of the Caribbean and of the whole world, since this is a disease which is found to a greater or lesser extent in all countries producing cane sugar.

In order to carry out this project, economic assistance is required from the international organizations, since at present the universities do not have sufficient economic resources to continue it.

It is hoped that the nations making up this Caribbean Development and Co-operation Committee will provide the required support for this project so that the programme of work given below can be carried out and so that the results obtained can be applied in the other countries of the area.

If this project is approved, we would like the necessary financing to be channelled through the Association of Caribbean Universities and Research Institutes (UNICA), so as to facilitate participation by other institutions in the Caribbean. We feel that these arrangements could be consolidated at the Meeting of Rectors of Caribbean Universities and Directors of Research Institutes on the Transfer of Technology, which is scheduled among the activities of the CDCC at its present session.

Aims

The immediate aims of this programme will be to isolate and cultivate the causal agent of sugar cane gummosis in the laboratory, using specific culture media.

This project, apart from being of great importance for the country, will also serve to train professional and technical personnel in the disciplines used in its execution, thus proving of great value for subsequent studies. The staff thus trained could devote themselves independently in the future, with a higher level of training, to research projects of interest to each institution.

Programme of work

In order to carry out the research still needed, a programme of work has been prepared which will be carried out over a period of four years, and the institutions participating in the project all agree that this programme represents the best method for arriving at definitive conclusions.

Steps in the programme of work

1. Isolation and culture of the causal agent of sugar cane gummosis in the laboratory, using specific culture media.

2. Establishment of a bio-test for identifying plants susceptible to the disease, for the purpose of the early detection of the causal agent, using the method of S. Matsuoka.
3. Once it has been isolated, the causal agent will be identified by examination under the electron microscope.
4. Healthy plants will be infected with the isolated agent, which will once again be isolated for identification when the experimentally infected plants are fully affected by the disease.
5. Establishment of the basic method for physical and/or chemical treatments to prevent the disease.
6. Establishment of serological techniques for detecting the causal agent in plants which contain it.

CONTRIBUTIONS REQUIRED OVER A PERIOD OF FOUR YEARS
FOR THE EXECUTION OF THE PROJECT

First Stage

1977/1978

RD\$ 70,000

Second Stage

1978/1979

RD\$ 50,000

Third Stage

1979/1980

RD\$ 40,000

Fourth Stage

1980/1981

RD\$ 40,000

BREAKDOWN OF ECONOMIC CONTRIBUTION

Budget

<u>Operating Costs</u>	1977/1978	1978/1979	1979/1980	1980/1981
Consumable supplies, specific culture media, reagents, glassware, photographic material, specimen preparation material for electron microscopy.	RD\$ 18,000.00	\$ 15,000.00	\$ 10,000.00	\$ 10,000.00
Preparation of three experimental fields in different areas (Santo Domingo, Santiago, San Pedro de Macorís), labour costs, materials, transport, fertilizers, fumigation, irrigation and maintenance.	8,000.00	6,000.00	4,000.00	4,000.00
Acquisition of a suitable vehicle for use in the supervision and evaluation of the experimental fields and the delivery to the laboratories of samples from the cane fields in different areas.	12,200.00			
Cost of gasoline, insurance, spare parts, repairs, etc.	2,000.00	2,000.00	3,000.00	3,000.00
Wages of driver for vehicle (\$ 250.00 per month).	1,800.00	1,800.00	1,800.00	1,800.00
Salary of an agronomist for supervising the project and evaluating it in conjunction with the work carried out by the University (\$ 600.00 per month).	7,200.00	7,200.00	7,200.00	7,200.00
Training of personnel in other countries in special techniques, travel costs, board and lodging.	7,900.00	4,000.00	4,000.00	4,000.00
Payment of international consultants.	2,400.00	2,000.00	3,000.00	3,000.00
1 Ultra centrifuge for extraction and purification of sugar cane material (to be paid in 2 years)	5,000.00	5,000.00		

	1977/1978	1978/1979	1979/1980	1980/1981
Animals of laboratory, their care, serology.		RD\$ 2,000.00	\$2,000.00	\$2,000.00
General utility services, long distance telephone calls, mail, transport, articles of laboratory	3,000.00	3,000.00	3,000.00	3,000.00
<u>Miscellaneous</u>				
Publications, office material, incidentals.	2,500.00	2,000.00	2,000.00	2,000.00

SECTION 2

NOTE BY CDCC SECRETARIAT

Among the several new proposals submitted by the Dominican Republic at the last Session of the CDCC in Santo Domingo figures one on dwarf strains in sugar-cane caused by sugar-cane gummosis whose causal agent is a bacteria. A programme of research aimed at the investigation, prevention, eradication and avoidance in all forms of sugar-cane gummosis has been undertaken in the Dominican Republic since 1975 under a contract signed between the State Sugar Council (CEA) and the National University "Pedro Henríquez Ureña" (UNPHU). In order to continue this project whose results would be in the benefit of all the sugar-growing countries of the Caribbean, the Dominican Republic is looking for economic assistance and support from the CDCC.

Many research institutions are working on sugar-cane in the Caribbean. Attached is a preliminary listing of them.

Several of those institutions in the Caribbean and elsewhere have over the years undertaken research on sugar-cane pathology under varying ecological conditions. In view of the wealth of information gathered by those research institutions and the lack of communication between them, the Secretariat considers as a first step the establishment of collaboration on a day-to-day basis between them and; it is therefore proposed, if the Committee so approves, that they establish links between themselves and other institutions outside of the region so that a system of complementary exchange of research papers be established.

At a later stage, depending on the interest of these institutions, it could be considered the possibility for combining joint research projects with the view of reducing overlapping and duplication of projects and ensuring maximization of benefits to all.



SUGAR RESEARCH INSTITUTIONS
OF THE
CARIBBEAN

BARBADOS:

1. Barbados Sugar Cane Variety Testing Station
Grooves, St. Georges
2. West Indies Central Sugar Cane Breeding Station
Grooves, St. Georges
3. Graeme Hall Agricultural Station

BELIZE:

Belize Sugar Estates

CUBA:

1. Academia de Ciencias de Cuba
Apdo. Postal 6565, La Habana, Cuba
2. Instituto de Investigaciones Tropicales
3. "Alejandro de Humboldt" de la Academia de Ciencias de Cuba

DOMINICAN REPUBLIC:

1. Consejo Estatal del Azucar (CEA) Dominicana
Ciudad Trujillo, Republica Dominicana
2. Gulf and Western Americas Corporation
Centrale Romana, La Romana, Republica Dominicana
3. National University "Pedro Henríquez Ureña" (UNPHU)
4. The Autonomous University of Santo Domingo
5. The Catholic University "Madre y Maestra"
6. The Central University of the Eastern Region
7. The Technological Institute of Santo Domingo

GUYANA:

Guyana Sugar Experiment Station
La Bonne Intention Estates, Guyana

JAMAICA:

1. Sugar Industry Research Institute of the Sugar Industry Authority
Mandeville P.O., Jamaica
2. Frome Sugar Estates
Frome, Jamaica

ST. KITTS:

Research Department of the St. Kitts Sugar Association Ltd.
c/o National Agricultural Corporation
P.O. Box 339, Basseterre, St. Kitts

SURINAME:

Agricultural Experiment Station
Paramaribo, Suriname

TRINIDAD Caroni Research Station
AND Waterloo Estates
TOBAGO: Carapichaima, Trinidad

OTHER CARIBBEAN

GUADELOUPE:

1. Centre Technique de la Canne et de Sucre
2. Centre de Recherche Agronomique

PUERTO RICO:

1. College of Tropical Agriculture
University of Puerto Rico, Mayaguez Campus, Puerto Rico
2. Agricultural Experiment Station
Rio Piedras, P.R. 00928, Puerto Rico

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