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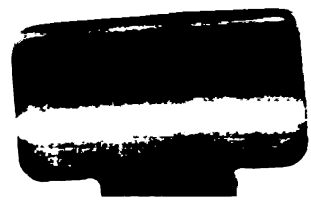
VI MEETING OF THE TECHNICAL ADVISORY COMMITTEE OF PLANT PROTECTION DIRECTORS

Caribbean Area

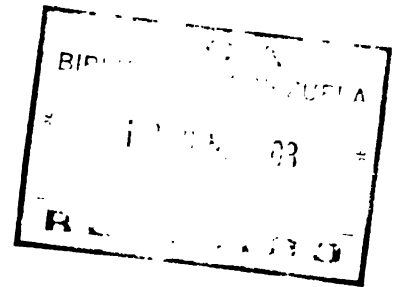
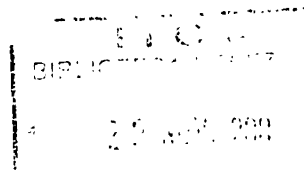
Castries, St. Lucia
June 11 - 12, 1990

PROGRAMME V: AGRICULTURAL HEALTH

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**PROCEEDINGS OF THE SIXTH MEETING OF THE TECHNICAL ADVISORY
COMMITTEE OF PLANT PROTECTION DIRECTORS
CARIBBEAN AREA**

**Castries, St Lucia
June 11 - 12, 1990**

**Edited by
Everton C. Ambrose and Raymond Dugas**

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**REPORTS, RESULTS AND RECOMMENDATIONS
FROM TECHNICAL EVENTS SERIES**

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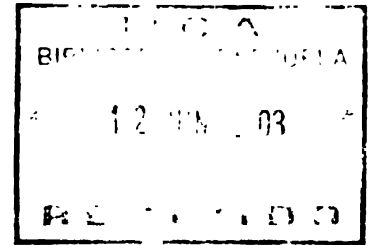
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**"The views expressed are those of the authors and do not
necessarily reflect those of the Inter-American
Institute for Cooperation on Agriculture."**

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The editor is grateful to the Ministry of Agriculture, Lands, Forestry, Fisheries and Cooperatives of St Lucia, especially the staff of the Research Division, for its assistance in contributing to the success of this meeting. Thanks to the delegates and representatives of the various institutions, especially those who presented papers.

The logistical support of the staff of the IICA Office in St Lucia, especially Miss Lenita Weekes who was also responsible for producing this proceedings, is gratefully acknowledged.



FOREWORD

The Technical Advisory Committee of Plant Protection Directors of the Caribbean Area is playing a major role in the countries of the region, both in its capacity as an advisory body to the Director General of IICA in the area of plant protection, and as an important regional forum in which plant protection problems are aired and ideas and solutions are proposed.

Along with the Directors of the Plant Protection Services of the eleven IICA member countries of the Caribbean Area, distinguished representatives of the international and subregional research, education and technical cooperation agencies operating in the field of plant protection in the Caribbean participated in the work of the Committee. Their presence has notably enhanced the exchange of information and the coordination of priority national and international activities and projects. Their active participation has ensured that the recommendations made are well conceived from a technical point of view and solidly grounded.

The TACPPD Meeting was also an opportunity for the OECS Plant Protection Directors to meet and discuss topics of special interest to the subregion. These topics: a model plant protection quarantine system for small States and the development of electronic databases for managing plant protection information, are included in these proceedings.

1. **Introduction**
 The purpose of this report is to analyze the impact of the COVID-19 pandemic on the global economy and to provide recommendations for recovery. The report is structured as follows: Section 2 discusses the economic impact of the pandemic, Section 3 examines the impact on different sectors, Section 4 discusses the impact on employment, and Section 5 provides recommendations for recovery.

2. **Economic Impact**
 The COVID-19 pandemic has caused a global economic recession, with a sharp decline in GDP and a significant increase in unemployment. The World Bank estimates that the global economy contracted by 3.5% in 2020, the largest annual decline since World War II. The impact has been particularly severe in emerging and developing economies, which have experienced a sharp decline in GDP and a significant increase in unemployment.

3. **Impact on Sectors**
 The impact of the pandemic has been uneven across different sectors. Sectors such as retail, hospitality, and tourism have experienced a sharp decline in demand, while sectors such as e-commerce, technology, and healthcare have experienced a significant increase in demand. The impact has also been uneven across different regions, with some regions experiencing a more severe impact than others.

4. **Impact on Employment**
 The COVID-19 pandemic has caused a significant increase in unemployment, with an estimated 100 million people losing their jobs globally. The impact has been particularly severe in emerging and developing economies, where unemployment rates have increased significantly. The impact has also been uneven across different sectors, with some sectors experiencing a sharp decline in employment while others have experienced a significant increase.

5. **Recommendations for Recovery**
 To promote recovery, governments should implement a combination of fiscal and monetary policies. Fiscal policies such as tax cuts and increased government spending can help stimulate demand and create jobs. Monetary policies such as lowering interest rates and increasing the money supply can help support economic growth. Additionally, governments should focus on supporting vulnerable sectors and regions, and on promoting innovation and entrepreneurship.

6. **Conclusion**
 The COVID-19 pandemic has caused a global economic recession, with a sharp decline in GDP and a significant increase in unemployment. The impact has been particularly severe in emerging and developing economies, and has been uneven across different sectors and regions. To promote recovery, governments should implement a combination of fiscal and monetary policies, and focus on supporting vulnerable sectors and regions, and on promoting innovation and entrepreneurship.

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OPENING SESSION

OPENING REMARKS

By

David Demacque
Director of Agricultural Services, St Lucia

Hon Minister of Agriculture, Mr Ferdinand Henry, Director Program V, IICA Dr Jerry Fowler, Assistant Area Director of Operations, Caribbean and Central America, Dr Chelston Brathwaite, Representative of IICA in the OECS, Dr Franz Alexander. Directors of Plant Protection in the Caribbean, representatives from regional and international Institutions, invited guests, Ladies and Gentlemen. Welcome to the Sixth Meeting of the Technical Advisory Committee (TAC) of Plant Protection Directors in the Caribbean.

The TAC is made up of Plant Protection Directors of IICA Member Countries and is responsible for providing advice and guidance on the direction and implementation of IICA's activities in the area of plant health.

The first meeting of this Committee was held in Costa Rica in 1979 when the Hemispheric Plant Protection Programme was launched. The Caribbean Programme came as part of a Hemispheric effort by IICA to control pests and diseases in Latin America and the Caribbean. The main objective of the Hemispheric Plant Protection Programme was to set up the mechanism needed for purposes of coordination for the prevention, control, and, if possible, the eradication of diseases and pests causing serious damage to the economy of some countries and which threaten to spread to other regions.

In August 1980, the TAC for the Caribbean met at a special meeting in Barbados to analyze the objectives of the Hemispheric Programme and establish lines of priority. These were reported on at the second meeting of the TAC in Mexico in October, 1980. At that meeting the Directors saw the need for closer collaboration and the sharing of knowledge and experiences. This spirit gave birth to the Society for Plant Protection in the Caribbean.

Since then the TAC has met in Venezuela, the third meeting; in Guatemala, the fourth meeting; and the Dominican Republic, the fifth meeting, to discuss the progress of the programme and to make recommendations on activities of high priority for altering the objectives to the benefit of the countries.

In response to the concerns expressed by the CARICOM Ministers of Agriculture about the constraints imposed by agricultural pests and diseases in production and in international trade, a Project CARIBBEAN ANIMAL AND PLANT HEALTH INFORMATION NETWORK (CARAPHIN) was initiated in 1988. This project is sponsored by CIDA, IICA and the Governments of Member Countries.

At a workshop involving the Senior Animal and Plant Health Officers of the Member Countries to discuss CARAPHIN the following objectives emerged:

- 1) to strengthen the Region's capacity, especially its human base, for pest and disease monitoring;
- 2) to develop a reporting system for regional surveillance of pests and diseases of interest to participating countries.

The process of consultation continues at this sixth meeting of the TAC where discussions will involve:

- . CARAPHIN
- . Changes in IICA's Animal and Plant Health Programme following the 1989 review

. OECS Plant Protection Project

The OECS Project of which the OECS countries are familiar with, is in support of the OECS Agricultural Diversification Programme. The object is to strengthen the capabilities of the countries to reduce the plant protection and quarantine constraints to production and marketing of non-traditional crops.

Ladies and gentlemen, invited guests we are indeed happy to be hosting this meeting. At this time I wish to ask Dr Franz Alexander to address you.

WELCOME ADDRESS

By

Dr Franz C.M. Alexander
IICA Representative in Antigua and Barbuda
Dominica/Grenada/St Lucia/St Vincent and the Grenadines

Good morning Mr Chairman, Hon Minister of Agriculture, Mr Ferdinand Henry; Director Program V, IICA Dr Jerry Fowler; Assistant Area Director of Operations, Caribbean and Central America IICA, Dr Chelston WD Brathwaite, Ladies and Gentlemen. It is my privilege and duty to welcome you to the VI Technical Advisory Committee Meeting of Plant Protection Directors of the Caribbean and this I do with a sense of pride and honour on behalf of the Inter-American Institute for Cooperation on Agriculture (IICA) on Agriculture. It is an honour that St Lucia has been chosen to host this meeting and we would like to extend our sincere congratulations and thanks to the Ministry of Agriculture who readily accepted the decision to host the Meeting here. It is an honour because the Ministry would never have been asked to do this if the Committee did not appreciate the beauty, warmth and hospitality of St Lucia and the reliability of their support staff to whom I am sure you would like me to extend thanks and congratulations for the arrangement of the meeting place which you see before you. In particular, the Organizing Committee consisting of Mr Dunley Auguste, Mr Worrel St Louis, Mr Giovanni St Omer, Ms Lena Batou and of course the Plant Protection Officer from St Lucia Mr Ernest Henry. They have worked closely with our Plant Protection Specialist Mr Everton Ambrose and Ms Lenita Weekes from our Institute.

CARAPHIN has been mentioned by our Chairman and we at IICA are proud of the very sound start made and the response it has generated by the Plant and Animal Health personnel in the Region. It is gratifying, we feel that IICA is playing a leading role in promoting animal and plant health services to share common ground to bolster our slim national resources.

It was the SCMA that endorsed the need for information and monitoring and surveillance of pests and diseases. This program has taken off very soundly and satisfactorily and congratulations to those who initiated and have led and guided the Project so far; Of course, Dr Barry Stemshorn and Dr Theresa Bernardo and the team from CIDA. We are also very happy to note that this Project forms part of the Plan for the Reactivation of Agriculture in Latin America and the Caribbean (PLANLAC) and to know that those Projects that form PLANLAC under IICA's responsibility are prepared in support of the Caribbean Community Programme for Agriculture Development and the OECS Agriculture Diversification programme.

This particular area of focus, information and monitoring and surveillance of pests and diseases bring to mind that OIE is the oldest living evidence of international cooperation in the world. T h e need for global warning of pests and diseases of magnitude gave its birth

and led to its establishment in France. This in the Caribbean is now hopefully our component which will assist the countries to maintain their national resources without devastation by pests and diseases of both the plant and animal world. IICA is proud of the cooperation which it has received from FAO and USDA in the Caribbean. I have to note that the computer program developed by CPPC/FAO will be used and promoted through the Project for your use and benefit and it has been hailed throughout the Hemisphere as a very wonderful working model.

In addition the cooperation enjoyed from FAO and USDA is not only for the data base system, but for support to the Fruit Fly Surveys which have been conducted in Grenada and St Vincent and the Grenadines and the support of the fruit fly surveys in St Lucia and Dominica. FAO has assisted IICA in developing with the countries the guidelines for the introductions of germplasm and the training in the development of effective plant quarantine systems for the OECS.

I would like to introduce to you and welcome to St Lucia and the Caribbean for the first time Dr Jerry Fowler, the new Director of IICA's Program V in the Hemisphere. Dr Fowler is enjoying the end of his first week in Office and is his first official duty.

All of this would not have been possible without the support of the

Government of St Lucia and the continued support to our activities here in St Lucia and the OECS in particular. The Agreement to host this meeting, not just in words but in tangible administration and organization for the meeting and their hospitality.

The Minister has shown great leadership to the MOA in the many Programs and Plans with which the Ministry is engaged in support of the policy for increased exports and import substitution through Agricultural Diversification. The success of the meeting will be due also to cooperation we have received from you the Plant Protection Directors in the countries and Institutions which make up the Meeting and we thank you for that support.

IICA and other Agencies are here to work for you to effect multinationally what each country by itself may find more difficult to achieve on its own. Your deliberations, discussions and consensus will direct the Institution's work. We offer service; we do not choose to impose or direct and I think this is very important.

Please accept the best wishes of IICA for a very fruitful and successful meeting and I want to welcome you to St Lucia and thank you very much for your support.

FEATURE ADDRESS

THE NEW CHALLENGES FOR PLANT PROTECTION IN THE CARIBBEAN

By

Chelston WD Brathwaite
Assistant Director of Operations
Caribbean and Central Areas

Mr Chairman, Distinguished Colleagues, Ladies and Gentlemen. It is indeed my pleasure to accede to the request and to acknowledge the honour of having been asked to present the opening address this morning.

Let me first say how pleased I am to be back in the beautiful country of St Lucia and in the Caribbean, to meet and greet old friends and renew acquaintances in this part of the world. The last time I visited these shores was in October of 1987, when I had the opportunity to participate in a meeting of Heads of Pesticide Registration Boards. On that occasion, we were able to lay the ground work for what I understand has become important initiatives in subregional cooperation on pesticide use in the OECS countries.

Since that meeting and indeed since 1987, our world has changed substantially. These changes have been characterized by a worsening state of the economies of many countries of Latin America and the Caribbean. Indeed, the decade of the eighties has been considered the "lost decade". The decade of the

1990's, on the other hand, promises to be a challenging period for economic development.

AGRICULTURE IN THE CONTEXT OF THE WORLD SCENARIO - PLANLAC

It is generally agreed that we must embrace a new model for development.

The model of the last two decades which favoured industrial growth has clearly not been able to provide sustained economic growth and the decade of the eighties has been particularly depressing for the economies of several countries of Latin America. The situation has been less severe in the Caribbean; in fact, some Caribbean economies, eg. those of the OECS, experienced strong economic growth in the 1980's. Nevertheless, the period was characterized by rising debt crisis, stagnation of world commodity prices and high unemployment levels. We believe that agriculture can play an important role in revitalizing the economies of the region, as it becomes more technically advanced, diversified and efficient and if the multiplier effects resulting from agro-industrial activities can be enhanced.

In 1987 in Canada, the Ministers of Agriculture of the American continent agreed to foster the development of agriculture in the region, in what is known as the "Ottawa Declaration" and in October 1989 at the Fifth Regular Meeting of the Inter-American Board of Agriculture, approved "The Plan of Joint Action for Agricultural Reactivation in Latin American and the Caribbean" (PLANLAC).

The basic orientation of PLANLAC is the execution of joint actions, at both the regional and subregional levels, in order to solve specific problems common to several countries.

The Plan, however, is not a static instrument, but represents a process for the development of new ideas and new directions for agriculture in our region.

THE CARIBBEAN PLAN

The Plan for the Caribbean takes as its point of departure the Caribbean Community Program for Agricultural Development (CCPAD) and the OECS Diversification Plan and seeks to complement these plans in certain strategic areas.

Among the specific actions recommended for the region are:

1. Strengthening of linkages between Latin America and the Caribbean, specifically in the areas of marketing opportunities, sourcing supply of inputs as well as capital for investment activities, and technology development and transfer.

2. Exploiting opportunities with respect to the agricultural sector through the development and fuller utilization of regional trade and production integration mechanisms of the Caribbean community.
3. Strengthening of national and regional institutions and institutional arrangements for the provision of support in strategic areas, such as policy analysis, planning and management, technology generation and/or acquisition and transfer, investment and investment incentive policy, joint marketing, animal health and plant protection.
4. Strengthening farmers' organizations to improve agricultural production and marketing; and motivating and promoting the participation of youth in agricultural transformation and rural development in the Caribbean.
5. Upgrading the region's institutional capability for the development, production and marketing of non-traditional diversified crops, such as fruits, food crops and vegetables.

THE IICA PLANT AND ANIMAL HEALTH PROGRAM IN THE CONTEXT OF THE PLAN

Special mention should be made of the key role given to the animal and plant health program in PLANLAC.

The animal and plant health program plays a critical role in considerations for the design of

incentive and investment policies, in international economic relations, in the modernization of the public agricultural sector, in the new technological strategy, in agro-industrial development, in rural development, in efforts to promote the small-farm economy and in increased international trade - all of which are key elements of the PLANLAC.

Because of this, our Institute has given a new focus to our Animal and Plant Health Program, in order to provide greater support to the countries in solving sanitary problems, increasing exports and productivity and preventing the entry of exotic diseases and pests.

In this new approach, the Program, without abandoning its support of official animal health and plant protection institutions, will become more actively involved with groups and organizations of producers, agro-exporters and agro-industrialists.

We feel that this support for agriculture from the functional rather than the institutional point of view, will have a great impact on regional and international trade and on increasing agricultural productivity.

PLANT PROTECTION IN RELATION TO REGIONAL AND INTERNATIONAL TRADE ISSUES

Against the background that agriculture must play a new dynamic role in economic development and that increased regional and international trade is an important aspect of this new scenario, then plant protection assumes new importance. The role suggests that plant protection

regulations must facilitate international and regional trade while limiting the risks of spread of new pests and diseases.

In order to achieve this objective, I think there are five main requirements for facilitating regional trade:

- 1) Harmonization of plant protection regulations.
- 2) Development of systems of information and monitoring to ensure the rapid flow of information between countries.
- 3) Establishment of a mechanism for the resolution of disputes between countries.
- 4) Representation of Plant Protection in meetings concerned with trade at regional and international levels.
- 5) Establishment of the pest status of marketable commodities in the region.

1) Harmonization of Plant Protection Regulations

An important element of the discussions on regional and international trade issues is a consideration of the removal of non-tariff barriers and the elimination of the protectionist strategies of the developed countries vis-a-vis the developing countries.

During the conversations and negotiations of the Uruguay Round of the General Agreement on Trade and Tariffs (GATT), the dominant concern of the countries of Latin America and the Caribbean has been the liberalization of international

trade. In the meeting in Geneva on this subject, it was decided that there is the urgent need to harmonize phytosanitary procedures. This is because it has been clearly recognized that these phytosanitary regulations and procedures have been and can be used as politically expedient non-tariff barriers to trade.

Admittedly, the harmonization of phytosanitary procedures and regulations is a complicated and long term goal. The differences among nationals and number of quarantine pests and diseases which are endemic to certain regions justify import restrictions and quarantine. However, we believe that a common approach based on sound scientific knowledge will eventually eliminate those regulations which exist solely for political reasons. This harmonization should eventually lead to the removal of some of the non-tariff barriers to free trade.

Harmonization of plant quarantine regulations based on standard analysis of scientific data will allow market forces to function, in which the producer with the best quality at the lowest price will have the competitive advantage.

The Animal Health and Food Disciplines have organizations such as the Office International des Epizooties (OIE) and the Codex Alimentarius Commission, which have facilitated harmonization of procedures in these areas for several years.

However, there is currently no comparable organization devoted exclusively to plant health. Reference is often made to the International Plant Protection Convention (IPPC). The IPPC,

however, is not an "organization", it is an "international agreement" under the Food and Agriculture Organization of the United Nations.

In an attempt to fill this void, FAO convened a Technical Consultation of Regional Plant Protection Organizations in September 1989 to discuss development of an approach to alleviate work program covering the areas of:

- a. Pest risk assessment, i.e., the development of a set of criteria to more precisely characterize pests of quarantine significance.
- b. Development of a universal set of plant quarantine principles by which the necessity for and severity of phytosanitary problems may be measured.
- c. Global development of harmonized procedures to include procedures for inspection, certification, treatment, and survey.

We must seek to support these global initiatives which will eventually rebound to the benefit of the Caribbean.

2. Development of Systems of Information and Monitoring to Ensure the Rapid Flow of Information between Countries

I note with satisfaction the progress made in the establishment of the Caribbean Animal and Plant Health Information Network (CARAPHIN) and I would like to congratulate all those associated with the development and implementation of the project. This project, which IICA executes with support from the Canadian International Development Agency

(CIDA), uses the methodology and plant and disease classification system set up by FAO and the Office International des Epizooties (OIE).

A similar project for Latin America is currently being implemented by IICA, with support from the Animal and Plant Health Inspection Service of the United States Department of Agriculture (USDA/APHIS). Through this project, the Inter-American Agriculture Health Monitoring and Information Network (RIMISA) will be put into operation. It will provide support for the analysis of and subsequent dissemination of information on the prevalence, incidence and distribution of agricultural diseases and pests; the countries' sanitary legislation as it pertains to international trade; the countries' requirements in relation to permissible levels of agricultural pesticide and veterinary product residues; and studies evaluating the economic impact of diseases and pests on agricultural productivity. This network will use the information generated and processed by the international agencies working in this field, such as FAO, the OIE, and other regional, subregional and national agencies.

3. Establishment of a Mechanism for the Resolution of Disputes between Countries

The recent initiatives of CARICOM in establishing a regional plant quarantine program, which includes proposals for the establishment of a Technical Advisory Committee and a mechanism for the resolution of trade disputes associated with plant quarantine issues, is an important step in

facilitating regional trade in primary agricultural produce.

4. Representation of Plant Protection in Meetings concerned with Trade at Regional and International Levels

There has been increased awareness of the importance of plant quarantine issues in the GATT and other meetings dealing with trade issues. We must ensure that this trend continues both at the regional and international levels.

5. Establishment of the Pest Status of Marketable Commodities in the Region

The recent initiatives which have declared St Vincent and the Grenadines and Grenada as fruit fly free are important. More survey work of this nature needs to be undertaken. The distribution of the FAO Data Base on Plant Protection, the production of the bibliographies on Plant Diseases and Insect Pests in the region can form the basis for an important information infrastructure on the pest status of major commodities in the region.

THE NEW CHALLENGES FOR PLANT PROTECTION

The achievement of these objectives require, to my mind a new focus for plant protection and plant protectionists.

1. Plant Protection has to be seen as an essential component of production on one hand and of marketing on the other. This implies the inclusion of plant protection activities in

development projects concerned with production and marketing of specific commodities both at the policy and operation levels. The traditional walls between marketing, production and plant protection need to be dismantled.

2. The majority of the primary agricultural products in regional and international trade today, must conform to established standards of pesticide use. This sensitivity to pesticide use has two implications for plant protection:

- a) Increase emphasis on the use of biological and biotechnological approaches to pest control.
- b) The wider use of and demand for organically grown food.

This implications will influence the way plant protection develops in the future.

3. Plant Protection of the future will have to be concerned with more ecological and sustainability issues where the emphasis will be on the quality of the product and not on the eradication of the pests only.

The Biotechnology Revolution in which we alter organisms at the cellular and molecular levels, will result in the production of new systems of pest control which are less environmentally hazardous. In the next few years, we shall see the development of commercial products based on three basic approaches to pest control:

- a) Genetically altered plants to improve their resistance to pests.
- b) Genetically altered pests.
- c) Biological control of pests with microbial pesticides.

The role of developing countries, such as the Caribbean, in this new biotechnological scenario, vis-a-vis the developed countries and the private sector, is currently being discussed.

CLOSING STATEMENT

Let me say that I view with some satisfaction the progress of Caribbean Plant Protection during the decade of the 1980's. In 1980, when our initiatives started in the region, there were many weaknesses.

I believe that there have been several positive achievements during the last ten years. In my opinion, the seven most important achievements in Plant Protection in the Caribbean during the last ten years are the following:

1. The distribution of the FAO Data Base on Plant Protection.
2. The establishment of the CARAPHIN Network with possibilities for monitoring and reporting pest and disease incidence in the region.
3. The publication of the Bibliography of Entomology and the Bibliography of Plant Disease.
4. The declaration of St Vincent and the Grenadines and Grenada as fruit fly free.

5. The continued meetings of Regional Heads of Plant Protection.
6. The establishment of a close working relationship between CARDI, IICA, FAO, UWI, CARICOM and the Governments in plant protection matters.
7. The initiatives of CARICOM with respect to the establishment of a regional plant quarantine programme, including the proposals to establish a technical advisory committee for addressing priority areas such as:
 - training needs;
 - strengthening of facilities and equipment in support of quarantine;
 - the resolution of trade problems arising from plant quarantine issues.

The achievements are indeed noteworthy and you should all be proud of the progress that has been made. However, there is no time to rest on our laurels, the situation demands that plant protection and plant protectionists assume a new role in response to the challenges of our time. This role is not purely scientific, but implies a greater involvement in the practical issues related to increased production and facilitating regional and international trade.

The recent development in Eastern Europe, the proposals for the European Community Single Market in 1992 and current developments in Japan, Korea and other countries of the Pacific Basin suggest that there will be increased demand for tropical agricultural products in the future.

If we in the Caribbean are to benefit from these opportunities, we must:

- a) become more aggressive in our marketing strategies; and,
- b) produce products of the highest quality.

To achieve these objectives, we must improve our support services in the agricultural sector, especially those related to marketing, production and plant protection.

We already have a certain comparative advantage in that our region is relatively free of major pests and diseases of quarantine importance. We must capitalize on this advantage for exploiting new market opportunities in our rapidly changing world.

We must now continue to work, continue to cooperate, continue to contribute, so that Caribbean agriculture will reach the goals which have been set by the decision makers and thereby guarantee an adequate standard of living for this generation and the ones to come. I wish you success in your endeavours.

MAIN ADDRESS

By

THE HONOURABLE MINISTER FOR AGRICULTURE, LANDS FORESTRY, FISHERIES AND COOPERATIVES ST LUCIA

Mr Ferdinand Henry

Mr Chairman, Permanent Secretary, Director of the IICA Office in the Sub-region, Dr Alexander, other IICA Officials, Directors of Plant Protection of IICA Member States, invited guests, ladies and gentlemen.

First of all let me say how pleased I am to participate in this very important meeting of Plant Protection Directors of IICA Member States and to welcome our overseas delegates to St Lucia on behalf of the Ministry of Agriculture and the Government and people of St Lucia. I trust that your stay among us will be relaxing and satisfying in all respects and I look forward to a very productive meeting from the technical point of view. Indeed, St Lucia is very pleased to have been able to play host to this meeting and I wish to express my Ministry's appreciation for the very excellent cooperation we have received from the local IICA Office in the preparations leading up to this meeting.

I understand that this is the Sixth Meeting of the Technical Advisory Committee of Directors of Plant Protection of IICA Member Countries in the Caribbean. I firmly believe that this meeting is taking place at a very important period in

the development of agriculture in the Region when the majority of countries are seeking to broaden their diversification programmes and increase their foreign exchange earnings by increasing agricultural exports. These endeavours offer serious challenges for our Plant Protection Services which must maintain their vigilance on the movement of plants, plant parts and food generally to ensure that harmful pests and diseases do not leave or enter our shores.

It is very important that we cooperate as a region in regularizing our Plant Protection Laws and Regulations to ensure that there is harmony in our actions. I agree that the Technical Advisory Committee is a Forum from which useful advice and guidelines can be generated in relation to the general direction and the implementation of IICA's activities in the area of Plant Health Programmes. It is indeed a good opportunity for Plant Protection Directors to give some guidance as to what they consider to be the high priority areas for the countries of the region to pursue.

At the ninth Inter-American Conference in Ottawa, Canada in 1987 the Ministers of Agriculture charged

IICA with the preparation of a Plan which will contribute to the re-activation of the economies of the countries of the Hemisphere. The Plan was approved at the Meeting of the Inter-American Board of Agriculture held in Costa Rica in 1989 and has become part of the work programme of most of the countries. It is the belief of the Ministers as well as their advisors and planners that Agricultural Modernization can serve as a new formula for economic development in the region. There is the need therefore for the sector to take advantage of all opportunities that exist in the market place for agricultural produce. The plant protection services of the region have a major role to play in this process and they must be prepared to make a timely and constructive input.

In our attempts to access new and existing markets there is need for strict adherence to the laws and regulations of importing countries. The greater the competition becomes the more pressure that will be brought to bear on exporting countries of adherence to conditions imposed by importing countries. We need therefore to maintain high standards as a matter of utmost importance.

One of the very important tasks that must occupy the attention of Plant Protection Directors during this Meeting therefore is to determine how the projects which are now being implemented in your respective countries can be made to more effectively meet the challenge

of the Plant Protection Service for the 90's and the period ahead. You will need to critically review the actions currently being implemented under the programme and determine their suitability for the demands of the system. You will also need on the basis of your analyses to recommend appropriate alternative actions in terms of pests and crop priorities and determine the most appropriate methods for dealing with the existing problems.

Mr Chairman, I believe these meetings provide the opportunity for sharing experiences and to facilitate cooperation and joint approaches to common problems. I want to assure you of my Ministry's continued support for your activities as we seek jointly to resolve problems of food production and distribution.

In this period of increased environmental awareness we must seek to strike a balance between production and conservation. It is important that you take this into consideration in developing programmes in regional plant protection.

Once again Mr Chairman, I want to thank you for the opportunity of sharing these thoughts with your delegates. I wish you a very successful meeting and trust that your deliberations will be productive and will have a lasting positive effect on food production in the region.

I thank you.

**FINAL REPORT
AND
RECOMMENDATIONS**

SIXTH MEETING OF THE TECHNICAL ADVISORY COMMITTEE OF PLANT PROTECTION DIRECTORS, CARIBBEAN AREA

FINAL REPORT AND RECOMMENDATIONS

The VI Meeting of the Consultative Technical Committee of Directors of Plant Protection in the Caribbean was held in Castries, St Lucia, June 11- 12, 1990.

Participating in this meeting were the Directors of Plant Protection of the eleven IICA Member Countries in the Caribbean and observers from regional and international agencies operating in the region and the Institute officials. A request for meetings such as this to discuss technical matters instead of the customary country papers was entertained.

BOARD OF DIRECTORS

During the Preliminary Session, held at the beginning of the Meeting, the Directive Board was elected as follows:

Chairman:	Mr Dunley Auguste (St. Lucia)
Rapporteur:	Mrs Juliet V Kellman (Guyana)

The Meeting Coordinators, Mr Everton C Ambrose, IICA Specialist in Plant Protection, and Dr Barry Stemshorn, IICA Agricultural Health Specialist and CARAPHIN Coordinator, acted as Ex-Officio Secretaries.

AGENDA

The meeting was held in accordance with the following agenda:

1. Changes in IICA's Animal and Plant (Agricultural) Health Program and the actions carried out in the Caribbean;
2. The Caribbean Animal and Plant Health Information Network (CARAPHIN);
3. The CPPC/FAO database being distributed through CARAPHIN
4. Technical papers:
 - The threat of *Thrips palmi* to crop production in the Caribbean
 - The future of fruit fly programs and prospects for the export of fruit from the Caribbean;
 - Harmonization of Pesticide Legislation in the Caribbean;
 - Report on the *Bactocera (Dacus) dorsalis* complex in Suriname.

Annexed to this meeting was a session by the OECS Plant Protection Directors. During that session two topics were discussed: the plant quarantine system operating in St Vincent and the Grenadines as a model for a small state and the progress in the development of electronic databases for managing plant protection information.

This document contains an edited version of the proceedings.

RECOMMENDATION 1

PROGRESS OF THE CARIBBEAN ANIMAL AND PLANT HEALTH INFORMATION NETWORK (CARAPHIN).

The Sixth Meeting of the Technical Advisory Committee of Plant Protection Directors of the Caribbean Area, having discussed the report on the progress of CARAPHIN and the plans for reporting on surveillance activities in that project, and considering:

1. That pests and diseases impose major constraints to production and marketing of crops in the Caribbean;
2. That the CARAPHIN Project is designed to assist the countries in planning their plant protection programmes against these constraints;
3. That the satisfactory report presented on the progress of the activities of the Project, and the procedure for reporting on regional surveillance activities presented;

RECOMMENDS:

1. That the proposed regional surveillance reporting activities as discussed and adopted during the Sixth Meeting of the Technical Advisory Committee be implemented.
2. Supports earlier recommendations of the Standing Committee of Ministers of Agriculture, that IICA secures funding for the full participation of St Kitts/Nevis, Montserrat and Belize in the Regional Network.
3. That IICA finds ways of ensuring that the major monitoring and continuing education functions of CARAPHIN continue following the termination of CIDA funding in 1992.

RECOMMENDATION 2

THE THREAT OF *THRIPS Palmi* TO CROP PRODUCTION IN THE CARIBBEAN.

The Sixth Meeting of the Technical Advisory Committee of Plant Protection Directors of the Caribbean Area, having discussed a paper on the threat of *Thrips palmi* to crop production in the Caribbean, and considering:

1. That serious economic loss can be caused by *Thrips palmi* and *Bemisia tabaci* in the Caribbean;
2. That concern was expressed about the excess pesticide use in an attempt to control these pests and the apparent inability of these pesticides to adequately control the problem;
3. That the possibilities for biological control have not been adequately explored;

RECOMMENDS:

1. That research and development of biocontrol agents including micropesticides be included as a major component for an integrated control system for *Thrips palmi* and *Bemisia tabaci*.
2. That CAB-I prepares a draft project proposal for referral by IICA, CARDI and FAO to solicit funds from an international donor for the research program.

RECOMMENDATION 3

HARMONIZATION OF PESTICIDE LEGISLATION

The Sixth Meeting of the Technical Advisory Committee of Plant Protection Directors of the Caribbean Area, having discussed a paper on Harmonization of Pesticide Legislation, and considering:

1. That pesticides are widely used in the Caribbean for the control of pests and diseases;
2. That the problem caused by the misuse of pesticides have long been recognized;
3. That in 1983, a meeting was convened by IICA to discuss the issue and that the recommendations made at that meeting are still relevant;

RECOMMENDS:

That CARICOM coordinates activities relevant to harmonization of pesticides registration and all other related activities indicated in Brathwaite, C. W. D. (ed) 1983 Pesticide Legislation and the Registration Process in the Caribbean IICA Miscel. Pub. No. 378.

RECOMMENDATION 6

QUARANTINE SYSTEM

The Sixth Meeting of the Technical Advisory Committee of Plant Protection Directors of the Caribbean Area, having discussed the quarantine system in the OECS Countries, and considering:

1. That agriculture plays a significant role in the economic development of the Countries;
2. That most of the current pests in the Sub-Region have been introduced and the Sub-region is constantly being exposed to the dangers of having introduced many other serious pest from other countries;
3. That the Countries do not have sufficient funds to provide the necessary facilities and adequately trained personnel;
4. That in many cases legislation is outdated because of deficiencies in the public service;
5. That the quality standards obtained in the extra-regional markets can be exacting and pests and diseases may adversely affect quality or serve as non-tariff barriers to trade;

RECOMMENDS:

1. That there be an amalgamation of the Plant and Animal Quarantine Inspection System at the various ports of entry.
2. That member territories up-date their Plant Protection Ordinance after the FAO model. And that where this has been done accompanying regulations be drawn up. Using Legislation from other countries is not the correct procedure as important sections from the model may have been left out.
3. That customs declaration forms be instituted and that these forms include a declaration on agricultural products.
4. That shipments of Agricultural products rejected in one OECS territory, for Plant Quarantine reasons, be reported immediately to FAO or IICA Trinidad and Tobago which will in turn notify OECS Member States.
5. That much emphasis/weight be placed on the value of import permits and the inspection of the goods at their destination should not be overlooked and that guidelines be developed for the movement of germplasm.

6. That there be put in place at various ports facilities to store and dispose of perishable plant materials intercepted. Other general equipment necessary for the functioning of the Plant Quarantine system should be available.
7. That an emergency preparedness programme be developed to enable immediate and effective response in the event of new pest or disease introductions.
8. That flyers be used through travel agents to alert the travelling public on plant quarantine.
9. That there be instituted a concerted effort to make the Public aware of the importance of Plant and Animal Quarantine.
10. That the present training needs of member territories be assessed and that there be some relevance and continuity to this training bearing in mind the rapid turn over of staff within the territories and that the content of this training be tailored to satisfy the needs of the territories in Plant Quarantine.
11. That a system be developed which will ensure controlled disposal of garbage.
12. That there be developed mechanism(s) for the free flow of information on Plant Protection matters between member territories.
13. That a system be developed whereby produce for export be inspected in the field through regular visits by Plant Quarantine Officer and members of the Plant Protection Unit.

RECOMMENDATION 7

DATABASE DEVELOPMENT

The Sixth Meeting of the Technical Advisory Committee of Plant Protection Directors of the Caribbean Area, having discussed the report on the progress of the Data Base in St Lucia, and considering:

1. That the full benefit of the CPPC database depends on the information it contains being regularly used and updated;
2. That information held on the database for each island should be consistent;
3. That interest was expressed in a computer system for management of quarantine information described by Dr Canale at a Plant Health Information Workshop in Costa Rica, April 1990. That this system could be adapted to meet the needs of the Caribbean region.

RECOMMENDS:

1. That personnel in the Ministries of Agriculture be trained fully in its use and that they participate in the entry and modification of data.
2. That the database at FAO Trinidad be considered the "Central Database". Additions/modifications to the database on each island should be sent to Charles Schotman, FAO Trinidad, in the form of a backup diskette of the database. The updated information will then be sent out to each island.
3. That Charles Schotman investigates the possibility of using some elements of the system described by Dr Canale for the Plant Quarantine database being developed for the Caribbean region.

ACKNOWLEDGEMENT

The Sixth Meeting of the Technical Advisory Committee of Plant Protection Directors of the Caribbean Area, considering:

1. That Barry Stemshorn, Coordinator of CARAPHIN, has been responsible for the satisfactory progress made in the development of the Project;
2. That Barry Stemshorn is leaving the Project and IICA at the end of June, 1990;

RESOLVES:

Express to Dr. Stemshorn its recognition for his outstanding activities as CARAPHIN Coordinator and to wish him success in his future activities.

LIST OF PARTICIPANTS

ANTIGUA AND BARBUDA

Mr Vincent Belle
Plant Protection Officer
Plant Protection Unit
Ministry of Agriculture
St John's

Tel. 462-4738/0027

BARBADOS

Dr Eslie Alleyne
Entomologist
Ministry of Agriculture, Food and
Fisheries
Graeme Hill, Christ Church

Tel: 425-9373

DOMINICA

Miss Carol Severin
Plant Protection Officer
Ministry of Agriculture
Botanical Gardens
Roseau

Tel. 448-2401

GRENADA

Mrs Dale Francis-Ellis
Pest Management Officer
Ministry of Agriculture
Botanic Gardens
St George's

Tel. 440-3083

GUYANA

Mrs Juliet V Kellman
Plant Quarantine Officer
Ministry of Agriculture
Georgetown

Tel: 026-8714

HAITI

Mr Henry Turenne
Agronomist
Ministry of Agriculture
P O Box 1546
Damien
Port au Prince

Tel: 2-3593

JAMAICA

Mr Fabian Edman
Plant Pathologist
Ministry of Agriculture
Bodles Research Station
Old Harbour PO
St Catherine

Tel: 983-2267

SAINT LUCIA

Mr Lucius Alexander
Crop Protection Officer
Research and Development Division
Ministry of Agriculture
Castries

Tel. 452-5375

SAINT LUCIA Continued

Mr Dunley Auguste
Senior Research Officer
Research and Development Division
Ministry of Agriculture
Castries

Tel. 452-5375

Mr Ernest Henry
Crop Protection Officer
Research and Development Division
Ministry of Agriculture
Castries

ST VINCENT AND THE GRENADINES

Mr Philmore Isaacs
Plant Protection Officer
Ministry of Agriculture, Industry
and Labour
Kingstown

Tel. 71283/61410
Fax. 62876

SURINAME

Mr Rudy Huiswoud
Director Agricultural Experiment
Station
Ministry of Agriculture
P O Box 160
Paramaribo

Tel. 72442

TRINIDAD AND TOBAGO

Dr Ronald Barrow
Chief Technical Officer
Ministry of Food Production
and Marine Exploitation
Port of Spain

Tel. 622-5596

Ms Mona Jones
Entomologist
Ministry of Food Production & Marine
Exploitation
Central Experiment Station
Centeno

CAB-I

Dr Peter Baker
Entomologist
C.A.B. International
Institute of Biological Control
Caribbean and Latin American Station
Gordon Street
Curepe

Tel: 662 4173
Fax. 663 2859

CARDI

Mr Lennox Andrews
Horticulturist
Caribbean Agricultural Research
Institute (CARDI)
John Compton Highway
Castries

Tel. 45-24160
Fax. 45-26934

Mr William Massiah
Animal Scientist, Field Station
Manager
Caribbean Agricultural Research
Institute (CARDI)
John Compton Highway
Castries

Tel. 45-24160
Fax. 45-26934

CARDI Continued

Mr Llewellyn Rhodes
Entomologist
Caribbean Agricultural Research
Institute (CARDI)
Botanical Gardens
Roseau

Tel. 448-4715/2715
Fax. 448-5690

CARICOM

Dr Frank Gumbs
Chief of Agricultural Development
Caribbean Community Secretariat
(CARICOM)
P.O. Box 10827
Bank of Guyana Building
Georgetown

Tel. 6981-7

CEHI

Dr Naresh Singh
Executive Director
Caribbean Environmental Health
Institute (CEHI)
Morne Fortune
P.O. Box 1111
Castries

Tel. 22501
Fax 32721

FAO

Dr Charles Schotman
Regional Plant Protection Officer
17 Keate Street
P.O. Box 822
Port of Spain

Tel. 625 0467
Fax. 623 0995

USAID

Dr Scott Campbell
Director
Operational Support
International Services, APHIS, USDA
Room 657 - Federal Building
6505 Belcrest Road
Hyattsville

Tel. (301) 436-8892
Fax. (301) 436-8318

UWI

Dr Gene Pollard
Entomologist
The University of the West Indies
(UWI)
St Augustine Campus

Tel. 663 1364
Fax. 663 9686

WINBAN

Mr Guy Mathurin
Assistant Crop Protection Officer
WINBAN Research and Development
Division
P.O. Box 115
Castries

Tel. 453-4242/4255
Fax. 453-1638

IICA

Mr Everton Ambrose
Specialist in Plant Protection
IICA Office in St Lucia
P.O. Box 1223
Castries

Tel. 452-5482/21688
Fax. 453-1224

IICA Continued

Dr Theresa Bernardo
Epidemiologist
University of Guelph
C/o IICA Office in Trinidad & Tobago
Tacarigua Post Office
Tacarigua

Tel. 645-1058/9
Fax. 645-6804

Dr Chelston W D Brathwaite
Assistant Director of Operations for
the Caribbean and Central Area
Sede Central
Apartado 55
Coronado 2200
San Jose

Tel. 290222 (506)
Fax. 294741 (506)

Dr Raymond Dugas
Coordinator, CARAPHIN
IICA Office in Trinidad & Tobago
P.O. Box 1328
Port-of-Spain

Tel. 622-2373/4/81/83
Fax. 628-7058

Dr Jerry Fowler
Director
Program V -
Agricultural Health
Sede Central
Apartado 55
2200 Coronado
San Jose

Tel. 290222 (506)
Fax. 294741 (506)

Ms Judith Mann
Plant Protection Assistant
IICA Office in St Lucia
P.O. Box 1223
Castries

Tel. 452-5482
Fax. 453-1224

Mr Urban Martin
Coordinator/Crop Protection
Specialist
IICA Office in Dominica
c/o Division of Agriculture
Botanical Gardens
Roseau

Tel. 448-4502
Fax. 448-5898

Dr Barry Stemshorn
Coordinator, CARAPHIN
IICA Office in Trinidad & Tobago
Tacarigua Post Office
Tacarigua

Tel. 645-1058/9
Fax. 645-6804

IICA REPORTS



REPORT ON IICA'S ACTIVITIES SINCE THE VTH MEETING

Barry Stenshorn
Coordinator - CARAPHIN Project

As most of you know, IICA's Caribbean regional plant and animal health projects underwent a major restructuring in early 1988 under the combined pressures of budget reductions and the simultaneous promotion of both the plant and animal health specialists into senior management positions.

The separate regional animal and plant health projects with their diverse training and advisory activities were replaced by a single integrated project to develop a Caribbean Animal and Plant Health Information Network, CARAPHIN.

A progress report on CARAPHIN will follow as a separate item on the agenda.

What I wish to do now is to tell you what has become of the other activities of IICA's regional plant protection program that were discussed at your last meeting (Proceedings of the Vth Meeting, page 58-60, items 12, 14, 15, 16, 17 & 18:

1. Training in Plant Protection: 1.1 Diagnosis of Plant Pests and Diseases

A final two week IICA-sponsored course on Plant Pest and Disease Diagnosis was given in September, 1988. The teaching manual which served as the basis for this course was recently handed over to the

University of the West Indies' Faculty of Agriculture for use in a course to be given under their new Continuing Education Program in Agricultural Technology (CEPAT). It is understood that the Faculty will use the proceeds from this course to publish an updated and revised edition of this manual. In my view this training activity has been properly transferred to a regional teaching institution.

1.2 Quarantine Methods and Pesticide Management Systems

A project of IICA's Program V for the Organization of Eastern Caribbean States (OECS) region has hosted a series of training workshops on plant protection and quarantine with support from the Food and Agricultural Organization (FAO) and United States Department of Agriculture (USDA). This project has also been providing support in pesticide management. I expect that this will be discussed in more detail at the OECS session on the Tuesday afternoon.

1.3 Disease and Pest Surveillance

The regional CARAPHIN project held the first in a series of annual courses on Monitoring Pests and Diseases of Crops and Livestock in September, 1989. Future courses in this series will be given in cooperation with CEPAT.

2. **Assessment of crop losses:**

While CARAPHIN does not have specific projects in this area, training in epidemiology under CARAPHIN will better enable the participants to conduct such assessments.

3. **Regional (Caribbean Plant Protection) newsletter:**

This has been replaced by CARAPHIN News.

4. **Manual on Diagnosis:**

A manual "Guidelines for the identification and diagnosis of damage in crop plants caused by insects, diseases, weeds and nutrient disorders" was published in 1987, used for the 1988 course on the "Diagnosis of Plant Pests and Diseases", and will be revised and updated by the UWI Faculty of Agriculture.

5. **Bibliography on Insect Pests:**

This was published recently and copies are being distributed.

6. **Proposal for Strengthening Plant Quarantine and Laboratory Diagnostic Capabilities**

A new project proposal "Strengthening national animal and plant quarantine capabilities" is included in the Caribbean component of the recently approved "Plan of Joint Action for Agricultural Reactivation in Latin America and the Caribbean" (PLANLAC) which will shape IICA's actions for the next few years. A proposal to strengthen the region's laboratory capability is an annex to this quarantine project. In an effort to prepare these proposals

for funding, a feasibility study is planned for later this year. One issue the feasibility study would need to address is how IICA's Program V could manage a second large regional project with the small number of staff it has available in the Caribbean; external project funding would likely have to include salaries for management and administrative personnel.

7. **Technical support to pest and disease control in fruit development, especially in the Windward Islands, Barbados and Guyana:**

The main contribution in this area has been through the regional project "Supporting the Development of Tropical Fruit Crops" coordinated by R Marte from the IICA Office in Barbados. This project is currently being expanded under a new cooperative agreement with the Government of France under which a fruit production specialist recently joined the IICA Office in Trinidad and Tobago.

A Program V project to strengthen plant protection services in the OECS is also contributing in this area.

8. **Emergency assistance:**

Under this category falls support provided to IICA Member Countries following the arrival of African Desert Locusts in the Caribbean in the fall of 1988. IICA provided advice in some countries, hosted a regional meeting and provided emergency funds, primarily for surveillance work.

IICA has also supported actions by FAO and national agencies to deal

with the problem of the Carambola fruit fly *Bactocera dorsalis* complex in Suriname.

9. Society of Plant Protection in the Caribbean:

On this topic, I would concur with a recent description of this Society as "dormant".

10. Fruit fly surveillance:

CARAPHIN has provided some support to regional work on fruit flies by publishing a manual on methods used for the 1986-87 surveys in Grenada and St Vincent and the Grenadines to which IICA contributed, and by preparing a computerized routine for managing data from fruit fly trapping and fruit cutting surveys.

11. Information Systems and Networks

Our work in this area will be described later under the CARAPHIN project. The session on Tuesday afternoon will cover some extensions of this work in the OECS.

Conclusion

As you will hear in the next

presentation, IICA's Animal and Plant Health Program (V) recently underwent a major review. Subsequently all of the Program's projects were assessed against the reviewers' recommendations during a meeting held last February at IICA Headquarters in San Jose. I was very pleased to learn at this meeting that the Caribbean's regional and sub-regional animal and plant health projects were relatively well regarded and will require little modification to respond to the new directions of IICA's Animal and Plant Health Program.

Before closing, I would introduce Dr Raymond Dugas who will replace me as Coordinator of CARAPHIN and other region-wide Program V activities, effective July 1, 1990. Dr Dugas is a Canadian Veterinarian who has worked with IICA's Animal and Plant Health Program in the Southern Cone, based in our Office in Argentina, for the past four and half years. His previous experience includes work in Northern Canada, Peru and Haiti, as well as work for Agriculture Canada's Food Production and Inspection Branch.

I would also thank you for your support and cooperation over the past two years.

**REPORT ON CHANGES TO IICA'S ANIMAL AND PLANT HEALTH PROGRAM
FOLLOWING THE 1989 REVIEW**

**Dr Jerry Fowler
Director Program V**

Thank you Mr Chairman, I must say that the opportunity to talk to you about the new objectives of Program V and the changes that have occurred came as a surprise to me. I knew that this had to be done but I had hoped that it would have been after I had a chance to put my feet on the ground. I have been in Office for only a week. Since I have participated in some of the implementation ideas in regard to the changes in Program V, I will try and convey some of them to you. The kind of visions that we have for the future may not be as clear as we would like them to be at this point and I would certainly encourage your participation, your questions and your points of view for clarification of our position. I will try to give you an idea of our objectives, our implementation strategy, our organizational structure, our areas of concentration and also something about current projects. I will leave the current projects open because we are currently waiting for new objectives and work plans coming in on some of these projects so that at the next meeting I will have an opportunity to talk to you about what those are. We will start reviewing those new projects next week when I get back from this meeting.

Some background on Program V. The Program was founded in 1979. At that time as you know, both Animal Health and Plant Protection were

separate activities. When the Programs in IICA were adjusted from 10-5, the Animal and Plant Health activities were merged to one Program. In 1989 we had a change in the orientation again which attempts to bring those projects in both the animal and the plant world in closer integration or communication with each other with three major objectives. Firstly, export enhancement which is more of a commercial enhancement on a regional and international basis. Secondly - the enhancement of production and thirdly the increase in surveillance for exotic pests and diseases.

Our implementation strategy following the above objectives will be to broaden our clientele. We have been working directly with Ministries of Agriculture and we will continue to do so but we will also begin to include the producing community. The producers, the farmers and the exporting community to give us a broader range of participants in many of our activities. As Barry mentioned much of this is already occurring in the Caribbean and our changes, our implementation strategy may or may not have as much impact here, at least not right away. Secondly, on our implementation strategy, we will have a broader view of our Programs to include concepts in the world of Forestry and Aquaculture as well as in the Veterinary Sciences and Plant

Sciences. We also hope that our implementation of these projects will include Programs within IICA rather than Program V only as a producer and implementer of projects. We see a need for the inclusion of Marketing and Agro-industry Program, the Rural Development Programs. Closer ties need to be brought in a program base within IICA. Fourthly in our implementation strategy we are looking for a program that is consistent with the environmental and food safety needs of the Western Hemisphere (Latin America and Caribbean Areas).

The Organizational restructure is mainly aimed at integrating more closely our management activities between the plant and animal sides. We do not see major changes in terms of the specialists that will be required to implement projects on a national or regional level. Those individuals will be required to maintain their disciplines within either the Veterinary Sciences or Plant Sciences.

Our areas of concentration again in terms of commercialization on regional and international levels will be active and will support the harmonization of the laws and the procedures that are required to implement those laws and regulations for export products. We see a role for the Program in residue analysis for not only antibiotics but programmes for pesticide use as well in meats and plant products. We see a role also in international and regional organizations that impact on export procedures.

In the production area our concentration will be on pest and disease management through laboratory activities, through monitoring programs for suppression and even

eradication. Further in terms of information, we see our information projects as extremely important. The CARAPHIN project shows our concern for the establishment of these information networks. We will continue with that and with the development and distribution of information systems that are developed by others such as the FAO/CPPC Programme that Charles Schotman has worked so hard on. We will also be involved in the distribution of information legislation, the changes of laws within the IICA community and also for cost benefit analyses that might be important for management within a country or on a regional or international level. We will also be involved in information activities in terms of new methodologies for operations at the levels of ports should there be inspection activities or pest control activities that will occur at the field level. The studies that are required on veterinary biology and also in the field of biotechnology.

In terms of quarantine and emergency systems, we will be involved with the evaluation and recommendation of the actions that will be required for emergency outbreaks. As Barry mentioned, locusts and other activities that have occurred in the past, the *Bactocera (Dacus)* situation in Suriname for example and also for the standardization of procedures that have been used for materials existing in a country whether it be export certification activities. The quarantine certification projects are extremely important for the protection of others as well as the activities that are required for the movement of products into countries should also be standardized and up to date. We will continue to work with

international groups for the production and dissemination of quarantine and emergency information as well as discussion groups such as this where we will make recommendations or listen to and help implement recommendations from the group.

Sounds like a lot of work but I hope that Program V is up to it. As you realize this calls for careful management of resources. We do not want to leave anything out in terms of the activities that we might be able to undertake. As I mentioned before our core projects are coming into the office this week from our plant and animal specialists and as soon as we have them on line approved and ready to go I will have a chance to report them out through Raymond Dugas who will be replacing Barry. We are going to miss Barry in the future but I have the utmost confidence in Raymond who will be here with you in the future. The projects that I see as important for the future here in the Caribbean area are sure dealing with fruit flies particularly the *Bactocera (Dacus)* situation in Suriname and the development of the Quarantine project. Also of high importance for the entire area and Program V is the Bont Tick Program. With that I will appreciate any of your concerns or comments. I invite you to either contact me in the future or we can still go along the beach as I suggested this morning and talk about some of these projects or your concern on how Program V should interact with the Region. I am very happy to be with you and to listen to those comments. Mr Chairman, thank you for the opportunity to speak to you.

DISCUSSION

Alleyne: Considering the mobility of plant quarantine officers in the Ministries of Agriculture, is there any scope for continuous plant quarantine training in the new Program V?

Fowler: There will be no major change in the training strategy. I see a change for a broader clientele to include the private sector - exporters, farmers so that they have an idea of what is being attempted in plant quarantine activity and the problems faced.

Ambrose: In the OECS, plant quarantine training is ongoing and includes commodity organizations and exporters. Perhaps, this needs to be broadened to the wider Caribbean.

Isaacs: Considering Program V in relation to information, marketing and support for producers. What assistance would Program V give in relation to market intelligence. When one works with the private exporters example traffickers as opposed to the Ministry of Agriculture, these private exporters need to know where markets

exist. The countries have not benefitted from the fruit fly free status.

Fowler: Market information is difficult and expensive to develop. Before one enters a program, one should know the product to market and have the transportation strategy in place and the regulations in the market place. IICA can help if projects are written up in that way. In more general terms, consultants have been brought in to discuss products entering specific markets (USA) and the market strategy to be developed. If required such a topic can be considered for future meetings.

Stemshorn: The Program V review report recommends an integration of the IICA Programs. We were happy to learn that in the OECS a commodity approach to problems is being undertaken.

Brathwaite: The question raised is centered around Programs IV-V. IICA is taking steps to foster better integration between these projects. Last year, a seminar was held on harmonization of pesticide legislation and quarantine looking

at legislation in several countries as they relate to marketing.

Program V is seeking to link with marketing information system what Program IV develops in terms of specific markets which may be accessible to countries in the North from countries in the South but the initial efforts have been related to Central America. IICA is hoping to spread these initiatives to the Caribbean under Program IV not Program V.

The OECS is in a special position where the initiatives are Diversification Programme to seek to see how we can assist in the marketing of non-traditional crops.

The national strategy should be one in which people involved should sit together at a national level and decide how advantages can be exploited. The country has to set up mechanisms to identify markets. There should be harmonization of actions at the national level. There should be no walls existing between different disciplines.

TECHNICAL PAPERS

THE CARIBBEAN ANIMAL AND PLANT HEALTH INFORMATION NETWORK (CARAPHIN)

Theresa Bernardo
Epidemiologist, IICA Office on Trinidad

The Caribbean Animal and Plant Health Information Network (CARAPHIN) is being established in response to CARICOM Ministers' concern about the impact of pests and diseases on trade and production.

This four year project, sponsored by IICA and the Canadian International Development Agency (CIDA), began July 1, 1988. It is based in Trinidad and Tobago with a project coordinator provided by IICA and an epidemiologist from the University of Guelph.

CARAPHIN is a regional project with 14 participating countries, 12 of which constitute IICA's Caribbean Area (Antigua, Barbados, Dominica, Grenada, Guyana, Haiti, Jamaica, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Suriname and Trinidad and Tobago). Efforts are under way to secure funding for the full participation of St Kitts/Nevis (a new member of IICA) and for two other CARICOM member countries, Belize and Montserrat. To date we have been successful in including these countries in most project activities through economies made in the management of the project.

CARAPHIN began with a planning workshop¹ in November, 1988, which was attended by national directors of

animal and plant health. Two broad objectives emerged from the planning workshop:

1. To strengthen the region's capacity, particularly its human resource base, for disease and pest monitoring.
2. To develop a reporting system for regional surveillance of pests and diseases of interest to the participating countries.

The first objective, of strengthening disease monitoring capability, is being addressed by training staff in disease monitoring techniques and the use of microcomputers. This is being achieved through annual courses, the first of which was held in September, 1989, at the University of the West Indies (UWI), in Trinidad and Tobago. Thirty-six enthusiastic participants from 13 countries underwent two weeks of intensive training in selected aspects of epidemiology (how to conduct a survey, select or evaluate a test, calculate sample size, etc.). This was supplemented with hands-on computer sessions.

More advanced courses for CARAPHIN participants in 1990 and 1991 are being integrated with UWI's Continuing Education Programme in Agricultural Technology (CEPAT).

¹ Animal and Plant Disease and Pest Monitoring for the Caribbean. Proceedings of a Regional Workshop, Port of Spain, November 17-18, 1988. Edited by Barry Stemshorn and Theresa Bernardo. 163 pp. IICA Papers, Results and Recommendations from Technical Events Series, ISSN-0253-4746 A2/TT-89-02.

Microcomputers, printers and software have been provided to eleven IICA member countries and will now be purchased for the other three countries. Course participants set up and organized the computers under the supervision of CARAPHIN personnel as an extension of their training.

The regional centre will provide continued support in the design and analysis of national or regional initiatives involving plant health. Our newsletter is published twice yearly. CARAPHIN NEWS provides a medium for disseminating technical information related to pest and disease monitoring, particularly information that is generated in and should be shared within the Caribbean region.

The Advisory Committee formed at the planning workshop in November, 1988, identified four priority plant health issues for early attention and from which we selected national projects to complement. Due to limited national and project resources, we have sought to strengthen and build upon existing projects rather than to initiate new ones.

We have been involved with three of the four priority topics identified for plant protection. A software routine to manage data from fruit fly surveys was developed in

cooperation with the Plant Quarantine Division of the Ministry of Food Production and Marine Exploitation of Trinidad and Tobago. This routine was introduced to participants at the training course in September, 1989, and has since been adopted and modified for use by other countries, in the network. We also published a Fruit Fly Trappers Manual² which documented techniques used for surveys in Grenada and St Vincent and the Grenadines.

Emergency funds were provided to assist member countries in their response to an unprecedented incursion of African desert locusts in October, 1988. IICA also convened a regional meeting on desert locusts in the Caribbean and documented the resulting reports and recommendations in the proceedings³.

We participated with regional experts, led by Mr Charles Schotman, Technical Secretary of the Caribbean Plant Protection Commission, in formulating recommendations for surveying to detect the presence of mango seed weevil. CARAPHIN personnel prepared a "Report on Consultations and Recommendations on the Needs of CARICOM Member Countries for Research on Mango Seed Weevil" for the CARICOM Secretariat.

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² Instructions for Fruit Fly Trappers. A Manual of Techniques Used for the 1986-87 Surveys in Grenada and St Vincent and the Grenadines. Prepared by Amy J Dreves, United States Peace Corps Volunteer, in collaboration with the Ministry of Agriculture, Grenada, Ministry of Agriculture, St Vincent and the Grenadines and the United States Department of Agriculture. 50 pp. IICA Miscellaneous Publication, ISSN-0534065391 A2/TT-89-01.

³ Desert Locusts in the Caribbean. Proceedings of a Regional Meeting, Port of Spain, November 16, 1988. Edited by Barry Stemshorn. 68pp. IICA Miscellaneous Publication, ISSN-0534-5391 A2/TT-89-01.

Under the second objective, to develop a regional surveillance system, we are targeting pests and diseases which influence international trade. We have listed diseases of top concern to the Caribbean through discussions with national animal health and plant protection authorities and regional specialists. The intention is to report on disease surveillance activities, not to duplicate emergency reporting functions of FAO. In addition to asking whether a disease is present or absent we are interested to know what effort was made to find the disease. What was the intensity of sampling? What test was used?

After review by national Directors of Plant Protection and appropriate revision, we will pretest these procedures with national trials in a limited number of countries.

We are working with other agencies such as CARDI, FAO, UWI, CAB International and PAHO to strengthen inputs required for effective regional surveillance.

One important collaborative activity is the distribution through CARAPHIN of an FAO database on plant protection. This database was created by Mr Charles Schotman of FAO for the Secretariat of the Caribbean Plant Protection Commission. As a result of the training and computers provided by CARAPHIN, this impressive database is now being distributed for direct use by national plant protection agencies.

CARAPHIN is a network of people with common problems, goals and skills. In addition to the training,

and the sharing of information, it is hoped that the contacts made through CARAPHIN will facilitate a cooperative regional stand against agricultural pests and diseases.

DISCUSSION

Henry: How does CARAPHIN encourage regional trade? How can a country access information on the produce to trade bearing in mind the plant quarantine regulations of the country?

Bernardo: CARAPHIN is not limited to regional trade. If the countries have to consider joint marketing, then one must know what pests exist in the other countries to pool products. The question on market information was addressed by Drs Fowler and Brathwaite and is not a specific activity of the project.

Stemshorn: Plant quarantine regulations were mentioned as part of the question and perhaps C. Schotman can say if this is included in the database.

Schotman: Information on plant quarantine regulations of countries can be accessed in the FAO/CPPC data base. Countries are requested to update and check the data.

**DATA BASE ON PLANT PESTS AND DISEASES
OF THE CARIBBEAN PLANT PROTECTION COMMISSION (CPPC)**

**Charles Y L Schotman
Regional Plant Protection Officer - FAO Trinidad**

1. INTRODUCTION

The main objective of the Caribbean Plant Protection Commission (CPPC) is to promote inter-governmental cooperation in plant quarantine in the Caribbean area and assist in preventing the introduction of destructive plant pests and diseases into the area.

An important function of the CPPC is to gather and disseminate information concerning pests of quarantine importance. This implies different activities including analysis to determine which pests should be regarded as of quarantine importance; keep countries informed on distribution of those pests, and gather and disseminate other relevant recommended measures. Much of this information can be obtained efficiently through collaboration with other Regional Plant Protection Organizations through the FAO Plant Quarantine Information System.

Keeping countries informed on distribution of quarantine pests also implies that a warning system should be in place in case of spread of a dangerous quarantine pests to new areas.

One of the elements in determining whether a pest is to be regarded as a quarantine pest or not, is through knowledge on the pest situation in the area. The importance of gathering information

on pests within the area has been regarded an important function of the CPPC since its inception. During the first session, held in Paramaribo, Suriname in 1968, it was agreed that a central file would be maintained by the Technical Secretary containing all compiled information on the region's plant pests and diseases.

While the original central file, consisting of a card system, was no longer available when the Secretariat was re-established in Port of Spain in 1984, most of the information could be retrieved through publications and reports. Recently, part of the original CPPC card system was found at CIBC, Curepe, Trinidad, with the kind assistance of Dr Peter Baker.

The CPPC data base was started in 1985, first on a small scale, simply as an aid to prepare and keep updated listings of pests of quarantine and economic importance to the CPPC area. Gradually, it was improved, and more information was included. When the plant quarantine data base, "PQdBase" at FAO Headquarters was developed, the structure of the CPPC data base was drastically changed using the same principles as the PQdBase and became more efficient.

After meetings during the first half of 1989 with Barry Stemshorn and Theresa Bernardo of CARAPHIN, the idea was born to make the data base

itself (not only the resulting documents) available to national plant protection services in a collaborative effort between CARAPHIN and the CPPC Secretariat. CARAPHIN would provide the hardware, and the CPPC would provide the data base. From then on, work was undertaken to adapt the data base programme so that it could be managed more easily by persons without much computer knowledge, make it independent from a commercial data base software, and make it more attractive. A first pre-release version was made available by CARAPHIN to its member countries during the beginning of 1990. A second, more enhanced version is available at the present time: the pre-release version of May 1990.

2. OBJECTIVES OF THE DATABASE

The CPPC data base has the following main objectives:

- to provide information on pests of quarantine importance to the region covered by CPPC;
- function as a "central file" or catalogue of plant pests of importance reported in the Caribbean, and provide additional information on the more important pests;
- serve as a tool for exchange of information on particular pest problems.

Many new features are being added to the data base, so that in the near future it will have additional functions:

- provide information on national plant enemies recorded in the Caribbean;

- provide guidance to national plant quarantine services for decision making at import and export by:
 - a) providing information on plant quarantine legislation of countries within the Caribbean and elsewhere;
 - b) providing information on available quarantine treatments;
 - c) providing information on quarantine pests in regions outside the CPPC area (through linkage with the global FAO PQdBase);
 - d) providing guidelines for quarantine measures relating to the transfer of germplasm.

3. CONTENTS

The already existing CPPC listings of quarantine pests and pests of economic importance in the Caribbean initially formed the basis for the data base. The data base has further been completed with information extracted from country reports at CPPC meetings, and publications. The information from CPPC card system maintained up to 1974, and recently found at CIBC, Trinidad, was also entered. The cards represent an important collection of results of pest and natural enemy collections in Caribbean countries and identifications made in the 1970's. The CIBC collection also provides most useful information on occurrence of pests and natural enemies in the Caribbean.

At present, the data base contains the following elements:

<u>ITEM</u>	<u>RECORDS</u>
Organisms:	2774
Divided over:	
- Pest categories:	9
- Orders:	42
- Families:	288
- Pests of economic importance:	1442
- Pests of quarantine importance:	404
- Pests of uncertain or minor importance:	383
- Natural enemies:	675
- Pest names, synonyms and common names:	8042
Host Plants	57
References:	183
Countries and Regions:	303
- Digests of Plant Quarantine Regulations:	54
Combinations:	
- Pest/country/host:	13961
- Pest/reference:	5407
- Pest/natural enemy:	1098

Natural enemies have been added only recently and therefore are still very incomplete. More information is added gradually.

"Escape" key may be pressed. When the data base programme is started, the user can choose from one of six main items appearing at the top of the screen:

4. HOW TO USE THE CPPC DATA BASE

The CPPC data base has been developed for use on IBM computer (or compatible) and needs at present about 5.7 Mb disk space. It is an autonomous programme, which means that it does not need any software to operate, but works directly under the disk operating system. It works with a menu driven system which is easy to use and does not require any special computer knowledge to operate. Required items can be highlighted by using the arrows or cursor keys, and the highlighted item can be activated by pressing the "Enter" key (<Enter>). Items can also be chosen by pressing the first character. To eliminate an unwanted menu, the

S: Selection V: View L:List
R:Risk Analysis M:Modify Q:Quit
A "status box" provides the following information:

- amount of organisms in the data base
- amount of organisms in the selection
- code of the organism in selection which will show up first
- items on which selection was based
- date and time

4.1 Selection

The programme allows multiple selections of an organism. These can be selected through:

- a) name, category, order, family, status, natural enemies of the pests (or beneficial organisms);
- b) host name, plant part attacked, commodity category;
- c) or country or region

Each selection can either replace the previous one, be added to it, be taken away from it, or the selection can be made from the previous selection. Thus, practically any selection combination can be made, and one can continue to narrow down large selections, until a reasonably small amount for viewing or listing is obtained.

Example of a multiple selection: To select insect pests that have been reported to attack the stems of eggplant in Trinidad and Tobago, proceed as follows (the bold printed characters indicated what should actually be typed on the computer keyboard):

1. **S**:Select; **H**:Host; **R**:Replace current selection; type name of host (**EGGPLANT** <Enter>); Accept
2. **S**:Select; **P**:Plant part; **S**:Select from current selection
T:stems
3. **S**:Select; **T**:Type/Order/Family; **S**:Select from current selection; select **INSECTA** (press the cursor key down three times, <Enter>); select **ALL INSECTA** (<Enter>).
4. **S**:Select; **C**:Country; **S**:Select from current selection; type name of country (first part is enough) (**TRIN** <Enter>); Accept.

In the above example 10 records will be selected which can be viewed done by one.

4.2 View

This item allows viewing details on selected organisms, or their orders/families, host plants, countries, and references.

4.2.1 Viewing organisms

Selected organisms are displayed on screen after choosing **V:View** and **P:Pest**. When the selection is new and consists of more than one organism, the records are first sorted on category (Bacteria, Fungi, Insects and so on) and by order and family (if available, until now nearly exclusively for insects and mites).

Any organism selected more than once will be eliminated during the sorting.

Each organism is displayed in a kind of box on the screen showing the following:

- Record: sequence number with selection
- Code: A unique 6-character code used for each organism
- Stat: A 2-character code indicating the status of the displayed organism as follows:

1st character:

- U** - Unknown pest status, or very minor pests
- E** - Pest of Economic importance
- B** - Beneficial organism
- Q** - Quarantine Importance

2nd character:
P - Present in the Caribbean
N - Not present in the
Caribbean

- Inf: the + sign indicates that there is additional information
- Ref: the + sign indicates that there are references for the displayed organism
- Type: A one-character code indicating type of organism (B - Bacteria, F - Fungus, I - Insect, and so on);
- Order: A 4-character code indicating the order
- Family: A 3-character code indicating the family
- Scientific name

Further information follows depending on the choice of the user. Initially, these are synonyms and common names. Other type of information that may be displayed are distribution (list or maps), order and family (in full and any available additional information on a particular family), hosts (crops and commodity and plant parts attacked), description and notes on control, natural enemies, and references.

When viewing an organism which is a natural enemy, then no commodity and plant parts are attacked are showed when "hosts" is selected, but the attacked organisms, any secondary parasites, type of natural enemy (parasite, predator, phytophagous) and attacked pest stages are displayed when "natural enemies" is selected.

Full information of the displayed organism can be printed out while viewing.

If authorized, the user can modify the information on the selected organisms or add to it, or add a new organism.

4.2.2 Viewing

Families can be viewed by choosing V:View and F:Family. Scientific names and any available common names of orders and families are displayed, as well as additional (descriptive) information (mostly insect families).

4.2.3 Viewing host plants

Information on host plants or crops can be viewed by choosing V:View and H:Host. Scientific and common names are displayed as well as additional information such as guidelines for germplasm transfer (not implemented yet except for a few crops such as cocoa and sweet potato).

4.2.4 Viewing countries

Information on countries can be obtained by choosing V:View and C:Country. This allows the user to check the country names and isocodes, which can be useful when editing pest distributions. The isocodes are internationally agreed 2-letter codes. The location of a country or region on a world map or regional maps and related areas can be displayed.

For a number of countries (at present 54 countries) the digest of plant quarantine regulations can be consulted. The digests have been made according to a fixed format (FAO format) which facilitates quick reference of the main prohibitions and restrictions for a particular commodity.

4.2.5 Viewing references

The references can be viewed separately. They give the abbreviation used, authors, year, title of publication, and publisher/journal.

4.3 Listing

This item from the opening screen allows the user to generate a printed list of the organisms in the selection (grouped by category, order and family). The list may include common names, distribution, additional information, natural enemies, references, and other information as required. A bibliography or list of references for the selected organisms is compiled when requested. The lists can either be sent directly to the printer, or can be written to a file on disk for subsequent manipulation with word processor. A list of pest names can be added for generation of an index of scientific and common names through a word processor.

4.4 Risk analysis

This item evaluates the quarantine risk for imported commodities by checking the quarantine pests in the country of origin known to attack a specified host plant and commodity, and verify that these pests are not known to occur in the country of destination. It will warn against any possibility of quarantine pests being present, and automatically select them for viewing any additional information. Of course, the validity of the result depends entirely on the data available in the data base. If a commodity class has not been entered for a quarantine pest, this pest will not be selected for that commodity.

Until the data base has been fully completed in this respect, it is preferable to indicate only the host, and not select any commodity.

It is important to realize that, since pests marked for quarantine importance are only those for the Caribbean area, evaluations made for countries outside this area will necessarily be incomplete or incorrect.

4.5 Modify

This item allows the user, when authorized, to add new records to the data base, and to re-index the data base or any part of it when required. A special file must be present in order to allow modifications. This file functions as a key. If the contents is changed, the data base can be viewed normally, but it is impossible to make any valid alterations. To "lock" or "open" the data base, give the command LOCKPPC or OPENCPPC respectively in the sub directory where the CPPC data base files are located. The programme will ask to insert a "key diskette" in drive A. This is diskette 1 of the distribution diskettes. Keeping this diskette in a safe place, enables a plant protection service to control any modifications made. The present pre-release version comes with the key file and information in the data base can be modified freely.

4.6 Quit

This allows the user to exit from the data base program and return to the operating system. At the same time, the programme stores some memory variables to disk, so that the next time it is loaded, it "remembers" exactly which was the selection and which pest was last viewed.

5. FUTURE OUTLOOK

In the future, the CPPC data base should complement the global FAO data base, and refer to that data base to obtain information on pests of quarantine importance to the Caribbean but not yet present in the region; quarantine regulations for countries outside the CPPC area; and international plant quarantine treatments. This will enable the area to make full use of the latest information provided by other regional plant protection organizations at least concerning these three items.

As far as the area is concerned, the data base could serve as an efficient tool in the exchange of information on pests occurring within the area, plant quarantine regulations in the Caribbean countries, and plant quarantine treatments. This exchange of information would be possible, if plant protection services would agree to modify and add to the data base as far as the information relative to their country is concerned. This information could regularly (for instance every six months) be collected on diskette and, after screening, serve to update the central data base maintained by the CPPC Secretariat. After updating from all individual country contributions, the central data base could be re-distributed to all member countries. As far as the English speaking Caribbean is concerned, CARAPHIN, could continue to play an important role in this respect.

DISCUSSION

Alleyne: What is done about old scientific names which have been superseded.

Schotman: The old names as well as valid scientific names are included in the database. Where a new name is given and an old name is superseded, the new name is added with a code which tells the database that this is now the official scientific name. Change the code to the other name to indicate that it has been superseded. The name for insects have been taken from CAB-I publications. No similar publications were consulted for diseases so many of the names which change over the last few years will be outdated. Countries are asked to collaborate with central database to improve the database.

Messiah: Is there a similar database for animals?

Schotman: There is no similar database for animals and there are no plans for creating one. However one can be created using the same structure as the plant one.

PROPOSAL FOR REGIONAL REPORTING ON SURVEILLANCE ACTIVITIES

Theresa Bernardo

This is an initiative under the Caribbean Animal and Plant Health Information Network, CARAPHIN, which is a regional project with 14 participating countries. One of CARAPHIN's two main objectives is to develop a reporting system for regional surveillance of pests and diseases of interest to countries participating in the network, particularly those which affect international trade.

A list of such diseases and pests, and questions about their occurrence (see Appendix 1) was constructed through consultations with national and regional plant protection authorities in the Caribbean. The intention is to report on disease surveillance activities that are presently being undertaken in the region, not to duplicate emergency reporting functions of FAO. In addition to asking whether a disease is present or absent we are interested to know what effort was made to find the disease. An explanation of the contents of the columns/fields can be found in Appendix 2.

After review by national Directors of Plant Protection and appropriate revision, we will pretest these procedures with national trials in a limited number of countries. Once reporting commences on a regional basis, national reports will be used to generate regional summaries for distribution to the contributing countries.

The regional reports will serve two purposes. First, they will provide a source of timely information on the occurrence and distribution of diseases and pests of importance to the region from a trade perspective. Nations are repeatedly called upon to prove freedom from a fluctuating list of diseases in order to maintain or secure export markets. In addition to creating confidence in these reports, national participants will develop expertise that will enable them to confront new pest and disease issues as they arise.

Second, the resulting database will allow Directors of Plant Protection to identify concerted actions required to improve regional disease surveillance and improve prospects for intra- and extra-regional trade.

Appendix 1: Proposal for reporting surveillance activities

CASE HOST NO.	COMMON NAME	SCIENTIFIC NAME	PRE-SENT Y/N	NEW OCCUR-ENCE	ACT-IVE SURV EIL.?	METHOD OF DIAGNOSIS	# PLES TEST-ED	SAM-PLING	COM-PLIANCE	COMMENTS	SPECIES
1	MULTIPLE BROAD MITE	<u>Polychaetogersonemus latus</u>	NO	NO	NO	TRAPPING	1267	1265	USDA	TRAPPED FLIES	LUDENS, STRIATA
2	MULTIPLE FRUIT FLY	<u>AMASTREPHA</u>	YES	YES	YES	TRAPPING	1267	0	0	NONE TRAPPED	
3	MULTIPLE FRUIT FLY	<u>CERATIIS</u>	NO	NO	NO	TRAPPING	1267	0	0	NONE TRAPPED	
4	MULTIPLE FRUIT FLY	(DACUS) <u>Bactocera</u>	NO	NO	NO	TRAPPING	1267	0	0	NONE TRAPPED	
5	MULTIPLE GIANT AFR. SNAIL	<u>Achatina fulica (Bowdich)</u>	NO	NO	NO		0	0	0		
6	MULTIPLE LEAF-CUTTING ANT	<u>Thrips palmi (karny)</u>	YES	NO	NO		0	0	0	CPPC	
7	MULTIPLE PALM THRIPS	<u>Xanthomonas campestris pv dieffenbachiae</u>	YES	YES	YES		0	0	0		
8	MULTIPLE BACTERIAL BLIGHT	<u>Radopholus similis</u>									
9	ANTHURIUM BURROWING NEMATODE	<u>Stenoma catenifer (Walsingham)</u>									
10	AVOCADO SEED MOTH	<u>Helipus lauri (Boheman)</u>									
11	AVOCADO SEED WEEVIL	<u>Mycosphaerella fijiensis (Morelet)</u>									
12	BANAN/PLAN BLACK SIGATOKA	<u>Pseudomonas solanacearum (EF Smith)</u>									
13	BANAN/PLAN MOKO DISEASE	<u>Monilophthora roerei (Gif.)</u>									
14	CACAO MONILIA POD ROT	<u>Crinipellis/Marasmius perniciosus (Stahel)</u>									
15	CACAO WITCHES BROOM	<u>Xanthomonas sp.</u>									
16	CASSAVA BACTERIAL BLIGHT	<u>Xanthomonas campestris pv. citri</u>									
17	CITRUS CANKER	<u>Citrus Tristeza Virus</u>									
18	CITRUS QUICK DECLINE	<u>?Phytomonas staheli?</u>									
19	COCONUT CEDROS WILT=HARTROT	<u>Lethal yellowing disease (Mycoplasma)</u>									
20	COCONUT LETHAL YELLOWING	<u>Rhadinaphelenchus cocophilus (Cobb, Goodey)</u>									
21	COCONUT RED RING NEMATODE	<u>Hypothenemus/Stephanoderes hampei (Ferrari)</u>									
22	COFFEE BERRY BORER	<u>Hemileia vastatrix</u>									
23	COFFEE LEAF RUST	<u>Anthonomus grandis</u>									
24	COFFEE BOLL WEEVIL	<u>Diaphania nitidalis (Cram.)</u>									
25	CUCUMBER PICKLE WORM	<u>Sternochetus/Cryptorhynchus mangiferae (F.)</u>									
26	MANGO MANGO SEED WEEVIL	(Mycoplasma, vector:leaf hoppers)									
27	PAPAYA BLANCHY TOP DIS	<u>Toxotrypana curvicauda</u>									
28	PAPAYA PAPAYA FRUIT FLY	<u>Hoja blanca</u>									
29	PAPAYA HOJA BLANCA VIRUS	<u>Pyricularia oryzae (Cavara)</u>									
30	RICE RICE BLAST	<u>Aneneolamia varia Saccharina</u>									
31	SUGARCANE FROGHOPPER	<u>Eucepes</u>									
32	SMT POTATO W/ SW POT WEEVIL	<u>Megastestes grandis/pusisles</u>									
33	SMT POTATO SW POT BORER	<u>Cylas</u>									
34	SMT POTATO SW POT WEEVIL										

Appendix 2

Explanation of fields in the first draft of a reporting system for surveillance that is done in the Caribbean. Proposed frequency of reports is twice yearly.

1. HOST

This list of diseases was compiled after various consultations with national authorities, including our 1988 Workshop, and is open to modification.

Diseases/pests which affect multiple hosts are listed first followed by individual hosts in alphabetic order.

2. COMMON NAME

Rather than list all the possible species of fruit flies, the species which occur in a given country are to be listed in field 12, "SPECIES".

3. SCIENTIFIC NAME

Specify name of causal organism.

4. PRESENT Y/N?

Is the disease/pest currently present in the country.

5. NEW OCCURRENCE?

If the answer to field 4 is yes (the disease/pest is present) you are asked whether this is a new occurrence.

The answer should be yes if the occurrence of a new species of fruit fly has been noted.

6. ACTIVE SURVEILLANCE

Is there ongoing surveillance for this disease/pest?

7. METHOD OF DIAGNOSIS

If the answer to field 6 is yes (there is active surveillance for this disease) you are prompted to answer fields 7 through 9.

8. NUMBER OF SAMPLES TESTED

The number of tests done since the last reporting date.

Guidelines will be established as to what constitutes an appropriate sample. For example, in reporting on fruit fly trapping it is better to report the number of flies trapped or the density of traps per hectare?

9. NUMBER POSITIVE

10. CONFIRMED BY WHOM?

This question will be asked if it is a new occurrence of the disease/pest (if the answer to field 5 was yes).

11. COMMENTS

This field will allow for comments or more detailed explanations.

12. SPECIES

The species of fruit flies which occur in your country should be listed here.

DISCUSSION

Stemshorn: Would this be a useful mechanism to introduce in the Region?

Barrow: This would be useful for the region.

Jones: The sampling techniques should be standardized otherwise the data received from the various countries may not be able to be computed in a meaningful way.

Bernardo: It is advisable to start off with what is being done and then come to some consensus on what should be done.

COMMENTS AND OBSERVATIONS

Stemshorn: It would be desirable to develop a manual of documentation to go with the CPPC database to learn the full use of it.

Schotman: Some funds are available for a short consultancy to develop a manual but this involves much work. It would be useful if the manual can be available this year so that National Plant Protection Officers can correct the data base. All the added information should be sent to the Central database where it would be screened to ensure authenticity before

inclusion. The information would then be distributed so that all National Plant Protection Service will update their database.

Francis-Ellis: (1) The economic impact of pests and diseases to crop production referred to by B. Stemshorn is important and its importance is continuously being seen in the national activities. It is impossible to produce statistics on damage done by pests or to illustrate the savings to the country when the pest is controlled.

(2) For the database to be effective, it must contain accurate and updated information on the countries. For this reason countries should carry out pest surveys and monitor pest introductions.

(3) Countries should have reference collection of pests and diseases slides and coloured photographs to compare problem. Can IICA assist in that?

Mann: Database is being developed in St Lucia. The CPPC/FAO database is being augmented through information collected from records in St Lucia. It has not been established, how the database is to be

updated through CARAPHIN as suggested by C Schotman and with the new version one wonders how this can be done.

Schotman: If modifications have been made on the old database and they would like to be kept, countries should be careful when installing the new database because the batch files instructs the computer to eliminate the old file and put on the new one. As in the case of St Lucia, if you want to keep new modifications back them up on a diskette then send a copy to me so that the information is made available to all the other countries.

Pollard: Crop loss assessment is extremely difficult and if a country is interested, it can use the FAO documents on crop loss assessment and modify it to suit its needs.

Stemshorn: When dealing with one crop this may be possible but how does one deal with more than one crop where the losses in one benefits another.

Belle: The area of crop loss assessment is very important. In Antigua there is a high infestation of white flies and on surveying different areas losses vary considerably.

Chemical control is not effective. What is the situation in the other countries?

Jones: As far as white flies are concerned, Trinidad is experiencing similar problems and it has just as much difficulty as Antigua in control. Screening will be done using the following:

1. Insect growth regulator
2. Pyrethroid - but there are reservations about their use. Dominican Republic and Puerto Rico claim to have got control
3. Tambo, a Ciba Geigy product

Within the farming community all the things that have been tried have not given good results. Recent observations on tomatoes in a green house give an infestation level of 2000 larvae/leaflet but the farmer claims that yield was not affected but quality was.

Alleyn: There are no good results on the work being done in Barbados. Pyrethroid may be the original cause of the problem because of its impact on natural enemies. In Barbados, an upsurge of sucking insects in general has been observed. The problem of white flies seems to be complicated. We have observed fields covered with white flies

and yields are not affected and in lemon or squash the plants are killed. It appears to depend on the crop being grown, the time the pest enters. This problem is not only present in the Caribbean but also problems have been reported in California and Florida.

Baker: From the biocontrol point of view, the experts seems to think that if white flies is a

problem it is as a result of insecticide abuse and without insecticide natural enemies can control the pests. There is widespread concern and suggestion that it is a difficult strain and there is renewed interest to import natural enemies. There should be coordinated efforts on biocontrol.

Rhodes: CARDI can assist countries in national surveys.

THE FUTURE OF FRUIT FLY PROGRAMS IN THE CARIBBEAN THE PROSPECTS FOR EXPORTS

Scott Campbell
International Services, USDA/APHIS

As a theme, I would say that the future is what you want it to be. In this sense, "you" can mean the Plant Protection Officials, Research Officials, or the Agricultural Industry. I would prefer it to be understood as all of these combined into a single entity. Success in regulatory plant protection tends to depend upon the ability of these three sectors working closely together.

In dealing with the impact of fruit flies or other major pests upon the production, marketing, and movement of agricultural products, we need a close partnership of agriculture as a whole. The initiative for the development of this agricultural institution needs to come from within rather than being initiated from outside sources. It seems to me that organizations such as IICA and FAO have a role in assisting and coordinating in building such agricultural institutions.

In order to talk about the future, we need to look at the present. What do we have in place or available to us today? What does the information we have today mean not only today, but in the future? Do our capabilities today stand alone, do they need help, or do we need something more?

What we have today is a limited amount of information which tends to

have a negative impact upon the movement of fruits and vegetables in international commerce.

Many countries are listed as "infested" by fruit flies simply because there is not sufficient up to date information regarding these pests in those countries. Therefore, the lack of information results in those countries being labelled as infested. If these importing countries currently see the burden of resolving pest risk placed upon their quarantine processes, the burden of proof about plant pest status is placed upon the exporting country. Please note that I speak of the country in general terms. This is one area in which the agricultural "institution" can serve as a driving force in export/market development. As the responsibility of the country itself, not outside organizations.

The other side of the coin is those countries which are considered free from fruit flies. They must not only demonstrate that they are free from the fruit flies, but must also show that they have adequate exclusion processes in place to prevent the entry of these pests. The processes include plant quarantine legislation, rules and regulations, and the means of enforcing such quarantines. Once these technical matters are in place, a market strategy must be developed, cropping plans put in place, and adequate transportation and delivery systems identified.

As a result of what we have today, which is mostly information, the solution to the problem in the immediate future is the development of definitive delimiting of the fruit fly populations in the Caribbean Area. The acceptance of this information is dependent upon having uniform and recognized procedures for fruit fly detection which also result in recognition of the status of any given country with regard to fruit flies. There are standardized detection procedures available. A copy of the trapping manual has been published by IICA and was delivered to you as a part of the handouts for this meeting.

As noted previously, being free from fruit flies is but the first step in a process which requires other components. While free countries can ship fruit fly host material with few restrictions, those countries categorized as infested are limited as to options available. In those instances where there is an approved commodity treatment, material may be shipped. In some instances, the pest free zone concept may prove to be a viable option. Another option which may be of value is diversification of crops away from host materials. The final option for infested countries is to enter into an eradication program.

Chemical commodity treatments, particularly fumigants, are in danger of becoming a thing of the past. The loss of ethylene dibromide, the questions being raised about methyl bromide (MB), and the reluctance of chemical companies to develop and register new fumigants poses a risk of loss of quarantine treatments for many commodities. Continued research in both heat and cold temperature treatments holds some promise for fruits and vegetables. There is a

continuing need for both research and methods development activities in all areas of commodity treatments.

One of the newer concepts which is being applied to plant quarantine is the concept of "pest free zones". Under this procedure, areas known to be free from pests of concern--in this instance, fruit flies--are identified. Host materials from these areas are allowed to be moved to destination with no requirement for disinfestation. It needs to be reemphasized that the burden of proof is on the exporting country. Inherent in this procedure is the knowledge that the area has been adequately trapped, that the pest does not occur, and that internal quarantines are in place and enforced in order to prevent the introduction of unwanted pests into the free zone. Under the free zone concept, other pests and diseases of quarantine significance must be excluded from the shipments. This includes hitchhikers, contaminants, or infestation by other pests or diseases. The application of this concept to any geographic area must be based upon the merits of each individual request, must of course meet some standard and relies heavily upon adequate detection. The importance of a uniform trapping procedure becomes extremely significant under these circumstances. Once a free zone has been accepted as a basis for certification, marketing strategies, implementation of delivery systems and good quality control procedures must necessarily be developed.

As used in the context of the Caribbean Area, free zones probably can apply only to whole countries, or at a minimum, to whole islands. The establishment of trapping programs, the development of quarantines, and

the ability to deal with outbreaks must provide the necessary assurances that host commodities are not infested.

Eradication of any plant pest is a major undertaking. While the technology for eradication of fruit flies is known to exist and to be effective, the eradication of established infestations has to be viewed as a long term project. The eradication of the fruit flies of economic importance in the Caribbean Area as a whole, would be an immense project. Fiscal and environmental constraints to such a program would require a major effort in terms of plant quarantine procedures and processes designed to prevent re-infestation. Eradication would, however, provide an incentive for development of close working relationships within the agriculture sector, and would provide for training and development in plant protection. It would also provide an opportunity for planned marketing strategies and the potential for development of transportation and delivery systems.

Individual countries or groups of countries may wish to contemplate the potential for fruit fly eradication projects. Obviously, the constraints and concerns outlined for the entire Caribbean area would also apply, though to a lesser extent. The concepts of eradication also apply to such a small area. A major emphasis must be placed upon an effective plant quarantine, or exclusion, effort. A recognized, uniform pest detection system must be in place and an emergency response capability must be developed in order to respond to any fruit flies which manage to enter. In my opinion, FAO and IICA would have to play a major role in the coordination and

development of multinational or regional eradication or control projects.

All of the action options discussed to this point are long term operations. Treatments are continuous.

DISCUSSION

Rhodes: Some of the points raised by the speaker may be sound in theory but viewed in the context of Agriculture in the Caribbean, one needs to take a second look. Let us examine

1. Diversification away from fruitfly host: - The current position is diversification toward fruit fly hosts - mangoes and soft fruits.
2. Fruit fly free zone concept: Establishment of fruit fly free zone in any of the Caribbean countries does not seem to be a feasible proposition because of the size of the countries and the migratory capacity of the insects.

Concentration has been on post harvest treatment -hot water and the like more designed to protect the agriculture of the country to which countries are exporting rather than to protect the crop grown in the region.

An integrated management strategy seems more likely. This will involve parasites,

sterile males and development of lures for *Anastrepha*.

Campbell: Development of lures for *Anastrepha* have been tried but were not as effective as McPhail was.

Schotman: The concept of "host country combination free of fruit flies" is not accepted by USDA but exist in practice in the Caribbean. We see *A. obliqua* having completely different host range in certain Caribbean countries. It has been observed that in Jamaica and St Kitts mango is attacked by *A. obliqua* but it is not attacked in St Lucia and Trinidad.

If it can be proven from systematic research then it may be a good thing. Some countries in the Caribbean are already willing to consider this and will be satisfied if they can verify that a crop in a country is not attacked by a fruit fly, they would accept the fruit from the country.

Campbell: This concept is not totally unreasonable but there must be a basis for saying so. Proving negative is always difficult. There have been instances where adequate surveys have been conducted and was shown that a pest does not attack the fruit and

was accepted by USDA. There must be a set of plant quarantine procedures which are accepted by plant quarantine officials on a regional or global basis as being adequate to provide a protection so that the movement of the material poses no pest risk to the receiving country. This is harmonization in terms of acceptable procedure and allowing the movement of the material and let the traders get into the market and get the technical persons out of the battle.

Fowler: Who is implementing the harmonization procedures with FAO, who in FAO is seeing that the Regional Crop Protection Organizations are actively pursuing the harmonization plan or basic agreement on trapping procedures or other procedures required to provide standardization in quarantine procedures in the region.

Schotman: At the last technical consultation which took place 2-3 weeks ago, it was decided that we should proceed with the recommendation from the last technical consultation, that COSAVE proposed to head a working group to start establishing an initial document with guidelines

in order to get a global harmonization of procedures to tackle quarantine procedures in relation to fruit fly host. Another working group is handling white potatoes.

Campbell: Harmonization initiative is a trade initiative and driven by the GATT. Agreement on the harmonization of sanitary standards is a must for trade to continue. OIE is the technical group for zoosanitary regulations, the Codex Alimentarius deals with food safety issues and FAO through the administration of IPPC as the group to provide the technical support to plant quarantine phytosanitary matters. Terms - Harmonization means making identical
- Equivalence means having the same effect. Two different procedures but having the same effect.

Fowler: What are the alternative quarantine treatments for mango or papaya. Any information on hot air treatment?

Campbell: Agricultural Research Service feels that it is on the verge of showing that hot air treatments works on mango and papaya but the information has not been released. Chemical treatments are rapidly

coming to an end and there is need to look for alternatives.

Isaacs: Considering the topic of Dr Campbell's paper, the scenario painted looks grim especially because diversification is moving towards soft-fruits instead of away from these fruit. Experience of the islands which have been declared fruit fly free and the response of USDA to the export fruit from those territories. The response is that the quarantine service does not match up so where you are clear in one area obstacles are put in another area. What of the future? Must they consider processing?

Perhaps another thing will come up again. Mangoes have been declared fruit fly free yet they are not accepted. There is the question of restrictions of entry of *Annona sp* to the US. It appears to be a waste of time. If one has done work on a number of trees and they are not accepted why should further work be undertaken on agricultural produce from the Caribbean for some markets?

Barrow: St Vincent and the Grenadines and Grenada were declared free from

fruit flies. Are they able to export fruits to the US?

Isaacs: Fruits from St Vincent and the Grenadines in some parts of the US are confiscated even when they are carried by people.

Francis-Ellis: Similar situation exists in Grenada. It was said that perhaps some of the quarantine personnel are not aware of the situation in the countries. The other problem is that if the fruit passes through any country with fruit fly, they are not accepted by the US.

Concerning the *Annona spp* after fruit fly survey was completed there was a report from the USDA that they were not accepting these fruits because of the presence of internal feeders. Although fruit cuttings were made but it appears that the amount was insufficient or the procedure was not correct. A specific reason for this is not known. The countries presently doing the fruit fly survey should bear this problem in mind.

Campbell: Generally USDA policy with regards to importation of fruit in baggage especially if the flight is from multiple destinations.

Do not accept the passenger's mere declaration of origin as declaration of origin. St Vincent and the Grenadines - the understanding was once they had been declared free from fruit fly, the decision was to allow those fruit fly hosts which had been proposed at the time that the survey was started - Mango. It was then found that the mangoes could not be transported directly to the US but had to intransit to another country and remain for some time. Thus they could not be allowed in. If a permit were applied for mangoes from St Vincent and the Grenadines, it would be approved.

With regards to fruits and vegetables which have not been considered a complete biological risk assessment has to be undertaken. Mere fruit fly free is not sufficient. A pest survey has to be built around the commodity for export, the transportation service. The transport of the commodity must not pass through an infested country.

Francis-Ellis: It appears that the US wants a complete pest survey and not pest of quarantine importance.

When the fruit fly survey was undertaken USDA was involved and they never spoke of internal feeders or other pests. Is there a list of the pest of the fruits in the Caribbean. USDA must say what they consider as quarantine pest.

Rhodes: The USDA may not be blamed for the situation as described by Mrs Francis-Ellis because a letter May 3, 1990 from Dr Robert Griffin, Head, Permit Unit, USDA mentioned that according to his records the Governments of St Vincent and Grenada were informed of determinations in December 1987 in respect to internal feeders in the *Annona sp.* Since there has been no additional records from the countries which rejects or challenges their policy. So there seem to have been a communication gap.

Francis-Ellis: Grenada responded to USDA but got no reply from them.

Isaacs: Eric White, USDA came and looked at the records in St Vincent and the Grenadines and should have written a report.

Campbell: Will check but cannot recall having seen Eric's report.

Alleyne: About the time St Vincent and Grenada were carrying out their survey, a survey was undertaken by Barbados. Like the above countries the USDA carried out the training but the survey was supervised by entomologists in Barbados. The results indicated that Barbados was free of fruit flies. A report was submitted. A specialist was supposed to visit to verify the survey but no one has been seen.

One wonders whether the problems St Vincent is experiencing with intransit is associated with the delay in verifying Barbados free of fruit flies.

THE THREAT OF *THRIPS PALMI* TO CROP PRODUCTION IN THE CARIBBEAN REGION

Mona T Jones
CFS MFPME Trinidad and Tobago

ABSTRACT

Thrips palmi (karny), arrived in the Caribbean region in the mid 1980's and is now well established on many islands where heavy losses have been incurred on a wide range of high value crops. Low yields, poor quality fruits, post harvest, pest contamination and high pesticide inputs are associated with this pest. Control methods appear to work best at very low pest densities but the insect is capable of very rapid population growth at the high temperatures characteristic of the Caribbean. In addition *T.palmi* is genetically tolerant of most available insecticides. It is wind borne and thus easily dispersed. Control measures have included use of Ultra violet absorbent plastic mulches, sticky traps, natural enemies and high frequency application of a limited number of insecticides. Rain showers significantly reduce population levels and it is being suggested that soil and water management, use of natural enemies, unconventional insecticides, and phytosanitation be investigated for incorporation into a truly integrated programme for management of *T.palmi*.

1. INTRODUCTION

The southern yellow thrip or palm thrip, *Thrips palmi* (Karny) was first recorded infesting tobacco seedlings in Sumatra, Indonesia since

1925 and soon occurred in India, Sudan and Taiwan. Because of confusion with other species, little work on the economic importance of this pest had been documented till its full re-description (Bhatti 1980). This brought into focus the destructiveness of the pest within the Orient and Pacific region in which it had become well established on a number of crops (Sakimura et al 1986). It is also suggested that *T.palmi* was of little economic importance to the Pacific region where it originated, but that a highly injurious second biological strain possibly arose by mutation and invaded the region through wind currents and movement on aircraft (Bournier, 1986).

In the west, the pest was first recorded in Hawaii and Guam in 1984 and is often intercepted in dendrobium flowers from Thailand (Pers. comm. M Nakahara, 1989). *T.palmi* is now present in Japan, Hawaii, Guam, Indonesia, India, the Philippines, Pakistan, New Caledonia, Sudan, Thailand, Taiwan, Wallis and Futuna islands and the Caribbean. It had been recorded in green houses in the Netherlands but has since been eradicated (pers. comm. Schotman 1989). Within the Caribbean region it was recorded for the first time in the French West Indies on melongene in 1985 probably being introduced on Hibiscus plants. In December 1986, it was recorded in Puerto Rico on tomato plants in Ponce and in

December 1988 on melongene in Cunupia, Trinidad. The pest is now well established in Antigua, St Christopher/Nevis and the Dominican Republic. There are unconfirmed reports of it being in Barbados.

2. ECONOMIC SIGNIFICANCE OF *T.palmi*

Internationally the pest is hosted by melongene, peppers, potato, tobacco, cucumbers, melons, pumpkins, squash, gourds, cowpea, kidney beans, soya bean, white clover, cotton, mango, sesame, sweet potato, amaranthus, chrysanthemum, dahli, dendrobium, cyclamen, avocado and a number of weeds. Within the Caribbean it has so far been recorded on melongene, hot peppers, sweet peppers, cucumbers, caraille, melon, pumpkin, beans including pigeon pea and soya bean, ochro, amaranthus, lettuce and white potatoes. Most of these crops represent vital export earnings for the region, in addition to providing a valuable food base for local consumption. The new diversification thrust of many countries has within recent years focussed on increased production of winter vegetables, fruit, ornamentals and cotton. Should the pest also become established on cotton, mango and ornamentals, the livelihood of many people within the region would be adversely affected. The wide host range significantly limits shifts in cultivation to alternative crops since tomatoes and brassicas are now severely plagued by the white fly *Bemisia tabaci*, and the fruit fly situation in tree crops is still very uncertain.

Estimates of losses due to *T.palmi* infestation of vegetable fruit crops are most discouraging. Vast hectarages of high value crops

have been totally devastated within very short time periods. In the dry season of 1989, production of melongene, hot peppers and cucumber in Trinidad, declined by 80, 68 and 55% respectively. In Puerto Rico 1987 production of sweet pepper declined by 33% and was estimated at 90% in some areas (Franqui et al 1989). In the same year melongene production in Guadeloupe declined by 50%, the 1985 estimates for melongene and cucumber losses being 75 and 65% respectively (Etienne and Van Waetermeulen 1989, Palcy 1988). In the Dominican Republic, losses to melon and tomatoes alone amounted to US\$60 million in 1988 after combined infestation by *T.palmi* and *B.tabaci* (Pers. Com. St Clair Forde 1989). Apart from low yield, many of the harvested fruit is cracked and unsalable on the export market. The calyx of apparently uninjured fruit of melongene and peppers, as well as the crevices of caraille, conceal many insects. Simple washes are no longer adequate as post harvest treatments, and at least one shipment of hot peppers from Trinidad has been rejected in London due to *T.palmi* contamination.

3. INSECT RECOGNITION AND DAMAGE SYMPTOMS

T.palmi is most easily recognized by the clear yellow body of the two larval instars, their blackish body setae and reddish to brown eyes. Adults possess creamish filamentous wings fringed with dark seatal hairs. The eighth abdominal segment bears a comb. Pupae develop in soil but the two larval instars and the adult feed on plant tissue. The insect is polyphagous and not restricted to particular feeding sites on its hosts. Stems, flowers,

fruits and leaves are destroyed.

Fruit yield is directly affected through flower loss, scarring and defoliation, while indirect loss results from decreased chlorophyllic tissue. Damage symptoms include discoloration, scarring, silvering, bronzing, tip drying and deformation of all plant parts. Damage may be sometimes confused with mite attack, diseased or phytotoxic conditions. In peppers, fruit damage is almost identical to that inflicted by the broad mite *Polyphagotarsonemus latus*. Leaf damage is however distributed over the entire plant whereas board mite attack is generally confined to younger leaves. The severe wilts and die backs associated with thrips infestation of cucumber vines are easily mistaken for disease symptoms while the deformities, streaked coloration and cracks in melongene fruit resemble symptoms due to damage by mites and phytotoxic reactions. Corky patches on ochro and melon resemble those which are associated with plant sucking bug damage.

4. SOME OBSERVATIONS IN TRINIDAD

No formal trials have so far been conducted in Trinidad but preliminary observations have been made. These reveal that soon after establishment of *T.palmi* melongene was the crop most severely affected in terms of loss. This was due both to the high level of insect damage and to the plant's high sensitivity to many of the pesticides used by the farming community in the attempt to combat this pest. Over 250 insects/leaf were recorded in March of 1989, the upper leaf surface being preferred on this crop. Upper level infestation was as many as 20 times that of the lower side of the leaf in some instances but in most it

was approximately twice as much. In a few cases the density of the underside of the leaf slightly exceeded that of the upper side. Tolerable density for melongene cultivated in green houses in Japan was estimated to be 0.08 adults/leaf (Kawai 1986). By comparison, densities observed in Trinidad (Tables 1 and 2), were most intolerable and many fields were totally abandoned.

The wide range of chemicals utilized by the farmers (Table 3) did not appear to significantly affect this pest. Cocktails were utilized excessively and in the Aranguez area counts from two farmers who applied cocktail mixes three times per week were compared. It is interesting to note that in a field which recorded an average of 243 insects per leaf, the cocktail consisted of various combinations of Lannate, Tambo, Perfekthion, Nutrex and Basudin whereas in an adjacent field in which the cocktail consisted of Tambo, Elsan, Trimiltox and Cuprasan, leaf density average 18 insects. Apparently insect density per leaf was over 13 times higher in the field in which the cocktail mix was more potent.

Wet season counts in Aranguez ranged from 0-6 insects/leaf (Table 1) a remarkable decline over dry season averages. No fungal pathogens were observed and it is assumed that mechanical action of rain water was responsible for the dramatic population decline since on this crop insect population is much greater on the upper side of the leaf. An unidentified Anthocorid bug was recorded as a predator in the Aranguez region.

Other solanaceous crops did not demonstrate the high level of

infestation observed on melongene. Though hot and sweet peppers were affected, tomatoes appeared to be very tolerant showing very low pest density and no damage symptoms.

Within the cucurbits, which demonstrated higher levels of insect density on the underside of the leaf, caraille was very heavily infested resulting in total death of vines. This is unusual since most insects do not establish on this crop. No serious infestations were recorded on watermelons and in fact watermelon yields per acre increased slightly over the previous year. In February 1990, open field watermelon was observed at Las Lomas and *T.palmi* density averaged less than one insect per leaf with a range of 0-27. Cucumber was the most severely affected cucurbit in 1989, over 700 insects/leaf being recorded initially. This is supported by work conducted in Japan (Kawai 1986). Counts on a cucumber crop cultivated at Centeno in late May 1989 ranged from 10-548 insects/leaf before treatment with Profenofos (5 mls/gal), but declined to 0-3 insects per leaf after insecticide application and showery weather (Fig. 1). Despite the reduction in density to 1.4 insects/leaf after three applications, the damage sustained by the plants was such that the crop had to be abandoned. Nothing could be harvested. Except at the height of the wet season, open field densities were generally very high (Table II), overall, being way above the tolerable density of 4.1 adults/leaf, estimated for greenhouse cultivation in Japan (Kawai 1986).

Amaranthus sampled in February 1990 averaged 6.3 with a range of 4-12 insects per leaf for the red stem variety while the green stem variety averaged 4.7 insects/leaf ranging

from 0-6 insects/leaf. In June of the same year averages were 7.8 and 10.2/leaf respectively for red and green varieties.

5. METHODS OF CONTROL

5.1 Chemical Application

The observation that excessive use of chemicals do not reduce population levels of *T.palmi* supported by international studies. The insect has been demonstrated to have low cholinesterase activity for combination with organophosphates and carbamates (Kazano and Nishrino 1986). In Hawaii the very toxic oxamyl had no effect on adult thrips (Johnson 1986). Populations in Puerto Rico appeared to be unaffected by methomyl, azinphosmethyl, esfenvalerate and oxamyl (Franqui et al 1989). In Guadeloupe pesticide application as in Trinidad aggravated the situation and it is suggested that natural control is demonstrated by a complex of polyphagous predators both on foliage and in soil (Etienne and Vanwaetermeulen 1989). In Martinique where 34 insecticides were screened most were ineffective and many favoured increased thrips populations (Ryckewaert 1988). In Japan it has been demonstrated that insecticide application is most effective at very low thrips density (Kawai 1987). Chemical application alone is certainly not adequate for control of this pest.

5.2 Biological Control

Some eulophids, anthocorids, mites and fungi (Table IV) have shown various levels of control of *T.palmi*. These natural enemies perhaps warrant investigation within the Caribbean region but there is also a need to examine the local biological population.

5.3 Cultural practices

Cultural practices have included mulching with rice straw in the Philippines (Litsinger and Rahendi 1983) or polyethylene film (Makino 1984). Trapping with blue coloured sticky ribbons (Nonaka and Nagai 1984), Seiryu sticky ribbon traps (Jakeuchi et al 1983, Nishino and Ono 1984), and white sticky traps (Kawai 1982) have also helped to reduce thrips populations. It has however been demonstrated that trapping like pesticide application is most effective at lowest population densities (Kawai 1987). Ultra violet absorbent film (Nagai and Nonaka 1982, Kawai 1986) and silver coloured materials (Susuki and Miyara 1983) have contributed to lowering populations in green houses in Japan and post harvest contamination has been reduced in Guadeloupe, by immersing fruit in 45°C water for seven minutes (Etienne and Yan Waetermenlen 1987).

6. FACTORS AFFECTING POPULATION DENSITY OF *T. palmi*

Increase in population density of *T. palmi* is affected by the initial population density of seedlings. If this is high, control measures are less likely to be effective (Kawai 1987) and rate of copulation increases (Kawai 1987). High temperatures also result in rapid rates of population increase, this being highest at 30°C (Kawai 1985). Parthogenesis is known to occur in *T. palmi* and has been studied in Japan (Yoshiherickarico 1982). Conditions for its induction within the Caribbean situation need to be assessed.

Invasion from surrounding areas is a significant factor affecting management of *T. palmi* since it

nullifies the low density effect at which most methods of control are significant. Soil structure and ground cover impact on the rate of adult emergence as well as the rate of invasion by insects. Host plants determine to some extent, the survival rates of *T. palmi* populations as demonstrated in Japan where survival rates of *T. palmi* populations was greatest on cucumbers followed by melons, eggplant and pumpkins (Kawai 1986). As illustrated by work on chrysanthemums in Japan, survival rates vary even on different varieties of the same species is another factor to be considered. *Aphis gossypii* for example has been demonstrated to totally out compete *T. palmi* on eggplant (Kawai 1983) and may in fact be beneficial in this situation. Predation and parasitism both cause reductions in *T. palmi* populations particularly where insecticide input is low.

7. CONTROL OPTIONS FOR THE CARIBBEAN REGION

Observations in the Caribbean and elsewhere suggest that it is uneconomical to attempt control of *T. palmi* when population levels are already high. Control thresholds for the region must be determined. Careful destruction of infested material and high levels of sanitation are necessary in reducing overall population density which should be minimized from very early in the crop cycle. Rigid seedling management and high levels of field sanitation are imperative. Showery reductions in Trinidad, and overhead irrigation as a method of control needs to be assessed. The islands are often windy and cultivation is largely in open field. Invasion reduction is therefore difficult to achieve at the level of the individual farmer. The entire

farming community needs to address the problem of over all density reduction.

Ultra violet absorbent polyvinyl mulches may not be affordable to the many small growers in the region. The low densities of *T.palmi* recorded on water melon in Trinidad and the work on chrysanthemums in Japan suggest that some work on varietal selection should be conducted. Biological control through augmentation of natural populations of enemies, or introduction of exotic species should be encouraged in light of the dismal failure of insecticide application as a control method. The population ecology of the pest must however be carefully studied to ensure that the natural enemies being proliferated are sufficiently specific, so as not to upset the balance between *T.palmi* and highly competitive species like *A.gossypii*.

Chemical application is clearly not the best method of control and can not operate as a single control strategy. The genetic nature of *T.palmi* with respect to cholinesterase activity suggests that insect growth regulators, anti-feedants and sterilants may be more effective than toxicants in reducing pest density. In addition these may be more compatible with natural enemy populations.

8. SUMMARY AND CONCLUSIONS

Problems associated with *T.palmi* result from:

1. its wide host range;
2. its rapid rate of increase at Caribbean temperatures;
3. its devastating effect on high value crops;
4. its low susceptibility to insecticides;
5. the fact that it must be controlled at a low density level;
6. the risk of contamination due to post harvest pests and insecticide residues; and
7. the quarantine significance of the pest even at latitudes beyond where it establishes in open fields.

The monumental task of managing this unwelcome arrival to the region can not be postponed. Biological control, soil and water management, phytosanitation and varietal selection may form an integral part of a totally integrated management strategy. Studies in population ecology should provide better understanding of factors which regulate pest density. These factors may then be manipulated to ensure that proliferation of this most dangerous pest is minimized. The implications for trade are such that all Caribbean agriculturists must cooperate to prevent introduction to those countries where *T.palmi* is not yet present, and to effectively control it in countries where it has already become established.

TABLE 1: *Thrips palmi* densities on melongene leaves
1989-1990*

Date	Location	Range insect/ leaf	Average density/ leaf	Density/cm ²
June 89	Aranguéz	212-270 14-23	243.2 18.2	0.405 0.033
	Carapachaima	31-113	72.0	0.172
Sept. 89	Aranguéz	0-6	1.3	0.002
Oct. 89	Las Lomas	0-7	3.4	0.012
Feb. 90	Aranguéz	23-479	148	0.925
June 90	Aranguéz	0-25	23.4	0.19

* All crops were treated with chemicals

TABLE 2: *Thrips palmi* densities on cucumber leaves
1989-1990*

Date	Location	Range insect/ leaf	Average density/ leaf	Density/cm ²
Feb. 89	Arima	283-548	414	-
	Bamboo	150-725	265	-
	Centeno*	283-518	379.7	1.242
Oct. 89	Las Lomas greenhouse	190-419	283.8	1.464
	Las Lomas open field	0-7	1.4	0.007
Feb. 90	Aranguéz	0-3	1.2	0.064
June 90	Aranguéz	1-81	35.4	0.45

* unsprayed

TABLE 3: Chemicals used by farmers against *Thrips palmi* (Kary) in Trinidad 1989*

Actellic (primiphos methyl) O.P.
 Basudin (diazinon) O.P.
 Carbamult (promecarb) carbamate
 Chlordane, chlorinated hydrocarbon
 Dicarzol (formetanate) carbamate
 Dimecron (phosphamidon) O.P.
 Elsan or cidal (phenthoate) O.P.
 Folimat (Omethoate) O.P.
 Hostathion (triazophos) O.P.
 Karate (PP321) pyrethroid
 Kelthane (dicofol) chlorinated hydrocarbon
 Kilval (vamidothion) O.P.
 Lammate (methomyl) carbamate
 Neuron
 O funack (pyridaphenthion) O.P.
 Padan (cartap) nereistoxin
 Rogor 40 (dimethoate) O.P.
 Scipio (cypermethrin and ethion) Pyrethroid and O.P.
 Selecron (profonofos) O.P.
 Sevin (carbaryl) carbamate
 Tambo (cypermethrin and profonofos) pyrethroid and O.P.
 Tameron (methamidophos) O.P.
 Vydate and Vydate L (oxamyl) carbamate

TABLE 4: Natural Enemies Recorded for *T. palmi*

Location	Reference
Eulophids	
Ceraninus sp.	Thailand Hilrose, 89
Ceraninus sp.	Unsprayed fields, Japan Hilrose, 89
Anthocorids	
Unidentified	Trinidad Jones, 89
Orius sp.	Japan Kajita, 86
Orius sp.	Martinique Ryckewaert, 88
Orius sp. B	unsprayed fields, Japan Hilrose, 89
Orius maxdentex	India Kumar & Anatha, 84
Orius similus	China Wei et al, 84
Carayonocoris indicus	India Kumar et al, 84
Mites	
Amblyseius mckenziei	Japan Kajita, 86
A.obinawanu	Japan Kajita, 86
Lasioseius sp	Thailand Po-young Lai, 89
Fungi	
Entomophthore sp	Thailand Po-yong Lai, 89

*No significant effect observed on thrip population

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identification of specimens from Trinidad, Antigua and St Christopher and Dr L. Sealy for translating the French documents. Finally I must acknowledge the patience demonstrated by support staff of the Entomology Unit, Central Experiment Station, in scoring densities of *Thrips palmi* and the typists M Marting and J Ruiz.

DISCUSSION

Baker: History of control by biocontrol has not been successful. There are general predators but these tend to work only at high levels and above economic threshold levels. There are 1-2 parasitoids but they are not very effective. The best approach may be biopesticide. Three fungi have been isolated from thrips not *Thrips palmi* - *Verticillium*, *Bauveria* and *Hertucella*. CIBC is keen to try and develop these. Contacts have been made with an entomology department in Holland with the hope of getting a student to do some trials next year. The area of micro-pesticide is a coming thing and should be addressed. If we do not start this work in the region we will be buying it from abroad just as we now buy chemicals and maybe buying something which has been found in the region. Much of the work is within the technical ability of persons in the Region. At the moment CIBC is placing much emphasis on micro-pesticides programme FAO and USAID are looking at locusts from Africa.

Pollard: UWI is developing capability in microbial control.

Rhodes: Entomogenous nematodes are being used by CARDI for the control of citrus root weevils in Jamaica, Barbados and Dominica

HARMONIZATION OF PESTICIDE LEGISLATION IN THE CARIBBEAN

Ronald M Barrow
Ministry of Food Production and Marine Exploitation
Trinidad & Tobago

The concept of the harmonization of pesticide legislation and the registration process in the Caribbean is not a new one and has been under consideration for more than 10 years. If implemented it would result in a set of standards which are internationally agreed upon and which therefore could be used for submissions for registration for countries throughout the region. In 1983 the issue was well ventilated at a meeting jointly sponsored by IICA and the Ministry of Agriculture of Trinidad and Tobago in Port of Spain, Trinidad. Little has happened since the meeting. There has been limited development of the necessary infrastructure to properly manage pesticide use in the Caribbean. Bates (FAO) Consultant conducted a survey of eight countries in the region in January 1989 and although there is enabling legislation and pesticide control Boards in seven of these countries, there is only one trained registrar, no trained inspectors, and suitable laboratory facilities are limited.

Given the likelihood for the continued increase in the need for pesticides for the production of acceptable food and fibre to feed the increasing population predicted for the region and to take advantage of the export markets now available it is imperative that an effective pesticide control scheme is in place.

It is felt that it should not be difficult to harmonize pesticide

legislation in the Caribbean region to bring it in accordance with the FAO recommendation even though several countries already have enabling legislation for the control of pesticides. The experts agree that the most important and urgent needs could be met by the harmonization of registration requirements. In the Caribbean when there is either no scheme or the scheme is under consideration for updating there is an opportunity to establish some conformity in such laws. Where regulatory schemes exist in neighboring countries then much benefit and saving could be achieved by some form of collaboration.

The harmonization of the data requirements in adhering to the FAO Code of Conduct on the use and distribution of pesticides should address the following:

Quality Assurance - Formulation Analysis: In order to define a pesticide, it is necessary to have clear accurate and precise details of its chemical and physical properties in terms that can be measured. Some of the descriptive characteristics and certain properties which influence mobility and degradation of a pesticide are very important in predicting its environmental behavior. It is necessary to ensure that the marketed product complies with the compositional statement made at the time of registration. Facilities to undertake formulation analysis are lacking into the region. Given our limited resources it may be

useful to establish regional laboratories to undertake such analyses.

Efficacy Data:

Registration authorities have to assess the efficiency and crop safety of new pesticides in order to evaluate the benefits to be obtained from their use. These benefits have to be weighed against the potential hazards from the use of a new compound with the decision in granting registration incorporating a risk/benefit analysis. It is necessary sometimes to register compounds that are banned or restricted in metropolitan countries.

Efficacy data should be supplied by the registrant. Local trials should preferably be carried out but if this is not possible the registrant should supply results from trials conducted against the same pests in the same or similar climate conditions preferably using internationally accepted test protocols.

Efficiency data should include effects on beneficial organisms.

Toxicological Data:

I do not believe that the resources are available in the Caribbean to undertake a comprehensive evaluation of the toxicological data that is normally available as part of a registration package. The registrant should be required to provide documented evidence that the pesticide is registered in a country which has a sophisticated scheme. The FAO guidelines for Registration and Control of Pesticides detail the types of toxicological tests which are normally required.

Residue Data:

The generation of this data is relatively costly. Most countries in the region will not be able to bear these costs. Hence the reason for the establishment of regional laboratory to undertake residue analysis. There is precedence for this. In 1971 a pesticide residue laboratory was set up at UWI to service the region. This laboratory is no longer in existence.

The registrant must be asked to furnish results of residue trials carried out either in the country which registration is sought or in countries with a similar climate and similar crops so a pre-harvest interval can be set. Good Agricultural practice (GAP) can reduce the need for pesticide residue analysis and the process can be made less cumbersome with a reduction in the number of active ingredients available.

Environmental Risk Assessment:

The potential effects of pesticides on the environment are of great importance with such effects having to be carefully weighed as part of the registration process to avoid lasting damage to be beneficial, non-target organizations, soil, water etc which could affect the quality of life.

Where the used pattern is known reasonably confident evaluation can be made of the environmental effects of a pesticide product.

Guidelines have been developed by FAO on the environmental criteria for the registration of pesticides. This aspect also of the registration can be quite costly.

Labelling Requirements:

The use of pictograms developed by GIFAP/FAO to be used on labels is recommended.

Enforcement:

It is necessary to train inspectors to carry out inspections of sales premises and how to take samples for analysis if there are such facilities or access to such facilities.

While it is not recommended that short cuts should be taken when considering whether or not to register a compound it is clear that due to the considerable amount of resource and expertise required to operate a comprehensive scheme such as that recorded by FAO an adequate system can only be developed in the immediate future by clear collaboration between the Governments of the region and the Registrars of Pesticides once they are appointed. Avenues and procedures for ensuring such cooperation I hope will be explored through project proposal made to FAO - this year 1990 - for the implementation pesticide registration and control in the Caribbean.

DISCUSSION

Brathwaite: Harmonization of pesticide legislation is a long standing issue in the Caribbean. In 1983, a meeting was held in Trinidad to discuss pesticide registration and harmonization. There was an agreement on need for common registration process. The difficulty is that

pesticide is related to Public Health, Veterinary and other interest groups. The decisions arrived at in the meeting were not binding on the countries since the Plant Protection Directors at the meeting did not represent the political Institutional Body that dealt with pesticides registration. The Registration is usually under the Ministry of Health therefore, institutional problems of how a group representing agriculture agreed to a set of procedures that may not be binding on another Ministry or a Government and where agriculture may be in some cases the minority voice in the process. PAHO/FAO have had initiatives in this area. PAHO operating from regional office in Mexico has been seeking to do some harmonization of pesticide requirements. The initiatives have not really come together in a concrete way coming from the two different angles - Health and Agriculture. We need to get the Health and Agriculture people together get the people who make the decisions. The registrars of the Pesticides Boards should come together and make a decision. There will be some problems and

perhaps CARICOM should assist on this issue.

With respect to the question of efficacy data, this is not easy to control but where agencies are required to provide data for registration they will do it. With respect to residue analysis it is required but some countries do not do routine analysis because it is expensive and given the number of samples to analyze, this tend not to be routine. We can learn from other countries and use a networking approach. We can benefit from other countries in the region for example Martinique and Guadeloupe.

Barrow: Pesticides Control Boards fall either under Agriculture or Health but in most cases the PCB is in the Ministry of Agriculture or Environment. Use of CARICOM in the registration process is well taken. This item should go to the SCMA because it appears that the political will is missing. How does one motivate the political will?

Pollard: The generation of toxicological data is not beyond the capabilities of the Caribbean. There is a pesticide laboratory in Jamaica attached to

Zoology Departments of the UWI. I do think that they have the capability to do this. There is also the CEHI which can do pesticide residue analysis.

Barrow: The laboratory in Jamaica, is largely involved in residue analysis not toxicology. CEHI in St Lucia have recently received some grant from GTZ and are starting environment work on pesticides and link up with Trinidad with regards to residue analysis. They will be an avenue for environmental risk assessment.

Alleyne: There are difficulties with doing work on efficacy. Manufactures feel that the size of market does not make it economically feasible to conduct specific studies on efficacy for such a small market in the Caribbean. The problem of harmonizing pesticide is difficult because different Ministries deal with different areas of pesticides and pesticide contamination. It is extremely difficult to come up with a complete package for any harmonization.

Jones: Based on the above observation, it is suggested that CARICOM be given the responsibility for management of pesticide.

Perhaps go the USA way and set up an EPA.

Barrow: The national agencies can be in the Ministries but a regional body can be responsible for pesticide management/information dissemination. A role that can be played by CARICOM.

Gumbs: The Secretariat will be pleased if requested to convene such a meeting just as it did with veterinary who had similar problems relating to Public Health and Agriculture.

Alexander: Much work has been done in the OECS relating to harmonization of legislation. The network began as a Windward Island initiative and has spread to the OECS.

CEHI has been assisting OECS in residue analysis work and there are plans to work on a banana pesticide project which involves residue analysis. The question is how much can CEHI do. Monitoring may be difficult since some islands have only limited laboratory facilities for residue analyses but trained personnel are limited and this meeting can come up with a recommendation on this question.

Henry: The question of harmonization is very important. Pesticide dealers have interest only on the sales. If they cannot enter one island then they try another.

Rhodes: The Caribbean is considered a dumping ground for banned pesticide. The FAO has developed a principle and system of prior inform concert. What is the status of that?

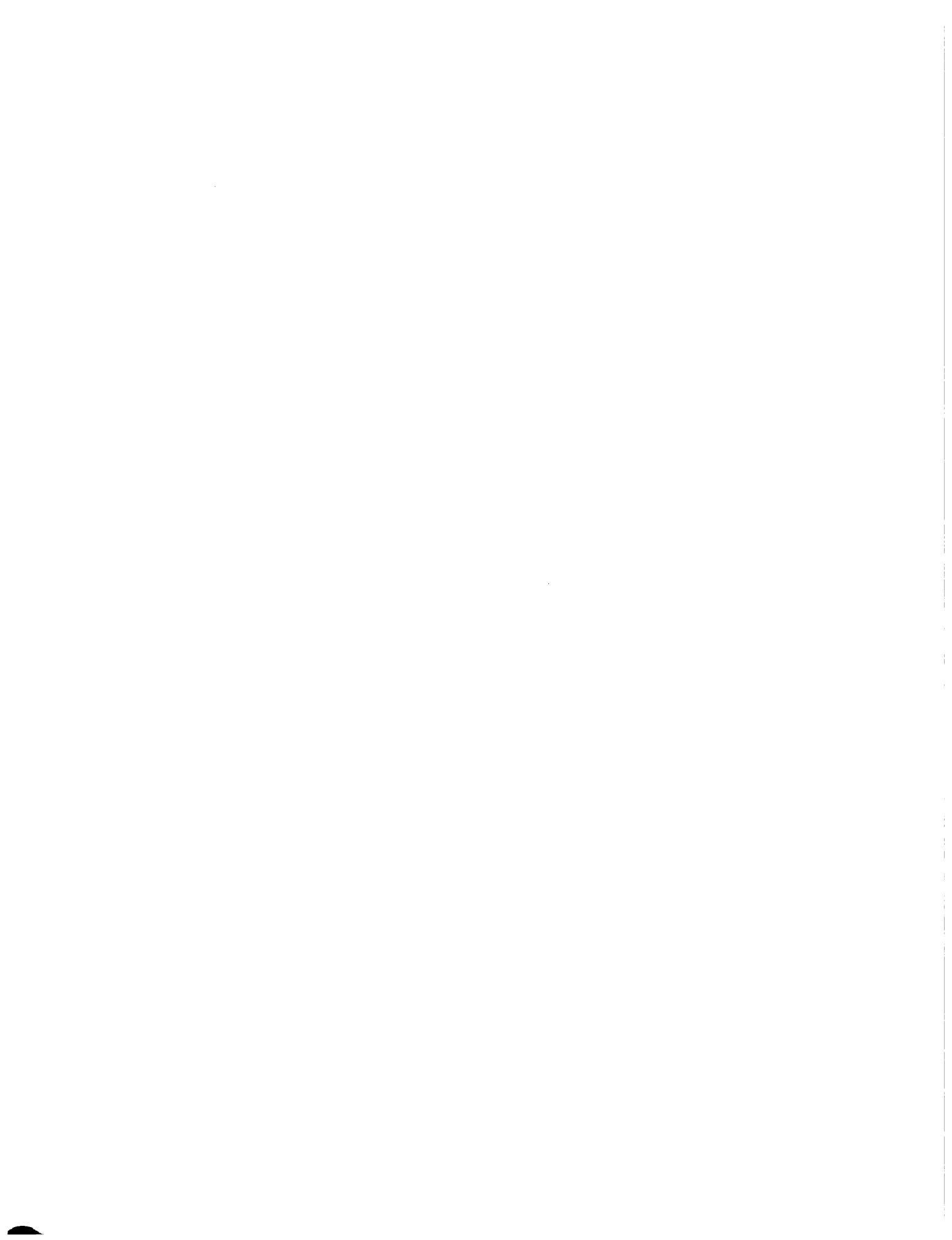
Barrow: The system is in place. The countries have to notify FAO as to the person the information goes to. Also the countries inform FAO as to the chemicals they wish to ban or restrict. The information comes to you once the decision to accept it is yours. A risk benefit analysis has to be made since the situation in countries are different. Socioeconomic conditions have to be taken into consideration before the pesticide is allowed in.

Ambrose: The harmonization process is active in the OECS. The countries meet every year to discuss common problems and collaborate on solutions. At the last meeting, two important decisions were taken (1) to send all legislation on Pesticide to the OECS Secretariat to seek

assistance in the harmonization process; (2) to examine a report on a retreat tabled by the Pesticides Control Board in St Lucia and to

comment on it in an effort to develop harmonized procedures in pesticide management in the OECS.

COUNTRY PAPERS



REPORT ON PLANT PROTECTION ACTIVITIES HAITI

Henry Turenne
Ministry of Agriculture of Haiti

1. ORGANIZATION

The plant protection service is integrated in the Plant Production Direction of the Ministry and is concerned with crop protection and plant quarantine activities.

In Port-au-Prince, the main city of the country, there are two quarantine posts: airport and seaport. In addition, there is one post in Cap-Haitien the second city and one in Port-de-Paix but no quarantine inspectors are in place at these two last cities.

Between 1985 to 1987, a Crop Protection Project financed by USAID supported the plant protection service in the execution of crop protection and plant quarantine activities but this project has ended because of lack of funding.

2. MAJOR PROBLEMS IN CROPS

2.1 Sugarcane: Sugar Cane Smut (*Ustilago scitaminea*)

Observed for the first time about 1980 in Leogane, this disease has spread in all the main regions of sugar production. Control measures are through the selection of tolerant and resistant varieties. In Leogane 20 varieties tolerant or resistant to smut were selected after artificial inoculation.

2.2 Coffee: Coffee Rust (*Hemileia vastatrix*)

This disease was observed in 1988 at Dondon in the north of the country and in other zones of coffee production. Affected varieties are typica, caturra and bourbon. Technical assistance is being received from FAO for the determination of the fungus evolution cycle.

Also there is a coffee revitalization project financed by USAID being executed by IICA in two zones (Jacmel and Beaumont) which includes control measures for yellow rust.

2.3 Cashew nut: Cashew nut Anthracnose (*Gloesporium sp*)

This is found in the north-east, north and Plateau Central. Control measures consist of selection and multiplication of some varieties for disease tolerance.

2.4 Fruit Fly (*Anastrepha obliqua*) on mangoes

As a result of USDA ban on the use of EDB, hot water both is being used by the private sector as a control measure.

DISCUSSION

Kellman: What is the position with regards to the organization of plant quarantine?

Turenne: Assistance is required for improving the system in the country.

REPORT ON THE (*BACTOCERA*) *DACUS DORSALIS* COMPLEX SPECIES SURINAME

Rudy Huiswoud
Agricultural Experiment Station, Suriname

1. INTRODUCTION

Following the USDA identification in 1985 of the fruit fly found in Suriname as *Dacus dorsalis*, and then *Dacus occifietalus*, a set of activities were undertaken by the Ministry of Agriculture in Suriname. Presently, the fruit fly is described as *Dacus dorsalis* complex.

Fruit sampling activities were intensified in 1986 to detect the distribution of this fruitfly and to have an indication of its host range. On July 12-13, 1988 a meeting was held in Suriname in collaboration with the IICA to analyze the status of the *Dacus dorsalis* complex species.

A TCP project proposal was submitted to the FAO and on January 1989 the FAO Oriental Fruitfly Survey and Detection Project was initiated. FAO committed US\$213.000 for that project and countries included were Suriname and Guyana.

A workplan for joint actions for detections and control of the *Dacus dorsalis* complex species was formulated. The major participants were FAO, USDA/APHIS/PPQ, IICA MINAG Brazil and MINAG Suriname. This workplan became operational when two 4-wheel Toyota jeeps from Brazil were officially handed over to Suriname in August 1989. Up to May 30, 1990 about 405 Jackson traps baited with methyl-eugenol were placed in the field. These materials were donated

by USDA. To support the detection and host plant survey a public awareness programme was started and this consisted of the distribution of a flyer and a radio program with three broadcasts.

A number of factors have affected the implementation of the program. There was renewed guerilla activities in the interior thus making servicing of the traps impossible. Mrs Muller, the Project Leader was out of the country pursuing a short training course at the University of Sao Paulo in fruit fly identification. In addition, the USDA invited the entomologist and her assistant to attend a *Dacus* eradication campaign in Los Angeles.

A pilot eradication project considered to be of importance to an eradication program was initiated.

2. TAXONOMY AND CARAMBOLA FRUIT FLY IDENTIFICATION

Within the TCP project Dr L Hancock was assigned to Suriname as a consultant to study the taxonomy of this *Dacus dorsalis* complex species. He identified it as the Carambola fruitfly and the major hosts are *Averrhoa carambola* (sweet cultivars) and *Sygenia javanica* Curacao or java apple. It is morphologically not identical with the oriental fruit fly *Dacus dorsalis* Hendel.

At the fruit fly seminar in 1988 the taxonomic issue was

discussed but the issue still remains unsolved. While awaiting a revision of the identification made in 1985, the fruitfly present in Suriname should be known as the Carambola fruitfly.

3. DETECTIONS AND DISTRIBUTIONS

The maps (Figures 1 and 2) illustrate increased intensity of trapping. To date no Carambola fruit flies have been found in the western district of Nickerie. In the eastern part of the country, this fruit fly was found at the border with French Guyana at Albina. In Washuleo upstream the Corentyne River along the western border with Guyana two fruit flies were caught.

4. THE ERADICATION PILOT PROJECT - CORONIE

The Coronie district was chosen for the pilot project because it is isolated and to use the concept of zero-zoning to stop the further spread to the western part of the country. The data obtained and the experience gathered will be to the benefit of the TCP project to be mentioned later. A regional quarantine post will be located at the experimental farms.

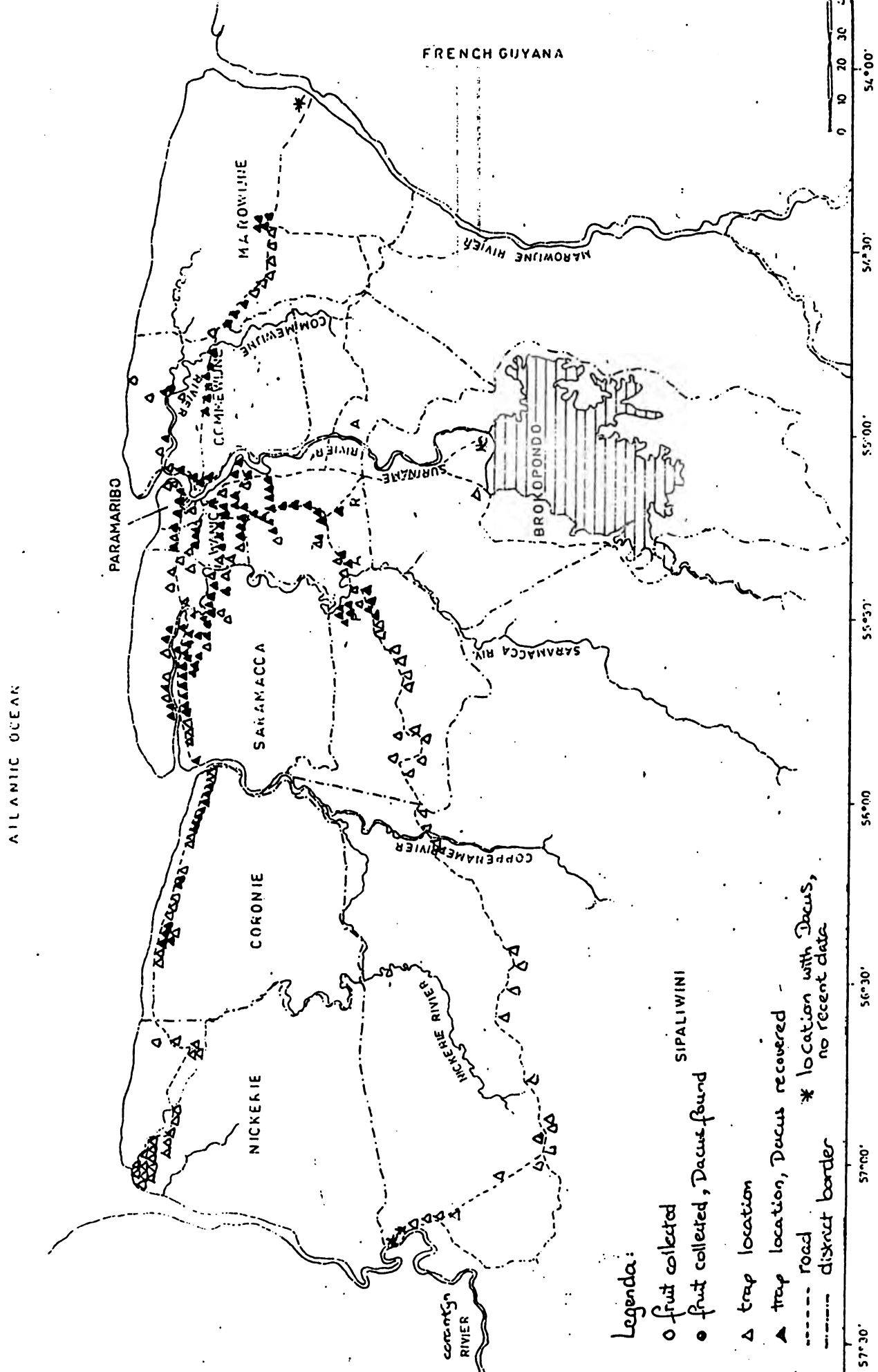
5. REGIONAL (border) QUARANTINE

In the districts bordering Guyana no Carambola fruit flies have been found. However in a district in the border with French Guyana, fruit flies suspected to be Carambola fruit fly were found in the St Laurant vicinity. These flies were being identified.

Cooperation with the French has been intensified and recently a one day discussion on exports was held. In addition, the quarantine office in French Guyana has become more independent and this will favor better cooperation between these neighbouring countries.

6. PROJECTS FOR ERADICATION AND CONTROL

Since May 1989, a draft proposal for a TCP Project "Carambola Fruit Fly Eradication" estimated cost US\$421.500 was submitted to FAO. This project should become operational in January 1991 after a Fruit Fly Seminar to be held in November and December 1990 in Suriname. As soon as sponsoring is clear announcements will be made. At this time, IICA can be informally requested to sponsor and or support such an important meeting.

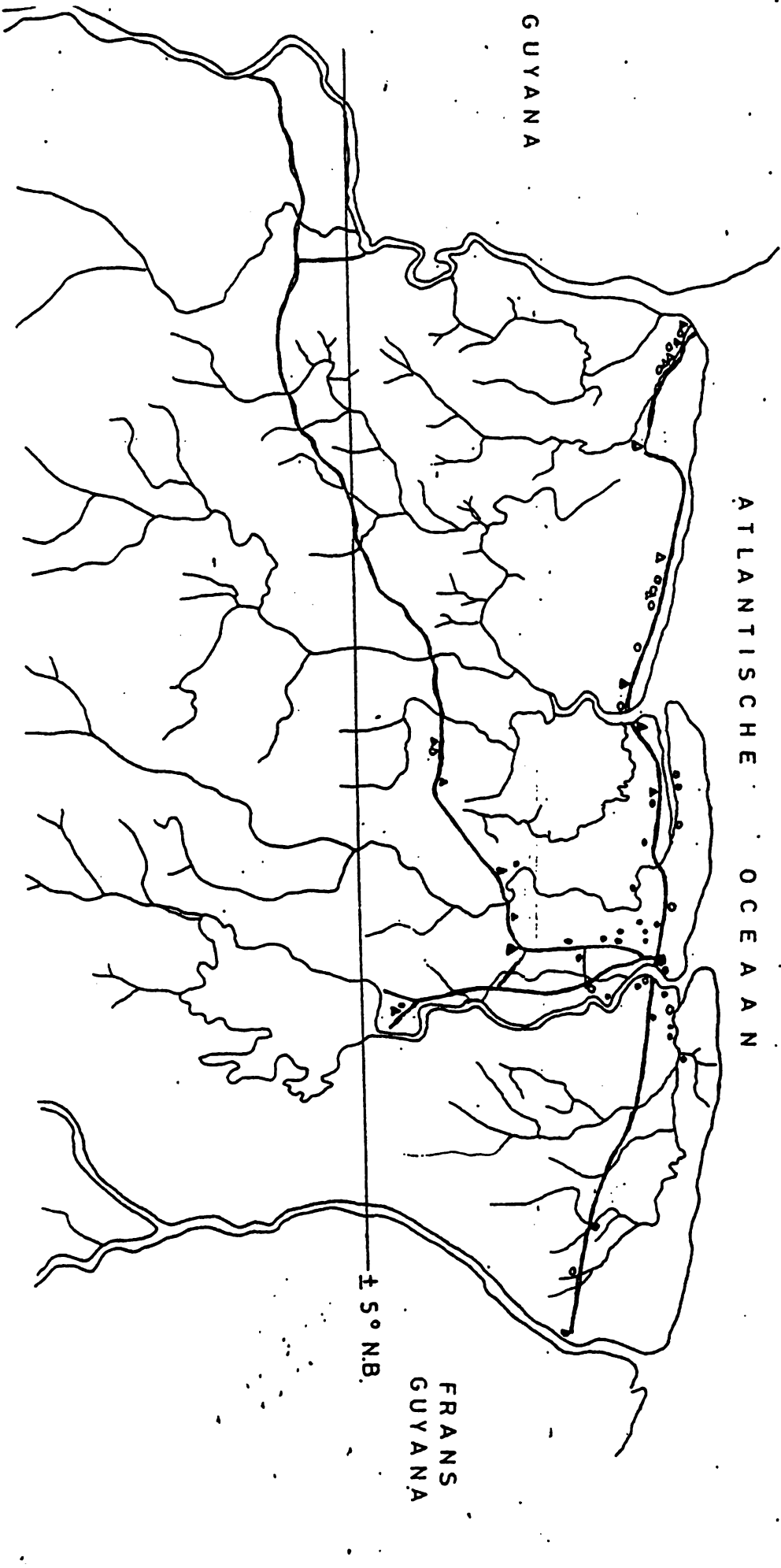


Legenda:

- fruit collected
- fruit collected, Dacus found
- △ trap location
- ▲ trap location, Dacus recovered
- road
- · - · - district border
- * location with Dacus, no recent data

FIG. 1. MAP of SURINAME, showing distribution of *Dacus dorsalis* complex species. May 31, 1990

Figure 2
Location of traps and fruit collection sites;
presence of *Dacus* Fruitfly



- Fruit collected
- Fruit collected - *Dacus* present
- △ trap location
- ▲ trap, *Dacus* collected

DISCUSSION

- Alleyne: What is the basis for considering that the Carambola Fruit Fly is of no economic importance in Suriname?
- Huiswood: Both the Carambola and the java apple are not important crops. It does not attack the export crops like citrus, bananas and other important fruit trees.
- Barrow: Why is Coronie being used as a free zone and not Nickerie. The map shows that *Dacus* is located in South Nickerie.
- Huiswood: Firstly, because of the distance Nickerie is not being serviced often. Secondly, Nickerie is a rice district so the chance of spread is minimal. There is one road to Wasabo and the intensity of moving plants is low. Nickerie can also be declared a free zone but in gathering data for an eradication project you need a district which is isolated. Coronie has no access roads. Eradication is easier there than in Nickerie.
- Barrow: What is the situation in Guyana?
- Kellman: We were working with FAO consultant, it was a joint Carambola project with Suriname. No carambola fruit fly was found.
- Baker: *Dacus* is now called *Bactocera*
- Schotman: In the CPPC database the fruitfly in Suriname will be mentioned under *Bactocera dorsalis* syn *Dacus dorsalis* with additional information saying that in reality it is Carambola fruit fly.
- A year ago IICA, FAO, USDA with Hancock, FAO (Specialist) made a TCP project proposal for eradication of carambola fruit fly. With the difficulties of surveying especially in interior of the country, this project does not seem feasible. No reliable answer can be given as to whether this fruit fly is established or can be established in the forest area on local plants. Present data indicates that most probably this is not the case (only on cultivated crops) and can be eradicated. On this probability it is difficult to get funds. Therefore it is very important that the survey be completed so that a more reliable answer can be given to the question and the TCP can be submitted to donor countries.

Huiswood: Suriname is not in a position to guarantee that the survey will be completed in a short time because of the conditions but will try.

Alleyne: The question of the free zone area selected. It seems that criteria used is the inaccessibility to human beings not necessarily the easy accessibility to the insect and I do not know that the two go hand in hand.

Huiswood: Inaccessibility is the criteria used - it is easy to have a quarantine post since it has one road and the area has a few carambola

and java apple trees. It is a coconut district and the fly would be easily eradicated there by a combination of trapping, malathion spray and cutting of trees.

Schotman: It is necessary to clarify some terms. Free zone is equivalent to eradication. Nickerie is already free so that eradication must be done in an area where it is already established. Coronie district is well chosen for this. FAO has approved some funds to assist Suriname in carrying out the project.

MEETING OF THE PLANT PROTECTION DIRECTORS OF THE OECS

JUNE 12, 1990

BRIEF REMARKS

**Everton Ambrose
IICA Office in St Lucia**

Mr Chairman, Ladies and Gentlemen, I wish to welcome you to our second meeting of the Directors of Plant Protection in the OECS. The first meeting was held in Trinidad and Tobago as an annex to a meeting to discuss an Animal Health and Plant Protection Project for the Caribbean.

This second meeting is also being held together with the Vith Technical Advisory Committee of Plant Protection Directors in the Caribbean. Unfortunately, time will not permit us to discuss all the items we have outlined on the agenda. We must nevertheless continue our consultation process and discuss related matters.

**PLANT PROTECTION INFORMATION DATABASE
DEVELOPMENT (ST LUCIA)**

Judith Mann
Peace Corps, IICA Office in St Lucia

**1. CPPC DATABASE - LOCAL PEST
SITUATION**

The CPPC/FAO Database for Plant Pests and Diseases of Importance to the Caribbean is by now familiar to most members of the OECS. This covers information on the biology, distribution, description, damage, control, references and quarantine risk of pests present in the Caribbean region. It is a quick and efficient method of obtaining the most recent information available on pests of economic or quarantine importance.

In St Lucia, information is being collected from both local and regional sources on pests known to occur on crops prioritized by the Crop Diversification Programme of the Government. Crops covered at the moment are: Sweet Potato, Yam, Ginger, Plantain, Hot Pepper, Tomato, Carrot, Cabbage, Cucumber, Mango, Coconut, Cocoa, Coffee, Citrus, Avocado, Papaya.

The information collected on pests of these crops is entered onto the main database on the IICA computer, augmenting the information concerning St Lucian pests. Summaries of information required can be made by saving selections as a separate file and editing the file using WordPerfect. As an example, summary reports of pests by crop are available. In these examples all the potential pests known to occur in St Lucia for a particular crop are

covered, however, not all of them cause problems here. Success of the database at this point depends on a good understanding of its use and participation by users in criticizing and updating the information it contains.

2. PLANT QUARANTINE DATABASE

2.1 Introduction

The need for a system to manage plant quarantine information has been emphasized by the Ministry of Agriculture Plant Protection Division in St Lucia. At present information from Phytosanitary Certificates is collected and summarized monthly by hand. This necessitates considerable paperwork when reports are being written on the status of plant imports and exports, the number or inspections made and produce confiscated. Development of a Plant Quarantine Database, in which information is organized and easily accessible on the computer, is hoped to increase the efficiency of data management and assist Plant Protection Officers in decision making.

The Plant Quarantine database being developed for St Lucia with the help of Mr Charles Schotman, FAO Regional Plant Protection Officer, is written in dBase III+ to allow compatibility with the CPPC database on Plant Pests and Diseases of Importance to the Caribbean. Information for Certification of

Produce for Export is presently covered, and a section on "Importation of Goods of Quarantine Importance and Pest Interception" is being worked on. It is hoped that both databases will be linked with the CPPC database. This link of information would be useful in providing Plant Quarantine Officers with data for pest interceptions.

2.2 Export Certification

This section of the database is made up of five files:

- a) Main file, with Certificate Number, Date, Country, Commercial Value
- b) Produce being exported
- c) Country names and codes
- d) Produce names and codes
- e) Pest information

Information to be entered on the database is:

1. Phytosanitary Certificate
2. Date
3. Country for Export
4. Container
5. Number of Containers
6. Commercial Value
7. Port Registered
8. Carrier
9. Commodity Type
10. Interception (pests)
11. Field examination
12. Treatment

Output information is as follows:

1. Countries receiving specified commodities
2. Produce exported to specified countries
3. Exports for a given time period
4. List of countries receiving exports from St Lucia

2.3 Produce for Importation

Information to be collected and entered:

1. Date of Inspection
2. Country of Origin
3. Type of Container
4. Number of Containers
5. Commercial Value
6. Port
7. Commodity
8. Commodity Type
9. Packing Material
10. Soil
11. Interception (pests)
12. Treatment
13. Confiscations

Output information is as follows:

1. Total number of imports for a given time period
 2. List of commodities imported from a specified country
 3. List of countries a specified commodity has been imported from
 4. Total number of confiscations
3. PESTICIDE DATABASE

A database will be developed to store information for Pesticide Control. This will be particularly useful in supporting work being carried out by the Pesticides Control Board, for pesticide registration, regulation and information.

Information collected for this database could be broken down into nine database files which can be related by a common field holding the Registration Numbers of the pesticides.

Applications

Registration Number
(for St Lucia)
Registration Number
(EPA - USA)

- Registration Number
 (EEC)
 Name of Applicant
 Date of Receipt
 (of application)
 Date of Decision
 Date of Notification
 Status of Application
 Restrictions on Pesticide
 (yes/no)
- 3.2 Chemical Properties**
- Registration Number
 (for St Lucia)
 Trade Name
 Common Name
 Manufacturer
 Active Ingredient
 % Active Ingredient
 Chemical Class
 Formulation
 Inert Reagents
- 3.3 Biological Properties**
- Registration Number
 Pesticide Grouping
 Pests Controlled
 LD₅₀ Value
 Mode of Entry
 (dermal, oral, respiratory)
 Test Animal
 Antidote
 Tolerance Level
 Residue Level
 Signal Words
 (WARNINGS!)
 Crop
 Restricted Use
 (description of restrictions)
- 3.4 Licenses**
- Registration Number
 (for St Lucia)
 License Number
 Quantity Requested
 Quantity Permitted
 Status of License Application
 Date License is issued
- 3.5 Experimental License**
- Registration Number
 (for St Lucia)
 License Number
 Quantity Requested
 Quantity Permitted
 Status of License Application
 Date License is issued
 Conditions Set
 Report
 (yes/no)
- 3.6 Operators**
- Registration Number
 (for St Lucia)
 Name
 Address
 Telephone Number
 Company
 Year of Course Attended
 Level Achieved
 Date of Initial Registration
 Date of Expiry
- 3.7 Dealer/Distributor**
- Registration Number
 Name
 Address
 Contact Person
 Telephone Number
 Warehouse Location
 Date of Inspection
 Warehouse Approval
 (yes/no)
- 3.8 Quarterly Returns**
- License Number
 Container Size
 (by weight/volume)
 Amount Imported
 (total or number of
 containers)
 Closing Stock
 (same unit as amount imported)

3.9 Health

Person
(by code)
Age
Sex
Chemical
(active ingredient/Brand name)
Date of Accident
Fatality

3.10 Reports

- a) Quantities of pesticide imported - per pesticide
- per active ingredient
- b) Calculate quantity of active ingredient imported
- c) Quantity of different pesticide classes imported
- d) Quantity of different pesticide groups imported

DISCUSSION

Alexander: Has the Pesticide database any facility for recording pesticide accidents, for example: spills, fires?

Ambrose: No, these are not included but will have to be accommodated under a separate file entitled Health and the Environment instead of Health only.

Stemshorn: How is the national data carried into the regional update? Is there a routine to do that?

Schotman: It is the first time that this will be attempted. It is possible to put the national data into the regional update. At the central location a routine will be developed to distinguish between the modifications made in St Lucia, screen the information to ensure that it is not fabricated or irrelevant. The information will be put into the central database using the national data base and the main database will be made available to the countries.

Bernardo: If other countries have made changes that you do not want to put in the central database, how can you allow it to use that?

Schotman: This is to be thought of. It may be possible to have a separate unit only for particular countries.

**PLANT QUARANTINE INSPECTION CERTIFICATION SERVICE
OF ST VINCENT AND THE GRENADINES (SVG)
MODEL FOR SMALL STATE?**

**Philmore Isaacs
Ministry of Agriculture, Industry and Labour
St Vincent and the Grenadines**

1. INTRODUCTION

I have placed a question mark at the end of the title of this paper as I do not wish to convey the idea that the system under which I operate is ideal. However, as a model, it may contain certain features which may be worth the while considering especially if you operate in a situation of scarce funds and limited trained personnel. In creating a system under these conditions one has to strike a balance between what is internationally expected and what is nationally possible without compromising on the technical requirements. SVG as a multi-island mini-state presents some very peculiar problems for Quarantine Inspection Service, but it also offers a number of unique opportunities of innovation. Much credit must be given to one of my colleagues, Mr. Sylvester Lynch for whatever quarantine system we have. Assistance has come, also from the Inter-American Institute for Cooperation on Agriculture (IICA) Everton Ambrose, Food and

Agricultural Organization (FAO)
Charles Schotman, Robert Strong and
Eric White (USDA/APHIS).

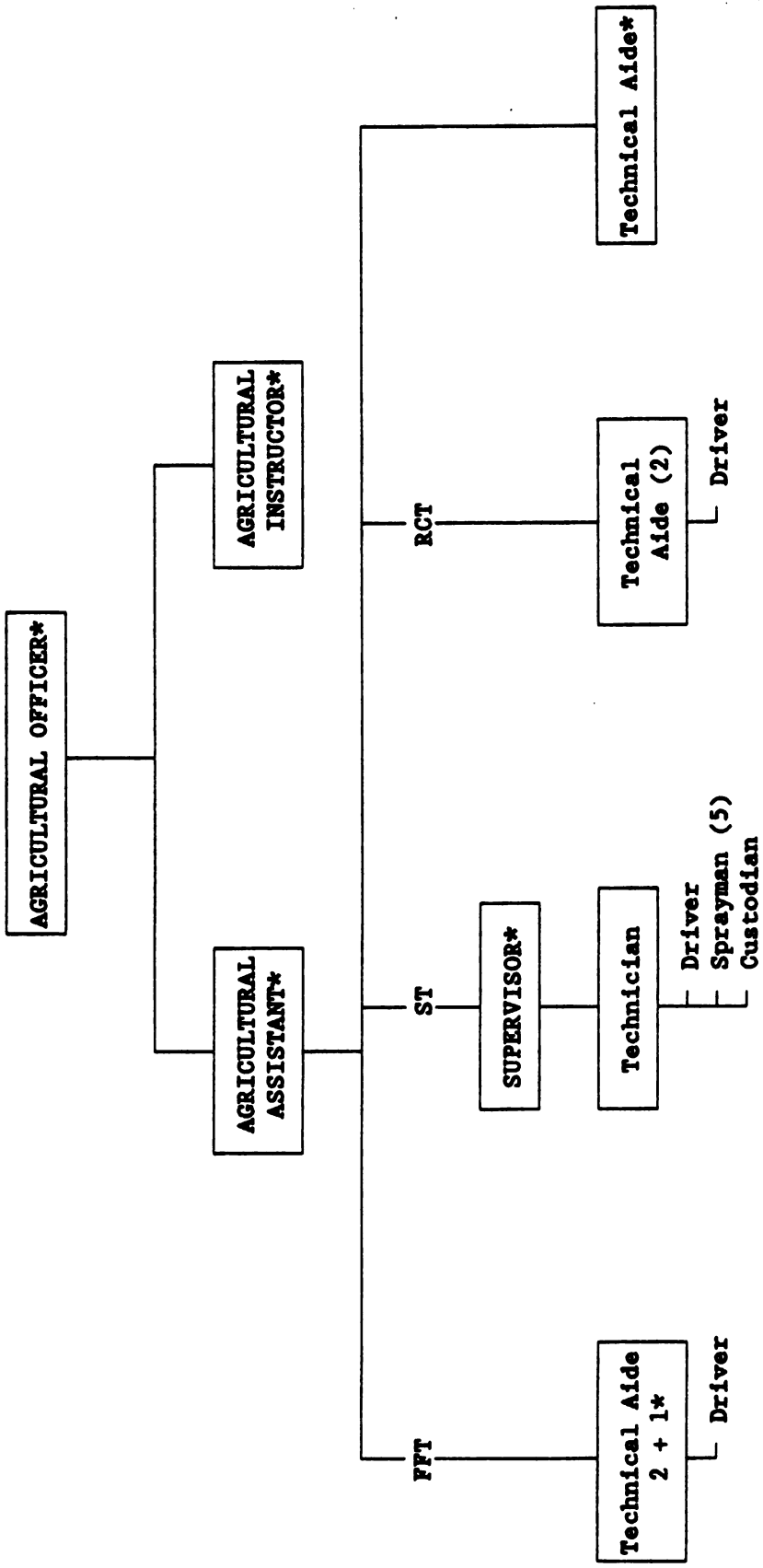
2. ORGANIZATIONAL STRUCTURE

Figure 1 gives an idea of the total number of persons who work in the Plant Protection Unit through which quarantine service is rendered. As you will observe, we have no special quarantine inspector. The duties of quarantine inspectors and Assistant Inspectors are shared by six persons. The Agricultural Assistant (AA) is the only member of the team who has received international training in Plant Quarantine. All others have received in-service training in quarantine inspection procedures. The technical aides except one are graduates of the Agricultural Programme of the SVG Technical College.

There are many international ports of entry in the State (Figure 2). The Unit is expected to enforce quarantine procedures in all of these ports.

**ORGANIZATIONAL STRUCTURE OF THE PLANT PROTECTION UNIT
MINISTRY OF AGRICULTURE, INDUSTRY AND LABOUR SVG**

Figure 1



- * : QUARANTINE INSPECTOR
- FFT : TREE CROP MONITORING/FRUIT FLY TEAM
- ST : PEST CONTROL/SPRAY TEAM
- RCT : RODENT CONTROL TEAM

Figure 2

LOCATION OF INTERNATIONAL PORTS OF ENTRY IN ST VINCENT AND THE GRENADINES.

	SEAPORTS	AIRPORTS
ST. VINCENT	Port Kingstown Wallilabou	E.T. Joshua Airport
GRENADINES		
Bequia	Port Elizabeth	Under construction
Canouan	X	X
Mustique	X	X
Union Island	X	X

X: Port of entry in function

3. LEGISLATION

Three pieces of legislation guide the unit in the performance of its quarantine duties:

- (i) The Plant Protection Ordinance, 1941. This law, though old, provides for the Prevention, Eradication and Control of diseases and pests affecting plants within the state.
- (ii) The exportation of Produce Ordinance 1959 which provides for the inspection of goods leaving SVG and for the issuing of phytosanitary certificate for each consignment.
- (iii) The Prohibition of Bananas and Coconuts Ordinance 1979, 1981 which specifies specific countries from which *Musa* spp and Coconuts may not be imported into the country.

The unit is in the process of updating its legislation and drawing up regulations to accompany this legislation.

4. INSPECTION/CERTIFICATION

4.1 Implementation of the System

Plant Quarantine activities are carried out by six persons of the PPU - the Agricultural Officer who is the supervisor, the Agricultural Assistant, the Agricultural Instructor and three technical aides (Fig 1). Customs Officers play a major role in the operation of the system. The Controller of Customs and Customs Officers are very keen about an effective quarantine system in the country. 17 Customs Officers have so far received national training in quarantine Inspection Procedures. These courses were implemented with assistance from FAO, USDA/APHIS and IICA. Training

courses were attended by both Plant and Animal Quarantine Officers.

ST VINCENT

Three visits are made to the airport daily. These visits coincide with some of LIAT's scheduled flights. Other visits are made upon request from the public or shipping agents when consignments are expected. Customs Officers also notify the Unit of arrivals of consignments. Visits to the sea port is less regular and it depends on traffic. Customs Officers have been given a short list for produce which normally pass through the airport. The list also has an action section which tells the officer if he should release or detain the commodity for the quarantine inspector especially if the produce is not accompanied by a Phytosanitary Certificate. Agricultural cargo leaving the mainland St. Vincent must be accompanied by a phytosanitary certificate before shipping papers are processed. Passenger carry on produce is brought to our office at the Ministry for inspection. Large quantities for the inter-island trade are inspected at the seaport mainly on Mondays from 9 a.m. to 2 p.m. Visits are made to the premises of exporting agencies which have been given stamped phytosanitary certificates because their time of shipment is irregular. These visits are made to determine the quality of the produce being shipped and to make recommendations to the management. Much progress has been made through training, talks and these visits especially with the Traffickers and the Small Business Association. These groups are the main exporters of large quantities for Agricultural produce in the inter-island trade.

THE GRENADINES

The system in these islands relies mainly on the Customs Officers. Bequia now has an Extension Officer who was trained in quarantine. Presently, all the Customs Officers in the Grenadines are trained. All agricultural produce are inspected by customs officers in Mustique, Canouan, Union Island. The officers have the short list as the officers in St Vincent. Whenever they are in doubt concerning any commodity they phone the PPU for advice. Visits are made to these islands occasionally to inspect plants which were allowed into the country and are quarantined on the owners' premises. During these visits talks are given to hoteliers the main importers of agricultural produce. These hotels are given a copy of the short list to guide them in their purchase of agricultural produce from outside the state. Some progress has been achieved through this means as more of the fruits and vegetables have been bought locally in recent times.

4.2 Planting Materials Import Permit

Anyone wishing to import germplasm in the form of cuttings and the like is required to supply the information on a permit form. This is done in duplicate. The Quarantine Officer checks the information against the CPPC/FAO database to see if there is any risk involved before he allows importation of a specified quantity and under what conditions. The Unit is in the process of acquiring a holding facility but this will be mainly for the Ministry's programme of introducing new germplasm in its diversification drive. However, the emphasis will

still be obtaining planting materials from sources which have been certified free of the pests/diseases of quarantine importance.

4.3 Facilities

There are covered bins at the ports for putting confiscated items until the Quarantine Officer inspects and makes a decision on whether to dispose or permit entry. Each officer has a knife and hand lens. The PPU has (3) three vehicles assigned to it. The Agricultural Officer and the Agricultural Assistant are travelling officers and each has a vehicle. The unit has a laboratory where some pest specimens are kept. This is soon to be upgraded.

5. WEAKNESSES/CONSTRAINTS

Legal Framework:

- Customs Officers are not quarantine inspectors
- Daily paid workers such as the three technical aides that we use are not appointed inspectors
- Outdated legislation

Some customs officers are reluctant to take the necessary action on the short list.

International garbage disposal is very difficult to monitor.

6. PROJECTIONS

6.1 Plant Protection Unit and Animal Health and Production Division to undertake cross-training and hence to share the service so that any officer visiting knows what to do with the incoming produce.

6.2 To implement a ship inspection system.

6.3 To develop a declaration form to be filled out by arriving passengers at the Airport. Persons will be required to declare whether they have agriculture produce.

6.4 To have the customs or immigration declaration form modified to include list of agricultural produce (fruits, vegetables, plant, meat and meat products) to be declared. This has been discussed with Customs. In conclusion, whatever model that is adopted for the OECS should be technically sound but realistic taking into consideration the limited financial and manpower resources. The system should be flexible enough to allow for the cross training and cross utilization of persons of other disciplines and the emphasis should be placed on preventative action rather than reaction to crisis situations.

DISCUSSIONS

In view of the nature of the discussion and in the interest of time, the topic "Review of Recommendations of the last Meeting" was discussed also.

Pollard: Plant Quarantine Officers in St Vincent had no authority to board vessels for inspection. There were no legislation in place for this at the time. Has the situation changed?

Isaacs: The law has not been changed but we use what is there and with the assistance of ships' agents we are boarding especially when there are large consignments of fruit from USA and UK.

Schotman: What are the difficulties that you encounter with the disposal of international garbage?

Isaacs: In Union Islands the yachts pay small boat owners to dispose garbage. The garbage is taken and disposed of on any sea coast or in the village garbage dump.

Ambrose: I have asked Mr Isaacs to speak on this topic "Plant Quarantine System", A Model For Small State - the St Vincent and the Grenadines Situation" because I thought that the St Vincent and the Grenadines system could form a basis for discussion for a Quarantine System in the OECS. The country is a small state with many international ports of entry. The hope is that this situation can be examined carefully by the other countries and adapted as necessary to suit their needs.

Alexander: Do you feel that in striking a balance between number of visits to the ports and number of inspectors you have sufficient inspectors to do the inspection?

Isaacs: Under the present system with the Customs Officers playing the present role, the inspectors are sufficient. However, I would like to see the technical aides upgraded to agriculture instructors.

Alexander: St Lucia too has many ports and is a destination for yachts. It is felt that with 3-4 inspectors doing quarantine and pesticide in addition to other crop protection work the number is insufficient. Some areas of your model can be adopted. As for customs assistance, they are aware but the trained ones have moved up to administrative duties or are reluctant to take decisions on their own.

Belle: On the questions of number of inspectors and the number of ports. In Antigua, there are four ports of entry serviced by six inspectors on a shift system. Customs

and plant quarantine have excellent relationship. Customs will not allow anything into the island unless it is examined by a Quarantine Officer.

Francis-Ellis: What is the situation in St Vincent on weekends and public holidays. In Grenada, Customs Officers are not entitled to take a decision on entry of produce. Additionally, disposal of confiscated material is a problem. An incinerator is present at the airport but not at the seaports. Some shipping agents have contacts with persons on the island who take the garbage and dump inland.

Isaacs: Officers work up to Saturdays. No one works on Sundays or holidays except if it is a shipping day for the inter-island trade. With regards to garbage disposal in St Vincent there is an area at Campden Park where garbage is burnt.

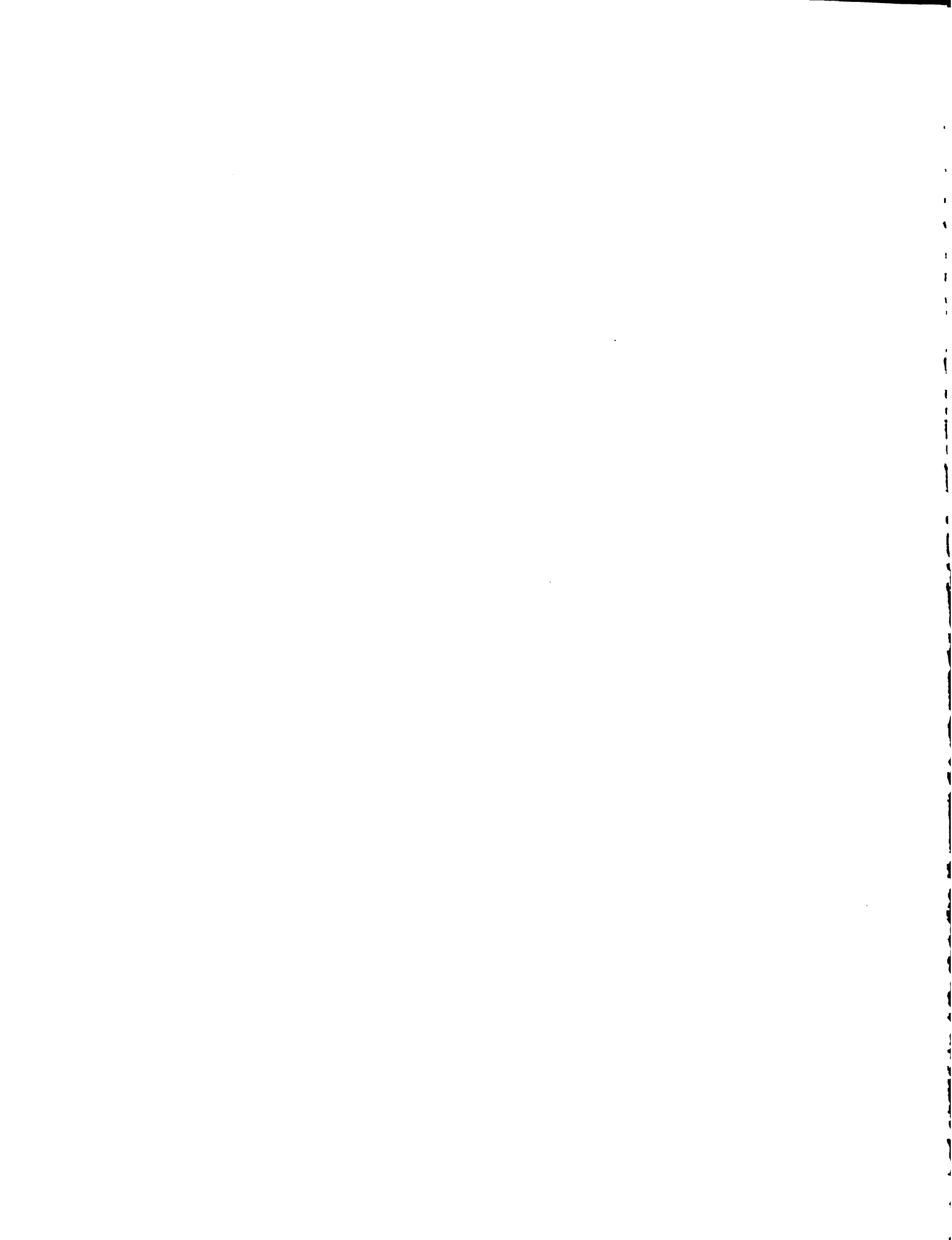
Belle: As far as I know there is no problem with disposal of

international garbage in Antigua. The problem is the security of the confiscated material.

On the question of visits to ports as opposed to persons stationed at the ports, consideration must be given to the volume of traffic at the ports.

Isaacs: There is some concern in that both OAS and OECS are undertaking updating of legislation in some countries. There is need to decide who handles it.

Schotman: The question of uniform regulation is an ongoing activity. It is important to consider this work. We should consider the rest of the countries not only the OECS. The use of legislation from another country as a model is not recommended. Some parts that one country leaves out may be necessary in another country. Dominica for instance left out the establishment of a Plant Protection Board. Such a Board is very important.



INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

IICA Office in St. Lucia, P.O. Box 1223, Castries, St. Lucia
Tel: (809) 452-5482/452-1688, Fax: (809) 453-1224