

Consultative Group on International Agricultural Research

Mailing Address: 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.
Office Location: 801 19th Street, N.W.
Telephone (Area Code 202) 473-8951
Cable Address—INTBAFRAD
Fax (Area Code 202) 334-8750

From: The Secretariat

April 21, 1993
MT/93/17

Mid-Term Meeting, May 23-29, 1993 **San Juan, Puerto Rico**

Agenda Item 11 - Progress Report by the CGIAR Task Force to Examine the **Priorities for International Support to Banana and Plantain Research**

Report of the **Task Force on Banana and Plantain Research**

Attached is the Report of the CGIAR Task Force on Banana and Plantain Research.

At the Mid Term Meeting, the Task Force Chairman, Dr. Henri Carsalade, will present the recommendations of the Task Force. The TAC Chairman will share TAC's views on the report.

Members of The Group will have the opportunity to address issues of concern contained in the report before deciding what action to take in response to the Task Force's recommendations.

Distribution

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Center Board Chairmen
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April 22, 1993

Dr. V. Rajagopalan
 CGIAR Chairman
 CGIAR Secretariat
 The World Bank
 1818 H Street, N.W.
 Washington, DC 20433
 USA



Centre
 de coopération
 internationale
 en recherche
 agronomique
 pour le
 développement

Dear Dr. Rajagopalan,

On behalf of all my colleagues from the CGIAR Task Force on banana and plantain, I have the pleasure of sending you our progress report for discussion at the CGIAR mid-term 1993 meeting in Puerto Rico.

To carry out its assignment, the Task Force received submissions from a wide range of institutions and individuals concerned with banana and plantain research, as well as donors. We received over twenty-five submissions. Individual members of the Task Force visited several national and regional research programs. The Task Force met in France with the Executive Committee of the INIBAP Board of Trustees, and its Director and senior staff; and with the Director General and the Head of the Plant Health Management Division of the International Institute of Tropical Agriculture (IITA). It also consulted extensive documentation. A draft version of this report was discussed with TAC last month and useful suggestions are incorporated in this document. We would like to acknowledge the excellent support we received from all institutions and individuals with whom we consulted in person or by correspondence.

In order to make recommendations to the CGIAR on priorities for international support to banana and plantain research activities and propose future involvement, the Task Force analysed banana and plantain production and consumption worldwide, as well as research capacities and needs. It concluded that this crop is important for smallholders and appropriate for international support.

The Task Force also examined several possible institutional options for CGIAR support. Given the overall financial situation of the CGIAR, and the quality of existing research by several international, regional and national groups, it decided to recommend for the future, international support at the current level, and focused on Musa germplasm-related activities. The Task Force proposes an innovative organizational format at three levels:

- a group of research organizations, from outside and inside the CGIAR system, with a mutually agreed program of global significance on Musa germplasm (a Musa germplasm improvement consortium);

42, rue Scheffer
 75116 Paris
 France
 téléphone :
 (1) 47 04 32 15
 télécopie :
 (1) 47 55 15 30
 télex :
 648729 F

IMP. SIRET
 141 596 270 00016
 RCS Paris B
 141 596 270

- an organization (INIBAP) which will be responsible for the scientific secretariat of the consortium, and facilitate relations between research programs in the areas of Musa germplasm, information, documentation and training;
- a single governing body responsible for CGIAR participation in the consortium and the program of INIBAP.

All of us took great interest in this exercise and look forward to discussing our proposals and the future steps with the CGIAR.

Sincerely yours,



Henri Carsalade
Director General

PROGRESS REPORT

CGIAR TASK FORCE ON BANANA/PLANTAIN

1. INTRODUCTION

The Consultative Group on International Agricultural Research (CGIAR) decided at its meeting in Washington, D.C. in October, 1992, to constitute a Task Force to examine the priorities for international support to banana and plantain research, to outline and assess the options for CGIAR support to banana and plantain research, and to make clear recommendations to the CGIAR. This decision was in response to a 1992 external review of the International Network for the Improvement of Banana and Plantain (INIBAP) which recommended that the CGIAR reconsider its strategy in international support for banana/plantain research, as well as some managerial and programmatic changes desirable within INIBAP. The Terms of Reference, list of members and schedule of activities of the Task Force are attached (Annexes A and B).

The Task Force sought submissions from a wide range of institutions and individuals concerned with banana and plantain research. Individual members of the Task Force visited several national and regional research programs in Australia, France (Montpellier and Guadeloupe), Honduras, Indonesia, and the Philippines. The Task Force also examined extensive documentation. It met in France with the Executive Committee of the INIBAP Board of Trustees, and its Director and senior staff; and with the Director General and the Head of the Plant Health Division of the International Institute of Tropical Agriculture (IITA). The Task Force itself met in Paris at the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD) on 23-24 January 1993, in Washington (four Task Force members) on February 4, in Rome on March 25, 1993 (four Task Force members). A draft version of the report was discussed with TAC in Rome in March 1993, and some very useful suggestions are incorporated here.

After analysing banana and plantain production and consumption worldwide, research capacities and needs, as well as several institutional options, the Task Force concluded that this crop is important for smallholders and appropriate for international support. However, the overall financial situation of the CGIAR, and the quality of existing research by several international, regional and national groups led it to recommend for the future, international support at the current level, on a specific topic, and using a particular type of organizational arrangement.

2. OVERVIEW OF *MUSA* PRODUCTION AND RESEARCH ACTIVITIES

2.1. Musa production

Banana and plantain belong to the genus *Musa*. The edible types comprise a range of natural

hybrids originating from two species. This range and its characteristics are shown in Figure 1. Due to the complexity of *Musa* taxonomy, and the wide spectrum of banana and plantain types, they are referred to collectively as *Musa* species in this report.

In terms of the gross value of production, banana and plantain rank fourth, after rice, milk and wheat (CGIAR, 1992). Total world production is approximately 70 million tons per annum, from some 120 countries. Of this production, 36% comes from Latin America and the Caribbean; 35% from Africa; and 29% from Asia and the Pacific. Of the 70 mt, 10 mt are produced on industrial plantations and 60 mt on smallholdings. Approximately 63 mt are consumed locally and 7 mt (mainly of dessert bananas) are traded internationally. Total production increased by about 15% during the 1980's.

The varieties, production systems and constraints vary greatly from one producing region to the other. Table 2 summarizes the major characteristics of each region. In the humid tropics of West and Central Africa, plantains are a staple food, whereas in East Africa, specific types of highland and cooking bananas are found. In these regions, banana and plantain contribute approximately 25% of total calories consumed. Dessert bananas are grown in South Africa for the local market, and in Cameroon and Côte d'Ivoire for export.

The center of origin of *Musa* species is in the Asia/Pacific region. A wide variety of cooking and dessert types are grown throughout South and South-East Asia and China, predominantly for local consumption. Dessert bananas are grown also in Australia, China and Vietnam for local consumption, and for export from the Philippines, Taiwan, and Thailand.

In Latin America and the Caribbean, there are four basic production systems: the large-scale commercial plantations of dessert bananas for export; the smallholdings of bananas and plantains grown for local consumption and increasingly for export; the smallholder production systems for export dessert bananas; and the special fruit bananas of Brazil (pome/prata) grown by smallholders for the large internal market.

Thus the *Musa* types important in the three main producing regions differ, as also do the constraints to production (Table 3). The problems of dessert bananas for export and bananas for local consumption within one region also differ.

In considering international support for banana/plantain research, it is important to recognize the diversity and importance of quite different types of bananas and plantains in the major production regions, and the consequent differences in production constraints. The CGIAR needs to recognize this diversity, and be alert to the research needs and opportunities it presents.

2.2. *Musa* research

There are approximately 500 scientists engaged in *Musa* research world wide, in 58 countries (some on a part-time basis) (INIBAP, 1992). Almost half of these (221) are located in Latin America and the Caribbean. In other regions, the distribution of *Musa* scientists is: West and Central Africa (74), East and Southern Africa (23), North Africa and West Asia (4); Asia/Pacific (68); Europe (73); and North America (14). The estimated total research expenditure on *Musa* is at least US\$ 70m.

In Africa, several national research institutions (mainly in Cameroon, Côte d'Ivoire, Congo, Nigeria, Uganda and Zaïre) have small research programs on local problems of banana and plantain. A regional program for East Africa is being developed at the Institut de Recherche Agronomique et Zootechnique (IRA7) in Burundi. There is a strong regional program for West and Central Africa based in Cameroon (Centre Régional Bananiers et Plantains - CRBP). IITA also has a comprehensive banana/plantain program (see section 3.3 below).

There are nine active programs in the Asia/Pacific region (Australia, China, India, Indonesia, Malaysia, Philippines, Taiwan, Thailand, and Vietnam). They receive adequate financial support, primarily from national sources. The strongest programs are those of the Taiwan Banana Research Institute (TBRI) and the Queensland Department of Primary Industries (QDPI) and the Queensland University of Technology (QUT) in Australia.

In Latin America and the Caribbean, there is a history of *Musa* research dating back several decades, which has led to several strong national programs in the region (e.g. in Brazil, Colombia, Costa Rica and Venezuela). These programs have shifted emphasis from export bananas to addressing also the problems of smallholder plantain production. These national programs are usually funded by a box tax on exports. Four programs have a regional influence: FHIA in Honduras, CATIE in Costa Rica, CIRAD-FLHOR (ex IRFA) in Guadeloupe, and WINBAN in the Caribbean.

The major *Musa* research effort by an industrial-country supported institution is that of CIRAD-FLHOR in France. There are also significant programs at the Catholic University of Louvain (KUL) and the University of Gembloux in Belgium, the Natural Resources Institute (NRI), U.K., and the International Atomic Energy Agency (IAEA), Vienna and in the Canary Islands (Spain). In the United States, there are individual scientists with long-standing interests in *Musa* at universities in California, Florida, Georgia, Texas and New York. The major private companies involved in dessert banana production worldwide are based in North and Latin America, and some have research activities. A proposal on dessert banana improvement is submitted to the Common Fund on Commodities by I'AO, but its financing is subject to the existence of other sources of funds.

In considering international support for banana/plantain research, it is important to recognize the existence of many research programs, some having a critical mass of researchers and resources, others being small, poorly supported and unable to reach full efficiency.

Compared to other staple crops, *Musa* has received relatively little research attention in the area of germplasm evaluation and breeding. All cultivated bananas and plantains are natural selections. There are several active breeding programs worldwide (primarily at CIRAD-FLHOR, France; CRBP, Cameroon; EMBRAPA, Brazil; FHIA, Honduras; IITA, Nigeria; QDPI, Australia; and TBRI, Taiwan). All have promising results in terms of the potential development of new, disease-resistant, higher yielding and locally adapted varieties. In considering future research support, the CGIAR needs to recognize the research strength in these programs.

The gaps in the present research efforts on *Musa* are :

- (1) The comprehensive collection, conservation, evaluation and utilization of *Musa* germplasm, and the associated study of its co-evolved pests and pathogens and their potential biocontrol agents, especially in its center of origin in South East Asia;

- (2) The full utilization of the wide diversity of *Musa* germplasm in multi-disciplinary crop improvement programs, in order to develop locally adapted, improved varieties for each of the three main producing regions,
- (3) The knowledge of *Musa* based production systems for a better identification of production constraints and for improved technology transfer.

3. CGIAR CURRENT ACTIVITIES IN *MUSA* RESEARCH

3.1. CGIAR Present Activities

The CGIAR recognizes that banana and plantain are important crops and TAC has recommended maintaining current efforts in CGIAR research on these commodities. Initially CGIAR support for banana and plantain was limited to the humid and subhumid tropics of sub-saharan Africa (through IITA's activities). With the incorporation of INIBAP into the CGIAR in 1990 it now includes also Asia/Pacific, Latin America and the Caribbean.

In 1993, it is estimated that the CGIAR will spend about US\$ 3.3m on core funding of banana and plantain (approximately US\$ 2.2m at INIBAP, US\$1.0m at IITA, and US\$ 0.1m at IBPGR). These three centers also receive about US\$ 0.7m in complementary funding. In total this represents less than 5% of the global research effort on these crops, and less than 1.5% of the total CGIAR budget. While mechanisms for coordination exist, there are opportunities for greater synergy amongst the centers and with other partners.

3.2. INIBAP

INIBAP (which was established in 1984) is a small organization with a novel model of operation. It became a CGIAR center in 1990. As a network, INIBAP facilitates linkages amongst the *Musa* research programs of the world. It has a germplasm research program, a crop protection research program, and an information and documentation program. It employs six senior staff in Montpellier and four regional coordinators, based in the main producing regions, making a total of ten senior staff. It has a core budget of US\$ 2.2m and receives an additional US\$ 0.5m in complementary funding.

INIBAP has facilitated the conservation, dissemination and testing of genetic material, increased the research capacity of agricultural research institutions by the provision of genetic material and documentation, helped in a better definition of research priorities, and participated in institution building by increasing the capacity of the national banana and plantain programs. It has also organized several symposia and expert meetings but has done little training.

3.3. IITA

Within a broad program of research in the humid and sub-humid tropics of Africa, IITA has had a long-standing involvement in *Musa* research dating back to the early 1970s. Initially, this comprised studies on the agronomy and physiology of plantains within plantain-based

farming systems. With the advent of Black Sigatoka disease in West Africa in the mid-1980s, IITA expanded its activities to include plantain breeding. IITA now has a comprehensive program on *Musa* improvement, covering breeding, agronomy, plant protection, post-harvest research and socio-economics. Several of IITA's plantain hybrids appear to have resistance to Black Sigatoka and have been released for on-farm testing.

In West Africa, IITA's plantain breeding and agronomy, post-harvest research and some crop protection activities are based at IITA's research station near Onne in eastern Nigeria, with some additional crop protection work in Cotonou, Benin. IITA collaborates in West and Central Africa with CRBP, Cameroon in the evaluation of new germplasm and training. In East Africa, IITA has two scientists conducting *Musa* plant protection activities, primarily pest diagnostic surveys. IITA is expanding its overall program in East Africa, from a base at Namulongue research station in Uganda. It intends to extend its *Musa* breeding activities to East Africa by the addition of a breeder to the staff based in Uganda. IITA's program currently employs four senior scientists and two post-doctoral fellows, making a total of six senior scientists working on banana and plantain in East and West Africa. The total budget for *Musa* research is approximately US\$ 1.3m (US\$1.0m core, \$0.2 complementary and \$0.1m capital expenditures).

3.4. IBPGR

Among other activities over the past decade, IBPGR has supported the collection of key *Musa* germplasm and has facilitated the development of methodologies for safe exchange of *Musa* germplasm, through some well-targeted contract research. More recently, IBPGR has collaborated with INIBAP on *Musa* germplasm collection and conservation activities.

4. PRIORITIES FOR INTERNATIONAL SUPPORT

The Task Force favors international support for *Musa* research, taking into account the existing research potential on the crop, and the high degree of complementarity among the regions, with each having specific advantages that can serve global research objectives. This complementarity argues for CGIAR support for a decentralized program which builds on existing strengths and develops synergies to achieve a whole greater than the sum of the parts. The Task Force believes that the CGIAR should invest its funds to address some of the identified gaps in such a way as to enhance the international relevance of current investments by national, regional, bilateral and multilateral agencies and to leverage other investments.

The Task Force considers that the area where there are major opportunities for impact in the near and medium term from CGIAR-supported research is in *Musa* germplasm conservation and improvement, with the aim of development of new varieties of banana and plantain suitable for use by low-income producers and consumers in sustainable production systems.

The Task Force recognizes the great importance of production systems research and has identified a gap in the knowledge of *Musa* based production systems. In many regions, results of such research can lead to sustainable production increase. However, the Task Force is of the opinion that national and regional institutions, including ecoregional entities supported by the international community, would have a greater comparative advantage to

conduct or coordinate such research.

Given the importance of *Musa* relative to other major commodities, a higher level of investment than the present CGIAR core funding of US\$ 3.3m for *Musa* research could be justified, but in the present financial climate, the Task Force considers it prudent to plan on a similar level of CGIAR core funding for the 1994-1998 planning period. However, the Task Force hopes that several donors will provide complementary funds for limited and well-defined activities.

5. RECOMMENDATIONS TO THE CGIAR

In light of the above analyses, the Task Force recommends that:

- the CGIAR sponsors a global program on *Musa* germplasm improvement and related research, to be undertaken by a consortium of leading research institutions within and outside the CGIAR.
- CGIAR-sponsored organizations focus their programs on (1) *Musa* germplasm-related activities, and (2) information, documentation and training in support of national agricultural research systems (NARS).

The Task Force considered several institutional options by which the above CGIAR objectives could be achieved. Their advantages and disadvantages are given in Annex C. The Task Force's preferred option is described in the following specific recommendations.

5.1. Recommendation 1: CGIAR Sponsor A *Musa* Germplasm Consortium

The Task Force recommends that the CGIAR sponsors the formation of a consortium on *Musa* germplasm improvement and related research, as a collaborative research initiative, consisting of a small number of strong, recognized national, regional and international breeding programs.

The consortium members should work together on a mutually agreed program on *Musa* germplasm improvement of global significance, where each member agrees to take responsibility for a particular component of the program where they have research strength. The results would be freely available on the basis of mutual benefit.

INIBAP would be a key member of the consortium, and would provide the scientific and administrative secretariat of the consortium (see Recommendation 2).

IITA would be a significant member of the consortium and be responsible for the continued implementation of a program on banana and plantain germplasm improvement for East and West Africa (see Recommendation 3).

A common governance mechanism for international *Musa* research would be set. The Board of Trustees of INIBAP would also act as the steering committee of the consortium and govern its activities (see Recommendation 5).

For problems of mutual interest and global relevance which are not able to be supported through the usual national, bilateral or multilateral channels, the CGIAR donors would allocate, through INIBAP, modest funds for collaborative projects submitted by the steering committee of the consortium. It is important that current national and international funding of all consortium members continues, and that the CGIAR collaborative funds are seen only as incremental to existing efforts. (see Recommendation 6).

The consortium concept would be an innovative approach for the CGIAR in funding international agricultural research. It offers the opportunity to add value to existing efforts by the use of targeted international funding, which is complementary to existing national and bilateral activities, while increasing the international relevance of these efforts. Additional suggestions on the consortium are given in Annex D.

5.2. Recommendation 2: INIBAP is a Key Member of the Consortium and the Hub of a Network

The Task Force recommends that INIBAP, as the scientific secretariat of the consortium and as the hub of a network of *Musa* research programs, focuses its activities on (1) *Musa* germplasm-related activities as part of an overall CGIAR strategy for *Musa* germplasm improvement; (2) the strengthening of NARS ability to conduct germplasm-related research on bananas and plantains through information, documentation and training. INIBAP should limit its activities to this and conduct them in close collaboration with its consortium partners and national programs.

As described in recommendation 5, a new Board should be nominated and act simultaneously as the INIBAP Board of Trustees and as the steering committee of the consortium. The Task Force endorses the timing of the Sunset Clause of INIBAP's membership of the CGIAR (to 31 December 1998). The Task Force's more detailed suggestions on INIBAP are presented in Annex E.

5.3. Recommendation 3: IITA is a Member of the Consortium and Focuses on Africa

The Task Force recommends that IITA, as a member of the consortium and as part of an overall CGIAR strategy for *Musa* germplasm improvement, focuses its program on *Musa* germplasm improvement and related activities in Africa. The Task Force endorses IITA's plan to extend its breeding activities to highland bananas in East Africa, a region which is underserved by current efforts. IITA should work closely with national and regionally based institutions, such as IRAZ and ICIPE. In regard to plantain germplasm improvement for West and Central Africa, the Task Force encourages greater collaboration between IITA and CRPB, Cameroon through the vehicle of the *Musa* consortium.

5.4. Recommendation 4: IBPGR Plays an Important Role in *Musa* Germplasm

The Task Force recommends that IBPGR continues its long-standing interest in *Musa* germplasm in close collaboration with INIBAP and the *Musa* germplasm improvement consortium. IBPGR should play a very important role the collection, conservation and utilization of *Musa* germplasm in its center of origin in South East Asia.

5.5. Recommendation 5: A New Governance for INIBAP and the Consortium is set

In order to implement a global program of *Musa* germplasm improvement as outlined above, a new and innovative governance model is required. Reflecting the decentralized nature of the activities and the involvement of a range of institutions within and outside the CGIAR, the Task Force proposes the establishment of a new governing body to replace the existing INIBAP Board of Trustees. This body should be comprised of individuals from the consortium members, a representative of the host country of INIBAP, and CGIAR-nominated members. The Task Force recognizes the need for a balanced composition of the Board to reflect knowledge of banana and plantain production, scientific expertise, management, and familiarity with the international agricultural system.

This new body will have dual responsibility as the Board of Trustees for INIBAP and as the steering committee for the Consortium. The governing body will be accountable to the CGIAR for the implementation of a collaborative research program through the consortium and INIBAP's activities.

5.6. Recommendation 6: Same Level for Future CGIAR Financial Support

The Task Force recommends that average annual core CGIAR funds allocated to banana and plantain germplasm research and related activities over the 1994-98 period remain at about the same level as they were in 1992 (i.e. US\$ 3.3m).

In order to finance the small additional collaborative projects proposed by the consortium members and approved by their steering committee and the changes in the CGIAR centers activities, existing core resources might have to be redirected, and/or additional complementary funding provided by CGIAR donors or other sources of funds.

6. CONCLUSION

The Task Force faced the difficult problem of reconciling two convictions: the need to maintain international support to *Musa* research whilst not calling upon donors to provide additional funding in the present financial climate. This led it to propose a new organizational format at three levels:

- a group of research organizations, from outside and inside the CGIAR system, with a mutually agreed program on *Musa* germplasm (the *Musa* germplasm improvement consortium);
- an organization (INIBAP) which will be responsible for the scientific secretariat of the consortium, and will facilitate relations between research programs in the areas of *Musa* germplasm, information, documentation and training.
- a single governing body responsible for CGIAR participation in the consortium and the program of INIBAP.

The Task Force did not consider its mandate to go into the details of this new model. Some more precise suggestions are made in the annexes. However, we believe that what we have proposed is adapted to the forecasted situation of the next five years, and can help the CGIAR to meet its responsibilities for this major food crop. If the CGIAR is in general agreement with the philosophy and recommendations of the Task Force, the Task Force stands ready to work with the various elements of the CGIAR system in the implementation of this new model for *Musa* research.

Musasacae

Musa acuminata (AA)

Musa balbisiana (BB)

<u>AAAB</u>	<u>AABB</u>	<u>AAA</u>	<u>AAB</u>	<u>ABB</u>	<u>AA</u>	<u>BB</u>	<u>AB</u>
Rare. (New Britain, Papua New Guinea)	Rare. (Bougainville, Papua New Guinea)	Major export banana cultivars (dessert bananas) e.g. Gros Michel and Cavendish types (world wide) East African cooking bananas	Cooking & dessert bananas e.g: Latundan, mysore, pisang raja (Asia) Plantains (West Africa and Latin America) dessert banana e.g. Prata/Rome in Brazil	Vigorous and drought resistant e.g. Bluggoe. pisang awak, saba (Asia/Pacific)	Land race cultivars (Asia/Pacific)	No edible types known (Asia/Pacific)	Widespread but unimportant except lady finger dessert type (Asia/Pacific)

Table 1: Range of banana/plain types

Source: CIRAD/IRFA, France

Table 2 : Banana/plantain production systems by region

	AFRICA (26 Mt)	ASIA & PACIFIC (18 Mt)	LATIN AMERICA & CARIBBEAN (26 Mt)
PRODUCTION SYSTEMS	<u>East Africa</u> - Cooking and beer bananas (AAA triploids, ABB).	<u>Asia</u> - Wide variety cooking and fruit types for local consumption (AAB, ABB, AA, BB). - Dessert bananas (AAA) for commercial production in Australia, Philippines, Taiwan.	<u>Latin America</u> - Dessert bananas (AAA) mainly from plantations for export from Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, Panama. - Plantains (AAB) for local consumption in Colombia, Venezuela, Central America, Ecuador. - Fruit Bananas (Pome/Prata types), Brazil.
	<u>West & Central Africa</u> - Plantain and bananas (AAB) for local consumption. - Dessert bananas (AAA) for export from plantations in Cameroon, Côte d'Ivoire.	<u>Pacific Islands</u> - Variety of cooking and fruit bananas for local consumption (AAAB, AABB, AAB, ABB). - Dessert bananas (AAA) for export from smallholdings in Tonga, Western Samoa.	<u>Caribbean Islands</u> - Dessert bananas for export from smallholdings on most islands (including French territories) ;

Table 3 : Major banana/plantain production constraints, by region¹

AFRICA	ASIA & PACIFIC	LATIN AMERICA & CARIBBEAN
<u>East Africa</u> Black Sigatoka. Fusarium wilt. Banana bunchy top Banana weevil Nematodes Banana streak virus Soil fertility	<u>Asia</u> Fusarium wilt (various races) Black Sigatoka Banana bunchy top Blood disease (Indonesia) Moko disease	<u>Latin America</u> Black Sigatoka Yellow Sigatoka Moko disease Banana weevil Nematodes Fusarium wilt (Brazil)
<u>West & Central Africa</u> Banana weevils Nematodes Black Sigatoka Post-harvest losses	<u>Pacific Islands</u> Black Sigatoka Banana bunchy top Banana weevil Nematodes	<u>Caribbean Islands</u> Black Sigatoka Yellow Sigatoka Banana weevil Nematodes

¹ Low productivity of small-holder production systems is a constraint throughout all regions.

ANNEX A

CGIAR TASK FORCE ON BANANA/PLANTAIN

Terms of Reference

In consultation with INIBAP and other interested parties and relying on materials available from TAC, INIBAP, IITA, IBPGR and other sources :

- a. Examine the priorities for international support to banana and plantain research and related activities;
- b. Outline and assess the options for CGIAR support to banana and plantain research and related activities, including institutional options;
- c. Make clear recommendations to the CGIAR on the two aspects noted above.

Schedule

Draft report to be available by March 1, 1993. Final report to be made to CGIAR meeting, May 24-28, 1993.

Task Force Members

Dr. Al App
Global and Interregional Programs
United Nations Development Programs
One United Nations Plaza
New York, New York U.S.A.
Tel : 1-212-906-5991
Fax : 1-212-906-6350

Dr. R. Bertram
US Agency for International Development
Science & Technology
Office of Agriculture
State Department
Washington, DC
Tel : 1-703-875-4070
Fax : 1-703-875-4639

Dr. T.W.A. Carr
Caroni Ltd.
Research Station
Waterloo Road, Carapichaima
Trinidad, West Indies
Tel : 1-809-673-0027
Fax : 1-809-636-1259

Dr. Henri Carsalade
CIRAD
42, rue Scheffer
75116 Paris
France
Tel : 33-1-47-04-32-15
Fax : 33-1-40-04-30-05

Dr. Gabrielle Persley
Agricultural Technology & Bureau for
Natural Resources Dept.
The World Bank
1818 H Street, N.W.
Room N-6059
Washington, DC 20433
Tel : 1-202-473-0353
Fax : 1-202-334-0568

Dr. W. van Vuure
Ministry of Agriculture
Dept. for Science and Technology
4 Mansholtlaan
Wageningen, 6708 PA
The Netherlands
Tel : 31-8370-77418
Fax : 31-8370-22886

ANNEX B

CGIAR BANANA/PLANTAIN TASK-FORCE

Schedule of Activities 1992-1993

Nov. 92	Consultation by letter to IARCS/other interested parties.
Dec. 92 - Jan. 93	Visits to Musa breeding and research programs by individuals Task-Force members. Desk study of available documentation and submissions to Task-Force.
22-23 Jan.	Task Force meeting at CIRAD, Paris.
25-26 Jan.	Task Force meeting with INIBAP, in Montpellier.
25 Jan.	Task Force visit to CIRAD-IRFA Research Program, in Montpellier.
27 Jan.	Task Force meeting with IITA (at CIRAD, Paris).
25 March	Discussion with TAC in Rome and Task Force meeting in Rome

ANNEX C

INSTITUTIONAL OPTIONS FOR FUTURE CGIAR SUPPORT

In considering the most cost-effective institutional arrangements by which a global program on *Musa* germplasm improvement could be implemented, the Task Force considered a number of options, and analyzed their advantages and disadvantages.

Option 1 : Integration of IITA *Musa* program in INIBAP

Advantages :

- Building up of a strong CGIAR *Musa* research program. One CGIAR center focuses on *Musa*. No problem of incoherence of activities.
- Expansion of scientific capacity of INIBAP through the reinforcement of its scientific program and the addition of an experimental base.
- One center with a global networking activity and a strong regional basis.

Disadvantages :

- Likely to give too much emphasis to this region at the expense of other regions where *Musa* is equally important.

Option 2 : Incorporation of INIBAP into IITA

Advantages :

- Building up of a strong CGIAR *Musa* research program. One CGIAR center focuses on *Musa*. No problem of incoherence of activities.
- One center with a global networking activity and a strong regional basis.
- Reduced costs of governance and administration.

Disadvantages :

- Likely give too much emphasis to Africa, at expense of other regions, where *Musa* is equally important.
- Risk of insufficient involvement and strengthening of NARS.
- Risk of insufficient relations among continents.
- Major change in IITA's mandate. Risk of dispersion for IITA.

Option 3 : Incorporation INIBAP's activities into IITA, IBPGR and eco-regional centers.

Advantages:

- More funds going directly to international research programs.

- Reduced costs of governance and administration.

Disadvantages:

- No global focal point for *Musa* research. Risk of incoherence and dispersion of funds.

Option 4 : IBPGR/INIBAP Association, IITA focus on Africa

Advantages:

- Reduced cost of governance and administration (e.g. shared Board of Trustees, and common financial/administrative services).
- INIBAP gains access to IBPGR's regional offices which can support its regional activities.

Disadvantages:

- Focus may be more on germplasm collecting and conservation than its utilization through breeding.
- Reduced overview of priority *Musa* research needs in different regions.

Option 5 : No change from current situation

Advantages:

- No disturbance.
- IITA continues its work in Africa.
- INIBAP continues its linkage' work with NARS.

Disadvantages:

- Insufficient synergy among research centers.

Option 6 : Consortium, INIBAP focuses on germplasm related activities and relations with NARS, and IITA focuses on Africa

Advantages:

- Give more focus to CGIAR investments on areas of *Musa* germplasm with likely payoff in new technology.
- Strong involvement and strengthening of NARS, especially those which are members of the consortium.
- Focuses range of INIBAP's interests.

Disadvantages:

- Innovative model whose management and accountability challenges are not fully known.

The Task Force considers that option 6 is the preferred option, in that it builds on existing institutions, while also proposes a viable elaboration of the 'network' concept of INIBAP, by the establishment of a *Musa* germplasm improvement consortium (as described above):

ANNEX D

FURTHER SUGGESTIONS FOR THE *MUSA* GERMPLASM IMPROVEMENT CONSORTIUM

In Section 5, the Task Force recommended that the CGIAR donors sponsor the formation of a *Musa* germplasm improvement consortium among several leading *Musa* breeding programs. The Task Force offers the following more detailed comments and suggestions as to its possible implementation.

Membership and Governance

Criteria for membership to the consortium could include the following: a demonstrated record of achievement in *Musa* germplasm research; commitment of financial support to current research programs; willingness to contribute staff, resources, and facilities towards achievement of common objectives; demonstrated willingness to undertake collaborative research and to share the results and the products of research with the international community.

Potential members include:

- four programs located in the main producing regions: CRBP in Cameroon, EMBRAPA in Brazil, FHIA in Honduras, and TBRI in Taiwan;
- two industrialised-country supported programs: QDPI/QU'T in Australia, and CIRAD-FLHOR (ex IRFA) in France;
- two CGIAR organizations: IITA and INIBAP.

In order to set up the consortium, the CGIAR could sponsor in 1993, a meeting of the potential members of the consortium, in order to identify areas of common interest and comparative advantage, to develop a global program and set up a *modus operandi*. INIBAP, as scientific secretariat, could be responsible for the organization of this meeting.

The Task Force proposes the establishment of a new governing body to replace the existing INIBAP Board of Trustees and simultaneously act as the steering committee of the consortium. This governing body might, on occasion, need to avail itself of independent scientific advice.

Role of INIBAP in the consortium

INIBAP should be a key member of the consortium and provide its scientific and administrative secretariat. INIBAP's role could consist in :

- facilitating linkages amongst consortium members with the goal of developing a decentralized but globally-integrated *Musa* germplasm improvement research effort;

- preparing joint decisions for implementation;
- providing scientific and logistic support to the members of the consortium;
- assisting in the delivery of germplasm, technologies and information to national programs, especially in their inter-regional aspects; and
- providing a channel for the funds from the CGIAR donors for the additional collaborative projects of the consortium members.

ANNEX E

FURTHER SUGGESTIONS FOR INIBAP

In section 5., the Task Force recommended that INIBAP as a key member of the consortium and the hub of a network, focuses its activities on germplasm-related research and information, documentation and training in relation to NARS. The Task Force's more detailed suggestions on the scope of INIBAP's future activities are given here.

Germplasm-related activities: INIBAP should make sure the main research gaps are filled out, and have the following global germplasm activities:

- The organization of a genetic resources initiative in the center of origin of *Musa* in South East Asia. In collaboration with existing research institutes of this region and IBPGR, INIBAP should ensure that *Musa* germplasm is collected, conserved, characterized and utilized and made available to *Musa* improvement programs worldwide. This should include a study of the co-evolved pests and pathogens and their potential biocontrol agents.
- The organization of international exchange and evaluation of *Musa* germplasm in order to increase the provision of diverse, naturally occurring, and improved cultivars to national and regional programs worldwide, and facilitating the delivery of new cultivars to smallholders.
- A *Musa* Germplasm Information System, which should play a very important role in the future in collating, analyzing and distributing information on the performance of *Musa* germplasm in various environments.
- In-vitro collections of *Musa* germplasm. There is presently one collection at KUL, Belgium, which is well managed but, for safety reasons, it should be duplicated elsewhere. INIBAP should continue to offer services for the safe movement of germplasm (indexation, multiplication and distribution). However, as demands for *Musa* germplasm have grown, and new indexing techniques have become more widely available, INIBAP should encourage other centers to carry out these activities in close relations with itself.

Information and training: INIBAP's information/documentation services are excellent, and their continuation through a decentralized, regionally-based approach is endorsed by the Task Force. INIBAP's training effort should be emphasized, in relation with other research and training institutions.

Linkages with national programs: INIBAP's interaction with and support to national and regional programs should focus on germplasm activities, information and training related to this area. Through appropriate fora, INIBAP should also assist national programs in the broader definition of research priorities on *Musa*.

Mode of operation: In order to carry out its own scientific responsibilities, and its responsibilities as the scientific secretariat of the consortium, INIBAP will need to have scientific staff outposted with leading *Musa* research programs in each of the producing regions. They will be given global responsibility within INIBAP for leadership in the program area which reflects their region's major constraints and comparative research advantage. Their objective will be to facilitate and enhance the global availability and application of the research results of their region. The priority areas identified by the Task Force for INIBAP's activities are: (1) *Musa* germplasm collection, conservation, evaluation and utilization and associated pest/pathogen variation in Asia/Pacific; (2) *Musa* breeding and evaluation in Latin America and the Caribbean; and (3) pest management (especially nematodes and borers) in Africa. In order to ensure global overview, central clearing house for information and coherence, a minimum amount of scientific staff, information science specialists, and administrative staff are required at headquarters in Montpellier, France.

Administration: The Task Force suggests that INIBAP reduces the proportion of its budget which goes towards administration, and directs a greater proportion towards research activities. Certain administrative and financial services should be sub-contracted to other Montpellier-based research institutions.

Sunset clause: The Task Force endorses the timing of the Sunset Clause of INIBAP's membership of the CGIAR (to 31 December 1998). It suggests that INIBAP includes in its Medium Term Plan measurable indicators of success. The terms of reference of the next CGIAR review of INIBAP should be more tailored to review the network model.

INIBAP Donor Support Group. The Task Force suggests that the INIBAP Donor Support Group (which was established by the INIBAP Charter) take a broader view of the *Musa* research, including the activities of the proposed *Musa* germplasm improvement consortium.