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Item 3.3 of the Draft Provisional Agenda

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Tenth Regular Session

Rome, 8 – 12 November 2004

REPORT ON THE INTERNATIONAL NETWORK OF *EX SITU* COLLECTIONS UNDER THE AUSPICES OF FAO

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I. BACKGROUND

Establishment of the International Network of *Ex Situ* Collections under the Auspices of FAO

1. The Commission called for the development of the International Network of *Ex Situ* Collections under the Auspices of FAO in 1989, in line with Article 7.1a of the International Undertaking on Plant Genetic Resources, because of the uncertainty of the legal situation of *ex situ* germplasm in genebanks, and of the lack of appropriate agreements to ensure its safe conservation.

2. Since the provisions regarding access to genetic resources in the Convention on Biological Diversity (CBD) do not apply to *ex situ* collections assembled prior to its entry into force, the Nairobi Conference for the Adoption of the Agreed Text of the CBD (May 1992) recognized, in its Resolution 3, the need to resolve this issue within the context of the FAO Global System.

3. At its Sixth Regular Session in 1995, the Commission prepared model agreements for adherence to the International Network, noting that the final form of such agreements would depend upon the outcome of the negotiations then underway for the revision of the International Undertaking. It agreed that negotiations with countries that had expressed their willingness to join the International Network should continue, using the model agreements as appropriate.

Agreements with the International Organizations bringing materials into the International Network

Agreements with the International Agricultural Research Centres of the Consultative Group on International Agricultural Research

4. Twelve International Agricultural Research Centres (IARCs) of the Consultative Group on International Agricultural Research (CGIAR)[1] signed agreements with FAO on 26 October 1994, placing plant genetic resource accessions in the International Network.[2] They agreed, in particular, to hold designated germplasm "in trust for the benefit of the international community" and not to claim legal ownership or seek intellectual property rights over the designated germplasm and related information.[3] They also undertook that, "where samples of the designated germplasm and/or related information are transferred to any other person or institution, the Centre

[1] Centro Internacional de Agricultura Tropical (CIAT); Centre for International Forestry Research (CIFOR); Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT); Centro Internacional de la Papa (CIP); International Centre for Agricultural Research in the Dry Areas (ICARDA); International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); International Institute for Tropical Agriculture (IITA); International Livestock Research Institute (ILRI), formally the International Centre for Africa (ILCA); International Plant Genetic Resources Institute (IPGRI)/International Network for the Improvement of Banana and Plantain (INIBAP); International Rice Research Institute (IRRI); The Africa Rice Centre, formally the West Africa Rice Development Association (WARDA); World Agroforestry Centre, formally the International Centre for Research in Agroforestry (ICRAF). Document CGRFA-10/04/11.2, *Reports from international organizations on their policies, programmes and activities on agricultural biological diversity (II): International Agricultural Research Centres of the Consultative Group on International Agricultural Research (CGIAR*), presents an overview of the genetic resources programmes of all 15 IARCs.

[2] The text of the agreements between FAO and the IARCs is available on the Internet at http://www.fao.org/ag/cgrfa/exsitu.htm.

[3] Article 3 of the agreements.

shall ensure that such other person or institution, and any further entity receiving samples of the designated germplasm…" is bound by the same conditions.[4]

5. The agreements were originally concluded for a period of four years and were to "be automatically renewed for further periods of four years unless notice of non-renewal is given in writing by either party not less than one hundred and eighty (180) days before the end of any four-year period".[5] Under the guidance of the Commission, the agreements have been twice renewed, on 26 October 1998, and on 26 October 2002, and currently run until 26 October 2006.

Agreements with the International Coconut Genetic Resources Network (COGENT)

6. The International Coconut Genetic Resources Network (COGENT) is a network of 38 coconut-producing countries,[6] administered by the International Plant Genetic Resources Institute (IPGRI). It has developed a multi-site International Coconut Genebank (ICG), hosted by individual member countries.[7] Agreements (which closely follow the format of the previous agreements with the IARCs) were concluded between the following IGC host countries, IPGRI acting on behalf of COGENT, and FAO:

- India, as holder of the ICG for South Asia (30 October 1998);
- Papua New Guinea, as holder of the ICG for the South Pacific (30 November 1998);
- Indonesia, as holder of the ICG for Southeast Asia (26 May 1999);
- Côte d'Ivoire, as holder of the ICG for Africa and the Indian Ocean (14 October 1999).

7. The Commission, at its Eighth Regular Session in 1999, "expressed satisfaction with the placing of the coconut genetic resources of the International Coconut Genetic Resources Network (COGENT) in the International Network of *Ex Situ* Collections under the Auspices of FAO".

Implementation of the International Network of *Ex Situ* Collections under the Auspices of FAO: use of a standard Material Transfer Agreement

8. In implementation of the agreements bringing their *ex situ* collections into the International Network, the IARCs and the COGENT genebanks use a standard Material Transfer Agreement (MTA) when transferring designated germplasm, which requires a recipient not to claim ownership or intellectual property rights over the designated germplasm and related information, and to bind subsequent recipients by the same conditions.

9. FAO and the IARCs have issued two Joint Statements, on matters arising in the implementation of the International Network and use of the Standard MTA. The First Joint Statement was reported to the Commission at its First Extraordinary Session in 1994.[8] The Second Joint Statement was reported to the Commission at its Eighth Regular Session in April 1999:[9] in it, *inter alia*, the IARCs commit themselves to taking appropriate remedial action, in accordance with agreed procedures, in case of suspected violations of the MTAs.

10. During the negotiations for the revision of the International Undertaking that lead to the adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture, the

[4] Article 10 of the agreements.

[5] Article 11 of the agreements.

[6] As of October 2002.

[7] Each host country aims to conserve and evaluate some 200 of the most important accessions of the region, and provides access to the conserved germplasm and promotes its safe movement to coconut breeders throughout the world.

[8] CPGR-Ex1/94/Inf. 5 Add.1, *The International Network of* Ex Situ *Germplasm Collections: Updating of the Progress Report on Agreements with the International Agricultural Research Centres*.

[9] CGRFA-8/99/7, Progress Report on the International Network of *Ex Situ* Collections under the Auspices of FAO.

Commission, at its Sixth Extraordinary Session in 2001, adopted a Resolution requesting "the preparation of a revised MTA that will, as appropriate, take into account the provisions of the revised Undertaking and support an effective transition". It requested that this be presented to the Ninth Regular Session of the Commission on Genetic Resources for Food and Agriculture."[10]

11. The Commission, at its Ninth Regular Session in 2002, reviewed, amended and endorsed the revised MTA, and recommended that the IARCs adopt it. This amended MTA was to be "without prejudice to the development of any MTA to be adopted by the Governing Body of the Treaty." The Commission also "reviewed the *Steps to be taken to implement the new CGIAR System-wide MTA*, endorsed by the CGIAR Inter-Centre Working Group on Genetic Resources in January 1999, and strongly recommended their full implementation by the Centres". It also "recommended that the IARCs should take appropriate measures, in accordance with their capacity, to maintain effective compliance with the conditions of the MTA, and report on such measures to the Commission at its next regular session". This report is contained in para. 17-20 of the present document.

Preparation for the implementation of Article 15 of the International Treaty on Plant Genetic Resources for Food and Agriculture

12. In Article 15 of the Treaty, "The Contracting Parties call upon the IARCs to sign agreements with the Governing Body with regard to [their] *ex situ* collections." "The Governing Body will also seek to establish agreements for the purposes stated in this Article with other relevant international institutions."[11] In adopting the Treaty,[12] the FAO Conference requested the Commission acting as the Interim Committee for the Treaty to "consult with the IARCs and other relevant international institutions on the agreements to be signed with the Governing Body, in accordance with Article 15 of the Treaty … and prepare draft agreements for consideration of the Governing Body at the first session..."[13] Consultations were accordingly held with the IARCs, and a draft agreement prepared. This was submitted to the Interim Committee at its First Meeting (October 2002), which decided to postpone consideration of the question until its Second Meeting, which will be held immediately following the present Regular Session.[14]

13. The Treaty provides that "Plant genetic resources for food and agriculture listed in Annex I of this Treaty and held by the IARCs shall be made available in accordance with the provisions set out in Part IV of [the] Treaty."[15] Access to such plant genetic resources shall be provided pursuant to a standard MTA, to be approved by the Governing Body of the Treaty.[16] The preparation of the draft standard MTA will be considered by the Interim Committee, at its meeting immediately following the present Regular Session of the Commission.

14. The Treaty further provides that "Plant genetic resources for food and agriculture other than those listed in Annex I of [the] Treaty and collected before its entry into force that are held by IARCs shall be made available in accordance with the provisions of the MTA currently in use

[10] CGRFA-Ex6/01/Rep, *Report of the Sixth Extraordinary Session of the Commission on Genetic Resources for Food and Agriculture*.

[11] Article 15.5.

[12] By Resolution 3/2001.

[13] CGRFA/MIC-1/02/08, *Consultations with the International Agricultural Research Centres of the CGIAR and other relevant institutions on the agreements to be signed with the Governing Body*.

[14] CGRFA/MIC-1/02/Rep, *Report of the First Meeting of the Commission on Genetic Resources for Food and Agriculture acting as Interim Committee of the International Treaty on Plant Genetic Resources for Food and Agriculture,* Rome, 9-11 October 2002, paragraph 17.

[15] Article 15.1a.

[16] Article 12.4.

pursuant to agreements between the IARCs and the FAO. This MTA shall be amended by the Governing Body no later than its second regular session, in consultation with the IARCs, in accordance with the relevant provisions of this Treaty…"[17]

15. Until such time as the Governing Body approves the standard MTA, the IARCs will continue to use the current MTA, subject to any amendments that may be agreed in the interim.

II. PROGRESS SINCE THE NINTH REGULAR SESSION

Updated list of germplasm designated by the IARCs

16. The IARCs have regularly updated the list of designated germplasm, in accordance with Article 2 of the agreements with FAO, which establishes that the list of designated germplasm will be updated every two years. A summary listing of germplasm designated in trust under the agreements is attached, as *Appendix 1*.

Report on the implementation by the IARCs of the interim MTA

17. As noted above, the Commission recommended that the IARCs take appropriate measures to maintain effective compliance with the conditions of the interim MTA, which it endorsed at its Ninth Session, and report to the present session.

18. The Secretariat of the CGIAR System-wide Genetic Resources Programme accordingly surveyed all IARCs holding germplasm in trust under the auspices of FAO. They all report that they are in compliance. As of 1 May 2003, all have implemented the interim MTA.

19. The interim MTA has been posted on all IARC and the CGIAR Web site, and is available in FAO's five official languages. In addition, each Centre informed its partners by mail of the terms of the interim MTA. The International Seed Federation (ISF) and other seed trade organizations were notified of the interim MTA, and requested to inform their membership. In order to further spread a knowledge of the terms of the MTA, IARCs published articles about it in their newsletters.

20. As the Commission requested, the *Steps to be taken to implement the new CGIAR System-wide MTA*, endorsed by the CGIAR Inter-Centre Working Group on Genetic Resources in January 1999, have been fully implemented. Since concluding agreements with FAO in 1994, the IARCs have transferred as many as 700,000 samples with MTAs, including a sizeable portion with the current MTA. They have not encountered any enforcement problems due to the MTA used, nor has any germplasm recipient questioned the legality or enforceability of the MTA.

Agreement with the Tropical Agricultural Research and Higher Education Centre (CATIE)

21. The Tropical Agricultural Research and Higher Education Centre (CATIE)[18] concluded an agreement with FAO, which entered into force on 13 May 2004, whereby it brought its field and

[17] Article 15.1b.

[18] CATIE is a regional Latin American Centre, with headquarters in Costa Rica, dedicated to research and graduate education in agriculture as well as the management, conservation and sustainable use of natural resources. The Centre's regular member countries are Belize, Bolivia, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay and Venezuela. The Inter-American Institute for Cooperation in Agriculture-OEA (IICA) is also a regular member.

orthodox seed collections into the International Network. A summary listing of germplasm designated in trust under the agreements is attached, as *Appendix 2*. The agreement with CATIE is available for the information of the Commission, as document CGRFA-10/04/Inf. 11.

COGENT Agreements: The International Coconut Genebank (ICG)

22. The ICG to date has conserved a total of 244 accessions in its four regional field genebanks, which are part of the International Network. COGENT has to date also conserved a total of 1,416 accessions in national genebanks in 23 countries.

23. Additional accessions were added to the germplasm conserved in COGENT's multi-site International Coconut Genebank (IGC):

ICG for Africa and the Indian Ocean	8
ICG for South Asia	16 15 embryos[19]
ICG for Southeast Asia	2 embryos[20]

24. Negotiations are underway between COGENT and EMBRAPA for Brazil to host the proposed ICG for Latin America and the Caribbean.

25. The development of the COGENT ICG has focused on strengthening regional ICGs, through training and research activities. One coconut breeder and one biotechnologist from each of the ICGs were trained on the use of molecular markers developed by CIRAD and IPGRI and given research grants to characterize their conserved germplasm. This will enable the regional ICGs to eliminate duplicates from the collections. IPGRI and COGENT are publishing a *Manual on Germplasm Health Management*, for distribution to genebank managers and quarantine officers in COGENT member countries, as a guide for more informed decisions on the safe movement of coconut germplasm.

Request for a re-examination of U.S. patent No. 5,894,079, over the "*Enola*" bean[21]

26. The Commission, at its Ninth Regular Session, was informed about US patent No. 5,894,079, over the "*Enola*" bean, which the Centro Internacional de Agricultura Tropical (CIAT) maintained was substantially identical in all important respects to a number of accessions held by CIAT in its genebank and designated since 1994 under the terms of the agreement with FAO.[22]

27. In early 2000, the Director-General of CIAT informed FAO that the United States Patent Office had granted intellectual property rights over the "*Enola*" bean to a US private company[23].

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[19] 11 from Bangladesh and 4 from Sri Lanka, grown *in vitro* for eventual field planting. An embryo culture laboratory was established at the field genebank site in Kidu, Karnataka.

[20] From Malaysia, now being grown in vitro in the laboratory.

[21] For more detailed information, see CGRFA-10/04/Inf.14, *Report on the International Network of Ex Situ Collections under the Auspices of FAO: further information provided by the International Centre for Tropical Agriculture (CIAT), regarding its request for a re-examination of U.S. patent No.5,894,079*.

[22] CGRFA-9/02/11, *Report on the International Network of* Ex Situ *Collections under the auspices of FAO,* paragraphs 23-26.

[23] The intellectual property rights were granted by the United States Patent and Trademark Office (USPTO) under US Patent Number 5,894,079 on 15 November 1996 covering any *Phaseolus vulgaris* variety having a certain yellow seed colour; and under US Plant Variety Protection Certificate Number 9,700,027 for the bean variety itself. The "*Enola"* bean produces a distinctly yellow (sulfur-colored) seed with a yellow *hilum* (deposited as ATCC 209549). The colour

On 7 March 2000 the Director General of CIAT wrote to the company indicating that the *"Enola"* bean was close to several yellow-seeded bean varieties deposited in its in-trust collection, and that CIAT would continue to distribute such germplasm freely, in the framework of the FAO-CGIAR Agreement. CIAT did not receive a reply to this letter. In May 2000, the FAO Legal Office sent a letter to the Director-General of CIAT supporting the latter's intention to bring the matter to the attention of the United States Patent and Trademark Office (USPTO) and proposing that CIAT include its letter in the documentation to be sent to the USPTO.

28. CIAT challenged the patent on 20 December 2000, by asking the United States Patent and Trademark Office (USPTO) for a re-examination. The grounds for CIAT challenging the patent were:

- That Patent No. 5,894,079 restricts the use of designated bean germplasm with yellow seeds for purposes of agronomy and breeding in the United States, and
- That the Patent does not fulfil two basic requisites, namely, newness, and non-obviousness.

29. On 8 February 2001, the USPTO indicated that it would re-examine the patent and its claims 1 to 15. On 11 July 2001, the patent owner asked that claims 1 to 15 be cancelled and added claims 16 to 58. CIAT made pertinent searches on these new claims and ascertained that they continue to ignore all the documentation it had cited, and do not fulfil the basic requirements for patent ownership, according to United States law.

30. Over the past four years, the patent holder has challenged in court several bean producers in the western states of the United States who grow other types of yellow beans, under the assumption that they were growing *"Enola"* without permission. Two private companies and several farmers and growers are currently attempting to prove in court that several varieties of yellow field beans were a matter of public knowledge before 1996.

31. The patent owner has changed claims several times, a delaying tactic in the view of CIAT, which *de facto* enables the company to enter further growing seasons. On 3 December 2003, the USPTO requested the applicant for additional information, which was provided on 2 June 2004. The USPTO is currently examining this reply.

32. At its Fifth Session in July 2003, the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore of the World Intellectual Property Organization (IGC/WIPO) was informed of this case, and the relevant deliberations of the Commission at its Ninth Session,[24] in the context of the IGC's consideration of "the practical questions that may arise in relation to patent examination and grant in relation to inventions making use of genetic resources".[25] In analysing this case, WIPO noted that it:

> "… illustrates the practical context of defensive protection strategies in the field of genetic resources. Put simply, the question is one of how to increase the likelihood that relevant information about genetic resources is available to patent-granting authorities, that this information is available at an early stage in patent processing, and that this information will in fact be located and assessed during the initial examination of the patent application. This information becomes especially important when it relates to public domain or open access international collections of germplasm. It also brings into

remains relatively unchanged through time. The invention also relates to a method for producing a field-bean cultivar by crossing a first parent field-bean plant with a second parent field-bean plant, wherein the first and/or second field-bean plant is that of the invention.

[24] CGRFA-9/02/Rep, *Report of the Ninth Session of the Commission on Genetic Resources for Food and Agriculture*, para. 31.

[25] WIPO/GRTKF/IC/5/6, *Practical mechanisms for the defensive protection of traditional knowledge and genetic resources within the patent system*, para. 16-21.

focus the substantial procedural costs which a national public or international institution may have to shoulder in challenging a patent, an important matter to take into account in considering defensive protection strategies, particularly when there is no possible financial benefit for the institution if its challenge succeeds."

33. In considering this matter at its Ninth Session, some members of the Commission requested WIPO to "cooperate with FAO in preparing a study on how intellectual property rights may affect the availability and use of material from the International Network and the International Treaty". Following extensive discussions between the Secretariats, WIPO is preparing a technical study, which aims to: develop a search algorithm to identify patents over crop genetic resources; test this in a number of crops in *Annex I* to the Treaty; identify the information that may be obtained from the results of such searches; and propose a methodology by which the effects on the availability and use of material may be further analysed. This study will be made available to the Commission when received.[26]

Report on the introgression of transgenic materials and workshop on genetically modified organisms (GMOs)

34. The Commission, at its Ninth Regular Session, was informed about the possible introgression of transgenic material into maize landraces in Mexico, and in particular of the possibility that such transgenic material had entered the collections of the Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT) and the accessions it had designated pursuant to its agreement with FAO. Members of the Commission expressed concern that geneflow from transgenic crops could jeopardize the integrity of genetic resources, in particular in the centres of origin, and in the collections of the Centres. Careful studies and observations on the issues were requested, and that FAO continue to provide science-based advice in such matters.[27]

35. FAO had written to the CIMMYT's Director General to ascertain the situation. He had replied comprehensively, noting that CIMMYT had put into place procedures that would minimize the chances of any introduction of transgenic material into CIMMYT collections. FAO had thanked CIMMYT for the comprehensive information received. It had noted that CIMMYT might in the future address a number of the questions of a technical and scientific nature raised by FAO, as CIMMYT was a centre of scientific excellence on maize.

36. In this context, the CGIAR's Genetic Resources Policy Committee and the Science Council jointly convened a technical expert workshop on*Technical Issues Associated with the Development of CGIAR Policies to Address the Possibility of Adventitious Presence of Transgenes in CGIAR* Ex Situ *Collections*, in the International Plant Genetic Resources Institute (IPGRI), Rome, 28 August-1 September 2004. Representatives of stakeholders, including FAO, the private sector, NGOs and farmers, were also invited.

37. The purpose of the workshop was to provide technical inputs to the Future Harvest Centre genebanks in drawing up their policies to prevent unintentional transgenic introgression. Genebanks, in managing the accessions that they conserve, generally put in place procedures to maintain genetic integrity, on the basis of best practices, which vary from crop to crop. If best practices are followed at all stages, this should prevent the introgression of other genes into accessions, whether from GMOs or non-GMOs.

[26] As document CGRFA-10/04/Inf. 15.

[27], *Report on the International Network of* Ex Situ *Collections under the auspices of FAO*, para. 27-31, and CGRFA-9/02/11, *Report of the Ninth Regular Session of the Commission on Genetic Resources for Food and Agriculture*, para. 32.

38. The meeting identified elements of processes that could prevent genes from GMOs unintentionally entering accessions in genebanks. It noted, however, that geneflow (or introgression) by the dispersal of pollen and seed is a natural component of the dynamics of all plant populations. Genes present in one population in a farmer's fields will therefore introgress into other populations, with a probability that varies with the crop and the distance between populations.

39. The technical information from the workshop was forwarded to the Genetic Resources Policy Committee for its consideration in drawing up draft guiding principles for the Future Harvest Centre genebanks.[28] These are intended to be the first steps in an ongoing consultative process that will take place over the course of several months. The draft principles will continue to be widely circulated, for further input by all stakeholders, with the expectation that a final version may be issued before April 2005.

III. POSSIBLE ACTION BY THE COMMISSION

40. The Commission may wish to consider the various matters discussed in this document, and to make relevant recommendations and provide guidance to the Secretariat for any follow-up actions necessary.

[28] The draft principles are available to the Commission, at this session.

Germplasm designated to the International Network by the International Agricultural Research Centres (IARCS) (2004)

Centres	Crop	Number of Accessions
CIAT	Cassava	5,742
	Forages	18,138
	Bean	33,676
CIMMYT	Maize	22,170
	Wheat	95,113
CIP	Andean roots and tubers	1,100
	Sweet potato	6,120
	Potato	6,687
ICARDA	Barley	24,218
	Chickpea	9,115
	Faba bean	9,074
	Wheat	30,270
	Forages	24,581
	Lentil	7,827
ICRAF	*Sesbania*	25
ICRISAT	Chickpea	16,970
	Groundnut	14,419
	Pearl millet	21,329
	Pigeon pea	12,712
	Sorghum	35,836
	Minor millets	9,210
IITA	Bambara groundnut	2,029
	Cassava	2,270
	Cowpea	15,001
	Soybean	1,909
	Wild *Vigna*	1,632
	Yam	2,991
ILRI	Forages	17,032
IPGRI	*Musa*	986
IRRI	Rice	82,501
WARDA	Rice	14,917
Total		**545,600**

Germplasm designated to the International Network by the Tropical Agricultural Research and Higher Education Centre (CATIE) (2004)

The field collections of CATIE comprise 4430 accessions, including:

Crop	**Number of Accessions**
Coffee (*Coffea* spp.)	1,848
Cacao (*Theobroma* & *Herrania* spp.)	765
Peach palm (*Bactris gasipaes*)	618
Fruit trees of the *Sapotaceae* family (*Pouteria* spp.) (*Manilkara zapota*.)	 110 72
Annatto (*Bixa orellana*)	103

The orthodox seed collections comprise 5712 accessions, of which 1802 have already been designated to the International Network. This is because the other orthodox seed accessions currently have low germination rates and/or small seed quantities. Once these accessions have been regenerated, they too will also be designated. The orthodox seed collections include:

Crop	**Number of Accessions**
Squash (*Cucurbita* spp.)	2001
Sweet pepper (*Capsicum* spp.)	1103
Tomato (*Lycopersicon* spp.)	472