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INTERGOVERNMENTAL COMMITTEE ON THE  
CONVENTION ON BIOLOGICAL DIVERSITY  
Second session  
Nairobi, 20 June - 1 July 1994  
Items 4.2.3 and 4.2.4 of the provisional agenda

OWNERSHIP OF, AND ACCESS TO, EX SITU GENETIC RESOURCES  
FARMERS' RIGHTS AND RIGHTS OF SIMILAR GROUPS

Progress report on resolution 3 of the Nairobi Final Act:  
ex situ collections and farmers' rights

Note by the Interim Secretariat

1. At its first session, the Intergovernmental Committee on the Convention on Biological Diversity decided to include in the agenda for its second session the following items:

- (a) Ownership of, and access to ex situ genetic resources; and
- (b) Farmers' rights and intellectual property rights of similar groups (see UNEP/CBD/2/2, annex I, para. 22).

2. Paragraph 4 of resolution 3 of the Nairobi Final Act recognizes "the need to seek solutions to outstanding matters concerning plant genetic resources within the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture, in particular:

- "(a) Access to ex situ collections not acquired in accordance with this Convention; and
- "(b) The question of farmers' rights."

3. In view of the experience and expertise of the Food and Agriculture Organization of the United Nations (FAO), as recognized by Governments in resolution 3 of the Nairobi Final Act, and in particular in view of its role in operating the Global System, the Interim Secretariat requested FAO to provide a background paper for these two items. The paper, entitled "Progress report on resolution 3 of the Nairobi Final Act: ex situ collection and farmers' rights", is annexed to the present note. With respect to the item referred to in paragraph 1 (b) above, the Interim Secretariat has prepared an additional paper entitled "The rights of indigenous and local communities embodying traditional lifestyles: experience and potential for implementation of Article 8 (j) of the Convention on Biological Diversity" (UNEP/CBD/IC/2/14).

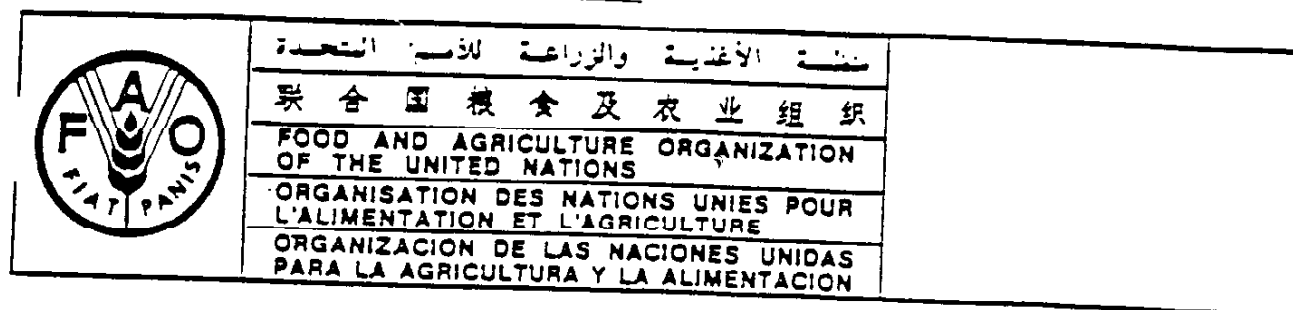
4. The report contributed by FAO specifically addresses the issue of access to plant genetic resources collected prior to the Convention, consistent with the scope of the Global System. It does not address the issue of existing ex situ animal and microbial collections.

5. In addition to considering the issues raised in the report, the Committee may wish to consider and advise on the following:

- (a) Identification of the existing microbial and animal collections at the national and international level;
- (b) Present regulations on ownership of access to these collections;
- (c) How these arrangements for ownership of and access to the collections can be made consistent with the objectives of the Convention.

6. It should be noted that Article 15, paragraph 2, of the Convention specifically addresses the issue of facilitating access to genetic resources collected after the Convention entered into force. In this respect, the Committee at its first session requested the Interim Secretariat "to examine and report on existing examples and possible models for national legislation, with due attention to their potentially conflictual nature, and for arrangements and other practices for regulating access to genetic resources" (see UNEP/CBD/IC/2/2, annex III, para. 43 (d)). As reported in the status report on action taken in response to requests made at the first session of the Committee (UNEP/CBD/IC/2/15), the Interim Secretariat is in the process of obtaining and analysing the required information on examples of national legislation and possible models for regulating access to genetic resources.

Annex



Second Session of the Intergovernmental Committee  
on the Convention on Biological Diversity  
Nairobi, 20 June - 1 July 1994

**PROGRESS REPORT ON RESOLUTION 3 OF THE NAIROBI FINAL ACT:  
*EX SITU* COLLECTIONS AND FARMERS' RIGHTS**

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**PROGRESS REPORT ON RESOLUTION 3 OF THE NAIROBI FINAL ACT:  
EX SITU COLLECTIONS AND FARMERS' RIGHTS:**

**I. INTRODUCTION**

1. The Resolution on the "Interrelationship between the Convention on Biodiversity and the Promotion of Sustainable Agriculture", ("Resolution 3 of the Nairobi Final Act"; see Annex 1) was adopted together with the Final Act of the Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity in Nairobi on 22nd May, 1992. This resolution "urges that ways and means be explored to develop complementarity and cooperation between the Convention on Biological Diversity and the Global System" and noted the "need to seek solutions to outstanding matters concerning plant genetic resources within the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture<sup>1</sup>, in particular:

- access to *ex situ* collections not acquired in accordance with this Convention; and
- the question of farmers' rights<sup>2</sup>."

2. The FAO Conference, at its 27th session in November 1993, welcomed Resolution 3 of the Nairobi Final Act and, in order to respond to it, adopted Resolution 7/93 on "The Revision of the International Undertaking on Plant Genetic Resources" (see Annex 2), which *inter alia* requested the Director-General to provide a forum for negotiations among governments:

- for the adaptation of the International Undertaking on Plant Genetic Resources, in harmony with the Convention on Biological Diversity;
- for consideration of the issue of access on mutually agreed terms to plant genetic resources, including *ex situ* collections not addressed by the Convention; as well as
- for the issue of realization of Farmers' Rights.

3. The FAO Conference noted that the revision of the Undertaking and other preparations for the Fourth International Technical Conference, including the preparation of the first report on the State of the World's Plant Genetic Resources and costed Global Plan of Action should be regarded as integral parts of one process. The Conference also noted the appropriateness of FAO as a forum, and of the process which FAO had initiated to address these matters. It recommended that negotiations be carried out in the Commission on Plant Genetic Resources in close collaboration with the governing body and secretariat of the Convention on Biological Diversity. Accordingly the Conference requested the Director-General of FAO to inform the

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<sup>1</sup> FAO has developed, since 1983, a Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, which encompasses, *inter alia*, the International Undertaking on Plant Genetic Resources, and the Commission on Plant Genetic Resources (See paras 10 - 13 of this document).

<sup>2</sup> "Farmers' Rights" are defined in FAO Resolution 5/89 (the second annex to the Undertaking) as "rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources(...)" (See paras 29-31 of this document).

Intergovernmental Committee for the Convention on Biological Diversity (ICCBD) and the first meeting of the Conference of the Parties of the Convention on Biological Diversity of the measures FAO had taken to respond to Resolution 3.

4. The ICCBD, at its session in October 1993, requested that a report on *ex situ* collections and on Farmers' Rights (as per paragraph 4, Resolution 3 of the Nairobi Final Act) be considered at its next session in June 1994. FAO, upon invitation of the Interim Secretariat and as the agency responsible for these issues and for the Global System, has produced the present report on the implementation in FAO of Resolution 3 of the Nairobi Final Act in order to ensure active communication and cooperation between the intergovernmental fora concerned.

## II. BACKGROUND

5. This section provides background information on the Convention on Biological Diversity relevant to the two outstanding issues of *ex situ* collections and Farmers' Rights and on the FAO Global System within which it was agreed in Resolution 3 that solutions to the two issues be sought.

### *The Convention on Biological Diversity in relation to the two issues*

6. The objectives of the Convention on Biological Diversity (as set out in its Article 1) are "the conservation of biological diversity, the sustainable utilization of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources by appropriate access to genetic resources, and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to those technologies, and by appropriate funding".

7. Provisions on access are set out in Article 15. The Convention reaffirms "the sovereign rights of States over their natural resources" and states that "the authority to determine access to genetic resources rests with the national governments and is subject to national legislation" (Art.15.1). The Convention elaborates on this basic point in three important ways. Firstly, it states that Parties "shall endeavour to create conditions to facilitate access to genetic resources" and "not to impose restrictions which run counter to the objectives of this Convention" (Art.15.2). Secondly, it strengthens the power of Parties to implement their sovereign rights by requiring that access "shall be subject to prior informed consent" of the country providing the resources "unless otherwise determined by that party" (Art.15.5) and that "access, where granted, shall be on mutually agreed terms" (Art.15.4). Thirdly, the Convention provides for the sharing of benefits derived from genetic resources with the country of origin, or the country providing such resources where they have been acquired in accordance with the Convention (Arts. 15.7, 16.3, 19.1, 19.2).

8. However Article 15, paragraph 3 of the Convention, states: "For the purpose of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article and Articles 16 and 19, are only those that are provided by Contracting Parties that are

countries of origin of such resources or by Parties that have acquired the genetic resources in accordance with this Convention." This means that the provisions on sharing the benefits, and for prior informed consent to access, do not apply to *ex situ* collections which are located outside the country of origin and which have been acquired prior to the entry into force of the Convention. Thus this issue was one of the two identified as outstanding by the Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity in Resolution 3.

9. The other issue identified as outstanding in Resolution 3 was "the question of farmers' rights". Article 1 of the Convention specifies that in meeting its objectives by "appropriate access to genetic resources" and "appropriate transfer of relevant technologies" that "all rights over those resources and to technologies" should be taken into account (see para 6 above). However, while the Convention refers to sovereign rights of states, and to the intellectual property rights of the holders of technology, it does not refer to farmers' rights<sup>3</sup>. The concept of Farmers' Rights as developed in the FAO Global System (see paras 10 -13 below), recognizes the role of farmers in conserving, improving, and making available plant genetic resources. It has been agreed that these rights will be implemented *inter alia* through an international fund. The concept of Farmers' Rights therefore might be considered as relevant to the Convention's provisions for sharing benefits and for funding (Art 15.7 and 20). The benefits include: access to and transfer of technology which makes use of the genetic resources provided (Art 16.3); participation in biotechnological research based upon such genetic resources (Art 19.1); and priority access to the results and benefits arising from such biotechnological research (Art 19.2). These are consistent with those specified in FAO Resolutions on Farmers' Rights (see section IV of this document).

#### *FAO and the Global System*

10. Following its Constitutional mandate, FAO deals with the conservation and sustainable utilization of genetic resources of interest to food and agriculture, including forestry and fishery. Genetic resources of interest to food and agriculture represent both the raw material used in the production of new plant cultivars and animal races - either through traditional breeding or the use of biotechnology - and a reservoir of genetic agricultural adaptability, which acts as a buffer against harmful environmental changes. Their erosion severely increases agriculture vulnerability and threatens world food security. FAO's work in this area which started early in the 50's has become more systematic since 1983 with the establishment of the FAO Global System for the Conservation and Utilization of Plant Genetic Resources for food and agriculture and later development of other initiatives for animal and fish biodiversity. Information on related matters concerning domestic animal genetic resources is provided in annex 4<sup>4</sup>. The responsibilities of FAO in supporting the implementation of the Convention on Biological

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<sup>3</sup> Article 8 (j) specifies the need to "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities (...)" but does not refer to Farmers' Rights as such.

<sup>4</sup> Although not covered in the operative part of Resolution 3 of the Nairobi Final Act, reference to animal genetic resources is made in the preamble.

Diversity, which includes under its coverage biodiversity for food and agriculture, have been fully recognized by governments that adopted the agreed text of the Convention, in Resolution 2 and 3 of the Nairobi Final Act and by the FAO governing bodies.

11. In 1983 the member countries of FAO established a permanent intergovernmental forum on plant genetic resources: the Commission on Plant Genetic Resources (CPGR), and a legal framework: the International Undertaking on Plant Genetic Resources. Since then the development of a Global System on Plant Genetic Resources for food and agriculture has been coordinated, overseen and monitored by the CPGR. The objectives of this Global System are to ensure the safe conservation and promote the availability and sustainable utilization of plant genetic resources for present and future generations, by providing a flexible framework for sharing the benefits and burdens. The system covers the conservation (*ex situ* and *in situ*) and utilization of plant genetic resources -genes, genotypes and gene pools. To date 140 countries are formally part of the System, of which 123 are members of the Commission and 110 have adhered to the International Undertaking. Agenda 21, agreed at the UN Conference on Environment and Development (UNCED), has recommended the strengthening of the Global System and the further development of many of its components<sup>5</sup>.

12. The International Undertaking was adopted by the FAO Conference Resolution 8/83 with the reservations of eight countries<sup>6</sup>. It was the first comprehensive international agreement concerning plant genetic resources. The Undertaking which is not legally binding seeks to "ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes." In order to overcome the reservations to the Undertaking, it has been further qualified and interpreted by a number of complementary resolutions which were negotiated by countries<sup>7</sup> through the Commission on Plant Genetic Resources and adopted

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<sup>5</sup> Chapter 14 on "Sustainable Agriculture and Rural Development" (SARD) includes a Programme Area on "Conservation and sustainable utilization of plant genetic resources for food and sustainable agriculture". At the international level, Agenda 21 indicates that the appropriate United Nations agencies and regional organizations should strengthen the Global System on the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture (PGRFA) by *inter alia*: accelerating the development of the World Information and Early Warning System on PGR (PGR/WIS) to facilitate the exchange of information; developing ways to promote the transfer of environmentally sound technologies in particular to developing countries; and taking further steps to realize Farmers' Rights; developing networks of PGRFA in *in situ* protected areas; preparing periodic State of the World Reports on PGRFA (PGR/SW) and a rolling global cooperative plan of action on PGRFA (PGR/GPA); promoting the fourth International Technical Conference on PGR to adopt the first PGR/SW and PGR/GPA, and adjusting the global system to bring it into line with the Convention on Biological Diversity.

<sup>6</sup> Canada, France, Germany, Japan, New Zealand, Switzerland, United Kingdom and the United States of America.

<sup>7</sup> It should be noted that in these negotiations Member and non-Member Countries of the Commission participated actively, including both countries which had signed the International Undertaking and countries which had not, as well as non-member Nations of FAO.

unanimously by the FAO Conference and which are now annexes to the Undertaking. The first such resolution (4/89) provided an agreed interpretation of the Undertaking which recognized that Plant Breeders' Rights as provided by the Union for the Protection of New Varieties of Plants (UPOV) convention of 1978, were not inconsistent with the Undertaking. It simultaneously recognized "Farmers' Rights" which were defined in a second resolution (5/89). A third resolution (3/91) reaffirmed that the concept of heritage of mankind is subject to the sovereign rights of nations over their genetic resources and agreed that Farmers' Rights will be implemented through an international fund on PGR. Finally, in Resolution 7/93 countries agreed that the Undertaking would be revised (see paras 2, 42 & 43). A Global Plan of Action is being developed in a related process (see section V).

13. The Undertaking, in its Article 7, provides for the establishment of an international network of *ex situ* germplasm collections (see section IV). 32 countries and the International Agricultural Research Centres (IARCs) of the Consultative Group on International Agricultural Research (CGIAR) have indicated their willingness to place their collections in this network and legal agreements are currently being negotiated.

### III. OWNERSHIP OF AND ACCESS TO *EX SITU* COLLECTIONS

14. *Ex situ* collections refer to collections of germplasm held outside their natural habitats<sup>8</sup>. Most major collections of crop genetic resources in the world are collections of seeds held in dry, cold storage conditions. *Ex situ* collections can also include field plantings (such as botanical gardens or arboreta), pollen held in cold storage, tissue cultures, or seed, pollen or tissues held under cryogenic storage (-150° to -196°C).

15. All existing collections which are located outside of the country of origin<sup>9</sup> and which existed at the time of the entry into force of the Convention on Biological Diversity in December 1993 are, by definition, collections which were acquired not in accordance with the Convention.

#### *Nature, size and importance of ex situ collections.*

16. Worldwide holdings of crop germplasm in *ex situ* collections (including wild relatives) amount to about 4.2 million accessions, including over two million accessions of cereals (Table 1). The number of unique samples is much less than this since many accessions are duplicated in different locations for safety reasons or to improve access for use. The number of unique accessions is not known but is thought to be of the order of 50% of the number of accessions, i.e. about 2 million samples.

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<sup>8</sup> The Convention defines "ex situ conservation" as "the conservation of components of biological diversity outside their natural habitats".

<sup>9</sup> "Country of Origin" is defined in the Convention on Biological Diversity: "Country of origin of genetic resources means the country which possesses those genetic resources in situ conditions".



**Table 1: Worldwide holdings of crop germplasm in genebanks  
(including wild relatives)<sup>10</sup>**

<u>Cereals</u>	2011000 including:	<i>Amaranthus</i> 9500; <i>Eragrostis</i> 6700; <i>Eleusine</i> 15800; <i>Fagopyrum</i> 6300; <i>Hordeum</i> 331000; <i>Oryza</i> 352000; <i>Pennisetum</i> 49500; <i>Sorghum</i> 169500; <i>Triticum</i> 622000; <i>Zea</i> 245200.
<u>Food Legumes</u>	703400 including:	<i>Arachis</i> 72300; <i>Cajanus</i> 22800; <i>Cicer</i> 52100; <i>Cyamopsis</i> 3100; <i>Glycine</i> 148200; <i>Lupinus</i> 22200; <i>Phaseolus</i> 174200; <i>Pisum</i> 64800; <i>Psophocarpus</i> 6200; <i>Vigna</i> 70900.
<u>Roots &amp; Tubers</u>	182400 including:	<i>Colocasia</i> 6100; <i>Dioscorea</i> 11100; <i>Ipomoea</i> 28200; <i>Manihot</i> 29600.
<u>Vegetables</u>	335200 including:	<i>Abelmoschus</i> 9900; <i>Allium</i> 19900; <i>Capsicum</i> 52400; <i>Cucumis</i> 26500; <i>Lycopersicon</i> 75800; <i>Raphanus</i> 6000; <i>Solanum</i> 90100.
<u>Fruits</u>	67300 including:	<i>Anacardium</i> 5800; <i>Bactris</i> 2600; <i>Carica</i> 1700; <i>Citrus</i> 17900; <i>Durio</i> 1200; <i>Ficus</i> 1970; <i>Mangifera</i> 6200; <i>Musa</i> 9200; <i>Persea</i> 4600.
<u>Forages</u>	439000	
<u>Industrial</u>	62000	
<u>Other</u>	436200	
<b>TOTAL:</b>	<b>4236500</b>	

Source: FAO: PGR/WIS, March 1994<sup>11</sup>

<sup>10</sup> Includes samples in long-, medium-, and short-term storage.

<sup>11</sup> Data from the World Information System on PGR developed by FAO in collaboration with IPGRI. The number of known accessions is substantially higher than the estimates previously available. This apparent increase is probably due largely to more complete information now being available.

17. Germplasm collections have been established in about 130 countries. Over half (53 %) of the accessions are located in developed countries, one third (36%) in developing countries, and about 12 % in the international centres. However, it is estimated that about 35% of the unique samples are held in the International Centres of the CGIAR and that therefore these comprise probably the world's most significant collection. Annex 3 details the collections held by the IARCs. International support has been particularly important in establishing *ex situ* collections.

18. There is no doubt that existing *ex situ* collections have particular importance, especially in the case of biodiversity for food and agriculture. For agricultural crops, *ex situ* collections have been the primary means of conservation and generally have been readily accessible to breeders and scientists. In fact, for certain major crops they may represent for practical purposes nearly all of the world's remaining diversity. Furthermore, the actual and potential value of these collections, is generally considered to be superior to most of the diversity not yet collected for the crops concerned. It is not by chance that this germplasm was selected and given the necessary priority, attention and funds to be collected and stored, and in many cases also to be characterized, documented and exchanged. While there is no doubt that *ex situ* collections of plant genetic resources have an economic value, it is difficult to estimate that value since no effective market for plant genetic resources operates.

19. Internationally agreed standards for the storage of seeds in genebanks (as well as for their exchange and distribution) have been developed by FAO and IPGRI and endorsed by the FAO Commission on Plant Genetic Resources.<sup>12</sup> Most genebank managers aim to reach these standards and agreements. It is not known, however, what proportion of accessions are maintained to these standards. Very often due to lack of resources, it is difficult for genebank managers to maintain standards of conservation, regenerate aged seed, or to document characterize and evaluate adequately accessions. Inadequate or non-standard documentation can severely limit the usefulness of genetic resource collections.

20. In order to have more accurate estimates of the importance and value of these collections, many technical issues require further investigation including the following:

- What proportion of the existing diversity of the relevant crops is represented in *ex situ* collections?
- What proportion represent landraces and farmers' varieties and what proportion are varieties developed through formal plant breeding?
- What is the actual value (monetary or otherwise) that can be attached to these *ex situ* collections?
- How many of them have been characterized, evaluated and documented? What is the added value of these activities?
- How are the collections conserved?
- What proportion of these collections have been exchanged and used?
- What proportion of them have been duplicated and stored in different places?
- For what proportion of them is the country of origin known?

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<sup>12</sup> Genebank Standards, CPGR/93/5 annex FAO.

- What socio-economic impact has been achieved through the use of these collections?  
With the technical assistance of IPGRI, FAO is currently addressing these issues. The result will be submitted to the Commission on Plant Genetic resources and on request to the ICCBD or the Conference of the Parties.

21. There are also a number of non-technical issues to be considered. For example, few of the international collections have a guaranteed funding base. This applies equally to the IARCs and to national programmes, though of course, developing country programmes face particular funding difficulties. Funding of the IARCs, for example, is dependent on year-to-year pledges from donor countries. Other non-technical issues refer to the ownership and control over genetic resources.

#### *Legal status and the position of countries*

22. These issues have been addressed by the Commission on Plant Genetic Resources. A study prepared by the FAO Legal Office in 1987 at the request of the Commission showed that regardless of from where the material may have been collected, ownership of genetic material held in government genebanks or in those of public institutions was, in most cases, for practical purposes considered to be vested in the State in which these genebanks are located. However, for material held in the International Agricultural Research Centres (IARCs) the legal position was unclear<sup>13</sup>. There were also, of course, *ex situ* collections of PGR held by private corporations, but little information about these collections was available.

23. The Commission on Plant Genetic Resources found this situation unsatisfactory. It was noted also that, although many of the collections were made on the basis of informal agreements at the operational level, stating that the material collected would be freely available, these informal agreements were considered to be insufficient. The Commission therefore called for the implementation of Article 7.1(a) of the International Undertaking in relation to the development of an "international network of base collections in genebanks under the auspices and/or jurisdiction of FAO"<sup>14</sup>. Countries and institutions which voluntarily decide to place

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<sup>13</sup> The 1987 study (FAO: CPGR/87/5) showed that the charters and legal documents available for the IARCs of the Consultative Group on International Agricultural Research (CGIAR) did not generally contain explicit provisions governing the ownership of plant genetic resources. The lack of legal provisions in the documents under which IARCs have been established generates an element of uncertainty regarding ownership. The IARCs have since developed their policy on these matters (see para 24).

<sup>14</sup> The Undertaking states in Article 7.1 that international arrangements will be developed and complemented in order that, *inter alia* "(a) there develops an internationally coordinated network of national, regional and international centres, including an international network of base collections in gene banks, under the auspices or jurisdiction of FAO, that have assumed the responsibility to hold, for the benefit of the international community and on the principle of unrestricted exchange, base or active collections of the plant genetic resources of particular plant species". Article 7.2 of the Undertaking further states that: "Governments or institutions (...) may, furthermore, notify the Director-General of FAO that they wish the base collection or collections for which they are responsible to be recognized as part of the international network of base collections in genebanks, under the auspices or the jurisdiction of FAO. The centre

collections in their genebanks within this network agree to ensure that the genetic material is safely conserved and will be made available for plant breeding and research purposes while respecting the rights of the providers of germplasm.

24. 32 countries and the IARCs have indicated their willingness to make their genebanks part of the International Network<sup>15</sup>. Collectively, these countries and institutions hold almost half (46%) of world germplasm accessions. Since 1989, the IARCs have jointly stated that they do not regard themselves as owners of the germplasm (which has been collected as a result of international collaboration) but consider that they hold them in trust for the benefit of the international community, in particular the developing countries.

25. IPGRI has established a register of national and international institutions holding base collections of particular crops. The register includes a total of about 50 institutions in 18 countries which have agreed to conserve specified germplasm and to make it available to the international community. In some cases the institutions concerned have signed formal agreements to this effect with IPGRI. Following a request by the Commission, IPGRI agreed that the register should be merged with the International Network. FAO and IPGRI are now actively promoting a combined network comprising genebanks which have agreed to conserve material under safe standards and to make it available for the purpose of breeding and research. It is estimated that the combined network will cover about 70% of global accessions.

#### *Issues to be resolved*

26. The Convention on Biological Diversity left the question of the legal status of existing *ex situ* collections (located outside the country of origin) unresolved. In line with the request in Resolution 3 of the Nairobi Final Act, the Commission on Plant Genetic Resources at its Fifth Session in 1993, considered the implications of the Convention and took note of the following possible interpretations of this situation:

- "(i) that these genetic resources were outside the Convention, and, since most of them were collected on the general understanding that PGR were the heritage of mankind, these resources should continue to be freely available, with a global compensatory mechanism;
- (ii) that these genetic resources were outside the Convention, and therefore that the host country could legislate on ownership and conditions of access, and

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concerned will, whenever requested by FAO, make material in the base collection available to participants in the Undertaking, for purposes of scientific research, plant breeding or genetic resource conservation, free of charge, on the basis of mutual exchange, or on mutually agreed terms."

<sup>15</sup> FAO is at various stages of discussion with the following countries: Argentina, Bangladesh, Chile, Costa Rica, Czech Republic, Denmark, Ethiopia, Finland, France, Germany, Indonesia, India, Italy, Japan, Iraq, Madagascar, Morocco, Netherlands, Norway, Pakistan, Philippines, Russian Federation, Senegal, Spain, Sweden, Switzerland, Syria, Togo, Tunisia, United Kingdom, Uruguay and Yemen. With respect to collections held by IARCs, negotiations between the Centres and FAO are currently underway, based on the recommendations of the Commission at its Fifth Session.

(iii) that, since Parties to the Convention can provide only those genetic resources originating in their own countries, or acquired under the terms of the Convention, that the permission of the country of origin is required for the release of genetic resources from pre-existing collections. It was noted, however, that, in many cases, countries of origin cannot be identified, and that the collections are widely dispersed."

It was agreed that these interpretations needed further discussion. Chart 1 groups *ex situ* collections according to the origin of samples and the location of their storage showing the complexity of the situation.

27. The Commission on Plant Genetic resources suggested that a number of options which should not be regarded as mutually exclusive and which might be explored within the Global System, including:

"(i) the facilitation of bilateral agreements between countries of origin, when they can be identified, and countries holding *ex situ* collections, for the sharing of the benefits;  
 (ii) the establishment of further agreements between FAO and the owners of genebanks, to place the collections in the International Network, and  
 (iii) the facilitation of a comprehensive multilateral agreement concerning access to *ex situ* collections, including mechanisms to compensate countries of origin, (It should be noted that where countries of origin cannot be identified, compensation might be provided to developing countries collectively)."

28. The Commission agreed that these issues will be discussed as part of the negotiations to revise the International Undertaking on Plant Genetic Resources and this was endorsed by the FAO Conference through Resolution 7/93 as FAO's follow-up to Resolution 3 of the Nairobi Final Act (see section V and Annex 2).

#### IV. FARMERS' RIGHTS

##### *Origin of the Concept of Farmers' Rights*

29. The concept of Farmers' Rights resulted from debates in FAO concerning the asymmetric treatment given to donors of germplasm and donors of technology. A commercial variety is usually the product of applying breeders technologies to farmers germplasm and while the former may generate returns through Plant Breeders' Rights or other intellectual property rights legislation, no system of compensation for the providers of germplasm was operational<sup>16</sup>. These debates finally led to the simultaneous and parallel international recognition of Plant Breeders' and Farmers' Rights in 1989. This recognition is included in resolutions 4/89, 5/89

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<sup>16</sup> The concept of Farmers' Rights is even more important and more urgent following the agreement on TRIPs in the GATT Uruguay Round. The TRIPs agreement will oblige parties to it - that is nearly all countries, developing as well as developed - to protect the rights of commercial breeders and biotechnologists and their companies and to ensure that they can claim and receive royalties on new seeds and other related products.

and 3/91. These three resolutions were negotiated by the Commission on PGR and unanimously approved by more than 160 countries in the FAO Conference in 1989 and 1991.

30. Resolution 4/89 recognizes "the enormous contribution that farmers of all regions have made to the conservation and development of plant genetic resources, which constitute the basis of plant production throughout the world, and which form the basis for the concept of Farmers' Rights".

31. Resolution 5/89 defines Farmers' Rights as "rights arising from the past, present and future contribution of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity. These rights are vested in the International Community, as trustees for present and future generations of farmers, for the purpose of ensuring full benefits of farmers and supporting the continuation of their contributions".

*Objectives of Farmers' Rights:*

32. The concept of Farmers' Rights form the basis of a formal recognition and reward system to encourage and enhance the continued role of farmers and rural communities in the conservation and use of plant genetic resources. This interpretation aims at reconciling the view of the "technology-rich" and the "gene rich" countries in order to ensure the availability of PGR within an equitable system.

33. Resolution 5/89 endorses the concept of Farmers' Rights "for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions, as well as the attainment of the overall purposes of the International Undertaking". The same Resolution further defines these objectives, as being to:

- ensure that the need for conservation is globally recognized and that sufficient funds for these purposes will be available;
- assist farmers and farming communities, in all regions of the world, but especially in the areas of origin/diversity of plant genetic resources, in the protection and conservation of their plant genetic resources, and of the natural biosphere;
- allow farmers, their communities, and countries in all regions, to participate fully in the benefits derived, at present and in the future, from the improved use of plant genetic resources, through plant breeding and other scientific methods".

34. It is envisaged therefore that the implementation of Farmers' Rights could:

- ensure that farmers, farming communities and their countries, receive a just share of the benefits derived from plant genetic resources (which they have developed, maintained and made available); and thereby
- provide incentives and means for the conservation and further development of these PGR by farmers, and through cooperation between farmers, breeders and the national and international research services. Farmers' Rights is not just a question of justice and

equity, but also of ensuring that the genetic resources on which we all depend are conserved and continue to be made available.

*Means to implement and monitor Farmers' Rights; the role  
of an international fund for plant genetic resources*

35. Some developing countries are considering the inclusion of a national mechanism for Farmers' Rights as part of the development of Plant Breeders' Rights legislation following the TRIPs agreement of the Uruguay Round of multilateral trade negotiations. However, to be fully successful, the implementation of Farmers' Rights needs international action. This is because in every country, most of the germplasm used in agriculture comes from other countries. According to recent studies, any region of the world is dependent on genetic material which originated in other regions for over 50 percent of its basic food production and for several regions of the world such dependency is close to 100%.

36. This is why the Governing Bodies of FAO have agreed that an international fund will be established for Farmers' Rights. "Resolution 4/89 considers that "the best way to implement the concept of Farmers' Rights is to ensure the conservation, management and use of plant genetic resources, for the benefit of present and future generations of farmers. This could be achieved through appropriate means, monitored by the Commission on Plant Genetic Resources, including in particular the International Fund for plant genetic resources".  
In fact Resolution 3/91 endorsed:

- "that Farmers' Rights will be implemented through an international fund on plant genetic resources which will support plant genetic conservation and utilization programmes, particularly, but not exclusively, in the developing countries";
- "that the effective conservation and sustainable utilization of plant genetic resources is a pressing and permanent need and therefore the resources for the international fund as well as for other funding mechanisms should be substantial, sustainable and based on the principles of equity and transparency";
- "that through the Commission on Plant Genetic Resources, the donors of genetic resources, funds and technology will determine and oversee the policies, programmes and priorities of the fund and other funding mechanisms, with the advice of the appropriate bodies".

37. The Commission on Plant Genetic Resources in 1993 agreed that the technical and financial needs to ensure conservation, and to promote the sustainable use of the world's plant genetic resources, should be determined and quantified through a country-driven process, whereby the First Report on the State of the World's Plant Genetic Resources and the Global Plan of Action on Plant Genetic Resources would be developed, as part of this participatory process, for the International Conference and Programme on PGR. It agreed that the Global Plan of Action would identify the activities, project and programmes needed to overcome present

constraints, in line with the relevant parts of Agenda 21. By financing the Global Plan of Action, through the international fund, and other funding mechanisms, as foreseen in Resolution 3/91, the international community would contribute to the practical realization of Farmers' Rights.

*Other discussions on the concept of Farmers' Rights*

38. At UNCED governments agreed on Agenda 21. In the programme area "Conservation and sustainable utilization of plant genetic resources for food and sustainable agriculture" (Chapter 14; programme area G), governments called *inter alia* for taking further steps to realize Farmers' Rights. The Conference secretariat estimated the average total annual cost of implementing the activities of this programme area at about \$600 million, including about \$300 million from the international community on grant or concessional terms.

39. At a more informal level the discussions and consensus reached by the participants at the Keystone International Dialogue on Plant Genetic Resources are significant since the participants, although attending in their personal capacities, reflected all the interests concerned including Governments, industries, NGOs and intergovernmental organizations. This meeting was followed up by a consultation organized by the Swedish Agency for Research Cooperation with Developing Countries involving government experts from Asia, Africa, Europe and the Americas as well as participants from international bodies. At these meetings the concept of Farmers' Rights and its implementation through an international fund was supported. Estimates of the size of the fund required (ranging from US\$300 - 500 million per annum), and some proposals for its governance were made.<sup>17</sup>.

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<sup>17</sup> The Second Session of the Keystone International Dialogue, Madras, 1990, agreed to propose that "the best way of recognizing Farmers' Rights would be a mandatory fund, and that "there should be a compulsory funding mechanism". It also stated that for an International Fund for Plant Genetic Resources a "conservative estimate indicates that at least US\$ 500 million per annum should be available to begin to meet these urgent needs". The Third and Final Session of the International Dialogue, Oslo 1991, proposed a "Global Initiative for the Security and Sustainable Use of Plant Genetic Resources" including a fund for PGR. The financial estimate previously made was reviewed and it was concluded that "a minimum of \$1.5 billion of additional funds [would] be needed during 1993-2000". The Dialogue report emphasized that the fund "should be established on a sustainable basis" and that "it should not be taken from existing development assistance budgets and not be subject to erratic or unreasonable fluctuations". An international consultation of experts from governments, intergovernmental organizations, non-governmental organizations and private industry was convened by the government of Sweden through SAREC in Stockholm, in January 1992, to follow up the Keystone recommendations and make specific proposals for the UNCED process. This consultation reiterated the need for a fund for the conservation and utilization of PGR to complement existing activities and based on an agreed global plan of action. If the fund is established under the Convention on Biological Diversity, it was proposed that for PGR, as for other components of biodiversity, the fund should be operationally separate and managed by an international agency with competence in the relevant area. The FAO Commission on PGR was identified as an appropriate body for decision-making on global policy issues, programmes and priorities with regard to the conservation and utilization of PGR.



*Issues to be resolved*

40. At its Fifth Session the Commission "agreed, however, that a number of questions remain open and would need to be addressed. These include:

- the nature of the funding (voluntary or mandatory);
- the question of linkage between the financial responsibilities and the benefits derived from the use of PGR, and
- the question of who should bear financial responsibilities (countries, users or consumers).

It also remained to be determined:

- how the relative needs and entitlements of beneficiaries, especially developing countries, were to be estimated, and
- how farmers and local communities would benefit from the funding".

41. These issues will be addressed during the negotiating process opened by FAO Resolution 7/93 aiming at the full realization of Farmers' Rights. When operative, the concept of Farmers' Rights, together with the international fund to implement it and the Global Plan of Action on PGR will provide mechanisms for compensation and sharing the benefits with the countries providing genetic resources for food and agriculture.

## V. FUTURE PERSPECTIVES: THE ON-GOING NEGOTIATING PROCESS

42. As noted above (para 2) the FAO Conference in 1993 welcomed Resolution 3 of the Nairobi Final Act and, through resolution 7/93, initiated a process to address the issues of access to *ex situ* collections not acquired in accordance with the Convention, and of Farmers' Rights, in the context of the revision of the International Undertaking on Plant Genetic Resources. As requested by the FAO Conference, negotiations between Governments will be carried out in a step-by-step manner in the Commission on Plant Genetic Resources and its Working Group. Progress will be reported to the FAO Governing Bodies and to the Intergovernmental Committee for the Convention on Biological Diversity, and once established, to the Conference of the Parties of the Convention. The Commission on Plant Genetic Resources at its Fifth Session in 1993 noted that: "at a later stage, FAO might, if it were requested, convert the revised Undertaking into a binding legal instrument, and that this might take the form of a protocol to the Convention. The CPGR emphasised that the decision whether or not to transform the Undertaking into a protocol to the Convention would have to be taken at a later stage, by the Conference of the Parties to the Convention, and that the first steps of the process of revising the Undertaking should not pre-empt this later decision."

43. Parallel to the revision of the Undertaking, and complementary to it, a costed Global Plan of Action is being developed as part of the ICPGR. The Global Plan of Action will be developed through a "bottom-up" country-driven process. The FAO Conference has emphasised that the revision of the Undertaking and the development of the Global Plan of Action should be regarded as an integral process. The intention is that both the revised International Undertaking

and the agreed Global Plan of Action will be adopted at high level session during the fourth International Technical Conference in 1996.

44. The FAO Secretariat will continue to report on progress made on these matters to the ICCBD and to the Conference of the Parties to the Convention on Biological Diversity as appropriate.



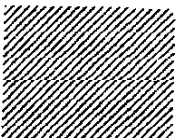
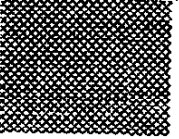
**Chart 1: Interests in ex situ collections; grouping by origin of sample and location of storage**

This chart applies to collections located outside of the country of origin, assembled not in accordance with the Convention on Biological Diversity.

		origin of sample			
		country of origin known		country of origin not known	
		collected under multilateral agreement	collected under bilateral agreement		
Location of Sample	International Centre				
	National Collection	Under International agreement or auspices			
		Not under International agreement or auspices			
	Private Collection				

The Chart shows various "types" of ex situ collection according to the origin of samples and the location of their storage. The country of origin of samples is known in some cases, and not in others. Some samples were collected under bilateral agreements between the collector and the providing country, in other cases collection was made under international auspices or with international financial support and sometimes under agreements which specified that the collected material should be freely available for breeding and research purposes. As to the location of storage of germplasm, some are stored in international centres, including those of the IARCs, others in national (publicly owned or controlled) collections, or in private collections. Some of the national collections operate under international auspices or agreement, others do not. As a result of this complex situation there may be several interests for particular genetic resources. The national interest of the country of origin applies in all cases. Other interests include the national interest of the country hosting the genebank, as well as private interests and the interest of the international community.

**Interests involved**

-  ALL SITUATIONS Country of Origin (has interest in all cases)
-  International Community
-  Owner of Collection Facility or Host nation
-  International Community and Owner of Collection Facility or Host nation

*Resolution 3*

THE INTERRELATIONSHIP BETWEEN THE CONVENTION ON BIOLOGICAL  
DIVERSITY AND THE PROMOTION OF SUSTAINABLE AGRICULTURE

*The Conference,*

*Having agreed* upon and adopted the text of the Convention on Biological Diversity at Nairobi on 22 May 1992,

*Recognizing* the basic and continuing needs for sufficient food, shelter, clothing, fuel, ornamental plants and medicinal products for peoples of the world,

*Emphasizing* that the Convention on Biological Diversity stresses the conservation and sustainable use of biological resources,

*Recognizing* the benefits from the care and improvement by the peoples of the world of animal, plant and microbial genetic resources to supply those basic needs and from the institutional research on and development of those genetic resources,

*Recalling* that broadly based consultations in international organizations and forums have studied, debated and achieved consensus on urgent action for the security and sustainable use of plant genetic resources for food and agriculture,

*Noting* that the Preparatory Committee of the United Nations Conference on Environment and Development has recommended that policies and programmes of priority for *in-situ*, on-farm and *ex-situ* conservation and sustainable use of plant genetic resources for food and sustainable agriculture, integrated into strategies and programmes for sustainable agriculture, should be adopted not later than the year 2000 and that such national action should include *inter alia*:

- (a) Preparation of plans or programmes of priority action on conservation and sustainable use of plant genetic resources for food and sustainable agriculture based, as appropriate, on country studies on plant genetic resources for food and sustainable agriculture;
- (b) Promotion of crop diversification in agricultural systems where appropriate, including new plants with potential value as food crops;
- (c) Promotion of utilization of, as well as research on, poorly known but potentially useful plants and crops, where appropriate;
- (d) Strengthening of national capabilities for utilization of plant genetic resources for food and sustainable agriculture, plant breeding and seed production capabilities, both by specialized institutions and farmers' communities;
- (e) The completion for the first regeneration and safe duplication of existing *ex-situ* collections on a world-wide basis as soon as possible; and
- (f) The establishment of *ex-situ* base collection networks,

*Noting further* that the Preparatory Committee for the United National Conference on Environment and Development has recommended:

- (a) The strengthening of the Global System for the Conservation and sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture operated by the Food and Agriculture Organization of the United Nations in close cooperation with the International Board for Plant Genetic Resources, the Consultative Group on International Agricultural Research and other relevant organizations;
- (b) The promotion of the Fourth International Technical Conference on the Conservation and Sustainable use of Plant Genetic Resources for Food and Sustainable Agriculture in 1994 to adopt the first State-of-the-World Report and the first Global Plan of Action on the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture; and
- (c) The adjustment of the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture in line with the outcome of the negotiations on a Convention on Biological Diversity,

*Recalling* the agreement in the Preparatory Committee for the United Nations Conference on Environment and Development on provisions regarding conservation and utilization of animal genetic resources for sustainable agriculture,

1. *Confirms* the great importance of the provisions of the Convention on Biological Diversity for the conservation and utilization of genetic resources for food and agriculture;
2. *Urges* that ways and means should be explored to develop complementarity and cooperation between the Convention on Biological Diversity and the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture;
3. *Recognizes* the need for the provision of support to the implementation of all activities agreed upon in the programme area on conservation and sustainable utilization of plant genetic resources for food and sustainable agriculture and in the programme area on conservation and utilization of animal genetic resources for sustainable agriculture in the Agenda 21 proposed to be adopted at the United Nations Conference on Environment and Development in Rio de Janeiro;
4. *Further recognizes* the need to seek solutions to outstanding matters concerning plant genetic resources within the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture, in particular:
  - (a) Access to *ex-situ* collections not acquired in accordance with this Convention; and
  - (b) The question of farmers' rights.

Adopted on 22 May 1992

Resolution 7/93

REVISION OF THE INTERNATIONAL UNDERTAKING

ON PLANT GENETIC RESOURCES

THE CONFERENCE,

Noting that

- (a) the United Nations Conference on Environment and Development (UNCED), in Chapter 14 of its Programme of Action, Agenda 21, recommended that the Global System on the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture be strengthened, and that the System should be adjusted to be in line with the outcome of the negotiations of a Convention on Biological Diversity,
- (b) the Convention on Biological Diversity, signed at UNCED by 156 governments and the European Communities, covers plant genetic resources, and recognizes that the authority to determine access to genetic resources rests with the national governments, that access to genetic resources shall be subject to the prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that party, and shall be on mutually agreed terms,
- (c) the Final Act of the Nairobi Conference for the adoption of the agreed text of the Convention on Biological Diversity, in a resolution on the interrelationship between the Convention on Biological Diversity and the promotion of sustainable agriculture, urged that ways and means should be explored to develop complementarity and cooperation between the Convention on Biological Diversity and the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for food and sustainable agriculture, and recognized the need to seek solutions to outstanding matters concerning plant genetic resources,
- (d) the Fourth Session of the FAO Commission on Plant Genetic Resources agreed that conditions of access to plant genetic resources needed further clarification,

Recognizing

- (a) the importance and urgency of revising the International Undertaking, in harmony with the Convention on Biological Diversity, on a step-by-step basis, starting with the integration of the Undertaking and its annexes,
- (b) the need to ensure fair and equitable sharing of benefits with the countries providing plant genetic resources,
- (c) the need to consider agreement on the terms of access to samples of plant genetic resources, including those preserved in ex situ collections, and not addressed by the Convention on Biological Diversity,
- (d) the need to realize Farmers' Rights,

- (e) the importance of close collaboration, including mutual reporting, in these matters, between the Commission on Plant Genetic Resources and the Governing Body of the Convention on Biological Diversity, the Intergovernmental Committee on the Convention on Biological Diversity, as well as the Commission on Sustainable Development;
1. Requests the Director-General to provide a forum for negotiations among governments:
    - (a) for the adaptation of the International Undertaking on Plant Genetic Resources, in harmony with the Convention on Biological Diversity,
    - (b) for consideration of the issue of access on mutually agreed terms to plant genetic resources, including ex situ collections not addressed by the Convention, as well as
    - (c) for the issue of realization of Farmers' Rights;
  2. Urges that the process be carried out through regular and extraordinary sessions of the Commission on Plant Genetic Resources, convened, if necessary, with extra-budgetary financing, and with the help of its subsidiary body, in close collaboration with the Intergovernmental Committee on the Convention on Biological Diversity, and after the entry into force of the Convention, with its Governing Body;
  3. Expresses the hope that the process be concluded in time for the FAO International Technical Conference on Plant Genetic Resources; and
  4. Suggests that the outcome be submitted to the International Technical Conference and to the Conference of the Parties to the Convention on Biological Diversity.

(Adopted 22 November 1993)

### Annex 3: Ex situ collections held by the IARCs.

The following table lists the germplasm accessions housed in the genebanks of the International Agricultural Research Centres of the CGIAR. An estimated two thirds of the accessions have been provided by sovereign countries, mainly through donations or joint collectioning missions. The remainder are mostly materials which have been enhanced by the Centre's own breeding programmes. The CGIAR distributes annually about 125,000 samples from these collections: approximately 50% to IARCs and other international agencies and programmes in developing countries, 30% to the various host countries, and about 20% to other national programmes. In addition to the genebank samples, the CGIAR Centres also distribute annually well over 500,000 samples of breeding lines to more than 120 countries worldwide.

#### *Ex situ collections of plant germplasm at CGIAR Centres*

<u>CENTRE</u>	<u>CROP</u>	<u>No. ACCESSIONS</u>
<b>CIAT</b>	Phaseolus	26,852
	Cassava	5,432
	Forages - Grasses	2,092
	Forages- Legumes	17,927
	<b>TOTAL</b>	<b>52,303</b>
<b>CIMMYT</b>	Maize	11,322
	Teosinte	94
	Tripsasum	80
	Barley	7,991
	Bread Wheat	52,839
	Durum Wheat	13,448
	Primitive and Wild Wheats	7,507
	Rye	194
	Triticale	13,268
	<b>TOTAL</b>	<b>106,743</b>
<b>CIP</b>	Potato	5,455
	Sweet Potato	5,663
	Other Andean Roots and Tubers	468
	<b>TOTAL</b>	<b>11,568</b>
<b>ICARDA</b>	Barley	23,011
	Aegilops	2,783
	Bread Wheat	7,771
	Durum Wheat	19,473
	Forage Legumes	20,873
	Chickpea	9,084
	Lentil	7,807



	Pea	3,449
	Vicia Faba	9,299
	<b>TOTAL</b>	<b>103,550</b>
<b>ICRISAT</b>	Chickpea	16,443
	Groundnut	12,841
	Pearl Millet	21,919
	Pigeonpea	11,910
	Small Millet	7,082
	Sorghum	32,890
	<b>TOTAL</b>	<b>103,085</b>
<b>IITA</b>	Bambara groundnut	2,000
	Cassava	1,704
	Cowpea	16,805
	Maize	1,214
	Rice	9,852
	Rice (O.glaberrima)	2,503
	Taro	60
	Soybean	1,347
	Sweet Potato	1,000
	Yam	2,660
	Musa	440
	Multipurpose Trees	300
	Miscellaneous Food Legumes	316
	<b>TOTAL</b>	<b>40,211</b>
<b>ILCA</b>	Forages	
	- Browse Species	1,466
	- Grasses	1,775
	- Legumes	6,759
	<b>TOTAL</b>	<b>10,000</b>
<b>INIBAP</b>	Banana	1,053
	<b>TOTAL</b>	<b>1,053</b>
<b>IRRI</b>	African Rice	1,335
	Asian Rice	72,403
	Wild Rice Species	2,216
	<b>TOTAL</b>	<b>75,954</b>
<b>WARDA</b>	Asian Rice	4,913
	African Rice	1,136
	<b>TOTAL</b>	<b>6,049</b>
<b>ALL</b>	<b>TOTAL</b>	<b>510,534</b>

#### Annex 4: Notes on Domestic Animal Genetic Resources

The first analysis of the Global Databank on Animal Genetic Resources which is being developed by FAO, was recently released in the First Edition of the World Watch List for Domestic Animal Diversity, published by FAO and UNEP. This analysis highlighted the serious state of a large proportion of the genetic resources of the 40 or so species of animals widely used for food and agriculture. Based on the global survey data in the Databank, above 30% or 1,200 of the expected total of 4,000 breeds are now at very high risk of extinction.

In domestic animals *ex situ* conservation will primarily rely on cryopreservation of semen and, where technology exists, of embryos and particularly of oocytes. Until now *ex situ* conservation by cryopreservation has not been widely used in these animals. FAO information indicates that adequate *ex situ* samples are currently being maintained for as few as 100 of the predicted 1,200 breeds currently categorised as being at high risk of extinction. However this must change and cryopreservation must be employed more widely in the maintenance of global animal genetic resources and the conservation of this segment of biodiversity. *Ex situ* conservation forms one of the six primary elements in FAO's new and comprehensive programme for the global management of animal genetic resources and conservation of domestic animal diversity. This programme also incorporates the wild relatives for these species.

A preferred global strategy for *ex situ* conservation of domestic animals, which is in keeping with the Convention on Biological Diversity, combines national genebanking with global repositories of last resort as a safety net.

Access and ownership issues associated with *ex situ* conservation of animal genetic resources are still to be elaborated.