# Botanic Garden's Collections and the CBD - Rio de Janeiro Botanic Garden case study.

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## Botanic Garden´s state of art

Botanical gardens are very significant among the few forces which exist to fight against the catastrophic losses imposed on endangered habitats and have been instrumental in the plant conservation movement around the world (Hawksworth,1995). They are strategically placed as a result of their historical collection strategies. The Plant Kingdom is, as well documented as it is, because of Botanic garden activity. They have contributed enormously to the knowledge of our plant biodiversity.

Botanical gardens collections represent one of the most powerful tools in the conservation of many threatened species from the world plant heritage. They are geared towards carrying out ex-situ conservation and they enable the accommodation and management of important genetic resources.

Botanic gardens historic acquisitions around the world represent a level of guarantee of conservation of some potential economic species. Native plant relatives from crops and other important economic species with potential for human survival may also be found in Botanic garden collections. They have the potential to facilitate the introduction of new resources for utilisation for the benefit of mankind.

Botanical gardens associations have developed conservation strategies and have formed a huge international network – Botanical Gardens Conservation International. Herbaria also have huge international network – the IAPT (International Association for Plant Taxonomy) and a long-standing code of conduct involving loan and exchange of genetic resources in the form of herbarium collections. Their exchange programs are well placed to lock into the world's conservation moves. Together with the International Code of Botanical Nomenclature, plant taxonomy, which is one of its attributions, is well regulated with internationally agreed practices.

In spite of a range of obstacles botanical gardens prioritise species representation in their collections based on genetic resources acquisition around the world. The gardens are updating their rules for enriching their collections by way of having responsible acquisition policies in the letter and spirit of the CBD.

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In the end, the exchange of such species between relevant institutions will facilitate public awareness and support for conservation. With this procedure, among others, botanical gardens can enhance community goodwill for conservation.

The Convention has a major influence upon the availability of access both to in-situ genetic resources as well as to genetic resources held by botanic gardens and other ex-situ collections. Botanic gardens will be increasingly affected by requirements that access should be on Mutually Agreed Terms (MAT) and that benefits arising from research and commercialisation should be shared with source countries (ten Kate, 1995b).

The CBD was set up in 1993 and, by default, set an artificial distinction between acquisitions made prior to 1993 and acquisitions made after 1993. This time frame, in addition to creating this distinction, has legal implications under the CBD. However, the timing of acquisition of botanic gardens collections has no significance on the ground conservation needs, with or without CBD.

Because of all the considerations above, we recognize that botanic gardens and Herbaria must treat all their acquisitions as if they are post 1993 acquisitions. The arguments for this approach are: the vast bulk of their acquisitions are pre 1993, reduced administrative procedures, uniform approach to benefit-sharing, uniform treatment under the “coverage” of the Convention and maintenance of the spirit of the CBD; botanic gardens have no power to make or break laws but do have a scientific and moral imperative to support responsible conservation of the world’s biodiversity. The biggest argument against this approach could be the potential legal complications for the botanic gardens, once pre 1993 acquisitions have no legal coverage under the CBD.

## A Botanic Gardens´s Material Transfer Policy

A harmonised, multilateral botanic gardens policy on access and benefit-sharing is needed and it will be very useful in order to increase transparency among botanic gardens. The main reason to build this policy is because botanic gardens who do not adhere to the letter and spirit of the CBD’s access and benefit-sharing (Glowka et al., 1994) could expose all botanic gardens to criticism and risk provoking future restrictions on access to source-country material.

With over 1700 botanic gardens world-wide (Heywood, 1990), a botanic garden policy could build trust with government access authorities and thereby facilitate access with less bureaucracy and lower transaction costs. It could also promote more efficient communication and exchange of genetic resources among botanic gardens through standardisation of exchange agreements and policies.

On this way, a team of 16 botanic gardens world-wide where grouped to discuss and formulate a policy in general terms, which will seek 'best practice' by operating in the spirit of the CBD.

Members of the group saw the link between ex-situ and in-situ conservation as crucial to defining a niche for botanic gardens within a CBD policy framework. In this context, the value of botanic gardens was noted in three principle contexts: re-introduction of certain species to in-situ environments, alongside habitat rehabilitation; preservation of species ex-situ where reintroduction is impossible; and capacity-building in source countries undertaking in- situ conservation of plant genetic resources.

## Conservation at Brazilian Botanic Gardens

Brazilian plant systems represent one of the richest systems of the world. Much of their environment is threatened; including the Brazilian Atlantic rain forest and the brazilian savanna ("cerrado") (Brasil,1998). However, the few number of brazilian botanical gardens are not sufficient to represent and preserve Brazilian Plant Heritage in such a large country. There are 25 botanic gardens linked to the Brazilian Network of Botanic Gardens, and they don't have a clear collection's acquisition policy. They represent many species from other countries but their main live collections are regional, and their value increases as agricultural practices and urban growth are degrading their natural habitat.

The absence of a national law to govern plant material transfer [2]makes decision-making very difficult for all public institutions. For this reason it is time to create local procedures based on standard methods to regulate the main policies, based on codes of conduct and the best practice.

[2] Silva, M., 1995 – Is the Brazilian Project Bill which is been analysed by Brazilian Government since the date of its creation.

Rio de Janeiro Botanic Garden Research Institute

Rio de Janeiro Botanic Garden is the oldest Brazilian botanic garden, highly experienced in plant taxonomy and species conservation.

Sited near the biggest world urban forest, Rio Botanic Garden receive yearly a huge amount of visitors, and have one of the oldest and largest plant material exchange program of the whole country, including dry herbarium specimens and seeds. A very broad public search for services, they could be scientists or general public, looking for the right names of the plants, or for the checklist from someplace, or how to reproduce a certain species, which are the matter of research from taxonomists and ecologist.

Those products must to have current monetary value, but they are not easy to evaluate (Primack, 1993). Knowledge transfer must have other value than scientific publications for the Botanic Garden. Access and benefit-sharing need to be seen as an useful way to capacity-building and training to Botanic Gardens development. On this way of thinking, Rio de Janeiro Botanic Garden Institute receives sponsorship to maintain live collections and plant labels, lawns and visitors path. But knowledge must have high benefits institution reverting.

The staff has agreed on a policy for collecting and accessing genetic resources and knowledge transfer, which includes material transfer agreements for germplasm / exsicate exchange where the request institution must to agree formally with some compromises before the receiving of the material/knowledge.

In a broad sense those accomplishment insure the following: that the request shall be previously approved by the Permanent Commission of Germplasm Collection and Assessment; the material used shall be for the common good of conservation research, education purposes and Botanic Gardens collection representation; the plant material or any product, progeny, propagule or derivative genetic material shall not be transferred to others without written authorisation from the Rio de Janeiro Botanic Garden Research Institute; any publication proceeding from the use or study of the material granted shall include credits to the Research Institute; a copy of the publication shall be sent to the Rio de Janeiro Botanic Garden of up to one year after the publication. In case of acquiring the material for trading any of its parts or derivatives, or the thirds use of any associated information about genetic resources samples, it will be necessary to obtain a permission, which

will be a commitment term between the Rio de Janeiro Botanic Garden Research Institute and the seeker.

Beside this procedure the research team organises the scientific collections policy and an Exchange Germplasm Agreement (MTA) in order to adequate their collections to the new approach of the CBD (IPGRI, 1996) looking for access and benefit-sharing, as follow:

## RIO DE JANEIRO BOTANIC GARDEN RESEARCH INSTITUTE COLLECTION POLICY[3]

## I. On fundamental principles

## The Institutional Mission

Rio de Janeiro Botanic Garden Research Institute, is a centenary institution, which history and importance are associated to the representation of the Brazilian flora and also from some acclimatised species of the world plant heritage; it's mission is to promote and spread research on Brazilian floristic resources aiming the knowledge and the conservation of it's biodiversity.

Rio de Janeiro Botanic Garden Research Institute, harmonised with its Institutional Mission, with the Convention on Biological Diversity - CBD, and also with "Botanic Gardens Conservation's Strategy ", decide to establish its Collection and Access to Genetic Resources Policy, join to the world effort for plant biodiversity conservation.

For the purposes of this document the terms bellow are defined as follow:

1 – Genetic resources sample - is the sample of genetic resources which represent a biological individual or more from one population, included in a scientific collection, with their basic information, which are: collection registration number, scientific epithet, provenance, the name and number of the collector and the date of the field collection.

[3] Botanic Gardens Conservation International (1994), UNEP/CBD (1994), Botanic Gardens Conservation International (1995), Convention on Biological Diversity Secretariat (1995), World Conservation Monitoring Centre /WCMC (1996) are the main literature used to build this Policy.

2 - Access to genetic resources - it is the collection of proceedings used to get, represent and transfer plant material.

3 - Genetic Resources - represent any plant material, which contain functional units of heredity of actual or potential value. This definition is likely to cover living and herbarium specimens as well as derivatives.

In order to implement the Collection and Access to Genetic Resources Policy, the Botanic Garden will use the follow instruments:

I - The Live Collection Curator (LCC);
II - The Herbarium Curator (HC);
III -The Permanent Commission on Collection and Access to Genetic Resources (CPRG).

## II. The scientific collections

The collection of plant material in the field to represent any taxa into Rio Botanic Garden collections must be harmonised to the CBD.

Any plant material incorporated into the collections must be represented with a voucher at RB (Rio de Janeiro Botanic Garden Herbarium); it could be admitted exceptions only if the material is from donation origin or exchange material.

Each specimen incorporated into the Rio Botanic Garden Collections must be mainly tied to the research institutional programs or originated from scientific expeditions bonded to the Collection’s Policy. It could be admitted exceptions if the material is originated from scientific exchange.

### II a - The Herbarium Collections

Herbarium Collections are defined for purposes of this documents as the collection of individual samples representative from plant species, submitted to a special procedures of drying, cleaning, register and storage, setting up the heaps of the dried plant fragments, fruits, seeds, timber samples and plant pictures.

The specimens to be incorporated into Herbarium Collection (RB) must be obligated to have basic informations about provenance, name of the collector and the collection date. The registration number from the material on RB Herbarium must be registered in the tag of the other Live Collections; it could be admitted exceptions only if the material is from donation or from exchange origin.

### II b - The Live Collections

Live Collections are defined for purposes of this document as the collection of alive individual samples representative from plant species, accurately registered, that could be under cultivation at the Arboretum, into the greenhouses or at the nursery, or it could be yet seed samples stored in the Seed Bank.

Any plant material to be represented into the Live Collections must be obligated to have basic informations, in order to be inserted in a registration system, preferably an electronic data base system, which could be linked to other collection's data base systems.

The national flora assessments must be harmonised to the management plan; the new incorporations of any specimen into the Live Collection must be an agreement between Research and Arboretum Departments.

## III - Access to genetic resources

Access to the Brazilian genetic resources by the foreign institutions, with the help of Rio de Janeiro Botanic Garden Research Institute, must have the approval in advance from National Research and Biotechnology Council (CNPq), with respect to the Federal Law number 55, from March, 14$^{th,}$ 1990 from Science and Technology Ministry.

### III a - The Herbarium Collections

It could be allowed the loan between botanic gardens or other institutions, only with identified plant material. The reception of plant material in charge to identification of plant species could only be admitted with the advanced agreement between the parties, when this represent the description of new

taxa It must be kept the rights of Rio Botanic Garden, as the owner of typus specimens and its duplicates, to storage and spread.

Typus collections could be loan or exchange, only by agreement and autorization from the Herbarium (RB) Curator.

It is only admitted loans of scientific collections by material of same scientific value.

III b - The Live Collection

It must be adopted the minimum criteria[4] for plant genetic material collection, created by the research team, which is an annex of this document, in order to have genetic provenance representation of plant material into the scientific collections, for those field collections aiming reproductive purposes.

The CPRG must be notified about the assessment stock in the Seed Bank and Nursery, and also about the plant material which doesn't a represent genetic resources sample in Rio Botanic Garden, for exchange and donation purposes.

The plant material transfer could only be made by the signature of the Germplasm exchange agreement (which will follow this policy as an annex) by the requesting institution. The reply with the plant material requested would only be send with the agreement of the CPRG.

Plant material transfer could be realized for private meanings (for example, plant trade), after the agreement from the CPGR, always if there are availability of plant material. In this case the benefits between parties must be clear up in a special Co-operation Agreement.

Cuttings and saplings, which don't represent a genetic resources sample from the Live Collections, could be sold by the Rio Botanic Garden.

By exception, cutting and saplings, which represent a genetic resources sample, could be sold, exclusively with the authorisation of the CPRG.

[4] Vencovsky, R. 1987 – Brazilian author used to create minimum criteria for seed/cuttings field collection for Rio de Janeiro Live collections introductions.

It is not available for germplasm exchange the species listed on Official List of Endangered Species of CITES.

IV - The instruments to implement the Policy

The Herbarium Curator

The Herbarium Curator is defined for purposes of this document as the collection of technique-administrative procedures, to which the heap is submitted, aiming its organization, conservation and optimization.

It is an attribution of the Herbarium Curator to grant authorization to the use of herbarium materials from collections for taxonomic research.

It is an attribution of the Herbarium Curator to make and control exchange and loans of plant material, as such as to up to date the species nomenclature of the collection.

The Live Collections Curator

The Live Collections Curator is defined for purposes of this document as the collection of technique-administrative procedures to which the heap is submitted, aiming its organization, conservation and optimization.
It is an attribution of the Live Collections Curator to elaborate, implement and atualize the Live Collection Management Plan.

It is an attribution of the Live Collections Curator to put the tags of the sections, flowerbeds and individual plants in the Arboretum; as such as to realize sanitary inventory, edaphic and hidric diagnostic and to execute horticultural and tree cares to the collection, including high -pruning.

Is an attribution of the Live Collections Curator, joined to the research Department, to promote the collection’s inventory, to realize exclusions, rescues and incorporations of exemplars to the collections, as such as the management of the data base system.

The Permanent Commission on Collection and Access to Genetic Resources (CPRG)

The Permanent Commission on Collection and Access on Genetic Resources (CPRG) is sovereign to decisions ad referendum the Rio Botanic Garden´s Director to implement the Collection and Access to Genetic Resources Policy.

It is an attribution of the CPRG to analyse and to deliver concepts about the subjects related to the Management Plan for Live Collections and also about the Collection and Access to Genetic Resources Policy.

Are exclusive attributions of CPRG to ponder about the exchange from those reproductive plant material, which are elect to be genetic resources samples from scientific collections; it is also its attribution to decide about exclusions, rescue and incorporation of exemplars to the collections according to the Management Plan of the Live Collection.

It is an attribution of the CPRG to organize a list of institutional benefits to be used for exchange meanings.

It is an attribution of the CPRG to ponder about the requests of germplasm from privates, defining the benefit-sharing.

It is an attribution of the CPRG to keep a debtor’s up to dated register from those institutions, which didn’t fulfil the Germplasm exchange agreement.

It is an attribution of the CPRG to evaluate the interest of the Rio Botanic Garden to receive live plant material donations for the scientific collections.

It is an attribution of the CPRG to analize and resolve about special cases or those omitted by this document.

The CPRG would have a mixed composition, with representatives belonging to: the Director (1), the Research Coordination (3), the Arboretum Coordination (2) and the Cultural Department (1); it must have total of 7 (seven) members, indicated by their straight leadership.

This Policy will be sign by Rio de Janeiro Botanic Garden Director to constitute a domestic rule to be implemented during 1999-2000. The whole rule text and annexes will follow the main exchange documents for foreign and Brazilian institutions.

As a basic rule, Rio de Janeiro Botanic Garden elect the follow for benefit-sharing: taxonomic/ecological data, collaborative research - inclusive of training and capacity building, transfer of equipment and/or the means to make such equipment; employment of source-country technicians, joint authorship/publication, or acknowledgement in papers, educational material, live and herbarium collection enrichment.

The follow Material Transfer Agreement was created for seed exchange, but have been used for live plant cuttings and saplings; it will be enclosed joint to the signed policy in the Index Seminum issue which have been usually sent for botanic gardens world-wide.

MINISTÉRIO DO MEIO AMBIENTE, DOS RECURSOS HÍDRICOS E DA AMAZÔNIA LEGAL
INSTITUTO DE PESQUISAS JARDIM BOTÂNICO DO RIO DE JANEIRO

## GERMPLASM EXCHANGE AGREEMENT

Institution: _____

Address: _____

Representative's name:_____

Representative's position: _____

According to determinations established at convention on bio-diversity (Rio-92), the Rio de Janeiro Botanic Garden Research Institute will only furnish germplasm to public organs and similar institutions under the following conditions:

- this request shall be previously approved by the Permanent Commission of Germplasm Collection and Assessment;
- the service will be linked to the availability of material in storage, or to the seeds collection season;
- the material use shall aim for the common good with research, education conservation purposes and Botanic Gardens collection representation;
- in case of acquiring the material for trading any of its parts or derivatives, it will be necessary to obtain a permission, which will be a commitment term between the Research Institute of the Botanic Gardens of Rio de Janeiro and the seeker;
- the plant material or any product, progeny, propagule or derivative genetic material shall not be transferred to others without written authorisation from the Rio de Janeiro Botanic Garden Research Institute;
- any publication proceeding from the use or study of the material granted shall include credits to Rio de Janeiro Botanic Garden Research Institute. A copy of the publication shall be sent to the Rio de Janeiro Botanic Garden Research Institute up to one year after the publication.

Complete the chart below with the numbers of the species selected from the Index Seminun

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I AGREE: _____

Signature and date

Please send this order to the following address:
Instituto de Pesquisas Jardim Botânico do Rio de Janeiro
Banco de Sementes
Rua Pacheco Leão, 915 - Rio de Janeiro/RJ
22.460-030 - Brasil

Reserved to the Research Institute of Botanic Gardens of Rio de Janeiro

Recebido em: _____

Encaminhe-se à Comissão Permanente de Acesso a Recursos Genéticos:_____

Parecer da Comissão:

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Data:_____

Literature

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