DAY ONE Session 2
Summary of Overheads

1.2.1

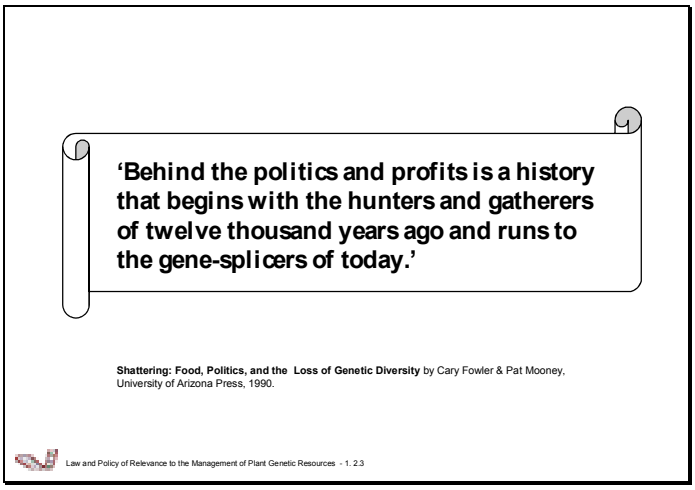
Session 2 : History and Development of Law and Policy, Related to Plant Genetic Resources and the FAO Global System

1.2.2

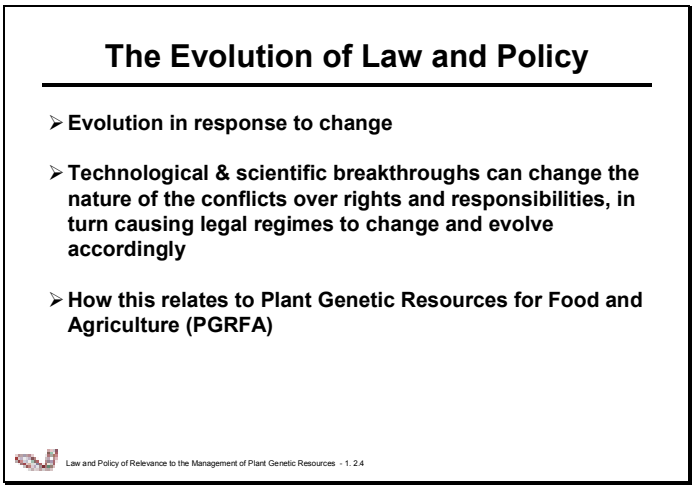
Objectives of Session 2

- **Describe how legal regimes governing genetic resources have evolved, responding to changes in perceptions of sovereignty and intellectual property rights**
- **Describe the main contributions of the FAO Global System to the conservation and sustainable use of plant genetic resources for food and agriculture**

1.2.3


'Behind the politics and profits is a history that begins with the hunters and gatherers of twelve thousand years ago and runs to the gene-splicers of today.'
Shattering: Food, Politics, and the Loss of Genetic Diversity by Cary Fowler & Pat Mooney, University of Arizona Press, 1990.
Law and Policy of Relevance to the Management of Plant Genetic Resources - 1. 2.3

1.2.4


The Evolution of Law and Policy
Evolution in response to change
Technological & scientific breakthroughs can change the nature of the conflicts over rights and responsibilities, in turn causing legal regimes to change and evolve accordingly
How this relates to Plant Genetic Resources for Food and Agriculture (PGRFA)
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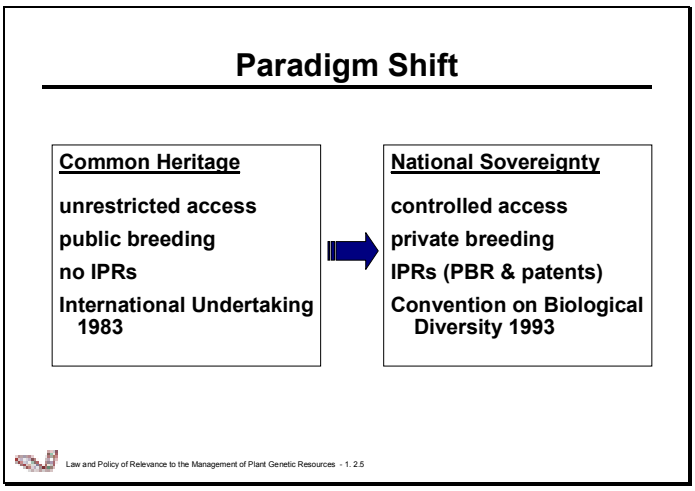
1.2.5


Paradigm Shift
Common Heritage
unrestricted access
public breeding
no IPRs
International Undertaking 1983
National Sovereignty
controlled access
private breeding
IPRs (PBR & patents)
Convention on Biological Diversity 1993
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1.2.6

The Food and Agriculture Organization (FAO)

- The Food and Agriculture Organization of the United Nations responded in 1983 by establishing the Global System for the Conservation and Utilization of Plant Genetic Resources. The System consisted of:
  - A Commission on Plant Genetic Resources to oversee the Global System
  - The International Undertaking on PGRFA (next slide)
  - Codes of Conduct and Guidelines
  - The Report on the State of the World's PGRFA
  - The Global Plan of Action
  - Network of *Ex Situ* Collections
  - World Information and Early Warning System

1.2.7

International Undertaking on PGRFA

- Originally based on common heritage of mankind and free availability
- Reservations and difficulties
  - Sovereignty and the CBD
  - Plant Breeders' Rights
- Agreed interpretations
  - National sovereignty
  - Recognition of Plant Breeders' Rights
  - Recognition of Farmers' Rights
- Re-negotiated in harmony with CBD as International Treaty of Plant Genetic Resources for Food and Agriculture (see chapter on IT)

1.2.8

The Convention on Biological Diversity

- Conceived in the mid- to late 1980s, adopted in 1992 and entered into force in 1993
- Almost universal: 188 Parties
- Objectives: conservation, sustainable use, fair and equitable benefit sharing
- Based on concept of national sovereignty
  - Access subject to national legislation
  - Prior consent and mutually agreed terms
  - Country of origin
  - In practice, implemented bilaterally
- Emphasis: *In situ* conservation
- Problems for PGRFA

1.2.9

Intellectual Property Rights: National and International Trends

- The application of modern biotechnologies to biological materials has brought new economic opportunities and the growth and subsequent consolidation in industry concerned with bio-industrial products
- Growth of Plant Breeders' Rights and Patents
- Mirroring larger trends in globalization, many private sector interests, national governments and intergovernmental organizations are making concerted efforts to 'harmonize' IPRs
- The TRIPS Agreement and the evolution of the International Convention for the Protection of New Varieties of Plants (UPOV) reflect these efforts
- Biotechnology X Biodiversity
- Farmers' Rights


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1.2.10

UPOV

- ***Sui generis*** **system of intellectual property rights for the protection of plant varieties**
- **'DUS' Requirements: Distinct, Uniform, Stable**
- **Four versions, only 1991 open for new Parties. Trend has been towards increasing strength of right holder and increasing number of Parties**
- **Breeders' rights and farmers' privilege**


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1.2.11

WIPO

- **Intergovernmental organization established in 1967 to promote intellectual property rights worldwide**
- **In March 1998, the WIPO General Assembly approved a reinvigorated programme for the Global International Property Issues Division that would address issues of biodiversity, human rights and indigenous rights through activities such as research, publication and consultations**
- **WIPO Intergovernmental Committee on Traditional Knowledge, Genetic Resources and Folklore**


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1.2.12

Comparison between Biological Diversity, Genetic Resources and Biological Resources

- **Biological diversity is an attribute of life: the diversity of life**
- **Biological resources are real entities, such as seeds, genes, maize, elephants, etc.**
- **Genetic resources are genes and other genetic material of actual or potential value contained in biological resources**

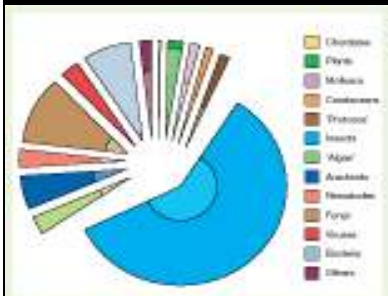
1.2.13

Diversity of Life

- **Total number of species on Earth is estimated at between 13 and 14 million**
- **Only 1.75 million have been described**
- **Enormous diversity between *and within* these species**
- **The complex patterns of variation and distribution that they exhibit provide the very substance of biodiversity**

1.2.14

Getting the measure of biodiversity



1.2.15

Richness of Species

MEGADIVERSITY HOLDERS

Latin America

- Brasil, Colombia, Equador, Mexico, Peru,Venezuela

Asia

- China, India, Indonesia, Malaysia, Philippines

Africa

- Madagascar, Zaire, South Africa, Dem. Rep. of Congo

Oceania

- Australia, Papua New Guinea

Adapted from Miguel Guerra, UFSC, 2004.

1.2.16

The Indirect Use Value of Biodiversity

- **is the value of biodiversity in supporting economic and other activities in society**
- **this value stems from the role of biodiversity in maintaining ecosystem services that support biological productivity, regulate climate, maintain soil fertility, and cleanse water and air**

1.2.17

The Value of Biodiversity

- **Habitats of 16 biomes**
- **Estimates of mean value/ha of 17 different services, including:**
  - Regulation of atmosphere composition and climate
  - Agriculture and forestry
  - Recycling
  - Water and nutrients;
  - Pollination and bilogical control;
  - Genetic resources
  - Recreation and culture
- **US$ 14.785/ha/year: mangrove**
- **Tropical forest: US$ 2.007/ha per year**
- **US$ 33000 billion/year: total value of goods and services**
- **World economy: US$ 18000 billion/year**

Constanza et al. 1997, *Nature* 387(6230).

1.2.18

Germplasm

- **The genetic material that constitutes all life forms**
- **Genetic resources that can also be used to improve or change organisms through processes such as:**
  - **crossing**
  - **selection**
  - **genetic engineering**

1.2.19

The Direct Use Value of Biodiversity

is the value of those components of biodiversity that satisfy humanity's needs:

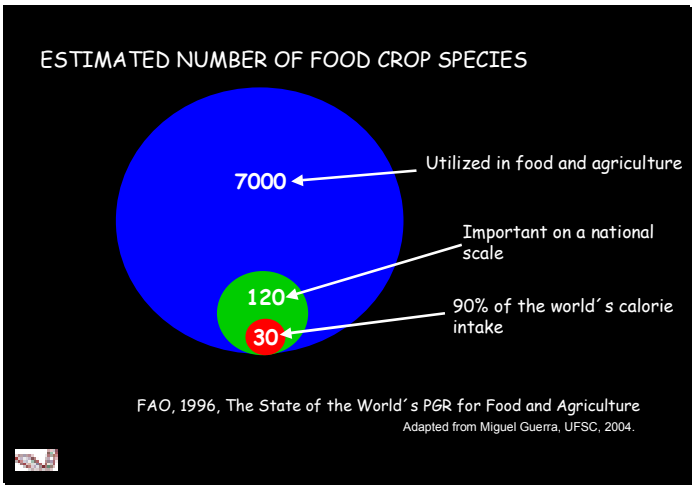
- ***Consumptive* use of genes, species or ecological communities, or biological processes to meet needs, such as food, fuel, medicine, energy and wood**
- ***Non-consumptive* use of components of biodiversity, such as recreation, tourism, science and education**

1.2.20

Importance of the Diversity of Plant Species

- **There are between 300,000 and 500,000 species of higher plants**
- **Approximately 250,000 have been identified or described**
- **30,000 are edible**
- **7,000 or more have been cultivated or collected by humans for food at one time or another**

1.2.21



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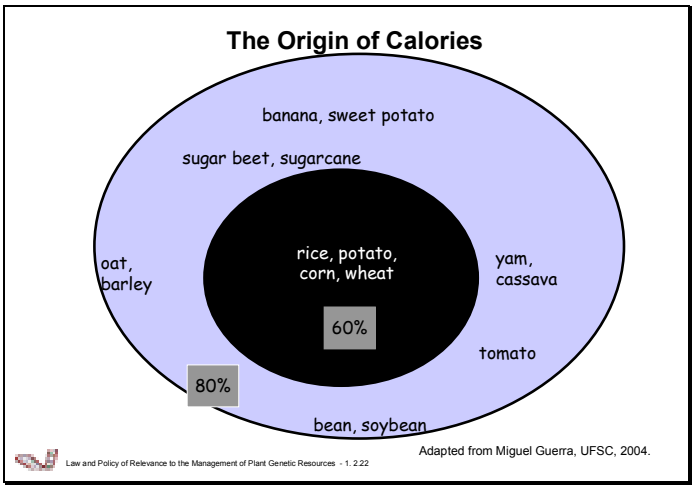

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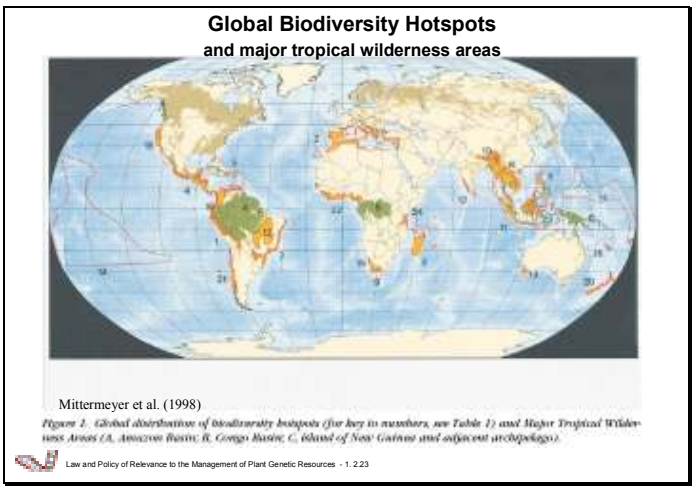

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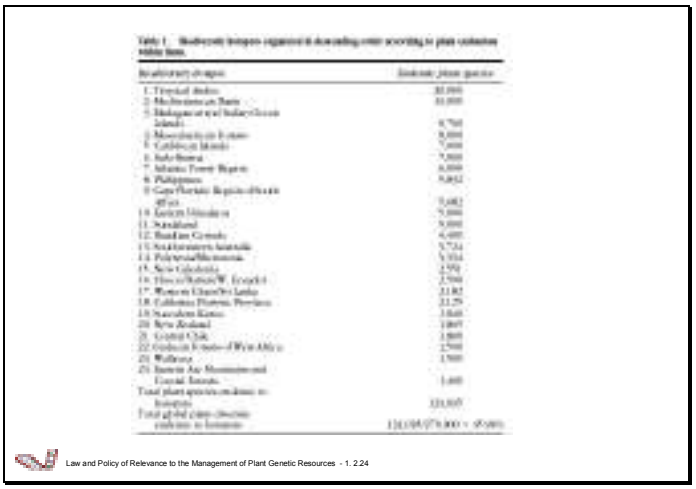

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1.2.25

Table 2-3. Diversity and endemism of higher plant species[a].

Country	Total diversity	Endemism	Endemism as % of global diversity of higher plants[b]
Brazil	~ 50,000 - 56,000	~16,500 - 18,500	6.6-7.4
Indonesia	~37,000	14,800 - 18,508	5.9-7.4
Colombia	45,800 - 51,000	15,000 - 17,008	6.0-6.8
Mexico	18,800 - 30,000	10,000 - 15,008	4.0-6.0
Australia	15,638	14,458	5.8
Madagascar	11,800 - 12,000	8,800 - 9,400	3.5-3.8
China	27,100 - 30,000	~10,000	~4.0
Philippines	8,000 - 12,000	3,800 - 6,000	1.5-2.4
India	> 17,000	7,025 - 7,875	2.8-3.2
Peru	18,800 - 20,000	5,356	2.1
Papua New Guinea	15,800 - 21,000	10,500 - 16,008	4.2-6.4
Equador	17,600 - 21,100	4,000 - 5,000	1.6-2.0
United States	18,956	4,036	1.6
Venezuela	15,800 - 21,070	5,000 - 8,000	2.0-3.2
Malaysia	15,000	6,500 - 8,000	2.6-3.2
South Africa	23,420	16,508	6.6
Dem.Rep. of Congo	11,000	3,200	1.3

[a] Taking into account a total of 250,000 species in the world.
[b] The 17 megadiversity countries have between 155,475 and 183,025 endemic species, that is, from 62.2% to 73.2% of global higher plant diversity.
Source: Mittermeier *et al.* (1997).

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1.2.26