



COMPILED AND CIRCULATED BY BANGAMOTI HANSDA, ASSISTANT PROFESSOR,
DEPARTMENT OF BOTANY, NARAJOLE RAJ COLLEGE

CBD and BIOPROSPECTING

1. Write a short note on CBD.

CBD or Convention on Biological Diversity –

The Conservation of Biological Diversity (CBD) is an international treaty which is ratified by 196 nations. It is a legal instrument with three main aims which are consists of the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Its overall objective is to encourage actions, which will lead to a sustainable future.

The biodiversity conservation is a common concern of mankind. The Convention on Biological Diversity covers biodiversity at all levels like ecosystems, different species populations and genetic resources. It also covers biotechnology, including through the Cartagena Protocol on Bio-safety. It also covers all possible domains that are related to biodiversity and its role in development, ranging from science to industry, politics to business and education to agriculture, culture and much more.

The CBD's governing body is the Conference of the Parties (COP). The authority of all parties that have ratified the treaty meets every two years to observe progress, set priorities and work planning.

The Secretariat of the Convention on Biological Diversity (SCBD) is based in Montreal, Canada. Its main function is to assist governments in the implementation of the CBD and to organize meetings, draft documents and coordinate with other international organizations and to conduct programs to collect and disseminate information. The Executive Secretary is the head of the Secretariat.



COMPILED AND CIRCULATED BY BANGAMOTI HANSDA, ASSISTANT PROFESSOR,
DEPARTMENT OF BOTANY, NARAJOLE RAJ COLLEGE

History:

Earth's biological resources are important for human economic and social development. As a result, there is a growing recognition that biodiversity is a global resource of great value to present and future generations. At the same time, the threat to species diversity and their ecosystems has never been as great as it is today. Species extinction caused by human activity continues at an alarming rate.

The United Nations Environment Programme (UNEP) convened the Ad Hoc Working Group of Experts on Biological Diversity in November 1988 to explore the need for an international convention on biological diversity and established the Ad Hoc Working Group of Technical and Legal Experts in May 1989 to prepare an international legal instrument for the conservation and sustainable use of biological diversity. The experts were to take into account "the need to share costs and benefits between developed and developing countries" as well as "ways and means to support innovation by local people".

By February 1991, the Ad Hoc Working Group had become known as the Intergovernmental Negotiating Committee and its work completed on 22 May 1992 with the Nairobi Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity. The Convention was opened for signature on 5 June 1992 at the United Nations Conference on Environment and Development and It remained open for signature until 4 June 1993. During this time it received 168 signatures. The Convention took effect on 29 December 1993, which was 90 days after the 30th ratification. The first session of the Conference of the Parties was held in the Bahamas from 28 November to 9 December 1994.



COMPILED AND CIRCULATED BY BANGAMOTI HANSDA, ASSISTANT PROFESSOR,
DEPARTMENT OF BOTANY, NARAJOLE RAJ COLLEGE

The Convention on Biological Diversity was inspired by the growing commitment of the world community towards sustainable development. It represents a dramatic step towards the conservation of biodiversity, the sustainable use of its constituents and the fair and equitable sharing of benefits arising from the use of genetic resources.

2. Write in your own language about Bioprospecting.

Bioprospecting –

Bio prospecting or biodiversity prospecting is the analysis of natural sources for small molecule, macromolecules, biochemical and genetic information that could be developed into commercial products for the agriculture, aquaculture, bioremediation, nanotechnology, cosmetics and for pharmaceuticals industries. In the pharmaceutical industry, almost one third of all small-molecule drugs approved by the U.S. food and drug administration (FDA) between 1981 and 2014 were derived from natural products.

Terrestrial plants, fungi and actinobacteria have been the focus of many bioprospecting programs in the past, but interest in invented ecosystems and organisms is growing as a means of identifying new compounds with the biological activities. Species can be randomly screened to explore bioactivity or rationally selected and screened based on ecological, ethno biological and ethno medical, historical or genomic information.

When a region's natural capital and indigenous knowledge are unethically appropriated or commercially exploited without providing fair compensation is known as **biopiracy**. Various international agreements have been negotiated to provide legal assets to countries in the field of



COMPILED AND CIRCULATED BY BANGAMOTI HANSDA, ASSISTANT PROFESSOR,
DEPARTMENT OF BOTANY, NARAJOLE RAJ COLLEGE

biopiracy and to provide legal guarantees for the investment of commercial actors. These include the UN convention on biological diversity and the Nagoya Protocol.

Other risks associated with bioprospecting include overharvesting species and environmental damage, but legislation has been developed to combat these also. For example, national laws such as the US Marine mammal protection act and US Endangered species act, and international treaties such as the UN Convention on Biological Diversity, the UN Convention on the law of the Sea and the UN antarctic treaty.

Bioprospecting Derived Resources or Products

Agriculture:-

Bioprospecting derived resources are veterinary antibiotics, biofertilizers and biopesticides that are used in agriculture. Rhizobium is a soil bacteria that fix nitrogen. Bacillus thuringiensis and the annonins are the example of biopesticides.

Bioremediation:-

Examples of bioprospecting derived resources or products used in bioremediation include *Corioloopsis gallica* and *Phanerochaete chrysosporium* derived laccase enzymes, used for treating waste water in beer factory and for dechlorinating and decolorizing paper mill effluent.

Cosmetics and personal care:-

It include oligosaccharide and oligoelement blend derived from *Porphyridium cruentum* used to treat erythema, zeaxanthin derived from *Xanthobacter autotrophicus* used for skin hydration and UV protection.



Nanotechnology and biosensors:-

Microbial laccases can be used in biosensor technology to detect a wide range of organic compounds. For example, laccase containing electrodes are used to find out the polyphenolic compounds in wine, and lignins and phenols in wastewater.

Pharmaceuticals:-

Many of the antibacterial drugs were discovered through bioprospecting including the aminoglycoside antibiotic streptomycin from the soil bacterium *Streptomyces griseus*, the fusidane antibiotic fusidic acid from the soil fungus *Acremonium fusidioides*, and the pleuromutilin antibiotics from the basidiomycete fungus *Clitopilus passeckerianus*.

References:

<https://www.un.org/en/observances/biological-diversity-day/convention>

<https://www.cbd.int/history/>

<https://en.wikipedia.org/wiki/Bioprospecting>

(All the information is collected from above references and will be used only for teaching and learning purposes)