ETHICAL ISSUES

The control over living organisms by humans must be regulated to avoid potential consequences. Establishing ethical standards is essential to assess the moral implications of activities that affect living beings. Additionally, understanding the biological significance of such actions is crucial. Introducing genetically modified organisms into ecosystems can lead to unforeseen outcomes.

Recognizing these concerns, the Indian Government has formed organizations like the Genetic Engineering Approval Committee (GEAC). This committee evaluates the validity of genetic modification research and ensures the safety of introducing genetically modified organisms for public use, such as in food and medicine.

However, the use of living organisms for public services, like as sources of food and medicine, has raised issues regarding patents. Genetically modified crops are already being cultivated in the USA, Europe, and many other countries. In India, certain insect-resistant cotton varieties containing cry genes have been adopted by farmers. Critics argue that transgenic crops may pose risks to the environment. These concerns revolve around the potential transfer of transgenes through pollen to wild relatives of the crops and the pollution of the environment by genetically modified organisms.

Bio – Patent

A patent is a legal right given by a government to an inventor, allowing them to prevent others from commercially using their invention. Patents can be granted for various reasons:

(A) An entirely new invention, including products.
(B) Improvements made to existing inventions.
(C) Processes used to create products.
(D) Unique concepts or designs.

There is a growing concern among the public that certain companies are obtaining patents for products and technologies that utilize genetic materials, plants, and other biological resources traditionally developed and used by farmers and indigenous peoples of specific regions or countries.
Rice holds significant importance as a food staple with a history dating back thousands of years in Asia's agricultural heritage. India alone boasts an estimated 200,000 rice varieties, showcasing one of the world's richest rice diversities. Basmati rice, renowned for its distinctive aroma and flavor, has been cultivated for centuries and is documented in ancient texts, folklore, and poetry.

In 1997, an American company obtained patent rights for Basmati rice from the US Patent and Trademark Office. This enabled them to market a "new" Basmati variety in the US and internationally. However, this "new" variety was actually derived from traditional Indian farmer's varieties. Indian Basmati was crossed with semi-dwarf varieties and claimed as an innovative invention. The patent also covers functional equivalents, potentially restricting others from selling Basmati rice. Similar efforts have been made to patent products and processes based on traditional Indian herbal medicines like turmeric and neem.
If we fail to monitor and respond to these patent applications promptly, other countries or individuals may profit from our rich cultural heritage, leaving us powerless to address the situation.

Biopiracy:

- Multinational companies and certain organizations unlawfully exploit or patent biological resources from other nations without proper permission from the respective countries. This practice is known as biopiracy.

- Institutions and companies in industrialized countries often lack biodiversity and traditional knowledge about resource utilization, but they possess advanced technology and financial resources. Conversely, developing nations are abundant in biodiversity and traditional knowledge about bioresources but lack technology and financial means.
- Biological resources include all organisms that can provide commercial benefits. Traditional knowledge concerning bioresources refers to the wisdom accumulated by various communities over time regarding their utilization.
- Pentadiplandra brazzeana, a plant native to West Africa, produces brazzein protein, which is incredibly sweet—about 2000 times sweeter than sugar. Local communities have been using the berries of this plant for centuries. However, the brazzein protein was patented in the USA, along with the isolated and sequenced gene encoding it. There are plans to transfer this gene into maize and express it in maize kernels for the extraction of brazzein. This could significantly impact countries that export large quantities of sugar.
- Institutions and companies in industrialized nations are engaged in various exploitative practices concerning bioresources. They collect and patent genetic resources, analyze bioresources for valuable biomolecules, isolate useful genes from bioresources and patent them, and utilize traditional knowledge for commercial purposes. In some cases, traditional knowledge itself may be patented.