MICROBIOLOGY COURSE MATERIAL

Semester - V

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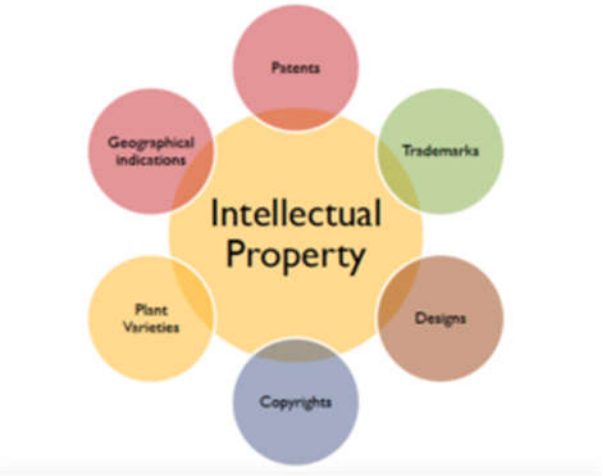
DSE: A1: UNIT 7: INTELLECTUAL PROPERTY RIGHTS

B.Sc (HONOURS) MICROBIOLOGY (CBCS STRUCTURE)
SEMESTER – V
DSE: UNIT – 7
TOPIC: INTELLECTUAL PROPERTY RIGHTS

❖ Categories of Intellectual Property

(1) Industrial Property, which includes inventions (patents), trade secrets, trademarks, industrial designs, and geographic indications of source, and

(2) Copyright, which includes literary and artistic works such as novels, poems, plays, films, musical works, artistic works such as drawings, paintings, photographs, sculptures, and architectural designs.



Copyrights:

Rights related to copyright include those of performing artists in their performances, producers of phonograms in their recordings, and those of broadcasters in their radio and television programs. India's Copyright Law, laid down in the Indian Copyright Act, 1957 as amended by Copyright (Amendment) Act, 1999, fully reflects the Berne Convention on Copyrights, to which India is a party. Additionally, India is party to

the Geneva Convention for the Protection of Rights of Producers of Phonograms and to the Universal Copyright Convention. India is also an active member of the World Intellectual Property Organization (WIPO), Geneva and UNESCO.

The copyright law has been amended periodically to keep pace with changing requirements. The recent amendment to the copyright law, which came into force in May 1995, has ushered in comprehensive changes and brought the copyright law in line with the developments in satellite broadcasting, computer software and digital technology. The amended law has made provisions for the first time, to protect performer's rights as envisaged in the Rome Convention.

- **Trade Secrets:**

Trade secrets often include private proprietary information that allows a definite advantage to the owner. This can be illustrated by the popular example of Coca-Cola brand syrup formula which is not known publically under trade secret. Trade secrets in the area of biotechnology may include materials like:

(i) Hybridization conditions
(ii) Cell lines
(iii) Corporate merchandising plan or
(iv) Customer lists

Unlike patents, trade secrets have an unlimited duration and therefore may not be required to satisfy the more difficult conditions laid down for patent applications. Disclosure of a trade secret and its unauthorized use can be punished by the court and the owner may be allowed compensation. However if a trade secret becomes public knowledge by independent discovering or other means, it is no longer protectable.

❖ Trademarks:

Trademarks can be of various types: service marks, collective marks, certification marks, etc. Whatever the type of trademark, the purpose of the trademark is the same that is to distinguish the source of the goods or services and assure the consumers of the quality of the product or service.

Before delving into the types of trademarks, we must first understand what the term trademark means. A "Trade mark" [TM] is defined under Section 2(zb) of the Indian Trademarks Act, 1999 as "*mark capable of being represented graphically and which is capable of distinguishing the goods or services of one person from those of others and may include a shape of goods, their packaging, and combination of colors.*"

Simply putting a trademark may include a device, brand, heading, label, ticket, name, signature, word, letter and numeral, shape of goods, packaging or combination of colors, etc. The only qualification for a trademark IS is its capacity to *distinguish the goods or services of one person from that of another.*

Types of Trademarks:

- ***Word marks****:* Word marks may be words, letters or numerals. A word mark gives the proprietor a right only in the word, letter or numerical. No right is sought with respect to the representation of the mark.

- ***Device marks****:* Where the trademark lies in the unique representation of a word, letter or numerical, it is called as a device mark.

- ***Service Marks***: A service mark is nothing but a mark that distinguishes the services of one person from that of another. Service marks do not represent goods, but the services offered by a person/ company. They are used in a

service business where actual goods under the mark are not traded. It is a mechanism available to protect marks used in the service industry. Thus businesses providing services like computer hardware and software assembly and maintenance, restaurant and hotel services, courier and transport, beauty and health care, advertising, publishing, educational and the like are now in a position to protect their names and marks from being misused by others. As service marks, the substantive and procedural rules governing the service marks are fundamentally the same.

- ***Collective Marks****:* Marks being used by a group of companies can now be protected by the group collectively. Collective marks are used to inform the public about a particular feature of the product for which the collective mark is used. The owner of such marks may be an association or public institution or cooperative. Collective marks are also used to promote particular products which have certain characteristics specific to the producer in a given region.

- ***Certification Marks****:* Certification marks are used to define standards. They assure the consumers that the product meets certain prescribed standards. The presence of a certification mark on a product indicates that the product has successfully gone through a standard test specified. It assures the consumer that the manufacturers have gone through an audit process to ensure the quality of the product. For example, Toys, Electrical goods, etc. have such marking that indicates the safety and the quality of the product.

  The difference between the certification mark and the collective mark is that the collective mark is used by a particular enterprise or members of the association while a certification mark may be used by anybody who meets the defined standards.

- ***Well-known marks****:* When a mark is easily recognized among a large percentage of the population it achieves the trademark status of a well-known

mark. Well-known marks enjoy greater protection. Persons will not be able to register or use marks, which are imitations of well-known trademarks. In order to be well-known, a trademark needs to be known/recognized by a relevant section of people. These people include actual or potential customers, people involved in the distribution and business service dealing with the goods/services.

- ***Unconventional Trademarks:*** Unconventional trademarks are those trademarks that get recognition for their inherently distinctive feature. Categories of Unconventional trademarks are as follows:

- **Colour Trademark**: If a particular color has become a distinctive feature indicating the goods of a particular trader it can be registered as a trademark. For example, Red Wine is colour trademark.

- **Sound Marks**: Signs which are perceived by hearing and which is distinguishable by their distinctive and exclusive sound can be registered as sound marks. For example, Musical notes.

- **Shape Marks**: When the shape of goods, packaging has some distinctive feature it can be registered. For example, Ornamental Lamps is shape marks.

- **Smell Marks**: When the smell is distinctive and cannot be mistaken for an associated product it can be registered as a smell mark. For example, Perfumes.

Points to Consider While Adopting a Trademark:

Any startup needs to be cautious in selecting its trade name, brands, logos, packaging for products, domain names and any other mark which it proposes to use.

You must do a proper due diligence before adopting a trademark. The trademarks can be broadly classified into following five categories:

a) **Generic**
b) **Descriptive**
c) **Suggestive**
d) **Arbitrary**
e) **Invented/Coined**

Generic marks mean using the name of the product for the product, like "Salt" for salt. Descriptive marks means the mark describing the characteristic of the products, like using the mark "Fair" for the fairness creams. Suggestive marks means the mark suggesting the characteristic of the products, like "Habitat" for home furnishings products. Arbitrary marks means mark which exist in popular vocabulary, but have no logical relationship to the goods or services for which they are used, like "Blackberry" for phones. The invented/ coined marks means coining a new word which has no dictionary meaning, like "Adidas". The strongest marks, and thus the easiest to protect, are invented or arbitrary marks. The weaker marks are descriptive or suggestive marks which are very hard to protect. The weakest marks are generic marks which can never function as trademarks.

❖ Industrial designs

As per the definition given under Section 2(d) of the Designs Act, 2000, "design" means only the features of shape configuration patterns or ornament applied to any article by any industrial process or means whether manual, mechanical or chemical, separate or combined which in the finished article appeal to and are judged solely by the eye. However, "design" does not include any mode or principle of construction or anything which is in substance a mere mechanical device and does not include any trademark as defined under the TM Act or any artistic work as defined under the Copyright Act, 1957. The total period of validity of registration of an Industrial Design under the (Indian) Designs Act, 2000 is 15 years.

Features of shape, configuration, pattern, ornament or composition of lines or colours applied to any article, whether in two dimensional or three dimensional or in both forms, can be registered under the *(Indian) Designs Act, 2000*. However, functionality aspects of a design are not protected under the (Indian) Designs Act, 2000, as the same are subject matter of patents. Design of an article is not register able in India, if it:

- is not new or original;
- has been disclosed to the public anywhere in *India or in any other country* by publication in tangible form or by use in any other way prior to the filing date or priority date of the application;
- is not significantly distinguishable from known designs or combination of known designs; or
- comprises or contains scandalous or obscene matter.

Enforcement of Design Rights in India

The (Indian) Designs Act, 2000, only provides for civil remedies. Besides injunction, monetary compensation is recoverable by the proprietor of the design either as contract debt or damages. An action for infringement of design can only be initiated after the registration of the design; however, an action for passing-off is maintainable in case of unregistered design. Among the different kinds of intellectual property rights (IPR), one of the most important ones is industrial design. Companies go enormous lengths to protect industrial design because it gives them a competitive edge in the market and a lot of energy and resources goes into developing them. If competitors are allowed to copy the industrial design without the owner's consent,

there would be little incentive to develop new ways of improving things. It will act as a dampener to innovation. So naturally, industrial design intellectual property rights are critical for a modern economy. So what exactly is industrial design? According to the World Intellectual Property Rights Organization (WIPO), it is a composition of lines and colors or any three-dimensional form, which leaves a unique impression on a product. They maintain the essence of the ornamental or aesthetic aspect of a useful article, which usually appeals to sight and touch senses, and can be reproduced in significant quantities. Industrial design protection applies to several products, including packaging, lighting, jewelry, electronic goods, textiles and even logos.

Industrial Design protection in India

Industrial design intellectual property rights are protected in India by the Designs Act of 2000. Under this, registration offers the proprietor 'copyright' in the design, i.e. exclusive right to apply a design to the article belonging to the class in which it is registered. All models that are registered find their place in the Register of Designs, Kolkata. This includes the design number, class number, and date of filing (in this country), the name and address of the proprietor and so on.

The registration is for duration of ten years and can be extended for up to five years. Under the Designs Act, anyone violating the copyright of the design is liable to pay a sum of Rs. 25,000 for every offense to the registered proprietor subject to a maximum of Rs. 50,000 recoverable as contract debt for any one design.

Advantages of industrial design protection

There are many benefits of IPR in industrial design. It would be wise to understand them –

- **Monetary gain:** The biggest benefit would be the financial gain that would accrue to the owner of the design right. As we mentioned earlier, companies spend a lot of resources to gain an edge over competitors, and good design can help them make a lot of money.

- **Unique selling proposition:** In a competitive market, companies can get an edge by having a product that looks and feels different/unique. Often consumers make purchase decisions based on the appearance. Industrial design protection enables companies to protect their USP and set their product distinctly apart.

- **Selling designs:** If a company cannot profit directly from the design developed, they can sell it to third parties and make a profit from its design capabilities.

- **Image:** Design protection helps build a positive image of a company. Industrial designs are considered critical business assets and can even increase the share price of a company that, in turn, helps sell their products.

- The law offers high-level protection for IPR in industrial design. However, infringement of design rights is quite common in India more often than not because of weak enforcement. As competition heightens, the temptation to steal designs is stronger. Hence, it is crucial for the authorities to be more stringent in enforcing design rights. Companies, for their part, should be vigilant about their rights and take proactive measures to protect them.

❖ Geographical Indications

A geographical indication (GI) is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place. In addition, the qualities, characteristics or reputation of the product should be essentially due to the place of origin. Since the qualities depend on the geographical place of production, there is a clear link between the product and its original place of production.

A geographical indication right enables those who have the right to use the indication to prevent its use by a third party whose product does not conform to the applicable standards. For example, in the jurisdictions in which the Darjeeling geographical indication is protected, producers of Darjeeling tea can exclude use of the term "Darjeeling" for tea not grown in their tea gardens or not produced according to the standards set out in the code of practice for the geographical indication. However, a protected geographical indication does not enable the holder to prevent someone from making a product using the same techniques as those set out in the standards for that indication. Protection for a geographical indication is usually obtained by acquiring a right over the sign that constitutes the indication. Geographical indications are typically used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts, and industrial products. There are three main ways to protect a geographical indication:

- so-called *sui generis* systems (i.e. special regimes of protection);
- using collective or certification marks; and
- methods focusing on business practices, including administrative product approval schemes.

These approaches involve differences with respect to important questions, such as the conditions for protection or the scope of protection. On the other hand, two of the modes of protection — namely *sui generis* systems and collective or certification mark systems — share some common features, such as the fact that they set up rights for collective use by those who comply with defined standards.

Broadly speaking geographical indications are protected in different countries and regional systems through a wide variety of approaches and often using a combination of two or more of the approaches outlined above. These approaches have been developed in accordance with different legal traditions and within a framework of individual historical and economic conditions.

- **Invention or Discovery?**

Something that is only a discovery, such as the identification of a new gene, is not patentable. But if you have studied further what the gene's function is if it is used as a medicinal product or diagnostic tool, then it is an invention that can be patent protected. The protection is often defined as “isolated DNA molecules with (a certain) nucleotide sequence”. In other words, the protection cannot be said to cover DNA in nature, only artificial DNA molecules or DNA which is isolated from the human body and cut down to the piece you are interested in.

- **Plants and Animals?**

An invention relating to plants and animals can be patented, if the implementing ability of the invention is not limited to a certain plant variety or animal breed. Even a microbiological procedure and products of such a procedure, for example plants and animals, can be patented. However, methods consisting of biological procedures, such as cross-breeding and selection, for producing plants and animals cannot be patented.

"Biotechnology can transform humanity provided humanity wishes to be transformed"

- Geoffrey Carr

Biotechnology inventions are important for human development. It is the broad area of biology involving living systems and organisms to develop or make products, or any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific uses. Thomas Jefferson the man behind the first Patent Act did not have even slightest idea that the life forms can ever become a subject of Patent protection. The famous case of Diamond vs Ananda Chakrabarty, where a biochemist at GE developed a genetically modified organism which had the ability to decompose crude oil. At first his patent application was rejected which on further appeal was granted by the court with order stating "His claim is not to a hitherto unknown natural phenomenon, but to a non-naturally occurring manufacture or composition of matter: a product of human ingenuity".

❖ Biotechnology and Patents

Biotechnology involves technical applications of biological processes in microorganisms, plants or animals. We benefit from biotechnology in industries like food, agriculture and medicine.

Patentable Biotechnological Inventions

- Methods for producing or analyzing proteins and their use in any analysis method or in a medicinal product.
- Proteins, DNA sequences, microorganisms and constituents of the human body (for example, cells) which already exist in nature, if they are isolated from their natural environment or produced by a technical procedure, and have not been described previously.

- A gene, which is isolated and given a new task as a medicinal product or diagnostic tool.
- Genetically modified products, such as plants and animals.

Non-patentable Biotechnological Inventions

- Pure discoveries but not isolated or further described parts of animals, plants or microorganisms.
- Plant varieties and animal breeds. For a definition of plant variety (keeping in mind the Act on the Protection of Plant Breeders' Rights).
- Inventions that is contrary to public order or morality, which society regards as unethical and unacceptable. For example, it is not possible to patent a method for reproductive human cloning as it is contrary to public order and morality (keeping in mind Biotechnology and Ethics).

Biotechnology Patent in India

Patent Act in India was enacted in 1856. It has been modified several times since then, one major amendment being in 1970 which satisfied the international norms of patentability covering novelty, inventive step and industrial application. But this version had nothing specific concerning Biotechnological invention and protection. At the same time, since the patent offices and courts in US and EU were seeing increasing number of biotech inventions and patent application, the demand for amendment of Indian Patent Act to introduce biotech patentability gained voice in India. The amendment came in 2002 to explicitly include biochemical, biotechnological and microbiological processes within the definition of potentially patentable process.

Statutory obstacles to patentability

The criteria for fulfilling patentability requirements are novelty, inventiveness, and industrial application. Apart from this, some inventions are also excluded from patentability under Section 3 of the Patent Act, 1970.

What Is Not Patentable In India?

- Section 3 (b) - As per the section an invention would not be patentable if it is immoral or against public order, harmful to human, animal or plant life or harmful to environment.
- Section 3 (c) - Discovery of living things or non- living substances in nature.
- Section 3 (j) - Plants and animals in whole or any parts thereof other than micro-organisms but including seeds, varieties and species.
- Section 3 (j) - Essentially biological processes for the production or propagation of plants and animals.
- Section 3(i) - Any process for the medicinal, surgical, curative, prophylactic, diagnostic or therapeutic or other treatment of human beings or animals to render them free of disease or to increase their economic value or that of their products.
- Section 3(h) - Methods of agriculture or horticulture.
- Section 3(p) - Traditional knowledge.

❖ Patenting Procedure:

Deposition of biological material

Under Section 10(4) and rule 13(8) of the Patent Act, an applicant must deposit the biological material mentioned in the specification if it is unavailable to the public and cannot be described adequately as per the provisions of the act. The material must be deposited with an international depository authority under the Budapest Treaty.

The international depository authorities in India are the Microbial Culture Collection, Pune and Microbial Type Culture Collection and Gene Bank, Chandigarh. It is the duty of the applicant to give information w.r.t biological material used in specification.

- **Time period** - The deposit must be made no later than the filing date of the patent application in India. Mentioning of the deposit must be made in the specification within the prescribed period (i.e. three months from the filing date).

- **Sequence listing -** Sequence listing is the most important part of any bilological invention. It pertains to the listing of nucleotides and amino acids. The details of nucleotides and/or amino acids shall be filed in electronic form. However, the fee with respect to the equivalent number of pages shall be payable. In the case of Biotechnology related inventions, relevant numbers of the sequence listing shall be mentioned at appropriate place in the specification. Sequence listing should also be given in electronic form.

- **Moral Issues**

It is true that necessity propels any invention. In this new era our necessities are increasing fuelling inventions but again it is our responsibility to protect our rights too.

a) Organ Transplantation - Organ transplantation is a big moral issue for biological based invention. It possesses moral issues. The biological invention facilitating the organ transplantation is opposed by numerous intellectual based on religious faith. Also it is anticipated by some that it may give rise to illegal human trafficking.

b) Biological Weapons - Biological weapons are the most dreaded ones today, far more dangerous than nuclear, chemical or conventional weapons. Discussion on this issue is most crucial.

c) Bioinformatics- It is a methodology of biological studies implemented with the help of computer programmes. It is generally used for gene identification and prediction of upcoming diseases. Many believe that this could bring legal turmoil in the society. Also it may hamper the natural living of humans.

It can be seen that the Biotechnology and life form patentability is a subject of exploration in India. With more and more research and innovation going on in this field and keeping in view the rich bio-diversity that India enjoys, there is a real need to protect the interest of inventors. India needs to enable its inventors and inventions to compete in the global scenario, although few claims are considered but they are more on case-to-case basis and there is a lack of tidy guidelines.

Majority of the world's biodiversity-rich countries are underdeveloped and lack the necessary technologies to transform biological resources into products yielding significant measurable benefits. With little or insignificant in situ market value, biodiversity-rich wild lands may be expected to succumb to pressure from development activities (e.g., conversion to cropland, inundation of forest lands due to hydroelectric and flood-control projects, etc.).

One way to prevent the destruction of wild lands (and, in turn, biodiversity loss) is to promote biodiversity prospecting which creates new markets for biological resources and generates incentives for their conservation. However, biodiversity prospectors generally are multinational corporations from developed countries. These corporations are reluctant to invest in biotechnologies discovered in developing countries due to poorly defined and enforced intellectual property laws.

Several scientists currently are addressing this deficiency in IPR protection. Nations which have become signatories of two major international agreements in recent years: the 1992 Convention on Biological Diversity (CBD) (UNEP, 1992) and the 1993 Trade-Related Intellectual Property Rights (TRIPS) (UN, 1993). These agreements call for

establishing a set of suitable intellectual property laws in each nation, depending on the type of intellectual material in question and the economic and technological background of the nation itself.

CBD establishes a formal framework for the reciprocal transfer of biological resources and knowledge (technology) between nations. The convention promotes the idea of biodiversity as a global common heritage, which, therefore, requires biodiversity-rich countries to allow access to biological resources to other countries on 'mutually agreed terms' (UN, 1993). CBD requires technology-rich nations generally, developed nations to encourage transfer of technology to biodiversity-rich, underdeveloped countries. Thus, the Convention promotes the exchange of biological resources for technology to facilitate biodiversity prospecting, which benefits all nations in the world.

Even though the resource technology reciprocity and IPR provisions of these agreements have strong economic justification, their use at the global level raises issues concerning the transfer of wealth and respect for national and cultural sovereignty. These issues may become pressing in situations where the resource consumption associated with a patented biotechnology comes in direct conflict with traditional uses of a region's biological resources.

Conflict may take different forms:

- First, the developer of a new biotechnology who normally has greater financial strength might out-compete traditional users for raw biological material in the input market by paying higher prices. However, the products produced by the new commercial user and traditional users may not compete with each other in the output market.

- Second, the commercial product developed may have intellectual similarity with traditional products. Then, conferring IPR to a new product/ technology may limit or prevent traditional consumers from continuing their use of biological resources.

- Third, the new commercial product may become a substitute for a traditional product and available at a cheaper price. The lower output market price may drive the traditional producers out of business. Such conflicts can alter the underlying market incentives of competing resource users, with likely adverse implications for biodiversity.

TRIPS:

The standard for Intellectual Property Rights is outlined in the global intellectual property treaty agreement of Trade-Related Aspects of Intellectual Property Rights (TRIPS). Member countries that have signed this agreement must ensure that the requirements stated in TRIPS are met in their own legislation. TRIPS states that 'patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application'.

Although seemingly simple and consistent with the requirements for obtaining a patent in most developed countries, this statement is at the heart of most of the controversy relating to biotechnology patenting. An additional paragraph in TRIPS permits several grounds for exclusion in granting patent protection, including exclusion on moral grounds; or diagnostic, therapeutic and surgical methods for the treatment of humans or animals, life forms other than microorganisms and processes for the production of plants or animals. However, these exclusions are optional and vary from country to country. For example, the European Patent Convention (EPC)

provides limited moral grounds for exclusion, yet no such grounds are defined in the Patent Acts in Canada, Australia, USA or Japan.

TRIPS also state that if protection of plants is not available by patent, then member countries need to provide protection in some other way. A standard method for such alternative protection is plant variety protection, as set out under Union International pour la Protection des Obtentions Vegetables, known more simply as UPOV.

- **Plant Variety Protection:**

UPOV is a global agreement setting out a minimum standard for the protection of plant varieties, similar to that of TRIPS. Member states that have signed the UPOV Convention must ensure that these standards are met within their own legislation. The two versions of UPOV that are currently in force are set out in the UPOV Conventions of 1978 and 1991 and are similar in that they provide protection to a plant variety that is distinct from existing known varieties and that is uniform, stable and novel. However, there are several significant changes in the 1991 Act. For example, the definition of propagating material has been tightened and provisions relating to farmers' rights (or privilege) that permit a farmer to replant seed for personal use have been defined.

Although plant variety protection meeting the standard set out under UPOV is accepted in 50 countries, such protection has not been uniformly accepted and many countries with strong histories of farmers' privilege have yet to accede to the convention. A rigorous debate also continues over the effect of plant variety protection and associate Material Transfer Agreements, on sharing and developing new germplasm. UPOV 1978 provides an exclusive right to produce and offer for sale propagating materials of a plant variety but not the harvested end product, for example a fruit. Furthermore, the right pertains only to a commercial end product and not to non-commercial uses. As a result, replanting seed is implicitly allowed under UPOV 1978, leading to farmers' privilege.

Also provided in the 1978 convention was a breeders' exemption permitting the use of protected varieties as a germplasm source to develop new plant varieties. The 1991 Act introduced several significant amendments. The number of plant genera and species that could be protected under UPOV was increased from the selected list of plants in UPOV 1978 to all plants.

Furthermore, the 1991 Act provides the option to protect all aspects of the production and reproduction of a plant variety, thereby removing farmers' privilege. However, the application of this provision is discretionary for each member state of UPOV and a country can provide an exemption in its laws to permit farmers' privilege, if desired. Another important change pertains to providing protection to plant varieties that are 'essentially derived' from a protected variety. An 'essentially derived' plant is one that comprises the properties of the protected variety along with only a minor change. The introduction of a gene using recombinant techniques into a protected plant variety might not be sufficient to exceed the 'essentially derived' criteria unless the gene alters the variety in a significant manner.

On 3 November 2001, the International Treaty on Plant Genetic Resources was adopted by 116 countries; there were two abstentions (the USA and Japan). Before the Treaty comes into effect 40 countries must ratify it. This Treaty pertains to ensuring that the raw materials used to develop new crop varieties remain publicly available. In doing so the Treaty promotes conservation of plant genetic resources for food and agriculture. The aim of the Treaty is to ensure farmers' privilege and to develop a multilateral system comprising an aggregate of genetic material from the member countries, so that, after paying a fee, members can have access to the genetic material.

GATT (General Agreement on Tariffs and Trade):

During Uruguay Conference, WTO (World Trade Organization) was created. General Agreement on Tariffs and Trade (GATT) was framed by WTO in 1948 and was meant to be a temporary arranged to settle amicably, among countries, disrupts regarding who gets what share of world trade. This is achieved by determining both tariff rates and quantitative restrictions on imports and exports globally. In 1994, about 100 countries signed this agreement. This was to be effective from 1-1-95 in phases. Its new quarter is in Geneva, Switzerland. Although GATT has made the world a better place to do business by allowing more free and fruitful flow of goods and services, this benefit has unfortunately gone mainly to developed countries to the disadvantage of the countries in the third world.

US Plant Patents:

Another way to protect plant-related subject matter includes a 'plant patent', a unique form of protection offered in the USA. A US plant patent is available for a plant that reproduces through asexual reproduction but it does not include a tuber-propagated plant. Although not a common form of plant protection, it is used to protect ornamental and fruit-producing trees, roses, poinsettias, strawberries and other plants that reproduce asexually. A plant patent is different from a regular utility patent.

Utility Patents:

Plants can also be protected using a regular (utility) patent in countries that permit patenting of plant or higher life forms (HLFs). This is a more common method for protecting whole novel plants, plant genes, methods for creating novel plants and novel applications for an existing plant. However, the costs are greater and the process more involved than plant variety protection. Many major jurisdictions permit the patenting of non-human HLFs, including Europe, USA, Japan and Australia. The

scope of protection offered by a utility patent is broader than that available under plant variety protection. As noted above, a farmer saving and replanting seed, and a breeder producing a new variety, can do so without infringing a plant variety certificate. However, if a utility patent, the patent owner, protects the plant or licensee has the right to exclude the making, using or selling of the plant or seed, making a user buy seed every year.

- **Gene Patenting:**

Although patents have been granted on nucleotide sequences for more than 30 years, there has been much recent controversy surrounding the patenting of genes. Genome sequencing initiatives coupled with improved techniques for identifying and sequencing genes, has resulted in an exponential increase in the number of gene patents in the last decade. As a result, the obscure world of gene patenting is now being scrutinized closely in many different sectors, not least because the effect of these patents is felt in everyday life, especially healthcare.

The importance of Intellectual Property in India is well established at all levels-statutory, administrative and judicial. India ratified the agreement establishing the World Trade Organisation (WTO). This Agreement, inter-alia, contains an Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) which came into force from 1st January 1995.

- **Patenting of Life Forms and GMO:**

Life forms such as microorganisms, plants and animals, are not patentable in India under the provisions Indian Patent Act (1970). However, patent can be obtained for various biotechnological processes and product applications within the scope of International conventions. In America, Europe and other developed countries, microorganisms isolated from nature or are obtained by simple manipulations are not

patentable. But microorganisms obtained by novel techniques like genetic engineering are patentable.

The first patent of GMO (Genetically Modified Organisms) was allowed by US Supreme Court in 1980 as described in utility patent. A maize plant over producing tryptophan amino acid was patented in USA in 1985. This was the beginning of patenting of higher organisms. For animals, a patent was granted in 1988 for 'oncomouse', genetically modified mouse in USA. In USA, non-naturally occurring, non-human, multi-cellular organisms are now considered patentable by US patent and trademark office. This clearly excludes humans and human parts. There is a long debate about patenting of life forms including GMO and several organizations and religious groups are opposing the patenting of these life forms.