

## Agricultural Research *vis-à-vis* the Cresting IPR Wave in the 21<sup>st</sup> Century

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Innovative resource use or '*jugaad*' by ordinary Indian has contributed immensely to adapting to hardships on the one hand and adding to the global knowledge bank on the other hand. In the present era, India possesses one of the more elegant IPR systems in the world, although the newly enacted laws have encountered minor hiccups. In fact, it was an Indian agricultural product (Basmati rice) that caused a furore over three continents on three different aspects of intellectual property laws in the last decade of the 20<sup>th</sup> century. However, the 21<sup>st</sup> century seeks answers to problems beyond the major milestones in Indian agriculture (the green and white revolutions) to tackle the problems of food security and volatile food prices. The gap in the perception of researchers and legal acumen needs to be bridged; wherein IP audit is an important tool to assess and project the intellectual properties of clients. This paper attempts to synthesize a well-knit idea for IPR awareness in agriculture sector using sectoral as well as external examples.

**Keywords:** Innovation, intellectual asset, agriculture, IPR, IP audit

'*Jugaad*' roughly translated as 'innovation' has been a way of life for the ordinary Indian. *Jugaad* reflects the ingenuity of the Indian mind to adapt to hardships using resources available in unrelated areas by applying it creatively to solve perceived problems. The learned Indian of ancient India contributed to the global knowledge bank and gave, treatises on astronomy, surgical systems, a vast storehouse of medicinal systems and agricultural practices. Most of these sophisticated knowledge systems were created and nurtured by wealthy patrons and wise rulers of ancient India. Now, when India is regaining intellectual sophistication and emerging as a super power, it is imperative that the ingenuity of the modern Indian mind regains the recognition accorded to the ancient Indian mind. Fortunately, this recognition of the intellectual ingenuity also translates into economic and social gains through the mechanism of intellectual property rights (IPR), essentially a western concept. With the world going global and technological advancements providing a level playing field it has become imperative to learn the rules of the new game that entails creation of intellectual assets, converting them into property, exploiting the same for gains.

### **The Intellectual Property Rights Mechanism**

IPR is a legal fiction whereby the State has created negotiable property rights in intangible assets that is very similar to the rights vested in real property. Originating in Europe<sup>1</sup> and developing over a period of approximately seven hundred years in Europe, USA, Japan, Australia and Canada, the IPR system is ingenious. A creative individual finds creative ways to adapt to an evolving need felt in the society thereby creating intangible intellectual assets. In most cases, the creator derives a commercial gain by exploiting his intellectual assets that include inventions, artistic work, literary work, logos, trade names, trade secrets, designs, etc. These intellectual assets have great significance in commerce and provide distinct competitive advantage over business rivals. Usually, such assets are maintained as trade secrets, but due to their importance in commerce and their role in nation-building, many countries have formally given these assets a legal status - that of a 'property'. Here, the State steps in creating a quid pro quo situation; the State grants IPR to the intellectual assets by way of recognition of the inventive and creative genius of an individual or a group of individuals and gives them or their assignees an exclusive right to exercise their invention or creation over a pre-determined period. In return, the State demands that the details of the invention or creation be disseminated to the general public for public use after the term of exclusivity has expired<sup>2</sup>, the only exception being trade secrets.

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Since the State has the primary responsibility of the welfare of her people, almost all IPR systems including the patent system have a series of checks and balances which strive for providing a balance between the exclusive rights of the rights holder and the legitimate demands of the society. The types of checks and balances built into the patent system have been briefly described later in this article. It is a fallacy that the IPR system takes away from the public good vesting far larger powers on the IP creators.

The general perception of the IPR system is that it denies the right of the general public to enjoy new inventions / creations freely. However, as users/potential users of the IPR system, it is imperative to view the advantages as well as the disadvantages of the system from a fresh perspective. In fact, viewing the IPR system from the perspective of the beneficiary of the IPR system puts together a diametrically opposite IPR scenario. It shows a system where the State incentivizes the creator to apply his inventive mind to find solutions to problems and needs of the evolving society. The State proceeds to set up systems to accept these inventions/ creations, grant exclusive rights and in the process creating a large repertoire of easily accessible and referenced publications for further use by the scientific community.

Outside India, the 20<sup>th</sup> century provides a veritable smorgasbord of intriguing examples highlighting the use of intellectual assets and their IPR in creating wealth, sometimes of immense proportions. Some of the biggest brands today including IBM, Sony, Google, Microsoft, Samsung and Coca Cola, have made their millions on the strength of their intellectual assets. With the deft handling of their carefully put-together portfolio of trademarks, trade secrets, patents, copyright, etc., these behemoths have risen from modest beginnings. For instance, it is a well-known fact that when the century old IBM faced crisis in the mid 20<sup>th</sup> century, its fading fortunes turned on the strength of a very robust IPR regime, earning IBM an annual turnover of US\$ 2 million in revenues from just royalties on its patents. Incidentally, IBM has also allowed open access to key innovations covered by 500 patents in January 2005. It is equally well known that the decade 'young' Google Inc is one of the most recognized brands the world over and is listed in the top 10 brands in 2008 by the ranking agency Interbrand.

It is interesting to note that just as the social needs are evolving, various laws including the IPR laws are also evolving.

### Of 'Law' and Things Legal

*Ignorantia juris non excusat* in Latin translates approximately to mean 'ignorance of law is no excuse'; a common term applied to violators of civil and criminal laws. This maxim applies equally to scientific community. On the crest of the 21<sup>st</sup> century riding into the second decade, many members of scientific community are unaware that India possesses one of the most elegant IPR systems in the world. Another point that the same scientific community overlooks is that more than one IP right can be exercised on a single creation. Thus a new invention can be protected by way of a patent, trademark, copyright, designs as well as trade secrets.

In fact, it was an Indian agricultural product that caused a furore over three continents on three different aspects of intellectual property laws in the last decade of the 20<sup>th</sup> century. The case involved important aspects of trademark, patent and geographical indications. The registration of trademarks similar to Basmati in the UK by the US company, RiceTec for selling Basmati rice was withdrawn after it was strongly opposed by the Indian Agriculture and Processed Food Products Export Development Authority (APEDA) in 1999.

However, the tug of war over Basmati which is traditionally grown in the alluvial soils at the foothills of the Himalayas was far from over. APEDA discovered that a patent had been granted by the US patent office to RiceTec for very broad patent claims that included well-known traits of Basmati.<sup>3</sup> The grant of patent was contrary to the established law which requires that the invention must be novel. It was of course rather quaint that a patent had been granted for a publicly known trait. More dangerous was the fact that if this patent was enforced it would have very seriously impacted the Indian exports of Basmati to the US.

In September 2000, RiceTec withdrew 4 of the 20 claims that dealt with the starch content, grain length, chalkiness, 2-acetyl-1-pyrroline content and burst index. On 27 March 2001, the USPTO informed RiceTec that only 3 of the 20 claims that pertained to three specific rice plants lines that met with the patentability criteria namely, BAS867, RT1117 and RT1121 were allowed.<sup>4</sup>

Having tackled the trademark in the UK and patent issues in the US with a modicum of success in the international area, India was not successful in getting the due recognition for according geographical indication (GI) status to Basmati. This is also because GI for basmati was not recognized in the country itself; thus it was not expected of the other countries like USA or UK or any other country to accord such protection. This and other such questions need to be urgently resolved in the national interest.

The last decade of the 20<sup>th</sup> century also witnessed India signing the Convention on Biological Diversity (CBD)<sup>5</sup> effective since 1992, pledging to conserve the biodiversity (and the ecosystem) and TRIPS Agreement<sup>6</sup> effective from 2005, which required the member states to adopt laws for grant of IPR to intellectual property products in all the areas of creativity. The most notable of these TRIPS provisions in the present context are Article 27 of the TRIPS Agreement which impacted protection of innovations in plant breeding, plant varieties, biotechnological innovations, microorganisms, methods of treatment of plants, etc.<sup>7</sup>

The first decade of the 21<sup>st</sup> century is particularly significant in the process of evolving a robust IPR regime in India. Greater awareness of intellectual wealth arising out of traditional knowledge systems in the wake of the Basmati rice controversy, the turmeric patent and the WR Grace's neem patent among others saw the enactment of the Geographical Indications of Goods (Registration and Protection) Act 1999 and the Biological Diversity Act 2002. Other laws such as the Protection of Plant Varieties and Farmer's Rights Act 2001, the Semiconductor Integrated Circuits Layout and Designs Act 2000, the Information Technology Act 2000 were all enacted in this decade. The decade has seen the enactment of five new intellectual property related laws.

In addition, the laws central to the intellectual properties such as patents, trademarks, copyrights and designs were either amended extensively or repealed altogether to give way to more effective and modern laws. The Patents Act of 1970 was amended a number of times over a period of 6 years viz., in 1999, 2003, 2004 and 2005 to finally reflect both compliances required under Article 27.3 of the TRIPS Agreement as well as under the CBD thereby linking the Patents Act to the Biological Diversity Act. The Copyright

Act was revised while both the laws relating to trademarks as well as industrial designs were repealed and replaced by the Trade Marks Act of 1999 and the Designs Act of 2000.

The significance of this decade is not just limited to the enactment of new laws or effective amendments to existing laws. The latter half of the decade is also witness to some path breaking judicial pronouncements. One of the significant developments has been with regard to extending pecuniary penalties for infringement beyond statutory provisions. In the first of its kind pronouncements, the Delhi High Court distinguished between compensatory damages and punitive damages in *Times Incorporated v Lokesh Srivastava & ors.*<sup>8</sup> On establishing infringement and undue commercial exploitation by the infringers, the Delhi High Court awarded Rs 5,00,000 as punitive damages for loss of goodwill and reputation of the plaintiff in addition to Rs 5,00,000 as compensatory damages.

The IPR systems especially the patent system has a series of checks and balances which strives to provide a balance between the exclusive rights of the right holder and legitimate demands of society. For instance, Section 3(d) of the Patents Act introduced by way of the recent amendments weeds out inventions relating to new use of a known substance, thereby preventing ever-greening of patents. Sections 25(1) and 25(2) relating to pre-grant, post-grant opposition as well as Section 84 on compulsory licensing and Section 85 on filing details on the working of a patent are examples of some of the checks and balances introduced into the patent system to weed out frivolous patents and 'patent trolls'.

### **The Challenges before the Agriculture R&D Community**

Like in every century, the 21<sup>st</sup> century has also dawned with its own challenges. The significant milestones achieved in the 20<sup>th</sup> century, namely, 'Green Revolution'<sup>9</sup> and 'White Revolution'<sup>10</sup>, were the need of the times for a newly independent sovereign India which brought immense global recognition and respect for the scientific community. These two revolutions turned around the beleaguered nation on-the-brink-of-famine into a nation with surplus. The series of innovative solutions responsible for the two revolutions brought food security and stability to the nation.

The White Revolution also provided insights into the business acumen of the local community which came together under a 'co-operative' umbrella to consolidate its strengths and script a success story. However, though both the revolutions met the immediate need of society, there were severe costs to the environment and agro-biodiversity.

A case in point is the success of the Green Revolution which was associated with a negative fallout on the environment (and human health) due to excessive use of chemical fertilizers and pesticides. The ground water and tap water in parts of Punjab which saw spectacular success due to the Green Revolution have very high concentration of calcium, magnesium, fluoride, mercury, beta-endosulphan and heptachlor. A joint study by the Post Graduate Institute of Medical Education and Research, Chandigarh and the Punjab Pollution Control Board in 2008, also revealed that the water had high concentration of COD and BOD (chemical and biochemical oxygen demand), ammonia, phosphate, chloride, chromium, arsenic and chlorpyrifos pesticide highlighting health hazards for the local population.

Similarly, the use of foreign breeds of milch cows during the implementation of the White Revolution has drawn criticism in that, they have been instrumental in the decimation of Indian breeds.

The 21<sup>st</sup> century seeks answers to problems beyond these major milestones to tackle the problems of food security and volatile food prices. The innovations here would have to address a number of issues that are discussed below:

#### **The Responsibility to Research, Innovate and Self-Regulate the Research**

The *raison d'être* of the agricultural R&D community is to research and innovate to provide food security for better quality of life, preferably in a sustainable environment. This may encompass innovations relating to improved plant varieties with increased yields along with innovations in animal husbandry, veterinary sciences, fisheries with a careful understanding of maintaining and conserving the local biodiversity and ecological systems. The next generation scientists and technicians must take the lessons from the two very successful Green and White revolutions, that is, agricultural developments and breakthrough innovations may have direct impact on the environment, biodiversity and ecosystem. From being the 'starving millions' of the

1960's to being a nation that exports, these two revolutions put India firmly back on the map as a great nation in the making.

However, responsible science and responsible research requires responsible regulation in order to avoid irreversible changes to the environment or depletion of natural resources. It is imperative that the impact of new research must be carefully monitored periodically especially, where there is field testing outside of the contained and controlled environment of the laboratory. This is especially true in case of introduction of new species or new technology into the environment, or introduction of a biotechnological variation of flora or fauna. In both cases, unless the introduction is carefully monitored and assessed, it can have disastrous consequences. The previous decade also witnessed sharp criticism on the introduction of Bt Cotton without careful environment impact assessment. Lack of clear laws and transparent regulatory mechanisms can mar the joy of R&D besides leading to enormous waste of resources in terms of investment of time and money. The shelving of the GEAC approved release of Bt-Brinjal in February 2010 is a case in point.

#### **The Responsibility to Regulate before Commercialization, Taking into Account Handling and Waste Disposal**

Agricultural practices are largely dependent on climatic conditions and these practices in turn have a major effect on the climate. Usurping of a particular kind of vegetation to replace it with another that is alien to the ecosystem is an invitation to sharp retaliation by nature including onset of unpredictable weather. The introduction of a new species of fauna into an ecosystem without regulating its release into the environment is another invitation to disaster. Textbook lessons in ecology have begun to become a reality since the changes are rapid enough to be noticeable by the generation that initiated such a change.

Progress cannot be at the cost of the very ecosystem which sustains earth. History is rife with examples of negative impact of new technology on the environment.

Needless to say, the necessary regulatory mechanisms must address the effect of innovation in respect of short-term, mid-term and long-term impact on the environment. It is essential to carry out an environment impact assessment of not only introduction of the material into the environment but also handling the material, value additions, if any,

marketing and waste disposal. The processes involved in the environment assessment have to be transparent since it is at the innovation stage that these considerations of safety, efficacy and non-toxicity must be built into the research programme with periodic testing in a contained manner. Research that is divorced of such periodic assessment during the innovation process is irresponsible, leading to immense waste of resources.

#### **The Responsibility to Deliver Innovations to the Segments of Society in Need of Them**

It is not enough to create or innovate. The said creation/innovation must be successfully marketed to that segment of society that actually needs these innovations. Thus, innovation should extend to means and methods of transporting the said innovation without loss of vitality and with improved shelf life till it reaches the final consumer. There is a definite innovation in value addition. Whether this aspect is treated as agricultural R&D is subject matter of policy formulation. Taking the invention from lab to the market and finally to the consumer requires all the innovative skills of the ingenious mind.

That there is a division of labour involved in the 'road from conceptualization to consumption' is the reality that has to be tackled by the conceptualizer. A great life-saving innovation is of no use when it does not reach the consumer who actually requires it. But this requires an excellent team that has a vision to create, develop, market, distribute and sell an innovation either through its own distribution channels or through licences and franchises.

#### **The Role of Intellectual Property Rights in Marketing the Innovation**

The conscious use and enforcement of appropriate IPR can play a very important role in ensuring that the authentic technologies reach the market. If properly used along with registration of the trademark, advertisement of the product/services and enforcement to abort sale/distribution of spurious goods or hiked pricing, it can be ensured that the innovation reaches the target market without dilution.

#### ***Illustrative Case***

During a recent IP audit of a seed company with focus area on plant breeding, there emerged a vast untapped portfolio of trademarks and copyrights that had never been acknowledged by the company as proprietary assets. The focus was on plant varieties, and in all fairness, there was a lot of effort put into

ensuring that applications were being filed at the PVP&FR Authority. However, the other IPRs were not being enforced at all. Thus, while the company had filed a number of plant variety protection applications, there were no applications filed for over 500 important trademarks or copyrights.

So, what were the main challenges before the R&D division of the company?

(i) To develop new cell lines that would meet the needs of the farmer and the final consumer through breeding or biotech methods. The needs could be as varied as high yielding cotton with a particular fibre quality, or crops that grow in alkaline soil or plants that can flourish in very high temperatures with minimum water, etc.

From the IP perspective, there are two ways to meet this challenge. The first is to find a problem and then search a solution leading to a ready market for the product. In such a situation there is every chance that the innovation may not be patentable, if it does not meet the novelty and inventive step criteria. The second way is obtain a technology landscape<sup>11</sup> from a reliable source in the area of interest, check for the 'white spots' and commence research in the areas of least patents/technology reports, thereby ensuring leading edge in research as well as a strong patent portfolio.

The decision as to whether the R&D team ought to focus on path-breaking research instead of the need-to-find-a-solution research is a policy decision of that organization. But where there is a definite plan to obtain patents, there has to be specific guidance regarding the focus of R&D in order to prevent futile efforts of re-inventing the wheel. This focus could come from conducting a technology landscape study.

(ii) The final end products ought to reach the consumer who could be based either locally or in a geographically distant place. In the efforts to reach target consumers, there are IPRs such as trademark, copyright and industrial designs that can ensure that original products reach the market even when there are no patents on the said product.

To meet each of these challenges, there has to be a very close interaction between the R&D team as well as the marketing and sales team. Additionally, the legal team has to ensure that IP due diligence has been complied with, i.e., patents, trademarks, copyright and designs have been filed, appropriate non-compete and confidentiality agreements have been executed, deed of assignments are executed, etc.

### **Path to Success: Consolidating Gains**

One of the soundest IPR related advice is to conduct an IP audit of all the intellectual property as well as intellectual assets present in the organization and create an IP portfolio. This exercise provides a fair idea of the volume of IPR created, owned, registered, in force, expired, lapsed, pending registration, pending completion, licensed in or licensed out. This helps consolidate gains and weed out the unnecessary or redundant IPRs. After all, there is no need to pay annuity fee to maintain a patent that is not being used commercially or otherwise.

That apart, an IP audit reveals the strengths inherent in the existing intellectual property. Putting them together can help create brands and consolidate the gains.

A visit to the official website of Amul indicates the efforts put in by the enthusiastic team. There are a large number of trademarks, a series of innovative advertisements backed by a very clear focus of development which has created a brand which the consumers trust. The innovation in business methods takes them from being just a co-operative society of milk producers to innovators seeking ways to meet the challenges of a successful system. According to the official website, the 13 district cooperative milk producers union has 2.9 million producer members. There is a collection system, storage and refrigeration as well as milk distribution system that has a total milk handling capacity of 13.07 million litres per day. The daily average milk collection in 2009-2010 was 3.32 billion litres with a daily average of 9.10 million litres. In addition, a milk drying capacity as well as cattle feed manufacturing capacity have been added.

### **Conclusion**

The beginning of a new decade in the century promises to be the age of IT and BT (information technology and biotechnology) and the writing on the wall for the Indian companies and R&D centres is very clear. It is time to come of age, and coming of age in this context means focused research, quality development which can withstand the demands of progressively stringent regulatory laws as well as the demands of a very discerning consumer, great marketing combined with excellent management of all resources, particularly the management of the company's intellectual assets.

A careful study and analysis of world's leading brands provides very strong indicators of wealth creators. Between the steps leading to the creation of intellectual property and to the decision to act against the unauthorized use of intellectual property there is an entire area of legal practice pertaining to the management of intellectual assets.

Even where an intellectual asset cannot be protected by way of converting it into an intellectual property, it continues to be an asset of the company. For instance, the pricing strategies adopted by a company to market its product in different countries may not be protectable as a copyright, but may be a good trade secret and therefore an intellectual asset of the company. Other examples of a company's intellectual assets are their client list, information on sourcing of raw materials, man-management, technical know-how, etc.

The emerging importance of intellectual property in a company's (or client's) balance sheet in the recent decades have significantly impacted the scope of IP services. A 2002 survey of the Fortune 500 companies estimated that approximately 45 to 75 per cent of the wealth of individual companies comes from their IPR. A number of companies have used IPR as an effective strategy to leverage market share. Qualcomm, known for CDMA or Code-Division Multiple Accesses technology, has used patents and licenses to generate a reputation in wireless market. Qualcomm licenses about 130 patents to mobile phone makers and chip companies.

Moreover, the effect of intellectual property especially patents has been seen to impact the stock market. The shares of the Internet phone company Vonage Holdings Corp went down to the lowest level of 96 cents, since the company went to public, after the Court of Appeals for the Federal Circuit, held it guilty of patent infringement. Shares of Ranbaxy Laboratories, reportedly fell more than 6 per cent after an out-of-court patent dispute settlement with Pfizer allowing it to launch a generic version of cholesterol drug, Lipitor.

It is only in the recent past that such proprietary knowledge has been acknowledged as a key component of a successful business strategy. As markets become increasingly competitive, intellectual assets and its proper management become as essential an exercise as conducting tax audits. Strategies have to be formulated to successfully create an effective intellectual property portfolio.

The benefits of an IP audit become evident after the compilation of the results of an IP audit. The organization can improve processes to protect its trade secrets, weed out unused patents by selling or licensing it out, examine licenses to ensure that all royalties due are received on time or paid on time as well as put processes in place to generate focus areas for future R&D. Also, this leads to the next step of IP valuation to help put a market value on the given IP.

In the new era of globalization, the role of IPR has a very significant place in the generation and creation of wealth and welfare. IPR in agriculture, biotechnology, and pharmaceuticals, requires the law to accordingly evolve to balance proprietary rights with social welfare and environmental protection.

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