



Strategies for Management of Intellectual Property Rights in Developing Countries and the Role of Farmers' Associations

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The objectives of this briefing paper are to provide information about intellectual property rights (IPRs) in agriculture and to identify some possible areas of interest to farmers' associations. The paper is organized into four sections: a general definition of IPRs and discussion of the IPRs affecting agriculture; the role of farmers' associations as lobbyists to protect traditional knowledge; how IPRs are secured, including some general contract law issues related to IPR, and using the Internet to publish and protect farmers' innovations; and IPR enforcement, including some new IPR trends relevant to farmers' organizations, including the notion of collective rights and regional IPRs.

Introduction

Protected intellectual property (IP) has long been emerging as a source of wealth and power in the New World Economy. Today's rapid technological change increasingly shifts national economic focus from manufacturing based on imitation to more lucrative idea-based businesses or systems of innovation involving diverse economic sectors. This trend can also be seen in changes in the definition of IP, which, until thirty years ago, referred to the ideas behind mechanical inventions and had little effect on non-industrialized countries.

Today, there is a danger that foreign or domestic entities can gain legal rights to innovations that incorporate the traditional knowledge and cultural heritage so essential to local cultures.¹ With the exception of copyright, most current IP regimes recognize the rights of individuals, but not the intellectual contribution of communities (May 2001).

There is a need to involve farmers in this realm. In both developed and developing countries, farmers' associations give credence to the concept that advocacy for an individual right is best done in groups of individuals. By forming organizations, farmers gain more market power and participation along with a reduction in transaction costs, and wield more influence within agricultural innovation systems. Farmers' associations build alliances with other organizations to improve rural services, to ensure respect for rural life, and to achieve recognition for the contribution of agriculture to society (IFAP 1998). In developing countries, farmers' associations – whose memberships predominantly

comprise small-scale agricultural producers, including women and youth members – advocate that governments should finance and protect public goods and keep publicly-funded research in the public domain. The natural consequence of this is advocating the preservation of traditional knowledge and other critical intellectual assets (IA) and/or IP.

Most farmers' associations that represent resource-poor farmers find it difficult to access and manage the vast amount of information surrounding IP and IPRs. Nonprofit organizations such as SRISTI in India have assisted farmers' associations in managing IA and IP information and advocate on IP issues (Box 1). The efforts of agencies like the International Federation of Agricultural Producers (IFAP) serve to inform their membership of family farm organizations from around the world (Box 2).

Intellectual property patent rights are usually at odds with farmers' rights to do such things as sell reproduced seeds. So it is often suggested that farmers should have the same rights as plant breeders, to ensure that unauthorized breeding activity does not infringe upon protected plant varieties. However, this is a formidable task.

¹ The World Intellectual Property Organization (WIPO) Secretariat has defined "traditional knowledge" as: "tradition-based literary, artistic, or scientific works; performances; inventions; scientific discoveries; designs; marks, names, and symbols; undisclosed information; and all other tradition-based innovations and creations resulting from intellectual activity in the industrial, scientific, literary, or artistic fields" (WIPO 2002).

Box 1. Honey Bee: Defensive Publishing for Farmer Innovation in India on the Internet

An example of how the Internet can be used in a developing country framework is seen in the Honey Bee website, www.nifindia.org, which is maintained by a nongovernmental organization (NGO) known as SRISTI. For 13 years, the Honey Bee network has helped farmers in India to register and thus defensively publish more than 12,000 innovations. An example entry for an innovation is: Innovator: Marutrao Sarode. Title of Innovation: Groundnut pod separator. Marutrao Yashwant Sarode designed and fabricated a unique pod separator that used rotating blades to snip off the pods.

SRISTI also organizes contests and awareness campaigns to help to identify and better manage IP. In 1997, the Gujarat Grassroots Innovation Augmentation Network (GIAN) was set up to help local innovators work with the formal sector to invest in the innovations and create enterprises. The GIAN initiative (www.gian.org) has helped innovators to file patents, develop innovations into products, and license these products to entrepreneurs.

Defining intellectual property and its relevance to agriculture

Intellectual property (IP) is an innovation or invention from a creator's mind; an intangible product over which rights have been granted or attached. An intellectual asset in an innovation or product per se, that becomes IP when rights are taken out. Rights to IP are legally owned and control the use of the intellectual property to which they are attached. IP can entail anything from paintings to cottonseed processing methods, poetry or name brands. IPRs enable IP owners to license, distribute, or sell access to their IP.

The increasing importance of IPRs in agriculture is unlikely to subside, especially with the adoption of the Agreement on Trade-related Aspects of Intellectual Property Rights, commonly known as the TRIPS Agreement, finalized in 1994. The TRIPS Agreement essentially establishes international minimum standards, that IP laws for every member of the World Trade Organization (WTO) must make part of the national law. This means significant changes for countries, both with and without IP laws, before becoming part of TRIPS.

International treaties concerning IPRs do not have to create total uniformity of laws among various nations. Rather, TRIPS can be used as a tool to set minimum standards among the member nations' laws concerning IPRs. Much debate over the TRIPS agreement surrounds the opportunity it affords industrialized nations to impose law fitting its own interests and goals on the developing world and the inability of developing countries to effectively use discretionary power afforded by TRIPS.

TRIPS forces all member countries, including those in the developing world, to formulate national IP strategy and legislation in conformity with its provisions, if they are to remain WTO members or accede to membership. Noncompliance with TRIPS can potentially land members on the losing end of the very effective WTO dispute settlement process, which has the power to impose strict penalties for violation or noncompliance with its terms. TRIPS is particularly relevant

to agriculture, health, education, and culture, and covers types of IP in developing countries that may be entirely new, such as product patents for food, pharmaceuticals, chemicals, microorganisms, or copyright protection for software (Watal 2001). It sets minimum IP protection standards without making specific provisions concerning traditional knowledge (TK) or TK-derived products. While TRIPS does recognize "the special needs of the least-developed country members", it does so only regarding flexibility for developing countries for implementing supporting national legislation to support the TRIPS structure. Some argue that fairness mandates TRIPS to address the unique issues of developing countries before implementation, by allowing flexibility in the legislation itself, rather than addressing these issues after the fact, in the final implementation stage.

Other international agreements involving IPR, that are of direct importance to farmers' organizations, include protection of new plant varieties under the Union for the Protection of New Varieties of Plants (UPOV) convention, as well as contractual language for material transfer agreements associated with germplasm exchange under the (as yet un-enacted) International Treaty for Plant Genetic Resources for Food and Agriculture.

Farmers' associations and IPRs

Farmers' associations have formidable potential for disseminating information and expertise, even throughout remote communities, making them central to IPR debates (Downes 2000). Key to the lobbying efforts of farmers' associations is helping members to recognize that IP is intangible property (or the intangible embedded in tangible property such as seed) and cannot be preserved or protected in the same way as rights to physical property.

In the last 20 years, official recognition of plant breeders' rights over the varieties they develop has spread, largely ignoring traditional farmers' rights. Farmers rights are defined in the FAO Resolution 5/89 as "rights arising from the past, present and

Box 2. Trade-related Intellectual Property Rights – A Statement by the International Federation of Agricultural Producers (IFAP)

Farmers recognize that the substantial investment made by the private sector for research and development into new technologies and inputs must be recovered through royalties under intellectual property production. Farmers' organizations call attention to the following points:

1. Strengthened intellectual property regimes of the World Trade Organization (WTO) are important for stimulating innovation and encouraging investment in research and development.
2. Higher prices for protected technologies and products could inhibit the transfer of, and access to, much needed technology to developing countries. This requires special attention in the WTO agreements to the terms of transfer of technology to developing countries.
3. Measures are necessary to ensure equitable compensation and protection for traditional or community-based knowledge to local communities for use of source plant and animal material in the Trade-related Aspects of International Property Rights (TRIPs) Agreement.
4. As technology becomes increasingly private and patented, and therefore possibly more expensive and less accessible to developing countries, there is a need to look to increased public funding for technological development internationally, for example in the Consultative Group on International Agricultural Research (CGIAR) network.

Source: IFAP (1998)

future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of origin/diversity". Traditional farmers are largely responsible for conserving and developing the seeds that plant breeders use to develop their materials. Since IPRs for plant breeders have risen, others have emphasized that more focus should be given to traditional farmers' rights. In India, for example, "The Protection of Plant Varieties and Farmers' Rights Bill" was passed by both Houses of Parliament in 2001.

Farmers' rights recognize that farmers are the custodians of biodiversity and as plant breeders add value to that biodiversity. Both farmers and research and industrial plant breeders, have some degree of IPRs over the genetic materials they use and produce. What is most disputed are the means and amount of profits or rewards farmers rightfully have for the use of traditional materials in research and development (Correa 2000).

Traditional farmers generally operate outside the formal market, which can put them at a disadvantage compared to non-farmer plant breeders that work within the formal economy. Farmers must re-earn time and money invested in their research and development when they have to buy seed that includes germplasm from their own, selected varieties. In this way, the IPRs that protect non-farmer breeders serve as barriers that deprive traditional farmers of the rights to their own plant genetic resources (PGRs).

Securing IPRs

Unlike other legal rights, unsecured IPRs are irrevocably lost. In agriculture, the primary IPR issue is whether their use excludes public access to indigenous know-how or inputs (such as seeds) previously available at low cost or free. This

may happen if such material becomes incorporated, along with novel attributes, protected as an invention. That is, as a new improvement, or in legal terms, an embodiment. Access to old seed is not an issue, but rather access to the new embodiment, such as transgenic seed that might also contain already known or used inputs. Thus, it is imperative that scientists and farmers, and their respective organizations, learn how to recognize their own IP and take steps to preserve IPRs and to develop and integrate strategies to systematically assess IP value and, based on that value, determine the means of securing (or not), critical IPRs.

The most common IPR instruments are patents, plant variety/plant breeders' rights, copyrights, trademarks, and trade secrets. The type of instrument used depends on the form of the IP (written material, a company symbol, etc.) and the originator's strategy for that IP in their business. The IP instrument used determines which bundle of rights the IP owner may seek to obtain. For example, a copyright protects the form, but not the concept contained therein, of a novel or a movie from copying or profit making by anyone other than the owner. A trademark protects a specific label but not the particular agricultural origin.

Patent rights are the strongest, most restrictive form of IPR. Patent rights are based on "claims" that have been examined by a national patent examiner. In order to be patentable a claim must be to an innovation or invention, on the basis of national patent law regulations, for which there is no "prior art", which is also nonobvious or contains an "inventive" step. Prior art and nonobviousness are what distinguish one patent from another – the innovation or invention that makes the IP new and unique.

Most countries require a patent applicant to file a technical description and claims directed to the invention to a national



government office or agency, according to submission specifications. A patent is valid for a limited time, after which it becomes a public good if not renewed or renewable. The fact that patents go into the public domain also ensures that “enabling” information passes into the public domain. That is, the way in which to practice, make, or use the invention is fully contained in the description, so that the invention can be replicated by another person. Since patenting is so burdensome due to costs, and administrative and examination procedures, it often not feasible or advisable to apply for a full patent.

If a full patent is not necessary, or not possible financially, then a defensive publication on the Internet or elsewhere, is an alternative (Box 1). The ability to enforce (or not) a patent infringement is another point for consideration, before deciding whether or not to pursue a formal patent. If it is not possible to punish those who infringe on a patent, then there is little obvious motivation for entering lengthy and expensive patent proceedings. Another ISNAR briefing paper by Adams and Henson-Apollonio (2002) provides information on why defensive publishing can be a very effective means of protecting accessibility without the expense and delays of the patent application process.

Once IP is in the public arena via defensive publishing, the IP inventor and everyone else who hears of the IP will have right of use. It does not matter who publishes the IP; consequently, another party can discover IP and publish it before the inventor does. Therefore, if a patent or other exclusive instrument is to be used to protect the IPR, it is essential to keep the IP confidential, prior to the submission of a patent application.

A key point for farmers and their associations to note is that defensive publishing always carries the risk that rivals will learn of a new IP and adapt it to their own competitive ends. Some defensive publishers do so anonymously and use vague language to describe an innovation. Unfortunately, this practice can make the prior art hard to decipher for patent examiners as well as competitors, perhaps resulting in a patent on your defensively published IP. Effective defensive publication treads a thin line between being carefully written enough to establish prior art, but not so well written to describe the innovation to competitors.

Contracts can be used to transfer IAs and IPRs. However, transferring IPRs can be confusing, since the tangible property containing the IP can often be transferred, while the intangible IPRs remain with the owner. All contracts contain whatever the contracting parties mutually agree, within certain limits of the law. Limits on contracts and their very nature can change, depending on the legal regime under which the contract is effective. A contract is effective in whatever legal jurisdiction or geographical designation it is agreed to be effective. It is possible to control the jurisdiction (and the law) of a contract simply by changing some of its clauses. The WIPO website offers an online database for model contracts for IP and genetic resources.

World legal systems are divided into several categories, such as: civil law, common law, Islamic law, Hindu law, Socialist law, tribal law, and a combination of any of these systems. What a contract means legally and how it is enforceable, depends on the legal system and the jurisdiction controlling it. Although there are different legal traditions controlling contract law, in any system, a contract is a private agreement that the law recognizes as enforceable. All legal systems provide a legal remedy – damages or forcing performance of the contract – if a contract is breached. Under most countries’ laws, poorly performing what the contract mandates is treated the same as a breach.

While it is true that contracts have the same purpose in all legal traditions, they can be very different instruments in different legal systems. Civil law countries, such as in continental Europe, treat the “obligations” underlying the contract as enforceable, regardless of contract form. As a result, civil law prefers to force the parties to perform the contract duties and, only if this is not possible, to award damages. Common law countries, such as the UK or its former colonies, prefer to award damages because contracts for the most part, only, obligate the parties insofar as their contents.

While contract content is important, the contract format is also important. Common law contract disputes will more than likely end with a damages award because common law courts weigh what is within the “four corners” of the document to interpret the parties’ duties. It is important to remember that contracts are defined and enforced differently, according to the type of legal regime and applicable national and local law.

In any case, where a contract is international, or even in different parts of the same country, it is preferable to avoid court determination of a case. This can be done by simply including a clause in the contract stating that the contract will be mediated (or arbitrated) in a named jurisdiction and use that jurisdiction’s law in case of breach or conflict. As is the case with competitive sports, legal systems do provide an innate “home town advantage” for their citizens.

There is some confusion concerning contracts that transfer IPRs. A material transfer agreement (MTA) alone does not preserve an IPR. A MTA is a type of contract that temporarily and restrictively transfers a tangible material, that may contain IP, to allow the use of the tangible material or property, and thus the embedded IP, such as in research and development. The confusion arises because MTAs may contain clauses with IPR descriptions and conditions for use. A MTA is a type of contract that, depending upon the provisions that are put into the agreement, can allow an IPR owner to keep ownership of unpatented IPR, while allowing another party to use the technology for research.

A MTA contract usually, but not necessarily, will include some conditions under which IPR material will be used, and some standard language for contracts in that jurisdiction (plus any

negotiated and mutually agreeable legal provisions). MTAs will include a term describing the time period during which the MTA is valid. Usually MTAs terminate when: the material becomes part of the public domain; the recipient's research using it is completed; or, upon written notice of one party to the other giving notice of termination. They will also often contain language that protects the provider against claims from the recipient regarding warranties, compliance with local laws regarding introduction of alien species, and the like.

The most important thing to understand about MTAs is that there is often language in such an agreement that explains that the original IPR contained in the property that is transferred remains with the provider. If both parties to a MTA agree on provisions addressing new innovations, the recipients can retain the IPRs to anything they develop. Usually MTAs will prohibit commercial use or licensing the original material and/or embedded IPR without the provider's permission. Terms for commercialization might also be included in the MTA, as might be a description of what is 'misuse' and consequences for that misuse under the MTA. As does any contract, a MTA creates mutual rights and responsibilities on the part of all who negotiate and sign it. Just as any other contract, language may be included in a MTA that requires that the existence of the agreement remains confidential.

A licensing agreement (LA) is another type of contract that wholly or partially transfers IPRs. Depending upon the provisions that are included, a LA can grant a binding, revocable privilege to use the IP for a fixed number of years, in a fixed territory, in exchange for money or some other payment for the right to use it. It buys the holder the right not to be sued by the inventor for using that IP (Erbish and Fischer 1998). IP that can be licensed includes patents, trademarks, copyrights, trade secrets, or other recognized IP instruments. Unlike MTAs, licensing does relay actual IPRs to the licensee, but does not necessarily transfer every aspect of ownership, in the form of a material or tangible object.

In a LA, the technology owner can separate out or pick and choose and negotiate which rights are to be relayed to the licensee. It is common for the inventor to retain the right to noncommercial IPR use, so that the inventor may continue to research using the licensed IPR. Depending on the legal system and jurisdiction in which the licensing agreement is drafted, it is a written contract containing information on the nature of the IPR licensed, its description, the duties and responsibilities of each party at the time of the agreement and in the future, and dispute mechanisms the parties can use.

Licensing allows the inventor to: retain ownership over the IPR; to control its sale, marketing, and production; and to sue if the IP is not used in a manner consistent with the LA contract. An inventor can issue multiple licenses for the same IPR and a licensee can grant sublicenses to parties in different geographical regions or countries with the exclusive right to use that IPR in that area (Erbish and Fischer 1998). In civil

law jurisdictions, however, moral rights cannot be transferred with a license.

Compulsory licensing is a protection measure that can be utilized by sovereign states for local users since it forces an IP owner to permit someone else to use the IP for a predetermined, lower fee. A compulsory license is an exception that can be specified in a LA for people in certain circumstances to be eligible for low-cost use of the IP. Compulsory licenses should be in common use in developing countries to maintain local rights to traditional knowledge.

Therefore, advocating laws that provide for compulsory licenses is an advisable priority for farmers' associations, since they are a tool for protecting indigenous know-how and raw materials. As discussed above, traditional knowledge can encompass everything from rights to timber or underground minerals; methods of animal domestication and hunting; herbal classification, location, and properties; and land management and use.

Compulsory licenses and another liberalizing tactic, parallel importation, have been used in Africa to allow the importation, manufacture, and use of AIDS medicines for local peoples, since the cost of buying these patented medicines abroad would otherwise be prohibitive. While multinational pharmaceutical companies might insist publicly that the IP is theirs alone, and unauthorized use of that IP is theft, in reality IP is only able to be private property in jurisdictions with the requisite underlying legal framework to support an IP regime and enforce IP infringement (EIPR 2003).

Since contracts are negotiated, private agreements, contents of MTAs and LAs will vary, depending in part on the nature of the IPR conveyed. All contracts should be carefully written legal instruments that anticipate every possible scenario for violation and avoid loopholes in the language and content.

With any contract, it is critical to verify that the provider is authorized to relay the material to another party, since only a full owner may sell property, whether tangible or not. Without the proper owner involved, a contract is null at best and fraudulent at worst and in either case does nothing to preserve IPRs or control distribution of materials properly.

IPR enforcement

IPRs are intangible rights; therefore, ownership and theft are often difficult to prove. There is no exclusive IPR owner unless: the legal, technical, and administrative criteria are met; there is no prior art; and, proper steps have been taken to preserve the rights. Even after obtaining and proving IPR ownership, without the institutional support to enforce it, the IPR often has no "teeth". Without consequences for infringement, the right will not be respected and has reduced or little monetary value. The enforcement of some rights, such as patent rights,



is totally up to legal action that is taken by the owner of the right. In the enforcement of other rights, for example registered copyrights or trade secrets, governmental authorities can be required to assist the IPR owner in the enforcement of their rights.

Effectively enforcing IPRs in developing countries usually requires improving judicial and administrative institutions and procedures, and fortifying customs and police cooperation to change local trading standards. In the absence of enforcement institutions, farmers' associations can perhaps fill some gaps in organization and resource availability, particularly in countries that rely solely on private enforcement.

Enforcement of IPRs is a very important issue. This is evidenced in TRIPS, which contains an entire section devoted to rights enforcement. Particularly in the case of TRIPS, enforcing IPRs will test the developing country's administrative and judicial capacities. Securing borders against unlawful importation is especially problematic in the many areas of the world where copyright piracy and patent and trademark infringement are rampant and can easily take place via the Internet.

In extreme cases, some countries have such burdensome IP procedures that the procedures themselves become barriers to the approval process, essentially forming nontariff barriers and market protectionism. In every country, it is the IP holder – not the government – who is primarily responsible for policing the market to enforce the right. Governments generally dispense with infringement complaints that are privately discovered. Government enforcement becomes impossible or ineffective if the supporting courts and ministries are defective (Letterman 2001).

In some developing countries, there is an increasing trend for using private enforcement agencies. Companies, such as the Enforcers of Intellectual Property Rights in India, Ltd., use private agents who investigate IPR infringement, provide litigation support, and facilitate multijurisdictional actions (Matthews 2002). Such companies could be of great use to farmers' associations since individual farmers or small farmers associations are unlikely to have the individual means to enforce cases against IPR infringement.

Another priority for IPRs in agriculture is the notion of collective rights in which IP can be owned in community, not individually. There is a long history and rich experience of collective copyright in areas such as entertainment and publishing. The Indian music industry, for example, has mechanisms for collecting and dispersing royalties to performers and songwriters. The relevance of collective rights and the precedent of IPR under other protection modes require further research among agencies involved in agricultural research and development. One initiative related to collective rights to intellectual property within the CGIAR is a project at the International Plant Genetic Resources Institute (IPGRI) which, in partnership with the Indigenous Peoples' Biodiversity Network, seeks to develop a

protocol for access to PGR with Quechua communities and to increase awareness of diversity through a museum devoted to traditional Andean potato varieties.

The reality in most developing countries is that there are usually insufficient resources to merit a full patent process, even in the case of critical technology. It has been suggested in the agricultural public sector that regional intellectual property rights (R-IPRs) be pursued more aggressively. The European Patent Office (EPO) is an example of a cost-effective alternative method to patent filing via national offices. In Africa there is a regional IP organization, the African Organization for Intellectual Property (OAPI) but it does not have national offices in the member states so a cost comparison is not possible. OAPI is also limited to resource sharing, not patent filing.

Generally, international treaties, conventions, or other agreements are multilateral (among more than two parties), bilateral (between two parties), or regional (among nations with common geography or other factors to justify a "regional" grouping). The WTO serves as an umbrella over all agreements among nations that are WTO members and virtually every nation is a member. In addition, WIPO administers many international agreements and conventions, based on the Paris Convention.

WTO legislation and regulations contain exceptions for some behavior at the bilateral, multilateral, and regional levels. It would be a significant strategy in developing countries, even at the level of the farmer organization, to develop R-IPRs. Negotiating R-IPRs on a more equal level, among countries with similar IPR issues, could present a united front to the international community on issues that are specific to developing countries, besides pooling scarce resources in poorer countries.

TRIPS includes a Most Favored Nation (MFN) obligation among members – the first time this general trade concept has been included in international IP law. In TRIPS, MFN status requires that a country's tariff cut or concession applies equally to other WTO members eligible for MFN status. Trade agreements that are usually not acceptable under WTO can be concluded in the form of regional agreements among WTO members. A country is under no obligation to extend MFN treatment to another country unless both are bilateral contracting parties of the General Agreement on Tariffs and Trade (GATT) or MFN treatment is specified in a bilateral agreement.

The WTO thus recognizes certain exemptions for regional trade agreements, including IP agreements. Transparency is also established as a basic principle in TRIPS so to obtain R-IPR exceptions for IPRs, it is advisable to publish laws and regulations, including judicial decisions and administrative findings that bear on the treatment of IP (Maskus 2000).

Farmers' associations and regional producer associations might be building blocks towards efforts at the national level

to promote R-IPRs. Regional IPRs enable groups of developing countries, geographically linked or not, to pool scarce resources; improve agricultural research; innovate new seeds and other agricultural inputs; and, make more global research advances (Philips 2000). "Regional" grouping also unites countries that have similar problems, rather than grouping only those literally in the same region.

Many developed countries are already aggressively pursuing restrictive bilateral agreements that usually limit the rights of developing country partners to fully utilize competitive practice available under TRIPS. Such agreements have been dubbed; "TRIPS+" and they represent a dangerous threat to the weaker partner in a bilateral arrangement (GRAIN 2004).

Conclusions

Globalization already makes economic autonomy difficult for nations; this can be exacerbated, particularly for farmers' groups, by the absence of strategizing for IPR management. At a more basic level, public research institutions and farmers' associations could follow the private sector's example of treating IPRs as a global currency of limited liability. Strategizing IPRs at all levels protects the developing world from colonization over its ideas, traditional knowledge, and indigenous resources by the developed world.

As this paper has suggested, campaigning for laws that provide for compulsory licenses is an advisable priority for farmers' associations, since they are a tool for protecting indigenous know-how and raw materials. Farmers face constraints to such advocacy, including lack of information and limited access to professional knowledge, and skills for strengthening the capacity of farmers associations for strategic IPR management should be pursued by federations of farmer associations such as IFAP and its partners.

Without a compulsory licensing regime, IPRs often translate, with difficulty, into social welfare benefits and are an investment in a population's future as a whole, when they stimulate innovation. Farmers' associations may consider promoting and facilitating the formation of regional IPRs, which would partially compensate for the lack of supportive legal and economic structures that are needed to effectively preserve IPRs and enforce infringement. Pooling resources to evaluate research and development deficits in each country would allow R-IPRs to be made more realistic and enforced.

It is likely that over the next few years, further research into the possibility of R-IPRs will be completed. Farmers' associations also potentially provide a means for spreading the importance of strategizing and addressing issues related to IPR, to ensure the future economic freedom of farmers and their presence as key stakeholders in this debate.

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