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Abstract

The development of genetically engineered crops in the 1980s drastically changed the legal landscape. Extending patent rights to plant varieties was uncharted territory; there were many grey areas, and biotech companies exploited them fully. When Roundup Ready soybean and Bt cotton were introduced in Brazil and India in the early 2000s, Monsanto implemented unprecedented systems for the collection of royalties. In Brazil, Monsanto charged royalties on farmers' crops, as opposed to seeds, thus expanding its IP rights to a farmer's harvest and curtailing farmers' rights to save seeds. In India, Monsanto entered into comprehensive licensing agreements with seed producers that extended Monsanto's IP rights (and royalties) to virtually every Bt cotton seed sold on the market.

In the past decade, legal activists have challenged these patent rights, licensing agreements and royalty collection systems in a number of high-profile class actions and public interest lawsuits. In patent infringement lawsuits in Canada and the United States, courts have consistently upheld a strict interpretation of patent law favouring the interests of technology developers over those of farmers. In contrast, we argue that legal activists in Brazil and India had some success in establishing the validity of alternative legal interpretations grounded in social and collective interests, such as farmers' rights and the right to food. We also briefly examine how legal activism around IP and biotech seeds spurred the creation of unexpected alliances, and the broader significance of these legal challenges for proprietary regimes in agriculture. This paper is based on interviews with Brazilian and Indian farmers, rural union leaders, plant breeders, activists, expert witnesses and corporate lawyers who are involved in these lawsuits.

Keywords

Biotech seeds; intellectual property; legal activism; Brazil; India

Acronyms

APROSOJA-MT	Soybean Producers Association of Mato Grosso
ECJ	European Court of Justice
FAMATO	Agriculture Federation of Mato Grosso
FETAG-RS	Federation of Agricultural Workers of Rio Grande do Sul
PPV&FR	Protection of Plant Varieties and Farmers Rights (Act)
PVP	Plant Variety Protection
STJ	Superior Court of Justice (Brazil)
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UPOV	Union for the Protection of New Varieties of Plants

I. Introduction

We did have a number of people waiting in the queue, but [Canadian farmer Percy Schmeiser] was the first case where we attempted to find out if the patent was valid. You don't know how strong that patent really is until somebody violates it and it's upheld in a court of law.

– Monsanto Canada spokesperson, quoted in *The Canadian Press*, 2001

In a judgment that took many observers by surprise, the Delhi High Court ruled in April 2018 that Monsanto's Indian patent on Bollgard II Bt cotton should be revoked. Recent lawsuits filed in Brazilian courts also challenge the validity of Monsanto's patents on Roundup Ready (RR) soybeans. If, as the Monsanto spokesperson quoted in the above excerpt stated, the real test of whether a patent is valid is if it's upheld in a court of law, then this does not bode well for the agricultural biotechnology industry.

In this paper, we examine how recent court cases involving intellectual property (IP) rights in agriculture in Brazil and India are threatening to disrupt the steadfast advance of proprietary regimes worldwide. Legislation and case law around agricultural biotechnology (agbiotech) first evolved in the United States, and it laid the foundation for Monsanto's IP strategy abroad. Indeed, Monsanto has lobbied hard to obtain similar IP rights over its biotech traits in other jurisdictions. These efforts drew legitimacy from the recent imposition of a global IP regime – the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The TRIPS Agreement makes it compulsory for countries to provide some form of IP protection for plant varieties. The irony is that while the TRIPS Agreement has been invoked frequently to support the extension of patent rights worldwide, the strong IP norms prevailing in the United States are not required by the TRIPS Agreement. Through a mix of cooptation and coercion, Monsanto, with the backing of successive U.S. administrations, has succeeded in imposing what is in fact a U.S. exception in countries with different laws, like Brazil and India. Stated differently, the nuances of the Brazilian and Indian legislations – which are fully TRIPS compliant – were lost in the biotech industry's push for strong patent rights over transgenic crops.

In Brazil and India, lawsuits around IP and biotech crops started to emerge between 1995 and 2005 and have only recently reached their countries' highest courts. These lawsuits against Monsanto concern patents and royalty collection systems for Roundup Ready (RR) soybeans in Brazil, and Bt cotton in India.¹ While other agbiotech companies followed suit, Monsanto has clearly been the architect of the new proprietary regime. This explains why it is at the center of these lawsuits. These cases have reopened the debate on a number of issues, including the patentability of genes, the relationship between patent law and plant breeders' rights, the patent exhaustion doctrine, and the balance between private IP rights and the public interest. Litigation has prompted Brazilian and Indian courts to examine the complex issues raised by the extension of patent rights to plants in the context of their own countries' laws.² In this paper, we discuss the arguments made by claimants and the rationale of judges in the context of these lawsuits, and contend that these cases are challenging the legal status quo by offering alternative interpretations of IP rights to biotech crops.³

In the next section, we present four key rulings by U.S. and Canadian courts that consolidated the dominant IP regime for biotech crops. We then turn to the ongoing lawsuits concerning Monsanto's patent rights to Bt cotton in India (Section 3) and RR soybeans in Brazil (Section 4). We conclude by discussing how legal activism around IP and biotech seeds spurred the creation of unexpected

¹ Roundup Ready soybeans are genetically engineered to withstand the direct application of Monsanto's wide-spectrum glyphosate herbicide (brand name Roundup). Bt cotton is genetically engineered to produce a Bt protein that is toxic to certain pests.

² While we focus here on the judicial decisions, it is important to note that these decisions build on a growing body of legal documents produced by lawyers, legal researchers and expert witnesses.

³ This paper is based on interviews with Brazilian and Indian farmers and rural union leaders, plant breeders, activists, expert witnesses and corporate lawyers who are involved in these lawsuits, as well as court petitions, expert witness reports and legal decisions. It is part of a larger SNF-funded research project entitled "Bringing the seed wars to the courtroom: Legal activism and the governance of plant genetic resources in Brazil and India."

alliances, and the broader significance of these legal challenges for proprietary regimes in agriculture.

2. Consolidating a proprietary regime in agriculture: The U.S. exception

In the 1980s, developments in genetic engineering intensified the drive toward the patenting of life forms. The first decisive move in this direction was the landmark U.S. court case *Diamond v. Chakrabarty* [1980]. Chakrabarty's patent application for genetically engineered bacteria able to metabolize crude oil was initially denied by the U.S. Patent Office on the basis that living organisms were not patentable. Chakrabarty appealed, and the U.S. Supreme Court overturned the lower court's decision. This was a watershed decision: the first time a utility patent was allowed on living matter. Once it was accepted that a micro-organism could be patented, it was a short step to the patenting of more complex life forms such as plants. This came five years later when another landmark decision – *Ex parte Hibberd* [1985] – established the right of plant breeders to obtain protection under the U.S. Patent Act.

Extending patent rights to plant varieties was uncharted territory. There were many grey areas, and as many vexed questions. Are plant genes patentable? Can biotech traits be patented as micro-organisms? How can one distinguish between a plant genetic sequence and the plant of which it is part? And, when an invention is a self-replicating living organism, at what point do the rights of a patent holder become, in patent parlance, "exhausted"? In other words, at what stage of the plant's life cycle does a patent holder lose his/her exclusive rights?

In the following years, a number of emblematic court cases involving IP and biotech crops reached the U.S. and Canadian Supreme Courts. The rulings examined key aspects of the issue, namely: the scope of the seed saving exemption (*Asgrow Seed Co. v. Winterboer*); the relationship between patent rights and plant breeders' rights (*J.E.M. Ag Supply Inc. v. Pioneer Hi-Bred Int'l Inc.*); patent

infringement (*Schmeiser v. Monsanto*); and the patent exhaustion doctrine (*Bowman v. Monsanto*).⁴

2.1 The scope of the seed saving exemption: *Asgrow Seed Co. v. Winterboer* [1995]

Unlike the U.S. Patent Act, the U.S. Plant Variety Protection (PVP) Act contained three exemptions that limited the scope of the plant breeder's exclusive right. The first exemption allowed the U.S. Department of Agriculture to issue a compulsory license in the public interest in order to ensure an adequate supply of the variety if the breeder was unwilling or unable to meet public demand at a price deemed fair. The second, known as the research exemption, stipulated that the use and reproduction of a protected variety for plant breeding or other research purposes did not constitute patent infringement. The third, the farmer's exemption, allowed a farmer to save seeds from protected varieties for replanting. Prior to 1994, this last exemption was interpreted liberally as allowing farmers to sell saved seeds to neighbours.

In the early 1990s, Asgrow Seed Company sued Denny and Becky Winterboer, a couple of farmers who grew corn and soybeans on a 800-acre farm in Iowa, over the scope of the farmer's exemption. This lawsuit was a precursor of things to come. It was the first time a seed company sued its clients (farmers), but similar cases would multiply in following years. Significantly, it was also the first lawsuit to challenge the scope of a farmer's right to save seeds, an age-old practice that was coming under relentless attack.

Asgrow won at the District Court, lost at the Court of Appeals, and finally won the case in the U.S. Supreme Court. In the majority decision, the Justices interpreted the PVP Act as meaning that "the only seed that can be sold under the proviso is seed that has been saved by the farmer to replant his own acreage" (*Asgrow Seed Co. v. Winterboer* [1995], p.191). In contrast, the dissenting Justices concurred with the Court of Appeals that "The statute as a whole (...) indicates that Congress intended to preserve the farmer's right to engage in so called 'brown-bag sales' of seed to neighboring farmers" (*Idem.*, p. 194). The dissenting Justices reasoned

⁴ For a more detailed discussion of the first three cases, see Aoki (2008), pp. 44-58.

that the U.S. Congress wanted to allow any ordinary brown bag sale from one farmer to another, but did not want farmers to compete with seed manufacturers on a commercial scale. They concluded that this intent was evidenced by the distinction between selling and marketing, and by the express requirement that such sales may not constitute the primary farming occupation.

This decision restricted the scope of the farmer's exemption by eliminating the right to sell saved seeds. Around the same period, legislation was passed to bring the PVP Act into compliance with the 1991 Act of the International Union for the Protection of New Varieties of Plants (UPOV).⁵ The amendments eliminated the exemption for sales, but continued to allow farmers to save and replant seed on their own farms without committing infringement.

2.2 The relationship between patent rights and plant breeders' rights: *J.E.M. Ag Supply Inc. v. Pioneer Hi-Bred Int'l Inc.* [2001]

In 1998, Pioneer Hi-Bred filed a patent infringement lawsuit against Farm Advantage, a small Iowa seed supply company part of J.E.M. Ag Supply Inc. According to Pioneer, J.E.M. had infringed several Pioneer hybrid corn patents by purchasing seeds from seed dealers and reselling them. In other words, it had violated Pioneer's exclusive right to make, use, and sell these seeds during the term of the patent.

J.E.M. responded that its resale of the hybrid corn seeds did not constitute infringement because Pioneer's utility patents were invalid. Indeed, J.E.M. argued that the U.S. Patent Office had incorrectly extended the scope of utility patent rights. The J.E.M. lawsuit was in fact the first challenge to the legality of the U.S. Patent Office's administrative decision to issue utility patent protection for germplasm in the Hibberd case (Aoki 2008, p. 46).

⁵ The International Union for the Protection of New Varieties of Plants (UPOV) is an inter-governmental organization that enforces IP rights on plant varieties, known as plant breeders' rights. Brazil is signatory to the 1978 Act of the Convention; the United States is a member to the more stringent 1991 Act. India is an exception; it is the only large economy that is not a member of UPOV.

The case examined whether sexually reproduced plants were a patentable subject matter under the U.S. Patent Act. The district court, court of appeals, and ultimately the U.S. Supreme Court, in a split 6/2 decision, all upheld the validity of the patents. The majority decision held that sexually reproduced plants were eligible for utility patents, as established by the Court in *Diamond v. Chakrabarty*.

In contrast, the dissenting Justices reasoned that *Diamond v. Chakrabarty* concerned a bacterium, not a plant, and therefore did not consider the relevance of the PVP Act. They argued that, as in the Asgrow case, the majority opinion ignored the Congressional intent to grant plant breeders a weaker form of IP protection in the PVP Act. However, the argument of the dissent was weakened by Congress's failure to prohibit utility patents on plants issued by the U.S. Patent Office following the *Hibberd* case.

According to Pollack, "In J.E.M., the Court insisted on choosing the widest possible reading of section 1010, even though this reading wiped out two congressionally-created public interest exceptions to private intellectual property control over basic food crops" (2004, p. 516). As Hamilton and Kershen concluded, "This ruling made it clear that the U.S. Supreme Court was not going to revisit the larger issue of the wisdom or legality of granting patents on living materials", and "was squarely holding for utility patents on plants" (cited in Pechlaner 2012, p. 210).

2.3 Patent infringement: *Schmeiser v. Monsanto* [2004]

Around the same period, in neighbouring Canada, another lawsuit was drawing the world's attention. Farmer Percy Schmeiser became famous after refusing an out-of-court settlement when Monsanto accused him of having infringed its patent on Roundup Ready canola. Schmeiser argued that he had never sowed RR canola and that his fields had been contaminated accidentally (a claim disputed by Monsanto). In 2004, the case went all the way to the Supreme Court of Canada, which ruled in a close five-to-four decision that, no matter how RR canola had landed into Schmeiser's fields – whether through genetic contamination or otherwise – Monsanto had a valid patent and therefore owned the genes on

Schmeiser's property.⁶ However, Schmeiser did not have to pay Monsanto for patent infringement as he did not profit from the presence of RR canola in his fields. Indeed, he did not spray Roundup herbicide on his crops and therefore did not take advantage of the RR trait.

The Supreme Court of Canada judgment in *Schmeiser v. Monsanto* – a decision narrowly grounded in patent law – failed to consider other important questions related to biosafety, environmental liability and farmers' rights (Cullet, 2005a, pp. 104-105). The Supreme Court determined that it was up to Parliament to consider issues related to biosafety, farmers' rights and bio-patents, and to amend the Patent Act accordingly.

The judgment was uncompromising in its recognition of patent rights. The Court reasoned that plants are not a patentable subject matter in Canada, thus limiting the scope of Monsanto's patent to the cells and genes that confer herbicide resistance in canola, and not to the plant themselves. However, the Court proceeded to undermine this argument by holding that infringement occurs when the defendant uses a patented part even if it is contained in something unpatentable (*Schmeiser v. Monsanto* [2004], p. 921). The Justices compared the case to patented Lego blocks assembled in an unpatented structure, a comparison that obfuscates the fact that Legos are not alive and do not reproduce. The implication is that a patent on a transgenic gene gives the patent owner *de facto* rights over the plant that incorporates the said gene. The *Schmeiser* ruling became a landmark decision, not only in Canada but abroad, where it is often cited in court cases involving IP and biotech crops.

2.4 The patent exhaustion doctrine: *Bowman v. Monsanto* [2013]

The fourth court case concerns an Indiana soybean farmer, Vernon Hugh Bowman. Bowman bought Monsanto's RR soybeans from its licensed seed producer, Pioneer Hi-Bred, and signed a contract that prohibits farmers from reusing the seeds. From 2000 onwards, Bowman continued to buy seeds from Pioneer and planted them each year as first crop in each season. As stipulated in the contract,

⁶ The judgment was criticized as relieving companies of any responsibility or liability for genetic contamination.

he did not save seeds from these crops. But Bowman also bought commodity soybean seeds from a local grain elevator for his late-season second crop, and applied a glyphosate-based herbicide on them. Commodity seeds are a mix of seeds that come from farms using Monsanto's patented RR technology and others that do not. As such, no licensing agreements are required for the sale of these seeds. Quite a few of these plants exhibited the glyphosate tolerant trait, and he saved the seeds from this harvest for replanting as his second crop. Monsanto eventually learned about this and sued him in 2007.

This case tested the applicability of the patent exhaustion doctrine to self-replicating technologies. Can a farmer infringe patents simply by planting soybeans he bought in the open market? Does a patent apply to second-generation seeds? Does patent exhaustion apply to patented seeds?

In September 2009, the district court ruled against Bowman and awarded damages to Monsanto. Bowman appealed the lower Court decision. He argued that Monsanto's patent rights were exhausted with respect to second-generation soybean seeds. He also argued that he could not be sued for patent infringement for seeds bought in grain elevators, an undifferentiated commodity. The Court of Appeals also ruled in Monsanto's favor, stating that:

Even if Monsanto's patent rights in the commodity seeds are exhausted, such a conclusion would be of no consequence because once a grower, like Bowman, plants the commodity seeds containing Monsanto's Roundup Ready® technology and the next generation of seeds develop, *the grower has created a newly infringing article.* (*Monsanto v. Bowman* [2011], p. 12, emphasis added)

This reasoning turned the argument on its head: no longer a biological impediment to patenting, the seed's ability to reproduce became the very basis for patent infringement lawsuits.

In 2013, the U.S. Supreme Court affirmed the lower court decisions. In a unanimous decision, the Justices rejected Bowman's patent exhaustion argument. They dismissed his argument that "soybeans naturally self-replicate or sprout unless stored in a controlled manner, and thus it was the planted soybean and not Bowman that made replicas of Monsanto's patented invention" (an argument known as the "blame the bean" defense) (*Bowman v. Monsanto* [2013], p. 9). While

they did recognize that self-replicating inventions were becoming “ever more prevalent, complex and diverse”, they argued that Bowman was not a passive observer of his soybeans’ multiplication (*Idem*, pp. 9-10). The Justices held that “the exhaustion doctrine does not enable Bowman to make *additional* patented soybeans without Monsanto’s permission (express or implied)” (*Idem*, p. 5). They reasoned that “[i]f the purchaser of that article could make and sell endless copies, the patent would effectively protect the invention for just a single sale” (*Ibid.*). Finally, they ruled that this conclusion applied irrespective of how Bowman had acquired the seeds.

As can be seen from these examples, U.S. courts, and the U.S. Supreme Court in particular, systematically ruled in favour of technology providers in a number of high-profile cases arising from the extension of IP rights to agriculture. U.S. courts favoured a strict interpretation of patent law, placing companies’ IP rights above the statutory rights of farmers. They also placed private law above public law by accepting that farmers could forfeit their statutory rights by entering into private contracts. As Cullet observes, the contracts that companies require farmers to sign upon the purchase of transgenic varieties “have been challenged in some cases in the U.S. but the courts have found that even if they deprive farmers of some statutory rights this does not invalidate the contract which they voluntarily sign as part of the purchase agreement with the company” (Cullet, 2005a, p. 107).

The result was the consolidation of an unprecedented proprietary regime in agriculture. It is important to stress that this remains a U.S. exception: no other country allows such extensive monopoly rights over plants (Winston, 2008, p. 322). Monsanto, with the backing of the U.S. government, strove to export this model to other countries.

3. Legal challenges to proprietary seed regimes in India

3.1 Background

In the post-independence period, India pursued an industrial policy that sought to balance IP rights with industrialization and the public interest. The Patents Act (1970) reflected this objective. It allowed patents on processes but not on products, and excluded plants and agricultural methods. It specifically excluded from patentability “any process for the (...) treatment of animals or plants to render them

free of disease or to increase their economic value or that of their products” (Art. 3).⁷

India initially resisted attempts to include IP rights in the Uruguay Round of trade negotiations but eventually gave in to pressures. In the early 2000s, the Indian Congress amended its legislation to conform to its obligations under Article 27(3)b of the TRIPS Agreement, which deals with the patentability of plant and animal inventions and with the protection of plant varieties. In 2001, it passed the Protection of Plant Varieties and Farmers Rights (PPV&FR) Act. Under pressure from civil society, India was one of the few countries worldwide to pass truly sui generis legislation that provides for plant breeders’ rights but also guarantees substantial rights to farmers, notably to sell seeds from protected varieties (Peschard, 2014). India also introduced successive amendments to the Indian Patents Act. Products and methods or processes for modifying a plant became patentable subject matters. Patents were allowed on micro-organisms, as well as on microbiological, biochemical and biotechnological processes. This meant that methods of genetic engineering and genetically engineered micro-organisms could be patented.

However, under pressure from civil society, India included a more elaborate definition of exclusions to patentability than most countries. Article 3(j) of the Patents Act stipulates that micro-organisms are patentable, but explicitly excludes the patenting of “plants and animals, in whole or any part, including seeds, varieties and species, and essentially biological processes for production or propagation of plants and animals.” This provision was hailed as a victory by civil society. However, as Cullet argued at the time:

This does not provide a comprehensive picture of the scope of patentability in agriculture. In fact, while the introduction of patents on micro-organisms may be restricted in principle by the exceptions just mentioned, the case law in other jurisdictions points to the fact that courts may indirectly provide patent protection to seeds or plants. This is due to the fact that holders of patents on micro-organisms would argue that their rights should be upheld regardless of whether the protected micro-organism has been used in isolation or has been

⁷ Diego Silva and Adil Hasan Khan provided research assistance for this section.

inserted into another organism. In traditional patent law, it has usually been accepted that patent protection is not lost in a situation in which a patented device is used inside another device which may or may not be patented. Before the introduction of life patents, this principle of patent law would only have applied to human-made devices. In the case of micro-organisms inserted in seeds, the adoption of the same principle is problematic. The patented micro-organism inserted into a seed has the unique ability to be found not only in the seed sold by a licensed dealer but also in the progeny of this seed. In other words, while there is no input from the patent holder into 'making' the second generation of the seed, the patented micro-organism can still be identified in the latter. This calls for a separate treatment of life patents altogether. However, it cannot be assumed that courts in India would necessarily treat micro-organisms any differently than they would treat any patented mechanical device. This is of concern because other courts have already taken decisions where they determined that even where plants are not patentable, they may be indirectly protected in situations where they contain a patented micro-organism. (2005, p. 3609)

Some in Parliament and civil society felt that what could and what could not be patented under the new legislation was not sufficiently clear. In the wake of the adoption of the Patents (Amendment) Bill, 2005, the government formed an expert group to examine some outstanding issues, notably whether excluding micro-organisms from patenting would be compatible with the TRIPS Agreement. The Mashelkar Report, named after its chairman, concluded that "excluding micro-organisms per se from patent protection would be violative of [the] TRIPS Agreement" (Mashelkar et al., 2009, p. 15).⁸

However, as Cullet suggested at the time, the expert group could have explored other avenues short of a blanket ban on the patenting of micro-organisms. For example, the committee could have recommended "the inclusion of a specific provision indicating that micro-organisms are only protected in isolation and not

⁸ After a first report drowned amidst charges of plagiarism, a revised report was adopted in 2009.

where they are inserted into another organism which is itself not patentable under the Patents Act" (Cullet, 2005b, p. 3609). This interpretation would have been consistent with the exclusion of seeds in Article 3(j) of the Patents Act. It would also have prevented courts from interpreting a patent owner's right over a genetic sequence as extending to seeds and plants, as in the case of *Schmeiser v. Monsanto*. Furthermore, the committee could have recommended "restrictions on the patentability of micro-organisms based on Articles 7 and 8 of the TRIPS Agreement, the precautionary principle and the fact that Article 27(3)b, which mandates their protection, is still under review" (Ibid.).⁹

In contrast, the expert group adopted a conventional approach, favouring a strict interpretation of patent rights over one making use of the existing flexibilities. The report contended that the patenting of micro-organisms was a "non-issue" in the United States, the European Union, South Korea, Japan and China. Tellingly, the committee chose to refer (with the exception of China) to the handful of countries with a strong pro-patent policy and ignored the numerous countries where patents on life forms were controversial. The expert group also took a pro-industry approach: it contended that a pro-patent approach was in the interest of the nascent Indian biotech industry, and made no mention of farmers' rights or the public interest (Mashelkar et al., 2009, pp. 13-15). Finally, the report failed to address the more complex issues at stake. For example, it did not address whether genes and genetic sequences, which were not mentioned in the Patents Act, could be patented.

In the absence of clear policies and case law, the Indian Patent Office¹⁰ was left to interpret the new legislation. The Indian Patent Office publishes and regularly updates a Manual of Patent Practice and Procedure to provide guidance to patent examiners. The 2005 edition explicitly stated that genes were not considered patentable (Ravi, 2013, p. 324). By 2008, that statement had disappeared from the

⁹ TRIPS Article 27(3)b was particularly controversial among the parties and one of the compromises made to secure its adoption was the inclusion of a mandatory review within four years of the entry into force of the Agreement. However, the review procedure was never implemented.

¹⁰ Officially known as the Office of Controller General of Patents, Designs and Trademarks.

manual (OCGPDT 2008). The most recent edition of the Manual states that: when a genetically modified gene sequence or amino acid sequence is novel, involves an inventive step, and has an industrial application, patents can be claimed on: (1) A gene sequence or amino acid sequence, (2) A method of expressing the above sequence, (3) An antibody against the protein or sequence, and (4) A kit made from the antibody or sequence (OCGPDT, 2011, p. 97). Thus, it is clear that a genetically modified gene sequence is patentable, but the manual makes no reference to genes.

The first patents on biotechnology were granted in India following the last amendments to the Patents Act in 2005. That year, 73 patents were granted. The pace picked up in the following years, with 1950 applications and 314 grants in 2007-2008, the last year for which data is available (Singh, 2015, p. 108). In India, Monsanto obtained two patents related to Bollgard Bt cotton. The first is a broad patent on Bt technology granted by the Indian Patent Office in 2008 and valid until 2019.¹¹ The second is a patent specific to Bollgard II technology, granted by the Indian Patent Office in 2009 and valid until 2022.¹²

Under the subtitle "Patent grants by the [Intellectual Property Office]: Is there a method in the madness?", Ravi (2013) seeks to identify the criteria used by the Indian Patent Office to assess patent applications involving nucleotide sequences. The title is a reference to the apparent inconsistencies in how patent applications related to genetic material were treated by Indian patent offices. According to Ravi, there was a consensus among the patent examiners he interviewed that "the exclusion referring to plants/animals/parts of plants or animals [in the Patents Act] are not applicable at the molecular/cellular level where genes are involved" (Ibid., p. 327).¹³

¹¹ Patent N°214436, "Methods for transforming plants to express bacillus thuringiensis delta endotoxins."

¹² Patent N°232681, "Cotton event MON 15985 and compositions and methods of detection."

¹³ Patent examiners opined that genes found in nature are not patentable, while those that are not found in nature and whose function or utility is specified are patentable.

Until the 2018 decision of the Delhi High Court in *Nuziveedu v. Monsanto*, the only case regarding the patentability of living organisms in India was a judgment pronounced by the Calcutta High Court in *Dimminaco AG v. Controller of Patents* [2002]. The Indian Patent Office had rejected an application by the Swiss biotechnology company Dimminaco AG for a patent on a method for producing a live vaccine on the grounds that a process resulting in a living substance was not patentable under the Patents Act. Dimminaco appealed and the Calcutta High Court overturned the decision, stating that “there is no statutory bar to accept a manner of manufacture as patentable even if the end product contains a living organism” (*Dimminaco AG v. Controller of Patents* [2002], p. 10). For the purposes of our discussion, it should be noted that the case was limited to the patenting of a process and not of a product, and that the micro-organism in question was not transgenic.

The following analysis by Park and Jayadev was made with reference to pharmaceuticals patents, but the same could be said of biotech seed patents:

There is a dearth of Indian patent case law dating from the era during which the 1970 Patents Act was in effect. Perhaps inevitably, the courts and the patent offices have attempted to fill this vacuum by placing reliance on foreign judgements that interpret the basic criteria for patentability. However, because none of these judgements are legally binding in India, the possibility remains that the Indian courts can forge their own jurisprudence that takes into account the need to ensure access to affordable medicines in evaluating the basic criteria for patentability. Whether the Indian judiciary can be sufficiently weaned from its reliance on foreign precedent to allow this to happen remains to be seen. (2011, p. 98).

In 2018, a judgment by the Delhi High Court in a case opposing Monsanto and the Indian seed company Nuziveedu would begin to make up for the lack of case law and offer the first interpretations by the Indian judiciary on the patentability of biotech seeds.

3.2 *Nuziveedu v. Monsanto* [2018]

In February 2016, Monsanto filed a lawsuit against the Indian seed company Nuziveedu in the Delhi High Court for patent infringement. Nuziveedu had been

producing Bt cotton seeds under a sublicensing agreement with Monsanto since 2004. However, the relationship between the two companies soured over the price of royalties and Monsanto terminated the sublicensing agreement in November 2015 (Bhardwaj, Jain and Lasseter, 2017). Nuziveedu, Monsanto claimed, had continued to use the Bt technology after the termination of its sublicensing agreement.

In March 2017, Judge Gauba of the Delhi High Court ruled that Nuziveedu's demand to renegotiate royalties in accordance with the government order was legitimate. Given Monsanto's refusal to do so, its decision to terminate its sublicensing agreement with Nuziveedu was illegal. Therefore, he ordered Monsanto to restore the contract and abide by the royalty rate fixed by executive order in March 2016. He also stated that, while he was not in a position to rule on the complex issue of patent validity, he found the seed company's argument that Monsanto's patent on Bt cotton had been wrongly granted by the Indian Patent Office "*prima facie* to be devoid of merit" (*Monsanto v. Nuziveedu* [2017]).

Both parties appealed before a division bench of the same court to contest specific aspects of the decision. The parties also agreed that the division bench would decide the issue of patent validity on the basis of the evidence already submitted to the court.¹⁴ For Monsanto to forfeit its right to a full trial on such a fundamental issue was, as Reddy puts it, "incredibly brave or incredibly overconfident" (Reddy, 2018a).

In a landmark decision issued on April 11, 2018, Judges Ravindra Bhat and Yogesh Khanna of the Delhi High Court overturned the earlier decision. They ruled that Bt cotton seeds were not patentable in India, in effect revoking Monsanto's patent. This decision is significant because it was the first time a court examined the legality of patents on biotech seeds under Indian law. In this case, the patent in question was N°214436, the first and broader patent obtained by Monsanto in India on a method for producing Bt plants.

¹⁴ This understanding was subsequently contested by Monsanto in its appeal to the Supreme Court of India (Reddy 2018b).

The decision stood out for a number of reasons. Firstly, the judges addressed the fact that the claims made in the patent application had to be modified substantially to conform to the national legislation. On account of Section 3(j) of the Indian Patents Act on exclusions to patentability, the Patent Office had rejected a total of 45 claims made in the original patent application. These claims were related to plants, plant cells, tissues and progeny plants containing the nucleic acid sequence, as well as to plants created through an essentially biological process. Only three claims – those related to the nucleic acid sequence – had been deemed acceptable. According to the judges, “This narrowing of the patent claims, in the opinion of the court, is relevant, because ultimately what was granted was not a patent over a product, or even the method, but of identification of the ‘event’” (*Nuziveedu v. Monsanto* [2018], 33).

Secondly, the judges rejected Monsanto’s claim that the subject matter of the patent is a micro-organism, patentable under TRIPS Article 27(3)b. In the negotiations over Article 27(3)b, allowing patents on genes was a highly sensitive issue, and the compromise solution was to allow patents on micro-organisms. The problem is that there is no agreed definition of micro-organism, and that genetic engineering is not so much about micro-organisms as it is about genetic sequences and genes. Patent offices have been left to deal with the resulting ambiguity. The European Patent Office, for example, got around this problem by replacing the term “micro-organism” by “biological material” (Jain, 2015, p. 134). The *Nuziveedu* case is the first time this issue was addressed in India. The judges argued that a nucleic acid sequence is not a microscopic organism because it has no existence of its own. It is only of use after it is introgressed into seed material, which must in turn undergo hybridization. They recognized that Monsanto could assert patent rights over the nucleotide sequence responsible for the Bt trait. However, they argued that the trait has no intrinsic worth. It only becomes valuable if it is part of a plant cell or seed, both of which are explicitly excluded from patentability under Section 3(j) of the Patents Act.

This interpretation is reminiscent of the dissenting view in *Schmeiser v. Monsanto*. The dissenting Justices argued that Monsanto’s patent was only on the transgenic genes and cells, and on the process for making them; it did not extend to the seeds or plants. In their opinion, patent protection could not be extended to

unpatentable plants and their offspring. And therefore, “use” of the patented invention could not be construed to include use of the plants themselves.

To come back to the Delhi High Court case, the judges argued that the transfer of the Bt trait to plant varieties through hybridization is an essentially biological process, which is also exempted from patentability under Section 3(j) of the Patents Act. Under the sublicensing agreement, Monsanto supplies donor seeds incorporating the Bt trait to a seed company, which then uses the donor seeds to transfer the Bt trait to its own varieties through conventional breeding techniques. The judges concluded that the moment the DNA containing the nucleotide sequence (the subject matter of the patent) was hybridized to produce the transgenic seeds or plants, the latter fell within the purview of the PPV&FR Act, the Indian legislation regulating plant breeders’ rights.

Thirdly, the judges interpreted patent rights over biotechnological inventions in light of India’s distinct legislation in the area of agricultural patents and farmers’ rights. In his decision, the single-bench judge had relied on the decision of the Supreme Court of Canada in *Schmeiser v. Monsanto*, adopting its interpretation of what constitutes “use”:

It is no bar to a finding of infringement that the patented object or process is a part of or composes a broader unpatented structure or process, provided the patented invention is significant or important to the defendant’s activities that involve the unpatented structure. (*Monsanto v. Nuziveedu* [2017], p. 82)

The division bench judges rejected this line of reasoning, arguing that the uniqueness of the Indian legislation set it apart from the United States and Canada and that *Schmeiser v. Monsanto* could therefore not be extrapolated to India. The judges also noted that, contrary to the United States and Canada that do not formally recognize farmers’ rights, the Indian PPV&FR Act guarantees farmers invaluable rights.

The ruling is not without its problems. For example, the Judges instructed Monsanto to apply for protection and benefit sharing under the PPV&FR Act. However, the benefit-sharing provisions of the PPV&FR Act are intended to compensate farmers and communities whose resources have been used to

develop commercial varieties, not technology providers (Reddy, 2018c, see also Peschard, 2017). Nonetheless, the division bench did examine the issue of patents on agricultural biotechnology in light of India's own legislation in this area. The decision seems to indicate that the Indian judiciary is indeed weaning itself from its reliance on foreign precedent and forging its own jurisprudence. The irony is that the legal dispute around Bt cotton in India is not informed by the progressive and redistributive principles of the post-independence industrial policy, but is intimately linked to the resurgence of right-wing nationalism in India (see Bhardwaj, Jain and Lasseter, 2017).

4. Legal challenges to proprietary seed regimes in Brazil

4.1 Background

Like India, Brazil did not provide for plant variety protection prior to its entry into the WTO. During the Uruguay Round of trade negotiations, Brazil sided with India and other countries in the Global South in opposing the inclusion of intellectual property in the GATT agenda. Like India, Brazil eventually gave in to (mostly U.S.) pressure. A bill was tabled in 1991, but civil society mobilized against the bill, in particular the fact that it allowed the patenting of life forms. This delayed the adoption of the bill for five years. Nevertheless, the Industrial Property Act was passed in May 1996.

For the first time, the Industrial Property Act allowed the patenting of life forms, although these provisions are not as broad in scope as they were in the initial bill. To be patentable, an invention must meet the standard requirements of novelty, inventive activity and industrial application (Art. 8). This excludes "natural living beings, in whole or in part, and biological material, including the genome or germplasm of any natural living being, when found in nature or isolated therefrom, and natural biological processes," which are not considered to qualify as inventions (Art.10, IX). Article 18 further specifies that living beings, in whole or in part, are not patentable, "*except transgenic micro-organisms meeting the three patentability requirements – novelty, inventive activity and industrial application – as provided in Article 8 and which are not considered mere discoveries*" (emphasis added). An explanatory paragraph defines transgenic micro-organisms as "organisms, except the whole or part of plants or animals that present, due to

direct human intervention in their genetic composition, a characteristic that cannot normally be attained by species under natural conditions.” In sum, plant varieties and animals are not subject to patent protection, but the law does not rule out genetically engineered micro-organisms or microbiological processes.

To fill the gap left by the Industrial Property Act, a law allowing plant breeders’ rights was introduced the following year. Brazil thus opted for the less stringent *sui generis* option under the TRIPS Agreement, as did most countries that did not have plant variety protection prior to entering the WTO. The Brazilian Plant Variety Protection (PVP) Act is modelled on UPOV 1978. It recognizes the right of farmers to keep and plant seeds for their own use. A farmer is also allowed (1) to store and plants seeds for his own use, or (2) to use or sell the product of his/her planting as food or raw material, except for reproductive purposes. An exception is made for small rural producers, who can multiply seeds to give away or exchange, but only in dealings exclusively with other small rural producers. The PVP Act also includes a research exemption, allowing the use of the plant variety as a source of variation in genetic improvement or in scientific research.

The first patent applications for biotechnological inventions were filed between May 1996 and May 1997 under a transitional provision of the Brazilian Industrial Property Act. Known as the pipeline mechanism, it allowed companies to apply for patents on products or processes invented before the Act came into force and patented abroad, provided they had not yet been marketed. As a TRIPS-plus provision – one that goes beyond the minimum requirements of the TRIPS Agreement – the pipeline mechanism came under severe criticism from civil society. Monsanto filed 14 patent applications related to RR soybeans and Bt cotton under the pipeline mechanism, half of which were granted by the Brazilian Patent Office (Barbosa, 2013, pp. 339-349).

4.2 *Passo Fundo Rural Union v. Monsanto* [2009]

On April 9, 2009, a class action was brought against Monsanto by a local rural union representing large farmers and rural employers in Passo Fundo, a hub of the soy-growing region of the State of Rio Grande do Sul in southern Brazil.

Starting with the 2003-2004 harvest, Monsanto charged royalties on harvested soybeans when a farmer could not prove that he had bought certified seeds at the

beginning of the growing season. Charging royalties on harvested grain represents a sea change: it means that Monsanto's IP rights extend to a farmer's production, and it effectively does away with the right to save seeds. The rural union asked the court to uphold the right of farmers, as specified in the Brazilian PVP Act, to save seeds from their crops for replanting on their farms and to sell their harvest as food or raw material without paying royalties to Monsanto.

The initial petition filed by the Passo Fundo rural union before a civil court questioned the legal basis of the royalty collection system, but it did not address the merits of the patents.¹⁵ The reason for this was simple and yet disconcerting: at the time, no one knew which patent(s) covered RR soybeans in Brazil. Monsanto deliberately perpetuated the confusion by declining to identify its patents until the courts ordered the company to do so (FAMATO, 2013).

By the time the Passo Fundo class action reached the Superior Court of Justice (STJ, following its Portuguese acronym)¹⁶ in 2016, enough was known about these patents to prompt legal action. However, the rural union decided not to include issues surrounding patents in its special appeal because they believed this might compromise the admissibility of the case. The STJ could have argued, for example, that this aspect was not included in the initial petition, and that patents fell under the jurisdiction of a specialized court.¹⁷

Though the class action did not formally address the issue of patent validity, the case prompted intense scrutiny that eventually helped to clarify the issue. Indeed, as litigants, lawyers, and judges sought to understand the legal basis of the royalty collection system, Monsanto's patents came under increasing scrutiny. As a fuller picture of the corporation's IP rights emerged, a number of issues were raised concerning these patents. Some of these issues were procedural in nature and concerned the pipeline mechanism discussed earlier. We will focus here on the

¹⁵ FETAG-RS, a state federation of 350 family farming local unions, and other rural unions have since joined the lawsuit. For the sake of simplicity, we will continue to refer to the rural union of Passo Fundo as the main party.

¹⁶ The Superior Court of Justice (*Superior Tribunal de Justiça*, STJ) is the country's highest court for non-constitutional matters.

¹⁷ Interview with the rural union's lawyer, Brasília, February 22, 2017.

substantive issues, namely the patent exhaustion doctrine, the relationship between patent law and plant breeders' rights, and the balance between private IP rights and the public interest.

In the course of the lawsuit, the rural union has obtained favourable decisions and suffered setbacks. The main decision in favour of Monsanto so far is the second-instance ruling by the Court of Justice of Rio Grande do Sul (TJ-RS). As in Canada and the United States, this decision is narrowly grounded in patent law (*Monsanto v. Sindicato rural de Passo Fundo* [2014], p.22). In the majority opinion, the judges ruled that, as a product of genetic engineering, RR soybeans come under the exclusive protection of the Patent Act (*Ibid.*, p. 115), and that those who opt for RR soybeans must compensate the patent holder for the use of the technology. They accepted the argument that exclusive rights granted to a patent owner can extend to a cultivar, and dismissed the PVP Act as altogether irrelevant to the case (*Ibid.*, p. 29).¹⁸

In contrast, the decisions in favour of the rural union tend to veer away from patent law. This is evident in the first-instance decision by Judge Conti (Civil Court in Porto Alegre), as well as the dissenting opinion by Judge Lopes do Canto (Court of Justice of Rio Grande do Sul, TJ-RS). Both judges strove to interpret the issue in light of a wider set of legal norms, including the Brazilian Constitution and the PVP Act.

Judge Conti did not refer to case law in the United States or Canada. However, he made a reference to the decision rendered by the European Court of Justice (ECJ) in *Monsanto v. Cefetra BV* [2010]. In this case, Monsanto attempted to stop the import of Argentinean soymeal into Europe because Argentinean farmers had not paid royalties on RR1 soybeans. The ECJ ruled that the presence of Monsanto's patented genetic material in the soymeal did not constitute patent infringement

¹⁸ By the time the Court of Justice delivered its decision in 2014, it had been established that Monsanto had charged royalties for two and a half years after the expiration of its Brazilian patent on RR1. However, the judges declined to address this aspect because it was not included in the initial petition (the patent was still in force when the initial petition was filed in 2009) (*Monsanto v. Sindicato rural de Passo Fundo* [2014], p. 116).

because the material was no longer performing the function for which it was patented (that is, resistance to Roundup herbicide).

Judge Conti similarly took a more restricted view of a patent holder's rights. He argued that the Plant Variety Protection (PVP) Act should take precedence over the Industrial Property Act when it comes to plant varieties. To support this interpretation, he pointed to the fact that the PVP Act (1997) was passed a year after the Industrial Property Act (1996), thus reflecting an intent to submit plant varieties to a distinct legal regime. The PVP Act stated that it is "the sole form of protection in the Country for plant varieties" (Art.2). This intention was further exemplified by Brazil's decision to join the 1978 version – and not the more restrictive 1991 version – of the UPOV Convention (*Sindicato rural de Passo Fundo v. Monsanto* [2012], p. 14). In his decision, Judge Conti reaffirmed the right of all farmers (small, medium and large), under the PVP Act, to save seeds for replanting without paying royalties; and the right of small farmers to exchange or give away seeds among themselves. In his opinion, Monsanto's property rights were exhausted by the licensing of its technology to seed producers and the sale of seeds to farmers. The court held Monsanto was therefore not entitled to collect royalties upon harvest.

Finally, the decisions favourable to farmers offer a different interpretation of the balance between private IP rights and the public interest. In his dissenting opinion, Judge Lopes do Canto also offered a radically different interpretation, informed by broader concerns over food security, and the limits and social function of property rights. According to this dissent, "No property right is absolute and can prevail over its most relevant social functions" (*Monsanto v. Sindicato rural de Passo Fundo* [2014], p. 65). The Brazilian Constitution stipulates that property must fulfill its social function and offers special protections to the small farmer. Judge Lopes thus redefines the conflict as one between a third party's IP and the guarantees offered to small farmers in the Constitution.

According to Judge Lopes, there are no perpetual rights in plant breeding (*Ibid.*, p. 73). Judge Lopes reasoned that Monsanto holds property rights over the initial technology, but these do not extend to the entire production process and to successive generations of plants. Charging royalties on production is an attempt to obtain financial gains far superior to the equitable remuneration for the use of

its technology. The patent-holder can charge royalties on the sale of seeds to farmers, but patent rights are exhausted from then onwards. Patent law is no longer applicable when a farmer sells his harvest as food or raw material, sets aside and replants seeds, multiplies seeds to give or exchange, or if the cultivar is used for plant breeding or scientific research (Ibid., p. 67).

In sum, Judge Lopes argued that since there is a specific law, passed with the objective of protecting small farmers, in compliance with the Constitution, then this statute must prevail if there is a conflict with another law: "When there is a normative conflict, the social interest must prevail over purely private interests. In other words, the law that must be applied is the one that best serves collective interests, in this case, the PVP Act" (Ibid., p. 73). Given the importance of family agriculture for Brazilian food security, he concluded, it was essential to guarantee the right to plant freely in the interest of society.

4.3 *APROSOJA-MT v. Monsanto* [2017]

On November 8, 2017, the Soybean Producers Association of Mato Grosso (APROSOJA-MT) filed a lawsuit in federal court challenging the validity of Monsanto's patent PI 0016460-7 on RR Intacta PRO soybeans.

This was not the first time agricultural producers challenged the validity of a patent in the courts. In 2012, after it was revealed that Monsanto's Brazilian patent on RR1 soybeans had expired in August 2010, and that the technology was therefore in the public domain, 47 rural unions and the Agriculture Federation of Mato Grosso (FAMATO) filed a class action. The lawsuit pressured Monsanto to suspend the collection of royalties in February 2013, two and a half years after the expiration of its patent (PI-1100008-2).

In the case of patent PI 0016460-7, the Brazilian Patent Office had initially delivered a negative opinion on the patent application, raising objections based on exclusions to patentability under Article 18(3) of the Industrial Property Act. In response, Monsanto withdrew all claims that conflicted with Article 18(3) and resubmitted the application. The Brazilian Patent Office then delivered another negative opinion in which it questioned whether the invention involved an inventive step. After further explanations, the Brazilian Patent Office granted the

patent in October 2012 (the patent is set to expire in October 2022). The patent comprises ten claims to DNA sequence, DNA construct, a method to express a DNA sequence, and a method to control weeds.

APROSOJA-MT asked the court to revoke the patent on three grounds. Firstly, it argued that Monsanto combined already existing technology and that Intacta therefore failed to meet the innovative step criteria.¹⁹ Secondly, it argues that the invention was not described in a way that would allow a skilled person to reproduce the invention once in the public domain, another patentability requirement. Thirdly, it argued that the scope of the patent was illegally extended by adding new material after the original application was submitted. In January 2018, the Brazilian Patent Office made a submission to the court in support of revoking the patent it had granted in 2012. In July 2018, a federal judge granted the judicial deposit of royalties until a final decision is issued on the merits of the case (*APROSOJA v. Monsanto* [2018]).

According to Ávila and Perin (2018, p. 29), another patent on RR Intacta PRO granted by the Brazilian Patent Office should be revoked for similar reasons.²⁰ The patent in question – PI 0610654-4 – was granted in 2017 and is set to expire in 2026. It covers both products (claims 1-8) and processes (claims 9-17). The scope of the claims, however, is unprecedented: in addition to nucleic acid molecules, the claims cover “soybean primary products.” In other words, the patent covers not only the harvested soybeans but also any derived products such as flour, flakes and oil, “because they are produced from a seed containing the event” (Monsanto Technology LLC, 2017, p. 35, our translation).

This is an extraordinary development: the first time such extensive claims were granted by the Brazilian Patent Office. Extending patent protection to grain is not allowed under the current legislation (hence industry efforts to amend the PVP Act to bring it into line with UPOV 1991). Extending patent rights to grain is what Monsanto and other biotech companies have in practice been enforcing by collecting royalties on harvested soybeans. However, as we have seen, this practice

¹⁹ For a detailed exposition of this argument, see Ávila (2015, pp. 121-125).

²⁰ As of September 2018, a third patent application related to Intacta RR PRO (PI 0820373-3) was under examination by the Brazilian Patent Office.

is highly controversial and the object of ongoing lawsuits. Why the Brazilian Patent Office accepted such claims is open to question. One thing is certain: this patent will be challenged in the courts. In fact, invalidity proceedings were filed even before the patent was granted, but were dismissed for procedural reasons.

5. Conclusion

The relentless march of intellectual property rights needs to be stopped and questioned.

— United Nations Development Programme, Human Development Report (1999)

Between 1995 and 2013, a series of high-profile rulings in the United States and Canada consolidated an unprecedented proprietary regime in agriculture. In these cases, judges consistently adopted a reductionist approach, giving primacy to patent law over other considerations, to the benefit of technology developers and at the expense of the farming community. These rulings effectively ended the debate in these countries on the complex questions raised by the extension of IP to living organisms such as seeds and plants.

Efforts to extend this proprietary regime to countries with different IP cultures, laws and seed saving traditions, such as Brazil and India, met with resistance. While it is widely acknowledged that countries in the Global South did not take full advantage of the flexibilities available to them under the TRIPS Agreement, the fact remains that their national legislations in the area of patent and plant variety protection differ in substantial ways from those of the United States and Canada. These specificities, however, were disregarded in the implementation of royalty collection systems for biotech crops in the early 2000s. In their lawsuits, Brazilian and Indian activists rely upon these legislative differences to challenge biotech patents and royalty collection systems in the courts. By addressing, for the first time, the unique national patent right statutes pertaining to biotech seeds, the Brazilian and Indian judiciaries have begun to develop alternative legal interpretations on key issues such as seed saving and patent exhaustion.

The support of politically and economically powerful actors – including Brazilian large soybean farmers and Indian national seed companies that are sublicensees

of Monsanto – may have contributed to the success of farmers in these lawsuits. Legal activism challenging Monsanto's IP rights and practices thus cuts across the dividing line between opponents and proponents of transgenic crops. In Brazil, the class action has brought together long-term environmental and social critics of RR soybeans, and staunch proponents of transgenic crops who are critical of the royalty collection system. In India, progressive food sovereignty activists and ultranationalist Hindu organizations both oppose Monsanto's aggressive pursuit of IP rights. These are unexpected, and sometimes uneasy, alliances. For food sovereignty activists, there is a fine line between curbing corporate patents and practices considered abusive, and making the cultivation of transgenic crops more attractive to farmers by invalidating the patents underpinning the royalty collection systems.

At the time of writing, the cases discussed in this paper are awaiting a final judgment by their countries' highest courts. In India, Monsanto is appealing the 2018 decision of the Delhi High Court in *Nuziveedu v. Monsanto* before the Supreme Court. In Brazil, the Passo Fundo class action is before the Superior Court of Justice, and an appeal of this decision before the Federal Supreme Court is not excluded. The higher courts' rulings will be decisive. However, independently of the outcome, the decisions rendered thus far have already broken with the dominant paradigm by offering legal interpretations that balance patent holders' rights against farmers' rights, food security and the public interest. These cases are going to the heart of the proprietary regime by challenging the validity of agbiotech patents. Whether they will, in the long run, disrupt proprietary legal regimes in agriculture remains to be seen.

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