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# Food for Thought: Genetically Modified Seeds as De Facto Standard Essential Patents

Benjamin M. Cole

*Fordham University Gabelli School of Business, [bmcole@fordham.edu](mailto:bmcole@fordham.edu)*

Brent J. Horton

*Fordham University Gabelli School of Business, [horton@fordham.edu](mailto:horton@fordham.edu)*

Ryan G. Vacca

*University of Akron School of Law, [vacca@uakron.edu](mailto:vacca@uakron.edu)*

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**LEGAL STUDIES RESEARCH PAPER SERIES**



***Food for Thought: Genetically Modified Seeds  
as De Facto Standard Essential Patents***

**Ryan G. Vacca**

Assistant Professor of Law  
University of Akron School of Law

**Benjamin M. Cole**

Assistant Professor of Management Systems  
Fordham University Gabelli School of Business

**Brent J. Horton**

Assistant Professor of Law & Ethics  
Fordham University Gabelli School of Business

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# Food for Thought: Genetically Modified Seeds as De Facto Standard Essential Patents

Benjamin M. Cole,<sup>\*</sup> Brent J. Horton,<sup>\*\*</sup> Ryan Vacca<sup>\*\*\*</sup>

## *Abstract*

*For several years, courts have been improperly calculating damages in cases involving the unlicensed use of genetically-modified (GM) seed technology. In particular, when courts determine patent damages based on the hypothetical negotiation method, they err in exaggerating these damages to a point where no rational negotiator would agree. In response, we propose a limited affirmative defense of an implied license due to the patent's status as a de facto standard essential patent. To be classified as a de facto standard essential patent, the farmer must prove three elements that reflect the peculiarities of GM seeds used in farming: (1) dominance, (2) impracticability, and (3) necessary to fulfill a basic need. Based on the approaches used by courts and standard setting organizations in licensing standard essential patents in technological fields such as cell phones and software, designation of some GM seeds as standard essential patents allows the courts to imply a license from patentees to farmers on reasonable and non-discriminatory (RAND) terms. Doing so shifts the case from a tort-based patent infringement suit to a breach of contract dispute and alters the damages regime from one based in compensation, deterrence, and punishment (a tort approach) to one based solely in compensation (a contractual approach). As a result of this novel proposal, the damages calculations in these suits return to economic reality.*

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<sup>\*</sup> Assistant Professor of Management Systems, Fordham University Gabelli School of Business.

<sup>\*\*</sup> Assistant Professor of Law & Ethics, Fordham University Gabelli School of Business.

<sup>\*\*\*</sup> Assistant Professor of Law, University of Akron School of Law.

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## INTRODUCTION

Kem L. Ralph owned a farm in western Tennessee growing cotton, soybeans and corn.<sup>1</sup> In preparation for the 1998 planting season, he “purchased 264 fifty-pound bags of soybean seed containing [Monsanto’s] Roundup-Ready biotechnology.”<sup>2</sup> “Roundup-Ready” is shorthand for the fact that the seed is genetically modified (GM) to be resistant to Roundup

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<sup>1</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004).

<sup>2</sup> *Id.*

herbicide.<sup>3</sup> When roundup is sprayed on crops, weeds are killed, but the GM plant survives.<sup>4</sup>

Monsanto<sup>5</sup> patented the genetic modifications necessary to the production of “Roundup-Ready” seed.<sup>6</sup> More precisely, it patented “recombinant gene sequences that can be inserted into plant seeds to protect them against the effects of glyphosate-based herbicides.”<sup>7</sup> When a farmer purchases and plants the “Roundup-Ready” seed, he is making use of the patent.<sup>8</sup> As such, each time the farmer purchases a bag he pays a “Technology Fee” for a license that costs approximately \$5 per bag.<sup>9</sup> But the license is narrow; it allows the farmer to use that particular bag of seed for one season only.<sup>10</sup>

However, the limited nature of the license contravenes an important facet of nature, that seed begets seed. A soybean plant with ten pods can produce twenty-five seeds.<sup>11</sup> This has implications for farming tradition and practice.<sup>12</sup> Farmers harvest most of their crop to feed the public, but from a portion of their crop, farmers harvest seed for use during the next growing season.<sup>13</sup> Ralph was no different.<sup>14</sup> Ralph recovered 796 bags of seed from the 1998 growing harvest for use in the 1999 growing season and recovered 438 bags of seed from the 1999 growing harvest for use in the 2000 growing season.<sup>15</sup>

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<sup>3</sup> *Id.*

<sup>4</sup> *Id.*

<sup>5</sup> Throughout this Article, references to Monsanto represent the firm as a patent holder of GM seed strains. Other firms holding similar patent rights for GM seed strains or traits include BASF, Bayer CropScience, Dow Chemical, DuPont, Pioneer Hi-Bred, and Syngenta, among others. William Neuman, *Rapid Rise in Seed Prices Draws U.S. Scrutiny*, N.Y. TIMES, March 11, 2010, at B1.

<sup>6</sup> *Ralph*, 382 F.3d at 1377.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

<sup>11</sup> Each pod contains two to three seeds. CHAD LEE & JIM HERBEK, ESTIMATING SOYBEAN YIELD 2 (University of Kentucky – College of Agriculture 2005), <http://www.ca.uky.edu/agc/pubs/agr/agr188/agr188.pdf>.

<sup>12</sup> Rick Weiss, *Seeds of Discord; Monsanto's Gene Police Raise Alarm On Farmers' Rights, Rural Tradition*, WASH. POST, Feb. 3, 1999, at A01 (describing farmers who follow the tradition of harvesting and replanting seeds as “seed savers”).

<sup>13</sup> Elizabeth I. Winston, *Why Sell What You Can License? Contracting Around Statutory Protection of Intellectual Property*, 14 GEO. MASON L. REV.93, 95-96 (2006) (discussing the “time-honored practice” of saving seed).

<sup>14</sup> *Ralph*, 382 F.3d at 1377.

<sup>15</sup> *Id.* at 1377-78.

Monsanto sued Ralph, asserting that Ralph's license was for one season only – 1998 – and claiming that planting in 1999 and 2000 infringed its patent.<sup>16</sup> The issue in the case was not whether Ralph had violated Monsanto's patent.<sup>17</sup> It was clear that he had.<sup>18</sup> The issue was how to measure damages.<sup>19</sup> Ralph insisted that he should pay the established royalty for use of the seed.<sup>20</sup> He argued that the "standard Technology Fee that Monsanto charges all farmers is 'the most established royalty patent infringement litigation has ever seen'"<sup>21</sup> and that the court should take the total number of bags of seed he recovered over the two years and multiply that by the per bag technology fee, *i.e.*,  $(696+438) * \$5/\text{bag} = \$6,170$ .<sup>22</sup> The court rejected Ralph's argument, finding that the use he made of the patent was broader than what the Technology Fee would cover.<sup>23</sup> Again, the license was very narrow, limiting use of the GM seed to producing one year's crop; Ralph was using the GM seed to produce one year's crop *and* seed for the next year.

The court also seemed concerned that simply awarding the Technology Fee would not result in adequate deterrence; if it awarded only \$6,170 in damages future farmers would have no incentive to follow the law.<sup>24</sup> Future farmers could infringe the patent and pay the royalty fee only if they got caught.<sup>25</sup> Such reasoning ignores the fact that the court could have found that the reasonable royalty was \$6,170 and trebled it to \$18,510.<sup>26</sup> Nor does it consider the time and money required to defend such a suit.

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<sup>16</sup> *Id.* at 1383.

<sup>17</sup> *Id.*

<sup>18</sup> In fact, the district court struck Ralph's answer, affirmative defenses and counterclaims when he admitted to destroying evidence, specifically, using tires and diesel fuel to burn 900 bags of seed in a bonfire that lasted two days. Peter Shinkle, *Fighting From The Ground Up; Monsanto Reaps Some Anger With Hard Line On Reusing Seed*, GRAND FORKS HERALD, May 20, 2003, at D1.

<sup>19</sup> *Ralph*, 382 F.3d at 1383.

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> *Id.* at 1379.

<sup>23</sup> *Id.*

<sup>24</sup> *Id.* at 1380.

<sup>25</sup> Brian Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 920 (2009) (quoting *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996)).

<sup>26</sup> 35 U.S.C. § 284 ("the court may increase the damages up to three times the amount found or assessed."). In *Monsanto Co. v. Roeder*, the court suggested this logical approach, but Monsanto argued that such a limitation would not be proper and the court relented. *Monsanto Co. v. Roeder (In re Roeder)*, 2009 WL 4907014, \*11 (Bankr. N.D. Iowa Dec. 14, 2009).

Which party holds the moral high ground in the battle between Monsanto and farmer is a matter of perspective. Monsanto claims that “between 1997 and April 2010 [it] filed just 144 lawsuits to enforce [its] patent rights against farmers,”<sup>27</sup> and only as a last resort, when necessary to “secure investment and innovation.”<sup>28</sup> Monsanto’s detractors point out that those lawsuits that have been filed – together with the 700 investigations conducted by Monsanto – intimidate farmers and force them to raise crops other than those where GM seed contamination is a possibility.<sup>29</sup> In fact, Kem Ralph, whose story is told above, was forced to declare bankruptcy in 2007 following his battle with Monsanto.<sup>30</sup> The Chapter 11 bankruptcy filing – which allows a company to reorganize and continue – was a last ditch attempt to save his farm.<sup>31</sup> As to the filing, Ralph stated, “I’m a farmer, . . . they may take [my farm] away from me, but they’re going to have to fight me first. All I want is justice to be served.”<sup>32</sup>

When one considers that farmers are being put out of business simply because they carry on a centuries-old tradition of saving seeds, it makes sense that some commentators characterize Monsanto’s litigation strategy as overzealous. As one commentator points out:

Monsanto has been very aggressive in enforcing these restrictions, especially the restriction on farmers saving seed. As of October 26, 2007, Monsanto had filed 112 lawsuits against farmers for alleged violations of its Technology Agreement and/or its patents on genetically engineered seed. In addition to the over 100 lawsuits that have actually been filed, there are many more suits that have ended in private out-of-court settlements. The inability of farmers to save

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<sup>27</sup> *Organic Seed Growers & Trade Ass’n v. Monsanto Co.*, 851 F. Supp. 2d 544, 549 (S.D.N.Y. 2012).

<sup>28</sup> Repps Hudson, *Illinois Farmers Want To Be Able To Keep Some Patented Seeds*, ST. LOUIS POST-DISPATCH, Dec. 7, 2005, at B1.

<sup>29</sup> Brief of Amici Curiae Farm and Ranch Freedom Alliance et al. in Support of Plaintiffs-Appellants in Support of Reversal at 12, *Organic Seed Growers and Trade Ass’n v. Monsanto Co.*, No. 2012-1298 (Fed. Cir. July 11, 2012); Michelle Ma, Comment, *Anticipating and Reducing the Unfairness of Monsanto’s Inadvertent Infringement Lawsuits: A Proposal to Import Copyright Law’s Notice-and-Takedown Regime into the Seed Patent Context*, 100 CAL. L. REV. 691, 693 (2012) (describing Monsanto’s “propensity to heavily guard its intellectual property.”).

<sup>30</sup> Andy Meek, *Down and Out in Covington*, THE DAILY NEWS, June 22, 2006, <http://www.memphisdailynews.com/news/2006/jun/22/down-and-out-in-covington>.

<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

Roundup Ready seed has turned the agricultural world on its head.<sup>33</sup>

The issue further comes into focus when one considers the damages awarded. In *Ralph*, the damages for infringing the soybean patent were \$66,639 and subsequently trebled to \$199,918.<sup>34</sup> All damages entered against Ralph totaled \$2,937,527.07.<sup>35</sup> Farmers like Kem Ralph are unique in their societal role as providers because they are fulfilling basic needs for little monetary reward. As such, when they follow the time-honored tradition of saving seed, they should not face damages totaling thirty times their yearly net profits.<sup>36</sup>

To remedy the problem of inflated damage awards against farmers using GM seed, we propose that patents governing GM seeds should be deemed de facto standard essential patents (de facto SEP), when certain requirements are met. Specifically, these requirements are that: (1) the patent holder has achieved dominance in a given field; (2) it is impracticable to expect that a farmer could operate without infringing the patent; and (3) the farmer is growing a crop used to meet a basic human need.<sup>37</sup>

Once the GM seed has been labeled a de facto SEP, courts can find an implied license between Monsanto and farmers.<sup>38</sup> Authority for implying a license can be found by analogizing from the hardware and software industries where standard essential patents are common and standard setting organizations (SSOs) are frequently used to mandate licenses on reasonable and non-discriminatory (RAND) terms.<sup>39</sup> As a result of an implied license, courts can transform patent infringement, a tort, into a contract dispute.<sup>40</sup> This changes the damages regime from one based in compensation, deterrence, and punishment to one based in compensation only.<sup>41</sup>

The approach we propose has the advantage of recognizing that Monsanto has a right to protect its patents and that its patents can be a force

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<sup>33</sup> Tempe Smith, Note, *Going to Seed*, 61 ALA. L. REV. 629, 630 (2010).

<sup>34</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1379 (Fed. Cir. 2004).

<sup>35</sup> *Id.*

<sup>36</sup> See calculations *infra* Part II.B.

<sup>37</sup> See *infra* Part III.B.

<sup>38</sup> See *infra* Part III.C.1.

<sup>39</sup> See *infra* Part III.C.1.

<sup>40</sup> See *infra* Part III.C.2.

<sup>41</sup> See *infra* Part III.C.2.

for good. GM seed can increase production.<sup>42</sup> Some even see GM organisms as a solution to world hunger.<sup>43</sup> To that end, “Monsanto has produced a GM rice, ‘golden rice,’ which contains high levels of beta carotene to prevent vitamin A deficiency-related health problems.”<sup>44</sup> By attempting to strike a balance, this Article moves beyond the existing literature, which tends to take an absolutist approach, *e.g.*, Monsanto should not have the ability to patent genetic sequences<sup>45</sup> or infringement should have an intent element.<sup>46</sup>

Part I of this Article explains Monsanto’s GM seed patents and describes the types of farmers using these seeds and the activities they engage in that constitute patent infringement. Part II explains the methods of calculating damages and describes how infringing farmers have been routinely enjoined from further use of GM seed and subjected to tort damages, which have been inflated for deterrent or punitive impact. Part III argues that a more appropriate model exists for reconciling the competing interests of Monsanto and farmers. Where patented technology necessary for the provision of a human need reaches *de facto* SEP status, a license should be implied between the patent holder and those users who cannot practicably fulfill such human need without infringing the patent. Such a license should be based on reasonable and non-discriminatory (RAND) terms. However, Part III also argues that this departure from the traditional operation of patent law be limited to cases where the farmer is not competing with the patentee by knowingly selling GM crops or seed for others to replant. Finally, Part IV analogizes our proposal to the Plant

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<sup>42</sup> Each plant is more productive and the space between rows (necessary for weeding) can be reduced. David J. Schnier, *Genetically Modified Organisms & The Cartagena Protocol*, 12 FORDHAM ENVTL. L. REV. 377, 385-86 (2001).

<sup>43</sup> Erik Benny, “Natural” Modifications: The FDA’s Need to Promulgate an Official Definition of “Natural” that Includes Genetically Modified Organisms, 80 GEO. WASH. L. REV. 1504, 1520 (2012).

<sup>44</sup> Zachary Lerner, *Rethinking What Agriculture Could Use: A Proposed Heightened Utility Standard for Genetically Modified Food Patents*, 55 KAN. L. REV. 991, 999 (2007).

<sup>45</sup> See *e.g.*, Kojo Yelapaala, *Owning the Secret of Life: Biotechnology and Property Rights Revisited*, 32 MCGEORGE L. REV. 111, 114 (2000) (questioning whether biotechnology should be patentable); Lara E. Ewens, *Seed Wars: Biotechnology, Intellectual Property and the Quest for High Yield Seeds*, 23 B.C. INT’L & COMP. L. REV. 285, 287 (2000) (arguing for the diminishment “of intellectual property protection for plants by lowering the number of years patents extend protection”).

<sup>46</sup> See *e.g.*, Kathleen C. Rose, Comment, *Protecting The Farmers: Limiting Liability For Innocent Infringement Of Plant Patents*, 12 WAKE FOREST J. BUS. & INTELL. PROP. L. 117 (2011) (proposing a defense for innocent infringement); Brennan Delaney, Note, *What Happens When the Gene Gets Out of the Bottle?: The Necessity of an Intent Element for Infringement of Patents Claiming Genetically Modified Organisms*, 76 UMKC L. REV. 553 (2007) (proposing an intent element for patent infringement).

Variety Protection Act to illustrate how the implied license scheme we propose has some support under existing law.

Currently *Bowman v. Monsanto Co.* is pending before the Supreme Court.<sup>47</sup> This case deals with patented GM seeds and the legal liability of reusing the seeds.<sup>48</sup> However, the ultimate decision in *Bowman* will have little impact on the proposal and arguments we make in this paper.<sup>49</sup> Even if the Supreme Court agrees with Bowman's arguments, that result would only immunize a small subset of farmers, leaving a majority of farmers who purchase or license non-commodity GM seeds open to liability. In short, however the Supreme Court rules in *Bowman*, future generations of GM seed patents will raise the same legal and policy issues that our proposal seeks to remedy.

## I. PATENTS, FARMERS, AND INFRINGEMENT

To appreciate the problem and proposed solution, it is helpful to have an understanding of what the patented technology is and how it may be infringed. In this section, we describe the patents currently involved in the GM seed litigation and then delineate the three types of farmers who may infringe these patents. Finally, we illustrate the actions these farmers may take that expose them to liability.

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<sup>47</sup> *Monsanto Co. v. Bowman*, No. 11-796 (U.S. argued Feb. 19, 2013).

<sup>48</sup> *Monsanto Co. v. Bowman*, 657 F.3d 1341 (Fed. Cir. 2011), *cert. granted*, 133 S. Ct. 420 (Oct. 5, 2012) (No. 11-796).

<sup>49</sup> Bowman's argument that the sale of seed extinguished Monsanto's claim for patent infringement is based on a very narrow set of facts. Specifically, although Bowman had legitimately purchased GM seed in the past, he later purchased GM seed from a grain elevator as a commodity sale. *Id.* at 1345-46. He later saved seed from that resulting crop and replanted it the following year. *Id.* Bowman first argues that the unrestricted commodity sale extinguished the claim for patent infringement. This argument is based on Monsanto's admission that the Technology Agreement does not prohibit "unrestricted seed sales to grain elevators as a commodity." *Id.* at 1345. Bowman's second argument is that the Court of Appeals for the Federal Circuit erred when it held that even if the commodity sale exhausted Monsanto's rights in its seeds, Bowman infringed by growing a new generation of crops and producing a new generation of GM seed. *Id.* at 1348. Monsanto, of course, strongly disagrees. *See* Brief for Respondents, *Bowman v. Monsanto Co.*, No. 11-796 (Jan. 2013), 2013 WL 179941. Monsanto is likely to solve these potential obstacles by amending its Technology agreement to prohibit commodity sales. If the Court adopts Mr. Bowman's first argument, but rejects his second, then this will have little effect on our proposal because it will only allow farmers to redistribute commodity seeds. Any planting of them would result in infringement by producing a new seed.

### A. *Monsanto's Patents*

Monsanto “produces genetically modified and patent-protected seed in large-acre crops, including corn, cotton, soybeans, and canola.”<sup>50</sup> The seed genes are altered to increase plant yield and, most importantly, immunize them to Roundup, Monsanto’s herbicide.<sup>51</sup> Thus, these GM seeds are also called Roundup Ready.<sup>52</sup> These technologies are largely protected by two U.S. patents.<sup>53</sup> In these two patents, Monsanto claims the following: (1) glyphosate-tolerant plants (i.e. herbicide-resistant plants); (2) genetically modified seeds for glyphosate-tolerant plants; (3) the specific modified genes; and (4) the method of producing these GM plants.<sup>54</sup>

### B. *Infringing Farmers*

Farmers in the United States provide American consumers with more than eighty percent of the food consumed each year.<sup>55</sup> The industry represents one in twelve American jobs<sup>56</sup> and occupies roughly one fifth of the nation’s land (382 million acres) for crop production and an additional one fourth of her land (525 million acres) for livestock grazing.<sup>57</sup>

There are three types of farmers who could be liable for patent infringement and a variety of actions by these farmers may lead to liability.

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<sup>50</sup> Ma, *supra* note 29, at 694.

<sup>51</sup> *Id.* at 701.

<sup>52</sup> *Monsanto Co. v. David*, 516 F.3d 1009, 1011 (Fed. Cir. 2008).

<sup>53</sup> *See generally* U.S. Patent No. 5,633,435 (filed Sept. 13, 1994) and U.S. Patent No. 5,352,605 (filed Oct. 28, 1993).

<sup>54</sup> *Monsanto Co. v. McFarling*, 302 F.3d 1291, 1293 (Fed. Cir. 2002); *see also* U.S. Patent No. 5,633,435 (filed Sept. 13, 1994) and U.S. Patent No. 5,352,605 (filed Oct. 28, 1993). Monsanto’s Canadian patents are similar. As described in *Monsanto v. Schmeiser*, the claims in the Canadian patent include: (1) a chimeric gene: this is a gene that does not exist in nature and is constructed from different species; (2) an expression vector: this is a DNA molecule into which another DNA segment has been integrated so as to be useful as a research tool); (3) a plant transformation vector: used to permanently insert a chimeric gene into a plant’s own DNA; (4) various species of plant cells into which the chimeric gene has been inserted; [and] (5) a method of regenerating a glyphosate-resistant plant. Once the cell is stimulated to grow into a plant, all of the differentiated cells in the plant will contain the chimeric gene, which will be passed on to offspring of the plant. *Monsanto Canada, Inc. v. Schmeiser*, [2004] 1 S.C.J. 902, 915-16 (Can.).

<sup>55</sup> U.S. Dep’t of Agric., *USDA Accomplishments 2009-2012: Agriculture* (2012), <http://www.usda.gov/documents/Results-Ag-Production.pdf>.

<sup>56</sup> *Id.*

<sup>57</sup> United States Environmental Protection Agency, *Land Use Overview, Ag 101* (June 27, 2012), <http://www.epa.gov/agriculture/ag101/landuse.html>.

Each category of farmers and the actions they may take are discussed in turn below.

### 1. Types of Farmers

The three types of farmers who could be liable for patent infringement are: (1) the drift farmer; (2) the direct purchasing farmer; and (3) the indirect purchasing farmer.

#### a. Drift Farmers

The first category is the drift farmer.<sup>58</sup> Drift farmers are arguably the most sympathetic of the infringers. The drift farmers find themselves using the patented genetic sequence and growing the patented plant when it either drifts into their field through natural pollination processes (such as via wind, animals, plants, and ocean currents<sup>59</sup>) resulting in cross pollination of GM varieties with non-GM varieties or through the germination of GM seeds dropped in transit or blown into fields.<sup>60</sup> Pollen from plants containing a GM sequence can be carried as far as twenty-one kilometers (thirteen miles) by the wind<sup>61</sup> and over three miles by bees.<sup>62</sup>

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<sup>58</sup> For a case about inadvertent infringement that garnered worldwide attention, see *Monsanto Canada, Inc. v. Schmeiser*, [2004] 1 S.C.J. 902 (Can.). After Schmeiser's neighbors began using GM seed, he claimed he was the victim of "drift." That is, despite Schmeiser not buying or planting GM seed, by 1998 the vast majority of his canola crop was made up of GM plants that resulted from seed that drifted from other farmers' crops. *Id.* at 912. Specifically, Schmeiser claimed that the GM plants "derived from [GM seed] that blew onto or near Schmeiser's land, and was then collected from plants that survived after Schmeiser sprayed Roundup herbicide around the power poles and in the ditches along the roadway bordering four of his fields." *Id.* Thus, Schmeiser found himself in the tenuous position of using – albeit inadvertently – a technology patented by Monsanto without having paid the license fee. *Id.* In 1998, "Monsanto got an anonymous tip that Schmeiser had an unauthorized field brim-full of the company's Roundup Ready canola." Colby Cosh, *Percy Schmeiser, stubborn foe of genetically modified crops: His struggle against a patent suit launched by Monsanto has made him an unlikely hero*, THE VANCOUVER SUN, May 22, 2004, at A.8. An investigator from Monsanto went to Schmeiser's farm and confirmed that over 95% of Schmeiser's canola crop was Roundup Ready. *Schmeiser*, 1 S.C.J. at 912. Monsanto sued Schmeiser for patent infringement, claiming he had intentionally harvested and reused Roundup Ready seed without a license. *Id.* Monsanto won the case, but the court refused to award damages. *Id.* at 937-39.

<sup>59</sup> Ma, *supra* note 29, at 703.

<sup>60</sup> S. Smyth et al., *Liabilities and Economics of Transgenic Crops*, 20 NATURE BIOTECH. 537, 537 (2002), available at <http://www.dnai.org/media/bioinformatics/ccli/CD/readings/smythetal2002.pdf>.

<sup>61</sup> Lidia S. Watrud et al., *Evidence for Landscape-Level, Pollen-Mediated Gene Flow from Genetically Modified Creeping Bentgrass with CP4 EPSPS as a Marker*, 101 PROC. NAT'L

Agricultural research has confirmed the presence of unintended gene flow into heritage crop lines, related wild varieties and even weeds.<sup>63</sup> Heritage crop lines are those used by organic farmers, who jealously guard their crops – and seed – against laboratory-derived genetic modification. The cross-pollination and hybridization between seed varieties can happen extremely quickly; farmers in Canada discovered plants resistant to three different herbicide products (each uniquely patented by its respective IP owner) within two years of introduction of single-herbicide resistant seeds to the area.<sup>64</sup> In its 2001 Prospectus leading up to its initial public offering, Monsanto itself listed the “possible presence of unintended biotechnology material” in conventional seeds among the market risks it considered material to investors, and the firm has continued to list the “adventitious presence” of biotechnology traits as a risk factor in subsequent federal filings.<sup>65</sup>

### *b. Direct Purchasing Farmers*

The second category is the direct purchasing farmer. Monsanto licenses its patented technology to seed companies, who incorporate it into their germplasm and produce Roundup Ready seeds.<sup>66</sup> As part of the license agreement, the seed companies are not permitted to sell this GM seed to farmers unless the farmers sign a license agreement that restricts

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ACAD. SCI. 14,533, 14,533 (2004), available at <http://www.pnas.org/content/101/40/14533.full.pdf+html>.

<sup>62</sup> EUROPEAN ENVIRONMENT AGENCY, GENETICALLY MODIFIED ORGANISMS (GMOs): THE SIGNIFICANCE OF GENE FLOW THROUGH POLLEN TRANSFER 16 (Copenhagen 2002).

<sup>63</sup> A. Piñeyro-Nelson et al., *Transgenes in Mexican maize: molecular evidence and methodological considerations for GMO detection in landrace populations*, 18 MOLECULAR ECOLOGY 750, 759 (2009); David Quist & Ignacio Chapela, *Transgenic DNA Introgressed into Traditional Maize Landraces in Oaxaca, Mexico*, 414 NATURE 541 (2001); Diana Pilson & Holly R. Prendeville, *Ecological Effects of Transgenic Crops and the Escape of Transgenes into Wild Populations*, 35 ANN. REV. ECOLOGY & EVOLUTION SYS. 149, 150 (2004); Norman C. Ellstrand et al., *Gene Flow and Introgression from Domesticated Plants into their Wild Relatives*, 30 ANN. REV. ECOLOGICAL SYS. 539 (1999); M.L. Zapiola et al., *Escape and Establishment of Transgenic Glyphosate-resistant Creeping Bentgrass *Agrostis Stolonifera* in Oregon, USA: A 4-year Study*, 45 J. APPLIED ECOL. 486 (2008); NORMAN C. ELLSTRAND, DANGEROUS LIAISONS? WHEN CULTIVATED PLANTS MATE WITH THEIR WILD RELATIVES *passim* (2003).

<sup>64</sup> Smyth et al., *supra* note 60, at 538.

<sup>65</sup> Monsanto Company, *Prospectus* (Filing Date: 2000-10-19) 13 (2001); Monsanto Company *10-K* (Filing Date 2001-03-26) 2 (2001); Monsanto Company, *10-K* (Filing Date: 2002-03-05) 20 (2002); Monsanto Company, *10-K* (Filing Date: 2003-03-13) 21 (2003).

<sup>66</sup> *Monsanto Co. v. Scruggs*, 459 F.3d 1328, 1333 (Fed. Cir. 2006).

what the farmers may do with the crops.<sup>67</sup> Direct purchasing farmers are those who purchase seed from an authorized seed company and execute a license agreement with Monsanto.<sup>68</sup>

The license agreement signed by the direct purchasing farmers imposes certain restrictions on the farmers, including: (1) prohibiting the use of the GM seed for planting a commercial crop for more than a single season; (2) prohibiting farmers from supplying the GM seed to others for planting; (3) prohibiting farmers from saving the GM seed for replanting or supplying it to others for replanting; and (4) prohibiting farmers from using the GM seed or supplying it to others for crop breeding, research, generation of herbicide registration data, or seed production.<sup>69</sup>

### *c. Indirect Purchasing Farmers*

The third category is the indirect purchasing farmer. The indirect purchasing farmer purchases the GM seed, but not from an authorized seed company and does not sign a license agreement with Monsanto. Instead, the indirect purchasing farmer obtains the GM seed (and perhaps non-GM seed) from grain elevators as a commodity purchase. The GM seed acquired by the indirect purchasing farmer may have been supplied to the grain elevator from a direct purchasing farmer or a drift farmer.<sup>70</sup>

## **2. Potentially Infringing Activities**

The Patent Act declares that “whoever without authority makes, uses, offers to sell, or sells any patented invention . . . infringes the patent.”<sup>71</sup> As applied to the above-described farmers, there are three actions they may take with respect to the patented seeds and plants that could expose them to liability. These actions include: (1) growing the crops with this patented gene; (2) growing the crop, saving some of the seed, and replanting it during the next growing season; and (3) growing the crop, saving some of the seed, and selling it to others to plant or otherwise use. Each action is discussed in turn below.

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<sup>67</sup> *Id.*

<sup>68</sup> *See e.g.* *Monsanto Co. v. McFarling*, 488 F.3d 973 (Fed. Cir. 2007); *Scruggs*, 459 F.3d at 1328; *Monsanto Co. v. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004).

<sup>69</sup> *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344-45 (Fed. Cir. 2011), *cert. granted*, 133 S. Ct. 420 (Oct. 5, 2012) (No. 11-796).

<sup>70</sup> *See e.g. id.* at 1345-46.

<sup>71</sup> 35 U.S.C. § 271 (2012).

*a. Growing Crops*

Farmers who grow GM crops without a license may be committing patent infringement because growing the GM crops may constitute making or using the patented invention. This is of concern for drift farmers and indirect purchasing farmers.<sup>72</sup> These farmers are using the patented seeds by planting them and are making the patented invention when they grow a GM seed because the GM seeds are self-replicating.<sup>73</sup> Importantly, patent infringement is a strict liability offense; no intent is required to infringe.<sup>74</sup> Thus, that the drift farmers or indirect purchasing farmers did not know they were using or making patented GM seed is of no consequence.<sup>75</sup>

One type of drift farmer who could infringe by growing crops is the organic farmer, who is the most sympathetic infringer. To some, Monsanto should be cast as the villain – polluting the organic farmer’s crop – and it seems unfair that when a farmer has taken no action to infringe a patent, liability may be lurking around the corner. This is particularly appalling in the case of organic farmers who inadvertently use GM seed because doing so may actually harm their livelihood.<sup>76</sup> Indeed, in any other context, where one “pollutes” the crops of another, it would be the polluter that faces a lawsuit.<sup>77</sup>

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<sup>72</sup> It is not a concern for direct purchasing farmers because they have a license from Monsanto to plant the seeds and grow the crops for a single season. *See supra* text accompanying note 69.

<sup>73</sup> *Bowman*, 657 F.3d at 1348 (holding that an indirect purchasing farmer infringed because “once a grower, like Bowman, plants the commodity seeds containing Monsanto’s Roundup Ready technology and the next generation of seed develops, the grower has created a newly infringing article.”).

<sup>74</sup> Jason A. Rantanen, *An Objective View of Fault in Patent Infringement*, 60 AM. U. L. REV. 1575, 1590 (2011).

<sup>75</sup> Lack of notice is relevant in the determination of damages when the product has not been properly marked under § 287(a). Infringing farmers are unlikely able to take advantage of this mitigating defense because Monsanto presumably marks the package or provides a label with the proper notice attached. *See* 35 U.S.C. § 287(a). The Court of Appeals for the Federal Circuit avoided answering this question in *Bowman*, because Monsanto had given actual notice to Bowman. *Bowman*, 657 F.3d at 1349. Even though drift farmers or indirect purchasing farmers may have never had the opportunity to see the notice, this defense will probably be unavailable to them as long as Monsanto or its seed distributors properly labeled the bags. *See* Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 64 (2001) (“[E]ven when the plaintiff properly marks all of the articles she makes and sells, there is no requirement that the defendant actually encounter any of those articles.”).

<sup>76</sup> 7 C.F.R. § 205.202(b) (2012).

<sup>77</sup> To opponents of GMO technology, this drift of GMO traits onto others’ land and crop property has been characterized as “genetic pollution.” Scott Kilman & Jill Carroll, *Monsanto Admits Unapproved Seed May Be in Crops*, WALL ST. J., Apr. 15, 2002, at A3.

Whether such liability exists for inadvertent infringement is an open question in patent law.<sup>78</sup> Judge Gajarsa, in a concurring opinion, wrote:

This [patented] compound raises a question similar to one that might arise when considering the invention of a fertile plant or a genetically engineered organism, capable of reproduction, released into the wild. Consider, for example, what might happen if the wind blew fertile, genetically modified blue corn protected by a patent, from the field of a single farmer into neighboring cornfields. The harvest from those fields would soon contain at least some patented blue corn mixed in with the traditional public domain yellow corn – thereby infringing the patent. The wind would continue to blow, and the patented crops would spread throughout the continent, thereby turning most (if not all) North American corn farmers into unintentional, yet inevitable, infringers.<sup>79</sup>

Although Judge Gajarsa believed no liability should be found, the majority avoided addressing this issue, leaving it open for another court to consider. For now, liability for the drift farmer is still a threat.

Drift farmers find the threat of liability quite real. In *Organic Seed Growers and Trade Association v. Monsanto Co.*,<sup>80</sup> a group of organic and non-organic farmers who do not want to grow or use GM crops or sell GM seed filed a declaratory judgment action seeking a declaration that they are not infringing Monsanto's patents when the GM seed inevitably contaminates the plaintiffs' non-GM crops.<sup>81</sup> The farmers fear that the inadvertent growth of GM plants could trigger liability.<sup>82</sup> Although Monsanto declared that its policy is "not to exercise [its] patent rights over inadvertently acquired trace amounts of patented seed or traits,"<sup>83</sup> Monsanto refused to respond to a request that Monsanto expressly waive any claim for

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<sup>78</sup> Holman's Biotech IP Blog, <http://holmansbiotechblog.blogspot.com/2011/06/organic-seed-growers-and-trade.html> (June 1, 2011, 9:38 AM) ("To my knowledge, this issue has never been directly addressed by the courts.").

<sup>79</sup> See *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1360-61 (2005) (Gajarsa, J., concurring).

<sup>80</sup> *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 851 F. Supp. 2d 544 (S.D.N.Y. 2012), *appeal docketed*, No. 2012-1298 (Fed. Cir. 2012) (argued Jan. 10, 2013).

<sup>81</sup> *Id.* at 547-48.

<sup>82</sup> *Id.* at 549.

<sup>83</sup> *Id.* at 549-50.

patent infringement against the plaintiffs.<sup>84</sup> Unsatisfied and still fearful that they could be liable for infringement, the farmers filed suit.<sup>85</sup>

*b. Saving Seed and Replanting*

Farmers who grow GM crops, save some of the seed, and replant it during the next growing season may be committing patent infringement. The saving seed and replanting conduct applies to all three categories of farmers and is the most common type of case being brought by Monsanto.<sup>86</sup> In particular, saving and replanting the GM seed infringes the patentee's exclusive right to make and use the patented technology.<sup>87</sup>

The drift farmer who grows the crop, saves some of the seed, and replants it during the next growing season is infringing because GM seeds are being used by the farmer to grow the crops, and because the GM seeds are self-replicating, new generations of GM seed are made by the farmer. All of this is done without a license from Monsanto to the drift farmer. One example is Percy Schmeiser.<sup>88</sup> Schmeiser claimed that GM seeds from neighboring farms drifted onto his farm.<sup>89</sup> He took advantage of the situation, harvesting the resulting GM plants, saving the seeds they produced, and using them in the next growing season.<sup>90</sup> To be sure, Schmeiser is not as sympathetic as the organic farmers who actively avoid having their crops contaminated by GM plants because, as the court stated, Schmeiser had reason to know that his crop had been polluted with GM seed.<sup>91</sup> Nonetheless, because Schmeiser never purchased the seed nor agreed to a restrictive license agreement,<sup>92</sup> he was simply guilty of taking advantage of naturally occurring processes or processes put in motion by others.<sup>93</sup>

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<sup>84</sup> *Id.*

<sup>85</sup> *Id.* at 550.

<sup>86</sup> See e.g. *Monsanto Co. v. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004); *Monsanto Co. v. David*, 516 F.3d 1009 (Fed. Cir. 2008); *Monsanto Co. v. McFarling*, 488 F.3d 973 (Fed. Cir. 2007); *Monsanto Co. v. Hargrove*, 2011 WL 5330674 (E.D. Mo. Nov. 7, 2011); *Monsanto Co. v. Bowman*, 657 F.3d 1341 (Fed. Cir. 2011), *cert. granted*, 133 S. Ct. 420 (Oct. 5, 2012) (No. 11-796); *Monsanto Canada, Inc. v. Schmeiser*, [2004] 1 S.C.J. 902 (Can.).

<sup>87</sup> See 35 U.S.C. § 271(a) (2012).

<sup>88</sup> *Schmeiser*, [2004] 1 S.C.J. at 930, 937. For a full recitation of the facts in *Schmeiser*, see *supra* note 58.

<sup>89</sup> *Id.* at 937.

<sup>90</sup> *Id.* at 930, 937.

<sup>91</sup> *Id.* at 933-34.

<sup>92</sup> *Id.* at 912.

<sup>93</sup> *Id.* at 933-34.

The direct purchasing farmer infringes by saving and replanting GM seed because, as discussed above, although the direct purchasing farmer has permission to use the GM seed, the license agreement imposes various restrictions on farmers, including prohibiting them from saving the GM seed for replanting.<sup>94</sup> Thus, replanting the second generation GM seed infringes the patentee's right to make and use the patented technology.<sup>95</sup> One case discussing a direct purchasing farmer who saves GM seed is *Ralph*, discussed in the Introduction.<sup>96</sup> Another example of the direct purchasing farmer who saves GM seed and replants it is *Monsanto Co. v. McFarling*.<sup>97</sup> McFarling purchased GM soybean seeds in 1998 and signed the license agreement.<sup>98</sup> In violation of the agreement, McFarling saved seeds from the 1998 crop and replanted them in 1999.<sup>99</sup> In 1999, he saved the GM seeds and replanted them in 2000.<sup>100</sup> McFarling was sued by Monsanto for infringing its patents and Monsanto's motion for summary judgment on liability was granted.<sup>101</sup>

The indirect purchasing farmer who infringes on patent protected seed lines by saving and replanting GM seed without signing a new license agreement is exemplified by Vernon Bowman.<sup>102</sup> Bowman purchased commodity seed, "a mixture of undifferentiated seeds harvested from various sources," which may contain GM seed.<sup>103</sup> Bowman saved the seeds resulting from his commodity-based crops and replanted them in subsequent years.<sup>104</sup> As a result, Monsanto sued Bowman for patent infringement, was granted for summary judgment, and was awarded \$84,456.20.<sup>105</sup>

Finding that the saving and replanting of seeds is patent infringement has an additional consequence – the law is threatening a basic

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<sup>94</sup> See *supra* text accompanying note 69.

<sup>95</sup> See e.g. *Monsanto Co. v. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004); *Monsanto Co. v. David*, 516 F.3d 1009 (Fed. Cir. 2008); *Monsanto Co. v. McFarling*, 488 F.3d 973 (Fed. Cir. 2007); *Monsanto Co. v. Hargrove*, 2011 WL 5330674 (E.D. Mo. Nov. 7, 2011); see also 35 U.S.C. § 271(a) (2012).

<sup>96</sup> *Ralph*, 382 F.3d at 1377.

<sup>97</sup> See *McFarling*, 488 F.3d at 976.

<sup>98</sup> *Id.* at 976.

<sup>99</sup> *Id.*

<sup>100</sup> *Id.*

<sup>101</sup> *Id.* at 976-77.

<sup>102</sup> *Monsanto Co. v. Bowman*, 657 F.3d 1341 (Fed. Cir. 2011), *cert. granted*, 133 S. Ct. 420 (Oct. 5, 2012) (No. 11-796).

<sup>103</sup> *Id.* at 1345-46. Mr. Bowman had previously been a direct purchasing farmer, but complied with the terms of the license agreement. *Id.* at 1345.

<sup>104</sup> *Id.* at 1345-46.

<sup>105</sup> *Id.* at 1346.

component of post-nomadic agriculture.<sup>106</sup> Over time, farmers have developed techniques for naturally selecting and perpetuating desirable traits, such as resistance to drought or pests and plants that produce higher yields.<sup>107</sup> The impulse to save seed is encoded in the farming community's collective memory.<sup>108</sup> Today, farmers in the United States carry on the tradition, saving seed from their best plants, from year to year, to produce "locally-adapted seed varieties."<sup>109</sup> Saving seed also provides farmers – and thus our food supply – with independence, by "ensure[ing] sufficient growing materials for future seasons."<sup>110</sup> Despite centuries of tradition of replanting seed, because GM seed replicates, this activity has become an expensive violation of the law. Moreover, "[t]here is no harvesting system in place in the world that is capable of containing all the seeds produced on a plot of land."<sup>111</sup> It is estimated that greater than 1,000 seeds per acre will remain in any given farming field; these seeds will germinate naturally the following season.<sup>112</sup> When these residual seeds are GM strains, the resulting so-called "volunteer crops" must be controlled.<sup>113</sup> Mitigation through chemical treatment (an option unavailable to organic farmers) can come at a cost ranging from between \$1 to \$1.31 per acre for GM canola to \$4.07 per acre for GM wheat.<sup>114</sup>

### c. Saving and Selling Seed

The final activity that may cause farmers to infringe Monsanto's patents is saving the GM seed and selling it to others.<sup>115</sup> There are two types of sales that may occur. First is selling the seed for planting purposes,

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<sup>106</sup> Jeremy P. Oczek, Note, *In the Aftermath of the "Terminator" Technology Controversy: Intellectual Property Protections for Genetically Engineered Seed and the Right to Save and Replant Seed*, 41 B.C. L. REV. 627, 647 (2000); Ma, *supra* note 29, at 694-95 (seed saving is "a longstanding agricultural technique whereby farmers procure and plant first-generation seed, then save future-generation seed for successive replanting.").

<sup>107</sup> Oczek, *supra* note 106, at 647.

<sup>108</sup> Ma, *supra* note 29, at 700.

<sup>109</sup> Oczek, *supra* note 106, at 629.

<sup>110</sup> Ma, *supra* note 29, at 700.

<sup>111</sup> Smyth et al., *supra* note 60, at 538.

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*

<sup>114</sup> Calculated using mitigation costs to Canadian farmers as described in Smyth et al., *supra* note 60, at 538. Costs converted from Canadian dollars to U.S. dollars using average daily bid rate for June 2002 of CAD\$0.6571 using historical exchange rate data on Oanda.com.

<sup>115</sup> *Monsanto Co. v. Scruggs*, 2012 WL 3938852, \*1 (N.D. Miss. Sept. 7, 2012).

often referred to as brown bag sales.<sup>116</sup> Second is selling the seed for other purposes, such as for food (e.g. sunflower seeds intended as snacks). Both types of sales may implicate the patentee's exclusive right to sell or offer to sell the patented invention.<sup>117</sup> Neither the drift farmer nor the indirect purchasing farmer has permission from Monsanto to grow the patented GM crops, much less sell them. As a result, they do not have the ability to sell the seeds or plants for replanting or any other purpose.

The direct purchasing farmers are a bit different. They have entered into a license agreement with Monsanto and, as described above, the current license only prohibits selling the GM seed to others for planting and saving the GM seed and supplying it to others for replanting.<sup>118</sup> As a result, the direct purchasing farmer who sells GM seeds or plants to others for use as food is participating in an authorized activity and, thus, is not infringing the license as it is currently worded.<sup>119</sup> Saving and selling GM seed becomes problematic when the direct purchasing farmer sells the GM seed to others so that they may subsequently plant it. This is specifically prohibited in the license agreement.<sup>120</sup>

In sum, the widespread use of GM technology in U.S. agriculture has had a powerful effect on farmers. GM seeds are generally licensed for single seasons and unused seed cannot be reused in subsequent seasons without an additional license fee.<sup>121</sup> A substantial number of defendants in patent cases filed by Monsanto have been found liable for this so-called "seed piracy" and been forced to pay extraordinary damages.<sup>122</sup>

## II. EXAGGERATED REMEDIES FOR PATENT INFRINGEMENT

Breach of contract damages are meant to compensate the non-breaching party by giving them the benefit of their bargain, nothing more.<sup>123</sup>

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<sup>116</sup> *Id.* at \*3 (discussing a \$6.3 million award for infringing brown bag sales). "'Brown bag' seed refers to the practice of a farmer buying commercial seed, planting the seed, harvesting the crop, cleaning the harvested crop seed and then replanting the saved seed or selling the seed to other farmers." *Monsanto Co. v. Strickland*, 604 F. Supp. 2d 805, 811 n.1 (2009).

<sup>117</sup> 35 U.S.C. § 271(a) (2012).

<sup>118</sup> *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344-45 (Fed. Cir. 2011), *cert. granted*, 133 S. Ct. 420 (Oct. 5, 2012) (No. 11-796).

<sup>119</sup> *Id.* at 1345.

<sup>120</sup> *See supra* text accompanying note 69.

<sup>121</sup> *See supra* text accompanying note 69.

<sup>122</sup> *See infra* Part II.

<sup>123</sup> *Adams v. Lindblad Travel, Inc.*, 730 F.2d 89, 92 (2nd Cir. 1984) (Where one party breaches a contract, damages are measured by asking, "[what] is the amount necessary to put the plaintiff in the same economic position he would have been in had the defendant

Contract damages are focused on the particular individuals to a contract and consequently limited.<sup>124</sup> Courts are not supposed to award contract damages “to punish the party in breach or to serve as an example to others.”<sup>125</sup> As a result, windfalls are prohibited<sup>126</sup> and punitive damages are generally not recoverable.<sup>127</sup> Compare tort damages, which seek to fully compensate the injured party for the injury received,<sup>128</sup> but also have a societal dimension.<sup>129</sup> In particular, tort damages serve the purposes of compensating the injured party, punishing wrongdoers, and deterring wrongful conduct.<sup>130</sup>

Patent infringement is generally thought of as a tort.<sup>131</sup> The remedies for infringement are tort-like in that they provide for “damages adequate to compensate for the infringement.”<sup>132</sup> As the Federal Circuit held in *Rite-Hite Corp. v. Kelley Co.*, “while the statutory text states tersely that the patentee receive ‘adequate’ damages [to compensate for the infringement], the Supreme Court has interpreted this to mean that ‘adequate’ damages should approximate those damages that will *fully compensate* the patentee for infringement.”<sup>133</sup>

fulfilled his contract.”); *see* RESTATEMENT (SECOND) OF CONTRACTS § 344 (1979) (Judicial remedies under the rules stated in this Restatement serve to protect one or more of the following interests of a promisee: (a) his “expectation interest,” which is his interest in having the benefit of his bargain by being put in as good a position as he would have been in had the contract been performed . . . ).

<sup>124</sup> Prolific legal scholar Grant Gilmore argued:

The [Holmes-Williston] theory seems to have been dedicated to the proposition that, ideally, no one should be liable to anyone for anything. Since the ideal was not attainable, the compromise solution was to restrict liability within the narrowest possible limits.

GRANT GILMORE, *THE DEATH OF CONTRACT* 14 (1974).

<sup>125</sup> RESTATEMENT (SECOND) OF CONTRACTS § 355 cmt. a (1979).

<sup>126</sup> *Paul v. Deloitte & Touche, LLP*, 974 A.2d 140, 146 (Del. 2009).

<sup>127</sup> RESTATEMENT (SECOND) OF CONTRACTS § 355 (1979).

<sup>128</sup> *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1579 (Fed. Cir. 1992) (tort damages are measured by asking, “had the tortfeasor not committed the wrong, what would have been the financial position of the person wronged?”).

<sup>129</sup> *Erie Ins. Exch. v. Abbott Furnace Co.*, 972 A.2d 1232, 1238 (Pa. Super. Ct. 2009) (citing *Reardon v. Allegheny College*, 926 A.2d 477, 486-87 (Pa. Super. 2007)); *Ilkhchooyi v. Best*, 37 Cal. App. 4th 395 (4th Dist. 1995) (“tort damages are designed to vindicate social policy and to compensate the victim for injury suffered”).

<sup>130</sup> RESTATEMENT (SECOND) OF TORTS § 901 (1965).

<sup>131</sup> *N. Am. Philips Corp. v. Am. Vending Sales, Inc.*, 35 F.3d 1576, 1578-79 (Fed. Cir. 1994); *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1221-22 (Fed. Cir. 1995) (“[P]atent infringement is a continuing tort.”).

<sup>132</sup> 35 U.S.C. § 284 (2012).

<sup>133</sup> *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995) (citing *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 653-54 (1983)).

Yet the Patent Act's provisions on remedies also contemplate contractual damages.<sup>134</sup> The Patent Act places a floor on the amount of compensation, providing that it shall be "in no event less than a reasonable royalty for the use made of the invention by the infringer."<sup>135</sup> The reasonable royalty can be determined in one of two ways: (1) using an established royalty as a proxy for the reasonable royalty; or (2) using a hypothetical negotiation model.<sup>136</sup>

As discussed below, courts in GM seed cases have rejected the established royalty measure and instead follow the hypothetical negotiation measure.<sup>137</sup> But in doing so, they have tried to fully compensate the patentee under a tort paradigm which allows for deterrence and punishment.<sup>138</sup> This leads to exaggerated damages<sup>139</sup> and, because the infringing farmer is perceived as engaging in a tort, often injunctive relief.<sup>140</sup>

### A. *Rejecting Established Royalties*

A reasonable royalty can be based on an established royalty.<sup>141</sup> An established royalty is what others *actually* pay for the right to use the patent. It is a proper measure "when the patentee has consistently licensed others to engage in conduct comparable to the defendant's at a uniform royalty."<sup>142</sup>

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<sup>134</sup> See 35 U.S.C. § 284.

<sup>135</sup> *Id.*

<sup>136</sup> *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling, USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012).

<sup>137</sup> See *infra* Parts II.A and II.B.

<sup>138</sup> See *infra* Parts II.A and II.B.

<sup>139</sup> Love, *supra* note 25, at 917; Doug Lichtman, *Understanding The Rand Commitment*, 47 HOUS. L. REV. 1023, 1036 (2010). As pointed out by Professor Lichtman, courts do not award "reasonable" royalties in patent infringement cases. *Id.* "Quite the opposite, when a court decides that a valid patent has been infringed, the court typically imposes a remedy the net value of which clearly exceeds the value of any deal the parties would have made had they negotiated a license prior to the infringement." *Id.* at 1035. The reasons for courts to award exaggerated royalties are several: (1) it encourages infringers to settle rather than face an award of exaggerated royalties; (2) it discourages patent infringement in the first place by making it cheaper to agree to a reasonable patent *ex ante*, then to wait and face an award of exaggerated damages; (3) it compensates the patent holder for the time and effort of proving that the patent is valid, and infringed. *Id.* at 1036-41.

<sup>140</sup> See Andrew Beckerman-Rodau, *The Aftermath of eBay v. MercExchange*, 126 S. Ct. 1837 (2006): *A Review of Subsequent Judicial Decisions*, 89 J. PAT. & TRADEMARK OFF. SOC'Y 631, 654 (2007) ("One clear conclusion, based on the data, is that most courts continue to grant permanent injunctions for patent infringement after *eBay*.").

<sup>141</sup> *Transocean Offshore Deepwater Drilling*, 699 F.3d at 1357.

<sup>142</sup> *Monsanto Co. v. McFarling*, 488 F.3d 973, 979 (Fed. Cir. 2007).

“[T]hat royalty is taken as established and indicates the terms upon which the patentee would have licensed the defendant’s use of the invention.”<sup>143</sup> This approach has the advantage of “remov[ing] the need to guess at the terms to which parties would hypothetically agree,” as is required when the hypothetical negotiation model is used to determine a reasonable royalty.<sup>144</sup> In the GM seed context, farmers have argued that the technology fee is the established royalty.<sup>145</sup> The technology fee is the portion of the invoiced price equivalent to licensing the GM seed in that bag for the present growing season. In the late 1990s and into 2000, the technology fee was approximately \$5.00 or \$6.50 per bag of soybean seed.<sup>146</sup> In 2003, it was \$7.75 per bag.<sup>147</sup>

Despite the technology fee’s existence, it has consistently been rejected as an established royalty in the GM seed context, at least in cases where the farmer is accused of saving seed from year to year.<sup>148</sup> While farmers argue that the technology fee is an established royalty, the courts counter that the technology fee is limited to the use of the GM seed in that particular bag for the present growing season only.<sup>149</sup> The courts reason that a farmer who was negotiating for use of one bag of seed *and* use of the seed produced by that one bag of seed would pay more than the traditional technology fee.<sup>150</sup> The technology fee and the license that would be required to cover the infringing material are not the same; the second would be a broader license and hence more expensive.

Again, *Monsanto Co. v. Ralph* is illustrative.<sup>151</sup> Recall that “Ralph purchased 264 fifty-pound bags of soybean seed [in 1998] containing the patented Roundup-Ready biotechnology.”<sup>152</sup> Ralph infringed Monsanto’s patent by saving seed for use during the next planting season and Monsanto sued Ralph for patent infringement.<sup>153</sup> The court rejected Ralph’s argument

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<sup>143</sup> *Id.*

<sup>144</sup> *Id.*

<sup>145</sup> *Id.*

<sup>146</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004); *McFarling*, 488 F.3d at 976; *Monsanto Co. v. Swann*, 308 F. Supp. 2d 937, 939 (E.D. Mo. 2003).

<sup>147</sup> *Monsanto Co. v. David*, 516 F.3d 1009, 1017 (Fed. Cir. 2008). Monsanto stopped listing the technology fee separately on invoices for Roundup Ready seed in 2002.

<sup>148</sup> *See e.g. id.* at 1018 (“the technology fee is not an established royalty for the infringing act of saving seed”).

<sup>149</sup> *Ralph*, 382 F.3d at 1380.

<sup>150</sup> Even a single bag of the soybean seed improperly acquired “could therefore, by a conservative estimate, produce hundreds of thousands of bags of seed (i.e., [55 x 55 x 55 = 166,375]) over the course of just three growing seasons.” *Id.*

<sup>151</sup> *Id.* at 1377.

<sup>152</sup> *Id.*

<sup>153</sup> *Id.* at 1377-78.

that the “standard Technology Fee that Monsanto charges all farmers is ‘the most established royalty patent infringement litigation has ever seen’<sup>154</sup> and that the court should take the total number of bags of seed he recovered over the two years and multiply that by the per bag technology fee, *i.e.*,  $(696+438) * \$5/\text{bag} = \$6,170$ .<sup>155</sup> The court found that Ralph’s use of the patent was broader than what the technology fee would cover.<sup>156</sup> The court also seemed concerned that simply using the technology fee as an established royalty would not result in adequate deterrence; if it awarded only \$6,170 in damages, future farmers would have no incentive to follow the law.<sup>157</sup> Future farmers could infringe the patent and pay the royalty fee only if they got caught.<sup>158</sup>

Such reasoning ignores the other incentives farmers have to act lawfully and pay the technology fee.<sup>159</sup> First, this reasoning overlooks the Patent Act’s expressly designed tool to discourage blatant infringement – the ability to award treble damages for willful infringement.<sup>160</sup> A farmer who deliberately decides to use the GM seed without paying the technology fee “would almost certainly qualify as a willful infringer and face up to treble damages.”<sup>161</sup> In *Ralph*, a reasonable royalty of \$6,170 would have been trebled to \$18,510 for deterrent and punishment effect.<sup>162</sup>

A second incentive farmers have for paying the technology fee rather than opting for infringement is that they may be preliminarily enjoined from growing and selling the infringing crops.<sup>163</sup> Taking the risk that one’s farm will be temporarily shut down “may, in many cases, be the most powerful infringement deterrent of all.”<sup>164</sup>

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<sup>154</sup> *Id.* at 1383.

<sup>155</sup> *Id.* at 1379.

<sup>156</sup> *Id.*

<sup>157</sup> *Id.*

<sup>158</sup> Love, *supra* note 25, at 919 (quoting *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996)).

<sup>159</sup> *See id.* at 924.

<sup>160</sup> *Id.* at 925; 35 U.S.C. § 284 (2012) (“the court may increase the damages up to three times the amount found or assessed.”).

<sup>161</sup> Love, *supra* note 25, at 926.

<sup>162</sup> *See Ralph*, 382 F.3d at 1379; 35 U.S.C. § 284. In *Monsanto Co. v. Roeder*, the court suggested this logical approach, but Monsanto argued that such a limitation would not be proper and the court relented. *Monsanto Co. v. Roeder* (In re Roeder), 2009 WL 4907014, \*11 (Bankr. N.D. Iowa Dec. 14, 2009).

<sup>163</sup> Love, *supra* note 25, at 927; *but see Monsanto Co. v. Geertson Seed Farms*, 130 S. Ct. 2743 (2010) (concluding that a preliminary injunction was inappropriate despite a likelihood of success of showing the Department of Agriculture violated the National Environmental Policy Act); *Ctr. for Food Safety v. Vilsack*, 636 F.3d 1166 (9th Cir. 2011) (same).

<sup>164</sup> Love, *supra* note 25, at 927.

A third incentive farmers have for avoiding infringement and voluntarily choosing to pay the technology fee is the cost of patent infringement litigation.<sup>165</sup> Not only would farmers have their own costs (attorneys' fees, expert witness fees, and lost time), but the Patent Act permits courts to award attorneys' fees to prevailing parties in "exceptional cases."<sup>166</sup> Willful infringement is one factor courts consider in determining whether a case is exceptional.<sup>167</sup> Patent litigation is notoriously expensive,<sup>168</sup> which likely provides a strong incentive to avoid infringement. Yet despite these built-in deterrents, the courts have rejected the established royalty method and opted for a more deterrent- and punishment-oriented approach.

### ***B. Inflating the Hypothetical Negotiation***

Where an established royalty cannot be determined, the reasonable royalty may be "based upon the supposed result of hypothetical negotiations between the plaintiff and defendant."<sup>169</sup> This hypothetical negotiation method seeks to determine the terms of the license agreement the parties would have reached had they negotiated at arm's length when infringement began.<sup>170</sup> In the GM seed context, to estimate what the farmer would have

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<sup>165</sup> *Id.* at 928.

<sup>166</sup> *Id.*; 35 U.S.C. § 285.

<sup>167</sup> *Amsted Indus., Inc. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 184 (Fed. Cir. 1994).

<sup>168</sup> *Love*, *supra* note 25, at 928 (citing AM. INTELL. PROP. LAW ASS'N, REPORT OF ECONOMIC SURVEY 2007, at 25-26).

<sup>169</sup> *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling, USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012); *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 853 n.3 (Fed. Cir. 2010), *aff'd*, 131 S. Ct. 2238, 180 L. Ed. 2d 131 (2011) (citing *Georgia Pacific Corp. v. U.S. Plywood-Champion Papers, Inc.*, 446 F.2d 295, 297 (1971)).

<sup>170</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004) ("jury was instructed in the factors set forth in *Georgia-Pacific* for determination of a reasonable royalty"). The *Georgia Pacific* factors include:

- (1) royalties the patentee has received for licensing the patent to others;
- (2) rates paid by the licensee for the use of comparable patents;
- (3) the nature and scope of the license (exclusive or nonexclusive, restricted or nonrestricted by territory or product type);
- (4) any established policies or marketing programs by the licensor to maintain its patent monopoly by not licensing others to use the invention or granting licenses under special conditions to maintain the monopoly;
- (5) the commercial relationship between the licensor and licensee, such as whether they are competitors;
- (6) the effect of selling the patented specialty in promoting sales of other products of the licensee;
- (7) the duration of the patent and license term;
- (8) the established profitability of the product made under the patent, including its commercial success and current popularity;
- (9) the utility and advantages of the patent property over old modes or

been willing to pay, courts focus on the estimated economic benefits enjoyed by the farmer.<sup>171</sup> This makes sense. A farmer would certainly consider potential economic gains when deciding the proper payment for the right to use the patented seed.

However, courts also entertain considerations that have no place in a hypothetical negotiation, such as deterring future behavior. One court – despite a lack of evidence supporting this allegation – opined that the farmer may effectively go into business against Monsanto, a company with assets in excess of \$20 billion:<sup>172</sup>

Because one Roundup Ready(R) soybean seed is capable, on average, of producing thirty to forty identical second generation seed, the farmer is capable of selling forty-times the seed originally purchased. Given enough acreage, a farmer purchasing 1,000 bags of Roundup Ready(R) seed would be capable of bin-running or brown bagging 39,304,000 bags within four years. Thus Monsanto would only be willing to accept a royalty commensurate with the risk that a farmer could effectively become a direct Roundup Ready(R) soybean competitor to Monsanto in such a short time period.<sup>173</sup>

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devices; (10) the nature of the patented invention and the benefits to those who have used the invention; (11) the extent to which the infringer has used the invention and the value of that use; (12) the portion of profit or of the selling price that may be customary in that particular business to allow for use of the invention or analogous inventions; (13) the portion of the realizable profit that should be credited to the invention as opposed to its non-patented elements; (14) the opinion testimony of qualified experts; and (15) the results of a hypothetical negotiation between the licensor and licensee.

*i4i*, 598 F.3d at 853 n.3 (citing *Georgia Pacific*, 446 F.2d at 297).

<sup>171</sup> *Monsanto Co. v. McFarling*, 488 F.3d 973, 977, 980 (Fed. Cir. 2007) (affirming \$40 royalty per bag of seed where farmer “saved \$31 to \$61 per bag of seed”); *Monsanto Co. v. Hargrove*, 2011 WL 5330674, \*3 (E.D. Mo. Nov. 7, 2011) (awarding a royalty based “on the estimated economic benefits enjoyed by defendants”); see *Love*, *supra* note 25, at 916-18 (discussing how the court in *McFarling* based damages on what “the defendant has gained or lost by his unlawful acts.”).

<sup>172</sup> *Monsanto Co.*, Annual Report (Form 10-K), at 42 (Oct. 19, 2012).

<sup>173</sup> *Monsanto Co. v. Byrd*, 2000 WL 33952260, \*6 (E.D.N.C. Dec. 11, 2000). If Monsanto priced their seed based upon the assumption that each licensee would be a potential competitor, the price would be prohibitively expensive.

To deter such hypothetical competition, the court found that an inflated reasonable royalty would be appropriate.<sup>174</sup> That the courts are incorporating deterrence into their award of damages can be clearly inferred from the damage amounts.<sup>175</sup> Indeed, they are “nudging the reasonable royalty formulation further and further away from the traditional willing licensor-willing licensee negotiation.”<sup>176</sup>

An additional factor underlying all of the outcomes above is that in applying the hypothetical negotiation method to determine a reasonable royalty, courts refuse to consider that the farmer and Monsanto are partners in an arms-length negotiation. The courts find that Monsanto can refuse to negotiate and thus abandon the essential assumption of a willing licensor-willing licensee.<sup>177</sup> By rejecting the assumption of a willing licensor-willing licensee the court can abandon economic reality<sup>178</sup> and embark on a journey serving deterrence and punishment rather than just compensation. Of course, the Patent Act already includes specific provisions to deter and

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<sup>174</sup> *Id.* at \*7. Further, while the court may triple the reasonable royalty under section 284, some courts bring punishment into the calculation well before the treble damages phase, that is to say, they consider punishment in determining a reasonable royalty. *See Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1104 (Fed. Cir. 1996). One court told jurors that they should include in their calculation of reasonable royalties “other factors that might warrant higher damages,” and then tripled the reasonable royalty that the jurors came up with. *See Love*, *supra* note 25, at 920 (discussing *Maxwell*, 86 F.3d at 1104). On appeal, the Federal Circuit held that it was “not an abuse of discretion for the district court to instruct the jury to award in two separate amounts - first . . . the royalty that two willing parties would negotiate . . . and second . . . the increase in the damages . . . based on other relevant factors - what courts had previously instructed jurors to consolidate into a single damages award.” *See id.* at 920 (quoting *Maxwell*, 86 F.3d at 1109).

<sup>175</sup> *See infra* notes 181-88 and accompanying text; *see also Monsanto Co. v. Strickland*, 604 F. Supp. 2d 805, 815 (D.S.C. 2009) (“[the damage expert’s] analysis is based upon the considerations outlined in *Georgia-Pacific* and focuses on the commercial success of Roundup Ready(R) seed technology and the importance of Monsanto protecting its patent rights.”).

<sup>176</sup> *Love*, *supra* note 25, at 920.

<sup>177</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1384 (Fed. Cir. 2004) (“The hypothetical negotiation is often referred to as a ‘willing licensor/willing licensee’ negotiation. However, this is an inaccurate, and even absurd, characterization when, as here, the patentee does not wish to grant a license.”).

<sup>178</sup> Suzanne Michel, *Bargaining for Rand Royalties in the Shadow of Patent Remedies Law*, 77 ANTITRUST L.J. 889 899 n.41 (2011) (citing Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1185-86 n.163 (2009) (noting that “recent cases have highlighted that, as a legal matter, reasonable royalty awards may exceed the amount the parties would have agreed to” in the hypothetical negotiation and declaring that such “decisions make no economic sense”).

punish – courts can award treble damages for willful infringement<sup>179</sup> and attorneys’ fees in “exceptional cases.”<sup>180</sup> Because such provisions are already included in the Patent Act, this makes an inflated reasonable royalty even more inappropriate.

The results are telling. The court can find a reasonable royalty higher than the farmer’s anticipated profits, despite the fact that “no sane farmer would ever negotiate a royalty in excess of his anticipated profits.”<sup>181</sup> Again, *Monsanto Co. v. Ralph* is illustrative. Once the court decided not be bound by the established royalty of \$5 per bag, or even a royalty that would be reached in a hypothetical negotiation, it settled on “\$55.04 per bag for the 796 bags of soybean seed that Ralph saved for planting in 1999, [and] \$52.12 per bag for the 438 bags of soybean seed he saved for 2000.”<sup>182</sup> The damages for infringing the soybean patent were \$66,639 and subsequently trebled to \$199,918.<sup>183</sup> Notice that there are two levels of deterrence and punishment here: the original inflated royalty of \$55.04 per bag, and the trebling of that amount to 165.12 per bag. Other courts have moved even higher to \$100 per bag, trebled to \$300 per bag.<sup>184</sup> Indeed, this type of inflated damage is repeated in case after case, leading to judgments against farmers in the amount of \$3,052,800,<sup>185</sup> \$2,586,325,<sup>186</sup> and \$2,410,206,<sup>187</sup> and \$1,105,102.50.<sup>188</sup>

As a reference, in 2011, the median household income for farms specializing in cash grains such as corn or soybeans was a mere \$76,301.<sup>189</sup>

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<sup>179</sup> 35 U.S.C. § 284 (2012). Section 284 does not expressly require willfulness, but courts have held that a showing of willfulness is sufficient. Mark A. Lemley & Ragesh K. Tangri, *Ending Patent Law’s Willfulness Game*, 18 BERKELEY TECH. L.J. 1085, 1087 n.3 (2003).

<sup>180</sup> 35 U.S.C. § 285; see also Jon E. Wright, *Willful Patent Infringement and Enhanced Damages – Evolution and Analysis*, 10 GEO. MASON L. REV. 97, 102 (2001) (“[C]ourts used the treble damages provision to punish infringers for deliberate acts of infringement. The courts also used the available discretion to punish bad faith business tactics.”).

<sup>181</sup> *Ralph*, 382 F.3d at 1384.

<sup>182</sup> *Id.* at 1379.

<sup>183</sup> *Id.*

<sup>184</sup> *Monsanto Co. v. Strickland*, 604 F. Supp. 2d 805, 816 n.5, 818 (D.S.C. 2009) (seed purchased in 2004).

<sup>185</sup> THE CENTER FOR FOOD SAFETY, *MONSANTO V. U.S. FARMERS* 33 (2005) (citing *Monsanto Co. v. Anderson*, Case No. 4:01:CV-01749 (S.D. Tex. June 4, 2003)).

<sup>186</sup> *Id.* (citing *Monsanto Co. v. Dawson*, Case No. 98-CV-2004 (E.D. Mo. Dec. 19, 2001)).

<sup>187</sup> *Id.* (citing *Monsanto Co. v. Ralph*, 2003 WL 25276984 (E.D. Mo. July 9, 2003), *aff’d in part, rev’d in part*, 382 F.3d 1374 (Fed. Cir. 2004)).

<sup>188</sup> *Monsanto Co. v. Hargrove*, 2011 WL 5330674, \*4 (E.D. Mo. Nov. 7, 2011).

<sup>189</sup> U.S. Dep’t of Agric., Econ. Res. Serv. *Farm Household Income: Median Farm Household Income up in 2011 and Forecast Higher in 2012* (2013), <http://www.ers.usda.gov/topics/farm-economy/farm-household-well-being/farm-household-income.aspx>.

In 2010, seed costs for these two grains as a percent of gross crop-derived income per acre amounted to 11% – 12% for conventional seeds and 22% – 23% for branded GM seeds.<sup>190</sup> When examined in terms of net returns per acre, the percentage grew to 18% – 24% for conventional seeds and 35% – 51% for branded GM seeds.<sup>191</sup> This means that a simple trebling of these costs by the court for branded GM seeds would amount to 105% – 153% of a farmer’s total crop-derived net income for the year, and says nothing of the impact of the trebling of seed bag costs that have been inflated by up to twenty times market rates before trebling. By any standard, negotiated royalty rates that could consume upwards of twenty years’ worth of a farmer’s total household income go far beyond reasonable compensation and certainly would never be construed as a logical position on the part of a potential licensee in a willing licensor-willing licensee negotiation.

### C. Injunctions

Despite the fact that courts award a reasonable royalty based on the assumption that the farmer was negotiating for the use of one bag of seed for the year of the infringement *and* use of the seed produced by that one bag of seed (*i.e.*, the court is determining a reasonable royalty based on infringement this year, infringement next year, and into the future),<sup>192</sup> Monsanto often seeks an injunction against the future activity that the reasonable royalty is intended to cover. As one defendant argued:

[t]he absurdity of the Plaintiffs position is [clear when one considers that the court is awarding an inflated reasonable royalty of] \$427,291.00 per brown bag seed sold. Obviously, the plaintiff is attempting to recover a mandatory ten-year license in which the Defendant is presumed to grow and sell seed as a competitor against the Plaintiff for ten years. Yet the Defendant is prohibited from doing so by this Court’s [injunction].<sup>193</sup>

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<sup>190</sup> Charles Benbrook, The Organic Center, *The Magnitude and Impacts of the Biotech and Organic Seed Price Premium* (December 2009), <http://kohalacenter.org/publicseedinitiative/images/seedpricepremium.pdf>.

<sup>191</sup> *Id.*

<sup>192</sup> Even a single bag of the soybean seed improperly acquired “could therefore, by a conservative estimate, produce hundreds of thousands of bags of seed (*i.e.*, [55 x 55 x 55 = 166,375]) over the course of just three growing seasons.” *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1380 (Fed. Cir. 2004).

<sup>193</sup> *Monsanto Co. v. Byrd*, 2000 WL 33952260, \*6 (E.D.N.C. Dec. 11, 2000).

The court rejected the foregoing argument and permitted Monsanto to proceed to trial and argue that an inflated reasonable royalty is a proper amount of damages.<sup>194</sup> In addition to these inflated damages, Monsanto also sought injunctive relief.<sup>195</sup> This “result[s] in a windfall for the plaintiff because the damages are based on future infringements notwithstanding existence of the injunction preventing such infringements.”<sup>196</sup> This practice is repeated across cases.<sup>197</sup>

The impropriety of this practice was recognized long ago in a trade secret case where the Ninth Circuit explained that “[t]o enjoin future sales and at the same time make an award based on future profits from the prohibited sales would result in duplicat[ed] and inconsistent relief.”<sup>198</sup> In addition, inflating damages to compensate for future infringement while enjoining the defendant from future infringement directly contradicts one of the four required elements for injunctive relief – “that remedies at law, such as monetary damages, are inadequate to compensate for [the irreparable] injury.”<sup>199</sup> If monetary damages, in the form of inflated reasonable royalties, are being awarded to Monsanto, then these damages are necessarily adequate to compensate for the injury.<sup>200</sup>

Notwithstanding the duplicative relief and not satisfying the four-part test for injunctive relief, the hardship visited upon farmers by preliminary and permanent injunctions is undeniable. Farmers will generally be subject to a preliminary injunction, which effectively prevents them from farming during the pendency of the action.<sup>201</sup> And even if farmers pay damages for past wrongs and are willing to enter into license

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<sup>194</sup> *Id.* at \*7.

<sup>195</sup> *Id.* at \*2.

<sup>196</sup> *Id.* at \*7.

<sup>197</sup> See e.g. *Monsanto Co. v. Hargrove*, 2011 WL 5330674, \*4 (E.D. Mo. Nov. 7, 2011) (awarding exaggerated damages and an injunction); *Monsanto Co. v. McFarling*, 2005 WL 1490051, \*2 (E.D. Mo. June 23, 2005) (jury awarded an inflated reasonable royalty of \$40 per bag and court granted a permanent injunction), *aff’d*, 488 F.3d 973 (Fed. Cir. 2007).

<sup>198</sup> *Winston Research Corp. v. Minnesota Min. and Mfg. Co.*, 350 F.2d 134, 144 (9th Cir. 1965).

<sup>199</sup> *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). The four-part test is that the “plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.” *Id.*

<sup>200</sup> See *MercExchange, L.L.C. v. eBay, Inc.*, 500 F. Supp. 2d 556, 572-73, 582-83 (E.D. Va. 2007) (holding that the patentee’s willingness to enter into a license agreement with third parties and the defendant negating the existence of an irreparable injury and an inadequate remedy at law).

<sup>201</sup> *Monsanto Co. v. McFarling*, 302 F.3d 1291 (Fed. Cir. 2002).

agreements for future planting seasons, the farmers may not be allowed to do so by Monsanto. The Court of Appeals for the Federal Circuit held in *McFarling* that the permanent injunction against unlicensed use of GM seed did not require Monsanto to “license its technology to Mr. McFarling if it chooses not to.”<sup>202</sup> In short, McFarling was prevented from earning a living during the pendency and after the conclusion of the case and faces a judgment of \$375,000.<sup>203</sup>

In sum, because the infringing farmers face damages based on a tort model, they are subject to damages that are inflated for deterrent or even punitive effect. The typical farmer sued by Monsanto for patent infringement faces a “reasonable” royalty that is more than ten-times the established royalty. For example, in *Ralph*, while the typical farmer paid a royalty of \$5 per bag, Monsanto was awarded damages of \$55.04 per bag, tripled to \$165.12 per bag.<sup>204</sup> The possibility of injunctive relief compounds this problem and interrupts a long-standing tradition of farming.<sup>205</sup> A solution to this problem is necessary. Drawing from the law regarding and practices of standard setting organizations (SSOs), we propose to solve this problem with the help of an implied license.

### III. IMPLIED LICENSES VIA DE FACTO STANDARD ESSENTIAL PATENTS

In this section, we argue that one way courts could deal with cases involving patentees seeking redress for unlicensed use of GM seed technology is to deem that the patents covering the technology in question meet the criteria to be classified as de facto standard essential patents (de facto SEP). By this, we mean that certain stringent conditions have been met that makes infringing use of the underlying technology all but impossible to avoid. Our argument for determination of de facto SEP status for a technology is an extension of the standard essential patent (SEP) designation, which plays a vital role in technological fields by allowing

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<sup>202</sup> *Monsanto Co. v. McFarling*, 488 F.3d 973, 982 (Fed. Cir. 2007); *see Monsanto Co. v. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004) (“the court entered a permanent injunction prohibiting Ralph’s “current and future purchase, acquisition, making, use, sale, offers to sell, brokering, transfer, cleaning, and/or reconditioning . . . of any seed containing Monsanto’s patented biotechnology . . . [or] planting, moving, collecting transferring, or obtaining, in any manner, any patented biotechnology in [his] possession, or under [his] control, wherever situated,” and ordering him to inventory and produce all patented biotechnology in his possession to Monsanto.”).

<sup>203</sup> *McFarling*, 488 F.3d 973.

<sup>204</sup> *Ralph*, 382 F.3d at 1379.

<sup>205</sup> *See supra* notes 106-11 and accompanying text.

other producers to build on the patented technologies by paying a licensing fee. While SEP designation traditionally takes place through formal standard setting bodies, we argue that de facto SEP can be determined by the court by analyzing whether three stringent criteria, which reflect the peculiarities of seeds used in farming, have been satisfied. By acknowledging the potential for a de facto SEP in the cases of some GM seed technology, an implied license can be formed, which shifts the case from a tort-based patent infringement suit to a breach of contract dispute. As a result, this would alter the damages regime of the case from one based in compensation, deterrence, and punishment (a torts approach), to one based solely in compensation (a contractual approach).

### A. *Standard Essential Patents and Standard Setting Organizations*

A standard, most often seen in technology-based industries, is “any set of technical specifications that either provides or is intended to provide a common design for a product or process.”<sup>206</sup> Standards serve useful purposes because they may encourage interoperability, facilitate competition in replacement parts, and even promote social welfare.<sup>207</sup>

Standardization may arise in a number of ways.<sup>208</sup> One way is through standard setting organizations (SSOs).<sup>209</sup> SSOs, which typically act to solve interoperability problems, operate via their members to “create standards that ensure that devices within a system will work together and communicate with each other in standardized, predictable ways.”<sup>210</sup> Standards that are formed through SSOs often entail bringing together multiple patented technologies owned by different patentees under one standard.<sup>211</sup> But standards may also be formed around the technology of only one specific patentee.<sup>212</sup> As an example:

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<sup>206</sup> Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1896 (2002).

<sup>207</sup> *Id.* at 1897.

<sup>208</sup> *Id.* at 1898.

<sup>209</sup> *Id.*

<sup>210</sup> Edith Ramirez, *Prepared Statement of The Federal Trade Commission Before the United States Senate Committee on the Judiciary Concerning “Oversight of the Impact on Competition of Exclusion Orders to Enforce Standard-Essential Patents,”* 112th Cong. 4, (July 11, 2012).

<sup>211</sup> Aija Elina Leiponen, *Competing Through Cooperation: The Organization of Standard Setting in Wireless Telecommunications*, 54 MGMT. SCI. 1904, 1906 (2008).

<sup>212</sup> Timothy Simcoe, *Standard Setting Committees: Consensus Governance for Shared Technology Platforms*, 102, AMER. ECON. REV. 305 (2012); Joseph Farrell & Timothy Simcoe, *Choosing the rules for consensus standardization*, 43, RAND J. OF ECON. 235 (2012).

In the late 1970s, a firm called RSA obtained a number of extremely strong patents covering the basic methods of public key cryptography... [T]he significance of RSA's invention and the scope of its patents led to the adoption of a number of specifications that required implementers to seek a license from RSA.<sup>213</sup>

The potential impact of a technology becoming a standard – in terms of both revenue generation and technological impact for the IP holder<sup>214</sup> – is why firms will exert substantial effort on standards development activity.<sup>215</sup> The result of this activity is that other members of the industry are pressured to use the technology in order to compete in the market; product offerings that do not adhere to the industry standard are less likely to be adopted by consumers and may be viewed as suspect. Thus, one could argue that a broad definition of an SEP is a patent necessary to use the standard or a part thereof.<sup>216</sup> SEPs as denominated by SSOs are known as *de jure* standards.<sup>217</sup>

Before SSOs adopt standards covered by SEPs, they very frequently require the owners of those patents to commit to licensing their patents under reasonable and non-discriminatory (RAND) terms.<sup>218</sup> This is because adoption of an SEP could endow the patent owner with disproportionate market power and permit it to “extract unreasonably high royalties from

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<sup>213</sup> Timothy Simcoe, *Open Standards and Intellectual Property Rights*, in OPEN INNOVATION: RESEARCHING A NEW PARADIGM 161, 174 (Henry Chesbrough et al. eds., Oxford Univ. Press 2006).

<sup>214</sup> Leiponen, *supra* note 211, at 1904 (“Companies that were able to incorporate their patents in one of these standards may have been receiving royalty revenue for more than 15 years”); Mark Rysman & Timothy Simcoe, *Patents and the Performance of Voluntary Standard-Setting Organizations*, 54 MGMT. SCI. 1920, 1921 (2008) (finds that technologies garner a 19% and 47% increase in patent citations as a result of SSO endorsement).

<sup>215</sup> “In 2005 IBM spent an estimated \$500 million – roughly 8.5% of its R&D budget – on standards development.” Rysan & Simcoe, *supra* note 214, at 1920 (citing Benjamin Chiao et al. *The rules of standard setting organizations: An empirical analysis*. 54 RAND J. ECON. 905, 906 n.1 (2007)).

<sup>216</sup> 2 HERBERT HOVENKAMP ET AL., IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY § 35.1, at 35-7 (2d ed. 2009); *see also* Ramirez, *supra* note 210, at 4.

<sup>217</sup> Ramirez, *supra* note 210, at 4.

<sup>218</sup> Daryl Lim, *Misconduct in Standard Setting: The Case for Patent Misuse*, 51 IDEA 559, 571 (2011). Some SSOs, commentators, and courts use the phrase “fair, reasonable, and non-discriminatory” or FRAND. There is no difference between RAND and FRAND. *See* Apple, Inc. v. Motorola, Inc., 869 F. Supp. 2d 901, 912 (N.D. Ill. 2012) (“the word ‘fair’ adds nothing to ‘reasonable’ and ‘nondiscriminatory.’”).

suppliers [and users] of standard-compliant products and services.”<sup>219</sup> Requiring RAND licensing protects adopters and users of the standard from paying extraordinary high fees when there are no realistic opportunities to produce the product or provide the service without infringing the patent.<sup>220</sup> This RAND licensing requirement is commonplace.<sup>221</sup>

But not all standards are created by SSOs.<sup>222</sup> De facto standards may also emerge as a result of consumer preference.<sup>223</sup> If a de facto standard emerges and is covered by a patent then the patent becomes a de facto standard essential patent (de facto SEP). The owner of the de facto SEP, like the owner of the de jure SEP, may have increased market power.

We argue that there should be no difference between the rights and responsibilities that arise from the creation of a de jure SEP and a de facto SEP. In particular, we suggest that where patented technology necessary for the satisfaction of a human need reaches SEP status, a license should be implied between the patentee and those users who cannot practicably fulfill the need without infringing the patent. This type of implied license would, like other licenses, be an affirmative defense.<sup>224</sup> If established, this implied license would remove the possibility of damages being inflated for deterrent or punitive effect and remove the possibility of injunctions being granted.

When applied to Monsanto’s GM seed litigation, we see Monsanto benefiting from the advantages of an SEP without taking on any of the reciprocal responsibilities. Specifically, Monsanto’s technology has “become[] a de facto standard. . . controlled by [Monsanto], [giving Monsanto] significant power and control.”<sup>225</sup> Where a given technology

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<sup>219</sup> Microsoft Corp. v. Motorola, Inc., 696 F.3d 872, 876 (9th Cir. 2012) (citing Mark A. Lemley, *Ten Things to Do About Patent Holdup of Standards (And One Not To)*, 48 B.C.L. REV. 149 (2007)).

<sup>220</sup> See Lim, *supra* note 218, at 571.

<sup>221</sup> Lemley, *supra* note 206, at 1906 (“The most common condition was that IP rights be licensed on ‘reasonable and nondiscriminatory terms.’”).

<sup>222</sup> *Id.* at 1899.

<sup>223</sup> *Id.*; Antitrust Enforcement and Intellectual Property Rights 34 (citing Janice M. Mueller, *Patent Misuse Through the Capture of Industry Standards*, 17 BERKELEY TECH. L.J. 623, 633-34 (2002); Daniel J. Gifford, *Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy: Standards and Intellectual Property: Licensing Terms: Some Comments* 1, <http://www.ftc.gov/opp/intellect/020418danieljgifford.pdf> (Apr. 18, 2002) (discussing the Windows operating system as an example of a *de facto* standard chosen by the market)).

<sup>224</sup> Carborundum Co. v. Molten Metal Equip. Innovations, Inc., 72 F.3d 872, 878 (Fed. Cir. 1995) (“[A]n implied license, like an express license, is a defense to patent infringement. . . . [The alleged infringer has] the burden of establishing the existence of an implied license as an affirmative defense.”).

<sup>225</sup> Michael Chapin, Note, *Sharing The Interoperability Ball On The Software Patent Playground*, 14 B.U. J. SCI. & TECH. L. 220, 233 (2008); see Pamela Samuelson, *Are*

achieves standard essential status without the determination of an SSO, it is not bound by any of the mitigating agreements that SSOs may put in place. These may include the agreement to grant a license on RAND terms to anyone using the patented technology on the part of the IP holder.<sup>226</sup>

It is clear from a review of cases involving GM seeds, that the courts are reluctant to compel a license. Given this, we narrowly tailor our proposal to create an implied license between the IP holder and the farmer only where certain strict conditions are met. Specifically, we limit application of the de facto SEP model to cases where (1) the patent holder has achieved dominance in a given field; (2) it is impracticable to expect that a farmer could operate without infringing the patent; and (3) the farmer is growing a crop used to meet a basic human need. In the following section, we further explain the elements for recognition of a de facto SEP.

Before doing so, it is important to point out that the de facto SEP defense would *not* apply to farmers who knowingly acquire patented GM seed, plant it, and then knowingly sell the resulting crop (and second generation seed) to others for the purpose of replanting.<sup>227</sup> This limitation would certainly exclude direct purchasing farmers who did this and may also exclude drift and indirect purchasing farmers who exploit their careful planning to compete with Monsanto. Our proposal does not seek to legitimize a black market for infringing GM seed. Instead, it attempts to minimize the harm to farmers who are producing products to satisfy basic human needs.

### ***B. Establishing a De Facto SEP Regime for Genetically Modified Technology***

To succeed with an affirmative defense that the patent is a de facto SEP and that an implied license is appropriate, the farmer has the burden of establishing three elements. These three elements are:

- 1) *Dominance*: The patented technology has reached a dominant position in the relevant crop market;
- 2) *Impracticability*: Growing the relevant crop has become impracticable (or impossible) without use of the patented technology; and

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*Patents on Interfaces Impeding Interoperability?*, 93 MINN. L. REV. 1943, 1950 (2009) (“Privately developed interface designs can also become de facto standards when the platforms for which they were designed become successful in the marketplace.”).

<sup>226</sup> Lemley, *supra* note 206, at 1906 (examining policies of SSOs and stating that 29 of 36 SSOs with IP licensing policies required members to license their patents on RAND terms).

<sup>227</sup> Knowingly includes conscious ignorance.

- 3) *Basic Need*: The crop is necessary to supplying a basic need (food, shelter, or clothing).

### 1. Dominance

The dominance element looks at whether the patented technology has reached a dominant position in the relevant crop market. This dominance may occur due to open competition, anti-competitive behavior, lawful patent protection, tariffs, or other such barriers to access. The specific question is: does the firm owning the patented technology have a sufficient amount of market power? Antitrust law, which regularly needs to assess market power, helps answer that question. The most commonly used surrogate for determining market power is to measure the market share and structure.<sup>228</sup> Measuring market share requires the market to be defined in terms of the product and geography.<sup>229</sup>

The product market should be defined as the crop being grown by the infringing farmer that is alleged to infringe the patent. If the farmer grows soybeans and patented GM soybean seeds drift into the farmer's field, then the product market is soybean seeds. If the farmer grows cotton and patented GM cottonseeds are indirectly purchased from a commodities dealer, then the product market is cottonseed. No distinction should be made between GM seed and non-GM seed.

For geographic markets, the general question to ask is where do consumers look when purchasing a product?<sup>230</sup> As applied to the infringing farmers, courts should look at where farmers in that community go to purchase their seed for the relevant crop. Although this could vary depending on the product and consumers, the geographic market should probably be defined locally rather than regionally or nationally. Ultimately, determining the geographic scope will be determined by the judge, but we anticipate that resolution of this issue will be informed by expert witness testimony and reports.

Once the market has been defined, market share must be measured.<sup>231</sup> This can be done by analyzing output within the market as either physical units or revenues as a percentage of all physical units or

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<sup>228</sup> LAWRENCE A. SULLIVAN & WARREN S. GRIMES, THE LAW OF ANTITRUST: AN INTEGRATED HANDBOOK 60 (West Group 2000).

<sup>229</sup> *Id.* at 61.

<sup>230</sup> *Id.* at 63.

<sup>231</sup> *Id.* at 64.

revenues.<sup>232</sup> Once market share has been established, it must be determined whether this amount is sufficiently large to constitute dominance.

We can use the Monsanto situation to show how this works. Monsanto's dominance can best be understood in historical terms; for thousands of years, farmers have engaged in a selection process to find or create seed that could produce the highest quality product with the least effort and at the lowest cost. As better seed became known, it displaced alternatives in the market. It is estimated that over 90% of field corn seed varieties sold commercially in the U.S. in 1903 were extinct by 1983,<sup>233</sup> the year when scientist Kary Mullis discovered how to produce multiple copies of specific fragments of a strand of DNA.<sup>234</sup> As the decades passed, more and more farmers relied on fewer seed varieties<sup>235</sup> while concurrently increasing productivity and quality.

In the 1980s, after *Diamond v. Chakrabarty*<sup>236</sup> established the legal right to patent a genetically modified organism, property rights in agriculture shifted away from just the ownership of land and crops to ownership of specific gene sequences within seed and their progeny.<sup>237</sup> These sequences provided resistance to certain pests, brought yield gains, or encouraged the production of other such attractive crop characteristics.<sup>238</sup> Judging from market sales, one of the most valued characteristics afforded by genetic manipulation is resistance to herbicides, which is necessary to

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<sup>232</sup> IIB PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW § 535, at 273 (3d ed. 2006).

<sup>233</sup> RURAL ADVAN. FOUND. INT'L, 2011 ANNUAL REPORT 3(2011); CARY FOWLER & PAT MOONEY, SHATTERING: FOOD, POLITICS AND THE LOSS OF GENETIC DIVERSITY 65 (Univ. of Arizona Press 1990).

<sup>234</sup> Mark Lehrer & Preeta Banerjee, Presentation to Eastern Academy of Management, Portland, ME (May 15, 2010) *From Complex Processes to Real-Time General Purpose Technologies: Patterns of Development in ERP Software and PCR DNA Analysis*; Emily Yoffe, *Is Kary Mullis God? Nobel Prize winner's new life*, ESQUIRE (July 1994), at 68–75.

<sup>235</sup> In the wake of the corn blight that destroyed 15% of the U.S. corn crop in 1970, The National Academy of Sciences established the Committee of Genetic Vulnerability of Major Crops to examine the vulnerability of the U.S.'s food and fiber supply. The final study, released in 1972, found that most major crops in the U.S. were "impressively uniform genetically and impressively vulnerable" to the same pathogens and pests as a result. NATIONAL ACADEMY OF SCIENCES, NATIONAL ACADEMY OF ENGINEERING INSTITUTE OF MEDICINE, NATIONAL RESEARCH COUNCIL, ANNUAL REPORT, FY 1973-74, at 4.

<sup>236</sup> *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

<sup>237</sup> See Michael R. Taylor & Jerry Cayford, *American Patent Policy, Biotechnology, and African Agriculture: The Case for Policy Change*, 17 HARV. J.L. & TECH. 321 (2004).

<sup>238</sup> Gregory N. Mandel, *Gaps, Inexperience, Inconsistencies, and Overlaps: Crisis in the Regulation of Genetically Modified Plants and Animals*, 45 WM. & MARY L. REV. 2167, 2176-77 (2004).

kill weeds without killing the crop plant.<sup>239</sup> Monsanto's Roundup Ready seed, which allows for the liberal application of the Roundup herbicide without harm to the crop, holds the largest market share for such GM crops.<sup>240</sup>

As a leading innovator in seed technology, Monsanto has taken numerous steps to increase the dominance of its products in the market. In 1996, Monsanto began a series of acquisitions of major seed companies, including Agracetus, Asgrow Agronomics, Asgrow and Stine Seed, Calgene, Inc., Cargill's international seed divisions, DeKalb Genetics, Delta and Pine Land, Holden's Foundation Seed, Inc., Monsoy, and Plant Breeding International.<sup>241</sup> As a result of these efforts, Monsanto grew to become the second largest seed company behind Pioneer Hi-Bred (to whom it licenses its GM traits in a separate arrangement), controlling most of the soybean market and "almost half of the corn germplasm market in the U.S."<sup>242</sup> Monsanto now provides seed technology "for at least 90 percent of the world's genetically engineered crops."<sup>243</sup>

At the same time that Monsanto has been increasing its market share to 90 percent of the world's genetically engineered crops, the percentage of genetically engineered crops has likewise been growing. "[A]s recently as 1980, no genetically modified crops were grown in the United States."<sup>244</sup> However, by 2009, "eighty-five percent of the corn cultivated in the United States, eighty-eight percent of the cotton, and ninety-one percent of the soybeans were genetically engineered."<sup>245</sup> The large market share Monsanto's patented GM seeds play in the agriculture industry is certainly dominant for purposes of this proposed test.

In *United States v. Terminal Railroad Association*, the Supreme Court expressed concern that "since the companies to the agreement now control about one third of the railroad mileage of the United States," an

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<sup>239</sup> THE CENTER FOR FOOD SAFETY, *supra* note 185, at 8.

<sup>240</sup> *Id.*

<sup>241</sup> *Id.* at 9-10.

<sup>242</sup> *Id.* at 10.

<sup>243</sup> *Id.*

<sup>244</sup> Donald L. Barlett & James B. Steele, *Monsanto's Harvest of Fear*, VANITY FAIR (May 2008), available at <http://www.vanityfair.com/politics/features/2008/05/monsanto200805>.

<sup>245</sup> Nate Hausman, *Monsanto Co. v. Geertson Seed Farms: Breathing a Sigh of Equitable Relief*, 25 TUL. ENVTL. L.J. 155, 169 n.108 (2011). There are of course regional variations. As early as 2004, 97% of all cotton planted in Mississippi used genetically modified seed and 95% of all soybeans and 79% of all corn grown in South Dakota did as well. Genetically Modified Crops in the United States (Pew Init. Food & Biotech.), Aug. 2004, at 8-9, available at [http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Fact\\_Sheets/Food\\_and\\_Biotech\\_nology/PIFB\\_Genetically\\_Modified\\_Crops\\_Factsheet0804.pdf](http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Fact_Sheets/Food_and_Biotech_nology/PIFB_Genetically_Modified_Crops_Factsheet0804.pdf).

agreement that certain companies “obligate themselves to forever use the facilities of the terminal company for all business destined to cross the river...would seem to guarantee against any competitive system.”<sup>246</sup> If control of one-third of the market was once considered problematic for the transport of freight, then control of market shares substantially above that level in the production of products necessary for life should also give us pause.

The U.S. Department of Justice (DOJ) and Federal Trade Commission (FTC) have long used measures of market concentration for the purposes of antitrust enforcement.<sup>247</sup> Although described in the context of horizontal mergers, the DOJ and FTC evaluate dominance with the Herfindahl-Hirschman Index (HHI).<sup>248</sup> The HHI sums the squares of the scrutinized firms’ market shares and adds them to give a final index number.<sup>249</sup> In an industry with two firms, one with a 70% market share and one with a 30% share, the HHI would be 5800 ( $70^2+30^2$ ).<sup>250</sup> The DOJ and FTC consider an HHI of below 1500 to be unconcentrated.<sup>251</sup> An HHI between 1500 and 2500 is moderately concentrated.<sup>252</sup> And an HHI above 2500 would be highly concentrated.<sup>253</sup> As applied to some of the market shares described above for Monsanto, the HHI for some crops would be highly concentrated.<sup>254</sup>

## 2. Impracticability

The second element of the de facto SEP defense is that growing the relevant crop has become impracticable (or impossible) without the use of the patented GM technology. This element reflects the traditional definition of an SEP as a patent necessary to use the standard or a part thereof.<sup>255</sup> In

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<sup>246</sup> *United States v. Terminal R.R. Ass’n*, 224 U.S. 383, 401 (1912).

<sup>247</sup> *FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 53 (D.D.C. 1998) (“The FTC and the anti-trust division of the Justice Department adopted the HHI as the preferred measure of market concentration in their 1992 Horizontal Merger Guidelines.”).

<sup>248</sup> U.S. Dep’t of Justice & FTC, *Horizontal Merger Guidelines* § 5.3 (2010), *available at* <http://www.justice.gov/atr/public/guidelines/hmg-2010.html> [hereinafter *FTC Guidelines*].

<sup>249</sup> *Id.*

<sup>250</sup> Andrew Chin, *Herfindahl-Hirschman Index Calculator* (Dec. 2010), <http://www.unclaw.com/chin/teaching/antitrust/herfindahl.htm>.

<sup>251</sup> *FTC Guidelines*, *supra* note 248, at § 5.3.

<sup>252</sup> *Id.*

<sup>253</sup> *Id.* Dominance need not be held by just one firm or just one gene sequence. The combined market share of all GM technologies crowds out opportunities to purchase non-GM products, and also increases the probability of drift occurring in the local market.

<sup>254</sup> For example, a 90% market share for Monsanto would result in an HHI of 8100.

<sup>255</sup> *See supra* note 216 and accompanying text.

particular, to satisfy this element, the farmer must show that if alternatives to GM crops are or had been available, that it was or would not have been reasonably possible to exclude the GM crops from the alternative crops. The impracticability element can be thought of as applying to three different scenarios.

In the first scenario, unpatented seed is unavailable in the market and the farmer uses the patented GM seed. This is not uncommon. Alternatives to GM seed are oftentimes not readily available. According to a 2005 report by the Center for Food Safety (CFS), the availability of non-GM seed has been drastically reduced as a result of Monsanto's actions to buy competitors, license its technology to major seed sellers, and buy-out then close seed cleaners.<sup>256</sup> Indiana soybean farmer Troy Roush tells CFS, "[y]ou can't even purchase [heritage soybeans] in this market. They're not available."<sup>257</sup> Another farmer, who wished to remain anonymous, concurred, saying, "Just about the only cottonseed you can get these days is [genetically engineered]. Same thing with the corn varieties. There's not too many seeds available that are not genetically altered in some way."<sup>258</sup> A survey of farmers in seven agricultural counties in Illinois revealed roughly 40% of farmers reported that they did not have any access to high-yield potential non-GM corn seeds in 2009.<sup>259</sup> On a county-by-county basis, lack of access ranged from 32% (Champaign county) to 46.6% (Malta county).<sup>260</sup> This scenario would arise when dealing with direct purchasing

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<sup>256</sup> Monsanto has systematically engaged in the closure of seed cleaners throughout the United States. *Monsanto Co. v. Parr*, 545 F. Supp. 2d 836, 839 (N.D. Ind. 2008) (seed cleaner enjoined from cleaning seed). Because farming is a yearly process, historically, farmers have either held onto seed that were not planted in the current planting season for use in future seasons, or they have harvested seed from this season's crop for use in subsequent seasons. Oczek, *supra* note 106, at 629 (discussing historical practice of saving seeds). Seed cleaners offer a way for farmers to ensure that extraneous leaves, rocks and so forth do not remain mixed in the seed that they will eventually plant. *Parr*, 545 F. Supp. 2d at 839 (discussing role of seed cleaning in saving seeds). Monsanto has also engaged in lobbying for legislation at the state level that substantially increases the cost of running a seed cleaning operation. Jill Sudduth, *Where the Wild Wind Blows: Genetically Altered Seed and Neighboring Farmers*, 2001 DUKE L. & TECH. REV. 15, 15 (2001) (discussing state legislation). Bills in several farming states would require seed cleaners to keep detailed records on every seed cleaning transaction, to document the name of the farmer, seed variety names and whether or not the seed is protected by patents or breeders' rights. *Id.* Such legislation places a regulatory burden on all seed cleaners. *Id.*

<sup>257</sup> THE CENTER FOR FOOD SAFETY, *supra* note 185, at 10.

<sup>258</sup> *Id.*

<sup>259</sup> Michael E. Gray, *Relevance of Traditional Integrated Pest Management (IPM) Strategies for Commercial Corn Producers in a Transgenic Agroecosystem: A Bygone Era?*, 59 J. AGRIC. FOOD CHEM. 5852, 5855 (2011).

<sup>260</sup> *Id.*

farmers and indirect purchasing farmers who grow crops, save seed, and replant it. As applied to these farmers, because alternatives are unavailable, it is not reasonably possible to exclude the GM crops from the alternative crops. In fact, it is impossible. Lack of access to non-GM alternatives forces farmers to purchase GM seeds (and thus, license the technology) even when the farmer may not desire to utilize the GM properties.

In the second scenario, unpatented seed is available and the farmer uses it, but the farmer's crops are mixed with infringing crops. This scenario would arise when dealing with drift farmers; direct purchasers, who end up with residual seeds in their fields which volunteer unplanned GM crops in future years; and indirect purchasing farmers, who unknowingly grow the GM crop and then save the seed and replant it. Like the first scenario, the question is whether it is reasonable to exclude the GM crops from alternative crops. But the inquiry is more fact-intensive.

For the drift farmer, taking steps against pollen drift can be extremely expensive.<sup>261</sup> Creating a buffer to prevent the unintended pollen drift is one option.<sup>262</sup> One study "tracked the drift of pollen from blue corn and [GM] Roundup Ready corn into adjacent conventional corn. Corn with marker traits (blue kernels or Roundup herbicide tolerance) was planted adjacent to corn without those traits."<sup>263</sup> Cross pollination was detected at 600 feet.<sup>264</sup> Based on these results, a 150 foot buffer was suggested to be a reasonable distance to protect against GM seed contamination.<sup>265</sup> However, these buffer zones come with costs as they often take away otherwise arable land from productive crop use.<sup>266</sup> Even with these precautions, drift may still occur. Consider that corn pollen can travel one half mile.<sup>267</sup>

Some methods of drift are produced by man. Machinery used in harvesting and transportation can contaminate crops. This may be the

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<sup>261</sup> Brief of Amici Curiae Farm and Ranch Freedom Alliance et al. in Support of Plaintiffs-Appellants in Support of Reversal at 2, Organic Seed Growers and Trade Ass'n v. Monsanto Co., No. 2012-1298 (Fed. Cir. July 11, 2012)

<sup>262</sup> 7 C.F.R. § 205.202(c) (2012).

<sup>263</sup> Peter Thomison, Managing "Pollen Drift" to Minimize Contamination of Non-GMO Corn, AGF-153, Ohio State University Extension Fact Sheet, <http://ohioline.osu.edu/agf-fact/0153.html> (citing Byrne, P.F., K.A. Terpstra, T.A. Dabbert, and R. Alexander. 2003. "Estimating Pollen-Mediated Flow in Corn Under Colorado Conditions." In *Annual Meetings Abstracts* [CD-ROM]. ASA, CSSA, SSSA, Madison, WI.).

<sup>264</sup> *Id.*

<sup>265</sup> *Id.*

<sup>266</sup> Brief of Amici Curiae Farm and Ranch Freedom Alliance et al. in Support of Plaintiffs-Appellants in Support of Reversal at 1, Organic Seed Growers and Trade Ass'n v. Monsanto Co., No. 2012-1298 (Fed. Cir. July 11, 2012)

<sup>267</sup> Bob Nielson, *Corn Segregation: A Necessary Evil in Today's Biotech Age*, April 23, 2003, [http://www.kingcorn.org/news/articles.03/GMO\\_Segregation-0423.html](http://www.kingcorn.org/news/articles.03/GMO_Segregation-0423.html).

farmer's own machinery or, as in the case of Percy Schmeiser, contamination may come from other farmers' trucks whose seed "fell from trucks carrying seed to grain elevators."<sup>268</sup> In the case of the farmer's own machinery causing the contamination, extra costs are imposed on the farmer who must clean the machinery before passing from an area where GM seed is used to one where it is not.<sup>269</sup> Of course, cleaning other farmers' trucks to prevent contamination is not a workable solution.

In the end, it may be impossible to prevent all GM crops from entering a non-GMO field.<sup>270</sup> Researchers from the University of California at Berkeley reported the presence of "introgressed transgenic DNA constructs in native maize landraces grown in remote mountains in Oaxaca, Mexico."<sup>271</sup> That is, they found GM corn in what should have been a field without it.<sup>272</sup> What made this discovery amazing is that the field was in the mountains, twenty miles from the nearest major road, in a country where it was illegal to plant GM corn.<sup>273</sup>

For the indirect purchasing farmer, one possible way to detect and reduce the likelihood of infringing the patent would be to conduct DNA testing on random samples of purchased crops. Unfortunately, doing so to make sure GM plants are not being grown is extremely burdensome and costly.<sup>274</sup>

In the third scenario, non-GM seed is available, but the farmer does not use it. Instead, the farmer intentionally uses the patented GM seed. This scenario is especially pertinent to direct purchasing farmers and indirect purchasing farmers who know they are using patented GM seed. The impracticability inquiry in this scenario is slightly different than the first two scenarios. Instead of asking whether it was reasonably possible to exclude the GM crops, the inquiry is a more speculative alternative universe inquiry. That is, had the farmer who intentionally used the patented GM seed actually used public domain seed, would it have been unreasonable for the farmer to attempt to exclude the GM crops? If so, the impracticability

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<sup>268</sup> *Monsanto Canada, Inc. v. Schmeiser*, [2003] 2 F.C. 165, at ¶ 49 (Fed. Ct.).

<sup>269</sup> D.S. Bullock, M. Desquilbet, E.I. Nitsi, *The Economics of Non-GMO Segregation And Identity Preservation*.

<sup>270</sup> Alison Peck, *The New Imperialism: Toward an Advocacy Strategy for GMO Accountability*, 21 *GEO. INT'L ENVTL. L. REV.* 37, 45 (2008).

<sup>271</sup> David Quist & Ignacio H. Chapela, *supra* note 63, at 541-42.

<sup>272</sup> *Id.*

<sup>273</sup> *Id.* at 542.

<sup>274</sup> Brief of Amici Curiae Farm and Ranch Freedom Alliance et al. in Support of Plaintiffs-Appellants in Support of Reversal at 10, *Organic Seed Growers and Trade Ass'n v. Monsanto Co.*, No. 2012-1298 (Fed. Cir. July 11, 2012).

element is satisfied even though alternatives were available and the farmer did not necessarily attempt to use them.<sup>275</sup>

### 3. Basic Need

The third element for establishing a de facto SEP defense is that the crop is commonly used in supplying a basic need. The rule that property rights – including patent rights – are inviolate pervades our law,<sup>276</sup> yet that rule begins to show cracks when it calls into question the supply of a basic need, including food, shelter or clothing.<sup>277</sup> To be sure, a particular farmer's GM crop could be used in the production of an unnecessary item. For example, cotton grown from GM seed could be used to make a Halloween costume. Halloween costumes are not a basic need, but under this test, judges would look at whether the crop, as a class, is commonly used in supplying a basic need. Because cotton is commonly used to manufacture shirts, pants, and socks, the production of cotton from GM seed would always satisfy the basic need element. Likewise, the most common GM crops, wheat, corn, and soybeans, would certainly fall within the basic need category.

Indeed, just nine of the world's plants – wheat, rice, maize, barley, sorghum/millet, potato, sweet potato/yam, sugarcane, and soybean – constitute approximately three-fourths of all plant-derived food consumed around the world.<sup>278</sup> This production is concentrated unevenly throughout the world, with India, the United States, the Russian Federation, China, and Brazil constituting 42.6 percent of the total cropland in service from 2008 – 2010 and the bottom 100 countries constituting only 1.05 percent combined.<sup>279</sup> The importance of these crops to feeding not only the U.S., but the world, is of the utmost importance.

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<sup>275</sup> A similar inquiry is made in trade secret litigation when the defendant misappropriated the plaintiff's information by improper means, but successfully defends by arguing that the information was not protected because it would have been readily ascertainable had the defendant opted for that route of discovering the information.

<sup>276</sup> See Shyamkrishna Balganesh, *Demystifying the Rights to Exclude: Property, Inviolability, and Automatic Injunctions*, 31 HARV. J.L. & PUB. POL'Y 593, 620-21 (2008).

<sup>277</sup> Daniel Benoliel, *Copyright Distributive Injustice*, 10 YALE J. L. & TECH. 45, 67 (Fall 2007-2008) (citing Shubha Ghosh, *The Fable of the Commons: Exclusivity and the Construction of Intellectual Property Markets*, 40 U.C. DAVIS L. REV. 855 (2007)).

<sup>278</sup> FOWLER & MOONEY, *supra* note 233, at 17.

<sup>279</sup> Philip G. Pardey, Julian M. Alston & Connie Chan Kang, *Agricultural Production, Productivity And R&D Over The Past Half Century: An Emerging New World Order* (Aug. 24, 2012), at 4 (unpublished paper presented at International Association of Agricultural Economists), available at <http://ageconsearch.umn.edu/bitstream/131824/2/PardeyEtAlFinal.pdf>.

The basic need element is important not only because of the importance of food, clothing, and shelter to survival, but also because it limits the applicability of this defense. As noted above, courts loathe compelling patent licenses and the de facto SEP defense should be narrowly construed so as to not upset this tradition.

### *C. Effects of De Facto SEP Status*

#### **1. De Facto SEP Leads to an Implied License**

An implied contract is one that “is inferred from conduct other than the speaking or writing of words.”<sup>280</sup> The proper measure of damages for breach of an implied contract is quantum meruit, the reasonable value of the services or materials provided.<sup>281</sup> Where a court finds that a patent has reached de facto SEP status, it is then possible for the court to find that the patent must be impliedly licensed to the infringing farmer. Judge Posner’s decision in *Apple, Inc. v. Motorola, Inc.* lends some support for this.<sup>282</sup> In this case, Motorola obtained SEP status for one of its patents from the Institute of Electrical and Electronics Engineers (IEEE).<sup>283</sup> IEEE is an SSO responsible for adopting standards for the electronics industry.<sup>284</sup> Motorola’s patent was essential to the (IEEE) 802.11 wireless local area network standard.<sup>285</sup> As part of IEEE’s policies, it required SEPs to be licensed to applicants on RAND terms.<sup>286</sup> Apple used the Motorola patent and Motorola filed suit for patent infringement.<sup>287</sup>

In addressing whether injunctive relief for Motorola would be appropriate, Judge Posner, determined that injunctive relief was improper given Motorola’s commitment to license its SEP on RAND terms.<sup>288</sup> Importantly, Judge Posner seemed to suggest that there was not yet an express contract between Motorola and Apple to license the patent on RAND terms, but rather the parties were engaged in preliminary

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<sup>280</sup> JOHN EDWARD MURRAY, JR., MURRAY ON CONTRACTS 40 (LexisNexis 5th ed. 2011).

<sup>281</sup> *Clayson v. Zebe*, 280 P.3d 731, 738 (Idaho 2012).

<sup>282</sup> *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901 (N.D. Ill. 2012).

<sup>283</sup> *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993, 995 (W.D. Wash. 2012).

<sup>284</sup> *Id.*

<sup>285</sup> *Id.*

<sup>286</sup> *Id.* at 996.

<sup>287</sup> *Apple*, 869 F. Supp. 2d 901.

<sup>288</sup> *Id.* at 913-14 (“I don’t see how, given FRAND, I would be justified in enjoining Apple from infringing the ‘898 unless Apple refuses to pay a royalty that meets the FRAND requirement.”).

negotiations to do so.<sup>289</sup> As a result, Motorola's obligation to license on RAND terms could very well be the result of an implied license.<sup>290</sup> Other scholars have suggested the same approach should be applied in similar circumstances.<sup>291</sup>

Of course, *Apple, Inc. v. Motorola, Inc.* involved a de jure SEP. However, the same principles apply in the case of a de facto SEP. Where patented technology reaches de facto SEP status and the patentee does not voluntarily make such technology available through an SSO on RAND terms, there is a basis for finding an implied license between the patentee and those who cannot produce a product without infringing the patent. In *New York v. Microsoft*, the district court found that Microsoft's application programming interfaces, communication protocols and related technology (collectively, Microsoft's IP) had become essential for any software developer that wanted its program to run on a computer using a Microsoft operating system, that is, most computers.<sup>292</sup> Phrased differently, because of Microsoft's dominance in the industry, Microsoft's IP had become de facto standards.<sup>293</sup> The court implied a license between Microsoft and the software developers on RAND terms.<sup>294</sup>

Of course, *New York v. Microsoft* was an antitrust action,<sup>295</sup> not a case where Microsoft was suing the software developers for patent infringement like we see in *Ralph*.<sup>296</sup> However, upon closer examination we see that the underlying dynamics are the same. The software developers could not produce their product – e.g., software – without infringing Microsoft's IP rights. Farmers cannot produce their product – e.g., soybeans – without infringing Monsanto's patent. In the first case, the court

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<sup>289</sup> *Id.* at 914 (“But Apple’s refusal to negotiate for a license (if it did refuse – the parties offer competing accounts, unnecessary for me to resolve, of why negotiations broke down) was not a defense to a claim by Motorola for a FRAND royalty.”). This language indicates that, at best, Motorola were engaged in preliminary negotiations rather than having formed a contract.

<sup>290</sup> *Apple, Inc. v. Motorola Mobility, Inc.*, 2012 WL 5416941, \*14 (W.D. Wis. Oct. 29, 2012) (“[I]t also could be that he believed . . . that Motorola’s commitments created an implied license that rendered moot any claim to injunctive relief.”).

<sup>291</sup> Lemley, *supra* note 206, at 1925; Lichtman, *supra* note 139, at 1043 (“Courts could just as well interpret RAND as creating an implied license, with the license rendering moot any claim to injunctive relief or triple damages, but leaving the court with the power to determine the royalty due.”).

<sup>292</sup> *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 89 n.11 (D.D.C. 2002), *aff’d*, in *relevant part*, 373 F.3d 1199 (D.C. Cir. 2004).

<sup>293</sup> *Id.*

<sup>294</sup> *Id.* at 177-78.

<sup>295</sup> *Id.*

<sup>296</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004).

implied a license to level the playing field;<sup>297</sup> in the second case, the court should imply a license to level the playing field.<sup>298</sup>

In Europe, required licensing of de facto SEPs is more established. For example, the European Commission indicates that when a protected technology becomes a de facto industry standard, “[t]he main concern will then be to ensure that these standards are as open as possible and applied in a clear non-discriminatory manner. To avoid elimination of competition in the relevant market(s), access to the standard must be possible for third parties on fair, reasonable and non-discriminatory terms.”<sup>299</sup>

Not only might refusing to license a de facto SEP on RAND terms constitute an abuse of a dominant position, but European authorities, like those in the United States, have ordered licensing on RAND terms as a remedy for such abuses.<sup>300</sup> For example, in *NDC Health v. IMS Health*, IMS Health held a copyright in a “brick structure” used for collecting data about pharmaceutical sales, which was, in turn, useful to pharmaceutical companies.<sup>301</sup> IMS Health refused to license its brick structure to two competitors and obtained injunctions against them.<sup>302</sup> One of the

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<sup>297</sup> Samuelson, *supra* note 225, at 1997-98; *see also* William H. Page & Seldon J. Childers, *Software Development as an Antitrust Remedy: Lessons from the Enforcement of the Microsoft Communications Protocol Licensing Requirement*, 14 MICH. TELECOMM. & TECH. L. REV. 77, 83 (2007) (“Other provisions of the final judgments that the court characterized as ‘forward-looking’ are even more tenuously linked to proven monopolistic conduct. Of these, the ‘most forward-looking’ and most problematic in terms of the principles of antitrust relief is the requirement that Microsoft “make available” its proprietary communications protocols that permit Windows servers to interoperate with Windows client computers. These technologies had almost nothing to do with the government’s case, and there was no holding that Microsoft had manipulated them for exclusionary purposes.”).

<sup>298</sup> Samuelson, *supra* note 225, at 1983-84 (“Some commentators and policymakers have called for a liability rule approach to patents on interfaces. This would allow unlicensed persons to implement patented interfaces to achieve interoperability as long as these persons offered reasonable compensation to the patentee. A liability rule approach can be implemented in a number of ways.”). *See also id.* at 1986 (“[Another] approach to interface patents was proposed during the debate over the proposed European directive on the patentability of computer-implemented innovations. The Foundation for Free Information Infrastructure (FFII) urged the European Parliament to adopt its proposal to require owners of patents on interfaces indispensable to achieving interoperability to license such patents on reasonable and nondiscriminatory (RAND) terms.”).

<sup>299</sup> Commission Notice, Guidelines on the Applicability of Article 81 of the EC Treaty to horizontal cooperation agreements, 2001 OJ (C 3), 2, 25 (discussing standards formed by a group of firms).

<sup>300</sup> Commission Decision 2001/165 EC, 2002 OJ (L 59) 18, 46-48.

<sup>301</sup> *Id.* at 20-22.

<sup>302</sup> Robert Pitofsky et al., *The Essential Facilities Doctrine Under United States Antitrust Law*, 70 ANTITRUST L.J. 443, 444 (2002).

competitors, NDC, made a complaint to the European Commission claiming that IMS Health's refusal to license the brick structure was an abuse of a dominant position.<sup>303</sup> After considering the evidence, the European Commission ordered IMS Health to grant access to the copyrighted brick structure on RAND terms.<sup>304</sup> As one commentator noted, "[a]fter a careful economic analysis of the German market, the Commission concluded that IMS' brick structure amounted to a *de facto standard essential* for operating in that relevant market. The conclusion was based on the fact that consumers (i.e., pharmaceutical firms) were essentially locked in to IMS' product and would not switch to any other supplier."<sup>305</sup>

## 2. A Return to Reasonable Royalties

As discussed in Part I.B, farmers who grow, replant, or sell GM seed find themselves subject to suit by Monsanto and face traditional patent infringement remedies based in tort.<sup>306</sup> Tort remedies are intended to "undo the harm"<sup>307</sup> or "make the plaintiff whole," but they are also intended to deter and punish.<sup>308</sup> The result is inflated damages.<sup>309</sup> As described earlier, one way courts justify inflating damages in the GM seed context is by finding that Monsanto may choose to "totally exclude others" – that is to say, refuse to negotiate.<sup>310</sup> This imbues disproportionate bargaining power on Monsanto, changing the hypothetical negotiation from one involving an arms-length negotiation between a willing buyer and willing seller, to a non-arms-length negotiation between a willing buyer and a recalcitrant seller. The result is that any upward limit on damages is removed, allowing

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<sup>303</sup> Case C-418/01, *IMS Health GmbH & Co. v. NDC Health GmbH & Co.*, 2004 E.C.R. I-5069, 5074

<sup>304</sup> Commission Decision 2001/165 EC, 2002 OJ (L 59) 18, 46-48; Robert Pitofsky et al., *supra* note 302, at 444.

<sup>305</sup> Emanuela Arezzo, *Intellectual Property Rights at the Crossroad Between Monopolization and Abuse of Dominant Position: American and European Approaches Compared*, 24 J. MARSHALL J. COMPUTER & INFO. L. 455, 489 (2006) (emphasis added).

<sup>306</sup> *See supra* Parts I.B. and II.

<sup>307</sup> Harry G. Prince, *Overprotecting the Consumer? Section 2-607(3)(A) Notice Of Breach In Nonprivity Contexts*, 66 N.C. L. REV. 107 (1987).

<sup>308</sup> RESTATEMENT (SECOND) OF TORTS § 901 (1965).

<sup>309</sup> *See supra* Part II.B.

<sup>310</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1384 (Fed. Cir. 2004) ("The hypothetical negotiation is often referred to as a 'willing licensor/willing licensee' negotiation. However, this is an inaccurate, and even absurd, characterization when, as here, the patentee does not wish to grant a license.").

the court to ignore the fact that “no sane farmer would ever negotiate a royalty in excess of his anticipated profits.”<sup>311</sup>

Establishing the patent as a de facto SEP may ameliorate the danger of inflated damages;<sup>312</sup> by declaring that Monsanto’s genetic modifications are de facto SEPs, the court can institute an implied license between Monsanto and the farmer. As such, the remedies model changes from one based in tort to one based in contract. Contract remedies are intended to put the plaintiff in the position it would have been in had the contract been performed, otherwise known as “benefit of the bargain damages” or “expectation damages.”<sup>313</sup>

Because there is no difference between an express license (called a technology agreement in the case of GM seed) and an implied license,<sup>314</sup> the benefit of the bargain to Monsanto is the “technology fee” it charges to other farmers when they purchase GM seed.<sup>315</sup> All that is required is that the technology fee be calculated for the number of acres in question. Take the example of soybean seed; the price per bag included a technology fee of \$5.<sup>316</sup> First, the court multiplies the “acreage by the planting density to obtain the total weight of soybean seed planted.”<sup>317</sup> The court then divides the total weight by 50 to calculate the number of bags used (*i.e.*, a 50 pound

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<sup>311</sup> *Id.*

<sup>312</sup> *Id.*

<sup>313</sup> “The license render[s] moot any claim to injunctive relief or triple damages, . . . leaving the court with the power to determine the royalty due.” Lichtman, *supra* note 139, at 1043; *see* Lemley, *supra* note 206, at 1925 (“The IP owner in that case has only a contractual claim for a royalty, not a not a cause of action for patent infringement that might result in treble damages or an injunction.”).

<sup>314</sup> “To the extent that the Declared-Essential Patents are essential to any ETSI standard and to the extent any of the alleged inventions described in and allegedly covered by the Declared-Essential Patents are used, manufactured, or sold by or for Apple, its suppliers, and/or its customers, Apple is licensed to the Declared-Essential Patents pursuant to Samsung’s commitments to license its Declared-Essential Patents on FRAND terms; or, in the alternative, Apple has the irrevocable right to be licensed on FRAND terms under those patents. In addition, to the extent that Apple is licensed, expressly, impliedly, or by operation of law, by virtue of any agreement between Samsung and an Apple supplier, Apple is licensed.” *Barnes & Noble, Inc. v. LSI Corporation*, 849 F. Supp. 2d 925, 944-45 (N.D. Cal. 2012) (quoting *Apple Inc. v. Samsung Electronics Co.*, No. 11-1846 LHK, Docket No. 124, at 25); *see McCoy v. Mitsubishi Cutlery, Inc.*, 67 F.3d 917, 920 (Fed. Cir. 1995) (explaining that express and implied contracts are subject to the same principles of contract law).

<sup>315</sup> Recall that when following a remedy model based in tort, courts reject the technology fee, because simply awarding the technology fee would not result in adequate deterrence. However, that objection disappears when the remedy model is based in contract.

<sup>316</sup> *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004).

<sup>317</sup> *Monsanto Co. v. David*, 516 F.3d 1009, 1018 n.5 (Fed. Cir. 2008).

bag equals one unit).<sup>318</sup> The number of bags is then multiplied by \$5. Returning to the case of *Monsanto Co. v. Ralph* discussed above, Ralph would pay a royalty for each bag of GM seed he harvested and replanted:  $(696+438) * \$5/\text{bag} = \$6,170$ .<sup>319</sup> Not \$199,918.<sup>320</sup>

In the SEP context, courts are much more willing to base their damage calculations with an established royalty.<sup>321</sup> In *Microsoft Corp. v. Motorola, Inc.*, the court refused to exclude the testimony of an expert witness who planned to testify that RAND terms could be based on an initial 2.25% established royalty rate.<sup>322</sup> This initial royalty rate was based on prior license agreements involving some or all of the standard essential patents.<sup>323</sup> The case for using an established royalty in Monsanto's GM seed litigation is even easier because the established rate is for the exact same product.

The law should not ignore the fact that even if Monsanto has not sought de jure SEP status, it has achieved de facto SEP status. Failing to recognize de facto SEP status for its patents allows Monsanto to avoid the restrictions faced by holders of de jure SEPs. It is well understood that SEP status means a patent holder will receive less royalty per use.<sup>324</sup> Firms accept this trade-off, considering "additional sales volume they are likely to achieve by having their technology incorporated into a standard."<sup>325</sup> Indeed, by avoiding SEP status for what is a de facto SEP, Monsanto is able to have its cake and eat it too. It has high sales that accompany an SEP without the trade-off of a lower royalty.

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<sup>318</sup> *Id.* at 1019.

<sup>319</sup> *Ralph*, 382 F.3d at 1379.

<sup>320</sup> *Id.* (limited to soybeans, but trebled for willful infringement).

<sup>321</sup> *Microsoft Corp. v. Motorola, Inc.*, 2012 WL 5248439, \*5-6 (W.D. Wash. Oct. 22, 2012).

<sup>322</sup> *Id.*

<sup>323</sup> *Id.* The court has not yet decided what the damages are for the breach of contract. However, the fact that the court is entertaining the possibility of using prior license agreements as a basis is more encouraging than the GM seed courts, which regularly refuse prior license agreements as a measure of damages for patent infringement. *See supra* Part II.A.

<sup>324</sup> Conferring SEP status on a patent actually can confer more market power. As such, the owners of SEP are generally limited to charging a license fee that is reasonable and nondiscriminatory (RAND). Thus, as Judge Posner stated in *Apple, Inc. v. Motorola, Inc.*, "[t]he proper method of computing a [RAND] royalty starts with what the cost to the licensee would have been of obtaining, just before the patented invention was declared essential to compliance with the industry standard, a license for the function performed by the patent." *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 913 (N.D. Ill. 2012).

<sup>325</sup> George S. Cary et al., *The Case for Antitrust Law to Police the Patent Holdup Problem in Standard Setting*, 77 ANTITRUST L.J. 913 (2011).

### 3. Inapplicability of Injunctions

Finally, following a contract model of remedies will negate the possibility of an injunction. “The traditional goal of the law of contract remedies has not been compulsion of the promisor to perform his promise but compensation of the promisee for the loss resulting from breach.”<sup>326</sup> Indeed, courts and commentators are in general agreement that a court cannot impose an injunction where a patent is an SEP.<sup>327</sup> Judge Posner stated in *Apple, Inc. v. Motorola, Inc.* that he would not “be justified in enjoining Apple from infringing [the patent at issue] unless Apple refuses to pay a royalty that meets the [RAND] requirement. By committing to license its patents on [RAND] terms, Motorola committed to license the [patent] to anyone willing to pay a [RAND] royalty and thus implicitly acknowledged that a royalty is adequate compensation for a license to use that patent.”<sup>328</sup>

Instead of granting injunctive relief for future infringement, the courts should award ongoing royalties. The Court of Appeals for the Federal Circuit recognized the ability to grant ongoing royalties in *Paice LLC v. Toyota Motor Corp.*<sup>329</sup> As Professor Mark Lemley argues, the ongoing royalty rate should be the reasonable royalty.<sup>330</sup> For GM seed infringement cases, once the court uses the established royalty (as opposed to inflated hypothetical negotiations) as the reasonable royalty, the court should also use the established royalty as the ongoing royalty rate for future infringement.

## IV. OVERCOMING HOSTILITY TO COMPULSORY LICENSING

Although court-compelled licensing is rare, especially where the technology is protected by exclusive rights, it is not entirely new. As discussed in Part III.C above, where technology is granted SEP status by an

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<sup>326</sup> RESTATEMENT (SECOND) OF CONTRACTS, Intro. Note to Ch. 16, at 100 (1981); *see also* E. Allan Farnsworth, *Legal Remedies for Breach of Contract*, 70 COLUM. L. REV. 1145, 1147 (1970) (“Our system, then, is not directed at compulsion of promisors to prevent breach; rather, it is aimed at relief to promisees to redress breach.”).

<sup>327</sup> *Microsoft Corp. v. Motorola, Inc.*, 696 F.3d 872, 877 (9th Cir. 2012).

<sup>328</sup> *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 914 (N.D. Ill. 2012).

<sup>329</sup> *Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1213-14 (Fed. Cir. 2007).

<sup>330</sup> Mark A. Lemley, *The Ongoing Confusion Over Ongoing Royalties*, 76 MO. L. REV. 695, 701-02 (2011) (“According to black-letter patent law, a reasonable royalty represents the rate a willing buyer and a willing seller would have agreed upon if they had known that the patent was valid and infringed. Conveniently, that determination is precisely what an ongoing royalty in lieu of an injunction is supposed to represent: what the parties would be willing to agree on now that they know the patent is valid and infringed.”).

SSO (a de jure SEP), or even by virtue of firm dominance (a de facto SEP), courts may imply a license. In the former, the court implied a license as to Motorola's proprietary cell phone technology.<sup>331</sup> In the latter, the court implied a license as to Microsoft's proprietary computer technology.<sup>332</sup>

Federal legislation evidences a willingness on the part of lawmakers to compel licenses when necessary to level the playing field between corporations and farmers. The Plant Variety Protection Act (PVPA)<sup>333</sup> was enacted in 1970 to deal with certain classes of plants.<sup>334</sup> It created sui generis rights analogous to patent rights in certain sexually reproduced plants.<sup>335</sup> The PVPA gives patent-like protection in the form of a certificate to new sexually reproducing plant varieties that are distinct, uniform, and stable.<sup>336</sup> A PVPA certificate holder is given the right to sue for infringement, which consists of, *inter alia*, selling or marketing the variety, sexually multiplying the variety as a step in marketing, using the variety in producing a hybrid, or dispensing the variety without notice that the variety is protected.<sup>337</sup>

Unlike utility patents, PVPA rights are subject to substantial limitations. The most important for our purposes is the statutory "saved seed" exemption. This exemption "allows farmers who grow protected varieties (obtained through authorized sources) to save the resulting seed for the production of a subsequent crop 'for use on the farm.'"<sup>338</sup> Importantly for our purposes, the PVPA creates a compulsory license scheme in which two-year compulsory licenses will be granted by the Agriculture Secretary at a reasonable royalty rate when "the Secretary determines that such declaration is necessary in order to insure an adequate supply of fiber, food, or feed in this country and that the owner is unwilling or unable to supply the public needs for the variety at a price which may reasonably be deemed fair."<sup>339</sup>

Likewise, more recently introduced legislation, the Seed Availability and Competition Act of 2013, would allow those who plant patented seed or

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<sup>331</sup> Microsoft Corp. v. Motorola, Inc., 854 F. Supp. 2d 993, 995 (W.D. Wash. 2012).

<sup>332</sup> New York v. Microsoft Corp., 224 F. Supp. 2d 76, 177-78 (D.D.C. 2002), *aff'd*, in *relevant part*, 373 F.3d 1199 (D.C. Cir. 2004).

<sup>333</sup> 7 U.S.C. §§ 2321-2583 (2012).

<sup>334</sup> J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc., 534 U.S. 124, 138 (2001).

<sup>335</sup> Mark D. Janis & Jay P. Kesan, *U.S. Plant Variety Protections: Sound and Fury . . . ?*, 39 HOUS. L. REV. 727, 731 (2002).

<sup>336</sup> 7 U.S.C. § 2402.

<sup>337</sup> *J.E.M. Ag Supply*, 534 U.S. at 139 (citing 7 U.S.C. § 2541(a)).

<sup>338</sup> Janis & Kesan, *supra* note 335, at 751-52; *see also* 7 U.S.C. § 2543 (permitting farmers to engage in "bona fide" sales of saved seed "for other than reproductive purposes.").

<sup>339</sup> 7 U.S.C. § 2404; *see also* Janis & Kesan, *supra* note 335, at 752.

seed derived from patented seed to retain and replant seed if the farmer notifies the Secretary of Agriculture and pays a fee to be established by the Secretary.<sup>340</sup> Under this proposed legislation, these fees would then be distributed to patentees.<sup>341</sup> Because compulsory licensing has previously been contemplated and implemented, the idea of compelling a license of GM seed through the de facto SEP framework we provide may be more digestible to courts and Congress.

Importantly, our proposal does not require Congressional action or new bureaucracy. Under the proposed framework, consistent with existing common law doctrine, a court can imply a license from Monsanto to farmer where: (1) the patent holder has achieved dominance in a given field; (2) it is impracticable to expect that a farmer could operate without infringing the patent; and (3) the farmer is growing a crop used to meet a basic human need.<sup>342</sup> That does not preclude the courts and Congress from acting concurrently; courts could use our proposed framework while they wait for Congress to pass the Seed Availability and Competition Act of 2013.<sup>343</sup>

## CONCLUSION

Whether Monsanto's lawsuits against farmers are reasonable is debatable. But when the courts inflate damage calculations and routinely grant injunctions in these cases, they remove the dispute from the realm of reasonableness and threaten the traditions of an age-old profession and those who have practiced them. Moreover, the overwhelming dominance of GM products in the production of food and clothing (human needs) sets them apart from other technological innovations.

As such, courts or Congress should be willing to deviate from their reluctance to compulsory licensing and embrace a more balanced system. Such a system would allow farmers to continue their traditions and professions, but also would permit and encourage companies like Monsanto to continue to develop technologies to enhance agricultural production. Recognizing a de facto SEP affirmative defense, in which the farmer proves (1) dominance in the field; (2) impracticability of operating without infringing; and (3) the crop is used to meet a basic human need, would result in an implied license to the farmer under RAND terms. This

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<sup>340</sup> Seed Availability and Competition Act of 2013, H.R. 193, 113th Cong. § 2 (2013).

<sup>341</sup> *Id.* Although it sounds promising, Representative Kaptur has introduced similar bills every year since 2004 and never received any activity by either committee it was referred to. Tony Dutra, *Kaptur Reintroduces Seed Replanting Bill But Supreme Court Decision Coming Soon*, BNA Patent, Trademark & Copyright Law Daily (Jan. 15, 2013).

<sup>342</sup> See *supra* Part III.B and III.C.

<sup>343</sup> Seed Availability and Competition Act of 2013, H.R. 193, 113th Cong. § 2.

approach forces the courts to reconceptualize the dispute as a traditional contract dispute rather than one based in tort, where inflated damages are the norm. As a result, a more appropriate balance between age-old traditions and innovation continues.