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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


Brent J. Horton

Fordham University Gabelli School of Business

Ryan G. Vacca

University of New Hampshire School of Law, ryan.vacca@law.unh.edu

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FOOD FOR THOUGHT: GENETICALLY MODIFIED SEEDS AS DE FACTO STANDARD-ESSENTIAL PATENTS

BENJAMIN M. COLE, BRENT J. HORTON, & RYAN VACCA*

For several years, courts have improperly calculated 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 human need, such as for use as food. 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.

* Benjamin M. Cole is an Assistant Professor of Management Systems at the Fordham University Gabelli School of Business. Brent J. Horton is an Assistant Professor of Law & Ethics at the Fordham University Gabelli School of Business. Ryan Vacca is an Associate Professor of Law at the University of Akron School of Law. The authors gratefully thank Sarah Cravens, Molly McBurney, Betsy Shaver, Tracy Thomas, and the attendees at the Wayne State School of Law works-in-progress presentation for their contributions; Fordham University Gabelli School of Business for grant assistance; and the editors at the *University of Colorado Law Review* for their excellent suggestions.

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INTRODUCTION

Kem L. Ralph owned a farm in western Tennessee growing cotton, soybeans, and corn.¹ In preparation for the 1998 planting season, he “purchased 264 fifty-pound bags of soybean seed containing [Monsanto's] Roundup Ready biotechnology.”²

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

2. *Id.*

“Roundup Ready” is shorthand for seed that is genetically modified (GM) to be resistant to Roundup herbicide.³ When Roundup is sprayed on crops, weeds are killed, but the GM plant survives.⁴

Monsanto⁵ patented the genetic modifications necessary to the production of “Roundup Ready” seed.⁶ More precisely, it patented “recombinant gene sequences that can be inserted into plant seeds to protect them against the effects of glyphosate-based herbicides.”⁷ When farmers purchase and plant the “Roundup Ready” seed, they are making use of the patent.⁸ As such, each time the farmers purchase bags they pay a “Technology Fee” for licenses that cost approximately \$5 per bag.⁹ But the licenses are narrow; they allow the farmers to use those particular bags of seed for one season only.¹⁰

However, the limited nature of the license contravenes an important facet of nature: that seed begets seed. A soybean plant with twenty-two pods can produce fifty-five seeds.¹¹ This has implications for farming tradition and practice.¹² 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.¹³ Ralph was no different.¹⁴ Ralph recovered

3. *Id.*

4. *Id.*

5. 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, Mar. 11, 2010, http://www.nytimes.com/2010/03/12/business/12seed.html?pagewanted=all&_r=0.

6. *Ralph*, 382 F.3d at 1377.

7. *Id.*

8. *See id.*

9. *Id.*

10. *Id.*

11. Each pod contains on average 2.5 seeds. CHAD LEE & JIM HERBEK, UNIVERSITY OF KENTUCKY, COLLEGE OF AGRICULTURE, ESTIMATING SOYBEAN YIELD 2 (2005), available at <http://www.ca.uky.edu/agc/pubs/agr/agr188/agr188.pdf>.

12. *See* Rick Weiss, *Seeds of Discord; Monsanto's Gene Police Raise Alarm On Farmers' Rights, Rural Tradition*, WASH. POST, Feb. 3, 1999, <http://www.artsci.wustl.edu/~anthro/articles/monsanto1.html> (describing farmers who follow the tradition of harvesting and replanting seeds as “seed savers”).

13. *See* 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).

14. *Ralph*, 382 F.3d at 1377.

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.¹⁵

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.¹⁶ The issue in the case was not whether Ralph had violated Monsanto's patent.¹⁷ It was clear that he had, when he admitted in court to destroying evidence in violation of a court order to not move his seeds or his crops, which were being investigated by Monsanto for the violation.¹⁸ The issue was how to measure damages.¹⁹ Ralph insisted that he should pay the established royalty for use of the seed.²⁰ He argued that the "standard Technology Fee that Monsanto charges all farmers is 'the most established royalty [that] patent infringement litigation has ever seen.'"²¹ And that as a result, 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., (796 + 438) multiplied by \$5/bag = \$6,170.²² The court rejected Ralph's argument, finding that his use of the patent was broader than what the Technology Fee would cover.²³ 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.²⁴

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.²⁵ Future farmers could infringe the patent and would pay the royalty fee only if the patent holder

15. *Id.* at 1377–78.

16. *Id.* at 1378.

17. *Id.*

18. 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. *Id.*; see also 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.

19. *Ralph*, 382 F.3d at 1383.

20. *Id.*

21. *Id.*

22. *Id.* at 1379.

23. *Id.* at 1382.

24. *Id.* at 1377–78.

25. See *id.* at 1380–81.

caught them.²⁶ Such reasoning ignores the court's ability to treble the reasonable royalty to \$18,510.²⁷ Nor does such reasoning consider the time and money required to defend such a suit.

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,"²⁸ and only as a last resort, when necessary to "secure investment and innovation."²⁹ Monsanto's detractors point out that those lawsuits that have been filed—together with the 700 investigations conducted by Monsanto—intimidate farmers, preventing them from carrying on the centuries-old tradition of saving seeds, even when those seeds were not patented.³⁰ The intimidation stems from the sheer cost of defending against such lawsuits, not to mention the possibility of large judgments against the farmer. Kem Ralph, for example, whose story is told above, was forced to declare bankruptcy in 2007 following his own battle with Monsanto.³¹ The Chapter 11 bankruptcy filing was a last ditch attempt to save Ralph's farm.³² 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

26. See Brian Love, *The Misuse of Reasonable Royalty Damages as a Patent Infringement Deterrent*, 74 MO. L. REV. 909, 924 (2009) (quoting *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996)).

27. 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*, No. 07-01422S, 2009 WL 4907014, at *11 (Bankr. N.D. Iowa Dec. 14, 2009).

28. *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 851 F. Supp. 2d 544, 549 (S.D.N.Y. 2012).

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

30. See Brief of Amici Curiae Farm & Ranch Freedom Alliance et al. in Support of Plaintiffs-Appellants in Support of Reversal at 12, *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, No. 2012-1298 (Fed. Cir. July 11, 2012) (arguing that the district court erred in dismissing the suit); 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").

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

32. *Id.*

want is justice to be served.”³³ The mere existence of such bankruptcy filings likely intimidates farmers.

When one considers that farmers are being forced into bankruptcy 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 Roundup Ready seed has turned the agricultural world on its head.³⁴

The potential consequences of being accused of patent infringement 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 \$199,918.³⁵ The total damages entered against Ralph reached \$2,937,527.07.³⁶ Farmers like Ralph are unique in their societal role as providers because they are fulfilling basic needs for little monetary reward.³⁷ As such, when they follow the time-honored tradition of saving seed, they should not face damages totaling thirty times their yearly net profits.³⁸ Compensation to Monsanto, not punishing the farmer, should be the goal.³⁹

33. *Id.*

34. Tempe Smith, Note, *Going to Seed?: Using Monsanto as a Case Study to Examine the Patent and Antitrust Implications of the Sale and Use of Genetically Modified Seeds*, 61 ALA. L. REV. 629, 630 (2010).

35. *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1379 (Fed. Cir. 2004).

36. *Id.*

37. The median household income for farms specializing in cash grains such as corn or soybeans in 2011 was only \$76,301. See 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), available at <http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=31715>.

38. See calculations *infra* Part II.B.

39. See discussion *infra* Part III.C.2.

The urgency of this issue—and the need for a paradigm shift—is illustrated by the recent United States Supreme Court decision in *Bowman v. Monsanto Co.*, which upheld a judgment in the amount of \$84,456 against a seventy-five-year-old farmer from Indiana.⁴⁰ Monsanto brought suit against Bowman after he purchased commodity seeds from a grain elevator, which he correctly assumed would contain seeds carrying the Roundup Ready trait.⁴¹ Bowman sprayed the resulting crop with Roundup and harvested seeds from the plants that survived for use during the next growing season.⁴² He continued this over many seasons, effectively eliminating the need to purchase Roundup Ready seeds from Monsanto in the future, by making his own.⁴³ Monsanto claimed that Bowman's actions constituted an infringing use of its invention.⁴⁴ The Supreme Court agreed with Monsanto, rejecting Bowman's argument that his purchase from a grain elevator had extinguished Monsanto's patent, stating:

[Were we to hold otherwise] other seed companies could reproduce the product and market it to growers, thus depriving Monsanto of its monopoly. And farmers themselves need only buy the seed once, whether from Monsanto, a competitor, or (as here) a grain elevator. The grower could multiply his initial purchase, and then multiply that new creation, *ad infinitum*—each time profiting from the patented seed without compensating its inventor. Bowman's late-season plantings offer a prime illustration. After buying beans for a single harvest, Bowman saved enough seed each year to reduce or eliminate the need for additional purchases.⁴⁵

Important for our purposes, while the Court did limit the holding to the "situation before [it],"⁴⁶ a literal reading of the decision would seem to apply to even a farmer who unwittingly

40. 133 S. Ct. 1761, 1766 (2013); David G. Savage, *Farmer Loses Seed Patent Case*, L.A. TIMES, May 14, 2013, at B1.

41. *Bowman*, 133 S. Ct. at 1765.

42. *Id.*

43. *Id.*

44. *Id.*

45. *Id.* at 1767.

46. *Id.* at 1769.

used seeds that contained Monsanto technology.⁴⁷

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),⁴⁸ 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.⁴⁹

Once the GM seed has been labeled a de facto SEP, courts can find an implied license between Monsanto and farmers.⁵⁰ 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.⁵¹ As a result of an implied license, courts can transform patent infringement, from a tort to a contract dispute.⁵² This new perspective would change the damages regime from one based in compensation, deterrence, and punishment to one based in

47. Timothy B. Lee, *Could the Monsanto Case Sow Future Patent Fights?*, WASH. POST, May 19, 2013, at G02. As Washington Post Reporter Timothy B. Lee perceptively observed:

It's a common-sense ruling, but it raises an interesting problem: How can a farmer who isn't interested in using Monsanto's soybeans avoid infringing? Bowman was trying to get Monsanto beans on the cheap, but other farmers might want generic soybeans. Monsanto's beans are so ubiquitous that even organic farmers who deliberately avoid planting Monsanto's beans can wind up growing beans with Monsanto's DNA due to cross-pollination. So is a farmer who accidentally buys and plants beans with Roundup Ready genes guilty of patent infringement? . . . Monsanto says it has no intention of going after farmers who use its beans by accident, so organic farmers don't need to worry in the short term. But the ruling creates the theoretical possibility of biotech "patent trolls" who sue farmers for accidentally planting infringing seeds.

Id.

48. See 2 HERBERT HOVENKAMP ET AL., IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLES APPLIED TO INTELLECTUAL PROPERTY § 35.1, at 35–37 (2d ed. 2009); see also Ramirez, *infra* note 251, at 4; see *infra* Part III.A., for an explanation of SEPs.

49. See *infra* Part III.B.

50. See *infra* Part III.C.1.

51. See *infra* Part III.C.1.

52. See *infra* Part III.C.2.

compensation only.⁵³ The balanced approach proposed here has the advantage of recognizing that Monsanto has a right to protect its patents and that its patents can be a force for good. GM seed can increase food production.⁵⁴ Some even see GM organisms as a solution to world hunger.⁵⁵ 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.”⁵⁶ Technological advancements in seeds have brought tremendous benefits to consumers around the world, but they have also brought tremendous risk to farmers through potential lawsuits stemming from alleged misuse of those technologies. Our approach of giving the courts the leeway to determine that a given patented seed technology has become the de facto standard in a particular market allows farmers to pursue their occupation without increasing the potential for bankruptcy, while at the same time allowing patent holders to receive financial compensation for unauthorized use of their patented technologies. 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)⁵⁷ or infringement should have an intent element.⁵⁸

Part I of this Article explains Monsanto’s GM seed patents

53. See *infra* Part III.C.2.

54. 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).

55. 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).

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

57. See, e.g., 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”); 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).

58. See, e.g., 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); see also 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).

and describes the types of farmers using these seeds and the activities they engage in that constitute patent infringement.⁵⁹ Part II explains the methods of calculating damages and describes how courts have routinely enjoined infringing farmers from further use of GM seed and subjected them to tort damages, which have been inflated for deterrent or punitive impact.⁶⁰ Part III argues that a more appropriate model exists for reconciling the competing interests of Monsanto and farmers.⁶¹ 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 should be limited to cases where the farmer is not competing with the patentee by knowingly selling GM crops or seed for others to replant, that is to say, actively competing with Monsanto.⁶² Finally, Part IV analogizes the proposal in this Article to the Plant Variety Protection Act to illustrate how the implied license scheme has support under existing law.⁶³

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. This section describes the patents currently involved in the GM seed litigation and then delineates the three types of farmers who may infringe these patents. Finally, it illustrates the actions these farmers may take that expose them to liability.

A. *Monsanto's Patents*

Monsanto "produces genetically modified and patent-protected seed in large-acre crops, including corn, cotton,

59. See *infra* Part I.

60. See *infra* Part II.

61. See *infra* Part III.

62. See *infra* Part III.

63. See *infra* Part IV.

soybeans, and canola.”⁶⁴ The seed genes are altered to increase plant yield and, most importantly, immunize them against Roundup, Monsanto’s herbicide.⁶⁵ Thus, these GM seeds are also called Roundup Ready.⁶⁶ United States’ patents largely protect these herbicide-resistant technologies.⁶⁷ 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.⁶⁸

B. *Infringing Farmers*

There are three types of farmers⁶⁹ that could face potential legal liability for infringing Monsanto’s patents. The potentially infringing activities are quite broad. Each category of farmer is discussed in turn below, together with the potentially infringing activity in which the farmers engage.

64. Ma, *supra* note 30, at 694.

65. *Id.* at 701.

66. *Monsanto Co. v. David*, 516 F.3d 1009, 1011 (Fed. Cir. 2008).

67. *See generally* U.S. Patent No. 5,633,435 (filed Sept. 13, 1994); U.S. Patent No. 5,352,605 (filed Oct. 28, 1993).

68. *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); 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.R. 902, 915–16 (Can.).

69. Farmers in the United States provide American consumers with more than 80 percent of the food consumed each year, and the agricultural industry represents one in twelve United States’ jobs. *See* U.S. Dep’t of Agric., *USDA Accomplishments 2009–2012: Agriculture* (2012), available at <http://www.usda.gov/documents/Results-Ag-Production.pdf>. Additionally, the agricultural industry occupies roughly one-fifth of the nation’s land (408 million acres) for crop production and an additional one-fourth of the nation’s land (613 million acres) for livestock grazing. *See Land Use Overview, Ag 101*, U.S. ENVTL. PROTECTION AGENCY (Apr. 9, 2013), <http://www.epa.gov/agriculture/ag101/landuse.html> (last visited Nov. 29, 2013).

1. Types of Farmers

The three types of farmers who could be liable for patent infringement are: (a) the drift farmer, (b) the direct-purchasing farmer, and (c) the indirect-purchasing farmer.

a. Drift Farmers

The first category—and most sympathetic of the infringers—is the drift farmer. Drift farmers find themselves using the patented genetic sequence and growing the patented plant when it drifts into their field through natural pollination processes (via wind, water, or animal movement⁷⁰), resulting in cross-pollination of GM varieties with non-GM varieties, or through the germination of GM seeds dropped in transit.⁷¹ Pollen from plants containing a GM sequence can be carried as far as thirteen miles by the wind⁷² and over three miles by bees.⁷³ Agricultural research has confirmed the presence of unintended gene flow into jealously guarded organic crop lines, related wild varieties, and even weeds.⁷⁴ 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-

70. Ma, *supra* note 30, at 703.

71. Stuart 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>.

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

73. KATIE EASTHAM & JEREMY SWEET, EUR. ENV'T AGENCY, GENETICALLY MODIFIED ORGANISMS (GMOs): THE SIGNIFICANCE OF GENE FLOW THROUGH POLLEN TRANSFER 16 (2002).

74. Norman C. Ellstrand et al., *Gene Flow and Introgression from Domesticated Plants into their Wild Relatives*, 30 ANN. REV. ECOLOGY & SYSTEMATICS 539, 544 (1999); 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, 542 (2001); 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 ECOLOGY 486, 488 (2008). See generally, NORMAN C. ELLSTRAND, DANGEROUS LIAISONS? WHEN CULTIVATED PLANTS MATE WITH THEIR WILD RELATIVES (2003).

herbicide resistant seeds to the area.⁷⁵ Even patent holders of such seed technology recognize the possibility of unintentional gene flow into other crops. In its 2001 Prospectus leading up to its initial public offering, for example, Monsanto 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 recent federal filings.⁷⁶ Still, given the court cases to date, farmers, not patent holders, bear the true risk of such gene flow.⁷⁷

b. Direct-Purchasing Farmers

The second category is the direct-purchasing farmer. Direct-purchasing farmers are those who purchase seed from an authorized seed company.⁷⁸ An authorized seed company is one that is licensed by Monsanto to incorporate the technology

75. Smyth et al., *supra* note 71, at 538.

76. Monsanto Company, *Prospectus* (Filing Date: 2000-10-19) 12 (2001); Monsanto Company, *10-K* (Filing Date 2012-10-19) 9 (2012); Monsanto Company, *10-K* (Filing Date: 2011-11-14) 11 (2011), available at <http://www.monsanto.com/investors/Pages/archived-annual-reports.aspx>.

77. For a case about inadvertent infringement that garnered worldwide attention, see *Monsanto Canada, Inc. v. Schmeiser*, [2004] 1 S.C.R. 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*, VANCOUVER SUN, May 22, 2004, at A.8. An investigator from Monsanto went to Schmeiser’s farm and confirmed that over 95 percent of Schmeiser’s canola crop was Roundup Ready. *Schmeiser*, 1 S.C.R. 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.

78. See, e.g., *Monsanto Co. v. McFarling*, 488 F.3d 973 (Fed. Cir. 2007); *Monsanto Co. v. Scruggs*, 459 F.3d 1328 (Fed. Cir. 2006); *Monsanto Co. v. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004).

into its germplasm (i.e., genetic material) and produce Roundup Ready seeds.⁷⁹ A condition of the license between Monsanto and the authorized seed company is that the latter is not permitted to sell GM seed to farmers unless the farmers also sign a license agreement.⁸⁰ That license agreement restricts what the farmers may do with the crops.⁸¹

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.⁸²

c. Indirect-Purchasing Farmers

The third category is the indirect-purchasing farmer, who purchases the GM seed, but not from an authorized seed company and does not sign a license agreement with Monsanto.⁸³ Instead, the indirect-purchasing farmer obtains the GM seed (and perhaps non-GM seed) from grain elevators as a commodity purchase.⁸⁴ A direct-purchasing farmer or a drift farmer may have supplied the grain elevator with the GM seed acquired by the indirect-purchasing farmer.⁸⁵

2. Potentially Infringing Activities

There are a number of ways in which these farmers can infringe such patents. The Patent Act declares that “whoever without authority makes, uses, offers to sell, or sells any

79. *Scruggs*, 459 F.3d at 1333.

80. *Id.*

81. *Id.*

82. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344–45 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013).

83. *See, e.g., Monsanto Co.*, 657 F.3d at 1344–45.

84. Seeds purchased as a commodity from a grain elevator are meant to be used as food. *See id.* at 1348.

85. *See, e.g., id.* at 1345–46.

patented invention . . . infringes the patent.”⁸⁶ 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.

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.⁸⁷ 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.⁸⁸ Importantly, patent infringement is a strict liability offense; no intent is required to infringe.⁸⁹ Thus, the fact that the drift farmers or indirect-purchasing farmers did not know they were using or making patented GM seed is of no consequence.⁹⁰

86. 35 U.S.C. § 271 (2012).

87. 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* Part I.B.1.b.

88. *Bowman v. Monsanto Co.*, 133 S. Ct. 1761, 1767 n.3 (2013) (it is not how the seed is acquired that matters, but the fact that the farmer uses the seed to make a replica).

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

90. 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) (2012). The Court of Appeals for the Federal Circuit avoided answering this question in *Monsanto Co.* because Monsanto had given actual notice to Bowman. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1349 (Fed. Cir. 2011). 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. INTEL. 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.”).

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, because Monsanto's seeds drift into, and pollute, the organic farmer's crop; it seems unfair that liability may be lurking around the corner for the organic farmer, who took no action to infringe a patent.⁹¹ This is particularly appalling in the case of organic farmers because having such seeds contaminate their crop directly harms their livelihood.⁹² Organic growers found to be using chemicals or genetically modified seeds would be stripped of their ability to label their crops as certified organic, thus losing a point of differentiation in the market and a substantial price premium.⁹³ Moreover, the discovery of such contamination would disqualify the land as fit for organic production for several years,⁹⁴ depending on the certification body's requirements.⁹⁵ Indeed, in almost any other context, where one "pollutes" the crops of another, it would be the

91. Scott Kilman & Jill Carroll, *Monsanto Admits Unapproved Seed May Be in Crops*, WALL ST. J., Apr. 15, 2002, at A3.

92. 7 C.F.R. § 205.202(b) (2012).

93. Jerry Dryer, *Getting Serious About Organics*, 107 DAIRY FOODS 38 (2006). Roughly half of Americans surveyed who buy organic milk are willing to pay a 40 percent premium for organic soymilk over non-organic soymilk, and a 30 percent premium for organic milk, which is produced from cows fed organic feed, over non-organic milk.

94. 7 C.F.R. § 205.202(b) (2012) (stating "[a]ny field or farm parcel from which harvested crops are intended to be sold, labeled, or represented as 'organic,' must: . . . (b) [h]ave had no prohibited substances, as listed in § 205.105, applied to it for a period of 3 years immediately preceding harvest of the crop").

95. See, e.g., Karen Klonsky & Kurt Richter, *Statistical Review of California's Organic Agriculture 2000-2005*, AGRIC. ISSUES CENTER, UNIV. OF CALIF., May 2007, at 2 ("The California Organic Products Act (COPA), signed into law in 2003, provides protection to producers, processors, handlers and consumers in that foods produced and marketed as organic must meet specific standards. As part of the regulatory process, COPA requires annual registration of all processors, growers and handlers of commodities labeled as organic. State registration is separate from, and does not act as a substitute for, organic certification. State law mandates registration administered by the California Department of Food and Agriculture (CDFA) while federal law mandates certification by a USDA accredited third-party organization."); National Organic Standards Board, *Principles of Organic Production and Handling*, NAT'L ORGANIC STANDARDS BOARD, adopted October 17, 2001, at 1.11 (stating "[g]enetic engineering (recombinant DNA technology) is a synthetic process designed to control nature at the molecular level, with the potential for unseen consequences. As such, it is not compatible with the principles of organic agriculture (either production or handling). Genetically engineered/modified organisms (GEO/GMOs) and products produced by or through the use of genetic engineering are prohibited.").

polluter that faces a lawsuit.⁹⁶

Whether such liability exists for inadvertent infringement is an open question in patent law.⁹⁷ 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.⁹⁸

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 & Trade Ass'n v. Monsanto Co.*,⁹⁹ 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.¹⁰⁰ The farmers fear

96. To opponents of GMO technology, this drift of GMO traits onto others' land and crop property has been characterized as "genetic pollution." Kilman & Carroll, *supra* note 91, at A3.

97. Chris Holman, Organic Seed Growers and Trade Association Et al. v. Monsanto: *The Public Patent Foundation Takes on Agricultural Biotechnology*, HOLMAN'S BIOTECH IP BLOG (June 1, 2011, 9:38 AM), http://holmansbiotechblog.blogspot.com/2011_06_01_archive.html ("To my knowledge, this issue has never been directly addressed by the courts.").

98. See *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1360–61 (Fed. Cir. 2005) (Gajarsa, J., concurring).

99. *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 851 F. Supp. 2d 544 (S.D.N.Y. 2012), *aff'd*, 718 F.3d 1350 (Fed. Cir. 2013).

100. *Id.* at 547–48.

that the inadvertent growth of GM plants could trigger liability.¹⁰¹ Although Monsanto declared that its policy is “not to exercise [its] patent rights over inadvertently acquired trace amounts of patented seed or traits,”¹⁰² Monsanto refused to respond to a request that it expressly waive any claim for patent infringement against the plaintiffs.¹⁰³ Unsatisfied and still fearful that they could be liable for infringement, the farmers filed suit.¹⁰⁴ The Federal Circuit recently affirmed the district court’s dismissal of the case because it failed to satisfy the case or controversy requirement.¹⁰⁵

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 subject of cases being brought by Monsanto.¹⁰⁶ In particular, Monsanto asserts that saving and replanting the GM seed infringes the patentee’s exclusive right to make and use the patented technology.¹⁰⁷

The drift farmer who grows the crop, saves some of the seed, and replants it during the next growing season is infringing patented technology. This is 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.¹⁰⁸ Schmeiser claimed that GM seeds from

101. *Id.* at 549.

102. *Id.*

103. *Id.* at 549–50.

104. *Id.* at 550.

105. *Organic Seed Growers & Trade Ass’n v. Monsanto Co.*, 718 F.3d 1350, 1361 (Fed. Cir. 2013).

106. *See, e.g.*, *Monsanto Co. v. Bowman*, 657 F.3d 1341 (Fed. Cir. 2011), *aff’d*, 133 S. Ct. 1761 (2013); *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. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004); *Monsanto Co. v. Hargrove*, No. 4:09-CV-1628 (CEJ), 2011 WL 5330674 (E.D. Mo. Nov. 7, 2011); *Monsanto Canada, Inc. v. Schmeiser*, [2004] 1 S.C.R. 902 (Can.).

107. *See* 35 U.S.C. § 271(a) (2012).

108. *Schmeiser*, [2004] 1 S.C.R. at 930, 937. For a full recitation of the facts in *Schmeiser*, *see supra* note 77.

neighboring farms drifted onto his farm.¹⁰⁹ He took advantage of the situation by harvesting the resulting GM plants, saving the seeds they produced, and using them in the next growing season.¹¹⁰ 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.¹¹¹ Nonetheless, because Schmeiser never purchased the seed or agreed to a restrictive license agreement,¹¹² he appears only to have taken advantage of naturally occurring processes or processes put in motion by others.¹¹³ Under this set of facts, he was involuntary thrust into a situation where his field was polluted with GM seed; it was how he reacted (actively cultivating the GM seed) that was problematic.¹¹⁴

The direct-purchasing farmer infringes the patent by saving and replanting GM seed. While 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.¹¹⁵ Thus, replanting the second-generation GM seed infringes the patentee's right to make and use the patented technology.¹¹⁶ An example of a direct-purchasing farmer who saved GM seed and replanted it is presented in the case of *Monsanto Co. v. McFarling*.¹¹⁷ McFarling purchased GM soybean seeds in 1998 and signed the license agreement.¹¹⁸ In violation of the agreement, McFarling saved seeds from the 1998 crop and

109. *Schmeiser*, [2004] 1 S.C.R. at 937.

110. *Id.* at 930, 937.

111. *Id.* at 933–34.

112. *Id.* at 912.

113. *Id.* at 933–34 (discussing defendant's position that the GM seed "may have been derived from Roundup Ready 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").

114. *Id.*

115. *See supra* text accompanying note 82.

116. *See, e.g.*, *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. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004); *Monsanto Co. v. Hargrove*, No. 4:09-CV-1628 (CEJ), 2011 WL 5330674 (E.D. Mo. Nov. 7, 2011); *see also* 35 U.S.C. § 271(a) (2012).

117. *McFarling*, 488 F.3d at 976.

118. *Id.*

replanted them in 1999.¹¹⁹ In 1999, he saved the GM seeds and replanted them in 2000.¹²⁰ Monsanto sued McFarling for infringing its patents, and the court granted Monsanto's motion for summary judgment as to liability.¹²¹

Bowman v. Monsanto, Co. exemplifies the indirect-purchasing farmer who infringes on patent-protected seed lines by saving and replanting GM seed without signing a new license agreement.¹²² Bowman purchased commodity seed from a grain elevator, "a mixture of undifferentiated seeds harvested from various sources," which may contain GM seed.¹²³ Bowman saved the seeds resulting from his commodity-based crops and replanted them in subsequent years.¹²⁴ As a result, Monsanto sued Bowman for patent infringement, and the court granted summary judgment and awarded Monsanto \$84,456.20.¹²⁵

Finding that the saving and replanting of seeds is patent infringement has an additional consequence—the law is threatening a basic component of post-nomadic agriculture.¹²⁶ 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.¹²⁷ The impulse to save seed is encoded in the farming community's collective memory.¹²⁸ 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."¹²⁹ Saving seed also provides farmers—and thus our food supply—with independence, by "ensur[ing] sufficient

119. *Id.*

120. *Id.*

121. *Id.* at 976–77.

122. *Monsanto Co. v. Bowman*, 657 F.3d 1341 (Fed. Cir. 2011), *aff'd*, 133 S. Ct. 1761 (2013); *see also supra* notes 40–47 and accompanying text.

123. *Bowman*, 657 F.3d at 1345–46. Mr. Bowman had previously been a direct-purchasing farmer, but complied with the terms of the license agreement. *Id.* at 1345.

124. *Id.* at 1345–46.

125. *Id.* at 1346.

126. *Ma, supra* note 30, at 694–95 (seed saving is "a longstanding agricultural technique whereby farmers procure and plant first-generation seeds, then save future-generation seed for successive replanting"); 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).

127. Oczek, *supra* note 126, at 647.

128. *Ma, supra* note 30, at 700.

129. Oczek, *supra* note 126, at 629.

growing materials for future seasons.”¹³⁰ Despite centuries of tradition of replanting seed, because GM seed replicates, this activity has become an expensive violation of the law.¹³¹ 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.”¹³² Greater than 1,000 seeds per acre will remain in any given farming field; these seeds will germinate naturally the following season.¹³³ When these residual seeds are GM strains, the resulting so-called “volunteer plants” must be controlled.¹³⁴ Mitigation through chemical treatment (an option unavailable to organic farmers) costs anywhere between \$1 to \$1.31 per acre for GM canola to \$4.07 per acre for GM wheat.¹³⁵

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.¹³⁶ There are two types of sales that may occur. First is selling the seed for planting purposes, often referred to as brown bag sales.¹³⁷ Second is selling the seed for other purposes, such as for food (e.g., kernels of corn consumed by animals or humans respectively).¹³⁸ Both types of sales may implicate the patentee’s exclusive right to sell or offer to sell the patented invention.¹³⁹ 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

130. *Ma*, *supra* note 30, at 701.

131. *See infra* notes 134–135 and accompanying text.

132. Smyth et al., *supra* note 71, at 538.

133. *Id.*

134. *Id.*

135. *See id.* (calculated using mitigation costs to Canadian farmers). Costs converted from Canadian dollars to U.S. dollars using average daily bid rate for June 2002 of CAD\$0.6571 from historical exchange rate data. *See* OANDA, www.oanda.com (Feb. 6, 2013).

136. *Monsanto Co. v. Scruggs*, 890 F. Supp. 2d 729, 733 (N.D. Miss. 2012).

137. *Id.* at 734 (discussing a \$6.3 million award for infringing brown bag sales); *Monsanto Co. v. Strickland*, 604 F. Supp. 2d 805, 811 n.1 (D.S.C. 2009) (“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.”).

138. *Monsanto Co. v. Bowman*, 657 F.3d 1341, 1344–45 (Fed. Cir. 2011), *aff’d*, 133 S. Ct. 1761 (2013).

139. 35 U.S.C. § 271(a) (2012).

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 license prohibits selling the GM seed to others for planting or saving it for planting beyond the current season.¹⁴⁰ As a result, the direct-purchasing farmer who sells GM seeds for use as food is participating in an authorized activity and, thus, is not infringing the license.¹⁴¹

In sum, the widespread use of GM technology in United States' 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.¹⁴² In patent cases filed by Monsanto, courts have found a substantial number of defendants liable for infringement and have forced them to pay extraordinary damages.¹⁴³

II. EXAGGERATED REMEDIES FOR PATENT INFRINGEMENT

Breach of contract damages are meant to compensate non-breaching parties by giving them the benefit of their bargain and nothing more.¹⁴⁴ Contract damages are focused on the particular individuals who are parties to a contract, and damages are consequently limited in scope.¹⁴⁵ Courts are not supposed to award contract damages "to punish the party in breach or to serve as an example to others . . ."¹⁴⁶ As a result,

140. *Bowman*, 657 F.3d at 1344-45.

141. *Id.* at 1345.

142. *Id.* at 1344-45.

143. *See infra* Part II.

144. *Adams v. Lindblad Travel, Inc.*, 730 F.2d 89, 92 (2d Cir. 1984) (stating that 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 fulfilled his contract."). *See also* 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. . . .").

145. 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).

146. RESTATEMENT (SECOND) OF CONTRACTS § 355 cmt. a (1979).

windfalls are prohibited,¹⁴⁷ and punitive damages are generally not recoverable.¹⁴⁸ Compare tort damages, which seek to fully compensate the injured party for the injury received¹⁴⁹ but also have a societal dimension.¹⁵⁰ In particular, tort damages serve the purposes of compensating the injured party, punishing wrongdoers, and deterring wrongful conduct.¹⁵¹

Patent infringement is generally thought of as a tort.¹⁵² The remedies for infringement are tort-like in that they provide for “damages adequate to compensate for the infringement. . . .”¹⁵³ 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.”¹⁵⁴

Yet the Patent Act’s provisions on remedies also contemplate contractual damages.¹⁵⁵ 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.”¹⁵⁶ Thus, even in the absence of actual harm to the patentee,¹⁵⁷ the patentee may still recover a reasonable royalty that tries to replicate a license agreement and fee between the patentee and infringer.¹⁵⁸ The reasonable

147. *Paul v. Deloitte & Touche, LLP*, 974 A.2d 140, 146 (Del. 2009).

148. RESTATEMENT (SECOND) OF CONTRACTS § 355 cmt. a (1979).

149. *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1579 (Fed. Cir. 1992) (measuring tort damages by asking, “[H]ad the tortfeasor not committed the wrong, what would have been the financial position of the person wronged?”).

150. *Erie Ins. Exch. v. Abbott Furnace Co.*, 972 A.2d 1232, 1238 (Pa. Super. Ct. 2009) (citing *Reardon v. Allegheny Coll.*, 926 A.2d 477, 486–87 (Pa. Super. Ct. 2007)); *Ilkhchooyi v. Best*, 37 Cal. App. 4th 395, 412 (1995) (“Tort damages are designed to vindicate social policy and to compensate the victim for injury suffered. . . .”).

151. RESTATEMENT (SECOND) OF TORTS § 901 (1979).

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

153. 35 U.S.C. § 284 (2012).

154. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995) (citing *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 654 (1983)).

155. See 35 U.S.C. § 284 (2012).

156. *Id.*

157. For example, the patentee may not actually manufacture the patented product. In such a case, there are no lost sales from the infringement.

158. See *Love*, *supra* note 26, at 913.

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.¹⁵⁹

As discussed below, courts in GM seed cases have rejected the established royalty measure and instead follow the hypothetical negotiation measure.¹⁶⁰ But in doing so, they have tried to fully compensate the patentee under a tort paradigm, which allows for deterrence and punishment.¹⁶¹ This leads to exaggerated damages¹⁶² and, because the infringing farmer is perceived as engaging in a tort, often injunctive relief.¹⁶³

This Part will first describe how courts have consistently rejected the established royalty method of calculating reasonable royalties.¹⁶⁴ Next, it will discuss how courts calculating reasonable royalties under the hypothetical negotiation method have erroneously inflated these royalty amounts.¹⁶⁵ Finally, it will illustrate how courts have compounded the damage calculation problem by enjoining farmers from future infringement.¹⁶⁶

159. *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling, USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012).

160. See *infra* Parts II.A. and II.B.

161. *Id.*

162. See Love, *supra* note 26, at 916; 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.* at 1035. “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.* 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* than to wait and face an award of exaggerated damages, and (3) it compensates the patent holder for the time and effort of proving that the patent is valid and has been infringed. *Id.* at 1036–39.

163. 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. . .”).

164. See *infra* Part II.A.

165. See *infra* Part II.B.

166. See *infra* Part II.C.

A. *Rejecting Established Royalties*

A reasonable royalty can be based on an established royalty.¹⁶⁷ An established royalty is what others actually pay for the right to use the patent.¹⁶⁸ It is a proper measure “[w]hen the patentee has consistently licensed others to engage in conduct comparable to the defendant’s at a uniform royalty, that royalty is taken as established and indicates the terms upon which the patentee would have licensed the defendant’s use of the invention.”¹⁶⁹ 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.¹⁷⁰ In the GM seed context, farmers have argued that the Technology Fee is the established royalty.¹⁷¹ The Technology Fee is the portion of the invoiced price equivalent to licensing the GM seed in that bag for the present growing season.¹⁷² In the late 1990s and into 2000, the Technology Fee was approximately \$5.00 or \$6.50 per bag of soybean seed.¹⁷³ In 2003, it was \$7.75 per bag.¹⁷⁴

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.¹⁷⁵ 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.¹⁷⁶ The

167. *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling, USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012).

168. *See Monsanto Co. v. McFarling*, 488 F.3d 973, 978–79 (Fed. Cir. 2007); *Nickson Indus., Inc. v. Rol Mfg. Co.*, 847 F.2d 795, 798 (Fed. Cir. 1988).

169. *McFarling*, 488 F.3d at 979.

170. *See id.* at 981.

171. *See id.* at 978, 979.

172. *Monsanto Co. v. McFarling*, 363 F.3d 1336, 1339 (Fed. Cir. 2002).

173. *See 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).

174. *See 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. *Schoenbaum v. Monsanto Co.*, 517 F. Supp. 2d 1125, 1131 n.4 (2007).

175. *See, e.g., David*, 516 F.3d at 1018 (noting that “the [T]echnology [F]ee is not an established royalty for the infringing act of saving seed”).

176. *Ralph*, 382 F.3d at 1383.

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.¹⁷⁷ 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.¹⁷⁸

Monsanto Co. v. Ralph provides an example of a court rejecting the Technology Fee as an established royalty.¹⁷⁹ Recall that “[i]n 1988, Ralph purchased 264 fifty-pound bags of soybean seed containing the patented Roundup Ready biotechnology.”¹⁸⁰ Ralph infringed Monsanto’s patent by saving seed for use during the next planting season and Monsanto sued Ralph for patent infringement.¹⁸¹ The court rejected Ralph’s argument that the “standard Technology Fee that Monsanto charges all farmers is ‘the most established royalty [that] patent infringement litigation has ever seen,’”¹⁸² 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., $696 + 438$) multiplied by \$5/bag = \$6,170).¹⁸³ The court found that Ralph’s use of the patent was broader than what the Technology Fee would cover.¹⁸⁴ 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.¹⁸⁵ Future farmers could infringe the patent and would pay the royalty fee

177. *See id.* at 1381. 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., $70 \times 70 \times 70 = 343,000$) over the course of just three growing seasons.” *Id.* Each soybean plant is capable of producing 55 seeds, because each plant produces on average 22 pods, and each pod produces 2.5 seeds. *See* LEE & HERBEK, *supra* note 11, at 2.

178. *See Ralph*, 382 F.3d at 1383 (rejecting Ralph’s argument that the “standard [T]echnology [F]ee that Monsanto charges all farmers is ‘the most established royalty patent infringement litigation has ever seen,’” and agreeing with Monsanto that Ralph’s “infringing use extended well beyond the licensed planting of a commercial crop for a single growing season.”).

179. *See id.* at 1377.

180. *Id.*

181. *Id.* at 1377–78.

182. *Id.* at 1383.

183. *See id.* at 1379.

184. *See id.* at 1379, 1384.

185. *Id.*

only if they got caught.¹⁸⁶

Such reasoning ignores the other incentives farmers have to act lawfully and pay the Technology Fee.¹⁸⁷ First, this reasoning overlooks the Patent Act's expressly designed tool to discourage blatant infringement—the ability to award treble damages for willful infringement.¹⁸⁸ A farmer who decides to deliberately use the GM seed without paying the Technology Fee “would almost certainly qualify as a willful infringer and face up to treble damages. . . .”¹⁸⁹ In *Ralph*, a reasonable royalty of \$6,170 would have been trebled to \$18,510 for deterrent and punishment effect.¹⁹⁰

Second, farmers will want to avoid a preliminary injunction, which would prevent them from growing and selling the infringing crops.¹⁹¹ Taking the risk that one's farm will be temporarily shut down “may, in many cases, be the most powerful infringement deterrent of all.”¹⁹²

Third, farmers will want to avoid the cost of patent infringement litigation.¹⁹³ 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.”¹⁹⁴ Willful infringement is one factor courts consider in determining whether a case is exceptional.¹⁹⁵ Patent litigation is notoriously expensive,¹⁹⁶ which likely provides a strong incentive to avoid

186. Love, *supra* note 26, at 919 (quoting *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1109 (Fed. Cir. 1996)).

187. *See id.* at 924.

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

189. Love, *supra* note 26, at 926.

190. *See Ralph*, 382 F.3d at 1379; 35 U.S.C. § 284 (2012). 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*, No. 07-01422S, 2009 WL 4907014, at *11 (Bankr. N.D. Iowa Dec. 14, 2009).

191. Love, *supra* note 26, 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 in showing the Department of Agriculture violated the National Environmental Policy Act); *Ctr. for Food Safety v. Vilsack*, 636 F.3d 1166 (9th Cir. 2011).

192. Love, *supra* note 26, at 927.

193. *See id.* at 928.

194. *Id.* at 927; 35 U.S.C. § 285 (2012).

195. *See Amsted Indus., Inc. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 184 (Fed. Cir. 1994).

196. *See, e.g., Love, supra* note 26, at 928 (citing AM. INTELL. PROP. LAW ASS'N, REPORT OF ECONOMIC SURVEY 2007, at 25–26).

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.”¹⁹⁷ 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.¹⁹⁸ In the GM seed context, to estimate what the farmer would have been willing to pay, courts focus on the farmer’s estimated economic benefits enjoyed.¹⁹⁹ This

197. *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling, USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012); *see also* *i4i Ltd. P’ship v. Microsoft Corp.*, 598 F.3d 831, 853 n.3 (Fed. Cir. 2010), *aff’d*, 131 S. Ct. 2238 (2011) (citing *Georgia-Pac. Corp. v. U.S. Plywood-Champion Papers, Inc.*, 446 F.2d 295, 297 (2d Cir. 1971)).

198. *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1383 (Fed. Cir. 2004) (stating “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 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. *Ga. Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).

199. *Monsanto Co. v. McFarling*, 488 F.3d 973, 980 (Fed. Cir. 2007) (affirming \$40 royalty per bag of seed where farmer “sav[ed] \$31 to \$61 per bag of seed”); *Monsanto Co. v. Hargrove*, No. 4:09-CV-1628 (CEJ), 2011 WL 5330674, at *3 (E.D. Mo. Nov. 7, 2011) (awarding a royalty based “on the estimated economic benefits enjoyed by defendants. . .”); *see Love, supra* note 26, at 916–18 (discussing how the court in *McFarling* based damages on what “the defendant has gained or lost

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. Awarding a reasonable royalty for patent infringement, measured by an established royalty or a hypothetical negotiation, is grounded in a contract-based approach to damages.²⁰⁰ As such, deterrence should not be a goal.²⁰¹ One court—despite a lack of evidence supporting this allegation—opined that the farmer may effectively go into business against Monsanto:

Because one Roundup Ready® 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® 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® soybean competitor to Monsanto in such a short time period.²⁰²

To deter such hypothetical competition, the court found that an inflated reasonable royalty would be appropriate.²⁰³

by his unlawful acts”).

200. See 35 U.S.C. § 284 (2012); *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling, USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012).

201. See *supra* note 161 and accompanying text.

202. *Monsanto Co. v. Byrd*, No.7:99-CV-154-F1, 2000 WL 33952260, at *6 (E.D.N.C. Dec. 11, 2000) (quoting *Daesch Aff.*, Oct. 4, 2000). If Monsanto priced its seed based upon the assumption that each licensee would be a potential competitor, the price would be prohibitively expensive.

203. *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, 1109 (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 26, at 919 (discussing *Maxwell*, 86 F.3d at 1109). On appeal, the Federal Circuit held that it was:

[N]ot an abuse of discretion for the district court to instruct the jury to

However, the need to deter the farmer's competition with Monsanto seems less critical, when one considers that Monsanto is a company with assets in excess of \$20 billion.²⁰⁴ Realistically, the farmer has no hope of competing in the capital-intensive world of GM seed production.

Further, the fact that the courts are incorporating deterrence into their award of damages can be clearly inferred from the damage amounts.²⁰⁵ Indeed, they are "nudging the reasonable royalty formulation further and further away from the traditional willing licensor-willing licensee negotiation."²⁰⁶

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 arm's-length negotiation. The courts find that Monsanto can refuse to negotiate and thus abandon the essential assumption of a willing licensor-willing licensee.²⁰⁷ By rejecting the assumption of a willing licensor-willing licensee the court can abandon economic reality²⁰⁸ 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 punish—courts can award treble damages for willful

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.* (quoting *Maxwell*, 86 F.3d at 1110).

204. Monsanto Co., Annual Report (Form 10-K), at 18 (Oct. 19, 2012).

205. See *infra* notes 213–219 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® seed technology and the importance of Monsanto protecting its patent rights.”).

206. Love, *supra* note 26, at 920.

207. *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1384 (Fed. Cir. 2004) (quoting *Rite-Hite Corp. v. Kelly Co.*, 56 F.3d 1538, 1554 n. 13 (Fed. Cir. 1995), “[t]he 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.”).

208. 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”)).

infringement²⁰⁹ and attorneys' fees in "exceptional cases."²¹⁰ 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."²¹¹ Again, *Monsanto Co. v. Ralph* is illustrative. Once the court decided not to 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."²¹² The damages for infringing the soybean patent were \$66,639 and subsequently trebled to \$199,918.²¹³ 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.²¹⁴ Other courts have moved even higher.²¹⁵ Indeed, this type of inflated damage is repeated in case after case, leading to judgments against farmers in the amount of \$3,052,800;²¹⁶ \$2,586,325;²¹⁷ \$2,410,206;²¹⁸ and \$1,105,102.50.²¹⁹

209. 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).

210. 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.").

211. *Ralph*, 382 F.3d at 1384.

212. *Id.* at 1379.

213. *Id.*

214. *Id.*; see *supra* Part II.A., for the reasoning behind treble damages.

215. *Monsanto Co. v. Strickland*, 604 F. Supp. 2d 805, 815–18 (D.S.C. 2009) (awarding \$100 per bag of soybean seed plus enhanced damages).

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

217. *Id.* (citing *Monsanto Co. v. Dawson*, No. 98-CV-2004 (E.D. Mo. Dec. 19, 2001)).

218. *Id.* (citing *Monsanto Co. v. Ralph*, No. 02-MC-26, 2003 WL 25276984 (E.D. Mo. July 9, 2003), *aff'd in part, rev'd in part*, 382 F.3d 1374 (Fed. Cir. 2004)).

219. *Monsanto Co. v. Hargrove*, No. 4:09-CV-1628 (CEJ), 2011 WL 5330674, at *4 (E.D. Mo. Nov. 7, 2011).

As a reference, in 2011, the median household income for farms specializing in cash grains such as corn or soybeans was a mere \$76,301.²²⁰ In 2010, seed costs for these two grains as a percent of gross crop-derived income per acre amounted to 11 percent—12 percent for conventional seeds and 22 percent—23 percent for branded GM seeds.²²¹ When examined in terms of net returns per acre, the percentage grew to 18 percent—24 percent for conventional seeds and 35 percent—51 percent for branded GM seeds.²²² This means that a simple trebling of these costs by the court for branded GM seeds would amount to 105 percent—153 percent 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),²²³ Monsanto often seeks an injunction against the future activity that the reasonable royalty is intended to cover. As one defendant argued:

The absurdity of the Plaintiff's position is [clear when one

220. 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/data-products/chart-gallery/detail.aspx?chartId=31715>.

221. CHARLES BENBROOK, THE ORGANIC CENTER, *THE MAGNITUDE AND IMPACTS OF THE BIOTECH AND ORGANIC SEED PRICE PREMIUM 6* (2009), available at <http://kohalacenter.org/publicseedinitiative/images/seedpricepremium.pdf>.

222. *Id.*

223. Even a single bag of the soybean seed improperly acquired could produce hundreds of thousands of seeds over just three growing seasons. See *supra* note 177 and accompanying text.

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].²²⁴

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.²²⁵ In addition to these inflated damages, Monsanto also sought injunctive relief.²²⁶ 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."²²⁷ This practice is repeated across cases.²²⁸

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."²²⁹ 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."²³⁰ If monetary

224. *Monsanto Co. v. Byrd*, No. 7:99-CV-154-F1, 2000 WL 33952260, at *6 (E.D.N.C. Dec. 11, 2000).

225. *Id.* at *7.

226. *Id.* at *2.

227. *Id.* at *7.

228. *See, e.g., Monsanto Co. v. Hargrove*, No. 4:09-CV-1628 (CEJ), 2011 WL 5330674, at *4, *6 (E.D. Mo. Nov. 7, 2011) (awarding exaggerated damages and an injunction); *Monsanto Co. v. McFarling*, No. 4:00CV84 CDP, (E.D. Mo. June 23, 2005) (awarding an inflated reasonable royalty of \$40 per bag and granting a permanent injunction), *aff'd*, 488 F.3d 973 (Fed. Cir. 2007).

229. *Winston Research Corp. v. Minn. Mining and Mfg. Co.*, 350 F.2d 134, 144 (9th Cir. 1965).

230. *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). The four-part test is that the:

- (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

damages, in the form of inflated reasonable royalties, are being awarded to Monsanto, then these damages are necessarily adequate to compensate for the injury.²³¹

In addition to the relief being duplicative and failing to satisfy the four-part test for injunctive relief, there is the human dimension of the hardship visited upon farmers by preliminary and permanent injunctions. Farmers will generally be subject to a preliminary injunction, which effectively prevents them from farming during the pendency of the action.²³² And even if farmers pay damages for past wrongs and are willing to enter into license agreements for future planting seasons, Monsanto may not allow the farmers to do so.

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.”²³³ In short, McFarling was prevented from earning a living during the pendency and after the conclusion of the case and faces a judgment of \$375,000.²³⁴

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. In *Ralph*, while the typical farmer paid a royalty of \$5.00 per bag, Monsanto was awarded damages of \$55.04 per bag, tripled to \$165.12 per bag.²³⁵ The possibility of injunctive relief

disserved by a permanent injunction.

Id.

231. 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).

232. *Monsanto Co. v. McFarling*, 302 F.3d 1291, 1293 (Fed. Cir. 2002).

233. *Monsanto Co. v. McFarling*, 488 F.3d 973, 982 (Fed. Cir. 2007); see also *Monsanto Co. v. Ralph*, 382 F.3d 1374 (Fed. Cir. 2004) (“[T]he 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.”).

234. *McFarling*, 488 F.3d 973.

235. *Ralph*, 382 F.3d at 1379.

compounds this problem by removing the farmer's ability to make a living.²³⁶ A solution to this problem is necessary. The legal playing field between Monsanto and farmers needs to be leveled. Drawing from the law regarding standard setting organizations (SSOs) and the practices of those involved in SSOs, we propose to level the playing field with the help of an implied license. An implied license will shift the paradigm from one based in tort to one based in contract. Punishing the farmer will give way to the more laudable goal of compensating Monsanto.

III. IMPLIED LICENSES VIA DE FACTO STANDARD-ESSENTIAL PATENTS

This Part proposes a way for a court to deal with a case involving a patentee seeking redress for unlicensed use of GM seed technology. The court should first determine whether the patent covering the GM seed technology meets the criteria to be classified as a de facto standard-essential patent (de facto SEP). If the patent can be classified as a de facto SEP, this provides a basis for implying a license between the patentee and the infringing farmer.²³⁷ The result will be that the infringing farmer will pay a reasonable, rather than inflated, royalty rate.²³⁸ By de facto SEP, we mean that certain stringent conditions have been met that make infringing use of the underlying technology all but impossible to avoid.²³⁹ 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 other producers to build on the patented technologies by paying a licensing fee.²⁴⁰ While SEP designation traditionally takes place through formal standard-setting bodies, this Article argues that de facto SEP can be determined by the court by analyzing whether three stringent criteria, which reflect the peculiarities of seeds used in

236. See *supra* notes 128–134 and accompanying text.

237. For a detailed discussion of the three elements required to find a de facto SEP, see *infra* Part III.B. For a discussion of how this will result in an implied license, see *infra* Part III.C.1.

238. See *infra* Parts III.C.1., III.C.2.

239. See *infra* Part III.B.

240. See Richard J. Gilbert, *Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations*, 77 ANTITRUST L.J. 855, 855–56 (2011).

farming, have been satisfied.²⁴¹ 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.²⁴² 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).²⁴³

This Part first defines standards and SEPs. It also describes SSOs and how they permit industry standards to flourish.²⁴⁴ Next, the notions of SEPs are applied and extended to the GM seed context and a three-part test for labeling GM seeds as SEPs is set forth.²⁴⁵ Finally, this Part describes how conceptualizing GM seeds as SEPs can yield an implied license between Monsanto and farmers, which will lead to reasonable, rather than inflated, royalty rates and avoid the need to enjoin farmers.²⁴⁶

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.”²⁴⁷ Standards serve useful purposes because they encourage interoperability, facilitate competition in replacement parts, and even promote social welfare.²⁴⁸

Standardization may arise in a number of ways.²⁴⁹ One way is through SSOs.²⁵⁰ 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,

241. See *infra* Part III.B.

242. See *infra* Part III.C.1.

243. See *infra* Part III.C.2.

244. See *infra* Part III.A.

245. See *infra* Part III.B.

246. See *infra* Part III.C.

247. Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1896 (2002).

248. *Id.* at 1897.

249. *Id.* at 1898.

250. *Id.*

predictable ways.”²⁵¹ Standards that are formed through SSOs often entail bringing together multiple patented technologies owned by different patentees under one standard.²⁵² But standards may also be formed around the technology of only one specific patentee.²⁵³ As an example:

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.²⁵⁴

The potential impact of a technology becoming a standard improves both revenue generation and technological impact for the intellectual property (IP) holder.²⁵⁵ This positive impact explains why firms will exert substantial effort on standards-development activity.²⁵⁶ 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

251. *Oversight of the Impact on Competition of Exclusion Orders to Enforce Standard-Essential Patents: Prepared Statement of the F.T.C. Before the S. Comm. on the Judiciary*, 112th Cong. 4 (2012) (statement of Edith Ramirez, Comm’r of the F.T.C.) [hereinafter Ramirez Statement].

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

253. Timothy Simcoe, *Standard Setting Committees: Consensus Governance for Shared Technology Platforms*, 102 AMER. ECON. REV. 305 (2012), available at http://people.bu.edu/tsimcoe/documents/published/SSOCommittees_v3.pdf; Joseph Farrell & Timothy Simcoe, *Choosing the Rules for Consensus Standardization*, 43 RAND J. OF ECON. 235 (2012), available at <http://people.bu.edu/tsimcoe/documents/published/ConsensusRules.pdf>.

254. 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).

255. Leiponen, *supra* note 252, at 1904 (noting that “[c]ompanies that were able to incorporate their patents in one of these standards may have been receiving royalty revenue for more than 15 years”); Marc Rysman & Timothy Simcoe, *Patents and the Performance of Voluntary Standard-Setting Organizations*, 54 MGMT. SCI. 1920, 1921 (2008) (finding that technologies garner a 19 percent and 47 percent increase in patent citations as a result of SSO endorsement).

256. “In 2005 IBM spent an estimated \$500 million—roughly 8.5% of its R&D budget—on standards development.” Rysman & Simcoe, *supra* note 255, 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)).

adhere to the industry standard are less likely to be adopted by consumers and may be viewed as suspect.²⁵⁷ Thus, one could argue that a broad definition of an SEP is a patent necessary to use the standard or a part thereof.²⁵⁸ SEPs as denominated by SSOs are known as de jure standards.²⁵⁹

Before SSOs adopt standards covered by SEPs, they frequently require the owners of those patents to commit to licensing their patents under reasonable and non-discriminatory (RAND) terms.²⁶⁰ 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 suppliers [and users] of standard-compliant products and services.”²⁶¹ Requiring RAND licensing protects adopters and users of the standard from paying extraordinarily high fees when there are no realistic opportunities to produce the product or provide the service without infringing the patent.²⁶² This RAND licensing requirement is commonplace.²⁶³

But not all standards are created by SSOs.²⁶⁴ De facto

257. W. B. Arthur, *Competing Technologies: An Overview*, in TECHNICAL CHANGE AND ECONOMIC HISTORY 590, 590–607 (Giovanni Dosi, ed., Columbia Univ. Press 1988). Technologies that have become standards garner increasing returns to adoption from several sources, including learning by using (i.e., the more it is used the more it is improved), network externalities (i.e., the more users there are, the more likely adopters benefit from greater availability and variety of related products (e.g., VHS tapes)), scale economies in production (i.e., price comes down as production numbers increase), informational increasing returns (i.e., better known makes more attractive, especially to the risk averse), and technological interrelatedness (i.e., supporting infrastructure is developed and becomes difficult to dislodge (e.g., gas engines with gas stations)). *Id.*

258. 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 Statement, *supra* note 251, at 4.

259. Ramirez Statement, *supra* note 251, at 4.

260. 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) (“[t]he word ‘fair’ adds nothing to ‘reasonable’ and ‘nondiscriminatory’”).

261. *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)).

262. See Lim, *supra* note 260, at 571.

263. Lemley, *supra* note 247, at 1906 (“The most common condition was that IP rights be licensed on ‘reasonable and nondiscriminatory terms.’”).

264. *Id.* at 1899.

standards may also emerge as a result of consumer preference.²⁶⁵ 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.

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, 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.²⁶⁶ If established, this implied license would remove the possibility of inflating damages for deterrent or punitive effect and remove the possibility of granting injunctions.

When applied to Monsanto's GM seed litigation, the company is currently 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."²⁶⁷ Where a given technology 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

265. *Id.*; U.S. DEPT OF JUSTICE & FED. TRADE COMM'N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 34 (2007), available at <http://www.justice.gov/atr/public/hearings/ip/222655.pdf> (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 (Apr. 18, 2002), available at <http://www.ftc.gov/opp/intellect/020418danieljgifford.pdf> (discussing the Windows operating system as an example of a de facto standard chosen by the market)).

266. *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.").

267. 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 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.").

to grant a license on RAND terms to anyone using the patented technology on the part of the IP holder.²⁶⁸

It is clear from a review of cases involving GM seeds that the courts are reluctant to force Monsanto to license its patented technology to farmers.²⁶⁹ Given this, the narrowly tailored proposal presented here creates an implied license between the IP holder and the farmer only where certain strict conditions are met. Specifically, the proposal limits 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 Part, the elements for recognition of a de facto SEP are further explained.

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

To succeed with the affirmative defense that a 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
- (3) *Basic Need*: The crop is necessary to supplying a basic need (food, shelter, or clothing).

Each element is explained below, along with how a farmer could prove each element. Before doing so, it is important to point out that the de facto SEP affirmative defense would *not* apply to farmers who knowingly cultivate second-generation GM seed for the primary purpose of selling it to other

268. Lemley, *supra* note 247, at 1906 (examining policies of SSOs and stating that twenty-nine of thirty-six SSOs with IP licensing policies required members to license their patents on RAND terms).

269. See *supra* Part II.C. and note 228 (describing cases where courts enjoin farmers rather than permit continued use of the GM seed conditioned upon payment of a set fee).

farmers.²⁷⁰ This “unclean hands” limitation would exclude direct-purchasing farmers who seek to profit from selling second-generation GM seeds and may also exclude drift and indirect-purchasing farmers who seek to profit from the fact that their fields now contain plants with GM seed. In short, the 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 a basic human need while trying to comply with the law.

1. Dominance

The dominance element looks at whether the patented technology has reached a dominant position in the relevant crop market (the terms “dominance” and “significant market power” are often used interchangeably in the literature). This dominance may occur due to open competition, anticompetitive behavior, lawful patent protection, tariffs, or other such barriers to access. The specific question is: Does the firm owning the patented technology have significant market power? Antitrust law, which regularly assesses market power, helps answer that question.²⁷¹ The most commonly used surrogate for determining market power is a system that measures the market share and structure of the market.²⁷² Measuring market share requires the market to be defined in terms of the product and geography.²⁷³

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

270. “Knowingly” includes acting with “willfull blindness.” *Global-Tech Appliances, Inc., v. SEB*, 131 S. Ct. 2060, 2070 (2011).

271. William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 937 (1981) (stating “[m]arket power is a key concept in antitrust law. A finding of monopolization in violation of section 2 of the Sherman Act requires an initial determination that the defendant has monopoly power—a high degree of market power.”).

272. LAWRENCE A. SULLIVAN & WARREN S. GRIMES, *THE LAW OF ANTITRUST: AN INTEGRATED HANDBOOK* 60 (2000). Market share creates the presumption of market power. See *Reazin v. Blue Cross & Blue Shield of Kansas, Inc.*, 899 F.2d 951, 968 (10th Cir. 1990). Market structure is examined to see if the market share is durable, as it would be in the presence of barriers to entry. See *id.*

273. SULLIVAN & GRIMES, *supra* note 272, at 61.

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, in determining antitrust violations, the general question to ask is where consumers look when purchasing a product.²⁷⁴ 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 be defined locally rather than regionally or nationally.²⁷⁵ Ultimately, the court determines the geographic scope, but it is anticipated 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.²⁷⁶ Generally, market share is measured by analyzing output within the market in one of three ways: (1) as physical units sold, (2) as revenues as a percentage of all physical units sold, or (3) as firm revenues.²⁷⁷ Once market share has been established, it must be determined whether this amount is sufficiently large to constitute dominance.²⁷⁸

The United States Department of Justice (DOJ) and Federal Trade Commission (FTC) have long used measures of market concentration in antitrust enforcement.²⁷⁹ Although described in the context of horizontal mergers, the DOJ and FTC evaluate dominance with the Herfindahl-Hirschman

274. *Id.* at 63.

275. "Farmers typically buy their seed locally." Guanming Shi, Jean-Paul Chavas and Kyle Stiegert, *An Analysis of Bundle Pricing: The Case of The Corn Seed Market*, FSWP2008-01, at 9 (2008), available at <http://aae.wisc.edu/fsrg/publications/wp2008-01-2nd%20version.pdf>. "Local market" is generally defined at the Crop Reporting Districts (CRD) level. *Id.* In general, the U.S. Department of Agriculture definition of a CRD "is larger than a county but smaller than a state." *Id.* at 9 n.7.

276. SULLIVAN & GRIMES, *supra* note 272, at 64.

277. IIB PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 535, at 273-84 (3d ed. 2007).

278. *Id.* at ¶ 531a, at 232-33 (Because courts often lack data regarding a firm's elasticities, courts traditionally examine the firm's market share); see also *id.* at ¶ 532a, at 242-43 ("[C]omputing market shares provides an indirect means for estimating market power.").

279. *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.").

Index (HHI).²⁸⁰ The HHI sums the squares of the scrutinized firms' market shares and adds them to give a final index number.²⁸¹ In an industry with two firms, one with a 70 percent market share and one with a 30 percent share, the HHI would be 5800 ($70^2 + 30^2$).²⁸² The DOJ and FTC consider a HHI of below 1500 to be unconcentrated.²⁸³ A HHI between 1500 and 2500 is moderately concentrated,²⁸⁴ and a HHI above 2500 is highly concentrated.²⁸⁵ As applied to some of the market shares described for Monsanto, the HHI for some crops is highly concentrated.²⁸⁶

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. Higher quality seed displaced lower quality alternatives in the market. It is estimated that over 90 percent of field corn seed varieties sold commercially in the United States in 1903 were extinct by 1983,²⁸⁷ the year when scientist Kary Mullis discovered how to produce multiple copies of specific fragments

280. U.S. DEPT OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES § 5.3 (2010), available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf> [hereinafter FTC Guidelines].

281. *Id.*

282. Andrew Chin, *Herfindahl-Hirschman Index Calculator*, U. N.C. SCH. L., <http://www.unclaw.com/chin/teaching/antitrust/herfindahl.htm>, (last visited Sept. 16, 2013).

283. FTC Guidelines, *supra* note 280, § 5.3.

284. *Id.*

285. *Id.* The dominance condition that we are proposing need not be held by just one firm or just one gene sequence. The combined market share of all GM technologies acts to crowd out opportunities to purchase non-GM seeds and also increases the probability of drift occurring in the local market. This can be problematic both for organic farmers and for farmers who would prefer to not use GM seeds for their yield and herbicide immunity characteristics but are forced to use the seeds because no non-GM alternatives are available in the market for purchase.

286. For example, if we assume that 91 percent of soybean crops in the United States are produced with GM seed, *see* GMO STATISTICS, *infra* note 300, and that Monsanto controls 90 percent of the GM seed market, *see* THE CENTER FOR FOOD SAFETY, *supra* note 216, at 10, then Monsanto's market share for soybeans (both GM and non-GM) is 82 percent. This would result in a HHI of 6724 ($= 82 \times 82$), indicating a high level of concentration. Naturally, the degree of concentration relevant to each case will depend on the court's definition of an appropriate geographic boundary as deemed pertinent to the case at hand.

287. RURAL ADVANCEMENT FOUND. INT'L, 2011 ANNUAL REPORT 3 (2011); CARY FOWLER & PAT MOONEY, SHATTERING: FOOD, POLITICS, AND THE LOSS OF GENETIC DIVERSITY 65 (1990).

of a strand of DNA.²⁸⁸ As the decades passed, more and more farmers relied on fewer seed varieties²⁸⁹ while concurrently increasing productivity and quality.²⁹⁰

In the 1980s, after *Diamond v. Chakrabarty*²⁹¹ established the legal right to patent a genetically modified organism, property rights in agriculture shifted away from the ownership of solely land and crops to ownership of specific gene sequences within seeds and their progeny.²⁹² These sequences provided resistance to certain pests, increased yield gains, and encouraged the production of other attractive crop characteristics.²⁹³ Judging from market sales, one of the most valued characteristics afforded by genetic manipulation is resistance to herbicides, which are used to kill weeds without killing the crop plant.²⁹⁴ 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 GM crops, such as soybeans, alfalfa, corn, and cotton.²⁹⁵

288. Mark Lehrer, Suffolk Univ. & Preeta Banerjee, Brandeis Univ., Presentation to Eastern Academy of Management 47th Annual Meeting Program: From Complex Processes to Real-Time General Purpose Technologies: Patterns of Development in ERP Software and PCR DNA Analysis (May 15, 2010); Emily Yoffe, *Is Kary Mullis God? Nobel Prize Winner's New Life*, ESQUIRE, July 1994, at 68–75.

289. In the wake of the corn blight that destroyed 15 percent of the United States' corn crop in 1970, The National Academy of Sciences established the Committee of Genetic Vulnerability of Major Crops to examine the vulnerability of the United States' food and fiber supply. The final study, released in 1972, found that most major crops in the United States 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, available at <http://books.google.com/books?id=n1ErAAAAAYAAJ&lpg=PA4&dq=Committee%20of%20Genetic%20Vulnerability%20of%20Major%20Crops&pg=PR1#v=onepage&q=Committee%20of%20Genetic%20Vulnerability%20of%20Major%20Crops&f=false>.

290. See Schnier, *supra* note 54, at 388–91.

291. 447 U.S. 303, 318 (1980).

292. 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).

293. 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, 2181 (2004); Graham Brookes & Peter Barfoot, *Global Impact of Biotech Crops: Income and Production Effects*, 12 AGRICULTURE 184 (2009), <http://agbioforum.org/v12n2/v12n2a04-brookes.htm>.

294. THE CENTER FOR FOOD SAFETY, *supra* note 216, at 8–9.

295. *Id.* at 7–9; see *Roundup Ready Seed Overview*, MONSANTO, <http://www>.

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.²⁹⁶ 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."²⁹⁷ Monsanto now provides seed technology "for at least 90 percent of the world's genetically engineered crops."²⁹⁸

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 likewise has been growing. "As recently as 1980, no genetically modified crops were grown in the United States."²⁹⁹ 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."³⁰⁰ Monsanto's large market share of patented GM seed in the agriculture industry certainly is dominant for purposes of this proposed test.

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

monsanto.com/weedmanagement/Pages/roundup-ready-system.aspx (last visited Sept. 12, 2013) (describing which seeds are Roundup Ready).

296. THE CENTER FOR FOOD SAFETY, *supra* note 216, at 9–10.

297. *Id.* at 10.

298. *Id.*

299. 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>.

300. Nate Hausman, *Monsanto Co. v. Geertson Seed Farms: Breathing a Sigh of Equitable Relief*, 25 TUL. ENVTL. L.J. 155, 168 n.108 (2011). There are of course regional variations. As early as 2004, 97 percent of all cotton planted in Mississippi used genetically modified seed and 95 percent of all soybeans and 79 percent of all corn grown in South Dakota did as well. PEW INITIATIVE ON FOOD & BIOTECH, GENETICALLY MODIFIED CROPS IN THE UNITED STATES (Aug. 2004), at 6–9 [hereinafter GMO STATISTICS], available at http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Fact_Sheets/Food_and_Biotechnology/PIFB_Genetically_Modified_Crops_Factsheet0804.pdf.

of the United States,” an 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.”³⁰¹ 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 seeds should lead to a conclusion of dominance.³⁰² Such dominance is especially concerning when one considers that it encompasses a product necessary to sustain life.

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 a SEP as a patent necessary to use the standard or a part thereof.³⁰³ In particular, to satisfy this element, the farmer must show that although GM crops were found on the farmland, it would not have been reasonably possible for the farmer to keep those GM crops off the land. 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 often are 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 shutter seed cleaners so that they can no longer serve farmers wishing to save seeds for future plantings.³⁰⁴

301. *United States v. Terminal R.R. Ass’n of St. Louis*, 224 U.S. 383, 400–01 (1912).

302. *See* discussion *supra* note 286.

303. *See supra* note 258 and accompanying text.

304. THE CENTER FOR FOOD SAFETY, *supra* note 216, at 7. As to seed cleaners, they provide a service to farmers that save seed from year-to-year, removing extraneous leaves, rocks and so forth from the seed that they will eventually plant. *Monsanto Co. v. Parr*, 545 F. Supp. 2d 836, 839 (N.D. Ind. 2008). Monsanto has engaged in a course of conduct aimed at closing seed cleaners, through litigation. *See id.* (seed cleaner enjoined from cleaning seed, and by lobbying for legislation at the state level that requires registration of seed cleaners). Jill

Indiana soybean farmer Troy Roush tells CFS, “[y]ou can’t even purchase [heritage soybeans] in this market. They’re not available.”³⁰⁵ 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.”³⁰⁶ A survey of farmers in seven agricultural counties in Illinois revealed that roughly 40 percent of farmers reported that they did not have any access to high-yield potential non-GM corn seeds in 2009.³⁰⁷ On a county-by-county basis the results varied: 32 percent of farmers lacked access to non-GM seed in Champaign County, while 46.6 percent of farmers lacked access to non-GM seed in Malta County.³⁰⁸ This scenario in which unpatented seeds are unavailable in the market may arise when dealing with direct-purchasing farmers. It may also arise when dealing with indirect-purchasing farmers who grow crops, save seed, and replant it. Because alternatives are unavailable, it is not reasonably possible to exclude the GM crops from the alternative crops. Lack of access to non-GM alternatives forces non-organic farmers to purchase GM seeds (and thus, to 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, GM-seeded crops. This scenario would arise when dealing with drift farmers; direct-purchasers, who end up with residual seeds in their fields that cause 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 in 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, as detailed below.

Sudduth, *Where the Wild Wind Blows: Genetically Altered Seed and Neighboring Farmers*, 2001 DUKE L. & TECH. REV. 15, 15 (citing Brian Williams, *Battle Over Farming Growing with Monsanto Seed Debate*, COLUMBUS DISPATCH, April 4, 1999, at 2H).

305. THE CENTER FOR FOOD SAFETY, *supra* note 216, at 10.

306. *Id.*

307. 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 CHEMISTRY 5852, 5855 (2011).

308. *Id.*

Genetic drift is an extremely difficult process to monitor and prevent. 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.”³⁰⁹ That is, they found GM corn in what should have been a field without it.³¹⁰ What made this discovery amazing is that the field was in the mountains, more than twenty kilometers from the nearest major road, in a country where it was illegal to plant GM corn.³¹¹ This study implies that it may be impossible to prevent all GM DNA from entering a non-GM field.³¹²

When farmers desire to prevent genetic drift, the efforts can be extremely expensive.³¹³ One option that is often used is the creation of buffer zones, where otherwise arable lands are set aside from productive crop use.³¹⁴ Such buffer zones can be extremely helpful when adjacent lands hold GM seeds. 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.”³¹⁵ Cross pollination was detected at six hundred feet.³¹⁶ Based on these results, a 150-foot buffer was suggested to be a reasonable distance to protect against GM seed contamination.³¹⁷ Despite the benefits of keeping errant pollen out of the farmer’s main crop, these buffer zones are not

309. Quist & Chapela, *supra* note 74, at 541–42.

310. *Id.*

311. *Id.*

312. Alison Peck, *The New Imperialism: Toward an Advocacy Strategy for GMO Accountability*, 21 GEO. INT’L ENVTL. L. REV. 37, 45 (2008).

313. Brief of Amici Curiae Farm & Ranch Freedom Alliance et al. in Support of Plaintiffs-Appellants in Support of Reversal at 2, *Organic Seed Growers & Trade Ass’n v. Monsanto Co.*, 718 F.3d 1350 (Fed. Cir. 2013) (No. 2012-1298) [hereinafter Brief of Amici Curiae Farm & Ranch Freedom Alliance et al.].

314. 7 C.F.R. § 205.202(c) (2012). (The National Organic Program actually requires “distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management.”).

315. Peter Thomison, *Managing “Pollen Drift” to Minimize Contamination of Non-GMO Corn*, OHIO ST. U. EXTENSION FACT SHEET, available at <http://ohioline.osu.edu/agf-fact/pdf/0153.pdf> (citing Patrick F. Byrne et al., Presentation at 2003 ASA-CSSA-SSSA Annual Meeting: Estimating Pollen-Mediated Flow in Corn Under Colorado Conditions (Nov. 5, 2003)).

316. *Id.*

317. *Id.*

without negative consequences to the farmer. The removal of arable land from productive use reduces the total yield (and thus the total revenue) of the farm.³¹⁸ Moreover, even with these precautions, drift may still occur: corn pollen can travel one quarter mile, far exceeding conventional buffer zone dimensions.³¹⁹

Irrespective of these efforts to prevent drift carried through the winds, drift can take place in other ways as well. Machinery used in harvesting and transportation can contaminate crops, for example. This may be the farmer's own machinery or, as in the case of Percy Schmeiser, contamination may come from another farmer's "seed spilled from a passing truck."³²⁰ 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.³²¹ Of course, cleaning other farmers' trucks to prevent contamination is not a workable solution.

Given that drift can take place through natural (e.g., winds) or manmade (e.g., trucks) means, farmers also are required to take steps to prevent drift after the crop has started to grow. One possible way to detect and reduce the likelihood of infringing the patent is to conduct DNA testing on random samples of purchased crops, but doing so is again burdensome and costly.³²² Given all these reasons, it is impractical for farmers who do not desire GM crops on their lands to guarantee exclusion.

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

318. 7 C.F.R. § 205.202(c) (2012). *See also* Brief of Amici Curiae Farm & Ranch Freedom Alliance et al., *supra* note 313, at 17.

319. Bob Nielson, *Corn Segregation: A Necessary Evil in Today's Biotech Age*, PURDUE UNIVERSITY DEPT AGRONOMY (Apr. 23, 2003) http://www.kingcorn.org/news/articles.03/GMO_Segregation-0423.html.

320. *Monsanto Canada, Inc. v. Schmeiser*, [2003] 2 F.C. 165, ¶ 49 (Fed. Ct.).

321. David S. Bullock, Univ. of Ill., Marion. Desquilbet, Institut National de la Recherche Agronomique & Elisavet I. Nitsi, Univ. of Ill., at the American Agricultural Economics Association Annual Meeting: The Economics of Non-GMO Segregation and Identity Preservation (July 30–Aug. 2, 2000).

322. Brief of Amici Curiae Farm & Ranch Freedom Alliance et al., *supra* note 313, at 10.

who know they are using patented GM seed. The impracticability inquiry in this scenario is more speculative than the inquiry in the first two scenarios. Instead of asking whether it is reasonably possible to exclude the GM crops, the inquiry is an 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 element is satisfied even though alternatives were available and the farmer did not necessarily attempt to use them.³²³ This approach recognizes that it would be inefficient to require a farmer to purchase non-GM seed and take precautions to avoid drift knowing that those precautions would be for naught, simply so they could fit into the second scenario discussed above. Ultimately, because these farmers are playing an important role by fulfilling a basic need like the other farmers, this helps alleviate some of the concern that they have “unclean hands” and causes us to err on the side of including them within the scope of the defense rather than excluding them.³²⁴

3. Basic Need

The third element for establishing a de facto SEP defense is that the crop is primarily used in supplying a basic need. The rule that property rights—including patent rights—are inviolate pervades our law,³²⁵ yet that rule begins to show cracks when it calls into question the supply of a basic need, including food, shelter, or clothing.³²⁶ To be sure, a particular farmer’s GM crop could be used in the production of an

323. 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. See Unif. Trade Secrets Act § 1(4) (1985); see also *Henry Hope X-Ray Prod., Inc. v. Harron Carrel, Inc.* 674 F.3d 1336, 1341 (9th Cir. 1982).

324. See *supra* Part III.B. and note 270 (discussing inability of farmers with “unclean hands” to use proposed affirmative defense).

325. See Shyamkrishna Balganes, *Demystifying the Rights to Exclude: Of Property, Inviolability, and Automatic Injunctions*, 31 HARV. J.L. & PUB. POL’Y 593, 620–21 (2008).

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

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, as they make up a significant portion of all plant-derived food consumed around the world.³²⁷

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. To satisfy this portion of the test, the crop's *primary* use should be to fulfill a basic need. Hemp can be used to make clothing (a basic need), but its primary use is industrial (e.g., rope);³²⁸ it follows that hemp would not meet the basic need test. These limitations recognize that courts loathe compelling patent licenses; the *de facto* SEP defense should be narrowly construed so as to not upset this aversion.

C. *Effects of De Facto SEP Status*

1. De Facto SEP Leads to an Implied License

This Article argues that where a patent becomes dominant, it is impracticable to work around, and it covers a basic need, courts should declare it a *de facto* SEP.³²⁹ Further, this Article proposes that where a court finds that a patent has reached *de facto* SEP status, the court should imply a license between Monsanto and the farmer on RAND terms.³³⁰ Judge Posner's

327. Just nine of the world's plants—wheat, rice, corn, barley, sorghum/millet, potato, sweet potato/yam, sugarcane, and soybean—constitute approximately three-fourths of all plant-derived food consumed around the world. FOWLER & MOONEY, *supra* note 287, at 17.

328. Susan David Dwyer, Note, *The Hemp Controversy: Can Industrial Hemp Save Kentucky?* 86 KY. L.J. 1143, 1155 (1997).

329. See *supra* Part III.B. Compare an implied contract "inferred from conduct other than the speaking or writing of words." JOHN EDWARD MURRAY, JR., MURRAY ON CONTRACTS 40 (5th ed. 2011).

330. See Part III.A. for a discussion of RAND. *Clayson v. Zebe*, 280 P.3d 731, 738 (Idaho 2012).

decision in *Apple, Inc. v. Motorola, Inc.* lends influential support for this.³³¹ In that case, Motorola claimed that one of its patents (which allowed communication between cell phones and cell towers) was standard-essential and that Apple was infringing it.³³² Motorola sought to enjoin Apple from using the patent.³³³ In addressing whether injunctive relief for Motorola would be appropriate, Judge Posner discussed that Motorola and Apple were part of the same SSO, The European Telecommunications Standards Institute (ETSI).³³⁴ Judge Posner continued, pointing out that injunctive relief was improper given Motorola's legal obligation to provide its SEP to Apple on RAND terms.³³⁵ The question is *what* gave rise to that legal obligation? Importantly, Judge Posner seemed to suggest that there was not yet an express license between Motorola and Apple to provide Motorola's SEP on RAND terms, but rather the parties were engaged in preliminary negotiations to do so.³³⁶ It follows that Judge Posner could not be holding that an *express* license required Motorola to provide its SEP to Apple on RAND terms.³³⁷ The most logical conclusion is that Judge Posner was holding an *implied* license required Motorola to provide its SEP to Apple on RAND terms.³³⁸

331. 869 F. Supp. 2d 901 (N.D. Ill. 2012). The word "influential" when referring to a judge, or judicial opinion, has powerful connotations. However, we believe that it is appropriate in this case. As one commentator points out:

Judge Posner's influence on the development of legal doctrine is significant through his academic writings alone. Judge Posner's opinions are also given greater deference because of his academic reputation. . . .

Furthermore, Judge Posner's opinions are written in a straightforward but fully theorized law-and-economics framework easily applicable to other cases, thereby magnifying his influence.

Mitu Gulati & C.M.A. McCauliff, *On Not Making Law*, 61 LAW & CONTEMP. PROBS. 157, 200 (1998).

332. *Apple*, 869 F. Supp at 912.

333. *Id.* at 913–14.

334. *Id.* at 912.

335. *Id.* at 913–14 ("I don't see how, given [RAND], I would be justified in enjoining Apple from infringing the '898 unless Apple refuses to pay a royalty that meets the [RAND] requirement.").

336. *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 [RAND] royalty."). This language indicates that, at best, Motorola was engaged in preliminary negotiations rather than having formed a contract.

337. *Id.*

338. *Id.*; see *Apple, Inc. v. Motorola Mobility, Inc.*, No. 11-cv-178-bbc, 2012 WL

How did—if he did—Judge Posner hold that an implied license required Motorola to provide its SEP to Apple on RAND terms? The most eloquent exposition of such reasoning was set out by Professor Mark Lemley of Stanford Law School:

[P]atent law may well limit the ability of a patentee to ignore SSO IP rules requiring licensing on reasonable and nondiscriminatory terms. The most likely theory is a license implied from the patentee's conduct, which I will call an "implied license." Implied license is a doctrine of quasi contract, and depends on the beliefs and expectations of the parties. . . . [In the IP context, an implied license can arise in many ways, including] where an IP owner invites a use that would otherwise infringe, for example, by posting their copyrighted work on the Internet for free download. . . . [This] is perhaps most analogous to standard setting. If an IP owner agrees to license its patents that cover a standard on reasonable and nondiscriminatory terms, others will assume that they are free to use that standard so long as they pay a reasonable royalty. There may be no express license between the IP owner and any of the users of the standard, but it seems perfectly reasonable to imply one. . . .³³⁹

It should not escape notice that in apparently finding an implied license in *Apple, Inc. v. Motorola, Inc.*, Judge Posner cited Professor Lemley on the same page that he refused to enjoin Apple, stating "[b]y 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."³⁴⁰

5416941, at *14 (W.D. Wis. Oct. 29, 2012) (noting "it also could be that [Judge Posner] believed . . . that Motorola's commitments created an implied license that rendered moot any claim to injunctive relief").

339. Lemley, *supra* note 247, at 1923–25 (footnotes omitted). Other scholars have suggested the same approach should be applied in similar circumstances. See Lichtman, *supra* note 162, 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.").

340. *Apple, Inc.*, 869 F. Supp. 2d at 914 (citing, among others, Lemley, *supra* note 247).

Apple, Inc. v. Motorola, Inc. involved a de jure SEP. However, the same principles apply to 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, the equivalence between de facto SEPs and de jure SEPs serves as 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 Corp.*, 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.³⁴¹ Phrased differently, because of Microsoft's dominance in the industry, Microsoft's IP had become de facto standards.³⁴² The court implied a license between Microsoft and the software developers on RAND terms.³⁴³ While *New York v. Microsoft Corp.* was an antitrust action,³⁴⁴ not a case where Microsoft was suing the software developers for patent infringement like we see in *Ralph*,³⁴⁵ upon closer examination we see that the underlying dynamics are the same. The software developers could not produce their product 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 implied a license to level the playing field;³⁴⁶ in the second case, the court should imply a license to level the

341. *New York v. Microsoft Corp.*, 224 F. Supp. 2d 76, 89 n.11 (D.D.C. 2002), *aff'd*, 373 F.3d 1199 (D.C. Cir. 2004).

342. *Id.* at 89.

343. *See id.* at 177–78.

344. *Id.* at 86.

345. *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004).

346. Samuelson, *supra* note 267, 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.”).

playing field.³⁴⁷

United States courts' recent willingness to find an implied license brings this country's legal system in closer alignment with that of Europe. 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."³⁴⁸

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.³⁴⁹ 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.³⁵⁰ IMS Health refused to license its brick structure to two competitors and obtained injunctions against them.³⁵¹ One of the 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.³⁵² After considering the evidence,

347. See Samuelson, *supra* note 267, 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.") (footnotes omitted). 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.") (footnotes omitted).

348. Commission Notice 2001 OJ (C 3) 2, 25 (discussing standards formed by a group of firms).

349. Commission Decision 2001/165 EC, 2002 OJ (L 59) 18, 46–48 (EC), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:059:0018:0049:EN:PDF>.

350. See *id.* at 20–22.

351. Robert Pitofsky et al., *The Essential Facilities Doctrine Under U.S. Antitrust Law*, 70 ANTITRUST L.J. 443, 444 (2002).

352. Case C-418/01, *IMS Health GmbH & Co. v. NDC Health GmbH & Co.*,

the European Commission ordered IMS Health to grant access to the copyrighted brick structure on RAND terms.³⁵³ As one commentator noted,

After 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.³⁵⁴

In summary, there is precedent in both the United States and Europe in finding specific intellectual property to be *de facto standard essential* in order to be able to compete in the market.

2. A Return to Reasonable Royalties

Farmers who grow, replant, or sell GM seed find themselves subject to suit by Monsanto and face traditional patent infringement remedies based in tort.³⁵⁵ Tort remedies are intended to “undo the harm”³⁵⁶ or “make the plaintiff whole,” but they also are intended to deter and punish.³⁵⁷ The result is inflated damages.³⁵⁸ 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”—they may refuse to negotiate.³⁵⁹ This imbues Monsanto with

2004 E.C.R. I-5069, 5074 (Apr. 29, 2004).

353. Commission Decision 2001/165 EC, 2002 OJ (L 59) 18, 46–48 (EC); see also Robert Pitofsky et al., *supra* note 351.

354. 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).

355. See *supra* Parts I.B., II.

356. See Harry G. Prince, *Overprotecting the Consumer? Section 2-607(3)(A) Notice of Breach in Nonprivity Contexts*, 66 N.C. L. REV. 107, 150 (1987).

357. See RESTATEMENT (SECOND) OF TORTS § 901 (1965).

358. See *supra* Part II.B.

359. See *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.”) (quoting *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 n.13 (Fed. Cir. 1995)).

disproportionate bargaining power, 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 the court to ignore the fact that “no sane farmer would ever negotiate a royalty in excess of his anticipated profits.”³⁶⁰

Establishing the patent as a *de facto* SEP may ameliorate the danger of inflated damages.³⁶¹ 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.”³⁶²

Because there is no difference between an express license (called a technology agreement in the case of GM seed) and an implied license,³⁶³ the benefit of the bargain to Monsanto is the

360. *Id.*

361. *See id.*

362. “[T]he 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 162, at 1043; *see* Lemley, *supra* note 247, 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 an injunction, treble damages, and attorneys’ fees.”).

363. Courts have noted the equivalence of express and implied licenses in the context of SEPs before. As one court explained,

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 Corp., 849 F. Supp. 2d 925, 944–45 (N.D. Cal. 2012) (quoting Counterclaim Defendant Apple Inc.’s Answer, Defenses, and Counterclaims in Reply to Samsung’s Counterclaims, *Apple Inc. v. Samsung Electronics Co., Ltd.*, No. 11-CV-01846-LHK, 2011 WL 3205801, at *25 (N.D. Cal. July 21, 2011)); *see also McCoy v. Mitsubishi Cutlery, Inc.*, 67 F.3d 917, 920 (Fed. Cir. 1995) (explaining that express and implied contracts are subject to the same

“Technology Fee” it charges to other farmers when they purchase GM seed.³⁶⁴ 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 \$5.00.³⁶⁵ First, the court multiplies the “acreage by the planting density to obtain the total weight of soybean seeds planted.”³⁶⁶ The court then divides the total weight by fifty to calculate the number of bags used (i.e., a fifty-pound bag equals one unit).³⁶⁷ The number of bags is then multiplied by \$5.00. 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: $(796+438)$ multiplied by \$5/bag = \$6,170.³⁶⁸ Not \$199,918.³⁶⁹

In the SEP context, courts are much more willing to base their damage calculations on an established royalty.³⁷⁰ In *Microsoft Corp. v. Motorola, Inc.*, yet another Motorola case involving an SEP, 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 percent established royalty rate.³⁷¹ This initial royalty rate was based on prior license agreements involving some or all of the standard-essential patents.³⁷² 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

principles of contract law).

364. 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.

365. *Monsanto Co. v. Ralph*, 382 F.3d 1374, 1377 (Fed. Cir. 2004).

366. *Monsanto Co. v. David*, 516 F.3d 1009, 1018 n.5 (Fed. Cir. 2008).

367. *See id.*

368. *See Ralph*, 382 F.3d at 1379 (limiting calculations to soybeans, but trebling for willful infringement).

369. *See id.*

370. *See Microsoft Corp. v. Motorola, Inc.*, 904 F. Supp. 2d 1109, 1117–18 (W.D. Wash. 2012).

371. *Id.*

372. *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.

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.³⁷³ Firms accept this trade-off, considering “additional sales volume they are likely to achieve by having their technology incorporated into a standard.”³⁷⁴ 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.³⁷⁵

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.”³⁷⁶ Indeed, courts and

373. 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.*, “The 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).

374. George S. Cary et al., *The Case for Antitrust Law to Police the Patent Holdup Problem in Standard Setting*, 77 ANTITRUST L.J. 913, 920 (2011).

375. That holders of SEP’s received less in royalties in return for SEP status is evidenced by an April 25, 2013 order in *Microsoft Corp. v. Motorola, Inc.*, where District Judge James Robart found that the appropriate RAND royalty for the H.264 SEP portfolio is 0.555 cents per unit, and 3.471 cents per unit for the 802.11 SEP portfolio. Findings of Fact and Conclusions of Law at 207, *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR (W.D. Wash. April 25, 2013), available at <http://essentialpatentblog.com/wp-content/uploads/2013/04/2013.04.25-D.E.-681-Findings-of-Fact-and-Conclusions-of-Law-setting-RAND-royalty.pdf>; see Matt Rizzolo, *Microsoft-Motorola Update: Washington Court Sets RAND Royalty for Motorola 802.11 and H.264 Patent Portfolios*, ESSENTIAL PATENTBLOG (Apr. 25, 2013), <http://essentialpatentblog.com/2013/04/microsoft-motorola-update-washington-court-sets-rand-royalty-for-motorola-802-11-and-h-264-patent-portfolios/>. This was much less than the \$4.50 royalty that Motorola sought. See Findings of Fact and Conclusions of Law at 145, *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR (W.D. Wash. April 25, 2013) (“[Motorola’s expert’s] calculation resulted in payments from Microsoft to Motorola at a per unit royalty of \$3.00 to \$4.50 or 1.15 % to 1.73 % of the average selling price of the Microsoft Xbox.”).

376. RESTATEMENT (SECOND) OF CONTRACTS ch. 16, intro. note (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

commentators are in general agreement that a court cannot impose an injunction where a patent is an SEP.³⁷⁷ 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.³⁷⁸

Instead of granting injunctive relief for future infringement, 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.*³⁷⁹ As Professor Lemley argues, the ongoing royalty rate should be the reasonable royalty.³⁸⁰ 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. This is a sensible result because once an implied license is established, there is no reason for terminating it merely because the patentee will be compensated for prior use of its patent. Future use of the patent is the same as the prior use; it makes little sense to require the parties to enter into an express license agreement when an implied one already exists.

to prevent breach; rather, it is aimed at relief to promisees to redress breach.”) (emphasis omitted).

377. *Microsoft Corp. v. Motorola, Inc.*, 696 F.3d 872, 877 (9th Cir. 2012) (enjoining enforcement of a patent injunction entered in Germany).

378. *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 914 (N.D. Ill. 2012).

379. *Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1313–14 (Fed. Cir. 2007).

380. Mark A. Lemley, *The Ongoing Confusion Over Ongoing Royalties*, 76 MO. L. REV. 695, 702 (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.”) (footnote omitted).

IV. OVERCOMING HOSTILITY TO COMPULSORY LICENSING

As discussed above, although court-compelled licensing is rare, especially where the technology is protected by exclusive rights, it is not entirely new. Where technology is granted SEP status by an SSO (a de jure SEP) the court can imply a license, as Judge Posner appears to have done in *Apple Inc. v. Motorola, Inc.*³⁸¹ Likewise, where firm dominance gives rise to an SEP (a de facto SEP), a court may imply a license, as the judge did in *New York v. Microsoft Corp.*³⁸²

Further, 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)³⁸³ was enacted in 1970 to deal with certain classes of plants.³⁸⁴ It created sui generis rights analogous to patent rights in certain sexually reproduced plants.³⁸⁵ The PVPA gives patent-like protection in the form of a certificate to new sexually-reproducing plant varieties that are distinct, uniform, and stable.³⁸⁶ 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.³⁸⁷

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.’”³⁸⁸ Importantly for our purposes, the PVPA creates a scheme in

381. *Apple, Inc. v. Motorola, Inc.*, 869 F. Supp. 2d 901, 914 (N.D. Ill. 2012).

382. *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).

383. 7 U.S.C. §§ 2321–2583 (2012).

384. *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 138 (2001).

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

386. 7 U.S.C. § 2402 (2012).

387. *J.E.M. Ag Supply*, 534 U.S. at 139 (citing 7 U.S.C. § 2541(a) (2000)).

388. Janis & Kesan, *supra* note 385, at 751–52 (footnote omitted); *see also* 7 U.S.C. § 2543 (2013) (permitting farmers to engage in “bona fide” sales of saved seed “for other than reproductive purposes.”).

which the Agriculture Secretary will grant two-year compulsory licenses 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.”³⁸⁹

Likewise, more recently introduced legislation, the Seed Availability and Competition Act of 2013, would allow those who plant patented seed or 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.³⁹⁰ Under this proposed legislation, these fees would then be distributed to patentees.³⁹¹ Because compulsory licensing has previously been contemplated and implemented, the idea of compelling a license of GM seed through the de facto SEP framework provided in this Article may be more digestible to courts and Congress.

Importantly, this 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 a 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.³⁹² That does not preclude courts and Congress from acting concurrently; courts could use the proposed framework while they wait for Congress to pass the Seed Availability and Competition Act of 2013.³⁹³ In fact, the proposal in this Article is likely to present the most viable solution, as passage of the Seed Availability and Competition

389. 7 U.S.C. § 2404 (2012); *see also* Janis & Kesan, *supra* note 385, at 752.

390. Seed Availability and Competition Act of 2013, H.R. 193, 113th Cong. § 2 (2013).

391. *Id.* Although the bill sounds promising, Representative Kaptur has introduced similar bills every year since 2004 that have never received any activity by the committees to which they were referred. Tony Dutra, *Kaptur Reintroduces Seed Replanting Bill But Supreme Court Decision Coming Soon*, BNA PATENT, <http://www.bna.com/kaptur-reintroduces-seed-n17179871884/> (last visited Jan. 15, 2013).

392. *See supra* Parts III.B., III.C.

393. Seed Availability and Competition Act of 2013, H.R. 193, 113th Cong. § 2 (2013).

Act of 2013 is unlikely.³⁹⁴

CONCLUSION

Whether Monsanto's lawsuits against farmers are reasonable is debatable. But when 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 use compulsory licensing and embrace a more balanced system. Such a system would allow farmers to continue their traditions and professions, but would also 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 approach forces 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.

394. The Seed Availability and Competition Act of 2013 is unlikely to pass, as it has been stuck in the House Agriculture Committee since January 4, 2013. Committee members appear to have wielded their "blocking power"—if committee members disfavor the bill for any reason, they can do nothing and allow the bill to languish in committee." Brent J. Horton, *How Corporate Lawyers Escape Sarbanes-Oxley: Disparate Treatment in the Legislative Process*, 60 S.C. L. REV. 149, 171 (2008) (footnote omitted). In fact, this Act is proposed—and fails—almost annually. See, e.g., *Representative Kaptur Introduces Seed Availability and Competition Act*, U.S. FED. NEWS, Aug. 4, 2009 ("Rep. Marcy Kaptur, D-Ohio, has introduced the Seed Availability and Competition Act of 2009 (H.R. 3299), legislation that would 'require persons who seek to retain seed harvested from the planting of patented seeds to register with the Secretary of Agriculture and pay fees set by the Secretary for retaining such seed.'"); *Law Would Allow the Saving of Biotech Seed*, THE FARMER'S GUARDIAN, July 16, 2004, at 84 ("Now legislation moving through the US Congress would allow American farmers to save and replant patented seed. The Seed Availability and Competition Act of 2004 would decriminalize the act of saving patented seed as long as a producer reports the quantity and type of seed retained and pays a technology fee to the USDA.").

