The Seeds of Dispute: *Vernon Hugh Bowman v. Monsanto Company et al.*

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In May 2013, the U.S. Supreme Court decided in Vernon Hugh Bowman v. Monsanto Company et al. in favor of Monsanto Company, affirming the judgment of the U.S. Court of Appeals for the Federal Circuit and holding that patent exhaustion does not permit a farmer to reproduce patented seeds through planting and harvesting without the patent holder's permission.

This case note gives a brief overview of the U.S. Supreme Court's decision, in which the meaning and limits of the doctrine of patent exhaustion have been examined, and discusses its implications for farmers and seed companies.

I. The "Bowman Case" before the U.S. Supreme Court

On May 13, 2013, the U.S. Supreme Court unanimously decided in *Vernon Hugh Bowman v. Monsanto Company et al.* (the "Bowman case")[1] in favor of Monsanto Company, affirming the previous judgments of the U.S. Court of Appeals for the Federal Circuit and the District Court of Southern District of Indiana. The case focuses on the meaning of the doctrine of patent exhaustion applied to patented genetically modified seeds, which are self-replicating products.

Litigation started on October 12, 2007, when Monsanto Company ("Monsanto") sued Bowman, a grower in Knox County, Indiana, before the U.S. District Court of Southern District of Indiana, alleging infringement of U.S. Patent Nos. 5,352,605 ("'605 Patent")[2] and RE39,247E ("'247E Patent").[3]

Monsanto developed technology for genetically modified Roundup Ready® soybeans that exhibit resistance to N-phosphonomethylglycine (commonly known as "glyphosate") based herbicides, such as Monsanto's Roundup® product. The two patents cover different aspects of the Roundup Ready® technology. On October 4, 1994, the United States Patent and Trademark Office ("USPTO") issued the '605 Patent to Monsanto for chimeric genes for transforming plant cells using the cauliflower mosaic virus promoter ("CaMV"). The patent includes the chimeric gene and the plant cell, which comprises the chimeric gene that contains a promoter from cauliflower mosaic virus.

On August 22, 2006, the USPTO reissued patent No. 5,633,435 ("'435 Patent") as the '247E Patent for glyphosate-tolerant 5-enolpyruvylshikimate-3-phosphatesynthases (EPSPS). The invention of the '247E Patent entails "the transformation of plant cells – using, for example, the CaMV promoters disclosed in the '605 Patent – to transform plant cells with novel protein-encoding gene sequences that encode for EPSPS, a glyphosate-tolerant enzyme".[4] The genetically modified plant cells, containing the CaMV promoters, express EPSPS and are resistant to glyphosate, the active ingredient in many herbicides. Farmers planting soybeans, incor-

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1 Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, 13 May 2013, available on the Internet at <http://www.supremecourt.gov/opinions/12pdf/11-796_c07d.pdf> (last accessed on 25 November 2013).

2 Monsanto alleges infringement of claims 1, 2, 4, 5 of the '605 Patent. See U.S. Patent No. 5,352,605, available on the Internet at <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=5,352,605.PN.&OS=PN/5,352,605&RS=PN/5,352,605> (last accessed on 25 November 2013).

3 Monsanto alleges infringement of 17 claims of the '247E Patent. See U.S. Patent No. RE39,247E, available on the Internet at <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=RE39,247.PN.&OS=PN/RE39,247&RS=PN/RE39,247> (last accessed on 25 November 2013).

4 See United States Court of Appeals for the Federal Circuit, *Monsanto Company and Monsanto Technology LLC v. Vernon Hugh Bowman*, 21 September 2011, 657 F. 3d 1341, available on the Internet at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/10-1068.pdf> (last accessed on 25 November 2013), at p. 4.

porating this genetic alteration, can use a glyphosate-based herbicide to kill weeds without damaging their crops.

Since 1996 Monsanto has sold Roundup Ready® soybean seeds under its own brands and licensed its technology to seed producers, such as Pioneer Hi-Bred, and to growers who assent to a special licensing agreement, the "Monsanto Technology Agreement" or "Monsanto Technology/Stewardship Agreement". The agreement allows a grower (1) "to use the seed containing Monsanto gene technologies for planting a commercial crop only in a single season"; (2) "to not supply any of this seed to any other person or entity for planting"; (3) "to not save any crop produced from this seed for replanting, or supply saved seed to anyone for replanting"; (4) "to not use this seed or provide it to anyone for crop breeding, research, generation of herbicide registration data, or seed production".[5] In 2002 Bowman bought from Pioneer Hi-Bred, one of Monsanto's licensed seed producers, Pioneer Hi-Bred® brand seeds containing the Roundup Ready® technology and signed the "Pioneer Hi-Bred Technology Agreement", which includes restrictions identical to the Monsanto Technology Agreement.[6] Bowman planted Roundup Ready® seed as first-crop during the years 1999 through 2007 and, according to the agreement, did not save seeds from his first-crop to replant.[7] In 1999 he also purchased commodity seeds from said local grain elevator Huey Soil Service to be planted as second-crop, and subsequently planted them and treated them with a glyphosate-based herbicide. Many of the resulting plants exhibited glyphosate resistance. From 2000 to 2007, unlike his first crop, Bowman saved the seed harvested from his second-crop to replant additional second-crops in later years and supplemented his second-crop seed supply with periodic additional purchases of commodity soybeans from the grain elevator. Then, he applied to the resulting second-crop soy plants a glyphosate-based herbicide. On November 2, 2007, Monsanto investigated eight of Bowman's fields and found that his second-crop soybean seeds (the progeny of the commodity seeds) contained the patented Roundup Ready® technology and sued him, claiming that Bowman infringed on its patents "through the unauthorized planting of the commodity soybeans which contain the Roundup Ready® trait and via each successive crop planted with saved seed and commodity soybeans".[8]

Bowman, in defense, argued that "when the soybeans from a licensed Roundup Ready crop are harvested and sold to a grain elevator or dealer, they are sold without restriction, mixed with all other soybean crops and, therefore, when purchased and used by farmers to plant as seed (commodity soybeans) for another crop, they are not protected by patent"[9] and that the doctrine of patent exhaustion should be applied to these commodity soybeans.

Bowman emphasized the consequences that Monsanto's claim to patent protection for all soybeans that carry the Roundup Ready® trait has had on the general ability of farmers to use and plant commodity beans/seed: "Monsanto's domination of the soybean seed market, combined with the regeneration of the Roundup Ready® trait and the lack of any restriction against the mixing of soybeans harvested from a Roundup Ready® crop from those that are harvested from a crop that was not grown from Roundup Ready® seed, has resulted in the commodity soybeans sold by grain dealers necessarily carrying the patented trait, thereby eliminating commodity soybeans as low cost (but higher risk) source for planting".[10]

On September 30, 2009, the District Court of Southern District of Indiana granted summary judg-

5 See Monsanto's Standard Form Technology Agreements, 1998–2007, J.A. 284–315.

6 United States Court of Appeals for the Federal Circuit, *Monsanto Company and Monsanto Technology LLC v. Vernon Hugh Bowman*, *supra* note 4, at p. 7.

7 Bowman purported that he "never planted progeny seeds grown from his Pioneer seeds". See In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Brief for petitioner, available on the Internet at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 25 November 2013), at p. 7. See also United States Court of Appeals for the Federal Circuit, *Monsanto Company and Monsanto Technology LLC v. Vernon Hugh Bowman*, supra note 4, at p. 8. Monsanto did not allege patent infringement based on any of Bowman's activities related to crops grown from the Roundup Ready® soybean seeds he legitimately acquired. See note 5, In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Brief for respondents, available on the Internet at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 25 November 2013), at p. 5.

8 United States District Court S.D. Indiana, *Monsanto Co. v. Bowman*, 30 September 2009, 686 F.Supp.2d 834, at p. 836, available on the Internet at <http://www.innovationatstake.com/assets/Trial-Court-Opinion-U.S.-District-Court-Indiana-September-30-2009.pdf> (last accessed 25 November 2013).

9 United States District Court S.D. Indiana, *Monsanto Co. v. Bowman*, *supra* note 8, at p. 836.

10 United States District Court S.D. Indiana, *Monsanto Co. v. Bowman*, *supra* note 8, at pp. 836–837.

ment for infringement and entered judgment in favor of Monsanto in the amount of $84,456.20. Although Judge Richard L. Young admitted that Bowman raised "compelling policy arguments addressing the monopolizing effect of the introduction of patented genetic modifications to seed producing plants on an entire crop species", he concluded that "he has not overcome the patent law precedent which breaks in favor of Monsanto with regard to its right to patent protection against the use of the progeny of its patented Roundup Ready® seeds".[11] Judge Young referred to *Monsanto Co. v. Scruggs*[12] and *Monsanto Co. v. McFarling*,[13] two cases in which growers who allegedly infringed Monsanto's patents on Roundup Ready® seeds, raised the doctrine of "first sale" or "patent exhaustion" as a defense against the company. In both cases the courts found that Monsanto's patent rights had been infringed and that the patent exhaustion doctrine was not applicable.

On September 21, 2011, the U.S. Court of Appeals for the Federal Circuit affirmed the District Court's holding that patent exhaustion did not apply to Bowman's second-crop plantings. Recalling *Monsanto Co. v. Scruggs*, the Court stated[14] that, once Bowman planted the commodity seeds containing Monsanto's Roundup Ready® technology and the next generation of seeds developed, the grower had created a newly infringing article, concluding that "the fact that a patented technology can replicate itself does not give a purchaser the right to use replicated copies of the technology. Applying the first sale doctrine to subsequent generations of self-replicating technology would eviscerate the rights of the patent holder".[15]

II. The Doctrine of Patent Exhaustion

The U.S. Supreme Court, like the previous courts, focused its decision on the interpretation of the doctrine of patent exhaustion, which Bowman used as a defense against Monsanto's patent infringement claims. Recalling *Quanta Computer Inc. v. LG Electronics, Inc.*, U.S. 617, 128 S. Ct. 2109, 170 L.Ed.2d 996 (2008), Bowman argued that Monsanto could not control his use of the soybeans because they were the subject of a prior authorized sale (from local farmers to the grain elevator).[16]

The doctrine of patent exhaustion does not have a statutory basis. It was created by the U.S. Supreme Court in 1873 in *Adams v. Burke*[17] and limits the extent to which a patent holder can control what others do with an individual article, embodying or containing an invention, after an authorized sale. According to the doctrine, "the initial authorized sale of a patented article terminates all patent rights to that item"[18] and confers on the purchaser, or any subsequent owner, "the rights to use or sell the thing as he sees fit".[19] Whilst the Patent Act grants a patentee the "right to exclude others from making, using, offering for sale, or selling the invention",[20] the patent exhaus-

11 United States District Court S.D. Indiana, *Monsanto Co. v. Bowman*, *supra* note 8, at pp. 836–837.

12 See *Scruggs*, 459 F.3d, at 1336. In *Scruggs*, Scruggs purchased Roundup Ready® soybeans from one of Monsanto's authorized seed companies, planted and harvested them and replanted the second-generation seeds that contained the Roundup Ready® trait. Scruggs never signed and executed the Technology Agreement and used the doctrine of patent exhaustion as a defense against Monsanto. The Court held the doctrine inapplicable since "there was no unrestricted sale because the use of the seeds by seed growers was conditioned upon obtaining a license from Monsanto" (*Scruggs*, 459 F.3d, at p. 1334).

13 In *McFarling*, McFarling, a Monsanto's licensed grower, violated the terms of the Technology Agreement he signed with the company by saving 1500 bushels of Roundup Ready® soybeans from one harvest and replanting them in another growing season. He repeatedly saved seeds containing the Roundup Ready® trait, and planted them without paying Monsanto any license fee. McFarling argued, as a defense, that the conditions of Monsanto's Technology Agreement "violate[d] the doctrine of patent exhaustion". The U.S. Court of Appeals for the Federal Circuit, however, held that "the 'first sale' doctrine of patent exhaustion … was not implicated, as the new seeds grown from the original batch had never been sold. The price paid by the purchaser 'reflects only the value of the use rights conferred by the patentee' (citing *B. Braun Med., Inc., v. Abbott Labs*, 124 F.3d 1419, at p. 1426, Fed. Cir. 1997)". See *McFarling*, 302 F.3d, at p. 1299.

14 United States Court of Appeals for the Federal Circuit, *Monsanto Company and Monsanto Technology LLC v. Vernon Hugh Bowman*, *supra* note 4, at p. 12.

15 United States Court of Appeals for the Federal Circuit, *Monsanto Co. v. Scruggs*, 16 August 2006, 459 F.3d, at p. 1336.

16 See In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Brief for petitioner, available on the Internet at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 25 November 2013), at p. 31.

17 *Adams v. Burke*, 84 U.S. (17 Wall.) 453 (1873), available on the Internet at <http://supreme.justia.com/cases/federal/us/84/453/case.html> (last accessed on 25 November 2013).

18 *Quanta Computer, Inc. v. LG Electronics, Inc.*, 553 U.S. 617, at p. 625.

19 *United States v. Univis Lens Co.*, 316 U.S. 241, at pp. 249–250.

20 35 U.S.C. § 154 (a) (1), available on the Internet at <http://www.uspto.gov/web/offices/pac/mpep/mpep-9015-appx-l.html#d0e303482> (last accessed on 25 November 2013).

tion doctrine sets a limit to this right and represents an affirmative defense against patent infringement.[21]

In light of the restrictions the patentee can place on the sale or use of the patented invention, however, it is sometimes difficult to ascertain whether the patent exhaustion doctrine can be applied or not to a particular case, how broad the scope of the patentee's intellectual property rights is and when an "authorized sale" occurs. In *Bowman* these issues turned out to be more difficult to address because Bowman planted Roundup Ready® seed as first-crop during the years 1999 through 2007 but, unlike the growers Scruggs and McFarling, complied with the Technology Agreement signed with Hi-Bred and did not save seeds from his first-crop during those years to replant them.

Although the terms of the Technology Agreement forbid growers to sell the progeny of the licensed Roundup Ready® seeds for planting, Monsanto authorizes growers to sell second-generation seed to local grain elevators as commodity seeds, without requiring them to place restrictions on grain elevators' subsequent sale of that seed.[22] It is worth noting that commodity seeds are a mixture of undifferentiated seeds harvested from various sources, including farms that grow Roundup Ready® soybeans and those that do not. In Indiana approximately 94 % of the acres planted with soybeans in 2007 were herbicide resistant varieties and, therefore, most of the seeds sold by local grain elevators are Roundup Ready® soybeans.

In respect to the patent exhaustion doctrine, Monsanto and Bowman expressed two contrasting views about what an "authorized sale" is. Monsanto claimed that licensed growers' sales of second-generation seeds to grain elevators as commodity seeds did not exhaust Monsanto's patent rights in these seeds because of the express condition contained in the Technology Agreement that the progeny of licensed seed never be sold for planting and that when a grower's sale of harvested seeds to a grain elevator results in these to be planted, it is not an "authorized sale". Furthermore, the company argued that, even if there was patent exhaustion with respect to the commodity seeds, Bowman was liable for infringing its patents by planting those seeds, since patent protection is independently applicable to each generation of soybeans (or other crops) that contains the patented trait and that the patent exhaustion doctrine "applies only to the specific article sold and not to *new* articles embodying the patented invention".[23]

Bowman contended that exhaustion should be applied because *seeds are meant to be planted*, and allowing Monsanto to interfere with farmers' ability to use seeds freely would "create an impermissible exception to the exhaustion doctrine" for patented seeds and other replicating technologies.[24]

Justice Kagan, who delivered the opinion of the Supreme Court, focused instead on the limit of the rights that the patent exhaustion entails. She pointed out that "under the doctrine of patent exhaustion, the authorized sale of a patented article gives the purchaser, or any subsequent owner, a right to use or resell that article. Such a sale, however, does not allow the purchaser *to make new copies* of the patented invention".[25] In defining the meaning of the expression "making new copies", the Supreme Court applied a mechanistic analogy by comparing third-crop soybeans, obtained by Bowman planting the commodity seeds bought from the local grain elevator, to a copy of a patented machine and concluded that "the purchaser of the [patented] machine ... does not acquire any right to construct another machine either for his own use or to be vended to another" (*Mitchell v. Hawley*, 16 Wall. 544, 548 (1873).[26] The mechanistic analogy "soybeans-machine" is partially unsuitable to catch the peculiarity of seeds in comparison to a machine: a copy of a machine can only be made by man, whereas the growth of new seeds is mostly

21 35 U.S.C. § 271 (a) sets the definition of patent infringement as follows: "Whoever without authority makes, uses, offers to sell, or sells any patented invention … infringes the patent", available on the Internet at <http://www.uspto.gov/web/offices/pac/mpep/mpep-9015-appx-l.html#d0e303482> (last accessed on 25 November 2013).

22 United States Court of Appeals for the Federal Circuit, *Monsanto Company and Monsanto Technology LLC v. Vernon Hugh Bowman, supra* note 4, at p. 6.

23 In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Brief for respondents, available on the Internet at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 25 November 2013), at p. 15.

24 In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Brief for petitioner, available on the Internet at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 25 November 2013), at p. 16.

25 See Supreme Court of the United States*, Vernon Hugh Bowman v. Monsanto Company et al.*, *supra* note 1, at p. 1. Emphasis added.

26 See Supreme Court of the United States*, Vernon Hugh Bowman v. Monsanto Company et al.*, *supra* note 1, at p. 5.

the result of a natural process, which originates either from nature or from human beings.

By applying this analogy and offering a teleological interpretation of the concept of "patent exhaustion", the Court concluded that exhaustion occurs only with respect to the particular item sold and not to reproductions, as if it were otherwise, Monsanto's patent would provide scant benefit.[27] Since Bowman had reproduced Roundup Ready® seeds without the patent holder's permission, he was judged to have infringed Monsanto's patents.

III. Comment

In *Vernon Hugh Bowman v. Monsanto Company et al.* the U.S. Supreme Court mainly dealt with the doctrine of patent exhaustion, but the case is intertwined with several legal and policy issues: (1) which is the future of farmers' rights in the U.S. intellectual property protection system of new varieties of seeds and plants?; (2) how much granting utility patents on genetically modified seeds has contributed to concentrate control over germplasm, by transforming the seeds in mere commodities?; (3) which environmental risks of transgenic contamination for organic growers have emerged from patent litigation over genetically modified seeds in the U.S.?

As regards the first question, patent litigation over genetically modified seeds has increased significantly in only one decade. Most cases of patent infringement involved farmers who were alleged to have infringed patents on Roundup Ready® seeds,[28] such as *Monsanto v. McFarling*,[29] *Monsanto v. Scruggs*[30] and *Monsanto v. David*[31] in the U.S. and *Monsanto v. Schemeiser*[32] in Canada. One of the main reasons why farmers are increasingly facing patent litigation is a major change that occurred in IP protection of seeds and plants due to some courts' decisions:[33] *Ex Parte Hibberd* and *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.* These decisions have had a great impact on farmers' rights because they have allowed utility patents on seeds and plants, whereas the USPTO had earlier adopted a practice based on the legal principle of preemption. According to this principle, any subject matter that was protectable under either the plant patent law or the Plant Variety Protection Act[34] was preempted by that law and could not be protected under the general patent law.[35]

The environmental sociologist Jack Kloppenburg Jr., commenting on the effects of the U.S. Board of Patent Appeals and Interferences decision in *Ex Parte Hibberd* in 1985 – in which the Board overturned a half century of federal patent policy by granting Kenneth Hibberd patents on the tissue culture, seed, and whole plant of a corn line selected from tissue culture –, pointed out why, after that decision, utility patents were likely to be preferred over PVP certificates[36] and plant patents:

(1) At $300 per application, PTO fees are substantially less than those levied by the Plant Variety Protection Office ($2,000 per application);[37]
(2) Moreover applicants get more for their money. The PVPA and the Plant Patent Act permit only a single claim for a new plant variety as an indivisible whole. Utility patents may encompass

27 See Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, *supra* note 1, at p. 6.

28 By 2010 Monsanto had filed 136 infringement lawsuits against 400 farmers and 53 small-farm businesses. See Centre for Food Safety, *Monsanto vs. Farmers: 2010 Update* (2010), available on the Internet at <http://www.centerforfoodsafety.org/files/monsanto-v-us-farmer-2010-update-v-2.pdf> (last accessed on 25 November 2013). As Bowman pointed out, "of these lawsuits, 70 ended in Judgments for Monsanto, with aggregate damages totaling $23,345,820.99". In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Brief for petitioner, available at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 6 August 2013), at p. 5.

29 United States Court of Appeals for the Federal Circuit, *Monsanto v. McFarling*, 302 F.3d 1291 (2002).

30 United States Court of Appeals for the Federal Circuit, *Monsanto v. Scruggs*, 459 F.3d 1328 (2006).

31 United States Court of Appeals for the Federal Circuit, *Monsanto v. David*, 516 F.3d 1009 (2008).

32 Supreme Court of Canada, *Percy Schmeiser and Schmeiser Enterprises Ltd. v. Monsanto Canada Inc. and Monsanto Company*, 1 S.C.R. 904, 2004 SCC 34.

33 These decisions are *Ex parte Hibberd*, 227 USPQ 443 (Bd Pat. App. & Inter. 1985) and *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 122 S. Ct. 593 (2001).

34 Plant Variety Protection Act is a U.S. intellectual property statute passed by the Congress in 1970 (U.S.C. 7 §§ 2321–2582), which confers "patent-like" protection to new, distinct, uniform and stable varieties of plants that reproduce sexually.

35 See Stephen A. Bent, "Protection of Plant Material under the General Patent Statute: A Sensible Policy at the PTO?", 4 *Biotechnology Law Report* (1985), pp. 105 *et sqq.*, at p. 105, quoted in Jack Ralph Kloppenburg Jr., *First the Seed: the Political Economy of Plant Biotechnology, 1492–2000*, 2nd ed. (Madison WI: The University of Wisconsin Press, 2004), at p. 263.

36 Plant Variety Protection certificates are issued to developers of new varieties of sexually reproduced seeds, transplants and plants under the Plant Variety Protection Act.

37 Jack Ralph Kloppenburg Jr., *First the Seed: the Political Economy of Plant Biotechnology, 1492–2000*, *supra* note 34, at p. 263.

claims not only to multiple varieties but also to the individual components of those varieties: DNA sequences, genes, cells, tissue cultures, seed, and specific plant parts, as well as the entire plant;[38]

(3) Unlike the PVPA, the utility patent statute does not include a farmer-exclusion clause. Farmers are no more exempt from the legal obligation to respect the property rights of developers of patented seed than are their corporate competitors. Legal precedent is that the purchase of a patented product brings with it the right to *use* the product, but not the right to *make* it. Applied to seed, this principle implies that a farmer purchasing patented seed would have the right to use (to grow) the seed, but *not* the right to make the seed (to save and replant).[39]

Ex Parte Hibberd opened the way to granting utility patents on seeds and plants. However, only after the Supreme Court's decision in *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*,[40] utility patents became more appealing to seed companies, as it made clear that farmers' rights could no longer be opposed to the holder of a utility patent on seeds. In *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, the Supreme Court addressed whether an inventor could get a patent on a seed or plant or only a certificate issued under the Plant Variety Protection Act, and held that a patent was available, rejecting the claim that the PVPA implicitly repealed the Patent Act's coverage of seeds and plants. As Judge Kagan argued in *Bowman*, justifying the Supreme Court holding by relying on *J.E.M. Ag Supply, Inc.*, "the requirements for getting a patent are more stringent than those for obtaining a PVP certificate, and the protection afforded" by a patent is correspondingly greater. Most notable here, the Court explained that only a patent holder (not a certificate holder) could prohibit "a farmer who legally purchases and plants a protected seed from saving harvested seed for replanting".[41]

Furthermore, the *Bowman* decision leaves open some important issues related to the fact that granting utility patents on genetically modified seeds resulted in major control over germplasm by seed companies, which transformed the seed into a commodity for growers. These problems were partially raised by Bowman and were acknowledged by the District Court, as Justice Young stated that Bowman submitted "compelling policy arguments addressing the monopolizing effect of the introduction of patented genetic modifications to seed producing plants on an entire crop species".[42] The ubiquity of Roundup Ready® seeds in fields throughout the United States and the legal enforcement of Roundup Ready® patents can disrupt farmers' practice of saving and replanting seeds. As a consequence, the seeds (and their germplasm), which represent for farmers both commercial products and their means of production, may be completely withdrawn from their control as a means of production. Nonetheless, since these problems have been framed as policy issues, they have been dismissed by the three courts that independently heard and decided the case.

Finally, the Bowman case has shown that the ubiquity of Roundup Ready® seeds in fields across the United States is actually creating environmental risks of transgenic contamination for organic farmers and also making it more difficult for them to use commodity seeds from grain elevators. As Bowman pointed out, local grain elevators do not keep Roundup Ready® seeds segregated from non-Roundup Ready® ones.[43] The percentage of seeds with the patented trait in grain elevators has steadily increased as the use of Roundup Ready® seeds has become widespread. As a consequence, not only is it more difficult for farmers to find cheaper sources of non-infringing seeds,[44] but it is also diminishing organic growers' opportunities to find local sources of non-Roundup Ready® seed supply.

In addition, as *Organic Seed Growers and Trade Association, et al. v. Monsanto Company and Monsanto*

38 Jack Ralph Kloppenburg Jr., *First the Seed: the Political Economy of Plant Biotechnology, 1492–2000*, supra note 34, at p. 263.

39 Jack Ralph Kloppenburg Jr., *First the Seed: the Political Economy of Plant Biotechnology, 1492–2000*, supra note 34, at p. 265.

40 See *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*122 S. Ct. 593 (2001).

41 See *Supreme Court of the United States, Vernon Hugh Bowman v. Monsanto Company et al.*, supra note 1, at p. 7.

42 United States District Court S.D. Indiana, *Monsanto Co. v. Bowman*, supra note 8, at p. 837.

43 See United States District Court S.D. Indiana*, Monsanto Co. v. Bowman*, supra note 8, at p. 837: "Monsanto should be required to include with its license to plant Roundup Ready® seed a requirement that the resulting crop be *segregated* from non-Roundup Ready® crops going forward, so that commodity soybean planting is not eliminated as an option for farmers". Emphasis added.

44 In the Supreme Court of the United States, *Vernon Hugh Bowman v. Monsanto Company et al.*, Reply Brief, available on the Internet at <http://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs/11-796_pet.authcheckdam.pdf> (last accessed on 25 November 2013), at p. 14.

Technology LLC[45] has highlighted, organic farmers and conventional seed selling businesses are deeply concerned that Monsanto will sue them for infringement of its patents related to technologies for genetically modifying seeds. On March 29, 2011, several organic agricultural organizations, more than 60 family farmers and many seed selling businesses sought declaratory judgments of non-infringement and invalidity with respect to 23 patents owned by Monsanto Co. and Monsanto Technology, LLC, related to technologies for genetically modifying seeds and comprising Roundup Ready® technology. They brought suit against Monsanto in the Southern District of New York, alleging that they have been forced to do the following:

(1) forgo growing [conventional] corn, cotton, canola, sugar beets, soybeans, and alfalfa, since it is widely known that those crops are currently under severe threat of transgenic seed contamination ... (over 85–90 % of all soybeans, corn, cotton, sugar beets and canola grown in the U.S. contains Monsanto's patented genes),[46]
(2) take costly precautions to avoid contamination, such as testing seeds for transgenic traits and creating 'buffer' zones between their farms and those of neighbors growing modified crops.[47]

The appellants also purported that if they do not take these measures, they "would be at risk of having Monsanto assert claims of patent infringement against them, should they ever become contaminated by transgenic seed potentially covered by Monsanto's patents".[48] On June 10, 2013, the United States Court for the Federal Circuit affirmed the District Court's conclusion that it lacked Declaratory Judgment Act jurisdiction since Monsanto asserted that it is not willing to sue "inadvertent infringers". However, some issues raised by these farmers and seed companies still need to be thoroughly addressed because, at present, it is not clear who should assume liability for the reproduction of transgenic crops and transgenic contamination.

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45 See United States Court of Appeals for the Federal Circuit, *Organic Seed Growers and Trade Association, et al. v. Monsanto Company and Monsanto Technology LLC*, 10 June 2013, available on the Internet at <http://docs.justia.com/cases/federal/appellate-courts/cafc/12-1298/12-1298-2013-06-10.pdf> (last accessed on 25 November 2013).

46 United States Court of Appeals for the Federal Circuit, *Organic Seed Growers and Trade Association, et al. v. Monsanto Company and Monsanto Technology LLC*, *supra* note 45, at p. 7.

47 United States Court of Appeals for the Federal Circuit, *Organic Seed Growers and Trade Association, et al. v. Monsanto Company and Monsanto Technology LLC*, *supra* note 45, at p. 7.

48 United States Court of Appeals for the Federal Circuit, *Organic Seed Growers and Trade Association, et al. v. Monsanto Company and Monsanto Technology LLC*, *supra* note 45, at pp. 7–8.