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INTELLECTUAL PROPERTY FOR THE BOTANIST AND THE PLANT BREEDER:
AN OVERVIEW OF PROTECTION AFFORDED BY PLANT PATENTS AND PLANT VARIETY PROTECTION CERTIFICATES

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Introduction

An informal survey of the popular press might lead one to conclude that most developments in the world of biology involve genetics, pharmaceuticals, and microbiology. However, as the world population has been growing and the demands for sustenance and more balanced ecosystems have been rising, Mother Necessity has been placing increasing pressure on society to develop heartier and different varieties of plant life. At the same time, techniques for genetic screening have been providing the botanist and plant breeder with new tools that facilitate the ability to identify and to select plant parents that have desirable characteristics. Thus, the need to develop new and distinct plants and the tools for facilitating their development are each at an all-time high.

Fortunately, the need and means for developing new plants are peaking against a backdrop of strong economic incentives for the botanist and the plant breeder. Further, and perhaps even more so than in any other field, Congress has provided streamlined means by which these classes of inventors and plant breeders may avail themselves of economic rewards. Not only may advances in botany and plant breeding be the subject of the more familiar utility patents, but they may also be protected under the statutory frameworks first created by the Plant Patent Act of 1930 ("PPA") and the Plant Variety Protection Act ("PVPA").[1]

The PPA and PVPA may be looked upon dubiously by patent practitioners and other attorneys who counsel botanists and plant breeders, and this is understandable given the relatively few plant patents and plant variety certificates that have issued when

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[1] J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l Inc., 534 U.S. 124, 127 (2001) ("We hold that utility patents may be issued for plants."); Asgrow Seed Co. v. Winterboer, 513 U.S. 179, 181 (1995) ("In 1970, Congress passed the Plant Variety Protection Act (PVPA) (citation omitted) . . . in order to provide developers of novel plant varieties with 'adequate encouragement for research, and for marketing when appropriate, to yield for the public the benefits of new varieties' [7 U.S.C.] § 2581"); Monsanto Co. v. Good, No. 01-5678, 2003 U.S. Dist. LEXIS 27217, at *18-19 (D.N.J. July 23, 2003) (PVPA does not bar assertion of utility patent); *Ex parte* Hibberd, 227 U.S.P.Q. (BNA) 443, 444 (B.P.A.I. Sept. 18, 1985) ("We disagree with these contentions that the scope of patentable subject matter under Section 101 has been narrowed or restricted by the passage of the PPA and the PVPA and that these plant-specific Acts represent the exclusive forms of protection for plant life covered by those acts.").

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compared to the large number of utility patents that have issued. However, plant patents and Plant Variety Protection Certificates can provide valuable forms of intellectual property protection and often offer the most cost-effective means by which to ensure that botanists and plant breeders receive the economic rewards to which they are entitled. This article discusses the frameworks under which botanists and plant breeders may obtain exclusivity and highlights certain differences between these forms of intellectual property protection.

I. Background

Since the founding of this country, Congress has recognized the importance of rewarding inventors for their contributions to society. The most common type of reward is the utility patent, which grants exclusivity to inventors for their inventions and permits them to prevent others from making, using, offering for sale or selling products and processes that fall within the claims of a patent.[2] Utility patents may be valuable to the botanist and plant breeder for both new plants and new secondary inventions, such as new plant foods, new growing techniques, and new instruments, *etc.*

In order to obtain a utility patent, an applicant must satisfy the requirements of novelty,[3] non-obviousness,[4] and utility,[5] and must present an adequate disclosure with respect to enablement, [6] written description,[7] and best mode.[8] Regardless of the nature of the invention, every patent application for a utility patent that is filed by a botanist, plant breeder, or anyone else needs to satisfy these requirements. [9]

Unfortunately, these requirements -- particularly with respect to enablement and written description -- can be onerous for inventions in subspecialties related to biology.[10] With respect to inventive varieties of plants, even Congress has recognized that these burdens may be unfairly high. Accordingly, through the PPA and the PVPA Congress

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[2] 35 U.S.C. § 271(a) (2000). It is important to note that patents do not give an inventor the right to practice a particular technology. The right to exclude is not the same as the right to use, and clients should be cautioned against confusing the two issues.
[3] 35 U.S.C. § 102 (2000).
[4] 35 U.S.C. § 103 (2000).
[5] 35 U.S.C. § 101 (2000).
[6] 35 U.S.C. § 112, ¶ 1 (2000).
[7] *Id.*
[8] *Id.*
[9] 35 U.S.C. § 161 ("The provisions of this title relating to patents for inventions shall apply to patent for plants, except as otherwise provided."); *J.E.M. Ag Supply, Inc.*, 534 U.S. at 131 (For a utility patent "the plant must meet the specifications of [35 U.S.C.] § 112, which requires a written description of the plant….").
[10] *See* Scott D. Locke and David A. Kalow, *Preparing for Bioinformatics Litigation: How Will the Courts Confront the Next Generation of Biotechnology Patents*, 1 BUFF. INT. PROP. L. J. 76, 86-90 (Summer 2001). Additionally, there are detailed requirements for patent applications that contain sequence listings. 37 C.F.R. §§ 1.821–1.825 (2006).

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has provided unique statutory schemes to allow inventors and breeders to obtain patent rights and patent-like rights for asexually reproduced and sexually reproduced plants.[11]

These special statutory schemes and the regulations that implement them, arguably place less onerous burdens on botanists and plant breeders with respect to the adequacy of a disclosure than are placed on inventors who file for utility patents. Therefore, at least in theory, acquiring these rights is easier than acquiring rights to utility patents.

Regardless of whether these burdens are less onerous, in order to maximize the ability to claim rights under these provisions, the botanist and plant breeder, as well as the attorney who counsels them, must appreciate the unique aspects of these types of protections, including the Congressional policy and goals for each of these types of rights and the different legal frameworks and standards for obtaining these rights.

II. Plant Patents

A. Policy and Goals

More than seventy-five years ago, Congress first provided protection for asexually reproducing plants by enacting the Plant Patent Act.[12] Consistent with the goal of promoting science and the useful arts,[13] Congress sought

> to afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given industry, and thus assist in placing agriculture on a basis of economic equality with industry.[14]

Congress enacted the PPA to provide protection for new and useful asexually reproduced plants.[15] These types of plants are reproduced by "grafting, budding, or the like, and produce[] an offspring with a genetic combination identical to that of the single parent – essentially a clone."[16]

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[11] Monsanto Co. v. Byrd, No. 7:99-CV-154-F1, 2000 WL 33952260, at *3 (E.D.N.C. Dec. 11, 2000) ("Plants traditionally were not considered patentable . . . [in part] because of the inherent difficulty in meeting the 'written description requirement' for all patents.").

[12] Although there may have been some confusion at one time as to whether the scope of patentability has been narrowed by the enactment of the Plant Patent Act and Plant Variety Protection Act, the issue has been resolved and the availability of one type of right does not affect the availability of the other. *J.E.M. Ag Supply, Inc.*, 534 U.S. at 145 ("[W]e hold that newly developed plant breeds fall within the terms of § 101, and that neither the PPA nor the PVPA limits the scope of § 101's coverage"); *see also* note 1, *supra*.

[13] U.S. CONST. art. I, § 8, cl. 8.

[14] S. REP. NO. 315-307, at 1 (1930). For a general overview of the history of the Plant Protection Act, see Cary Fowler, Ph.D., The Plant Patent Act of 1930: A Sociological History of Its Creation, 82 J. Pat. & Trademark Off. Soc'y 621 (2000).

[15] S. REP. NO. 315-307, at 1 (1930).

[16] *J.E.M. Ag Supply, Inc.*, 524 U.S. at 132.

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There has always been a debate as to whether life forms such as plants should be entitled to patent protection. Congress indicated its view in 1930 when it included exclusivity rights for asexually reproduced plants within the general utility provisions of the patent law.[17] In 1952 Congress created a separate chapter exclusivity for plant patents.[18] However, the Supreme Court described this change as mere "housekeeping."[19] Thus, Congress' consistent policy has been to provide patent rights for asexually reproduced plants.

B. Legal Framework

Plant patents offer protection for "any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state" that is asexually reproduced.[20] Although one could, in theory, make arguments as to what is a "plant" and what is another life form, particularly as one considers primitive and unicellular organisms, the courts have applied the PPA to "plant life" as the phrase is commonly understood.[21]

The issuance of a plant patent provides the patent-holder with: "the right to exclude others from asexually reproducing the plant, and from using, offering for sale, or selling the plant so reproduced, or any of its parts, throughout the United States, or from importing the plant so reproduced, or any parts thereof, into the United States."[22] Thus, plant patents afford exclusionary rights that are similar to rights afforded to utility patent holders.[23]

However, plant patent rights are narrow when compared to many utility patents because a single valid plant patent cannot cover two or more genetically distinct plants. As the Court of Appeals for the Federal Circuit ("CAFC") explained in *Imazio Nursery v. Dania Greenhouses*, because plant patents cover asexually reproduced plants, "for purposes of plant patent infringement, the patentee must prove that the alleged infringing plant is an asexual reproduction, that is that it is the progeny of the patented plant."[24] This requirement makes it sound as if the plant patent right is more similar to a copyright than a patent right: if there was independent creation, there would be no infringement.

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[17] S. REP. NO. 315-307, at 1 (1930).
[18] July 19, 1952, c. 950, 66 Stat. 804.
[19] *J.E.M. Ag Supply, Inc.*, 524 U.S. at 132.
[20] 35 U.S.C. § 161 (2000).
[21] Kim Bros. v. Hagler, 167 F. Supp. 665, 667 (S.D. Cal. 1958), *aff'd* 276 F.2d 259 (9th Cir. 1960) (citations omitted). For example, one of the earliest cases involving plant patents recognized that plant patent protection does not encompass protection for bacteria. *In re* Arzberger, 112 F.2d 834, 838 (C.C.P.A. 1940). Similarly, tissue cultures are not within the scope of the plant protection act. *Ex parte* Hibberd, 227 U.S.P.Q.(BNA) (B.P.A.I. Sept. 18, 1985).
[22] 35 U.S.C. § 163 (2000).
[23] *Cf.* 35 U.S.C. § 271(a) (2000).
[24] Imazio Nursery, Inc. v. Dania Greenhouses, 69 F.3d 1560, 1569 (Fed. Cir. 1995), *cert. denied,* 518 U.S. 1018 (1996) (citation omitted). Similarly, the scope of protection is limited to a single plant, the plant that is shown and described. *Id.* at 1568.

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Even though the breadth of plant patents may be considered narrow, this does not make these types of patents less valuable. For example, a plant patent infringer would not likely try to cross two other plants with the hope of creating a progeny with the same exact genotype as the patented plant.[25] The infringer might, however, purchase a plant and then try to asexually propagate the plant in violation of the patent holder's rights. Both persons of ordinary skill in the art and laypersons are capable of such acts.

Congress recognized that asexually reproduced plants are inventive in a different way than new compositions of matter or new methods are inventive. Accordingly, despite the inclusion of the provisions for plant patents in Title 35 of the U.S. Code, the provisions for patentability that relate to utility patents are applicable "except as otherwise provided."[26] The "except as otherwise provided" provision of the PPA, as well as the unique parameter that a genetic variety is what is being patented, provide the foundation of two unique aspects of plant patent law when compared to patent law for traditional utility patents: (1) prior art and (2) sufficiency of the disclosure.

1. Prior Art for Plant Patents[27]

As noted above, a patent may issue only if the invention is new and non-obvious.[28] In order to evaluate whether a patent application satisfies these criteria, the Patent Office compares claims within a pending application to what is referred to as prior art, thus establishing the reference point over which the invention must meet these criteria.[29] The concept of prior art includes printed publications and domestic public uses, sales, and offers for sales.[30]

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[25] A competitor may of course try to cross the same parents to get an offspring with similar or better traits. In theory this is what the patent laws try to encourage. However, as a matter of practicality there are a number of economic burdens that discourage this. First, the competitor needs to have access to the parents. Second, depending on the growing cycle of the plant and where in the term of the patent one is, the competitor would often be better of simply waiting for the plant to go off patent at which point the invention would enter the public domain.

[26] 35 U.S.C. § 161 (2000); *see also In re* Elsner, 381 F.3d 1125, 1129 (Fed. Cir. 2004) ("[W]e perceive a difference between plants and statutorily distinct inventions…."); Yoder Bros., Inc. v. Cal.-Fla. Plant Corp., 537 F.2d 1347, 1377 (5th Cir. 1976) ("For plant patents, the requirement of distinctness replaces that of utility, and the additional requirement of asexual reproduction is introduced."), *cert. denied* 429 U.S. 1094 (1977); *In re* LeGrice, 301 F.2d 929, 935 (C.C.P.A. 1962) ("[I]t must be borne in mind that there are inherent differences between plants and manufactured articles. Should a plant variety become extinct one cannot deliberately produce a duplicate even though its ancestry and the techniques of cross-pollination be known. Manufactured articles, processes, and chemical compositions when disclosed are, however, susceptible to man-made duplication."); Monsanto Co. v. Trantham, 156 F. Supp.2d 855, 869 (W.D. Tenn. 2001) ("[T]he basic patent law applies to patented new varieties of plants except where the PPA has provisions different from basic patent law"); Dunn v. Ragin, 50 U.S.P.Q. 472, 474 (B.P.A.I. 1941) (there can be no constructive reduction to practice for plant patents).

[27] Searching for prior art for plants patents has always been a curious obstacle. At least one commentator has suggested that the best way for the PTO to address this issue is to make full use of the numerous databases in the Plant Variety Protection Office of the Department Agriculture. Katherine E. White, *An Efficient Way to Improve Patent Quality for Plant Varieties*, 3 NW. J. TECH. & INTELL. PROP. 79, *4, *9 (Fall 2004).

[28] 35 U.S.C. §§ 102 and 103.

[29] *Id.*

[30] 35 U.S.C. § 102 (2000).

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With regard to plant patents, the typical type of invalidating prior art is the prior sale or offer for sale within the United States.[31] This type of invalidating prior art is more common because it is difficult to conceive of an instance in which printed publications could invalidate a plant patent: printed publications would be hard-pressed to put the invention in the hands of the public.[32]

In re Elsner presented the CAFC with the interesting issue of whether evidence of the foreign sale of a claimed reproducible plant variety may enable an otherwise non-enabled printed publication disclosing that plant, thereby creating a section 102(b) bar.[33] The CAFC recognized that, according to the patent statute, a foreign sale does not qualify as prior art under section 102. However, it held that a foreign sale might be considered in determining whether a printed publication is enabling and thus can be used as a bar to the patentability of a plant patent application.[34] The CAFC did not make an ultimate determination as to whether the particular foreign sale at issue, in combination with the cited printed publication, was enabling, but instead it remanded with the guidance that the "foreign sale must not be an obscure, solitary occurrence that would go unnoticed by those skilled in the art. Its availability must have been known in the art just as a printed publication must be publicly available."[35] Thus, printed publications can be relevant to determine patentability.

As a matter of practicality, the holding of *In re Elsner* is likely to be of more concern to a foreign plant breeder than to one based in the United States. It is unlikely that a U.S. plant breeder would develop a plant, publish a description of the plant, and sell the plant abroad but not within this country. On the other hand, a foreign plant breeder might sell the plant in her own country and describe the plant in a printed publication more than one year before filing for a U.S. plant patent.

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[31] *See e.g.*, Bourne v. Jones, 114 F. Supp. 413, 420 (S.D. Fla. 1951), *aff'd* 207 F.2d 173 (5th Cir. 1953), *cert. denied,* 346 U.S. 897 (1953); Cole Nursery Co. v. Youdath Perennial Gardens, Inc., 17 F. Supp. 159, 160 (N.D. Ohio 1936).

[32] In the seminal case on this issue, *LeGrice*, 301 F.2d at 929, the Court of Customs and Patent Appeals addressed whether an English publication that described a plant could be a basis on which to hold the plant unpatentable. The court held that 35 U.S.C. § 102 did apply to plant patents, but "before any publication can amount to a statutory bar to the grant of a patent, its disclosure must be such that a skilled artisan could take its teachings in *combination with his own knowledge of the particular art and be in possession of the invention.*" *Id.* at 936 (emphasis added). Mindful of the scientific advances that would occur over the remainder of the twentieth century, the court was careful to qualify that advances in genetics might make a printed publication a bar to patentability. *Id.* at 939. Thus, one can imagine (though not necessarily view as a likely fact pattern) that a plant's complete genome could be sequenced and then published more than one year prior to filing a patent application. This alone or in combination with other printed descriptions of the plant might be distinguishable from *LeGrice*.

[33] 381 F.3d at 1128.

[34] *Id.* at 1130. The United States District Court for the Eastern District of Virginia has also noted that an Examiner may, in her discretion, ask for information regarding foreign uses and sales and breeder's certificates. Star Fruits S.N.C. v. United States, 280 F. Supp. 2d 512, 516 (E.D. Va. 2003).

[35] Elsner, 381 F.3d at 1131.

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Perhaps a more interesting question is: what significance does prior art have with respect to the non-obviousness requirement for plant patents? In *Yoder Brothers, Inc.*, the Court of Appeals for the Fifth Circuit held:

> Rephrasing the [*Graham v.*] John Deere[36] tests [for obviousness] for the plant world, we might ask about (1) the characteristics of prior plants of the same general type, both patented and nonpatented, and (2) the differences between the prior plants and the claims at issue.
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> . . .
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> We think that the most promising approach toward the obviousness requirement for plant patents is reference to the underlying constitutional standard that it codifies namely, invention.
>
> The general thrust of the 'invention' requirement is to ensure that minor improvements will not be granted the protection of a . . . monopoly by the state. In the case of plants, to develop or discover a new variety that retains the desirable qualities of the parent stock and adds significant improvements, and to preserve the new specimen by asexually reproducing it constitutes no small feat.
>
> . . .
>
> If the plant is a source of food, the ultimate question might be its nutritive content or its prolificacy. A medicinal plant might be judged by its increased or changed therapeutic value. Similarly, an ornamental plant would be judged by its increased beauty and desirability in relation to the other plants of its type, its usefulness in the industry, and how much of an improvement it represents over prior ornamental plants, taking all of its characteristics together.[37]

The *Yoder* obviousness language suggests that obviousness could be measured against the phenotypes of prior art plants. But should lack of obviousness be dependent on the difference between the known plant and the new plant or the obviousness of how to achieve the new plant?

Assuming the CAFC were to adopt the dicta of *Yoder* on this point, one could speculate that there will come a time when an infringer challenges a plant patent because the claimed plant results in crosses of well-known plants with specified traits and differs from those parents and/or siblings in a small but predictable ways according to the law of genetics. Further, as genetic screening techniques become more prevalent and less expensive, the accused infringers would likely assert that particular offspring are even more obvious.

This author will not speculate about when this argument will be made before a court or what will be the outcome. However, if a court were to hold a plant patent invalid

[36] Graham v. John Deere Co., 383 U.S. 1 (1966).
[37] 537 F.2d at 1379.

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as obvious, one would expect Congress to amend the PPA to exclude obviousness as a defense. Otherwise, inventors might be discouraged from inventing and disclosing new asexually reproduced varieties.

2. *Sufficiency of Disclosure*

Section 162 of Title 35 provides:

> No plant patent shall be declared invalid for noncompliance with section 112 of this title if the description is as complete as reasonably possible.[38]

The statute does not clarify what the phrase "as complete as reasonably possible" means. However, in the seminal case *In re Greer*,[39] the United States Court of Customs and Patent Appeals held that a rejection under 35 U.S.C. § 112 is proper if a patent applicant does not "clearly and precisely" describe the characteristics that define the new variety.[40]

The patent applicants sought a patent on a variety of Bermuda grass with the following claim:

> A new and distinct variety of BERMUDA GRASS PLANT, substantially as shown and described, characterized particularly by its outstanding reproductive properties, its large, glossy rhizomes, its high level of resistance to common Bermuda grass diseases and the large percentage of above ground stolons which remain green in freezing weather.[41]

The Patent Office forwarded the application to the Department of Agriculture, which provided a report that raised five issues.[42] Based on the report and the Examiner's

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[38] 35 U.S.C. § 162.
[39] 484 F.2d 488 (C.C.P.A. 1973).
[40] *Id.* at 491.
[41] *Id.* at 488.
[42] The report provided:
1. The claimed grass is reported as superior to five other varieties of bermuda grass [*sic*] in its ability to withstand freezing weather. No comparative data were included in the application to show the relative winter survival of the claimed grass vs. other varieties. In addition to the lack of survival data, it [is] not clear from the application that all varieties were planted and managed in the same fashion.
2. The claimed grass is reported to have a high level of resistance to common bermuda grass [*sic*] diseases. It is stated, however, that no disease was noted on bermuda grass [*sic*] varieties grown at the same locations as the claimed grass. This information does not support the claim for disease resistance as the named varieties differ greatly in their reaction to disease (from highly susceptible to highly resistant).
3. It is stated that the rhizomes of the claimed grass penetrate to a greater depth than those of Coastal bermuda grass [*sic*]. This comparison should include Zimmerly Select as this was the original source of the claimed grass.
4. No comparative measurements of rhizome diameters are included because comparable material was not available in test plots. Since diameter of rhizomes is a distinguishing characteristic of the claimed grass, comparative plots should be established to obtain these data.
5. A larger percentage of stolons of the claimed grass apparently stay green in freezing weather, in

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observations that the reproductive characteristics were not compared to those of any known Bermuda grass, the Examiner rejected the claim for failing to comply with 35 U.S.C. § 112 because the disclosure was not clear and complete with respect to the distinguishing characteristics.[43] Coupled with this rejection, the Examiner issued a rejection under 35 U.S.C. § 102 because based on the disclosure, what was claimed was patentably indistinguishable from common Bermuda grass.[44] The Board of Patent Appeals and Interferences affirmed the rejections.[45]

The Court of Customs and Patent Appeals also affirmed the rejection based on section 112, but it did not reach the merits of the section 102 (lack of novelty) rejection.[46] With respect to section 112, the CAFC emphasized:

> [W]e do not doubt that Bermuda grass having *different* reproductive properties, disease resistance, etc., when compared to the same properties of known varieties, would be a distinct variety of Bermuda grass. However, if, as is true in this case, the characteristics chosen to define the new plant are meaningless unless compared with predecessor plant varieties, it is incumbent upon the applicant to provide information of such a character that a meaningful comparison can be made. It is our view that the Patent Office in this case was justified in its conclusion that the criteria used to support the claim did not allow for such a meaningful comparison.[47]

Thus, *Greer* requires the patent applicant to provide a meaningful comparison to the prior art and not just submit characteristics of the subject that she seeks to patent.

One cannot help but wonder when, given the advances in today's technology, being "as complete as reasonably possible" would require the submission of a genetic profile. However, until Congress or the Patent Office explicitly institutes such a requirement, which is not likely to occur until the price of genotyping comes down, phenotypic characteristics will likely remain the means by which to describe plants that are the subjects of plant patents. Yet, a patent applicant should take care to include a

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> comparison with widely distributed bermuda grass [*sic*] varieties. The conditions under which these observations were made should be described. All varieties must be grown under comparable conditions, i.e., age of stand, irrigation, soil fertility, and clipping or grazing practice. Information on stolon color for the claimed grass and bermuda grass [*sic*] varieties could be given either as a percentage of stolon length or as percentage of stolons that remain green. The description of the claimed grass is not adequate to determine if it differs from other named bermuda grasses [*sic*].

Id. at 489 – 90.

[43] *Id.*

[44] *Id.* at 490

[45] *Id.*

[46] *Id.* at 491.

[47] *Id.*; *see also* Pan-American Plant Co. v. Matsui, 433 F. Supp. 693, 697 n.7 (N.D. Cal. 1977) ("Failure to describe accurately in the patent claim the Danielson plant material's known propensity to produce culls also raises questions as to whether Pan-American's description of the patented plant was 'as complete as is reasonably possible' as required by 35 U.S.C. §§ 112 and 162.").

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sufficient number of points for distinguishing the prior art such that the patent cannot be read as overbroad due to a failure to take reasonable steps to be complete.

III. Plant Variety Protection

Although Congress recognized the need to offer patent protection to asexually reproduced plants in 1930, Congress did not then, and has not since, chosen to offer patent rights for sexually reproduced plants. Instead, in 1970 Congress enacted the Plant Variety Protection Act ("PVPA"), which is administered by the Plant Variety Protection Office within the Department of Agriculture.[48]

A. Policy

As the United States Supreme Court has recognized, the PVPA was enacted to encourage developers to research and market new plant varieties for the public's benefit.[49] Thus, the PVPA "extends patent-like protection to novel varieties of sexually reproduced plants (that is, plants grown from seed) which parallels the protection afforded asexually reproduced plant varieties...."[50] One cannot help but wonder why the protection for asexually and sexually reproduced plants has not been consolidated in a single administrative agency.[51]

B. Legal Framework

The PVPA provides patent-like protection for breeders of sexually reproduced and tuber propagated plants who have successfully reproduced a variety that is new, distinct, uniform, and stable.[52] Plant variety protection provides a degree of exclusivity that extends beyond rights over genetically identical organisms:

> [T]he breeder (or the successor in interest of the breeder), has the right, during the term of the plant variety protection, to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing (as distinguished from developing) a hybrid or

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[48] 7 U.S.C. § 2321 (2000); Monsanto Co. v. Byrd, No. 7:99-CV-154-F1, 2000 WL 33952260, at *3 (E.D.N.C. Dec. 11, 2000) ("The PVPA provides patent-like protection by way of a certificate issued by the Department of Agriculture.").

[49] Asgrow Seed Co. v. Winterboer, 513 U.S. 179, 181 (1995).

[50] *Id.*; *see also* J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l Inc., 534 U.S. 124, 138 (2001) ("By passing the PVPA in 1970, Congress specifically authorized limited patent-like protection for certain sexually reproduced plant.").

[51] Noting the knowledge base of the Department of Agriculture, Congress did provide for authority for the Patent Office to use its expertise. 35 U.S.C. § 164 (2000).

[52] 7 U.S.C. § 2402(a) (2000); Jim Chen, *The Parable of the Seeds: Interpreting the Plant Variety Protection Act in Furtherance of Innovation Policy*, 81 NOTRE DAME L. REV. 105, 121 – 22 (Nov. 2005) (summary of requirements of novelty, distinctiveness, uniformity and stability).

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> different variety therefrom, to the extent provided by this chapter.[53]

Thus, the "PVPA provides a cause of action for infringement against any person who, *inter alia*, undertakes to 'sell or market the protected variety,' multiply or propagate it 'for growing purposes,' or 'dispense the variety to another, in a form which can be propagated without notice as to being a protected variety under which it was received.'"[54] Although it is tempting to equate the nature of patent rights with the nature of rights under the PVPA, there are significant differences beyond the type of plant (asexually reproduced vs. sexually reproduced) that is protected. The following three differences are discussed below: (1) the larger number of varieties protected by a plant variety protection ("PVP") certificate; (2) the absence of the non-obviousness requirement under the PVPA and implementation of a first to file system; and (3) the unique exception to liability under the PVPA.

1. Varieties Protected by a Plant Variety Protection Certificate

The first distinction between the protection afforded by a PVP certificate and a plant patent is the scope of what it means for a "variety" to be protected. As the CAFC explained at great length in *Imazio Nursery, Inc. v. Dania Greenhouses,*[55] the "variety" of plant that is protected by a plant patent is the asexually reproduced plant, while the "variety" of plant that is protected by the PVPA is directed to a plant grouping that can be defined by the expression of the characteristics resulting from a given genotype or combination of genotypes. Thus: "[p]lants true-to-type, although different in a strict genetic sense, are protectable under the PVPA."[56]

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[53] 7 U.S.C. § 2483 (2000). Section 2541 of Title 7 identifies ten specific acts that constitute infringement:

(1) sell or market the protected variety, or offer it or expose it for sale, deliver it, ship it, consign it, exchange it, or solicit an offer to buy it, or any other transfer of title or possession of it;
(2) import the variety into, or export it from, the United States;
(3) sexually multiply, or propagate by a tuber or a part of a tuber, the variety as a step in marketing (for growing purposes) the variety;
(4) use the variety in producing (as distinguished from developing) a hybrid or different variety therefrom;
(5) use seed which had been marked "Unauthorized Propagation Prohibited" or "Unauthorized Seed Multiplication Prohibited" or progeny thereof to propagate the variety;
(6) dispense the variety to another, in a form which can be propagated, without notice as to being a protected variety under which it was received;
(7) condition the variety for the purpose of propagation, except to the extent that the conditioning is related to the activities permitted under section 2543 of this title;
(8) stock the variety for any of the purposes referred to in paragraphs (1) through (7);
(9) perform any of the foregoing acts even in instances in which the variety is multiplied other than sexually, except in pursuance of a valid United States plant patent; or
(10) instigate or actively induce performance of any of the foregoing acts.

7 U.S.C. § 2541(a) (2000).

[54] Synergenta Seeds, Inc. v. Delta Cotton Coop., Inc., 457 F.3d 1269, 1274 (Fed. Cir. 2006) (quoting 7 U.S.C. § 2541(a)) (reversing trial court for omitting requirement that infringer had notice that the seed that it was dispensing was PVPA protected).

[55] 69 F.3d 1560, 1567 - 68 (Fed. Cir. 1996).

[56] *Id.* at 1568 n.7 (citation omitted).

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Under the PVPA, rights extend to:

1. [A]ny variety that is essentially derived from a protected variety, unless the protected variety is an essentially derived variety;

2. any variety that is not clearly distinguishable from a protected variety;

3. any variety whose production requires the repeated use of a protected variety; and

4. harvested material (including entire plants and parts of plants) obtained through the unauthorized use of propagating material of a protected variety, unless the owner of the variety has had a reasonable opportunity to exercise the rights provided under this chapter with respect to the propagating material.[57]

Most notably, "hybrids created from protected plant varieties are also protected; however, it is not infringement to use a protected variety for the development of a hybrid."[58]

2. *Thresholds for Obtaining a PVPA Certificate*

Both plant patents and plant variety certificates are awarded for new plants.[59] However, there are two differences between obtaining exclusive rights under the PPA and PVPA. First, and as noted above, plant patents (and utility patents) are subject to the requirement of non-obviousness.[60] However, "a plant variety may receive a PVP [Plant Variety Protection] certificate without a showing of . . . nonobviousness."[61]

Second, because PVPA certificates are not patents – they merely give a patent holder patent-like rights – when there is a contest between two parties that claim the same rights, the contest is decided by whose application is completed first.[62] Thus, PVPA certificates are awarded on a first to file system. However, in a contest between two patent applicants for rights to a plant patent or utility patent, rights are allocated based on a determination of who was the first to invent.[63]

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[57] 7 U.S.C. § 2541 (2000).
[58] J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc., 534 U.S. 124, 140 (2001). However, one should note: "It is, however, infringement of a utility patent to use a protected plant in the development of another variety." *Id.* at 140 n.11.
[59] 7 U.S.C. § 2422; 35 U.S.C. § 102.
[60] 35 U.S.C. § 103.
[61] *J.E.M. Ag Supply*, 534 U.S at 142.
[62] 7 U.S.C. § 2402(b) (2000).
[63] 35 U.S.C. § 135 (2000).

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3. *Exemptions*

Rights under the PPA and the PVPA also differ with respect to exemptions from infringement. "Infringement of plant variety protection occurs . . . if someone sells or markets the protected variety, sexually multiplies the variety as a step in marketing, uses the variety in producing a hybrid, or dispenses the variety without notice that the variety is protected."[64] With respect to the protection provided under the PVPA, Congress has granted broader protection than under the plant patent statute through the scope of the "variety" that is protected.[65] While the PPA prevents competitors from making, using, or selling genetically identical plants, the PVPA can prevent a competitor from selling seeds that are not genetically the same as the seeds created by the holder of the PVP certificate.[66]

Conversely, Congress has granted more exemptions from liability under the PVPA than under the PPA. For example, one exemption pertains to a farmer's right to sell seeds.[67] Originally, the exemption under the PVPA applied to persons whose primary farming occupation was the growing of crops for sale for non-reproductive purposes.[68] These persons could sell saved seed to other persons for reproductive purposes.[69] Thus, this exemption enabled farmers to offer "brown bag sales" of seeds and in effect compete with the plant breeder.[70]

Congress later realized that this limitation had the potential to greatly reduce the value of the rights awarded to the PVPA breeder and amended the statute.[71] The amendment, in effect, took away "brown bag" privilege from farmers.[72] "By eliminating farmers as a significant source of competition for commercially developed seed, the legislative rejection of brown-bagging restored much of the PVPA's value to commercial plant breeders."[73]

The issue was significant enough that under the law that existed prior to the congressional amendment, the United States Supreme Court took up the issue in *Asgrow Seed Co. v. Winterboer,* and limited the potential scope of this exemption holding that under that version of the PVPA, a farmer was not eligible for this exemption if he planted and saved seeds for the purpose of selling the seeds that produced for replanting.[74] The Court held that under the exemption, "if a farmer saves seeds to replant his acreage, but for some reason changes his plans, he may instead sell those seeds for replanting…."[75]

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[64] *J.E.M. Ag. Supply, Inc.*, 534 U.S. at 139.
[65] *Imazio*, 69 F.3d at 1564 – 68.
[66] 7 U.S.C. § 2483; 35 U.S.C. § 163.
[67] 7 U.S.C. § 2543.
[68] Chen, supra note 52, at 128 .
[69] *Id.*
[70] *Id*
[71] *Id.* at 129.
[72] *Id.* at 129-30 (quoting 7 U.S.C. § 2543).
[73] *Id.* at 130.
[74] 513 U.S. 179, 188 (1995).
[75] *Id.* at 191; *see also Monsanto Co. v. Byrd,* No. 7:99-CV-154-F1, 2000 WL 33952260, at *4 (E.D.N.C. Dec. 11, 2000) ("[A] farmer is permitted to save and replant seeds subject to a PVPA certificate, but may

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The statutory interpretation by the Court helped to strengthen the plant breeder's position and the value of her intellectual property, because it prevented purchasers of the seeds from becoming producers of the seeds.

Additionally, seed may be saved for research.[76] This exemption is unique for seed that falls within PVPA protection; there is no such research exemption for inventions that are protected by patents.[77] If research of competitors is of concern, then utility patent protection should be considered in addition to PVPA protection.

Conclusion

The value to society of any one new plant is difficult to quantify in the abstract. However, if through the use of not only utility patents, but also plant patents and plant variety certificates steps are taken to protect the intellectual property vested in new and distinct species, the value to a botanist or plant breeder can be significant. As with all

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not sell such seed or its progeny for planting"). *Asgrow* was decided based on the former version of section 2543, which also provided an exemption from liability for farmer-to-farmer sales, even if the purchaser would use the seeds for reproductive purposes. However, the case did not turn on this exemption. The more recent CAFC case, *Delta and Pine Land Co. v. The Sinkers Corp.,* 177 F.3d 1343 (Fed. Cir. 1999), was also decided on that incarnation of section 2543 and when addressing the issue of liability for third party brokers held:

> Liability for infringement under subsection (1) thus turns on knowledge. If Sinkers knew, or should have known, that the transfer of possession was not within the farmer-to-farmer exemption, then it can be held liable for infringing subsection (1), but only then.

Id. at 1352. Knowledge of this provision is obviously not relevant for situations that implicate Plant Variety Certificates that issued after the amendment. However the CAFC also noted that with respect to subsection (1), there is no requirement of active invention or brokering; there is a liability for third parties such a delinters when they have scienter. *Id.* at 1351. Although the court focused on the scienter of the farmer-to-farmer exemption, one would expect that despite the statutory amendment, the issue of scienter will again come into play as delinters and other entities interface with farmers in connection with protected seed.

[76] 7 U.S.C. § 2544 (2000); J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc., 534 U.S. 124, 140 (2001). Additionally, although not of significant use to private farmers, the PVPA contains what one commentator has described as an "intriguing limitation" in that the Secretary of Agriculture may declare a protected variety open to the public for compulsory licensing in order to insure adequate fiber, food or feed in this country. Chen, supra note 52, at 122–123. The commentator also notes that at no time has the provision been invoked. *Id.* at 122 – 123. There is a striking parallel with the "march in rights" that the government has with respect to federally funded inventions. 35 US.C. § 203. If the federal government has funded inventions and the recipient has obtained patent rights on that invention, the government can "march in" and require the patentholder to grant a nonexclusive, partially exclusive or exclusive license. *Id.* Similar to the rights retained by the Department of Agriculture, the author is unaware of any time in which the federal government has marched in and forced licensing of inventions that were developed with the assistance of federal funding. 35 U.S.C. § 203 (2000); Scott D. Locke, *Patent Litigation over Federally Funded Inventions and the Consequences of Failing to Comply with Bayh-Dole*, 8 VA. J. L. & TECH. 3, *23 (Spring 2003).

[77] *J.E.M. Ag Supply Inc.,* 534 U.S. at 143 ("Most notably, there are no exemptions for research or saving seed under a utility patent."); Madey v. Duke University, 307 F.3d 1351, 1362 (Fed. Cir. 2002) ("[R]egardless of whether a particular institution or entity is engaged in an endeavor for commercial gain, so long as the act is in furtherance of the alleged infringer's legitimate business and is not solely for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry, the act does not qualify for the very narrow and strictly limited experimental use defense.").

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inventions, utility patents are an option. However, because of a recognized need for development of new plant varieties, through the PPA and PVPA Congress created additional and less onerous means by which to acquire exclusive rights. In order for the botanist and plant breeder to reap the rewards to which they are entitled, they should become familiar with these options and know how to maximize their rights within each statutory scheme.

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