



COMMENTARY

The Enola Bean Patent Controversy

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The Enola Bean Patent Controversy

1 Controversy in a Nutshell

The United States Government awarded both Plant Variety Protection and a patent for the Enola bean. Pod-ners LLC, the owner of these rights, enforced its patent and PVP certificate against alleged infringers. Verbal and legal attacks against Pod-ners garnered much publicity. The opponents to Enola bean legal protection believed that the bean was no different than yellow beans grown in Mexico and as such, was both misappropriated and undeserving of legal protection.

Shouts of “biopiracy,” “abuses in the patent system,” and “morally unacceptable” have been launched countless times against US Patent No. 5,894,079 “Field Bean Cultivar Named Enola.” The accusations mainly derive from the ETC Group, an activist organization based in Canada and from CIAT (International Center for Tropical Agriculture), a partner member of the CGIAR (Consultative Group on International Agricultural Research), which is a partnership of 15 scientific research centers based primarily in developing countries. Shouting loudly and often however, does not mean that the accusations are necessarily true or that they further the cause of achieving sustainable food security and reducing poverty¹.

This commentary begins with descriptions of the intellectual property protection of Enola bean and enforcement of the protection, then dissects the arguments and contentions of ETC Group and the CGIAR and analyzes their accuracy and veracity. Finally, we look at the effects of and interplay between the actions of Pod-ners and ETC Group / CIAT.

2 History of Intellectual Property

2.1 Overview

Enola bean is a creamy-yellow bean with excellent cooking qualities and sweet taste. Enola bean was derived from yellow beans found in a package of edible dry beans bought by Larry Proctor in Mexico in 1994. The yellow beans in the package were planted by L. Proctor in Colorado, U.S.A. According to U.S. Patent No. 5,894,079, a heterogeneous population of plants grew, from which individual plants exhibiting small leaves, good adherence of the pod to plant branches, and resistance to pod shattering were selected. Twice more, seeds from the selected plants were planted and selected. The resulting plants were called Enola.

As explained in the patent, the seed of Enola have a yellow color that in natural light closely matches a defined yellow as described in the *Munsell Book of Color* (1973). The yellow

¹ The stated mission of CGIAR (2007-2008, <http://www.cgiar.org/who/index.html>) is “To achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, forestry, fisheries, policy, and environment.”

color is present throughout the entire seed coat, unlike some other yellow beans. The yellow hilar color of Enola is also distinct, closely matching a yellow color in *Munsell*.

In 1996, Pod-ners sought two types of intellectual property protection for Enola bean—a plant variety protection certificate (PVPC) (akin to plant breeders rights), and a utility patent (Figure 1). Both the PVPC and the patent issued in 1999. Between filing for protection and issuance, Larry Proctor deposited a sample of the Enola variety at the American Type Culture Collection.

[Figure 1: *Timeline of Legal Actions Related to Enola Bean*]

Unlike many other countries, the United States allows a plant variety to be protected by both a PVPC and a utility patent. While both give the owner the right to exclude others from performing defined activities, the level of protection is greater for a utility patent, in part because there are fewer exemptions (Table 1). On the other hand, the requirements for obtaining protection under the Plant Variety Protection Act (PVPA) are less stringent than for obtaining a utility patent. The following table compares some key aspects of the two types of protection.

[Table 1: *Legal Attributes of Plant Variety Protection Certificates and Utility Patents*]

2.2 Patent Claim History and Analysis

This section presents the history of the patent and a discussion of patentability. The original examination of the claims was unremarkable. Fireworks started when the patent came to the attention of NGOs (non-governmental organizations), in particular ETC Group. ETC Group outlined a number of action items; CIAT heeded this call and submitted a request for re-examination. The request was granted by the Patent Office in light of prior publications CIAT submitted. Although none of these publications negated the novelty of Enola bean, the claims were rejected nonetheless for two major reasons, a) a publication disclosing a field bean with similar characteristics that was submitted by the inventor, and b) a failure to meet other patentability requirements that had become more stringent since the patent grant. Pod-ners appealed the rejection to the Federal Circuit Court, and an infringement lawsuit Pod-ners filed against an importer was placed on hold pending resolution of the patent examination and appeal. Since then, the Federal Circuit determined that Pod-ners patent fails for obviousness (*In re POD-NERS* 2009).

2.2.1 Claims Granted in US 5,894,079

Fifteen claims were originally granted (Table 2). Claims 1-4 are directed to various aspects of a *Phaseolus vulgaris* bean called Enola, which was deposited at ATCC, a non-profit biological resource center located in Manassas, Virginia. Claims 5-7 recite methods for crossing Enola with another field bean plant. Claims 8-15 are directed to field bean varieties that exhibit a narrow range of yellow color of the bean or seed coat and of the hilar ring. These particular claims encompass any bean variety with the recited characteristics, which includes but is not limited to the Enola variety.

[Table 2: *Claims 1-15 in Patent Number 5,894,079*]

2.2.2 Why is a yellow bean made by a common breeding method patentable in the first instance?

Along with ETC Group and CIAT, plant breeders and researchers were outraged that a patent was granted to Enola because of a “perceived lack of novelty”. Is that outrage justified because the Patent Office made a mistake? Or was the patent grant in accordance with United States patent law?

Several issues have been raised regarding patentability of Enola bean; specifically its perceived lack of novelty, it was not deemed sufficiently inventive because of use of conventional breeding methods, and the color yellow was not considered inventive as yellow beans were well known in Mexico and some other Latin American countries (ETC Group 2000). In writings presenting these contentions, the allegations were made without much, if any, context to United States patent law. Without the context of the law, analyses of Enola bean patentability are inadequate at best and erroneous at worst.

In the United States, the controlling statute sets out a number of pitfalls that can negate patentability on the grounds of lack of novelty if occurring prior to a critical date. The negating prior art provisions most relevant to the Enola bean circumstances are enumerated in 35 U.S.C. §102(a). They are (i) known or used by others in this country; *or* (ii) described in a printed publication anywhere in the world.

During examination of an invention, the Patent Office obtains allegedly negating prior art in two main ways: by a search of publications, including patents and scientific articles, and by submission from the applicant. In the United States, the applicant (and other people with connections to the patent application) has an affirmative duty to submit all prior art and other information that is material to patentability. Penalties can be severe for failing to comply with this duty; a patent can even be revoked.

In this case, Mr Proctor revealed in the patent itself the origin of the starting genetic material. At the bottom of column 2 of the patent he admitted that “... field beans that were yellow in color were discovered in a package of dry edible beans purchased in Mexico and brought to the United States.” But neither this fact nor the knowledge of yellow beans in other Latin American countries negate patentability under 35 U.S.C. 102(a) because they do not constitute evidence that Enola was “known or used” in the United States. That is what the statute requires. Moreover, none of the prior art submitted by Mr Proctor or found by the Patent Office proclaimed the Enola bean. In addition, as discussed below, neither did any of the prior art submitted by CIAT in the request for re-examination of the patent. In fact, the most compelling written (published) evidence going to lack of novelty of the Enola bean was supplied by Mr Proctor during the re-examination. Interestingly, prior to CIAT filing the request for re-exam, Dr James Kelly, a professor at Michigan State University, provided ETC Group with “... documented evidence that yellow beans (of Mexican origin) similar to Enola were grown and consumed in the US [sic] as far back as the 1930s.” (ETC Group, 2000) Yet, this evidence was not

submitted to the U.S. Patent Office. If it was proof positive of lack of novelty, it is highly likely that CIAT would have submitted it. After all, ETC Group was in close communication with CIAT.² Therefore, it appears that the requirements for novelty were initially met for the Enola bean patent.

“To patent a color is absolute heresy,” (ETC Group 2000) bemoaned Dr Kelly. However, Dr Kelly mis-characterized the patent claims. Technically, the Enola bean patent did *not* patent a color; it claimed a bean having a *narrow* range of specified color and a specific bean deposited at the ATCC. Assuming that Dr Kelly meant that a patent on a specific-yellow bean is heresy, he doesn’t explain why such a patent is “at variance with established beliefs and customs” (the dictionary definition of “heresy”). Actually, patent claims like those in the Enola Bean patent are not at variance with U.S. patent law; Patent Office practice allows patents on plant varieties as long as the patentability requirements are satisfied.³

Quoting further from Dr Kelly in ETC Genotypes (2000), he contended that the breeding scheme of Mr Proctor did not imply novelty or invention. A report by CIAT to the FAO not only charged that the yellow color of Enola was not an invention but also that the breeding process was not “a novelty” (CIAT 2004, paragraph 8). Like many other non-lawyers, neither Dr Kelly⁴ nor CIAT nor ETC Group apparently sufficiently grasp the legal meaning of the terms “novelty” or “invention.” Otherwise, they would have known that the method used to arrive at the invention does not *per se* negate novelty or non-obviousness.

An axiom of U.S. patent law is that “patentability shall not be negated by the manner in which the invention was made.” (35 U.S.C. §103(a)). Rather, the standard for obviousness is the “... differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made ...” So, whether Mr Proctor obtained the yellow Enola bean by conventional or common breeding, or by selection, or by genetic engineering is irrelevant for determining obviousness.

Should CIAT and Dr Kelly have been referring to the method claims in the patent (claims 5-7), the answer is still that such claims can be novel and non-obvious, even if the steps are known. Since 1990, a method claim reading on a known process, such as mixing, reacting, or breeding, is not automatically obvious. In *In re Dillon* (1990), the Federal Circuit explained that “... new or old, obvious or nonobvious, materials are used or result from the process are only factors to be considered, rather than conclusive indicators of the obviousness or nonobviousness of a claimed process.” Finally, in 1995, the Biotechnological Process Patents Act codified biotechnological processes as nonobvious when using or resulting in a composition of

² “RAFI [now ETC Group] formally requested that FAO and the CGIAR investigate the patent as a likely violation of their 1994 Trust agreement ...” (ETC Group 2001)

³ See for example, U.S. patent number 6300546B, Claim 1. A pumpkin having a mass and a weight at maturity the weight being less than 492 grams and having a color of 158A or whiter as measured with reference to fan 4 of The Royal Horticultural Society Colour Chart.; and U.S. patent number 5602313A – Claim 1. A soybean plant having pink flowers and uniform pigmentation throughout each petal as a distinguishing phenotype.

⁴ According to Dr Kelly’s c.v., his stated expertise is bean breeding.

matter that is novel and nonobvious (35 U.S.C. §103(b)(1)). The definition of “biotechnological process” appears to be broad enough to encompass classical breeding methods for plants or animals. Therefore, as long as claims 5-7 meet other criteria for patentability, they can be non-obvious under U.S. patent law.

The bottom line is that none of the allegations put forth by ETC Group was particularly germane to patentability of Enola bean under U.S. patent law.

2.2.3 Claims that *Were* Subject to Appeal

During the combined reexamination and reissue prosecution⁵, Pod-ners added many claims. As often happens, some claims were canceled and others were amended. The claim set that was finally appealed to the Board of Patent Appeals and Interferences consisted of claims 1-15, 51, 52, and 56-64.

Claims 1-15 are as presented in Table 1 above, except that claims 7, 9, and 10 had minor word changes that provided clarity, but do not apparently affect claim scope. Appealed claims 1-15 are not reproduced here. Claims 51, 52 and 56-61 are similar to claims 8-15 but contain additional limitations, such as stable reproduction of the specified color (claims 51, 52, 56-61) and various characteristics (cuboid shaped—claim 57; dry seed weight—claim 58). Claims 62-64 recite a field bean variety with a yellow seed coat having a distribution of yellow color in the population, but in which the peak color is specified. In other words, the most frequently found color has the specified value. If the distribution is a Bell-shaped curve, the fraction in the peak could be relatively low.

[Table 3: *Claims 51-64 in Patent Number 5,894,079*]

2.2.4 Reexamination and Reissue Examination of Patent

In December 2000, concerned that the Enola “... patent would establish a precedent threatening public access to plant germplasm ... held in trust by CIAT and research centers worldwide” (CIAT 2008), the Centro Internacional de Agricultura Tropical (CIAT), a research center located in Cali, Colombia supported by the CGIAR, filed a petition for reexamination of the patent. Barely a month later, Pod-ners filed a request for a reissue patent. Whereas a reexamination can only be initiated on the basis of prior art that wasn’t originally considered (35 U.S.C. § 302), a request for reissue is made on the basis that the original patent is “defective” through error without any deceptive intention (35 U.S.C. § 251). When there is a co-pending reissue application and a reexamination proceeding, the Patent Office can either merge the two proceedings or suspend one of them. In this case, the two proceedings were merged, with the reissue application examination rules and procedures taking precedence. Any reissue patent would serve as a reexamination certificate.

The Examiner rejected all claims. Pod-ners appealed the rejections at the Board of Patent Appeals and Interferences (BPAI), who affirmed them on April 29, 2008. Subsequently,

⁵ “Prosecution” is a term of art that refers to the process of examination by the Patent Office and responses to the examination by the patent Applicant.

Pod-ners filed an appeal of the BPAI decision to the Federal Circuit Court. The Federal Circuit upheld the rejections (*In re POD-NERS* 2009), leaving Pod-ners with essentially no recourse.

2.2.5 Basis of Reexamination Request by CIAT

In its request for reexamination, CIAT submitted 23 prior art references alleged to disclose yellow beans identical to Enola. Six of the references were accessions in CIAT's germplasm bank, but CIAT stopped short of accusing Pod-ners of violating the trust agreement governing distribution of the accessions. CIAT did accuse Pod-ners however of misdeeds and acting in a morally unacceptable manner, specifically failing to acquire a proper export permit from Mexico. As a consequence, CIAT regarded Larry Proctor as misappropriating seeds from Mexico and falsely declaring to the Patent Office that Larry Proctor was the "true and original" inventor. These cries of "foul play" were dismissed by the Patent Office, because the *only* valid reason to request a reexamination is on the basis of prior art.

After a shamefully protracted examination, all patent claims were rejected in a final rejection. Instead of re-filing the patent application and continuing the examination, Pod-ners appealed the rejections to the Board of Patent Appeals and Interferences (BPAI). The BPAI affirmed the rejections. Pod-ners appealed the rejections to the Federal Circuit Court of Appeals, and in July 2009, the Federal Circuit held that the patent was invalid for obviousness.

Of most interest to those asserting "biopiracy", the rejection for lack of novelty—that the claimed Enola beans were prior known—was based on a piece of prior art submitted by Pod-ners. None of the CIAT accessions or references supplied by CIAT that were relied on by the Examiner was found to destroy novelty. Moreover, the BPAI dismissed each of the references as deficient, because the CIAT catalog listed only one of the six accession numbers, and the information about that accession was sketchy, rendering it insufficient to support a rejection for lack of novelty. Each of the remaining references similarly did not make Enola bean non-novel, because either the description of the allegedly anticipating beans differed from that of Enola bean or the description was insufficiently detailed to establish identity with Enola bean. Ironically, Pod-ners submitted a disclosure of the bean variety *Azufrado Peruano 87* (Salinas et al.) that sufficiently described a yellow bean having characteristics in common with Enola to support a rejection for lack of novelty. The BPAI found that Pod-ners did not provide rebuttal evidence that was adequate to overcome the rejection.

In addition to the prior art rejections, the claims were rejected (and the rejections affirmed by the BPAI) for failing to meet other requirements of patentability. More specifically, various claims fail to meet the requirements of:

- written description (claims 59-64): limitation reciting peak occurrence of color when plotted as distribution lacks basis in patent specification,
- written description (all claims): not all seeds in ATCC deposit may be Enola and patent description does not describe uniform and stable traits that distinguish Enola from related varieties;

- enablement (all claims), it would require undue experimentation to practice invention because of genetic and phenotypic diversity of seeds in ATCC deposit;
- clarity (claims 1-7) because heterogeneity of ATCC deposit does not “clearly and distinctly” define the claimed invention;
- clarity (claims 59-64) because the distribution of yellow color in a population of Enola beans is not explicitly described in patent specification.

2.3 Enforcement of the Patent and PVPC–The Plight of “Poor Mexican Farmers”

Following grant of its patent and its Plant Variety Protection Certificate, Pod-ners initiated licensing negotiations. Failing agreement, Pod-ners filed suit against a number of U.S. farmers for infringement of its PVPC and against Tutuli Produce Corporation, an importer of beans from Mexico, for infringement of its patent. On the other hand, growers in the Central Valley of California willingly paid a license fee to Pod-ners to produce and process Enola bean (Fujii 2002; Goldberg 2003).

The lawsuit against U.S. farmers never progressed. Despite denials of wrong-doing, the farmers settled with Pod-ners, agreeing to pay undisclosed financial compensation to Pod-ners (Fujii 2002; Goldberg 2003).

Tutuli Produce however, not only denied importing Enola beans, but refused to settle with Pod-ners. As a result, the lawsuit proceeded and, because of a quirk in timing, it was pending during the whole time of the re-examination and appeal. Consequently, Tutuli was unable to import yellow beans for 9 years. When the Patent Office initiates a reexamination of a patent, pending litigation may be suspended (called a “stay” in proceedings) until the reexamination is finished. This is what happened in this case. The lawsuit against Tutuli was filed in October 1999, CIAT requested reexamination in December 2000, and the lawsuit was stayed mid-2001. It remained stayed until after the BPAI decision. Just prior to the Federal Circuit decision, Tutuli indicated that it would file a petition to dismiss (based on the rejections upheld at the BPAI) and Pod-ners indicated that it would file an amended complaint to include infringement under its PVPC for Enola bean. Using this tactic, Pod-ners would be able to continue inhibiting Tutuli from importing and selling.⁶

Not all growers and processors however, have been disenchanted with the Enola bean intellectual property protection. For example, a bean farmer cooperative in the Central Valley of California recognized a lucrative market for yellow beans and so pays a license fee to Pod-ners to grow Enola. The coop finds value in the patent because production will be controlled (via Pod-ners continuing rights to inhibit the marketing of this variety under its PVPC), assuring farmers a decent profit from year to year.

So what about those “poor Mexican farmers” that according to CIAT and ETC Group suffered great economic harm and were victims of biopiracy? By the time that CIAT filed a request for reexamination, the lawsuit against Tutuli had been filed. CIAT and ETC were aware of the

⁶ There is not a procedure for challenging a PVPC or requesting that it be revoked.

lawsuit (ETC Group 2001). Accordingly, they should have been aware that the lawsuit could be stayed and that staying the lawsuit would lengthen the timeframe that the U.S. market was off limits for the Mexican farmers. Meanwhile, Tutuli's yellow bean business has been interrupted, a business that Mexican bean farmers depended upon, according to ETC Group. Had CIAT not filed for a reexamination, Tutuli's lawsuit may well have been resolved. As it turns out, the patent reexamination took about seven years, although even if it took a few years Tutuli's bean business would have taken a severe hit. Thus, in one view, CIAT and ETC Group also have a moral responsibility for worsening the economic situation of Mexican bean farmers, the very people they were trying to assist (CIAT 2008).

As an example of the confusion engendered by statements made by opponents of the patent, CIAT Director General Geoff Hawtin proclaims that "... for several years now, farmers in Mexico, the USA and elsewhere have unnecessarily endured legal threats and intimidation for simply planting, selling and exporting a bean that they have been growing for generations (CIAT 2008) In fact, the legal actions have been against U.S. farmers and a U.S. importer, not against Mexican farmers or other non-U.S. farmers. There is no evidence that Mr Proctor sought to stop any farmer or any marketing of the bean outside the United States.

2.4 Options in the Face of the Enola bean Patent and PVPC

Patenting, licensing, litigation are pieces of business strategy. In response to a patent that restricts freedom to operate or freedom to commercialize, a variety of options are available. Generally, the options include:

- negotiate a license (e.g., farmers' cooperative in California);
- find or develop an alternative that falls outside the patent (e.g., grow or import a yellow bean that is not covered by the patent);
- cease infringing activity (e.g., Colorado farmers);
- request reexamination of the U.S. patent (if meet requirements to lodge a request) or file opposition of European, Australian, etc. patent (if within time limits and other requirements satisfied) as done by CIAT and ETC Group; and
- continue activity to provoke litigation (e.g., Tutuli Produce).

Each of these options has its place and time, depending on facts and circumstances. Interestingly, the various parties each chose a different strategy. A detailed discussion of the advantages and disadvantages of each option and when each option might be optimal or desirable is beyond the scope of this commentary. Moreover, when several parties pursue different options, additional consequences may occur—as revealed by the dual pursuits of reexamination request, in the case of CIAT and ETC Group, and litigation, in the case of Tutuli.

2.5 Final Thoughts

The Enola Bean controversy is not over because of Pod-ner's continuing ownership of a Plant Variety Protection Certificate and because of the ongoing and recently re-opened litigation between Pod-ner and Tutulli Produce. For many, the length of time for the re-examination at

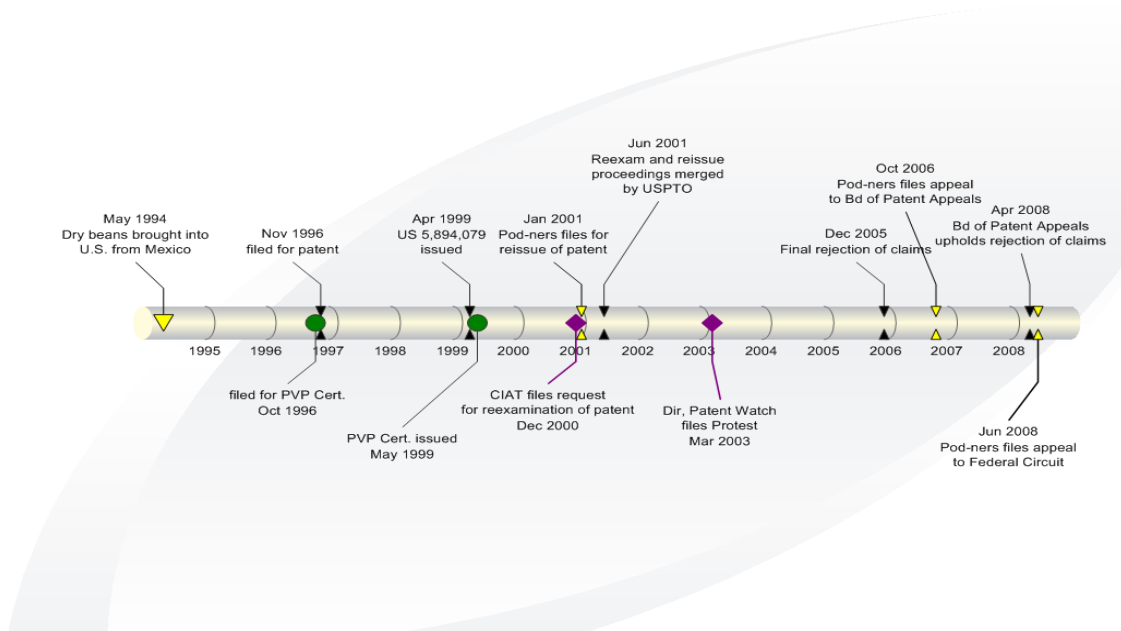
the Patent Office is troublesome. The ETC Group criticizes the U.S. Patent Office for the lengthy reexamination process, a viewpoint that most patent (practitioners) would likely agree with. It is unfortunate as all parties lacked resolution during this time period. Unfortunately, this particular re-examination lasted longer than the average pendency of about three years (Crouch 2008). There is no doubt that the lengthy process has increased cost for all parties. For example, during the nearly eight years of reexamination and appeal; along with the litigation, Pod-ners monetary outlays must have been quite large. Pod-ners has commented that its license income has been used to paying legal fees, instead of conducting research and development which was its intent. (Fuji 2002). Moreover, generally a patent under reexamination is not perceived to be as valuable, which could limit its licensing income potential.

There is no doubt that the Enola bean patent offended the sensibilities of many people, as exemplified in the multiple news releases, quotes, and analyses by CIAT, ETC Group and Dr Kelly. Their moral outrage however, is expressed along with, and possibly due in part to mis-statements and misunderstandings of patent law. Assuming that their intentions were not to mislead their readership, it is still disappointing that fact-checking and accurate statements weren't the norm. Patents are business tools, and, in the view of this author, keeping that in mind is an important lesson of Enola bean.

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Figure 1: *Timeline of Legal Actions Related to Enola Bean*



Source: Developed by author.

Table 1: *Legal Attributes of Plant Variety Protection Certificates and Utility Patents*

Attributes	Plant Variety Protection	Utility Patent
Requirements for protection	variety must be new, distinct, uniform and stable	invention must be novel, non-obvious, have utility, and the description must describe the invention as well as enable a skilled person to practice it without undue experimentation
Term of protection	20 years from date of issuance for non-woody species	20 years from earliest date of filing for a utility patent
Infringing activities	production or reproduction conditioning for the purpose of propagation, offering for sale, selling or other marketing, exporting, importing, stocking for any of the purposes mentioned above.	making, using, selling, offering for sale, or importing a product; using a process; using, offering for sale, selling, or importing a product obtained directly from the process.
Exemptions from infringement	acts done privately and for non-commercial purposes; acts done for experimental purposes; acts done for purpose of breeding other varieties; farmers may replant saved seed for own use or to sell resulting crop for other than reproductive purposes.	uses reasonably related to development and submission of information for approval of drug

Source: Developed by author.

Table 2: Claims 1-15 in Patent Number 5,894,079

Claim Number	Claim Details
1	A <i>Phaseolus vulgaris</i> field bean seed designated Enola as deposited with the American Type Culture Collection under accession number 209549.
2	A field bean plant produced by growing the seed of claim 1.
3	Pollen of the plant of claim 2.
4	A field bean plant having all the physiological and morphological characteristics of the field bean plant of claim 2.
5	A method of producing a field bean plant comprising crossing a first parent field bean plant with a second parent field bean plant, wherein the first field bean plant is the field bean plant of claim 2.
6	A method of producing a field bean plant comprising crossing a first parent field bean plant with a second parent field bean plant, wherein the second field bean plant is the field bean plant of claim 2.
7	A method of producing a field bean plant comprising crossing a first parent field bean plant with a second parent field bean plant, wherein the first and second field bean plant is the field bean plant of claim 2.
8	A field bean variety of <i>Phaseolus vulgaris</i> that produces seed having a seed coat that is yellow in color, wherein the yellow color is from about 7.5 Y 8.5/4 to about 7.5 Y 8.5/6 in the Munsell Book of Color when viewed in natural light.
9	The <i>Phaseolus vulgaris</i> of claim 8 wherein the seed further comprises a hilar ring.
10	The <i>Phaseolus vulgaris</i> of claim 9 wherein the hilar ring has a color of from about 2.5 Y 9/4 to about 2.5 Y 9/6 in the Munsell Book of Color when viewed in natural light.
11	Propagation material of the <i>Phaseolus vulgaris</i> of claim 8.
12	Pollen of the <i>Phaseolus vulgaris</i> of claim 8.
13	Seed from a field bean variety of <i>Phaseolus vulgaris</i> that is completely yellow in color, wherein the yellow color is from about 7.5 Y 8.5/4 to about 7.5 Y 8.5/6 in the Munsell Book of Color.
14	Seed of claim 13 further comprising a hilar ring.
15	Seed of claim 14 wherein the color of the hilar ring is from about 2.5 Y 9/4 to about 2.5 Y 9/6 in the Munsell Book of Color when viewed in natural light.

Source: US Patent No. 5,894,079

Table 3: Claims 51-64 in Patent Number 5,894,079

Claim Number	Claim Details
51	Seed from a field bean variety of <i>Phaseolus vulgaris</i> comprising a seed coat and a hilar ring wherein the seed coat color is about 7.5 Y 8.5/4 to about 7.5 Y 8.5/6 in the Munsell Book of Color when viewed in natural light; the seed being stably reproducible to provide additional seed having the hilar ring and the seed coat color, the seed being produced by a process that includes isolating a population of seed by selection of the hilar ring and the seed coat color from seed products of a segregating population of plants.
52	The seed of claim 51 wherein the hilar ring color is from about 2.5 Y 9/4 to about 2.5 Y 9/6 in the Munsell Book of Color when viewed in natural light.
56	The seed of claim 51, wherein said seed germinates in an environment free of light.
57	The seed of claim 51, wherein said seed is from the middle of a pod and is cuboid in shape.
58	The seed of claim 51, wherein the dry seed weight is about 43 grams per 100 seeds (adjusted to 12 percent moisture).
59	Seed from a field bean variety of <i>Phaseolus vulgaris</i> having a seed coat that is yellow in color, wherein the yellow color plotted as a distribution in a population of the seed of sufficient number for purposes of ATCC deposit has a peak occurrence ranging from about 7.5 Y 8.5/4 to about 7.5 Y 8.5/6 in the Munsell Book of Color when viewed in natural light.
60	The seed of claim 59 comprising a hilar ring.
61	The seed of claim 60 wherein the color of the hilar ring is from about 2.5 Y 9/4 to about 2.5 Y 9/6 in the Munsell Book of Color when viewed in natural light.
62	Seed from a field bean variety of <i>Phaseolus vulgaris</i> having a germplasm for expressing a seed coat that is yellow in color as evidenced by a substantially uniform yellow color of the seed coat, wherein the yellow color plotted as a distribution in a population of the seed of sufficient number for purposes of ATCC deposit has a peak occurrence ranging from about 7.5 Y 8.5/4 to about 7.5 Y 8.5/6 in the Munsell Book of Color when viewed in natural light.
63	The seed of claim 62 comprising a hilar ring.
64	The seed of claim 62 wherein the color of the hilar ring is from about 2.5 Y 9/4 to about 2.5 Y 9/6 in the Munsell Book of Color when viewed in natural light.

Source: US Patent No. 5,894,079