INTELLECTUAL PROPERTY RIGHTS ON PLANTS, WITH SPECIAL REFERENCE TO VEGETATIVELY PROPAGATED ORNAMENTALS

Lidwien A.M. Dubois
Plant Research International B.V.
P.O. Box 16
6700 AA Wageningen
The Netherlands
l.a.m.dubois@plant.wag-ur.nl

Keywords: breeder’s exemption, breeding, EDV, GMO, industrial patent, mutant, ornamentals, plant breeder’s right, plant patent, research exemption, trade mark

Abstract

Both in the industry and in plant breeding, the intellectual property of the inventor is (legally) protected. In the industry new inventions are protected by “industrial patent”, in the world of plants by “plant patent”, “breeder’s right” or sometimes just by “trade mark”. Plant patent was established in United States as early as 1930, breeder’s right was first established in The Netherlands in 1941. Important initiatives to legal protection of plant varieties were taken by ASSINSEL, a globally active association of plant breeders founded in 1938. This association took the lead as to the creation of the UPOV-Convention 1961, that formulated the legal protection of plant varieties. UPOV was revised in 1972, 1978 and 1991. UPOV-Conventions have been implemented in the national laws of member states. The revision of 1991, was mainly owing to increasing problems as to ownership of mutants in ornamentals and genetically modified organisms (GMO’s) in general. These problems were met by the introduction of the system of essentially derived varieties (EDV’s). Maintenance of breeder’s exemption in UPOV-1991, has ascertained the free use of protected varieties in breeding. However, the use of GMO’s, that commonly contain patented genes, is not free for breeders because research exemption in industrial patents is only valid during the research phase. Conflicting interests between breeder’s right and industrial patent for the protection of new varieties are discussed.

1. Introduction

Since the beginning of history, man has been selecting in the vegetable world for the necessities of daily life. After the discovery of systematic inheritance of plant characters by the monk Gregor Mendel in 1865, plant breeding was greatly accelerated. Owing to aimed crosses, a range of new plant varieties was introduced into traffic. As a consequence, the plant breeder demanded, like in industrial inventions, a system of granting an exclusive right for his breeding products. Such a right would mean that the breeder of a new variety would have the exclusive right to exploit his or her new creation. In that way the breeder would have both the opportunity to get returns on his investments in the new product, and be stimulated to create new varieties.

The first country that recognized the intellectual property rights on plants was the United States of America. Exclusively for vegetatively propagated crops, the so-called “Plant Patent Act of 1932” was established. The Netherlands was the second country that proclaimed a similar act: “Het Kwekersbesluit” in 1941, that was the first independent intellectual property law for both generatively and vegetatively propagated crops.

Already before World War II, breeders of different countries had united in ASSINSEL (2.1.1.), a new association for the protection of plant varieties. A diplomatic
conference on the subject of plant variety protection, initiated by ASSINSEL in 1957, resulted in the UPOV-Convention (2.1.2.) in 1961. That Convention formulated a number of formal and material criteria for the protection of new plant varieties. Over a period covering several decades, the UPOV-Convention of 1961 operated satisfactorily. However, owing to further developments in genetics, particularly the rise of biotechnology, there was an increasing danger of a conflict between two different intellectual property rights, viz. Plant Breeder’s Right and Patent Right. For that reason, the UPOV-Convention of 1961 was revised in 1972, 1978 and in 1991.

The present paper reviews the legal bases of intellectual property rights on plants, the various organizations that have contributed to subsequent UPOV-Conventions, and finally focusses on the consequences of the introduction of the concept of Essentially Derived Varieties in vegetatively propagated (woody) ornamentals (Dubois, 1998).

2.1. Organisations

2.1.1. ASSINSEL

The eldest known organisation, promoting the intellectual property rights on plants, ASSINSEL (Association Internationale des Sélectionneurs Professionnels pour la Protection des Obtentions Végétales) was founded in 1938. It is a world-wide operating organisation of public and private plant breeders, of which the registered office resides at Nyon, Switzerland. ASSINSEL was the leader in the creation of the UPOV-Convention 1961. It is committed to the legal protection of new plant varieties, particularly the creation of industrial protection rights for new plant varieties, respectively new genetic basic material for plants. The organisation represents breeders of all important plant species of agriculture, horticulture, industrial crops and ornamentals.

2.1.2. UPOV

UPOV (Union pour la Protection des Obtentions Végétales), is an intergovernmental organization based on “The International Convention for the Protection of New Varieties of Plants, founded 2 December 1961, Paris” (Anon., 1975). UPOV has two aims:
1. to promote the protection of the rights of the plant breeder in favour of the development of agriculture, and to safeguard the interest of the breeder.
2. to obtain an uniform system for the protection of the rights of the plant breeder in all member states.

UPOV consists of two permanent organs, viz. the Council and the Office. The Council consists of representatives of the member states, which elect a President and a Vice-President among its members. The Office is under the direction of the Secretary-General, who simultaneously is General Director of the WIPO (World Intellectual Property Organization) in Genève, Switzerland. The Office carries out all the duties and tasks entrusted to it by the Council. The Council has established a number of sub-groups with different tasks, e.g. the preparation of recommendations and guidelines. An important guideline as a basis of granting breeder’s right for a new variety, is the “Guidelines for the Conduct of Tests for Distinctness, Homogeneity, and Stability”.

Presently (2001), there are 46 UPOV member states (UPOV Announcements 24 September 2000).

UPOV has been revised in 1972, 1978 and 1991. The 1972 revisions concerned the modifications of internal matters of the Council. In 1978, another modification of several articles enabled membership of the United States of America. The most important revision, however, took place in 1991. Compared to UPOV-1961, the most conspicuous modifications in the UPOV-Convention 1991 were the introduction of (i) the system of essentially derived varieties and (ii) the limitation of “farmers privilege”. The
consequences of the system of essentially derived varieties will be considered in Chapter 2.3.

2.1.3. CIOPORA

CIOPORA (Communauté Internationale des Obtenteurs de Plantes Ornementales de Réproduction Asexuée) is an international organisation, founded by breeders of vegetatively propagated fruit- and ornamental crops, in 1961. Its registered office is in Genève, Switzerland. The organisation represents large numbers of breeders/growers of ornamentals (e.g. roses, carnations, chrysanthemums, freesias, or gerberas) and fruit (e.g. apples, pears, apricots, or peaches) (Anon., 1996). In various countries, national branches of CIOPORA are active.

2.2. Intellectual property rights on plants

2.2.1. Introduction

In about every branch of law concerning the intellectual property right, one or more treaties exist (Wichers Hoeth, 2000). The most important and overall-governing treaty is the Treaty of Paris of 1883, that protects the industrial property. Presently, 107 countries are treaty members, that together form an union. This union is supervised by WIPO that was founded in 1967. From that time, the “industrial” property right was renamed in “intellectual” property right. By granting such rights, the products of the human spirit are protected against unauthorized exploitation by third parties. This means, that upon infringement of his intellectual property right, the owner has the right to take action. In addition, the owner of an intellectual property right may exploit his right by licensing.

As to plant varieties, various possibilities to protect the results of a successful breeding programme are available. Depending on the country, the plant breeder may choose between (Plant) Patent Right, Breeder’s Right or Trademark.

2.2.2. Patent Rights

In general, “patents shall be granted for any inventions which are susceptible of industrial application, which are new, and which involve an inventive step” (art. 52 § 1 EPC). The term of a patent shall be 20 years as from the date of filing of the application. Exceptions to patentability in Europe are “plant- and animal varieties or essentially biological processes for the production of plants or animals” (art. 53a EPC) (Dorhout Mees, 1989). Specific national and international law systems are available to protect new plant varieties. The protection of plants by industrial patent will be considered in 2.3.3..

2.2.3. Plant Patent

Granting an industrial patent on plants, has raised serious problems in the past, because of the impossibility of “reproducibility” (Van Nispen, 1990), viz. in vegetatively propagated crops to breed exactly the same variety again. Already in 1930, the United States of America had recognized this problem. Hence, a specific law to protect plant varieties, the “Plant Patent Act” was proclaimed in that year. The Plant Patent Act is exclusively applicable to vegetatively propagated crops, e.g. roses, fruit trees or chrysanthemum. The Plant Patent Act is, in fact, composed of a mixture of elements of the traditional (industrial) patent and the protection of plant varieties. The act can be seen as a lex speciales of the industrial patent law system. Extra criteria for a new plant variety are: distinctness and novelty. In practice, new plant varieties can be distinguished by flower color, fragrance, flavour, habit, disease resistance or vase life.

Granting a Plant Patent on a new variety is based on the number of differences of
characters compared to existing varieties. To that end, specific characters have been established for every crop. The Plant Patent system is applied in the United States of America, Hungary, Italy, Japan and several South American countries.

2.2.4. Plant Breeder’s Right

In Europe, plant breeder’s rights is the most common form to protect the intellectual property rights of the breeder. All EU-member states have implemented either the 1961, 1978 or 1991 UPOV-Convention. In The Netherlands, a protection system for breeding activities was established in “Kwekersbesluit”, already in 1941. In 1967, a specific law, owing to implementation of the UPOV-Convention 1961, was established as the “Zaaizaad- en Plantgoedwet” (ZPW).

Breeder’s right (UPOV-1991) is granted when the variety is (i) new, (ii) distinct, (iii) uniform and (iv) stable, the so-called DUS-test. DUS-test is solely based on phenotypic characters. Besides these conditions, the variety must be denominated. Regarding the propagating material of the protected variety, authorization of the breeder is required for:

- production or reproduction (multiplication)
- conditioning for the purpose of propagation
- offering for sale, selling or other marketing
- importing
- exporting and
- stocking.

The breeder may make his authorization subject to conditions and limitations. The breeder’s right is granted for a period of 25 years, but for trees and vines of 30 years. On European Community level, a harmonisation of regulations on intellectual property right for plant varieties has resulted in a Community Plant Variety Right (Van der Kooij, 1997), which is mainly based on UPOV-1991. The EC-Council Regulation on Community Plant Variety Right of 27 July 1994 (No.2100/94) became operative on 27th of April 1995. Like in national breeder’s right, the duration of community plant variety right is 25 years, for trees and vines 30 years (art. 19).

2.2.5. Trade Mark

Trade mark is based on a registration system, of which four different forms are available:

1. registration in the BENELUX (Eenvormige Beneluxwet op de merken) (Trb.1996,225);
2. registration in other countries based on national law in each country;
3. international registration based on Madrid Agreement (1891) and The Protocol to the Madrid Agreement;

Individual marks are, e.g. denominations, drawings, prints, stamps, letters, etc., all serving to distinguish the products and services of a company. The term of a trade mark registration is 10 years, but it can be repeatedly extended for 10-year-periods thereafter. As mentioned in 2.2.4., according to breeder’s right, a new plant variety should be denominated. It is forbidden, however, to use the name of the variety as a trade mark. On the other hand, UPOV-Convention 1991 (art. 20) determines that, besides the obligation to bring into the market propagation material under the registered variety name, the addition of a trade mark or trade name is allowed. In practice, new varieties are commonly protected by both breeder’s right and a trade mark (Wolf, 1988). The former name is usually a more or less artificial name, often
designating the breeder’s company. The trade mark often is a well-sounding or romantic name, which in commerce should always go together with the registered variety name.

To apply for breeder’s right, it is not allowed to use the name of an old variety for a new one, but it is often seen that in course of time the same trade mark is used for successive new varieties. In practice, denominations of varieties and trade marks are often confused, which gives rise to a number of irritations by third parties. Most irritations occur due to:

- the contractual obligation to use both names
- lack of clearness as to the correct denomination of the variety
- the contractual obligation to use the trade mark after untimely withdrawal or termination of the breeder’s right
- prolonged charging of royalties over trade mark only.

2.3. Essentially derived varieties

2.3.1. Introduction

Before UPOV-1991, increasing problems as to the ownership of mutants in ornamentals, as well as novel developments in biotechnology, raised the question whether or not the existing system would meet the future demands of breeders as to sufficient protection of their intellectual property rights. Particularly the introduction of new techniques in breeding and propagation, and the fear of “double protection”, urged the revision of the UPOV-Convention 1961/1978 (Espenhain, 1989) in 1991. The discussions and preparations for the revision of UPOV-1961/1978 ran parallel to the design of the Directive on legal protection of Biotech Material (98/44/EC) and the introduction of the Community Plant Variety Right (nr.2100/94).

In UPOV-1991, this all resulted in the introduction of a new concept, the so-called “system of essentially derived varieties”, sometimes indicated as “dependency system” (Lange, 1993). The system of essentially derived varieties applies when a new variety, except for the differences which result from the act of derivation, conforms essentially to another variety, the “initial” variety, in the expression of characteristics that results from the gene type(s) of that initial variety. Such a new variety is called an “essentially derived variety” (EDV). It should be remembered that, particularly in ornamentals, breeder’s rights are solely granted on phenotypic characteristics (2.2.4.).

EDV’s occur in both seed- and vegetatively propagated crops. In seed propagated crops EDV’s are e.g. hybrids, varieties from self-pollination or back crosses. In vegetatively propagated crops EDV’s may consist of mutants or genetically modified organisms (GMO’s). In seed crops, which are not further considered here, problems have already arisen when new varieties could not be phenotypically distinguished from progenitors or existing varieties, or when for the breeding of a new variety the repeated use of protected varieties is needed.

It is notable that one original variety may give rise to more than one EDV, and that one EDV may give rise to a complete family of EDV’s. All such EDV’s, however, are essentially derived from the original or mother variety. Even when the breeder’s right of the mother variety has been expired or untimely terminated, its breeder may claim his property right on the EDV. Designating a new variety as an EDV, remains the responsibility of the breeder of the original variety.

Jurisprudence on the question for how many generations new varieties should be considered EDV’s, is not yet available.

2.3.2. Mutants

The uncontrolled occurrence of mutants in protected varieties of vegetatively propagated crops, either natural (‘sports’) or induced, has always been a thorn in the fleshand the flesh of the breeder. This was particularly true in ornamentals, where one single deviating plant
in a large growing area can be easily perceived. In UPOV-1961/1978, mutants could still be protected as original varieties. Breeders considered this compensation for the finder too good for so little breeding effort, which might even be considered as “imitation” or “cosmetic breeding” (Lange, 1993). On the other hand, it was argued that isolation, propagation and selecting for “true-to-type” is an effort that is comparable to selection in a seedling population. To prevent protection of mutants by third parties, breeders had even fixed in contracts, in advance, that rights of occurring mutants would be awarded to both parties, a clause that appeared to be unlawful as it conflicted Article 85 of the EU-Treaty (Anon., 1985; Wolf, 1987). The above problems are now definitely met by the newly introduced system of essentially derived varieties of UPOV-1991, as described in 2.3.1.

2.3.3. GMO’s

Modern biotechnological techniques enable the introduction of “foreign genes” into the germplasm of a certain crop. Foreign genes may originate from other plant species, insects, bacteria or otherwise. Because insertion of the new gene is undirected, its phenotypic expression should be awaited. Modification of living material with foreign genes is called genetic modification and the result a Genetically Modified Organism (GMO). Commonly, the foreign genes used are the result of clever genetic engineering, in which various pieces of DNA-fragments may form a new construct. Fragments or completely new constructs are protected by various industrial patents, owned by one or more, usually multinationally operating biotechnological companies. Because genetic engineering is very expensive, biotechnological companies will only invest when high returns are expected.

In crops, GMO’s may be a derivation either of protected varieties, or just from “a plant”. In the former case they are considered as EDV’s, in the latter case as a ‘Patented plant’. Both types of plants may give problems as to the right of breeder’s exemption (2.4.). It is notable that most genes or gene-constructs can be detected in plants by means of molecular marker techniques (Heitz, 1998; Van der Walt, 1998).

In spite of high expectations as to new types of resistance to pest and diseases, new plant habits of ornamentals, or promises to solve the world food problem, currently the development and cultivation of GMO’s has been subjected to strict regulations in many countries (e.g in the EU-regulations).

2.4. Breeder’s exemption vs research exemption

UPOV-1991 has maintained the breeder’s exemption (art. 15). Breeder’s exemption means that any breeder may use, without any restriction, any protected variety as a progenitor in breeding programmes. The results of that breeding may apply for breeder’s right or plant patent. In vegetatively propagated crops, breeder’s exemption, as it is practised today, is almost the only possibility for breeders to keep abreast with the requirements of modern cultivation, and to prevent inbreeding by using restricted germplasm.

Research exemption in industrial patent gives possibility to industrial inventors to use, for free, the patented invention for further research and development in their branch of industry. Consequently, on the one hand, there is a large similarity between the two exemptions during the research phase, on the other hand the exclusive ownership of the industrial patent remains to exist, which is not the case in breeder’s right. That plant breeder’s right and industrial patent may meet, is illustrated by four examples. In the first example a breeder/owner of a protected variety, uses that variety to introduce a patented gene owned by a third party. As long as that variety is not commercialized, this action is legal according to the research exemption in patent law. It is clear that commercialization of the new variety, which is a GMO/EDV, needs authorization of the patent owner.
A slightly different case occurs when the breeder uses “a plant”, which is not yet protected by breeder’s right, for the introduction of a patented gene.

A third situation occurs when the owner of a patented gene uses a protected variety owned by a third party, to introduce that gene. For commercialization of that new variety, which again is a GMO/EDV, authorization of the owner of breeder’s right is required. A fourth possibility is when the owner of a patented gene, uses “a plant” to introduce that gene. For the protection and commercialization of that plant, there seem two possibilities: (i) apply for breeder’s right as a new variety, or (ii) apply for industrial patent.

It may be concluded that for the breeder it is important that, in case a commercially available plant variety contains patented genes/trait, it should remain freely available for further breeding, according to the breeder’s exemption. For the patent holder, however, it is important that any time such a variety is used, either for commercial purposes or for breeding, royalty for his patent should be charged (Royon, 1998).

3. Concluding Remarks

The foregoing chapters may have given the impression that the ownership of plant varieties and industrial patents are well-regulated by various laws. Difficulties with EDV’s, either as mutant or GMO, are nicely cleared away by the system of essentially derived varieties of UPOV-1991.

However, there are some cloudlets in the sky. Since the introduction of UPOV-1991, multinational biotech companies have continuously tried to obtain industrial patent on plants or plant varieties. Two case laws, concerning the patenting of GMO’s, have offered significant jurisprudence (Bostyn, 2000; Reid, 1999; Thumm, 2000).

In the first case, the so-called “Plant cells / Plant Genetic Systems case”, it was attempted to obtain an industrial patent on a plant provided with a patented gene, coding for herbicide resistance (European patent No. 0 242 236 granted on 10 October 1990, “Plant cells resistant to glutamine synthetase inhibitors, made by genetic engineering”). Initially this was held up, but in a final process, the Technical Board of Appeal at the European Patent Office (EPO) permitted the patenting of all plant material (including plant groupings which encompass plant varieties), but it maintained the ban on patentability of a plant variety as such (T0356/93). This decision, in fact, was a compromise between the two protection systems, and was in agreement with the Directive on legal protection of Biotech Material (98/44/EC).

In the second case, however, the so-called “Transgenic plant / Novartis case”, where plants were provided with genes coding for controlling plant pathogens, the compromise, reached in the “PGS case”, has been confused by the decision of the Enlarged Boards of Appeal. It concerned the European patent no. EP546.090 “Anti-pathogenically effective compositions comprising lytic peptides and hydrolytic enzymes” (G0001/98). In this case the decision read that the ban on patentability of varieties can be bypassed.

Present state of the art thus seems to be, that the system of essentially derived varieties of UPOV-1991 has been surpassed. Obviously, ‘plants’ and ‘plant varieties’, can now be protected in three ways, viz. by ‘plant breeder’s right’, ‘plant patent’ and by ‘industrial patent’, developments that were already expected by Van Overwalle (1996; 1997; 1999).

References


