

Review

The legal protection of new plant varieties

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The production of new plant varieties is highly desirable. But it is expensive, long-lasting and knowledge-based activity. That is why it is necessary to prevent unauthorized commercial use of plant varieties. Effective plant variety protection can open a door to economic development, particularly in the rural sector, providing an incentive for plant breeding in many different situations. The inventions of the plant varieties are excluded from patentability. As for plant varieties a *sui generis* form of legal protection is available under the International Convention for the Protection of New Varieties of Plants (the UPOV Convention). The aim of the legal protection of new plant varieties under UPOV is promoting the development of improved plant varieties for the benefit of farmers, growers and consumers.

Key words: Intellectual property, invention, plant variety, breeders' rights.

INTRODUCTION

Plant variety is defined as a set of cultivated plants of the common origin, which differs from plants of the same order by inherited characteristics which are important for the forestry, horticulture and agriculture (Markovic, 1997a). Plant varieties are formed by plant refinements. The plant refinement can be done with classical methods or genetic engineering. Classical methods of plant refinement are: selection, crossing over, grafting, inbreeding and promotion of mutations in the plant genetic material. Which classical plant refinement method will be used depends on whether the plants propagate by self – pollination (autogamous plants such as wheat, barley, oats, pea, tomato, peach) or the plant is fertilized by cross – pollination (heterogametic plants such as corn, rye, sugar beet). Plant variety creation is done through genetic engineering in three phases. First, the plant cell is isolated. The next step is the manipulation with the genetic material of the isolated plant cells by protoplasts (cells bearing no cellulose membranes) and merging their content into an integral unit and the transfer of the

separate segments of DNA from one chromosome to the chromosome of the other cell. The process ends with the regeneration of the plant which derives from the genetically manipulated cell. Once created, plant variety is necessary to be maintained. Due to the degeneration risk of the self – pollination plant varieties, purity and health of the generative reproductive material (seeds) must be continually monitored. Maintaining the traits of plant variety is done periodically by repeating the key steps necessary for the creation of the plant variety as well as by continuous selection. Plant varieties that are cross – pollinated are not capable for the independent reproduction. Year by year, it is necessary that the breeder maintains the inbreeding lines and repeats the process of hybridization. In short, plant varieties are maintained, because the plant variety does not exist in the cases when it is not possible to get the second, third, nth plant generation which is characterized by variety's specific traits (Markovic, 2000). In the paragraphs that follow, it will be considered whether the described

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characteristics of plant varieties allow the possibility of the plant breeder protection within IP law and if so, how this legal protection is provided.

Particularly it will be presented the procedure for granting plant breeder's rights in the Republic of Serbia respecting that (a) the size of agricultural land in Serbia is 5.734.000 ha (of which 4.867.000 ha is arable - remainder are pastures, meadows etc.), that (b) rural areas in Serbia encompass 70% of the territory and that (c) 43% of people live in rural areas.

THE PREVAILING SYSTEM OF THE PLANT VARIETIES PROTECTION IN THE FRAMEWORK OF THE INTELLECTUAL PROPERTY RIGHTS

The reason why the creation of plant varieties is done is that the "new plant varieties, with higher yields, improved quality and better resistance to pests or diseases can increase the productivity and the product's quality in agriculture, horticulture and forestry" (Idris, 2003). However, the creation of new plant varieties requires significant investments in the form of knowledge and skills, labor, material resources, money and time. That means that the creation of the plant variety is a long lasting process that can last up to 15 years. Once created, plant variety (depending on species), can be readily duplicated without the authorization which makes the plant breeder deprived of the opportunity to recover the investments and the benefit by using of and disposition with the created plant variety (Bently and Sherman, 2004). To prevent unauthorized reproduction of plant varieties and distribution of such way obtained seed material, the legal protection to the breeder of the plant variety should be provided. Can the legal protection of plant variety creator be provided within the Intellectual property law? To make such a thing possible the plant variety should be economically applicable intellectual creation. At the first glance, one might say that the plant variety is not the intellectual property because every intellectual property is a non-material, and the plant variety was defined as a set of cultivated plants. But hence the creation of a plant variety is an intellectual and creative activity it is obvious that the concept of plant variety "is a logical abstraction in relation to the plant individuals that make up the plant variety. Plant individuals only concretize the variety or represent the *corpus mechanicum* of it" (Markovic, 1997a). Thus, the plant variety appears as an instruction for the process of developing the plant individuals with specific characteristics in order to promote the agriculture, horticulture and forestry. But the only fact that the plant variety is the intellectual property that can be applied to agriculture is not sufficient for establishing plant varieties protection by IP law. It is because the subject-matter of the IP law is not all commercially useful products of the human intellect, but only those which are specifically

enumerated in the legal sources of IPRs (the *numerus clausus* principle). Taking into account the Art. 27 of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS agreement - Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, signed in Marrakesh, Morocco on 15 April, 1994) according to which the Member States are obliged to ensure "the protection of plant varieties either by patents or by an effective *sui generis* system or a combination there", the condition for the establishment of the protection of plant variety breeders within the IP law is accomplished. With the regard of the things that have been mentioned, it can be concluded that in the juristic theory there is no dispute that the creation of new plant varieties without any doubt falls within the field of the IP law (Gajinov, 1996).

Since the field of IP law is wide and complex, it can be noticed numerous legal regimes of new plant varieties protection according to the legislation and the historical period. The very first institution dealing with the control and improvement of the quality of plant propagation material was founded in Germany in 1869. Shortly afterwards, such institutions are founded in other European countries (e.g. in Switzerland in 1871 and in Austria in 1881). By the beginning of the 20th century, the activities within these institutions had not been controlled by the state and the production and the marketing of seeds and planting material were not limited. Over the time, the governments began to realize importance of such institutions for securing sufficient food supply as well as for development of both agriculture and economy in general. Therefore they started to regulate production and trade of the plant propagation material. The first law of such kind was entered into effect in Czechoslovakia in 1921. The purpose of the regulation, which is nowadays exercised in all countries of the world, is to obtain for marketing, harvest and planting the propagating material which is quality and suitable for local climate, soil and other conditions and whose such traits have been tested and confirmed (Markovic, 1997a). The breeders whose plant varieties met legal requirements were granted by the permission to trade it and the plant variety itself was recorded in the official registrar with the variety name referring exclusively to this plant variety. The use of variety name in commerce became compulsory. In case somebody traded the registered variety name illegally, he could be taken to the court by the plant breeder. The suit would be filed in pursuance of rules on the suppression of unfair competition. In addition to this, the plant breeder could register his variety name as a trademark as well and as a result, the protection in pursuance of Trademark law was provided. This legal protection, even established within IP law, was indirect and subsidiary. It was indirect for it did not protect plant variety right itself but the loyal competition and trademark use. It was subsidiary because it referred to the plant varieties officially approved for the production and marketing by the

authorities. Accordingly, plant breeders whose varieties did not meet legal requirements of their "agricultural values" were not protected (Markovic, 1997b). Furthermore, plant breeders whose varieties were not under mandatory control and were not required to get the permission for marketing (e.g. varieties of decorative plants and other plants with no importance for national economy and forestry) were not legally protected, either.

It is obvious that the above-mentioned system of legal protection of plant breeders is seriously flawed. Thus in some countries they tried removing the flaws by establishing patent protection for new plant varieties. The United States was the first country to provide protection for new plant varieties by granting a patent. Plant Patent Act was adopted in 1930 (that is, Townsend – Purnell Act). Its purpose was to afford plant breeders the same type of protection for their inventions (plants) as that enjoyed by inventors of inventions having industrial application (Williams and Weber, 1989). In accordance with this Act, one could obtain patent only for the invention of plant variety produced by vegetative reproduction and the only exceptions were plants produced by bulbs (e.g. the potato). Vegetative reproduction is carried out by duplication of body cells of the plant. The resulting offspring is identical to the original plant, which means that all plant traits remain saved. Plant varieties with vegetative reproduction have the best consistency of traits throughout generations (Markovic, 2000). American legal pattern of plant varieties protection was then adopted by Cuba in 1937, South Africa in 1952 and South Korea in 1973, while in Europe Hungary was the only country where in 1969 plant patent protection was provided (Verona, 1977).

But could we identify new plant variety with the invention? The fact that the subject matter of plant variety is a part of living nature is not the obstacle to grant patent protection any more. But on the other hand, we cannot neglect that exactly that fact, that is, the "natural nature" of that creation, is a source of significant peculiarities. The most significant one is that plant individuals of certain plant variety cannot be naturally reproduced. Thus there is no limitless number of reproductive cycles with maintaining the characteristics of plant variety without human assistance. It means that the instruction of plant breeding is not enough for persons skilled in agriculture (average agricultural engineer) to create a certain plant variety. They have to have reproducible material, that is, inbreed lines and other starting materials in order to create the plant variety. They cannot make the material for reproduction on their own because there is no guarantee that by repeating the procedure of creating the variety they will get the plant individual which belongs to the same variety. Consequently, the existence of plant variety as intellectual property depends on the physical existence of plant individuals of certain genotypic and phenotypic characteristics. The fact that plant variety exists as far as its forms of materialization do, makes the

plant variety the specific goods of intellectual property, and it is not difficult to realize that, objectively, plant variety protection does not fit in patent law. Furthermore, new plant varieties are unlikely to satisfy the inventiveness threshold of patents: most breeds are obvious (Bently and Sherman, 2004). Therefore, Article 2(b) of the Convention on the Unification of Certain Points of Substantive Law on Patents for Invention of 27 November, 1963 (so called Strasbourg Patent Convention) provides that member countries are not obliged to accept plant patents. This standpoint that patent protection is not appropriate for plant patents is also present in the European Patent Convention (Convention on the Grant of European Patents of 5 October 1973 where in Article 53(b) thereof plant variety is explicitly excluded from patent protection.

But there was still a need for plant variety protection. Producers of plant varieties as a general matter must have the same rights to exclude unauthorized use for making, using, offering for sale and selling or importing for those purposes as do other inventors (Lesser, 2004). Without suitable legal protection, their investments in plant breeding would decrease and because of population growth and arable land reduce it could have negative social and political consequences if there was insufficient food supply at reasonable prices. Without suitable protection plant breeding would cease to exist or confine to "the programs sponsored by the government or just the varieties which cannot be reproduced from seeds obtained by harvest in the traditional way" (Idris, 2003). Since it was obvious in the late 1950s that there were not conditions for plant varieties to be protected institutionally by patent law, thanks to the suggestion of French government in 1957 was commenced diplomatic and expert work on the creation of an international convention on legal protection of a new plant variety. The result of their efforts was the Convention for the Protection of New Varieties of Plants. The Convention was signed in Paris in 1961. The UPOV Convention itself was amended in 1978 "in a way that allowed the US to come within its fold", and then again in 1991 (Cornish and Llewelyn, 2003).

The International Union for the Protection of New Varieties of Plants (*Union internationale pour la protection des obtentions végétales*) was established by the Convention. The acronym of French name of the Union is UPOV which is its internationally accepted name. According to UPOV Convention, "variety" means a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder's right are fully met, can be (a) defined by the expression of the characteristics resulting from a given genotype or combination of genotypes, (b) distinguished from any other plant grouping by the expression of at least one of the said characteristics and (c) considered as a unit with regard to its suitability for being propagated unchanged

(UPOV, Art 1(vi)). For plant breeders' rights to be granted, the new variety must meet four criteria under the rules established by UPOV. For plant breeders' rights to be granted plant variety must be (a) novel (b) distinct, (c) stable and (d) uniform. Additionally it has to have its variety's name (Markovic, 1997a). "A separate application must be filed to receive protection in each member country" (Jondle, 1989).

"Novelty has a carefully limited meaning, noticeably different from that of patent law" (Cornish and Llewelyn, 2003). The variety is deemed to be new if, at the date of filing of the application for a breeder's right, propagating or harvested material of the variety has not been sold or otherwise disposed of to others, by or with the consent of the breeder, for purposes of exploitation of the variety (a) in the territory of the party to whom the application for the protection has been submitted earlier than one year before the date of filing of the application and (b) in a territory other than that of the party to whom the application for the protection has been submitted earlier than four years or, in the case of trees or vines, earlier than six years before the said date.¹ Three features of the novelty requirement should be noted. The first is that novelty is not lost by prior use of the variety. The second notable feature is that the novelty provisions allow for substantial (so called 'grace') periods in which the applicant can commercialize the plant prior to grant without prejudicing the application. Third, the only disposals or sales to be taken into account when considering the novelty of a particular plant variety are those by the applicant themselves or with their consent (Bently and Sherman, 2004).

For the rest of the requirements for plant variety protection UPOV runs the DUS test (Distinctness, Uniformity and Stability test) (Markovic, 1997b). A plant variety is distinct if it is "clearly distinguishable by one or more characteristics which are capable of a precise description from any other variety whose existence is a matter of common knowledge at the time of application"² Distinctiveness may arise through visible differences in outward appearance, such as height, size of leaves, leaf color. It may also arise through physiological differences associated with the variety's particular chemical or biological structure, such as resistance to disease or ability to withstand certain conditions (such as cold, drought or so) (Bently and Sherman, 2004). A variety is uniform if it is sufficiently uniform in those characteristics which make it distinct.³ "This means that nearly all examples of the variety must bear the characteristics that make the plant distinct" (Bently and Sherman, 2004). It does not mean that all plants in a variety are exactly alike genetically (Bliss, 1989). "Uniformity is reached when the

proportion of deviation in a breeding procedure has been reduced to a point beyond which it would be unreasonable to expect further experimentation" (Cornish and Llewelyn, 2003). A plant variety is stable if the characteristics that make it distinct remain unchanged after repeated propagation.⁴ Stability implies that when the variety is reproduced or reconstituted, it will remain true to the essential and distinctive features with considerable reliability commensurate with that of varieties of the same category in which the same breeding method is employed (Bliss, 1989). "The aim of testing stability is to determine that subsequent generations of the plant are not throwing up noticeably more deviation" (Cornish and Llewelyn, 2003).

By the authorization the breeders are granted with the exclusive rights for: production or reproduction (multiplication), conditioning for the purpose of propagation, offering for sale, selling or other marketing, exporting, importing, stocking for any above-mentioned purposes (Jovanovic, 2000). The advantage of plant breeders' rights is that they do not constitute an impediment for farmers or those engaged in research to reproduce protected varieties for their own use (Frischtak, 1993).

The UPOV Convention provides the scope of protection, the conditions required for protection, the period of protection and above all the protection of plant variety independent of national laws regulating production and marketing of plant propagating materials (Markovic, 2000). In a word, The UPOV Convention provided a *sui generis* form of IP law protection. The mentioned Article 27 of TRIPS Agreement refers to that *sui generis* form. Even though plant variety is excluded from patent protection, it is protected by a *sui generis* system in accordance with UPOV system (most countries are selecting pure plant breeder's right option) (Lesser, 2004) or by the combination of UPOV *sui generis* protection of plant variety and patent. For example in the U.S.A. there are plant patent of vegetative reproduction as well as variety protection established by Plant Variety Protection Law in 1970 (Barton, 1993). American plant patent is not fundamentally a patent because it is of that kind only nominally in regard to the content and the titular has a little narrower right than the common titular of a patent. And one more thing: plant variety as a set of plant individuals is indeed excluded from patent protection, but the inventions including plant genome, plant organs and parts of the plant can be patented (Brush, 1996). It means that products of the invention including plants and their propagating materials (seed, root, seedlings etc.) may be patentable but without the specification of plant variety as well as products of the invention of other botanical materials (e.g. cell lines, modified cells, genes, plasmids etc.) not capable of regenerating into a plant (Markovic, 1997a). All in all, inventions of every plant material without the parentage of plant variety clearly said

¹ The Law on the Ratification of the International Convention on the Protection of New Varieties of Plants, (Official Gazette of the R. of Serbia-International Agreements, No. 19/2011), Art. 6(1).

² UPOV, Art.7.

³ UPOV, Art.8.

⁴ UPOV, Art. 9.

can be protected by patent law. According to this, the exclusion from patent law protection does not refer to the inventions of biotechnological process of a plant if the technical feasibility of the invention is not confined to a particular plant variety. It virtually means that the patent application will not be rejected if plant variety is not explicitly specified (e.g. patent application for patent recognition of *Triticum monococcum* (a species of wheat) will not be approved, while the invention of the technology applicable to the whole genus of *Triticum* will not be regarded as an invention with excluded patent protection and therefore patent application formulated in that way will be acceptable) (Wilson, 2005) as well as it does not include more than one plant variety like in Novartis /Transgenic Plant, T 1054/96 [1999] EPOR 123, 137 (TBA) (Bently and Sherman, 2004).

THE PROCEDURE TO GRANT PLANT BREEDER'S RIGHT IN THE REPUBLIC OF SERBIA

It is absolutely clear that Serbia has achieved the best results in the field of intellectual property presenting its new varieties of agricultural plants (Gajinov, 1996). The process of obtaining plant breeder's right was first established by the 1980 Act on Recognition of Newly Created Varieties, the Approval of Introducing to the Production of Foreign Varieties and Protection Varieties of Agricultural and Forest Plants.⁵ The major characteristic of that legal system of plant variety protection was that the granting of plant breeder's rights was conditioned by the previous legal recognition of a new created domestic plant variety or the permission for the production of foreign one. Only when has the domestic variety been recorded in The Register of Domestic Plant Varieties and a foreign variety in the official records, the breeder was authorized to apply for and to grant the plant variety protection under additional condition that the exact plant variety identification is possible. Because of the correlation between the control and marketing of botanical materials for propagation and variety protection, the 1980's Act was not in accordance with the UPOV Convention. Therefore the Act on Recognition of Agricultural and Forest Plants⁶ came into effect in 1998 (in meantime, this area was normatively widened with the 2004 Act on the Reproductive Material of Forest Trees, 2000 Act on Seedlings of Fruit Trees, Vines and Hops and 2005 Act on seeds) and Protection

Agricultural and Forest Plant Bill was adopted in 2000.⁷ The separation of these two legal areas by adopting the mentioned laws was completely justified because the control of production and marketing of propagation materials and plant variety protection exercise different interests and that is the reason why the requirements for plant variety production and trade permission and grant of plant breeder's rights cannot be and are not the same. Today a *sui generis* system for new plant varieties legal protection in the Republic of Serbia is provided by the 2009 Protection of Plant Variety Rights of the Breeders Act.⁸

Plant variety rights arise as a result of a process of registration (Bently and Sherman, 2004). The legal protection for the invention of the plant variety is granted by the Ministry of Agriculture in the legal procedure initiated by the request filed by plant breeders. With regard to the time of the request, in this field of the Intellectual property law are applied the rules of the time priority, including the rules of the international priority that is achieved within 12 months since the date when first lawful application of the same plant variety had been submitted in any UPOV member state. Along with the request applicant encloses the documentation on the creation of the plant variety and proposes the name of it. At the expressed request of the Ministry the patterns of the reproductive material of the variety must be submitted. The material of the variety for which the legal protection is requested and attached documentation are considered as an official secret and should be treated as confidential information. Upon receiving the request, the examination of meeting the formal conditions for the grants of the rights being done. Within the examination of the formal correctness of the request it is separately examined whether the conditions for the record of the request and the proposed name of the variety into the Register of requests have been fulfilled and whether the conditions for approval of the proposed name of the variety have been fulfilled. The conditions for enrolling request and the proposed variety name in the Register of requests are fulfilled if the submitted documentation is complete and if it is made in accordance with the Act. If not, the Ministry shall, with giving reasons, instruct the breeders or their authorized representative to, within 30 days of receipt of the notice, rectify the identified deficiencies. If the deficiencies are not promptly removed, the Minister will reject the request by the verdict. If the request is formally lawful it will be recorded into the Register of requests.

The next procedural step is the publication of the recorded request and proposed plant variety name. The moment when those data are published is the moment

⁵ The Act on Recognition of Newly Created Varieties, Official Gazette of the SFRJ, No 38/80 and 82/90.

⁶ The Act on Recognition of Agricultural and Forest Plants, Official Gazette of the SRJ, No. 12/1998 and 37/2002. In meantime, this area was normatively widened with the accepted Act on the Reproductive Material of Forest Trees, Official Gazette of the R. of Serbia, No. 135/2004, Act on Seedlings of Fruit Trees, Vines and Hops, Official Gazette of the R. of Serbia., No. 18/2000 and Act on seeds Official Gazette of the R. of Serbia, No. 45/2005.

⁷ The Act on Recognition of Agricultural and Forest Plant, Official Gazette of the R. of Serbia" No. 28/2000 and The Protection of Agricultural and Forest Plant Act, Official Gazette of the R. of Serbia, No. 101/2005.

⁸ Protection of Plant Variety Rights of the Breeders, Official Gazette of the R. of Serbia, No. 41/2009.

after plant breeder's application is not under official secret regime any more. Since the moment of publication, submission of objection in respect of the proposed plant variety name is allowed. The objection can be filed within three months from the date of publication of the proposed variety name. Such an objection has to be submitted to the applicant for a reply. The deadline for response is 30 days and within that period the applicant may propose a different name for the variety either with own initiative or by the direction of the Ministry. By the direction of the Ministry it must be acted, otherwise the request for grant of plant variety breeder's right will be rejected with the verdict.

Nevertheless the mentioned objection submitted or no, after the request enrollment into the Register had been done and proposed plant variety name is published it is always checked whether the conditions for the admittance of the variety name are fulfilled. To adopt the proposed name of the variety, the name of the variety:

- (1) Must be capable for identification of the plant variety.
- (2) Must not be consisted of numbers only, except in the case when such a pattern of labeling the variety represents a common practice.
- (3) Must be of such kind that it does not lead to confusion or causes the confusion in terms of characteristics, values and identity of the plant variety, that is, identity of the breeder.
- (4) Must be different from the name of another plant variety that is on the territory of any member state of UPOV recorded in the official register of plant varieties, and which belongs to the same or nearby plant species.
- 5) Cannot be the same or of a kind that it can be replaced with the name of the registered plant variety the third person had acquired the right on or already had used it in the good faith in legal transactions.
- 6) Cannot refer only to the traits that are common to other varieties of the same plant species and
- 7) Cannot be unsuitable for the use in the Republic of Serbia.

The same plant variety cannot be, in the different member states of UPOV, legally protected under different names. Only exceptionally, if by the previously gained right of the third party, the use of the plant variety name is prohibited to a person who is obliged to use it, the Ministry will require from the breeder to propose another name for the cultivar. After the proposed variety name is accepted the substantial examination of the request being done. During the substantial examination of the plant variety application, all necessary tests of the variety are performed either in the model farm or laboratory. If requirements for plant breeder's right grant are fulfilled or no is determined by decision. The decision is based on test results and proposals of the Expert Council. Until the decision is made, any person who considers that the variety is not new, distinct, uniform and stable or that the applicant is not authorized to apply for the plant breeder's

right can, starting from the date the request for the recognition of the breeders' plant variety rights was publicly announced, submit an objection. If objection is rejected and requirements for right award are fulfilled, plant breeder's right shall be granted. All relevant data shall be recorded in the Register of Protected Plant Varieties at the Ministry of Agriculture, and the list of protected plant varieties with the data on the names of varieties and species, the breeder, his residence, number and the date of the decision granting the legal protection for the plant variety and other information, shall be published in the "Official Gazette of the Republic of Serbia". The right of the breeder to the protected plant variety lasts for 25 years but for potatoes, vines, wooden fruits species and other trees 30 years from the date of the rights granting. As a date of the right grant is deemed the day when the decision on the acceptance of the breeder's request was made.

CONCLUSION

A new plant variety is an intellectual creation protected by Intellectual Property Law. The legal basis is the International Union for the Protection of New Varieties of Plant (UPOV). The Convention was signed in Paris in 1961 (amended 1978 and 1991). The main reason for the protection of plant breeders is the importance of their work in providing sufficient amount of food. Investments in creating more productive plant varieties as well as plant varieties more resistant to draught, coldness or high temperature, pests, weeds, herb diseases etc. can be at risks if plant breeders are left without exclusive legal protection, that is, so called legal monopoly. Awarding plant breeders by such exclusive right can be an incentive not only for providing enough food supply but also for the income gained by exporting of seeds of high technological knowledge and intellectual capital implemented into.

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