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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

ADMINISTRATIVE AND LEGAL COMMITTEE

Sixteenth Session
Geneva, November 14 and 15, 1985

PLANT BREEDERS' RIGHTS AND BIOTECHNOLOGY

Document prepared by the Office of the Union

Attached is the draft of one of the two papers whose preparation was decided in October 1985 by the Council of UPOV and which is intended as a preparatory paper in the joint UPOV-WIPO information meeting convened for January 10, 1986 (see document C/XIX/12 Prov., paragraph 14). The Consultative Committee decided that the draft of the paper should be considered by the Administrative and Legal Committee at its forthcoming session (see document CC/XXXII/5 Prov.2, paragraph 40).

[Annex follows]

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ANNEX

THE PROTECTION OF PLANT VARIETIES AND BIOTECHNOLOGICAL INVENTIONS

Introduction

1. During the last decades, on the basis of the Convention for the Protection of New Varieties of Plants, signed in Paris by a number of European States on December 2, 1961, (the "UPOV Convention," revised twice since that date, namely in 1972 and 1978)[1] which was the culmination of lengthy efforts by European breeders and the breeding industry to obtain industrial property protection for the results of their labor and investments, and on the basis of parallel developments in the United States of America,[2] a special type of protection was introduced offering to breeders of new varieties of plants the possibility of obtaining exclusive rights, comparable to patents for industrial inventions, for such varieties ("breeders' rights"). The said Convention--after its last revision in 1978 also acceptable to the United States of America--now counts 17 States, including non-European States (United States of America, Japan, New Zealand, Israel and South Africa)[3] and it provides that the breeders' rights mentioned are granted either in the form of patents, specially adapted to the mandatory provisions of the Convention, or in the form of special rights or certificates of protection, or

The UPOV system, based on the UPOV Convention, the result of long lasting efforts to obtain industrial property protection for plant varieties.

The UPOV system, a system of granting plant breeders' rights in the form of a special right or in the form of an adapted patent ("plant patent").

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1 The original version and the 1972 and 1978 revised texts of the UPOV Convention are reproduced in UPOV publication 293(E).

2 As early as 1930, development in the United States of America led to promulgation of the Townsend-Purnell Plant Patent Act, according to which patents of a special type (plant patents) are granted by the Patent Office for the asexual reproduction of a new variety of plant (except tuber propagated plants and plants found in an uncultivated state); in 1970, this development was complemented by the Plant Variety Protection Act under which certificates of plant variety protection are granted for varieties of (most) sexually reproduced plants.

3 The member States are: Belgium, Denmark, France, Germany (Federal Republic of), Hungary, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, South Africa, Spain, Sweden, Switzerland, United Kingdom, United States of America.

in both forms.[4] However, protection under both forms is not admissible for varieties of the same botanical species, i.e. varieties competing in economic life.[5] For the sake of convenience this system of protection is called the "UPOV system" in this paper. Most UPOV member States have chosen to grant special rights or certificates of protection; only Hungary, Italy and--for part of the plant kingdom--the United States of America grant specially adapted patents, "plant patents." As a result of the introduction of the UPOV system in addition to the general patent system, the European Patent Convention, and most UPOV member States in their patent legislation, expressly exclude plant varieties from the general patent law and the majority have also excluded the granting of patents for essentially biological methods for the protection of plants.[6] In the other UPOV member States, where no such express exclusion exists, general patents are (except for very recent developments) not granted for plant varieties. In several publications and in opinions expressed by scientific and industrial circles, it has been questioned whether, in view of the anticipated impact of certain new types of biotechnological inventions on plant breeding, the exclusion of

Exclusion of patent protection for plant varieties and essentially biological processes for the production of plants.

Prohibition of "double protection", i.e. parallel protection by patents and by plant breeders' rights, must be maintained.

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4 The possibility of granting protection in both forms was merely envisaged to enable transitional measures by States having granted some form of patent protection in the past and opting for a gradual application of the UPOV Convention. It did not obtain any practical importance (but see footnote 5 for the situation in the United States).

5 See Article 2(1) of the UPOV Convention. Only the United States of America, by making a reservation concerning Article 37 of the 1978 text of the UPOV Convention, reserved the right to grant protection for varieties of the same species under the different forms mentioned in Article 2(1) of the Convention. In the United States, plant patents are granted for vegetatively reproduced varieties while plant variety certificates are granted for sexually reproduced plants.

6 See Article 53(b) of the European Patent Convention. A counter-exception is made for microbiological processes for the production of plants or the product thereof. As regards the national laws, it should be noted that the Federal Republic of Germany and France only exclude plant varieties of those species which are not (yet) eligible for plant variety protection.

7 See in particular: Beier, Crespi, Straus, Biotechnology and Patent Protection, OECD, Paris, 1985, in particular page 92; Resolution of the Executive Committee of the AIPPI adopted in May 1985 in Rio de Janeiro; Dr. Martin Lutz, Entwicklungstendenzen im internationalen gewerblichen Rechtsschutz, Neue Zürcher Zeitung vom 14. August 1985.

the granting of general patents for plant varieties is still justified.[7] UPOV is convinced that in these publications the UPOV system, the reasons for its establishment and its importance for agriculture and society, as well as the differences between the UPOV system and the patent system, are not fully appreciated. It is for this reason that the following account describes of the factors which led to the UPOV system and its claim for exclusivity, and it is UPOV's belief that they have not lost their validity.

Reasons for the Development of the UPOV System In Addition to the Patent System

2. The UPOV Convention was elaborated by a Diplomatic Conference which met in two stages between 1957 and 1961 and it was the result of intense and lengthy new discussions in the interested circles and in legal periodicals.[8] The Convention was not the fruit of the caprice or over-zealousness of individuals nor was its elaboration left to inexperienced or unilaterally oriented negotiators. The idea was of course born among circles of breeders who wished to obtain legal protection for the fruit of their works in the same way as inventors enjoyed such protection for the results of their efforts. These breeders had tried hard over long periods to obtain normal patent protection for their newly bred varieties or for certain processes leading to varieties, but they had in many countries encountered great difficulties.[9] Although in later years in a few countries these difficulties were partly overcome and patents were granted, breeders envisaged difficulties in enforcing their rights so they found it necessary to continue their efforts to obtain appropriate protection. Protection by a general patent did not prove to be effective against third persons who--as would be the normal practice--only reproduced or propagated the variety. It was felt that whatever patent protection was granted (by product or process protection), it would never

The UPOV system introduced because of the unsuitability of the general patent system for protecting plant varieties, if not all living material.

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8 The history of the UPOV Convention is well described by B. Laclavière, The Convention of Paris of December 2, 1961, for the Protection of New Varieties of Plants, Industrial Property, 1985, pages 224 ssq.

9 Beier, Crespi, Straus, l.c., with further references, pages 21 to 36.

go beyond the immediate result of the breeding process (the elite seed).[10] The breeders' cause in their continued efforts was taken up by persons concerned in the industrial property field--lawyers, patent attorneys and government officials--who saw the need for such protection, in particular, in the interest of promoting breeding activities for the benefit of agriculture as a whole. Supported by agricultural experts, they laid the ground for the convening of the Diplomatic Conference of 1957 to 1961.[11] Besides the agricultural experts, eminent and experienced European jurists played an important role in this Diplomatic Conference, jurists working at the same time for such lasting achievements as the European Patent Convention and the Patent Conventions elaborated in the Council of Europe. The criticism sometimes heard from ill-informed persons that the UPOV Convention was elaborated by persons not sufficiently knowledgeable in the patent field is therefore out of place.[12] The UPOV Convention was negotiated by both agricultural and legal experts of a high professional level, and it is probably for this reason that it has proved flexible enough to meet all challenges for over a quarter of a century now and that its basic rules have not required any substantial amendment in the two Diplomatic Conferences held since, in 1972 and in 1978.

The UPOV system elaborated by high-level experts in agriculture as well as in patents.

The UPOV system proved flexible enough to meet all challenges over a quarter of a century.

3. The drafters of the UPOV Convention did not lightheartedly depart from the general patent system, as will be realized if the deep involvement of some of them in the patent system is

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10 For the very rich literature on this question in the Federal Republic of Germany see: Krause/Kathlun/Lindenmaier (Ulrich Weiss), Das Patentgesetz, Carl Heymanns Verlag KG, Berlin, Bonn, München, fifth edition 1970, note 18 to paragraph 1 (pages 17 to 19), with further references. Different opinions are expressed by Freda Herzfeld-Wuesthoff in "Der Züchter," 1932, pages 203 et. seq. and recently by Dr. von Pechmann in GRUR, 1985, pages 717 et seq.

11 Patentanwalt Dr. Freda Wuesthoff: Patentschutz für Pflanzen, La Propriété Industrielle, 1956, pages 176-183 and GRUR 1957, pages 49-56.

12 Only recently during the ASSINSEL World Congress held in June 1985 in Killarney, Ireland, one of the lecturers repeated the remark made during the recent discussion of the revision of the U.K. plant breeders' rights legislation, that the UPOV Convention must have been drafted by "a drunken lawyer".

The basic conception underlying the general patent law unsuited for protecting plant varieties, if not all living material.

taken into account.[13] They saw no other way than to create an independent system of protection, since the patent system as it had developed over the years did not appear to be suited to plant variety protection. In recent publications, the following are mentioned as the main obstacles standing in the way of patent protection at that time: the reluctance to grant patent protection for living matter or products of nature (at least in some parts of the world), the difficulties of describing plants or plant varieties and repeating with the necessary accuracy the processes leading to new plant varieties (in other parts of the world). Certainly, those considerations played an important role and they were sometimes over-emphasized, and, although it remains to be seen, it might well be that these obstacles could be overcome in our time or in the future. The unsuitability of the general patent system for the protection of plant varieties was however more fundamental, more deep-rooted. It was the conception underlying the general patent system which was, and in the opinion of UPOV still is, unsuited to the protection of plant varieties, i.e. a group of plants which possess basically the same expressions of characteristics which they are able to transmit, when propagated, to further generations of plants, and which are used in commercial agriculture for this purpose. At least this view was, and is, held true for plants of higher categories. The basic, and still prevailing, unsuitability of the general patent system for plant variety protection, which made the introduction of a separate, adapted system necessary, can best be demonstrated by comparing details of the UPOV system with those of the general patent system, a comparison which is undertaken in the following paragraphs. It should be noted that such a comparison is often difficult because of the lack of uniformity of the patent laws and patent case law in different countries. While the plant breeders' rights system of the UPOV member States, and even of certain other States, follows

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13 The list of participants of the second (final) session of the Diplomatic Conference in 1961, which established the final text of the UPOV Convention includes inter alia one head of a patent office, one inspecteur général of the French Department responsible for Patent Law, in later years Director General of the International Patent Institute in The Hague, one President of the Senate of a Patent Office, two high-ranking officers from ministries, junior officers from ministries responsible for patent law.

the mandatory rules of the UPOV Convention and is therefore similar, or even identical, patent legislation and patent case law differ widely from country to country, and it is only in the European States, thanks to work of the Council of Europe and of the drafters of the two European Patent Conventions, that a measure of harmony has been reached which sometimes extends beyond Europe.

Detailed Description of Differences between the UPOV System and the Patent System

4. As said before, differences were, and still are, to be seen in the basic concepts. Patents are granted for inventions, breeders' rights for certain new varieties (in the French version of the Convention for "obtentions"). The emphasis of the patent system lies on an instruction for a technical activity.[14] The inventor discloses to the world a new instruction for a technical activity, which competitors could copy if they were not for a certain period and for the commercial field prevented from doing so by the exclusive right granted to the inventor. The breeder offers to the world a new variety which is of economic value to him and others since it can, in its finished form, be reproduced or propagated by using the well-known biological multiplication methods; the breeder's competitors are not interested in repeating the breeding process which led to this variety; what they want is to reproduce or propagate material of the variety for marketing purposes, and the exclusive right accorded to the breeder therefore gives him mainly the right to produce and sell such propagating material. Using an invention means that the user repeats what the inventor did to arrive at the invention, the user of a plant variety is interested in reproducing or propagating the finished variety, he is interested in using its natural self-reproductive capacity.

The UPOV system protects varieties not abstract concepts.

Aim of protection under UPOV system different from patent protection: plant breeders' rights exclude others from using self-productive capacity of the variety.

5. Plant breeders' rights may be granted for discoveries, general patents may not. The UPOV Convention expressly states that all plant varieties fulfilling certain conditions may be pro-

The UPOV system also protects discoveries.

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14 "Lehre zum technischen Handeln," See G. Benkard, Patentgesetz, Gebrauchsmustergesetz, 7th Edition, Munich 1981, note 44 to paragraph 1.

tected, irrespective of their origin.[15] The merit of the breeder consists in offering to society a new and useful variety. The inclusion of discoveries is considered to be absolutely necessary since a great number of valuable "obtentions" in the plant field are based on a selection and multiplication of plants which owe their existence to a spontaneous mutation, a mutation which is not induced and thereby not repeatable at will. The finding of such mutants would not be protectable without the UPOV system, thus without that system there would be no protection at all for these "obtentions."

6. Basic differences can also be seen in the conditions to be fulfilled before protection can be granted. The conditions for granting patent protection are mainly novelty and non-obviousness (or inventive step or inventive activity), as well as industrial applicability. They cannot be applied as they are or they are meaningless for plant varieties, while other indispensable conditions are foreign to the patent law. In order to be protected, varieties do not have to be new and non-obvious as compared to an abstract "state of the art," which might even be composed of several elements of knowledge ("mosaic state of the art"). Plant varieties must possess distinctness from any--individual--other variety which forms part of the common knowledge. They are thus compared with concrete, existing varieties. A variety would not be refused protection if all of its characteristics could be found in several other varieties, but never combined in one single other variety. In patent law, protection could not be granted, for lack of non-obviousness (inventiveness), in such cases unless the combination of the various elements would in itself be inventive (non-obvious) to the average expert knowledgeable in the art. Naturally, just any degree of distinctness is not sufficient under the UPOV system. The new variety must be distinguishable by "one or more <u>important</u> characteristics" and it must be "<u>clearly</u> distinguishable". The existence of such <u>clear</u> distinctness in an <u>important</u> characteristic is judged according to objective standards and not according to an evaluation of its obviousness or non-

Normal conditions for granting patents meaningless for plant varieties.

The UPOV system provides for other--indispensable--conditions for granting.

The condition of distinctness under the UPOV system.

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15 See Article 6(1)(a) of the UPOV Convention: "Whatever may be the origin, artificial or natural, of the initial variation from which [the new variety] has resulted ..."

obviousness. Whether another breeder of average knowledge could have developed the variety as well is not assessed. What counts is whether agriculture, horticulture or forestry is given a new variety, not how inventive or non-obvious the breeding activity appears to be according to the judgement of a government official in a patent office.

Different novelty rules under the patent system and the UPOV system.

7. A special and interesting feature of the UPOV system is the provisions concerning novelty in cases of disclosure of the variety itself before the date of deposit of an application for protection. The patent system follows a rather rigid line as far as publication of the invention by the inventor himself is concerned. Premature publication destroys novelty, and only relatively short "periods of grace" prevent the inventor from losing all hope of obtaining a patent right when he discloses his invention for instance scientific world before filing a patent application, no matter how noble the intentions of such a disclosure nor how important it was for scientific progress. In patent law, for some time there was even a tendency to reduce the length of existing periods of grace or to do away with them altogether, and it is only lately--significantly in connection with other living material, namely, micro-organisms--that a prolongation of the periods of grace is requested.[16] The UPOV system, not bound by the example of the general patent law, follows a unique system which even might be worth copying for application of the patent system in the field of microbiology. It exempts the fact that the variety itself has become a matter of common knowledge from the strict rules on distinctness. The variety itself may have been disclosed, it may have been made publicly known to the scientific world, it may have been registered for whatever purposes and may have been shown at an exhibition. It must however not have been commercialized (with the agreement of the breeder or his successor in title) in the country of application (and even then a period of grace of up to one year is possible under the recent (1978) version of the Convention). The drafters of the UPOV Convention considered that mere knowledge of a variety should not prevent protection, since it would not mean that the general public had access to that variety; it would not enable anybody to repro-

Unique provision preventing loss of novelty in case of early disclosure. Fast exchange of information facilitated.

Generous periods of grace under the UPOV system.

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16 Beier, Crespi, Straus, l.c. page 97.

duce it or material therefrom. No one could reproduce a variety on the basis of its disclosure. Protection is excluded only when the variety is commercialized and material is on the market because otherwise bona fide users of such variety might a posteriori be confronted with an exclusive right and prohibition. In other words, the different situation existing for plant varieties allowed the legislators to establish a more lenient line than the rigid rules of the patent system, and the special situation of plant breeders, who in a number of countries must submit their material very early for governmental control of other aspects, made such leniency almost mandatory. Even more far-reaching leniency is foreseen under the UPOV system in the case in which the commercialization of the variety took place in another country. Commercialization abroad is only detrimental to novelty when it took place for longer than four--and in some cases even six--years before filing the application. These novelty rules of the UPOV system are a great advantage for breeders looking for protection. Breeders could probably not live with the strict patent law rules on novelty and non-obviousness.

Novelty rule under the UPOV system great advantage for breeders.

8. The patent law condition of industrial applicability would be meaningless for plant varieties and is therefore not retained under the UPOV system. Though there is no doubt that plant varieties are always industrially applicable, it cannot be excluded that, were the general patent law provisions applied to plant varieties, breeders would encounter bureaucratic difficulties under that aspect in a number of countries.

By abandoning meaningless conditions of patent system, bureaucratic difficulties are avoided.

9. On the other hand, under the UPOV system a plant variety has to fulfill the condition of sufficient homogeneity if it is to be protected. This condition is unknown in the patent law, but indispensable for plant variety protection. Here again the difference between the two systems shows clearly. UPOV has to do with living material and life forms, and particularly those of a higher botanical order, are never alike; each plant is different from another plant. On the other hand, it is obvious that an exclusive right of protection can only be granted for an assembly of plants which are likely to differ from those of another assembly of plants. Otherwise, it would be impossible to assess the scope of protection and to prove infringement of the right. Thus, a system of protection of plant varieties resulting from breeding efforts must be

Homogeneity: an indispensable condition for protection of varieties.

based on one group of plants showing such a strong resemblance amongst themselves that it can be distinguished from other groups of plants. This is the "sufficiently homogeneous variety." Requiring a certain homogeneity as a condition for protection is therefore essential, but a certain degree of homogeneity is not only required for protection. Wherever the legislator establishes rules for plant varieties (for entering them in national catalogues, for certification, etc.) homogeneity plays an important role. In the general patent law there is nothing comparable to the condition of sufficient homogeneity. The application of the general patent law as it stands would thus have meant that protection could have been granted for a plant population not possessing sufficient homogeneity, and such patents would have encountered difficulties in their practical application; they would have created great uncertainty for offices when they were to be considered as part of the state of the art for further applications.

Stability of the variety: another indispensable condition for protection of varieties.

10. What just has been mentioned about homogeneity is also true for a further condition under the UPOV Convention, the condition of stability. Plant varieties must be stable. They must be able to transmit their characteristics to succeeding generations. This is an absolute necessity from several points of view. From the practical point of view, it is indispensable that users, when propagating the material of a protected variety, obtain plants of the same type. From the legal point of view, it is obvious that an exclusive right cannot be enforced if the plant variety does not over the years retain the essential characteristics described when the right was granted.

The UPOV system provides for genuine system for contesting the validity of the right of protection.

11. The necessity for plant varieties to possess sufficient homogeneity and stability in their essential characteristics has its reflection in the provisions concerning the contesting of the validity of the right by competitors. The general patent law would have provided the annullment or revocation procedure for this purpose. Under these procedures, patents granted can be annulled or revoked if it is proven that the invention did not fulfill the conditions for granting a patent.[17] When annulled or revoked,

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17 As an example, see Sections 158 and 159 of the WIPO Model Law for Developing Countries on Inventions, Volume I, Patents, WIPO Publication No. 840(E), Geneva 1978, pages 40 and 41.

the patent would have to be considered as null and void from the beginning. (However, under most laws certain exemptions are made for license fees already paid before the annullment or revocation becomes effective). Such a rule would not be acceptable under the UPOV system. Plant varieties do change over the years unless maintained by the breeder, and occasionally the efforts of the breeder are in vain. Therefore, if the breeder is not able to provide the competent authority with propagating material which permits production of the variety with the characteristics it possessed at the time of granting the protection, the UPOV system envisages forfeiture ex nunc (which may be declared at the request of a third party or ex officio). The breeder's right ceases to have effect, but maintains its full validity for the past, i.e. the time before forfeiture was declared.[18]

Revocation or annulment of right under the patent system not acceptable for plant varieties.

12. Considerable differences exist in the granting procedure under the two systems. First of all, with regard to the application. An important part of an industrial patent application is the specification, the description of the invention.[19] Patent applicants describe their inventions in normal language or in formulas and symbols used in the technical field concerned, such as the generally known chemical symbols. Even under the general patent law it is sometimes not easy to describe the invention. Describing an invention in the field of macromolecular chemistry poses problems, but as far as living organisms are concerned, even greater difficulties are encountered. Difficulties that have arisen in the field of micro-biological inventions show this very clearly. The UPOV system has to do with an even more difficult subject matter, namely, living organisms of a higher order, that means living organisms of a great complexity and an almost unlimited variability. Furthermore, a system of symbols like that in chemistry is notably missing. In particularly for the last two centuries the scientific discipline of botany has struggled with the task

The UPOV system solves the difficulties encountered in describing living material.

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18 See Article 10 (2) of the UPOV Convention.

19 As an example see Article 123(3) of the WIPO Model Law for Developing Countries on Inventions, Volume I, Patents, WIPO Publication No. 840(E), WIPO, Geneva, 1979, page 23, and in particular the commentary on this provision on page 71.

of describing plants, even at the level of the species or higher botanical orders.[20] Describing plant varieties by words and sentences is sometimes impossible and always insufficient, so botanists over the ages have used drawings and colored illustrations. Now photography is available (but it does not always show the true color).[21] Pressed plants, as they are stored in a herbarium for example offer another possibility for defining plants. But botanists know that in the end only living samples of plants constitute a precise definition. In the Botanical garden of Geneva, the following Latin inscription can be found: "Herbarium praestat omni icone, natura viva praestat omni herbario." The UPOV Convention respects this line of thinking of the botanist. It provides expressly that protection can only be granted after an examination has been conducted to determine whether the conditions for protection, in particular, the so-called "technical conditions" of distinctness, homogeneity and stability have been fulfilled.[22] It was the intention of the drafters of the UPOV Convention that this examination should be carried out in grow-out tests in institutes specially equipped for this purpose, and this is the case in particular in the European member States of UPOV. Lately, UPOV has agreed that examination by the granting authorities may under certain conditions be based

Description under the UPOV system based on living material.

The UPOV system provides for a reliable examination system.

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20 Hervé M. Burdet, The De Candolle Family and the Historical Development of Botanical Nomenclature, Records on the UPOV Symposium on "Nomenclature," held in October 1983, UPOV Publication No. 341(E), Geneva, 1984, pages 17 et seq.

21 In the testing of plants, international color charts are used, as for instance the color chart issued by the Royal Horticultural Society. The Technical Committee of UPOV tries to harmonize the use of color charts by its member States.

22 Article 7 of the UPOV Convention.

on grow-out tests conducted by the breeder himself.[23] As a result, at least in the European member States, the obligations of the applicant for a breeder's right are quite different from those of an applicant for a general patent. He is not expected to submit a detailed and precise description. He gives a rather rough description, consisting of a few indications, on a form elaborated for each species according to UPOV standards--a so-called "technical questionnaire".[24] In addition, the applicant has to deliver a small amount of propagating material to the testing authority. In most UPOV member States this material is grown by the testing authority, mainly on small plots alongside comparable reference varieties. The technical questionnaire filled out by the applicant helps the testing authority to make reasonable arrangements for the growing-out tests; for instance, it

Under the UPOV system applicants deposit samples instead of furnishing lengthy descriptions.

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23 The necessary conditions are mentioned in the Records of the Geneva Diplomatic Conference on the Revision of the International Convention for the Protection of New Varities of Plants, 1978, UPOV Publication No. 337(E), UPOV, 1981, page 25. The statement reads as follows:

"(1) It is clear that it is the responsibility of the member States to ensure that the examination required by Article 7(1) of the UPOV Convention includes a growing test, and the authorities in the present UPOV member States normally conduct these tests themselves: however, it is considered that if the competent authority were to require these tests to be conducted by the applicant, this is in keeping with the provisions of Article 7(1), provided that:

(a) the growing tests are conducted according to guidelines established by the authority, and that they continue until a decision on the application has been given;

(b) the applicant is required to deposit in a designated place, simultaneously with his application, a sample of the propagating material representing the variety;

(c) the applicant is required to provide access to the growing tests mentioned under (a) by persons properly authorized by the competent authority.

(2) A system of examination as described above is considered compatible with the UPOV Convention."

24 A UPOV Model for such technical questionnaires is reproduced in the UPOV Collection "Important Texts and Documents," UPOV Publication No. 644(E), Section 12.

allows the variety that is the subject of the application to be grown next to the standard variety in relation to which distinctness might be questionable. If a breeder's right is to be granted, it is (in the majority of member States) the office not the applicant who establishes a description. In addition, after granting of the breeder's right, samples of the protected variety are kept by the granting authority which, if infringement is alleged, can then always compare the protected variety and the material used by the alleged infringer in further grow-out tests. It is obvious that this system has a number of advantages. First of all, it is a safe, if not the only possible, system of exactly defining a variety. Secondly, the fact that the description of the variety is, at least in the majority of member States, made by a reliable and objective authority which possesses, or acquires in the course of time, the necessary skill in making descriptions is advantageous for the owner of the right himself, as well as for the public: the same standards are applied to the description of all varieties for which protection is granted. The breeder is relieved of the cumbersome task of describing the variety, for which specialized skill is needed, and for which reference collections have to be maintained at considerable expense. It is true that such procedure is neither inexpensive nor fast (the testing lasts usually one to three growing periods, i.e. mostly one or three years)--and it is for this reason that a few member States of UPOV do not apply it--but it should be kept in mind that to a great extent it probably avoids costly litigation. Moreover the system is a sound basis for the exchange of test results between authorities in several member States when the breeder wishes his variety to be protected in other States as well so that not only costs and time can be saved, but it also avoids the risk that different decisions might be taken by different authorities, which is major consideration in view of the largely international character of the seed trade.

Offices conserve samples as proof in case of infringement.

Reliable descriptions furnished by the offices.

Costly litigation avoided; cooperation between offices facilitated.

13. Under the UPOV Convention a further condition which has to be met is the submission of a suitable variety denomination by the applicant. Patented inventions have short titles to which no special emphasis is given, but variety denominations play an important role under the UPOV Convention. In view of the difficulty of describing plants mentioned above, it is important to ensure that plant varieties can be safely referred to under special names. In the

The UPOV system provides a reliable naming system to facilitate identification of varieties.

past great confusion existed in the naming of plant varieties (and even in the naming of genera and species). The UPOV system took this into account, providing that the applicant has to submit a variety denomination which is examined and registered by the office of the application; under normal conditions, authorities of other member States of UPOV in which applications for the same variety are deposited have to accept this denomination. The applicant himself is of course requested to use the same denomination before all offices. Furthermore, the UPOV Convention provides that whoever sells propagating material of the variety has to use that denomination, even after expiration of the right, a rule thought to be necessary in the interests of the public.[25] Variety denominations are a necessary means of identification. It is doubtful if this safeguard for the breeder, the users and the general public could be maintained under the patent system. To avoid misunderstandings, it should be mentioned that the denomination rules under the UPOV system do not exclude the parallel use of trademarks. Trademarks (and other similar indications) can be associated with the variety denomination.

Under the UPOV system same variety denomination all over the world.

14. Like the general patent system, the UPOV system provides for the possibility of claiming the priority of another application filed up to 12 months earlier in another UPOV member State. Here again, the fact that the UPOV system is concerned with living material called for certain different solutions. In some cases, the breeder does not have a large amount of seed or other propagating material available when he files the applications in the various countries in which he wishes to obtain protection. The UPOV Convention therefore allows him an additional period of four years after expiration of the priority period to submit material to the offices of the subsequent applications. Except perhaps for countries which have introduced the deferred examination system in their patent law, it is difficult to see how the general patent law could have solved the problem of the shortage of the seed or other material in the first years after the finalization of a new variety. Certainly modern methods of micropropagation might overcome the difficulty, but it remains to be seen whether these modern methods can be used in all cases.

The UPOV system provides a priority rule adapted to needs of breeders.

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25 Article 13(7) of the UPOV Convention.

15. One major objection to patenting breeding results was always the lack of repeatability of the breeding process. The condition of repeatability of the invention under the general patent system--and of the possibility of proving it--indeed constituted an obstacle of major importance which is still wellremembered. It is now stated that the new methods offered by genetic engineering could overcome this obstacle, but no proof can yet be offered for this affirmation since genetic engineering, which is useful for breeding plants of the higher order, is in its infancy. Many agricultural experts in UPOV doubt whether sufficient repeatability or sufficient proof of the repeatability can in all cases be ensured by the new methods.

Under the UPOV system no proof of repeatability of breeding process needed.

16. A further major group of fundamental differences between the UPOV system and the general patent system exists as far as the scope of protection is concerned. Here the UPOV system offers first of all the great advantage that it contains some clear rules on the mandatory scope of protection while in most patent systems the rules on the scope of protection are based on case law--in many respects on conflicting case law--and case law is often different from country to country. Only the Luxembourg Convention on the European Patent for the Common Market (not yet entered into force) contains some rudimentary international provisions.

Scope of protection under the UPOV system: clear, but at the same time flexible rules adapted to the nature of the protected subject matter.

17. The scope of protection of the UPOV Convention is a very flexible one, which is a major advantage in an area where some unpredictable developments may occur. First of all the Convention contains rules on a minimum scope of protection, that is a scope of protection mandatory for every member State. Without going into detail, this minimum covers:

Mandatory minimum scope of protection.

- the production of the reproductive or vegetative propagating material for the purposes of its commercial marketing as such;

- the offering for sale or the marketing of the reproductive or vegetative propagating material as such.

The flexibility of the UPOV Convention consists in the fact that it allows member States to go beyond that minimum scope and to grant a more extensive right, in particular to extend the protection to the "marketed" or final

Member States can extend protection as required by developments.

product.[26] The UPOV Convention thus gives its member States the possibility of adapting the scope of protection when required by development.

18. As far as the minimum scope of protection is concerned, it is inferior to that of the patent system as it would not normally cover production of seed or other propagating material of a protected variety which is not to be sold as such (e.g. as seed), but used (sown or planted) on the producer's own premises for the purpose of producing material for consumption; where the scope of protection is not extended, the farmer or horticulturist who saves some of the harvest of a protected variety to be sown or planted on his own premises at the next growing season is free to do so. (An exception exists with regard to the use of material for the production of cut flowers or ornamental plants.) The possibility "of saving seed" is of great importance to farmers and it is doubtful whether it is at present possible to restrict this right. In most countries, political obstacles would be encountered if one tried to ask farmers to pay royalties for saving seed grown in their own fields with the help of propagating material freely purchased on the market and for sowing it out the following year in order to produce grain for milling. If the general patent law, as applied to plant varieties, gave the patentee the right to prevent such saving of seed by the farmer (as is claimed by patent experts), it would cause political difficulties of the most serious kind, and it is almost certain that in many countries the legislator would intervene in the interests of the farmer. It is therefore believed in UPOV that efforts to enlarge the scope of protection of plant varieties via the introduction of the patent system would not be successful world-wide. If the scope of protection of breeder's rights is considered insufficient in the light of future technological development, it would appear to be much wiser to persuade the UPOV member States to make use--on a cautious step-by-step basis--of the possibility opened by the UPOV Convention to extend the scope of protection, rather than to try to overcome that obstacle by permitting the breeder to choose the patent route.

Rules on minimum scope of protection allow farmers to "save seed" of a protected variety to be sown during the next season.

Scope of protection of the general patent law would lead to clashes with farmers' interests in some countries.

Should extension of scope of protection be necessary in the future, this could be achieved under the UPOV Convention.

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26 Article 5(4) of the UPOV Convention.

19. It should however be noted that the scope of protection under the UPOV system is, or at least seems to be, more advantageous insofar as production for the purpose of marketing seed or other propagating material as such (e.g. as seed) undoubtedly falls under the scope of protection through plant breeders' rights. Under the general patent law system, this might be doubtful in view of the concept of exhaustion of the rights derived from a patent once the patented product has been commercialized by the patent owner. In some countries, it is said to be the rule under the patent law that whoever buys seed of a protected variety can use it for any purpose whatsoever, even the production of further seed. However, in other countries the principle of exhaustion might not go so far and it would not prevent the patent owner from prohibiting the production of seed or other propagating material. It would, of course, be very disadvantageous for the breeder if he could not prevent the commercial production by third persons of seed and other propagating material to be marketed as such. The clear UPOV rules are therefore a valuable and indispensable guarantee for the breeder.

Even minimum scope of protection under the UPOV Convention offers full protection against the production of seed and other propagating material by third parties. The patent system would probably not.

20. The rules under the UPOV system concerning the scope of protection contain one other fundamental provision, namely that the use of material of a protected variety for the creation of another variety and the sale of that other variety is always free (Article 5 (3) of the UPOV Convention). This provision, included in the Convention at the request of agricultural circles to safeguard the freedom of further development of varieties, is considered as having a rather basic importance. The plant breeder's exclusive right should not form an obstacle to the development of further varieties using the protected variety as a basis. It is said that patent protection would go further, that under the patent system the second breeder would receive a right which was dependent on the right of the first breeder, so that the former would need the agreement of the first breeder for the production and sale of the second variety. Should this be true, it would show that in many countries the patent system would not be acceptable for plant varieties. In plant breeding, development always starts on the basis of existing material. A system which would allow for an appropriation of such material to a degree that the owner of the right in the material could block any further development of it by others would, so it is believed in UPOV, not be acceptable by most UPOV

The UPOV system guarantees freedom of further development in the interests of the general public.

The UPOV system avoids excessive appropriation of living material and ensures the free flow of genetic resources.

member States, particularly it would form an obstacle to the free flow of genetic resources and might be contrary to the FAO Undertaking on Plant Genetic Resources. Providing for compulsory licensing in such cases would probably not be considered a sufficient remedy and would not overcome the political objections mentioned.

21. The points mentioned above, which are by no means an exhaustive enumeration, explain why the drafters of the UPOV Convention considered that the only possibility was to create a special system and that they could neither just apply the patent system as it was nor only provide for some small adaptations thereof. The UPOV system is based on considerations quite different to those on which the general patent system is founded. It might happen though it cannot be proven today--that one or the other of these differences might lose their significance with the further development of genetic engineering. Nevertheless, there are a sufficient number of remaining differences which are based on necessity, to show that the separate system could not be wholly or partly replaced by the general patent system.

Differences between the UPOV system and the general patent system are of a fundamental nature.

Present Particularities of the Patent System Which Could Not Be Applied to Plant Varieties

22. There are some particularities of the patent system which show that this system, as it has developed, cannot be made applicable to plant varieties. These are differences of a basic nature.

Certain recent developments of the patent system unsuitable for plant varieties.

23. Under the patent system a very positive development that has taken place in recent years has been the establishment of wide-ranging international or regional cooperation. One example of such international developments is been the Patent Cooperation Treaty (PCT).[27] Under the PCT, a patent application filed in one country can have effect for a number of other countries

International cooperation under the patent system would not work with plant varieties in view of dependency of plants varieties on environmental influences.

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27 Patent Cooperation Treaty (PCT), done at Washington on June 19, 1970, amended on October 2, 1979, and modified on February 3, 1984, WIPO Publication No. 274(E).

all over the world, and the invention which is the subject of that application is centrally searched and sometimes even preliminarily examined by certain offices. To mention an example of such development at the regional level in Western Europe (but not just in the EEC), the European Patent Office has been established and the Convention under which it operates provides for the granting of European patents which have the force of national patents in the Contracting States; in addition, a Convention on a European Patent for the Common Market (not yet in force) envisages giving the European patent the force of a unitary patent. These provisions cannot be applied to plant varieties. Plant varieties respond to the environment conditions existing in various countries, for example, different intensity of sunshine or length of daylight. This already creates problems within one State and leads to light headaches even under the UPOV system. In the field of plant varieties it should be difficult in one State to use the examination results obtained in another State which is situated in a different climatic region. UPOV also organizes cooperation, in particular in the testing of varieties, and it plans to centralize such testing in appropriate cases, but this is being done with the greatest of caution. Cooperation is at present organized on the basis of bilateral agreements between two authorities.[28] It is restricted to a number of carefully chosen species for which problems arising from climatic differences are not likely to occur, at least not in the countries parties to bilateral agreement in question. Furthermore, in some countries, results obtained by offices of other countries are verified by additional testing in the receiving office. This example is further proof that basic practical differences exist between the protection of living organisms of a higher order and of a lower order, not to mention the protection of inanimate matter. In the case of microorganisms it might be easier to envisage the application of international conventions such as the Patent Cooperation Treaty and the European Patent Convention.

UPOV provides for appropriate cooperation between offices of member States.

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28 Bilateral Agreements are based on the UPOV Model Administrative Agreement for International Cooperation in the Testing of Varieties, reproduced in Section 19 of the UPOV Collection of Important Texts and Documents, Part I, UPOV Publication No. 644(E).

Links between plant variety protection and related seed regulations. The UPOV system enables administrative cooperation.

24. Another aspect to be considered in this context is the link between plant variety protection and the separate but related regulations governing the production and marketing of seeds and other propagating material (consumer protection legislation). In the European UPOV member States such links exist between the system of plant variety protection and the system of national Catalogues, i.e. catalogues of those varieties which are admitted for commercial marketing (there is no such system in the United States of America). Catalogues of this kind exist in the said States for the major agricultural crops, i.e. those crops which are of paramount importance for securing food supplies, and Common Catalogues exist in the EEC. Before being admitted to such catalogues, varieties are examined in more or less the same way as they are examined for the purpose of protection. The main, and often only, difference is that the Oesting for purposes of the national Catalogues is extended to one more condition, namely to the condition of the so-called "agricultural value." Where the UPOV system is applied by granting a special title of protection, (as stated above, this is the case in all European member States but two) the testing for both purposes is combined. The offices concerned are either identical or are part of the same higher administrative body, and the testing for distinctness, homogeneity and stability is indeed the same. This combination has invaluable practical advantages for breeders. Firstly, it reduces costs, secondly, it prevents different decisions being taken, for instance on homogeneity, in the procedures for the two different purposes, the procedure for plant variety protection and the procedure for entering a variety in the Catalogue. Were the general patent law applied, this combination would either not be possible at all or it would only be possible by making certain complicated arrangements between the competent offices.

The UPOV system gives a fair chance to small breeders.

25. While the patent system is occasionally blamed for favoring larger enterprises[29] which

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29 William Kingston, Who should protect intellectual property?, European Intellectual Property Review (EIPR), 1985, page 76: "On balance, patents probably now do more harm than good to the small and medium-sized businesses that have anything to do with them. The fact that such firms cannot invest rationally on the basis of patent protection means that we are largely being deprived of those types of innovation to which smaller firms are especially suited."

can afford their own patent departments, the plant breeders' rights system is administered in most UPOV member States in such a way that smaller applicants also have a fair chance. Every farmer and breeder can well understand the testing of varieties as performed by the offices. In most offices he can inspect his crops on the trial field during the time of testing. He can thus correct mistakes and, in particular, he can judge himself whether decisions taken or to be taken by the authorities are justified.

The Importance of the UPOV System

26. The UPOV system is sometimes not recognized at its true value. It is erroneously seen as a minor type of patent protection and not as an independent and valuable system of the protection of intellectual property. The reasons are manifold. The newness of the system may account for this, but also the fact that fewer problems arise and that those that do are more easily settled than in the patent field. Admittedly the dimensions are smaller than in the patent field but they are by no means negligible. First of all, with regard to the number of member States of the UPOV Convention, there are now seventeen members, less than the Paris Industrial Property Convention or the WIPO Convention. Nevertheless, membership comprises a good many of the agriculturally important States. On the other hand, the number is higher than the number of member States of the three Conventions on which the European Communities are based. UPOV covers most of those countries in which the international seed trade is of any importance. Furthermore, it must be noted that the UPOV Convention is rather demanding. States wishing to accede to the Convention can only be admitted after a careful study of their legislation which guarantees that the mandatory provisions of the Convention are observed by new member States. The UPOV system only makes sense in countries with a sufficiently developed agricultural administration. It is the belief of UPOV that the system should only be introduced in countries which possess a minimum of supporting agricultural regulations such as for instance a certification system. Seen from this point of view, the number of member States is not small but rather large.

The UPOV system is an independent system equivalent to the patent system.

The UPOV system applied by most countries with an important seed trade.

Parallel Application of the General Patent Law and the Plant Breeders' Rights System

27. The recent request to abandon the exclusion--under some Conventions, a large number of national patent laws and patent practice--of plant varieties from the general patent law, and to allow the applicant to chose in each case whether he wants to apply for a general patent or for a plant breeder's right, cannot be endorsed. General patents granted for plant varieties and plant breeders' rights would have the same subject matter, namely, material of plant varieties. As explained in detail in the preceding paragraphs, there are considerable differences between the two systems. Not only are the conditions for granting different, but also the examination would be performed in a different way--for plant breeders' rights mainly in fields or in glasshouses and for patents in offices on the basis of written documentation--by different unconnected authorities belonging to different government departments. There would be differences in such important aspects as homogeneity and stability. The identification of the plant variety by name would be different and the naming rules of the patent laws, if any, would be insufficient. Descriptions of the protected variety would be of different quality, precision and reliability. The scope of protection would differ considerably so that to a great extent--not only in a small number of maybe negligible borderline cases--there would be the risk of overlapping, insecurity for licensees as well as for the seed trade and the agricultural world as a whole. There would be different rules on the right of the farmer to sow seed, produced by himself from purchased seed of a protected variety, on his own field in order to produce seed for milling purposes. In general, it would be difficult for anybody working in the agricultural field to judge whether a certain use of protected varieties did or did not conflict with industrial property laws. As a result, the general esteem of industrial property protection as a valuable instrument in society might suffer considerably. A rigorous exploitation of the possibilities of such double protection might lead to a highly critical review of the industrial property system as a whole. For the European Patent Convention and for the legislations following it, it was therefore considered a categorical rule that any "double protection" of varieties of the same species had to be excluded. In the eyes of UPOV, the reasons for excluding "double protection" of varieties of the same species prevail.

"Double protection" by plant breeders' rights and by patents would jeopardize legal security.

"Double protection" would be harmful to the esteem of industrial property protection as a whole.

28. Furthermore it should be noted that States all over the world, even some not bound by the UPOV Convention or the European Patent Convention, exclude plant varieties from patent protection. These are countries in different continents--South America, Asia, Africa and Europe--with different economic systems. It is almost a general principle that plant varieties are not protected under the common patent law, but are left without protection or protected under a separate legal system. Argentina, Chile, the German Democratic Republic (which has plant breeders' rights in full conformity with UPOV), Yugoslavia, Zimbabwe, and recently China, are examples of this.

Plant varieties excluded from the application of patent laws even outside UPOV.

29. Moreover, there is not the slightest need to open the general patent law to plant varieties. All plant varieties, including those created with the help of genetic engineering, may be protected by plant breeders' rights. The application of one rather than two parallel systems for the legal protection of plant varieties ensures that seed traders, growers, farmers and consumers (for whom it is of no concern how a variety was created, whether it was with or without the help of genetic engineering, in a repeatable or non-repeatable manner) have to deal with one and the same system of protection. Varieties developed by genetic engineering methods (if this proves possible in the future) and varieties created by traditional methods--equal competitors in the market--stand on an equal footing; the same rights and rules exist for their revocation or annulment. The same system of identification, the same period of protection, the same scope of protection are applied to both.

No need to open or re-open patent route for plant varieties; plant breeders' rights granted for all plant varieties, no matter how created.

30. The frequently heard claim that genetic engineering is more expensive than traditional plant breeding requires study. It probably grossly underestimates traditional breeding. The breeding of some plant varieties with traditional methods is likewise expensive and figures of to 15 million Swiss francs for the development of one variety have been mentioned. Besides, it might be asked whether varieties should be bred by genetic engineering if more or less the same effect could be obtained at lower cost by traditional methods. Certainly in countries with excess production of agricultural goods, the logic of the applying over-expensive genetic engineering methods does not seem to make sense and the varieties developed would fail on the market. Besides, new technologies cost more in

Cost of "traditional" breeding considerable. Same need for promoting traditional breeding as for promoting genetic engineering.

the beginning than in the later stage of their development. This is the general experience with new developments. Plant breeders feel that the new methods of genetic engineering are the normal continuation of recent development, it seems to be an evolution rather than a revolution. If this is true, the question arises why the appearance of these new methods should require a drastic change of policy, at the expense of legal security and of a number of measures taken in the general interest.

Genetic engineering simply a continuation of modern breeding methods.

31. It is often stated that it would be difficult to separate patent law protection for certain processes from the protection of the result, namely the variety, but this overlooks the fact that in all likelihood results of plant genetic engineering cannot stand on their own. In lectures held in UPOV symposia[30] it was made clear that genetic engineering will not replace plant breeding, but will complement it, and it will in most cases give plant breeders new efficient tools for obtaining breeding results. Cases in which the results of genetic engineering do not need to be complemented by traditional breeding methods will probably be rare exceptions. If the system for protection of the results of breeding efforts carried out with the help of genetic engineering was separated from the system protecting the results obtained by traditional breeding methods, it might have more negative effects than separating process protection and product protection into two applications under different systems. Of course, there may be cases where it would be more convenient for an inventor and for his patent attorney to be able to file one application claiming everything from the first process used up to the final product (though there might be limits under the aspects of "unity of invention"). For the users of the varieties and for the competitors of the owner of the protection, it is however always easier to deal with one type of protection and with a title which is accompanied by a clear description of the variety, as such descriptions

Genetic engineering will not replace traditional breeding methods but complement it. Separation between traditional breeding and genetic engineering to be avoided.

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30 Max Rives, Introducing New Technologies to Plant Breeding, Records on the UPOV Symposium on "Genetic Engineering and Plant Breeding," in October 1982, UPOV Publication No. 340(E), UPOV 1983, pages 53 et seq.; Sir Ralph Riley, "Developments in Biotechnology - Dream or Reality," Records on the UPOV Symposium on "Industrial Patents and Plant Breeders' Rights - Their Proper Fields and Possibilities for their Demarcation," UPOV Publication No. 342(E), UPOV 1985, pages 41 et seq.

are elaborated by most offices applying the UPOV system, and to deal with a system of protection administratively linked to other legal regulations concerning plants (wherever they exist) such as the catalogue system.

Social Implications of Patenting Plant Varieties

32. Major objections against opening the general patent route for plant variety protection, either in replacement or parallel to the UPOV system, stem from the fact that the UPOV system was devised as a balanced and delicate compromise between the public interest and the interests of the breeders. It is of course true that the protection of intellectual property in all its forms is always based on a compromise of that kind. However, in the field of agriculture and in particular where the securing of food is at stake as is the case for a large part of plant breeding activities, the public interest has particular weight. The restrictions contained in most patent laws in the past with regard to food stuff patents--which still exist in large parts of the world--bear convincing testimony to this. The need to safeguard the general interest where food is concerned might be more strongly felt in countries where food shortages and famine had been a constant threat during their whole history and had even been experienced by generations still alive (this is the case in most European States), rather than in the more fortunate countries where food shortages and starvation had never existed. The UPOV Convention, drafted by representatives of the first group of countries, strongly emphasizes the need to limit plant breeders' rights and the exercise thereof where the public interest so requires it, and not only the Preamble of the UPOV Convention, but also some of its substantive provisions, in particular, Article 5(3), reflect this attitude, which has been endorsed by the legislative bodies of most UPOV member States. Allowing applicants to chose the general patent route, where similar limitations do not to exist, would give them the possibility of by-passing these legal provisions intended to guarantee the public interest, thus upsetting the said balance of the UPOV system and disregarding clear policy decisions by the legislator. This would certainly not be approved by those government authorities which consider themselves to be the guardians of those interests, not to mention the

The UPOV system has established a balanced and delicate compromise between general interest and individual interest that should not be upset.

Public interest has particular weight in main field of plant breeding activities.

parliaments. It might well be that the expected new developments would justify the search for another compromise between the general interest and the individual interests of inventors and breeders. If this should be the case, the matter needs to be re-examined by national legislative bodies, and it would be logical to implement any changes considered necessary by amending the present provisions of the UPOV Convention and the national laws based thereon--and of course other international conventions and laws drafted as a consequence of certain UPOV rules--and not by opening the general patent route, when it has intentionally and for good reason been closed to new plant varieties. Should certain barriers be found to be unnecessary in view of new developments, they should be removed for all varieties, not only for those which incidentally qualify for a certain type of protection, for instance, varieties created by processes that lend themselves to a description, while other varieties that are just as valuable and the breeding processes leading to them still cannot be described. Shortcomings in the present system should be corrected by improving the system, not by favoring a development under which it is left to the skill of attorneys to remedy the situation in some cases, while in other cases that do not lend themselves to a similar remedy, no satisfactory solution is offered.

Where improvement needed, the UPOV system should be improved.

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