

**CAJ/40/2****ORIGINAL:** French**DATE:** July 27, 1999

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

ADMINISTRATIVE AND LEGAL COMMITTEE

Fortieth Session
Geneva, October 18, 1999

THE NOTION OF BREEDER

Document prepared by the Office of the Union

At the thirty-ninth session of the Administrative and Legal Committee, it was proposed that the Office of the Union should draw up an explanatory document on the notion of breeder and on the basic principles of the plant variety protection system (see paragraph 15 of document CAJ/39/6). That document is given at annex.

[Annex follows]

THE NOTION OF BREEDER IN THE PLANT VARIETY PROTECTION SYSTEM BASED UPON THE UPOV CONVENTION

Introduction

1. On 11 February 1998, the Consultative Group on International Agricultural Research (CGIAR) published a press release containing an appeal for a moratorium in respect of “the granting of intellectual property rights on designated plant germplasm”. That appeal, which was widely disseminated on Internet (initially under <http://www.worldbank.org/html/cgiar/press/germrel.html>) but, curiously, not transmitted to those principally concerned (the States and their intellectual property and plant variety protection offices), followed on from allegations made by an organism designating itself as an international non-governmental organization, with regard to the abuse of the plant variety protection system and to “biopiracy”.
2. Correspondence then ensued with the CGIAR Chairman, Mr. Ismail Serageldin, and the Director General of the International Plant Genetic Resources Institute (IPGRI), Mr. Geoffrey Hawtin. It transpired that the appeal had been launched without any prior verification of the allegations which, consequently, were accredited by the implicit support of prestigious organizations. Nothing has been produced since then to support those allegations – a fact that is hardly surprising in view of the aims of their authors; furthermore, no corrective action has been taken, either by CGIAR or IPGRI.
3. It has therefore become useful to detail the notion of breeder – and the notion of a person entitled to protection – under the plant variety protection system based upon the UPOV Convention. These notions are closely related to the aims of the system of protection.

The Aims of Plant Variety Protection

4. The protection of plant varieties was primarily conceived with a view to the development of agriculture. That aim is set out as follows in the preamble to the original 1961 text of the UPOV Convention:

“The Contracting States,

“Convinced of the importance attaching to the protection of new varieties of plants not only for the development of agriculture in their territory but also for safeguarding the interests of breeders [...]”

The Technical Bases for Plant Breeding and the Protection of New Plant Varieties

5. The subject matter of the protection system is, in all cases, a variety, that is to say a subdivision of a (cultivated) species – or of the lowest-ranking taxonomic unit that has been defined within the species, for example a botanical form – such subdivision being defined on the basis of agro-botanical criteria and characterized by the fact that it is distinct from other varieties, is sufficiently uniform and sufficiently stable. The notion of variety covers a genetic structure theoretically corresponding to a single genotype (clone, line, F₁ hybrid) or a

particular combination of genotypes (complex hybrid, synthetic variety, population variety, etc.).

6. The final objective of plant breeding (plant improvement), as much an art as a science, is to produce such genetic structures. To do so, it must always start from a genetic variability, which may be already existing or created. Traditionally, a breeder (also known in French as a “sélectionneur”, a person who selects) is seen as a person who crosses two plants and then seeks in their offspring, by a patient process of fixation (typically in the case of self-fertilizing crops) and of selection, those plants that will be the basis of a new variety. Nevertheless, exploitation of entirely natural variability or that fashioned to varying degrees by the hand of man is also a most important – and very fruitful – activity in plant breeding.

Background

7. The invitation to participate in the first session of the International Conference, held in Paris from May 7 to 11, 1957, that was to lead to the signing of the UPOV Convention on December 2, 1961, was accompanied by an “Aide-mémoire on issues arising from the protection of new plant varieties” that had been drafted by the State Secretariat for Agriculture of France, comprising the following item 3:

“3. The following are generally considered as sources for the breeding of new varieties of plants:

- (a) bulk or pedigree selection within an existing population;
- (b) the discovery of a natural mutation;
- (c) the inducing of an artificial mutation with specific means;
- (d) chance cross-pollination;
- (e) deliberate cross-pollination;
- (f) any combination of the above methods.

“Should one consider as true creations only those new varieties which result immediately and directly from a process acting on the genetic structure of the plant or should the concept be broadened?”

8. The Final Act of that session sets out the following principle:

“4. The Conference considers that, since the essential work of the breeder is that of improvement, protection should apply whatever the origin (natural or artificial) of the initial variation that eventually results in the new variety.”

It should be noted that the reference to “improvement” should not be understood as implying a condition for protection linked to the value for cultivation and use of the variety. Indeed, the Final Act already sets out the conditions of distinctness, uniformity and stability, together with the independence of the system of protection from the regulations in the field of varieties and seed which, for their part, include that value.

9. The Committee of Experts set up by the first session of the Conference then, repeatedly, looked at that issue. A first avenue that was explored consisted in restricting protection to the fruit of “creative selection work [...] whatever may be the origin (natural or artificial) of the initial variation that eventually results in the new variety” (recommendation adopted at the session from April 22 to 25, 1958). The preliminary draft Convention drawn up by the

Drafting Committee at its session from January 20 to 23, 1960, still contained the following, more explicit wording:

“1. The breeder of a new plant variety shall be entitled to the protection provided for in this Convention when the following conditions are satisfied:

“(a) Whatever may be the origin, artificial or natural, of the initial variation from which it has resulted, the new variety must be the result of effective work on the part of the breeder and not of the simple choice of a genotype amongst those already contained in a variety, whether protected or not.”

The Text of the 1961 and 1978 Acts

10. The above condition was not maintained by the second session of the International Conference that adopted the 1961 Act of the Convention, of which the principles were maintained in the 1978 Act. The relevant provisions of that latter Act are as follows:

(a) Article 1(1):

“The purpose of this Convention is to recognize and to ensure to the breeder of a new plant variety or to his successor in title [...] a right under the conditions hereinafter defined.”

(b) Article 5(3):

“Authorization by the breeder shall not be required either for the utilization of the variety as an initial source of variation for the purpose of creating other varieties or for the marketing of such varieties. [...]”

(c) Article 6(1) (a):

“Whatever may be the origin, artificial or natural, of the initial variation from which it has resulted, the variety must be clearly distinguishable by one or more important characteristics from any other variety whose existence is a matter of common knowledge at the time when protection is applied for. [...]”

11. The fathers of the UPOV Convention therefore deliberately chose to open up the system of protection to all varieties whatever their method of breeding (therefore including the varieties that are “discoveries”) and whatever the effort made by breeder to achieve the variety.

12. The UPOV Convention differs from the patent system in the first point. Discoveries are not in fact patentable. This difference is the logical result of the aims of the Convention. The “discoveries” of mutations or variants in a population of cultivated plants – and to a lesser extent the “discoveries” of plants having special characteristics and able to serve as the point of departure for a variety which have grown spontaneously – are indeed the source of varieties of great significance in the context of agricultural and economic development. The UPOV Convention would have failed in its mission if it had excluded such varieties from protection and denied the authors of the discoveries the benefit of the incentives it offers, particularly in the field of dissemination and exploitation of varieties. Indeed, the United States Congress adopted the same approach in 1930 when it made the plant patent available to “whoever invents or discovers and asexually reproduces any distinct and new variety...”

13. The UPOV Convention does not differ from the patent system on the second point, nor indeed from the rules governing the property of material assets.

The Text of the 1991 Act

14. When the Convention was revised in 1991, it was then deemed useful to give a definition of breeder, particularly in order to emphasize the fact that the UPOV Convention also provided protection for varieties that had been “discovered”. However, at the Diplomatic Conference, attention was drawn to the fact that the word “discovery” – which has a precise meaning for plant breeding (and which does not necessarily imply a lack of effort or intellectual activity, or the occurrence of a fortuitous event) – is laden with emotion “for conservation groups in relation to the vast and as yet undiscovered array of indigenous species in [...] countries which had a rich, yet untapped flora”; or that “extension of the system of protection to discoveries could be somewhat provocative for certain circles”. Intensive discussion led to the following formulation: “bred, or discovered and developed”.

15. The definition of breeder has made it possible to simplify the provision setting out what is meant by distinctness. The relevant provisions of the 1991 Act therefore read as follows:

(a) Article 1(iv):

“For the purposes of this Act:

[...]

(iv) “breeder” means

– the person who bred, or discovered and developed, a variety,”

[...]

(b) Article 7:

“The variety shall be deemed to be distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filing of the application. [...]”

(c) Article 15(1)(iii):

“The breeder’s right shall not extend to

[...]

“(iii) acts done for the purpose of breeding other varieties and, except where the provisions of Article 14(5) apply, acts referred to in Article 14(1) to (4) in respect of such other varieties.”

The Administrative Operation of the System of Protection

16. Protection is therefore afforded to all varieties, whatever the way which they are created, and to the person who is able to claim the capacity of breeder.

17. The system of protection is optional (the title of protection is given only to a person who so requests) and, as far as the capacity of breeder is concerned, is declarative (the applicant does not have to prove that he is the breeder). From that point of view it differs neither from the patent system nor indeed from numerous other administrative procedures.

18. In a very large number of States, the applicant who claims to be the breeder is presumed to be the owner of the right to protection, unless proved otherwise (only the successor in title is required to prove his title).

19. The administrative procedure therefore comprises a series of measures enabling concerned persons to produce proof to the contrary, where appropriate. These measures particularly include publicity (publication of a gazette, public inspection of files) and the possibility of filing observations, objections or opposition or, where a title has already been granted, of instituting an administrative or judicial procedure for annulment or judicial transfer.

20. One measure of capital importance is the examination of the variety. The system of plant variety protection based on the UPOV Convention guarantees, save error or omission on the part of the administrative services, that all varieties accepted in the system are clearly distinguishable from all other varieties whose existence is (or is presumed to be) a matter of common knowledge. Each variety is also given a detailed description drawn up in accordance with standardized procedures and protocols.

21. Furthermore, the applicant is required to state in his application the genetic origin of his variety (how he has selected or modified the initial material and has obtained his variety). In some States, that information is published in the gazette already at the application stage.

The Notion of Breeder in Specific Cases

General

22. Experience gained over several decades in implementing the plant variety protection system – which may be illustrated by the fact that yearly some 9,000 applications are filed in the member States and that there are some 40,000 titles of protection currently in force, according to the statistics compiled by UPOV – shows that the notion of breeder has not raised any particular problems.

23. However, that situation is not eternal. There is no need to return to the activism on the part of certain bodies, nor to the hasty and improper reactions it may have provoked. On the contrary we have to accept two important facts:

(a) The extension of the system of protection. – The plant variety protection system traditionally applied to species that were subject to intensive breeding work and, typically, to varieties that derive from controlled crossing and selection carried out by a single person (or within the framework of cooperation or partnership under well established rules, including rules on the protection of plant varieties). It now increasingly applies to species subject to little work (or even to species “domesticated” by the breeder of the first variety of those species) and to varieties that result from selection within the entirely natural variability or within that shaped to varying degrees by the hand of man. This tendency results from the extension of protection, by a growing number of member States, to all genera and species

(and from the innovative activities of the pioneers in plant breeding and agriculture); it also results from membership in UPOV of States in which important genetic progress may (and has to be) achieved by exploiting the existing genetic variability.

(b) The uncertainty concerning genetic resources. – A cornerstone of the UPOV Convention is the “breeder’s exemption” (see paragraphs 16(b) and 21(c) above): a protected variety may be freely used as a source of variation for the creation of a new variety and – except where justified by the need to make the system effective – the use of the new variety does not require the authorization of the breeder of the (initial) protected variety. This principle was asked for and accepted by the breeders: free access to a protected variety, as a genetic resource, represents for the breeder of the variety a counterpart for the free access that he has had to the parents of that variety (it should be emphasized here that the breeder uses raw genetic resources and then reinserts into the circuit improved genetic resources). This principle was also accepted by the farmers: when they make a genetic resource, for example a landrace, available, an improved variety is made available to them. Today, the situation is more complicated and – as is shown by the slow speed and difficulty of revising the (FAO) International Undertaking on Plant Genetic Resources – is far from being clear. In particular, the Convention on Biological Diversity has resulted in strengthened claims with respect to access to genetic resources, control of the use made of them and the sharing of the benefits derived from that use. Furthermore, various suppliers of genetic resources – particularly some genebanks – make use of material transfer agreements to impose on users of the resources an obligation not to apply for intellectual property rights in those resources. Conversely, various international research centers distribute advanced generations of segregating material to bodies, particularly national research centers, that use them for breeding marketable varieties.

24. Plant variety protection encounters problems at its borders. Most difficulties can be resolved at two levels: at the variety level (with respect to the distinctness requirement) and at the level of the person entitled to protection. The nature of the starting material is not a relevant criterion, nor are the “efforts” of the breeder.

The Nature of the Starting Material and of the Work Performed by the Breeder

25. Certain detractors of the plant variety protection system are shocked by the fact that an intellectual property right may be granted for a variety derived from a “simple” selection made within the natural variability or from a “discovery”. The following observations may be made in addition to those made earlier:

(a) This type of plant breeding is an extremely important and beneficial activity for society as a whole. Indeed, making available a variety may correspond to the “domestication” of a species and in every case corresponds to the creation, organization or development of a commercial circuit.

(b) To refuse rights for such a variety would be tantamount to obliging breeders to create intermediate variability pointlessly, since one already exists, or to dissuade them from undertaking plant breeding activities.

(c) In certain cases, such as that of apomictic crops, the natural variability may be the only one that is available. To refuse a right would mean restricting plant breeding activities to those bodies alone that are able to ignore the economic and commercial necessities, particularly the research institutes financed with public funds; and to deprive the seed

production and distribution sector, as also the users, of the guarantees that the holder of a plant breeder's right can provide.

(d) To promote investment in the creation of varieties from natural variability is to contribute to achieving the aims of the Convention on Biological Diversity, particularly as regards the sustainable use of the elements of that diversity. Where a species is domesticated, for example a fodder or ornamental species, there also results a reduction of the pressure on natural eco-systems or on those extensively exploited.

26. Although the notion of "effort" is not pertinent, it should nevertheless be noted that there is no basic difference in the intensity of breeding work based upon natural variability and that based upon the offspring of a cross. Nor is there any difference in nature between the "discovery" of an interesting plant within a spontaneous population and the "discovery" of a mutation within a planted population. In both cases, there is intellectual activity in the fact of recognizing, choosing and propagating a specimen.

27. The opening chapters of Allard's classic work "Principles of Plant Breeding" refer to the introduction of plants. In a paragraph devoted to "commercial varieties originating from introductions" we may read that commercial varieties have been developed directly by increase *en masse* from the introduced stock. Testing and propagation remain important activities for certain research centers; they may even be cited, for example in the catalogues of varieties admitted in trade, as the breeders of varieties that have in fact been created by others. It is clear that the introduction and evaluation of a sample and its propagation and distribution in the form of a variety (perhaps under a denomination that differs from the original one) cannot lead to a right where the sample has been taken from a cultivated variety. The "new variety" would in fact be rejected for lack of distinctness from the "original variety". It would also be concluded that the applicant was not the breeder.

28. The same would happen if a person claiming (wrongly) to be the breeder sought to obtain protection in his own name for a "new variety" of a self-pollinated, a vegetatively-propagated or an apomictic crop that was derived from the propagation of a sample received from a genebank where such sample corresponded to an existing variety of common knowledge, for example, through the passport data registered by the genebank and the characterization produced by that genebank.

29. In practically all other cases, a multitude of factors will intervene.

The Links Between the Starting Material and the Variety for Which Protection is Sought

30. Under the bulk hybrid method, applied to wheat for example, the breeder makes a cross and selects the heads of lines in an advanced generation such as the F_8 . When he selects a line within a landrace comprising numerous lines, he basically carries out the same breeding work, the difference being that he uses an existing variability rather than a variability that he has himself created. The varieties produced by both types of work are protectable.

31. On the other hand, the selection of a dominant line in a cultivated population does not automatically lead to protection. It would not where selection corresponds in fact to roguing of the population as practiced in maintenance breeding or in the production of foundation seed. Indeed, the population may be sufficiently uniform to be considered a variety, within the meaning of Article 1(vi) of the 1991 Act of the Convention, and the fact that it is

cultivated makes its existence a matter of common knowledge. Protection for the line will therefore be refused for lack of distinctness.

32. It is obvious, however, that it would hardly be possible to set up a hard and fast rule. Plant breeding is an intrinsically complex field which is applied to plant material that is itself complex. Plant variety protection also has recourse to criteria whose application requires prior evaluation of all the facts. Those criteria are set out clearly and are applied in a transparent fashion.

33. The example above shows that the problem encountered at the borders of the system is no different in nature from that encountered with respect to “minimum distances between varieties”. It does differ, on the other hand, in its numerical importance: whereas technical experts are regularly asked to decide borderline cases of distinctness between two varieties resulting from breeding programs based upon controlled crossings, mutations, etc., those cases that can be described collectively as insufficient improvement (or more correctly modification) of initial material that has not been bred, or hardly so, are rare.

34. For the rest, the description of the alleged cases of “biopiracy” on the basis of which the appeal for a moratorium was launched shows, just by itself, that the allegations are gratuitous, or even purely and simply malevolent, and are based on profound ignorance of the fundamentals of genetic resources management and plant breeding.

Varieties Produced by Cooperative Work

35. A variety may result from cooperation, in the form of parallel or successive work. For example:

(a) Two breeders may evaluate segregating material at two different places and the variety finally chosen will be the fruit of those two breeding activities;

(b) A research center (private or public and, in the latter case, national or international) may produce an advanced generation of segregating material resulting from a cross and a further body (*ditto*) may carry out the final breeding of one or more varieties.

36. The following legal rules are applicable:

(a) Any commercially new variety that is clearly distinct, sufficiently uniform and sufficiently stable may obtain a title of protection in the name of the person who has bred it or who has discovered and developed it.

(b) Where a variety has been bred or has been discovered and developed by more than one person in common, the right to protection belongs to such persons in common.

37. Generally, the parties concerned decide by contract who shall have the right to protection and, where applicable, how that right has to be shared. Some parties may in fact prefer to receive payment for their contribution rather than to share the risks inherent in future exploitation of the variety.

38. Some parties may also deliberately (or through ignorance) waive their participation in the right. The right to protection then belongs to the other parties. In particular, if a variety is derived from intermediate material placed in the public domain by its producer, the person entitled to protection is the person who has produced the variety from that material.

39. Consequently, the – apparent – problems related to the person entitled to protection are problems of information on the plant variety protection system, of understanding of that system and of integration of that system in the strategy and activities of the various institutions.

40. A closer look should therefore be taken at the proposal to conclude material transfer agreements subjecting the person receiving material – particularly samples from a genebank – to restrictions on access to intellectual property for the outcome of his work.

41. It is all too easy, and effective from the media angle, to qualify the evaluation of a genetic resource and the creation of a variety as “biopiracy” where that work has been done by a breeder in a developed country on a resource originating in a developing country. However, that is only one configuration amongst others. This description would also apply to work of the same nature carried out by a breeder in a developing country on a resource originating in that country (and perhaps leading to an improved variety for the farmers who have “donated” that resource).

42. A restrictive policy on the part of the genebanks and upstream research institutes would therefore have negative effects at all levels in the chain of varieties and seed, particularly,

- (a) in all countries, including and above all in the developing countries;
- (b) in the case of under-utilized crops;
- (c) for the activities of collection, conservation and evaluation of plant genetic resources (practically reduced to museum pieces) and their funding;
- (d) on activities carried out in cooperation or under a partnership.

43. It is therefore important to consider both the aims of plant variety protection and the aims of genetic resource activities.

Conclusions

44. The main objective of plant variety protection is the development of agriculture, particularly through a more dynamic variety and seed sector. It contributes to the well-being of the people and, more particularly, to food security, to sustainable agriculture and to protection of the environment and of biodiversity.

45. The first sector to benefit from plant variety protection, in the chain of agricultural and food production, is that of plant breeding. This is as much an art as a science, which produces varieties from existing or created genetic variability. However, those who benefit the most are the farmers and the consumers.

46. As a result of the above two factors, the UPOV Convention was deliberately designed as an instrument permitting a title of protection to be granted in respect of any variety that is commercially new, clearly distinguishable from any other variety whose existence is (or is deemed to be) a matter of common knowledge, sufficiently uniform and sufficiently stable, to the person who has created or who has discovered and developed such variety. Neither the origin of the initial variation that has resulted in the variety nor the “efforts” of the breeder constitute relevant criteria.

47. The title of protection is granted on the basis of clear and detailed legislation, within the framework of a transparent administrative procedure that provides, in particular, concerned parties with numerous possibilities for asserting their rights or claims.

48. Several decades of experience in the implementation of the plant variety protection system have shown the system to be economically effective, legally reliable and well conceived. It is obvious, nevertheless, that its application raises some difficulties at the borders of the system – as is the case with many systems – and that those difficulties are likely to multiply along with the extension of the system to all botanical genera and species and to countries in which important genetic advances may (and must) be achieved through the exploitation of the existing variability.

49. Those difficulties must be overcome within the framework of existing law. The plant variety protection offices are perfectly aware of the existence of those difficulties and of their responsibility for the application of the law, in each individual case, in accordance with its letter, its spirit and its aim.

50. Finally, problems may arise due to a lack of information on the plant variety protection system, from a lack of understanding of that system and from a lack of integration of the system within the strategy and activities of certain institutions. It is for those institutions to take cognizance of the fact of plant variety protection, of the positive effects of protection, and of the synergies between protection and, in particular, genetic resource activities.

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