



**ARAB ORGANIZATION  
FOR AGRICULTURAL  
DEVELOPMENT**



**INTERNATIONAL UNION FOR  
THE PROTECTION OF NEW  
VARIETIES OF PLANTS**



**WORLD INTELLECTUAL  
PROPERTY ORGANIZATION**

**NATIONAL SEMINAR**

**ON**

**INTELLECTUAL PROPERTY  
IN THE FIELD OF AGRICULTURE**

**IN**

**THE REPUBLIC OF THE SUDAN**

**Khartoum-Sudan : 17-18 December, 2002**

**Khartoum:**

**January 2003**



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المنظمة العراقية للتنمية الزراعية  
17-7-2003  
48703  
قسم التوثيق العلمي

## Foreword

In the framework of cooperation between the Arab Organization for Agricultural Development (AOAD), the World Intellectual Property Organisation (WIPO), and the International Union for the Protection of New Varieties of Plants (UPOV), AOAD organised the National Seminar on Intellectual Property in the field of Agriculture in the Republic of the Sudan. The Seminar was held in Khartoum, at AOAD headquarters, and was under the patronage of H.E Dr. Magzoub Al-Khalifa Ahmed, Minister of Agriculture and Forestry, from the period 17 to 18 December, 2002. More than 50 participants attended the Seminar including scientists and officials representing; the Agricultural Research Cooperation, Universities, Ministries of Justice; of Agriculture and Forestry, of Science and Technology, the Higher Council for Environment and National Resources, WTO coordination and policy unit, Judges, Lawyers, Legal experts, private Seed companies and representatives of national professional organisations.

A total of six working papers were presented in the seminar, covering topics such as; introduction to Intellectual Property and its Economic importance, introduction to Plant Variety Protection under the UPOV Convention, Conservation of Plant Genetic Resources, Plant Breeding and Plant Variety Protection and Provisions of the Law on the Protection of New Plant Varieties of the Kingdom of Morocco.

The seminar participants formulated a number of recommendations dealing with the importance of strengthening the seed sector in Sudan, the use of UPOV Convention and Moroccan Law on Plant Breeders Rights when revising the seed law in Sudan, strengthening capacity building with the support of WIPO and UPOV, necessity of implementing Plant Breeders rights and other important recommendations.

In conclusion it gives me pleasure to extend my thanks to his Excellency Dr. Magzoub Al-Khalifa Ahmed, Minister of Agriculture and Forestry, for his patronage of the National Seminar on Intellectual Property in the field of Agriculture in the Republic of the Sudan, the World Intellectual Property Organisation (WIPO) and the International Union for the Protection of New Varieties of Plants (UPOV) for their cooperation in formulating the Seminar and my thanks are also due to all the participants in the Seminar.

**Dr. Salem Al-Lozi**  
**Director General**





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## Recommendations

The National Seminar on Intellectual Property in the Field of Agriculture was organized jointly by the World Intellectual Property Organization (WIPO), the International Union for the Protection of New Varieties of Plants (UPOV) and the Arab Organization for Agricultural Development (AOAD), in cooperation with the Government of the Republic of the Sudan, in Khartoum, on December 17 to 18, 2002.

The meeting was held under the patronage of his Excellency, the Federal Minister of Agriculture and Forestry, Dr Magzoub El Khaliffa Ahmed. He opened the meeting in the presence of the Federal Minister of Higher Education and Scientific Research, the Minister of Agriculture, Animal Resources and Irrigation in the Governate of Khartoum, the Ambassadors or Chargés d'Affaires of Algeria, Egypt, Jordan, Morocco, Syria, Tunisia and Yemen. The seminar was attended by high ranking officials from the Ministries of Justice, of Agriculture, of Higher Education and Scientific Research, of Science and Technology and of Industry, as well as from the Judiciary, by the President and members of the National Seed Council, by representatives of the World Trade Organization (WTO) Coordination Unit, by legal advisors, plant breeders from the Agricultural Research Corporation (ARC), lawyers, representatives of the Higher Council for Environment and Natural Resources, private seed companies, and national professional associations. More than 50 participants attended the seminar. The first day's sessions were chaired by Professor Abdella Ahmed Abdalla; Professor Ali Khider Kambal chaired the sessions of the second day.

The Seminar considered the conditions for agricultural development in Sudan. It addressed agricultural research, plant breeding and conservation of plant genetic resources in Sudan. It examined intellectual property protection instruments and the incentives provided by these instruments. The Seminar discussed basic principles of the International Convention for the Protection of New Varieties of Plants (UPOV Convention), and considered the example of Morocco of the introduction and the implementation of a plant variety protection system based on the UPOV Convention.

### **The participants formulated the following recommendations:**

1. Plant breeding and the seed sector in Sudan need to be strengthened, through an effective plant variety protection system.



2. In the ongoing revision of the Seed Law in Sudan, the UPOV Convention and the Moroccan Law on Plant Breeder's Rights should be used as references.
3. The support of WIPO and UPOV in capacity building, in particular training, in the field of intellectual property protection is requested.
4. The Government of Sudan is encouraged to seek cooperation from donors with regard to the implementation of Plant Breeder's Rights.
5. The Government of Sudan is encouraged to promote the concept of intellectual property rights *inter alia* through incorporation in the curricula of higher education.
6. Regional cooperation should be envisaged with regard to technical examination for Distinctness, Uniformity and Stability (DUS) of plant varieties as a basis for granting Plant Breeder's Rights, variety registration and seed certification.
7. AOAD, WIPO and UPOV should continue to promote intellectual property rights, as a tool for agricultural development in the Arab World and in Sudan in particular, through appropriate activities such as seminars, workshops and training.
8. An overall national policy on conservation of and access to plant genetic resources and benefit-sharing should be developed based on international conventions such as the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture and in harmony with the UPOV Convention.

## **1. Working Papers**

### **1.1. Definitions and General Aspects of Intellectual Property**

**Mr. Aziz Farag - Consultant  
Cooperation for Development, Bureau for Africa  
(WIPO)**



# **Definitions and General Aspects of Intellectual Property**

*Mr. Aziz Farag - Consultant*

*Cooperation for Development, Bureau for Africa  
(WIPO)*

## **SUBJECT MATTER OF THE DOCUMENT**

1. This document deals with the general aspects of industrial property. It gives a brief introduction to the essential features of industrial property protection. More detailed explanations can be found in the other documents.

## **INTELLECTUAL PROPERTY**

2. When speaking of "industrial property" it is important to note that this forms part of the broader concept of "intellectual property." Thus, "industrial property" is not something tangible like factories, equipment and material for industrial production but something intangible though in most cases extremely valuable.
3. Before describing in more detail the substantive aspects of industrial property, one should first explain what "intellectual property" means. This is a special kind of property.
4. In general, the most important feature of property is that the proprietor or owner may use his property as he wishes and that nobody else can lawfully use his property without his authorization. Of course, there are generally recognized limits of the exercise of that right. For example, the owner of a piece of land is not always free to construct a building of whatever dimensions he wishes, but must respect the applicable legal requirements and administrative decisions.
5. Roughly speaking, three kinds of property may be distinguished.
6. One is property consisting of movable things, such as a wrist watch or a car. No one except the owner of the wrist watch or the car may use those objects. This is a legal situation which is called an exclusive right, namely, the exclusive right, belonging to the owner, to use the thing which is his property. Naturally, the proprietor may authorize others to use his property. But such authorization is legally necessary, and use without the owner's authorization is illegal. Moreover, the right to use is not unlimited: when exercising that right, rights of other persons, for example, in the situation

where a road is privately owned by another person, and administrative regulations, for example, speed limits for cars, must be respected.

7. Now we come to the second kind of property. It is immovable property, namely, land and things permanently fixed on it, such as houses. We have already seen an example of the limitations of such property, namely, the requirements to be respected when constructing a building.
8. The third kind of property is intellectual property. The objects of intellectual property are the creations of the human mind, the human intellect. This is why this kind of property is called “intellectual” property. In a somewhat simplified way, one can state that intellectual property relates to pieces of information which can be incorporated in tangible objects at the same time in an unlimited number of copies at different locations anywhere in the world. The property is not in those copies but in the information reflected in those copies. Similar to property in movable things and immovable property, intellectual property, too, is characterized by certain limitations, for example, limited duration in the case of copyright and patents.

### **THE TWO BRANCHES OF INTELLECTUAL PROPERTY**

9. Intellectual property is usually divided into two branches, namely “industrial” property and “copyright.”<sup>(i)</sup>

#### ***Copyright***

10. Copyright relates to artistic creations, such as poems, novels, music, paintings, cinematographic works, etc. In most European languages other than English, copyright is called author’s rights. The expression “copyright” refers to the main act which, in respect of literary and artistic creations, may be made only by the author or with his authorization. That act is the making of copies of the literary or artistic work, such as a book, a painting, a sculpture, a photograph, a motion picture. The second expression, “author’s rights” refers to the person who is the creator of the artistic work, its author, thus underlining the fact, recognized in most laws, that the author has certain specific rights in his creation, for example, the right to prevent a distorted reproduction, which can be exercised only by himself, whereas other rights, such as the right to make copies, can be exercised by other persons, for example, a publisher who has obtained a license to this effect from the author.

## Industrial Property

11. As regards industrial property, it has already been mentioned that this expression is sometimes misunderstood as relating to movable or immovable property used for industrial production, such as factories, equipment for production, etc. However, industrial property is a kind of intellectual property and thus relates to creations of the human mind. Typically, such creations are inventions and industrial designs. Simply stated, inventions are solutions to technical problems, and industrial designs are aesthetic creations determining the appearance of industrial products. In addition, industrial property includes trademarks, service marks, commercial names and designations, including indications of source and appellations of origin, and the protection against unfair competition. Here, the aspect of intellectual creations--although existent--is less prominent, but what counts here is that the object of industrial property typically consists of signs transmitting information to consumers, in particular, as regards products and services offered on the market, and that the protection is directed against unauthorized use of such signs which is likely to mislead consumers, and misleading practices in general.
12. The expression "industrial" property may appear as not entirely logical because it is only as far as inventions are concerned that the main segment of economy that is interested in them is industry. Indeed, in the typical situation, inventions are exploited in industrial plants. But trademarks, service marks, commercial names and commercial designations are of interest not only to industry but also and mainly to commerce. Notwithstanding this lack of logic, the expression "industrial property" has acquired, at least in the European languages, a meaning which clearly covers not only inventions but also the other objects just mentioned.
13. In the hall of the WIPO building in Geneva, there is an inscription in the cupola whose text <sup>(ii)</sup> tries, in a few words, implicitly to define intellectual works. It also tries to convey the reasons for which intellectual works should be "property," that is, why their creators should enjoy advantages secured by law. Finally, the inscription invokes the duty of the State in this field. Naturally, the inscription makes no claim to legal exactitude. Its intent is to stress the cultural, social and economic importance of protecting intellectual property.

## INVENTIONS

14. As has already been said, inventions are new solutions to technical problems. This is not an official definition. Most laws dealing with the protection of inventions do not define the notion of inventions. However, the WIPO Model Law for Developing Countries on Inventions (1979), contained a definition

which read as follows: “‘Invention’ means an idea of an inventor which permits in practice the solution to a specific problem in the field of technology.”

### ***Patents***

15. Inventions are characteristically protected by patents, also called “patents for invention.” Every country which gives legal protection to inventions--and there are more than 140 such countries--gives such protection through patents although there are a few countries in which protection may also be given by means other than patents, as will be seen below.
16. But first, let us consider what a patent is.
17. The word “patent,” at least in some of the European languages, is used in two senses. One of them is the document that is called “patent” or “letters patent.” The other is the content of the protection that a patent confers.
18. First of all, let us deal with the first sense of the word “patent,” that is, when it means a document.
19. If a person makes what he thinks is an invention, he, or if he works for an entity, that entity, asks the Government--by filing an application with the Patent Office--to give him a document in which it is stated what the invention is and that he is the owner of the patent. This document, issued by a Government authority, is called a patent or a patent for invention.
20. Not all inventions are patentable. Generally, laws require that, in order to be patentable, the invention must be new, it must involve an inventive step (or it must be non-obvious), and it must be industrially applicable. These three requirements are sometimes called the requirements or conditions of patentability.
21. The conditions of novelty and inventive step must exist on a certain date. That date, generally, is the date on which the application is filed. However, in a certain case it will not matter if the conditions no longer exist on that date. That case is regulated in the Paris Convention for the Protection of Industrial Property (“the Paris Convention”) and concerns the situation where the application of a given applicant concerning a given invention is not the first application of that applicant for that invention, but a later application by the same applicant (or his successor in title) for the same invention. For example, the first application was filed in Japan and the second in France. In such a case, it will be sufficient that the conditions of novelty and inventive step exist on the date on which the first (the Japanese) application was filed. In other words, the second (the French) application will have a priority over any applications filed by other applicants in France between the date of the first (Japanese) and the

second (French) application, provided the period between the two dates does not exceed 12 months. Because of such priority, the advantage thus assured to the applicant is called "right of priority."

22. It is customary to distinguish between inventions that consist of products and inventions that consist of processes. An invention that consists of a new alloy is an example of a product invention. An invention that consists of a new method or process of making a known or new alloy is a process invention. The corresponding patents are usually referred to as a "product patent," and a "process patent," respectively.
23. Now, let us deal with the other sense of the word "patent," namely when the word "patent" relates to the content of the protection that the patent confers.
24. The protection that a patent for invention confers means that anyone who wishes to exploit the invention must obtain the authorization of the person who received the patent--called "the patentee" or "the owner of the patent"--to exploit the invention. If anyone exploits the patented invention without such authorization, he commits an illegal act. One speaks about "protection" since what is involved is that the patentee is protected against exploitation of the invention which he has not authorized. Such protection is limited in time. According to Article 33 of the Agreement on Trade-Related Aspects of Intellectual Property Rights ("the TRIPS Agreement") which was concluded in 1994, the term of protection must not end before the expiration of a period of twenty years counted from the filing date.
25. The rights, the protection, are not described in the document called a "patent." Those rights, that protection, are described in the patent law of the country in which the patent for invention was granted. The patent laws of Members of the TRIPS Agreement have to comply with Section 5 of Part II of the said Agreement which sets out, in its Article 28, the exclusive rights conferred by a patent. The other provisions, relating to patents, of the said Agreement deal, inter alia, with patentable subject matter, conditions on patent applicants and the reversal of burden of proof in respect of process patents. The rights, usually called "exclusive rights of exploitation," generally consist of the following:
  - in the case of product patents, the right to prevent third parties from making, using, offering for sale, selling or importing the product that includes the invention; and
  - in the case of process patents, the right to prevent third parties from using the process that includes the invention, and to prevent third parties from using, offering for sale, selling or importing products which were made by the process that includes the invention.



26. It has been mentioned earlier that, if anyone exploits the patented invention without the authorization of the owner of the patent for invention, he commits an illegal act. However, as already stated, there are exceptions to this principle, because patent laws may provide for cases in which a patented invention may be exploited without the patentee's authorization, for example, exploitation in the public interest by or on behalf of the government, or exploitation on the basis of a compulsory license. A compulsory license is an authorization to exploit the invention, given by a governmental authority, generally only in very special cases, defined in the law, and only where the entity wishing to exploit the patented invention is unable to obtain the authorization of the owner of the patent for invention. The conditions of the granting of compulsory licenses are also regulated in detail in laws which provide for them. In particular, the decision granting a compulsory license has to fix an adequate remuneration for the patentee, and that decision may be the subject of an appeal. It should be noted that the TRIPS Agreement, in particular in its Articles 27.1 and 31, establishes a number of obligations with respect to the use of a patented invention without the authorization of the owner of the patent. Members of that Agreement have to comply with these requirements the most important of which no longer permits the grant of compulsory licenses on the ground of failure to work or insufficient working of an invention if the protected product is lawfully imported into the territory of the Member concerned.

27. In conclusion, it can be stated that, among the means by which inventions are protected, patents are by far the most important. However, protection of inventions as utility models deserves mention.

### *Utility Models*

28. Utility models are found in the laws of a limited number (about 20) of countries in the world, and in the OAPI regional agreement. In addition, some other countries (for example, Australia and Malaysia) provide for titles of protection which may be considered similar to utility models. They are called "petty patents" or "utility innovations." The expression "utility model" is merely a name given to certain inventions, namely--according to the laws of most countries which contain provisions on utility models--inventions in the mechanical field. Utility models usually differ from inventions for which ordinary patents for invention are available mainly in three respects: first, in the case of an invention called "utility model," either only novelty but no inventive step is required or the inventive step required is smaller than in the case of an invention for which a patent for invention is available; second, the maximum term of protection provided in the law for a utility model is generally shorter than the maximum term of protection provided for a patent

for invention; and third, the fees required for obtaining and maintaining the right are generally lower than those applicable to patents. Moreover, in certain countries there is also a substantial difference in the procedure for obtaining protection for a utility model: this procedure is generally shorter and simpler than the procedure for obtaining a patent for invention.

## **INDUSTRIAL DESIGNS**

29. Generally speaking, an industrial design is the ornamental or aesthetic aspect of a useful article. Such particular aspect may depend on the shape, pattern or color of the article. The design must appeal to the sense of sight. Moreover, it must be reproducible by industrial means; this is the essential purpose of the design, and is why the design is called "industrial."
30. In order to be protectable, an industrial design must, according to some laws, be new and, according to other laws, original.
31. Industrial designs are usually protected against unauthorized copying or imitation. Under Article 26.3 of the TRIPS Agreement, the duration of protection available shall amount to at least 10 years. Members of the said Agreement are also obliged to ensure that requirements for securing protection of textile designs, in particular in regard of any cost, examination or publication, do not unreasonably impair the opportunity to seek and obtain such protection.
32. which certifies the protection may be called a registration certificate or a patent. If it is called a patent, one must, in order to distinguish it from patents for invention, always specify that it is a patent for industrial design.

## **INTELLECTUAL PROPERTY IN RESPECT OF INTEGRATED CIRCUITS**

33. The question of the type of protection to be given to the layout-design, or topography, of integrated circuits is relatively new. Although prefabricated components of electrical circuitry have been used for a long time in the manufacture of electrical equipment (for example, radios), large scale integration of a multitude of electrical functions in a very small component became possible only a few years ago as result of advances in semiconductor technology. Integrated circuits are manufactured in accordance with very detailed plans or "layout-designs."
34. The layout-designs of integrated circuits are creations of the human mind. They are usually the result of an enormous investment, both in the terms of

highly qualified experts, and financially. There is a continuing need for the creation of new layout-designs which reduce the dimensions of existing integrated circuits and simultaneously increase their functions. The smaller an integrated circuit, the less the material needed for its manufacture, and the smaller the space needed to accommodate it. Integrated circuits are utilized in a large range of products, including articles of everyday use, such as watches, television sets, washing machines, automobiles, etc., as well as sophisticated data processing equipment.

35. Whereas the creation of a new layout-design for an integrated circuit involves an important investment, the copying of such a layout-design may cost only a fraction of that investment. Copying may be done by photographing each layer of an integrated circuit and preparing masks for the production of the integrated circuit on the basis of the photographs obtained. The high cost of the creation of such layout-designs, and the relative ease of copying, are the main reasons for the protection of layout-designs.
36. Layout-designs of integrated circuits are not considered industrial designs in the sense of the laws providing for the registration of industrial designs. This is because they do not determine the external appearance of integrated circuits, but, rather, the physical location, within the integrated circuit, of each element having an electronic function. Moreover, layout-designs of integrated circuits are not normally patentable inventions, because their creation usually does not involve an inventive step, although it requires a great amount of work by an expert. Further, copyright protection may not apply if it is determined, under national law, that layout-designs are not copyrightable subject matter. Due to the uncertainty surrounding the protection of layout-designs, national, regional, and international efforts focussed on the question of what type and scope of protection would be appropriate.
37. On May 26, 1989, under the auspices of WIPO, the Treaty on Intellectual Property in Respect of Integrated Circuits was adopted at Washington, D.C., United States of America. The Treaty has not entered into force but its substantive provisions have, to a large extent, been adopted in the TRIPS Agreement. The main features of the protection mandated under the Treaty can be summarized as follows.
38. A layout-design is defined in the Treaty as the “three-dimensional disposition, however expressed, of the elements, at least one of which is an active element, and of some or all of the interconnections of an integrated circuit, or such a three-dimensional disposition prepared for an integrated circuit intended for manufacture.” Such a layout-design is considered protectable under the terms of the Treaty if it is the result of its creator’s own intellectual effort and is not

commonplace among creators of layout-designs and manufacturers of integrated circuits at the time of its creation.

39. The protection required under the Treaty, as modified in the TRIPS Agreement, is the prohibition, for a period of at least ten years, of the performance of the following acts, without the authorization of the holder of the right:

(i) reproducing, whether by incorporation in an integrated circuit or otherwise, a protected layout-design in its entirety or any part thereof, except the act of reproducing any part that does not comply with the requirement of originality; and

(ii) importing, selling or otherwise distributing for commercial purposes, a protected layout-design or an integrated circuit in which a protected layout-design is incorporated.

40. The manner in which these rights in a layout-design are to be secured is not mandated by the Treaty. Thus, a Contracting Party is free to implement its obligations under the Treaty through a special law on layout-designs (a solution which is more and more frequent), or its law on copyright, patents, utility models, industrial designs, unfair competition or any other law or a combination of any of those laws.

41. Contracting Parties are free to provide that registration of a layout-design is a prerequisite to protection.

42. The rights in layout-designs provided for under the Treaty are subject to three exceptions. Firstly, a third party is able to perform any act with respect to a layout-design for the purposes of evaluation, analysis, research, or teaching. Secondly, a third party may copy a layout-design or part thereof in order to prepare a second, original, layout-design. According to the Treaty, such a second layout-design is not to be regarded as infringing rights held in the first layout-design. Thirdly, a third party may perform any act in respect of a layout-design that was independently created.

## **TRADEMARKS**

43. A trademark is a sign used on, or in connection with the marketing of, goods. Saying that the sign is used "on" the goods means that it may appear not only on the goods themselves but on the container or wrapper in which the goods are when they are sold. Saying that the sign is used "in connection with the marketing" of the goods refers mainly to the appearance of the sign in

advertisements (newspaper, television, etc.) or in the shop windows of the shops in which the goods are sold. Where a trademark is used in connection with services, it may be called "service mark." For example, service marks are used by hotels, restaurants, airlines, tourist agencies, car-rental agencies, laundries and cleaners. All that has been said about trademarks applies also, *mutatis mutandis*, to service marks.

44. In general, it may be said that a trademark performs four main functions. These functions relate to the distinguishing of marked goods or services, their origin, their quality and their promotion in the market place.
45. The first function of a trademark is to distinguish the products or services of an enterprise from products or services of other enterprises. Trademarks facilitate the choice to be made by the consumer when buying certain products or making use of certain services. The trademark helps the consumer to identify a product or service which was already known to him or which was advertised.
46. In view of the fact that a trademark has the function of distinguishing, only distinctive signs are capable of serving as trademarks, and the main purpose of protecting trademarks is to ensure that only distinctive signs are used and that confusion among trademarks is prevented.
47. The second function of a trademark is to refer to a particular enterprise which offers the products or services on the market, i.e., give an indication as to the origin of the goods or services for which the mark is used.
48. Trademarks do not only or not always distinguish products or services as such. They distinguish them in their relationship to a particular enterprise, namely, the enterprise from which the products or services originate. Thus trademarks distinguish products or services from one source, from identical or similar products or services from other sources, namely, the various enterprises which offer such products or services. This function is important in the definition of the scope of protection of trademarks. The decisive test for that protection is whether the average consumer, in view of identical or similar trademarks relating to products or services of the same kind or of similar kinds, may believe that those products or services originate from one and the same enterprise.
49. The third function of trademarks is to refer to a particular quality of the products or services for which the trademark is used. This function is not always recognized. In fact, the quality function of trademarks is one of the most controversial issues of trademark law.

50. The reasons for maintaining that trademarks have the function of referring to a particular quality of the products or services for which they are used may be summarized as follows: a trademark frequently is not used by only one enterprise since the trademark owner may grant licenses to use the trademark to other enterprises; it is accordingly essential that licensees respect the quality standards of the trademark owner. Moreover, trading enterprises often use trademarks for products which they acquire from various sources. Thus, products, although not originating from one and the same enterprise, nevertheless have to correspond to certain common characteristics and quality standards which are applied by the trademark owner. A trademark owner therefore guarantees that only products that correspond to those standards and quality requirements will be offered under the trademark. In such cases, the trademark owner is not responsible for producing the products but rather--and this may be equally important--for selecting those that meet these standards and requirements. This argument is supported by the fact that even where the trademark owner is the manufacturer of a particular product, in the manufacturing process parts are frequently used which have not been produced by the trademark owner but which have been selected by him.

51. The question whether a quality-guarantee function for trademarks is to be recognized has practical significance in connection with trademark licensing. In this connection, it is generally agreed that the licensee must respect certain quality standards set by the trademark owner.

52. A controversial issue arises in respect of the question whether the trademark owner himself may change the quality and, if he does so, what are the consequences with respect to the trademark. Various approaches to solve this question are at present under discussion but there does not yet exist a generally accepted solution.

53. The fourth and last function of trademarks is to promote the marketing and sale of products and the marketing and rendering of services.

54. This function recently has become more and more important. Trademarks are not only used to distinguish or to refer to a particular enterprise or a particular quality but also to stimulate sales. A trademark which is to fulfill that function must be carefully selected. It must appeal to the consumer, create interest and inspire a feeling of confidence. This is why this function sometimes is called the "appeal function."

55. Trademarks which overemphasize the appeal function may run the risk of being misleading. This is to be kept in mind in the selection of trademarks, for misleading trademarks are excluded from protection.

56. Any sign, or any combination of signs, capable of distinguishing the goods or services of one undertaking from those of other undertakings, shall be capable of constituting a trademark. Such signs, in particular words including personal names, letters, numerals, figurative elements and combinations of colors as well as any combination of such signs, shall be eligible for registration as trademarks (TRIPS Article 15.1). Most countries require that trademarks for which protection is desired be registered with a government authority. The protection that laws give to a trademark consists essentially of making it illegal for any entity other than the owner of the trademark to use the trademark or a sign similar to it, at least in connection with goods for which the trademark was registered or with goods similar to such goods. The TRIPS Agreement sets out, in its Article 16, the rights conferred by trademarks including, in particular, well-known marks.

57. The TRIPS Agreement also deals, *inter alia*, with the protectable subject matter, the term of protection, the requirements of use as well as licensing and assignment.

## **TRADE NAMES**

58. Another category of objects of industrial property is “commercial names and designations.”

59. A commercial name or trade name--the two expressions mean the same thing--is the name or designation which identifies the enterprise. In most countries, trade names may be registered with a government authority. However, under Article 8 of the Paris Convention for the Protection of Industrial Property, a trade name must be protected without the obligation of filing or registration, whether or not it forms part of a trademark. Protection generally means that the trade name of one enterprise may not be used by another enterprise either as a trade name or as a trademark or service mark and that a name or designation similar to the trade name, if likely to mislead the public, may not be used by another enterprise.

## **GEOGRAPHICAL INDICATIONS**

60. Finally, among commercial designations there are also geographical indications.

61. The TRIPS Agreement (Articles 22 to 24) establishes certain obligations as regards the protection of geographical indications, which are defined therein, for the purposes thereof, as “indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.” The notions of “indications of source” and of

“appellations of origin,” which are used in the Paris Convention, encompass geographical indications as defined by the TRIPS Agreement.

62. An indication of source is constituted by any denomination, expression or sign indicating that a product or service originates in a country, a region or a specific place (for instance, “made in ...”). As a general rule, the use of false or deceptive indications of source is unlawful.
63. An appellation of origin is constituted by the denomination of a country, a region or a specific place which serves to designate a product originating there, the characteristic qualities of which are due exclusively or essentially to the geographical environment, in other words to natural and/or human factors. The use of an appellation of origin is lawful only for a certain circle of persons or enterprises located in the geographical area concerned and only in connection with the specific products originating there (for instance, “Bordeaux”).

## **PROTECTION AGAINST UNFAIR COMPETITION**

64. The last object of the protection of industrial property is the protection against unfair competition. Such protection, required under Article 10bis of the Paris Convention, is directed against acts of competition that are contrary to honest practices in industry or commerce. The following in particular constitute acts of unfair competition in relation to industrial property: all acts of such a nature as to create confusion with the establishment, the goods or the industrial or commercial activities of a competitor; false allegations in the course of trade of such a nature as to discredit the establishment, the goods or the industrial or commercial activities of a competitor; and indications or allegations the use of which in the course of trade is liable to mislead the public as to the characteristics of goods.
65. The protection against unfair competition supplements the protection of inventions, industrial designs, trademarks and geographical indications. It is particularly important for the protection of know-how, that is: technology or information which is not protected by a patent but which may be required in order to make the best use of a patented invention.
66. The TRIPS Agreement contains, in its Article 39, provisions on the protection of undisclosed information (trade secrets). In the course of ensuring effective protection against unfair competition as provided in Article 10bis of the Paris Convention, Members of the TRIPS Agreement are required to provide natural and legal persons the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without



their consent in a manner contrary to honest commercial practices so long as such information:

- (a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;
- (b) has commercial value because it is secret; and
- (c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

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<sup>(i)</sup> The Convention Establishing the World Intellectual Property Organization (WIPO), concluded in Stockholm on July 14, 1967, provides that “‘intellectual property’ shall include rights relating to

[1] literary, artistic and scientific works.

[2] performances of performing artists, phonograms, and broadcasts.

[3] inventions in all fields of human endeavor.

[4] scientific discoveries.

[5] industrial designs.

[6] trademarks, service marks, and commercial names and designations.

[7] protection against unfair competition and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields” (Article 2(viii)).

The objects mentioned under [1] belong to the copyright branch of intellectual property. The objects mentioned in [2] are usually called “neighboring rights,” that is, rights neighboring on copyright. The objects mentioned under [3], [5], [6] and [7] constitute the industrial property branch of intellectual property. The object mentioned under [4]--scientific discoveries--belongs to neither of the two branches of intellectual property. According to one opinion, scientific discoveries should not have been mentioned among the various forms of intellectual property since no national law or international treaty gives any property right in scientific discoveries. Scientific discoveries and inventions are not the same. The Geneva Treaty on the International Recording of Scientific Discoveries (1978) --a treaty that has not entered into force--defines a scientific discovery as “the recognition of phenomena, properties or laws of the material universe not hitherto recognized and capable of verification” (Article 1 (ii)). Inventions are new solutions to specific technical problems. Such solutions must, naturally, rely on the properties or laws of the material universe (otherwise they could not be materially (“technically”) applied), but those properties or laws need not be properties or laws “not hitherto recognized.” An invention puts to new use, to new technical use, the said properties or laws, whether they are recognized (“discovered”) simultaneously with making the invention or whether they were already recognized (“discovered”) before, and independently from, the invention.

<sup>(ii)</sup> The inscription is in Latin. Its English translation is the following: “Human genius is the source of all works of art and invention. These works are the guarantee of a life worthy of men. It is the duty of the State to ensure with diligence the protection of the arts and inventions.”

**1.2 THE ROLE OF INTELLECTUAL PROPERTY  
IN  
ECONOMIC DEVELOPMENT**

**Mr. Aziz Farag - Consultant  
Cooperation for Development Bureau for Africa  
(WIPO)**



## **1.2 THE ROLE OF INTELLECTUAL PROPERTY IN ECONOMIC DEVELOPMENT**

*Mr. Aziz Farag - Consultant  
Cooperation for Development Bureau for Africa  
(WIPO)*

### **INTRODUCTION**

#### **Technology and Economic Growth**

1. The last decade has witnessed sweeping economic changes all over the world, particularly in developing countries. Restrictive policies with respect to controls on trade and industry, foreign investment and technological collaborations have been discarded. As country after country has liberalized its economic regime, new competitive pressures have come into play.
2. The successful conclusion of the GATT negotiations, which also concluded the Agreement on Trade-Related Aspects of Intellectual Property Rights (known as the TRIPS Agreement), led to the formation of the World Trade Organization (WTO).
3. With new opportunities present, the critical role of technology as a driver of economic progress has been widely acknowledged. The value addition in most new products comes basically through intangible components, including technology.
4. The recent economic achievements of many countries have not sprung from their natural resources. Countries rich in natural resources, for example, oil producing countries, are not necessarily the great economic powers.
5. Economic progress requires a constant stream of new ideas and products to improve quality of life. Today it has become evident that innovation and creativity bring competitive advantage to companies and nations. *Per capita* economic growth of countries is driven increasingly by innovation, not by aggregate capital investment per say.

## **Growing Role of Intellectual Property Rights (IPR)**

6. Intellectual capital is often of considerable value because it is unique. It comprises, inter alia, patents for inventions, trademarks, industrial designs, utility models, appellations of origin, integrated circuits topographies, copyrights, but also know-how, trade secrets, proprietary technology, talents, skill and knowledge of the work force, training systems and methods, customer lists, distribution networks, quality management systems, etc.
7. Intellectual capital is the foundation for market dominance and continuing profitability of many leading corporations.
8. As nations and companies elaborate their new strategies, where technological superiority determines success, the question of assessment and valuation of intellectual property rights (including inventions, industrial designs, trademarks, know-how, trade secrets, etc.) assumes increasing importance.
9. Intellectual capital is a key objective in industrial mergers and acquisitions; knowledgeable companies often use licensing routes to transfer these assets to low tax jurisdictions. The role of intellectual property rights (IPR) is therefore significantly increased in the new economic and commercial forces. Intellectual capital is increasingly recognized as being among the very important assets of many of the world's largest and most powerful companies.
10. Licensing agreements and joint ventures are based on IPR assets. Novel financing techniques, leveraged buy-outs and mergers have led to emphasis of the role of intellectual property portfolios in companies. IPRs are being pledged as security for loans and assessment of the real worth of businesses increasingly requires valuation of their intellectual property portfolio.
11. At the corporate level there is an increasing awareness that active and full control over technology, new products and processes secures the way to competitive advantage. Companies focus on innovation and invention based design. Since product competitiveness falls with time, the upgrading of these products and the introduction of new ones demands well planned innovative technology inputs.
12. The neo-classical economic theory assumed technological progress essentially as an exogenous phenomenon. It is now widely acknowledged

that technological progress occurs precisely as a result of entrepreneurial activities in anticipation of profits from innovations. A sound patent system contributes to the transfer of technology and research results by providing a legal environment, which encourages this behavior.

13. As creations of the human intellect, intellectual property relates to the information, which can be incorporated in tangible objects, reproduced in different locations and used by several persons at the same time. Similar to the law regarding movable and immovable property, intellectual property law is characterized by limitations, for example, limited duration of copyrights and patents.

### **ROLE OF INTELLECTUAL PROPERTY IN THE NATIONAL INNOVATION SYSTEM**

14. In highly competitive international trade, increased importance is placed on planning and forecasting, and development of appropriate commercial and industrial strategies by enterprises, industrial groups, and countries. This strategic planning is increasingly an important part of the successful implementation of the product marketing policy of companies, and of the establishment and development of an appropriate technological base.
15. Recently, increasing importance has been given to the role of the industrial property system as an analytical instrument for such industrial planning and decision-making. Two main reasons exist:
  16. First, the information aspect of the patent system: awareness of the state of the art in a particular technical field can avoid duplicative research work if the desired technology already exists. Also it can stimulate further improvements and illustrate the technological activities of competitors and, by reference to the countries in which patents have been taken out, the marketing strategies of competitors. A state-of-the-art search will identify newly developing areas of technology in which future R&D activity should be monitored.
  17. Second, as a tool for industrial planning and strategic decision making, the industrial property system may be very useful through analysis of the statistical aggregation of patenting activity as revealed through published patent documents. The degree of patenting activity provides an index of which countries or companies are active in various fields, in which industries technology is progressing and in which the technology is stable and which are the enterprises active in particular technical fields. Registered trademarks bear witness of commercial interest in the market

of a country or group of countries. Analyses of IPR and their presence in different countries provide a means of testing the soundness of many policy and investment decisions.

18. The patent system contributes to economic growth and development by creating the conditions for the marketing and commercialization of inventions in several ways:
  - (a) it gives an incentive to the creation of new technology which will result in, *inter alia*, new products, inventions and commercial opportunities;
  - (b) it contributes to the creation of an environment which facilitates the successful industrial application of inventions and new technology, and the legal framework which encourages investment, including that made by foreign countries;
  - (c) it acts as a catalyst for the commercialization of inventions and their transfer to productive use;
  - (d) it is an instrument of commercial and industrial planning and strategy.

### **Legal Framework for Development and Transfer of Technology**

19. The patent system framework provides a necessary element of certainty for a technology transfer transaction. If a recipient were located in a country without a patent system, the supplier of the technology would need to rely on purely contractual arrangements to guarantee non-disclosure and non-use of the invention by third parties. Such arrangements may establish excessive commercial risk for technology suppliers, greater than in circumstances where the transfer transaction can be linked to a patent guaranteeing protection against third party illegal exploitation.
20. The existence of a patent also introduces another measure of certainty by enabling the potential recipient to acquaint himself with the essence of the technology which he is wishing to acquire. In the absence of a patent, such initial disclosure of the technology proposed for transfer must take place through secret disclosures and confidentiality agreements, again introducing an element of commercial risk by leakage of the technology to third parties. Furthermore, to cover such high risk the supplier generally would calculate a higher price for providing the technology.

21. The patent system must be understood as a policy instrument which encourages developing indigenous technological capabilities by providing an incentive to local inventors, research and development organizations and industry. In fact, it represents a strong shield for the development of innovative domestic industry however small it may be at the moment.
22. The patent system represents a long-term infrastructure investment to develop the national market. Without any patent system, inventors, entrepreneurs and companies would have no effective protection against the imitation of their inventions, and less incentive to invest in the development and strengthening of their technological capacities.

### **Valuing and Assessing Intellectual Property Rights (IPRs)**

23. Some questions that have to be answered when assessing IPRs
  - What IPR are used in the business?
  - How are IPR protected?
  - What is the value of IPR (as a whole and separately)?
  - What is the level of risk related to IPR (infringement third party's rights, infringement by others)?
  - Who owns IPR?
  - Could somebody sue me or could I sue based on held IPRs?
  - How can IPR be transferred or exploited to maximize return?
  - What is the net present value of damages claims (corporate, environmental, personal)?
24. When valuing intellectual property rights it is essential that the assessment of all aspects of the proposed transfer is seen in the whole context of the venture. Some of the considerations in respect of technology assessment are:
  - Size:** Is there a market for the product of the technology?
  - Scale:** Is the scale of operation of the technology appropriate to that market?
  - Maturity:** Is the technology market proven or is it new which will require further development?
  - Obsolescence:** On the other hand, is the technology stale which is about to be supplemented by new developments?
  - Environment:** Can the technology be operated satisfactorily in the licensee's environments, both climatic and cultural?



**Suitability:** Is the technology appropriate for the infrastructure which is available e.g., power supply, telecommunication, transport, waste disposal, etc.?

25. A common mistake of many inventors is that they try to sell their invention without taking the necessary steps to at least obtain legal protection and to develop the inventive concept into something more tangible, e.g., to file a patent application and to produce a working prototype before trying to commercialize it.
26. From the perspective of commercialization, inventions share properties with many other commodities or products, the main difference being that unlike material goods, inventions can be used simultaneously by several persons and hence they can be sold or licensed several times, to different persons.
27. Commercial and marketing strategies depend on the relation between the invention and the field of technology. Strategies will be different for mass products or for an invention in a specialized field, applicable only in the production of a few manufacturers. The market environment, the customs and traditions, the purchasing capacity and power of people (consumers) in the area also define the methods and approaches taken.
28. Commercialization and marketing of inventions is a complex process and it needs a professional approach and expertise in order to have a chance of success. Inventors are advised to seek as much as possible professional expert assistance when they are involved in that process.
29. From the viewpoint of the owner of the invention there exist several ways for commercializing inventions:
  - To start own manufacturing and marketing the product based on the invention;
  - To license the rights in the invention;
  - To sell the patent rights; or
  - Any combination of the above.
30. The decision of which way to choose will depend on a variety of factors, among which the cost and benefits analysis will often be decisive, as well as the inventor's business strategies (or lack of them).
31. The income an invention may generate will depend directly on the investment made for its development and marketing:

- The highest return (or benefit) for the inventor may be expected when he decides to start its own production based on the invention, but this approach will require also the largest investment;
  - The benefit for the inventor will be much lower when he decides to license or even to sell his patent rights at an early stage of development of his invention.
32. Each individual case should be analyzed and evaluated accordingly, taking into account the nature and properties of the invention, the needs, conditions and potential of the market, the resources available, and last, but not least, the willingness of the inventor to cooperate in further development of the invention.
  33. Well-prepared business plans and convincing prototypes are indispensable for attracting investors, manufacturers and potential users.
  34. Patent protection, if available and strong enough, can be a very powerful tool in the commercialization process, in particular on foreign markets.
  35. Usually commercialization should begin on a local scale, close to the user in order to test the invented product and only upon success should one embark on large-scale commercialization and marketing (including also for export in foreign countries).
  36. License partners or buyers for an invention may be approached in different manners, such as, inter alia, direct contacts with companies, contacts through chambers of commerce and similar organizations, contacts through industrial associations, by specialized exhibitions or by using the services of an invention broker. All contacts should be carefully coordinated and monitored by establishing a public relations plan. The commercial success of an invention will depend largely on a reliable and dynamic partnership.
  37. Today, besides the creators of technology (inventors, R&D centers, universities) and the user of technology (industry, the business community and the consumers), the entrepreneur (broker, finder/creator of markets) has an increasingly important role in the commercialization and transfer process.
  38. Sometimes governmental agencies could also act as brokers or promoters of inventions, however, such institutions should have an independent status with respect to business decisions existing outside the governmental or administrative system.

39. Inventors often entrust the search for partners and the commercialization of their inventions to commercial brokers. Before entering such arrangements, however, inventors should obtain as much as possible information on the activities and experience of the commercial broker and ask also for references from other independent sources. It is advisable that inventors retain the rights in the invention (patent, industrial design or utility model registration, trademark registration) and agree with the broker on a commission to be paid to him upon accomplishment of the task.
40. Practice has shown that in order to be successful in the commercialization or marketing of inventions, the owner of an invention (inventor, SME or any business entity) will need to have access to several or all of the following services:
- Technical and technological evaluation of inventions and innovative projects;
  - Economic evaluation and market studies (i.e., feasibility studies);
  - Legal advice and assistance;
  - Contacts with potential users;
  - Experience in business negotiations;
  - Contacts to mobilize and attract seed and start-up capital or venture capital;
  - Assistance in obtaining industrial property titles, including patenting of inventions or registering trademarks;
  - Assistance in publicity matters and preparation of public relation campaigns;
  - Advice and assistance in prototype manufacturing, etc.
41. Many universities and R&D organizations have established special services or units, which assist researchers and staff in obtaining protection and commercial exploitation of IPR developed under research work, etc. Furthermore they provide expert assistance on the different aspects of commercialization of inventions such as written information on general and specific business practice and ethics, on economic, financial and other laws and regulations affecting commercialization, contacts with experts in the various fields, such as patent practitioners, patent lawyers and invention brokers, etc..

## **ECONOMIC ASPECTS AND BENEFITS OF INTELLECTUAL PROPERTY FOR R&D AND UNIVERSITIES**

42. Inventions, as a fundamental part of technology, are by nature both private goods in creation, and public goods through productive use or consumption. They are private goods insofar as their creation consumes both mental and physical resources which are thereby diverted from other production or consumption activities. However, once technology or inventions become available in the form of information and enter into being public goods, they can be used without loss to any person, and without further investment in re-creating it for new users.
43. A dilemma exists if all are free to use technology and inventions, which have been created, who will bear the cost associated with their creation? One of the basic rationales of the patent system is to provide an incentive for the creation of new technology and inventions by offering to inventors exclusive rights to commercially exploit patented inventions for a limited time in return for the disclosure of the inventions to the public.
44. The exclusive rights to exploit the invention commercially permit its creator to work it without fear of interference from imitators who have not incurred the investment in research and development which produced the invention. The inventor will thus have the opportunity to recover research and development costs through competitive advantage. The patent grant in this respect acts as an instrument of economic policy to stimulate further risk-taking in the investment of resources in the development of new products and technology.
45. Patents are granted on technical criteria. The exclusive rights which are conferred by the patent relate to the commercial exploitation of the invention, and patent holders are not protected against those who derive from the disclosed invention a perception of a market need which may be satisfied by the legitimate adaptation or improvement of this technology, or through the discovery of a different technical solution to satisfy the same market need.
46. Intellectual property rights are of increasing significance to the research conducted at universities and R&D organizations. They constitute part of the assets of those institutions; research may be dependent upon securing permission to use of third parties' intellectual property rights; and finally, where research teams comprise also visiting researchers, in addition to university or faculty members, there will be a difficult question of identifying ownership of any intellectual property which might be generated. The use and commercialization of intellectual property thus presents numerous management challenges.

47. Much of the funding received by national R&D and educational institutions is provided from public sources, such as governments, or charitable foundations. Consequently, institutional accountability is needed for the intellectual property emerging from such research. Universities and R&D organizations may take the view that their research results are freely available to all. However, any unauthorized person may seek to register a patent arising from that research, thereby preventing its use as a public good. This may have to be pre-empted by the educational institution seeking its own intellectual property rights which can be licensed to users on a non-exclusive basis.
48. The purpose of intellectual property ownership by a university or R&D organization is invariably to promote the fundamental research mission, to protect its integrity and welfare, to provide a resource for industry, to obtain appropriate return for the use of facilities, resources and services provided by the institution, to encourage the growth, progress and success of the institute through ventures with industry, seeking commercial returns, to provide fair and reasonable reward (and incentive) to staff and students who apply their intellectual activity, to increase the accountability for management and use of public funds and to foster the identity of the organization and its esprit de corps.
49. Where collaborative research is to be conducted with private industry, the latter will often insist that the fruits of the research are not appropriated by some unauthorized third party. Sometimes the research will involve an elaboration of a piece of intellectual property contributed from the private sector and the contributor may insist that the educational institution has an appropriate intellectual property management policy.
50. As owner of the intellectual property, universities can apply quality assurance procedures to the evaluation, protection, development and exploitation of its intellectual property through administrative procedures dedicated to this task. It can also assist innovators in the commercialization of the intellectual property by concentrating expertise in an area available to all research teams.
51. The most effective way of establishing an appropriate intellectual property infrastructure is for the university or R&D organization to enact an intellectual property policy. Such policy statement may provide that as a general rule the university will own all the intellectual property generated by its staff and research students. This is on the basis either that the intellectual property has been created in the course of employment or that the university's resources and services have contributed to the generation of intellectual property.
52. A delicate question which can arise in relation to the intellectual property generated by a research institute is the question of ownership that property when a contribution is made by a visiting researcher. This is

conventionally dealt with by requiring visitors to agree to assign any intellectual property which is developed by them with the use of the university's resources and facilities.

53. A university or R&D organization should either establish a specially dedicated research liaison office or appoint an employee with intellectual property responsibilities (IP Focal Point or IP coordinator). The decision will usually be made on the basis of funds available to pay salaries and the pace available to house relevant staff. A critical factor will be the expected revenues which is expected to be generated from intellectual property by the institution. One of the main tasks of the IP Coordinator is to promote among research staff a better understanding of the rights which the law gives for the protection of creative efforts.
54. Where the IP Coordinator decides that the institution will not exploit its ownership of intellectual property generated by its staff, the rights will be released to the innovator(s), usually subject to a non-exclusive licence to use the intellectual property for research in the institution. In those cases where the IP Coordinator forms the view that the institution should be involved in the exploitation of the intellectual property, it will work with the innovator(s) in market evaluation and in finding commercial collaborators to exploit this the IP Coordinator will be responsible for assisting the institution in the task of commercializing appropriate intellectual property rights and in negotiating agreements in conjunction with the innovators, to ensure conformity with the role and mission of the university or research institute.

## CONCLUSION

55. We are witnessing growing inter-dependence in global trade and technology as costs and risks of developing new products and processes increase. Strategic alliances between companies such as licensing agreements, joint ventures, mergers, acquisitions and cooperative R&D agreements are proliferating, cutting across national borders and cultures. Alliances seek to learn and acquire from each other technologies, products, skills, and knowledge that are not available to other competitors. New relationships between universities, R&D organizations and enterprises are setting new standards in making it easier to do business together. The increasing role of technology in economic growth and the growing transfer of IPR for competitive performance within and across borders makes this an important issue.



### **1.3 Introduction to Plant Variety Protection Under the UPOV Convention**

**Rolf Jördens, Vice Secretary-General,  
International Union for the Protection of New Varieties  
of Plants, UPOV**





## **1.3 Introduction to Plant Variety Protection Under the UPOV Convention**

*Rolf Jördens, Vice Secretary-General,  
International Union for the Protection of New Varieties of Plants,  
UPOV*

### **Introduction:**

1. This note serves as a guide, in question and answer format, to enable participants to gain some initial familiarity with the concept of plant variety protection.

### **What is Plant Variety Protection?**

2. Plant variety protection, also called a “plant breeder’s right,” is an exclusive right, granted to the breeder of a new plant variety, to exploit his variety. It is a form of intellectual property right, examples of other such rights being patents, copyrights, trademarks, and industrial designs.
3. Plant variety protection has certain features in common with patents for industrial inventions. Both forms of protection grant to their holders a form of exclusive right so as to provide an incentive to pursue innovative activity.
4. Plant variety protection may also be compared with copyright, as plant variety protection enables the reproduction (copying) of protected plant varieties to be constrained by the owner of the protected variety.
5. Plant variety protection is an independent *sui generis* form of protection tailored for the purpose of the protection of new plant varieties, having certain features in common with other intellectual property rights but having at the same time fundamental differences.

### **Why Should New Plant Varieties be Protected?**

6. New varieties of plants with improved yield or providing resistance to plant pests, diseases, etc. are an essential factor in increasing productivity and product quality in agriculture, horticulture and forestry.
7. Breeding new varieties of plants requires a substantial investment, in terms of skill, labor, material resources and money, and may take many years (10 to 15 years in the case of many plant species). A new variety, once released,

could in many cases be readily reproduced by others so as to deprive its breeder of the opportunity to profit adequately from his investment.

8. Granting the breeder of a new variety the exclusive right to exploit his variety encourages him to invest in plant breeding and thereby contributes to the development of agriculture, horticulture and forestry.

### **What is UPOV?**

9. The International Union for the Protection of New Varieties of Plants, known as “UPOV,” is an intergovernmental organization with headquarters in Geneva. The acronym UPOV is derived from the French name of the organization, which is “Union Internationale pour la Protection des Obtentions Végétales.”
10. UPOV was established by the International Convention for the Protection of New Varieties of Plants, which was signed in Paris in 1961 and entered into force in 1968. The Convention was revised in Geneva in 1972, 1978 and 1991. The members of the Union<sup>1</sup> have undertaken to grant plant breeders’ rights in respect of new plant varieties in accordance with the principles established in the Convention and thus on an internationally harmonized basis.
11. In March 1991, a Diplomatic Conference was held in Geneva which resulted in the unanimous adoption by the members of the Union of a new 1991 Act of the UPOV Convention (“the 1991 Act”). The new 1991 Act provided that the Act should not come into force until five States had ratified or acceded to it. It came into force on April 24, 1998. The 1991 Act only binds States which have chosen to adhere to it. Existing members of the Union will only become bound by the 1991 Act when they have modified their existing laws and deposited an instrument of ratification or accession to the new Act. Intergovernmental organizations, under certain conditions, may accede to the 1991 Act.
12. As of December 5, 2002, there were 52 members of the Union. Their dates of joining UPOV and the Acts of the Convention by which they are bound are given in Table 1 in Annex I. Table 2 in Annex I lists the States or organizations which have initiated with the Council of UPOV the procedure for becoming members of the Union (17) and other States who have been in contact with the Office of the Union with a view to developing legislation in line with the UPOV Convention (39).

13. The European Community has adopted a Regulation which provides for the grant of a breeder's right pursuant to a single application which will have effect in each of the 15 States of the European Community. This Regulation also conforms with the 1991 Act. Decision 345, which creates a system of plant variety protection for the countries of the Andean Pact (Bolivia, Colombia, Ecuador, Peru, Venezuela), enables these countries to have laws which conform with the 1991 Act. Bolivia, Colombia and Ecuador have laws which conform with the 1991 Act, but have so far chosen to accede only to the 1978 Act.
14. A regional system of protection has been set up by the African Intellectual Property Organization (OAPI). Once fully operational, it will provide unitary protection (a single application leading to a single title of protection) in respect of the following 16 States being party to the revised Bangui Agreement of February 24, 1999. It entered into force on February 28, 2002.

Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon Guinea, Guinea Bissau, Mali, Mauritania, Niger, Senegal, Togo.

The administrative tasks are carried out by OAPI, whose headquarters are in Yaounde. The examination of the varieties for distinctness, uniformity and stability will be carried out by institutions designated and authorized by OAPI; it is likely that agricultural institutions which already have facilities and experience in variety testing (for instance seed certification stations) will be called upon to contribute to the working of the protection system.

15. It is a general principle of intellectual property treaties that, when a new, improved Act of a treaty comes into force, the previous Act becomes closed to further accessions. This is the case with the 1978 Act of the UPOV Convention. After April 24, 1998, it was no longer possible for a State to become a new member of the Union on the basis of a law which conforms with the 1978 Act. There was an exception for States which had already started the accession procedure provided they completed that procedure by April 24, 1999. Three such States, India, Nicaragua and Zimbabwe, were given a further extension to complete the procedure. Nicaragua has since done so by acceding to the Convention on September 6, 2001.
16. An indication of the progressive development of plant variety protection in terms of the number of titles of protection is provided by Fig. 1 in Annex II.
17. In this introduction, the basic principles of the UPOV Convention as they were expressed in the 1961 and 1978 Acts are described. These principles

had been seen to work well in practice. These same principles are in most respects retained in the 1991 Act. The 1991 revision was, in effect, the fine-tuning of the Convention to equip it for the twenty-first century. Accordingly, although the 1961 and 1978 Acts have now been outmoded by the coming into force of the 1991 Act, the 1961 and 1978 Acts are still the basis upon which many States have adhered to the UPOV Convention. Accordingly, in this paper, some of the main features of the 1978 Act are compared with the corresponding features of the 1991 Act and the reasons for the changes introduced in 1991 are explained.

### **Why change the UPOV Convention in 1991?**

18. If the Convention was working well, why was it necessary to amend it in 1991? When the Convention was created in 1961, it created certain concepts that were new to intellectual property. By 1991, some thirty years of experience had been gained in the application of these principles and members of the Union were aware of some improvements that could be made. The discovery of the structure of DNA was announced in 1953. During the period 1961 to 1991, consequential scientific discoveries and technological developments took place, which had profound implications for plant improvement and also for plant variety protection. Each of the changes made in 1991 was to deal with a problem identified through experience or arising from scientific and technical progress.

### **What are the functions of the UPOV Convention?**

19. All Acts of the UPOV Convention have five main functions. They established for members of the Union:

- the standard rules of novelty, variety denomination, distinctness, uniformity and stability for the grant of protection;
- a minimum scope of protection;
- a minimum duration of protection;
- a minimum number of plant genera and species whose varieties must be protected;
- rules for national treatment and priority which establish relations between members of the Union and provide the basis for cooperation.

#### **(a) What are the Standard Rules for the Grant of Protection under the 1961 and 1978 Acts?**

20. The 1961 and 1978 Acts established three technical and two non-technical conditions for the grant of protection and excluded the imposition of any other or additional conditions. To be protected effectively, a variety must be

identifiable. The Convention accordingly established distinctness, uniformity and stability as the three technical criteria that must be satisfied if a variety is to be identifiable. The two non-technical criteria were that the variety must be “new” in the sense that it must not have been sold or offered for sale prior to certain specified dates and it must be given an acceptable denomination. The Convention excludes the addition of any other condition for the grant of protection. These criteria worked well in practice and no major changes were made in 1991.

**(b) What is the Minimum Scope of Protection?**

21. Both the 1978 and 1991 Acts of the Convention specify acts with the propagating material, that is the seed or planting material, of a protected variety which require the prior authorization of the breeder. The acts are as follows:

1978 Act	1991 Act
Production for the purposes of commercial marketing	Production or reproduction (multiplication)
-	Conditioning for the purpose of propagation
Offering for sale	Offering for sale
Marketing	Selling or other marketing
-	Exporting
-	Importing
-	Stocking for any of the above purposes

22. It is clear that although the 1991 Act specifies the commercial acts which require the authorization of the breeder in greater detail, the difference in substance between the two Acts is limited. Exports and imports can rarely, in practice, take place separately from selling or marketing. The greater precision of the 1991 Act is designed to make it easier for the breeder to enforce his rights in practice and at an earlier stage, for example at the dockside, in the case of an import or export or in a warehouse in the case of stocking.
23. However, substantial change was made in relation to production. Under the minimum scope of protection of the 1978 Act, the breeder’s authorization was required only for “production for the purpose of commercial marketing.” If production was not for the purpose of commercial marketing, it fell outside the scope of the breeder’s right. Accordingly, if seed was produced on a farm for the purpose of resowing on the same farm and not for the purpose of selling the seed, the production fell outside the scope of the breeder’s right. This had the effect of creating the so-called “farmer’s privilege,” the

possibility for farmers to resow seed on their own farms free of any obligation to the breeder of the variety. It must be appreciated that this freedom arose in the 1978 Act only by implication, as a result of the limited minimum scope of protection of the 1978 Act. There is no express mention of the concept in the 1978 Act. Some members of the Union chose to grant a scope of protection covering all “production” without the limitation to “production for the purposes of commercial marketing,” and in this case, there was, legally speaking, no farmer’s privilege.

24. A problem with the formulation of the minimum scope of protection of the 1978 Act was that it applied not only to crops where it was the practice for farmers to save seed, e.g. the self-pollinating cereals, such as rice and wheat, but also to fruit trees, plantation crops and ornamental plants. If a fruit tree breeder sold one tree to a grower, that grower could use that tree to propagate many hectares of orchard which would produce fruit for many years but the breeder would have been rewarded by the sale of just one tree. Problems of this kind were compounded by technological developments. For example, modern tissue culture techniques makes it far easier to increase production of many plant varieties more rapidly. Accordingly, in the 1991 revision, the right of the breeder in relation to the production of propagating material is extended from “production for the purpose of commercial marketing” to all “production.” If this were all, farmers would no longer be able to freely save seed of crops where this is the common practice and this would be unacceptable for virtually all members of the Union. Accordingly, Article 15(2) of the 1991 Act contains an optional exception which permits States to exclude farm-saved seed from the scope of the breeder’s right and to adopt solutions on the question which are specifically adapted to their national agricultural circumstances. Virtually all countries which have adhered to the 1991 Act have adopted a farmer’s privilege in one form or another.
25. In 1961, when the UPOV Convention was created, there was discussion whether the right of the breeder should extend beyond the propagating material to the material which resulted from the planting of the propagating material and the harvesting of the resulting crop. It was recognized that, in some cases, it was difficult for the breeder to be properly rewarded in the absence of some such right. Members of the Union, conscious that the harvested material is frequently an element of the food supply were not willing to require States to extend the right of the breeder to the end product of the variety on a mandatory basis. They did, however, expressly provide in Article 5(4) of the 1961 Act that members of the Union should be free to grant a more extensive right to breeders in their national laws “extending in particular to the marketed product.”

26. A few countries took advantage of this freedom to extend the breeder's right to the end product in the case of some species. However, the lack of such an extension as part of the minimum scope of protection created a problem for many breeders. Material of a variety could be taken from country A, where it was protected, to country B, where it was not protected. It could be used there to produce an end product, for example cut flowers, which were exported back to country A. Since the end product did not fall within the scope of the breeder's right, the breeder could do nothing to stop this practice. The result was that not only was the breeder unrewarded, but growers in country A and other countries where the variety was protected faced unfair competition from growers who pirated the variety in country B.
27. In the 1991 revision, the members of the Union recognized the need for breeders to be able to take action in the circumstances outlined above but were still not prepared to grant an unconditional right to breeders exercisable in relation to acts concerning the harvested material. The situation concerning the harvested material under the two Acts is as follows:

1978 Act	1991 Act
Optional for States to extend protection to the harvested material in their national laws	Breeder's right extends to harvested material,  (i) IF the material is obtained through the unauthorized use of propagating material, and  (ii) IF the breeder has not had reasonable opportunity to exercise his right in relation to the propagating material

The 1991 Act accordingly provides the breeder with a right exercisable over the harvested material but only to the extent necessary to address the problems that had arisen in practice.

28. Under the 1978 Act, the breeder's right extended to the protected variety and, by implication, to any variety that could not be clearly distinguished from the protected variety. It also extended to any variety that was commercially produced by the repeated use of the protected variety (that is to say any F<sub>1</sub> hybrid variety produced by using the protected variety as a parent). Under the 1991 Act, the breeder's right is further extended to varieties that are "essentially derived" from the protected variety.



## Varieties Covered by Breeder's Right

<b>1978 Act</b>	<b>1991 Act</b>
The protected variety	The protected variety
By implication, any variety not clearly distinguishable from the protected variety	Expressly, any variety not clearly distinguishable from the protected variety
Varieties whose production requires repeated use of the protected variety	Varieties whose production requires repeated use of the protected variety
-	Essentially derived varieties

29. What is an essentially derived variety and why was the scope of protection extended to essentially derived varieties in the UPOV Convention? To explain this, one must first revisit certain of the basic principles of the 1978 Act. Both, the 1978 and 1991 Act, specify certain compulsory exceptions to the right of the breeder as follows:

<b>1978 Act</b>	<b>1991 Act</b>
The use of the protected variety as an initial source of variation for the purpose of creating other varieties and the marketing of such other varieties ("Breeder's exemption")	Acts done for the purpose of breeding other varieties and acts done for the marketing of such other varieties (unless they are essentially derived varieties) ("Breeder's exemption") Acts done for experimental purposes Acts done privately and for non-commercial purposes

30. Under the 1978 Act, a variety developed by exercising the so-called breeder's exemption and using a protected variety as an initial source of variation could be protected and freely marketed by its developer provided it was clearly distinguishable from the initial variety. This meant in practice that a relatively small change could be made or discovered, for example a mutation in an existing variety, and that the modified variety could then be protected, provided that the modified variety was clearly distinguishable from the initial variety. This situation was a problem for some breeders, particularly the breeders of ornamental plants but was tolerated by most breeders since excessive reliance on minor changes to existing varieties is not an effective competitive approach to plant breeding.

31. The advent of genetic engineering threatened to change the situation. While it takes ten to fifteen years or more to develop truly innovative new varieties of most species, genetic engineering offered the prospect of modifying varieties of most species in the laboratory in a matter of months by adding one or more genes. Provided the modified varieties were clearly distinguishable from the initial variety, they could, under the terms of the 1978 Act, be protected with no recognition of the contribution of the breeder of the initial variety to the end result. Clearly, it would not be worthwhile to spend long years and resources to develop truly new varieties if they could be effectively appropriated by others in this way. The situation was exacerbated by the apparent interaction of the patent system and the plant variety protection system where the gene in question was the object of patent protection. It would seem that in many cases if the breeder of the initial variety had added the patented gene to his own variety, the resulting modified variety would fall within the claims of the patent and the breeder of the initial variety would be unable to exploit the modified variety. On the other hand, if the genetic engineer added his patented gene to the initial variety, he could protect and exploit the modified variety with no obligation to the breeder of the initial variety. The situation was unbalanced and unfair.
32. This situation presented a challenge for policy-makers, who knew that the kind of improvements generated by classical plant breeding were frequently the result of numerous genes interacting in complex ways while the kinds of improvements achieved by genetic engineers were typically based on one or a few genes. To optimize plant improvement, it was necessary to so tailor the intellectual property system as to encourage both types of activity.
33. The outcome of the ensuing policy debate was the inclusion in the 1991 Act of the concept of the essentially derived variety. Under this concept, if a variety is essentially derived from another variety, the initial variety, it can still be protected if it is novel, distinct, uniform and stable, and has a satisfactory denomination, but for so long as the initial variety remains protected, it may not be exploited without the authorization of the owner of the initial variety. The balance between the plant variety protection system and the patent system is thus redressed and a new framework is provided within which those with interests in plant breeding are encouraged to cooperate with those with interests in the new technology of genetic engineering.

**(c) What is the Minimum Duration of Protection?**

34. No major changes were made to the standard rules for the annulment and cancellation of protection. However, the rules for the minimum duration of protection were amended as follows:

1978 Act		1991 Act	
Trees and vines	18 years		25 years
Other plants	15 years		20 years

In the judgment of the members of the Union a somewhat longer period of protection was desirable to ensure that the plant variety protection system provided an adequate incentive for the long-term investments that must be made to secure results in the risky activity of classical breeding.

**(d) What is the Minimum Number of Plant Genera and Species whose Varieties Must be Protected?**

35. When the UPOV Convention was created in 1961, experience in performing the new task of examining plant varieties to establish their distinctness from all other commonly known varieties was limited. The fathers of the Convention were cautious. Accordingly, they did not require members of the Union to provide protection for varieties of all plant genera and species but required firstly that members of the Union protect the “largest possible number of plant genera and species” and secondly that a minimum number of five plant genera and species should be protected when acceding to the Convention rising progressively to a minimum number of thirteen after eight years. This number was increased to twenty-four after eight years in the 1978 Act.
36. When the Convention was revised in 1991, no particular difficulty was seen in providing protection for varieties of all plant genera and species. It was also thought that breeders should be given more encouragement to work with new species. The Convention did not provide the necessary incentive, if a person working with a new species was uncertain if protection would be available when the work was completed.
37. Accordingly, the 1991 Act requires the grant of protection for the varieties of all plant genera and species. Existing members of the Union are given five years to achieve this position while new members of the Union are given ten years.

38. The position under the 1978 and 1991 Acts is accordingly as follows:

1978 Act	1991 Act
Must protect "the largest possible number of species"	Must protect a minimum of 15 plant genera and species on accession
Must protect a minimum of five plant genera and species on accession to the 1978 Act rising to 24 after eight years	Must protect all plant genera and species ten years after accession to the 1991 Act

**(e) Standard Rules for National Treatment and Priority**

39. Members of the Union are required to offer national treatment to the nationals and residents of other members of the Union. Under the 1978 Act, members of the Union were permitted to limit protection for any specified species to other members of the Union offering protection for the same species. This reciprocal limitation does not appear in the 1991 Act.

40. Both the 1978 and 1991 Acts make provision for a right of priority based upon an earlier application for the same variety in another member of the Union, that is to say, a subsequent application is treated as if it were filed on the date of the earlier application. This can have important implications for the application of the novelty and distinctness rules for the grant of protection.

**How does Protection of an Invention by Patent Compare with Protection of a Variety by Plant Variety Protection?**

41. Table 3 gives an outline comparison between protection of an invention by patent and protection of a variety by plant variety protection.

**Table 3: Comparison Between Protection by Patent and Protection by Plant Variety Protection**

	<b>Patent Protection</b>	<b>Breeder's right based on the 1991 Act of the UPOV Convention</b>
<b>I. Object of protection</b>	Invention	plant variety
<b>II. Requirements for protection</b>	(a) novelty (b) industrial applicability (c) unobviousness (inventive step) (d) an enabling disclosure	(a) commercial novelty (b) distinctness (c) uniformity (d) stability (e) an appropriate denomination
<b>III. Examination</b>		
1. documentary examination	Required	required
2. plant material examination	Not required	required (mainly growing tests)
<b>IV. Scope of Protection</b>		
1. determination of scope of protection	determined by the claims of the patent	fixed by the national legislation in accordance with the UPOV Convention
2. use of a protected variety for breeding further varieties	may require the authorization of the patentee	does not require the authorization of the right holder (breeder's exemption)
3. further propagation by a farmer for subsequent planting on their own farm	may require the authorization of the patentee	may be allowed with reasonable limits subject to safeguarding the legitimate interests of the breeder
<b>V. Term of Protection</b>	20 years from date of application	25 years for trees and vines, 20 years for other species, from date of grant

**In What Circumstances Should a Country Introduce a System of Plant Variety Protection?**

42. A system of plant variety protection is of interest to any country which believes that a system of incentives based upon exclusive rights for

individuals or entities engaged in plant breeding will increase the quantity or effectiveness of plant breeding relevant to its conditions. Members of the Union include countries where plant breeding is effected by state-owned entities, by private individuals or entities, or by a mixture of both.

43. Each member of the Union has decided that a system of incentives based upon the principles of the UPOV Convention will enhance plant breeding for its conditions to the national benefit. States seek, from the introduction of plant variety protection, to increase national plant breeding activity, to encourage breeders from other countries to satisfy their particular requirements, to secure conditions under which foreign breeders or seedsmen can produce seed of protected varieties for re-export, or to transform their national seed trade from a service role into the role of a research and development based industry.

#### **What is the Effect of the TRIPS Agreement?**

44. On April 15, 1994, the Uruguay Round of Trade Negotiations was concluded. Its outcome was embodied in the Agreement establishing the World Trade Organization (which replaces GATT) and in certain specific agreements contained in annexes to that Agreement. One of these Agreements is the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement). The TRIPS Agreement establishes minimum standards for intellectual property protection. Inter alia, the Agreement requires the members of the World Trade Organization (WTO) to provide protection for plant varieties by patent or by what is called an effective sui generis system of protection or by a combination of such methods. Under the TRIPS Agreement, all developing countries other than those categorized as least developed countries ("LDCs") had to provide intellectual property rights protection for plant varieties by January 1, 2000. LDCs have until January 1, 2005, to meet the same obligation.

#### **Is the Protection of Plant Breeders' Rights Harmful to the Conservation of Plant Genetic Resources?**

45. The UPOV Convention expressly provides that a protected variety may be freely used by others to breed further varieties, i.e. it remains freely available as a plant genetic resource.
46. The experience of members of the Union has shown that plant variety protection increases the number of breeders and, consequently, widens the spectrum of improved varieties available to farmers, with a potential increase in genetic variability.

47. A result of the fact that new varieties offer substantial advantages to farmers is that farmers may choose to stop growing their existing varieties or land races in favor of new varieties, whether or not such varieties are protected by plant breeders' rights. Ways must be found to make important new varieties available to farmers generally whilst encouraging the conservation of genetic diversity by appropriate means.
48. The Food and Agriculture Organization of the United Nations (FAO), at its 25th Conference in November 1989, agreed that plant breeders' rights as provided for under UPOV are not incompatible with the International Undertaking. At its 31st Conference in November 2001, it adopted the International Treaty on Genetic Resources for Food and Agriculture (hereinafter referred to as "the Treaty") in a form which is compatible with the provisions of all Acts of the UPOV Convention.

#### **How is Plant Variety Protection Administered at the National Level?**

49. Protection of new varieties is ensured in most members of the Union by an application for protection addressed to the competent national authority appointed for the purpose.
50. The beneficial features of a newly developed variety can only be realized if authentic propagating material of the variety is made available.
51. Accordingly, in practice, there is an inevitable relationship between policies relating to the encouragement of plant breeding and policies directed to securing the availability of authentic high quality seed of superior plant varieties. Many countries have chosen to permit the sale of new varieties of important crops only when the varieties have been independently tested in official trials.
52. Many of the current members of the Union have built their national institutional arrangements for plant variety protection on the organizations responsible for seed quality control and variety testing. In many cases, the technical conditions for plant variety protection, that is to say distinctness, uniformity and stability, are included in the requirements for the entry of a variety into an official variety list.
53. It may frequently be appropriate for the protection of new plant varieties to be administered as part of a national agricultural policy for seed quality control and the establishment of a national list of varieties recommended for cultivation; it should be noted, however, that the UPOV Convention requires

the granting of protection to be independent from decisions concerning the regulation of seed trading.

54. Alternatively, since plant variety protection is a form of intellectual property, a number of States have chosen to give responsibility for the administration of plant variety protection to state institutions which are responsible for one or more other forms of intellectual property. In some members of the Union, the patent office receives applications for and grants protection but delegates the technical examination of varieties for distinctness, uniformity and stability to the technical specialists of the Ministry of Agriculture.

#### **What is the Role of the UPOV Office?**

55. The UPOV Convention established a "Union"—the members—which agreed to make available to breeders of other members of the Union the same access to protection for their varieties as they made available to their own breeders. Any State and certain intergovernmental organizations with appropriate plant variety protection legislation have the opportunity through membership of UPOV to share in, and benefit from, the combined experience of the members of the Union and to contribute to the worldwide promotion of plant breeding. A constant effort of intergovernmental cooperation is necessary to harmonize the activities of the members of the Union, and this requires the support of a specialized Secretariat.

#### **What does UPOV do?**

56. The principal activities of UPOV are concerned with promoting international cooperation, mainly between the members of the Union, and with assisting countries in the introduction of plant variety protection legislation.
57. Cooperation among the members of the Union, particularly in the form of arrangements for the testing of varieties for distinctness, uniformity and stability, is well established. Through such arrangements, members of the Union are able to minimize both the cost and time of checking whether varieties qualify for protection. It is clear that such cooperation will have a beneficial effect on the level of investment in plant breeding in the members of the Union and on the introduction of valuable varieties from one members of the Union to another.
58. The fact that the Convention contains provisions on the basic conditions that must be included in the variety protection legislation of States wishing to join the Union leads, in itself, to a degree of harmony in the laws of the members and certain intergovernmental organizations of the Union. This harmony, in



addition to providing an obvious benefit to plant breeders, facilitates active cooperation between members of the Union, at both the administrative and the technical levels. The wish to operate as economically as possible has necessitated a continuous process of improvement and refinement of that cooperation, generally on the basis of recommendations and model agreements and forms developed by the Union.

59. To accomplish its tasks, UPOV has established, under the auspices of the Council, the following bodies:

(1) Consultative Committee

(2) Administrative and Legal Committee

(3) Technical Committee.

The Technical Committee further has the following Technical Working Parties:

Technical Working Party for Agricultural Crops

Technical Working Party on Automation and Computer Programs

Technical Working Party for Fruit Crops

Technical Working Party for Ornamental Plants and Forest Trees

Technical Working Party for Vegetables.

### **How do Plant Breeders Exercise Their Rights in Practice?**

60. The UPOV Convention provides that any authorization given by the breeder in relation to acts for commercial exploitation of his variety may be made subject to such conditions as he may specify. Subject to the provisions of individual laws, the breeder is thus free to decide whether he will exploit his exclusive right by producing and selling himself all the reproductive or propagating material of his variety that is needed by the market, or whether he will grant licenses to others, perhaps in exchange for a royalty. The practice in individual States varies, but generally speaking in relation to species where very large volumes of seed must be produced and sold, and where the ease of keeping their own seed influences the price which farmers will be prepared to pay, the practice of plant breeders is to select the least-cost method of production and distribution. For example, in the case of small grain cereals, in most European countries, licenses are granted very widely to organizations, such as local cooperatives and grain merchants, who provide a wide range of services and supplies to farmers. Organizations of this kind

produce seed locally under contract and sell it back to local farmers thus minimizing the cost of transportation. The breeder is content to receive a royalty on each ton of seed which is sold. In the case of more specialized seed production, such as the production of some cross-pollinating species, or of hybrid varieties or of high-quality vegetable seed, the practice of the breeder may be to control the production of seed very tightly in order to maintain the quality and reputation of his variety. In these cases, he will seek his reward directly in the price of the seed. Many different situations exist, however, depending upon the commercial structure of seed distribution in each country and the environmental and logistical aspects of the production and distribution of seed of each species.

### **How to Become a Member of the Union?**

61. Participants will wish to know how a State or an intergovernmental organization can become a member of the Union. First, the State or intergovernmental organization must have enacted and be in a position to implement a law on plant variety protection, which conforms with the provisions established in the 1991 Act of the UPOV Convention. It must then ask the Council of UPOV to advise it in respect of the conformity of its law with that Act. If the Council's advice is positive, an instrument of accession to the 1991 Act (a form of legal document) may be deposited with UPOV. This must be accompanied by the list of plant genera and species to which the provisions of the Convention will be applied and the proposed basis for financial participation. It will become a member of the Union one month later.
  
62. The period since 1961 has seen a steady growth in the number of countries which are members of the Union. These countries will all have reached a decision to adopt a plant breeders' rights law conforming with the UPOV Convention after detailed and careful consideration of their national circumstances. They will all probably have concluded that plant breeding needs to be conducted in many cases within their national borders if they wish to secure the maximum benefit from the potential offered by plant breeding and that a system of incentives to plant breeders will bring about an increase in the total amount of plant breeding relevant to their territories. Such breeding, being undertaken in programs which are independent from each other, is likely to have diverse breeding objectives and deploy diverse genetic sources.

**Table 1: Membership of the Union (as of December 5, 2002)  
UPOV Convention (1961), as revised at Geneva (1972, 1978 and 1991)**

State	Date on which State became member of the Union	Latest Act* of the Convention to which State is party and date on which State became party to that Act
Argentina.....	December	1978 Act..... December 25,
Australia.....	March 1,	1991 Act..... January 20, 2000
Austria <sup>1</sup> .....	July 14, 1994	1978 Act..... July 14, 1994
Belarus.....	January 5,	1991 Act..... January 5, 2003
Belgium.....	December 5,	1961/1972 Act ... December 5, 1976
Bolivia.....	May 21,	1978 Act..... May 21, 1999
Brazil.....	May 23,	1978 Act..... May 23, 1999
Bulgaria.....	April 24,	1991 Act..... April 24, 1998
Canada.....	March 4,	1978 Act..... March 4, 1991
Chile.....	January 5,	1978 Act..... January 5, 1996
China.....	April 23,	1978 Act..... April 23, 1999
Colombia.....	September	1978 Act..... September 13,
Croatia.....	September 1,	1991 Act..... September 1, 2001
Czech Republic.....	January 1,	1991 Act..... November 24, 2002
Denmark <sup>1</sup> .....	October 6,	1991 Act..... April 24, 1998
Ecuador.....	August 8,	1978 Act..... August 8, 1997
Estonia.....	September	1991 Act..... September 24,
Finland <sup>1</sup> .....	April 16,	1991 Act..... July 20, 2001
France <sup>1</sup> .....	October 3,	1978 Act..... March 17, 1983
Germany <sup>1</sup> .....	August 10,	1991 Act..... July 25, 1998
Hungary.....	April 16,	1991 Act..... January 1, 2003
Ireland <sup>1,2</sup> .....	November 8,	1978 Act..... November 8, 1981
Israel.....	December	1991 Act..... April 24, 1998
Italy <sup>1,2</sup> .....	July 1, 1977	1978 Act..... May 28, 1986
Japan.....	September 3,	1991 Act..... December 24,
Kenya.....	May 13,	1978 Act..... May 13, 1999
Kyrgyzstan.....	June 26,	1991 Act..... June 26, 2000
Latvia.....	August 30,	1991 Act..... August 30, 2002
Mexico.....	August 9,	1978 Act..... August 9, 1997
Netherlands <sup>1</sup> .....	August 10,	1991 Act..... April 24, 1998
New Zealand.....	November 8,	1978 Act..... November 8, 1981
Nicaragua.....	September 6,	1978 Act..... September 6, 2001
Norway.....	September	1978 Act..... September 13,
Panama.....	May 23,	1978 Act..... May 23, 1999
Paraguay.....	February 8,	1978 Act..... February 8, 1997
Poland <sup>2</sup> .....	November	1978 Act..... November 11,
Portugal <sup>1</sup> .....	October 14,	1978 Act..... October 14, 1995
Republic of Korea	December 7,	1991 Act..... January 7, 2002
Republic of Moldova..	October 28,	1991 Act..... October 28, 1998
Romania.....	March 16,	1991 Act..... March 16, 2001

Russian Federation .....	April 24,	1991 Act.....	April 24, 1998
Slovakia <sup>2</sup> .....	January 1,	1978 Act.....	January 1, 1993
Slovenia.....	July 29, 1999	1991 Act.....	July 29, 1999
South Africa <sup>2</sup> .....	November 6,	1978 Act.....	November 8, 1981
Spain <sup>1,2</sup> .....	May 18,	1961/1972 Act...	May 18, 1980
Sweden <sup>1</sup> .....	December	1991 Act.....	April 24, 1998
Switzerland.....	July 10, 1977	1978 Act.....	November 8, 1981
Trinidad and Tobago...	January 30,	1978 Act.....	January 30, 1998
Ukraine.....	November 3,	1978 Act.....	November 3, 1995
United Kingdom <sup>1</sup> .....	August 10,	1991 Act.....	January 3, 1999
United States of America	November 8,	1991 Act.....	February 22, 1999
Uruguay.....	November	1978 Act.....	November 13,

"1961/1972 Act" means the International Convention for the Protection of New Varieties of Plants of December 2, 1961, as amended by the Additional Act of November 10, 1972; "1978 Act" means the Act of October 23, 1978, of the Convention; "1991 Act" means the Act of March 19, 1991, of the Convention.

<sup>1</sup> Member of the European Community which has introduced a (supranational) Community plant variety rights system based upon the 1991 Act.

<sup>2</sup> Has already amended its law to conform to the 1991

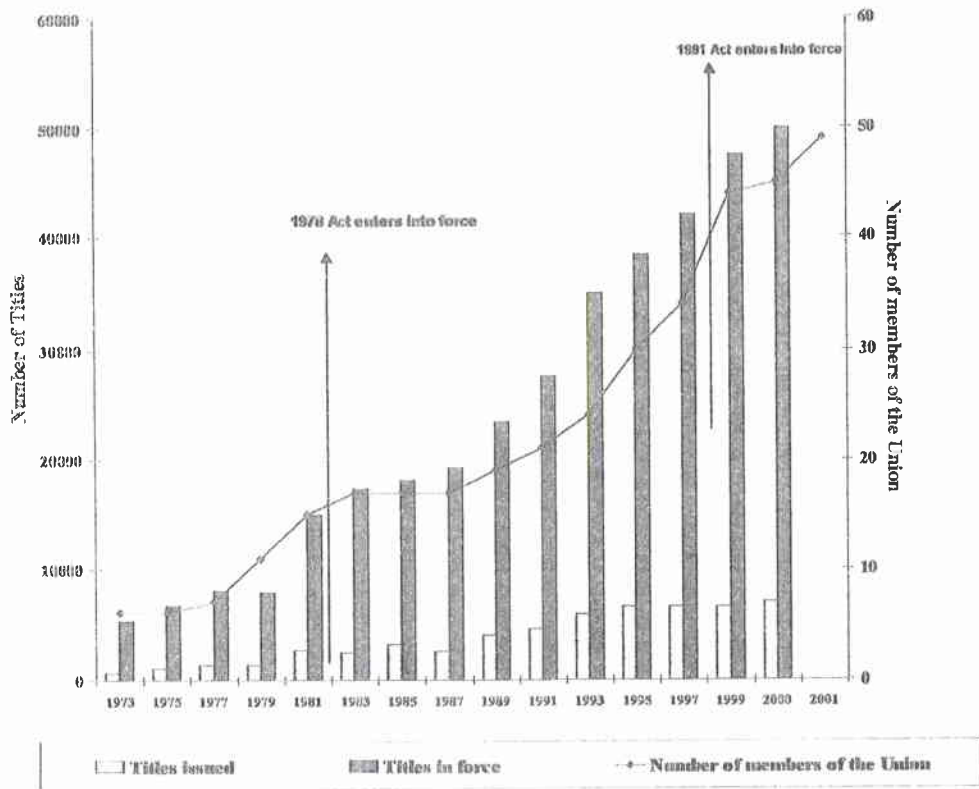
**Table 2****States or Organizations which have initiated with the Council of UPOV the procedure for becoming members of the Union (17)**

Azerbaijan, Costa Rica, Egypt, Georgia, Honduras, India, Kazakhstan, Lithuania, Morocco, Tajikistan, The former Yugoslav Republic of Macedonia, Tunisia, Venezuela, Yugoslavia and Zimbabwe, as well as the European Community and the African Intellectual Property Organization (Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, Togo (16)).

**Other States who have been in contact with the Office of the Union with a view to developing legislation in line with the UPOV Convention (39)**

Albania, Algeria, Armenia, Barbados, Burundi, Cuba, Cyprus, Djibouti, Dominica, Dominican Republic, El Salvador, Fiji, Ghana, Greece, Guatemala, Iceland, Indonesia, Jamaica, Kingdom of Bahrain, Madagascar, Malawi, Malaysia, Mauritius, Oman, Pakistan, Peru, Philippines, Saudi Arabia, Seychelles, Sri Lanka, Suriname, Thailand, Tonga, Turkey, Turkmenistan, United Republic of Tanzania, Uzbekistan, Viet Nam, Zamb.

## Development of Plant Variety Protection





## **1.4 Conservation of Plant Genetic Resources, Plant Breeding and Plant Variety Protection**

**Mr. Paul T. Senghor,  
Senior Program Officer, UPOV**





## **1.4 Conservation of Plant Genetic Resources, Plant Breeding and Plant Variety Protection**

*Mr. Paul T. Senghor,  
Senior Program Officer, UPOV*

1. The increase in agricultural productivity resulting from research carried out in recent years offered hope for greater food availability in developing countries in general and, particularly, those in Africa. Unfortunately, the present situation is quite different. In a number of African countries, food security is far from being achieved. Even though production increased in a number of areas in the region, millions of victims of natural disasters still require a considerable amount of relief food.
2. In October 2001, 66 countries in the world, listed as Low Income and Food Deficit Countries in their majority, have been involved in an operational Special Programme for Food Security of the United Nations Organization for Food and Agriculture (FAO). Amongst these countries, around two thirds are from Africa.
3. The reasons for this situation are numerous. First, population growth outstrips food production; secondly, year after year, the situation worsens as a result of the deterioration of arable land, due in part to desertification, salinity, floods, urbanization or civil wars, as well as high and persistent food losses before and after harvest.
4. Agronomic solutions to this problem consist in either improving techniques of land cultivation (soil treatment and management, irrigation, plant protection, etc.), in improving on the performance of indigenous and local existing varieties or the introduction and adaptation of suitable varieties from abroad. In fact, these solutions are very closely linked, for it is obvious that it is preferable to fertilize and irrigate improved varieties with high and stable yield potentials, rather than use indigenous local varieties which although adapted to natural local conditions, have limited potential.

5. The improvement of plant varieties for yield and pest and disease resistance, and their suitability to difficult environmental conditions (e.g. soil, climate) will be achieved through the utilization of plant genetic resources (i.e. inventory, conservation, evaluation, exchange and recombination) composed of the wild populations and cultivated varieties of a given plant species, in other words through plant breeding.
6. This paper will try to show (i) how important are plant genetic resources in the form of basic material as well as modern varieties for developing new varieties of plants (Conservation of plant genetic resources), (ii) how expensive and complex is the process of plant breeding and therefore (iii) how necessary it is to implement, at national level, a system of plant variety protection, which ensure that the successful plant breeder will have a better chance of recovering his costs and accumulating the funds necessary for further investment.

### **Conservation of Plant Genetic Resources**

7. The development of a new plant variety is a long and complex process. To develop a new variety, the breeder must use his expertise to combine (genetic combinations) the desired characteristics from different existing varieties, or other plant genetic resources, in this new variety.
8. To succeed in this process, it is essential that the breeder have access to a large range of plant genetic diversity. In fact, the larger the genetic diversity, the more opportunity exists for the breeder to find the desired characteristics for the development of a new improved variety. This requires the conservation of plant genetic resources for this purpose. Aware of the role of these plant genetic resources for the success of their plant improvement programs, breeders were the first to support the establishment of gene banks in agricultural research centers.
9. The establishment of a gene bank involves many other activities such as prospecting (i.e. inventory, collection), multiplication (regeneration of the existing collection), evaluation and documentation of the collections. Taking into account the importance of the management activities of a gene bank, in terms of time required, particularly for the initial evaluation of collected plant genetic resources, the activity of gene bank management has been assigned to specialized staff (curators). This allows breeders to concentrate on their plant breeding activities, leading to the creation of new plant varieties. The main objective of the

conservation of plant genetic resources (i.e. to prevent genetic erosion) is to make them available and to facilitate their use, by plant breeders.

10. Conscious of the important role of plant genetic resources for food and agriculture, the Twenty-second FAO Conference, held in November 1983, established the International Undertaking on Plant Genetic Resources for Food and Agriculture, which was the first comprehensive international agreement dealing with issues related to plant genetic resources for food and agriculture (Resolution 8/83) and the Commission on Plant Genetic Resources for Food and Agriculture, which monitored this Undertaking (Resolution 9/83). In October 1995, the mandate of the aforementioned Commission was broadened to cover all components of agro-biodiversity of relevance to food and agriculture (Resolution 3/95). It was then renamed the Commission on Genetic Resources for Food and Agriculture (CGRFA). The International Undertaking was adopted as an instrument to promote international harmony in matters regarding access to plant genetic resources for food and agriculture. In the spirit of the FAO Conference, the International Undertaking seeks to “ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes”.
11. The Undertaking is at the cross-roads where agriculture, environment and trade meet. The revised Undertaking, in harmony with the Convention on Biological Diversity, was a major international instrument reflecting the significance of access and benefit sharing as the basis for continued and sustainable utilization of plant genetic resources for food and agriculture. The Thirty-first Session of the FAO Conference adopted, on November 3, 2001, the finalized text of the revised International Undertaking, so called, the International Treaty on Plant Genetic Resources for Food and Agriculture. This was the outcome of several years of negotiations (from November 1994 to November 2001) to revise the International Undertaking on Plant Genetic Resources.
12. The conservation of plant genetic resources, including their documentation, is therefore, essential to ensure their accessibility, and to facilitate their use by breeders, as the most important input in plant breeding process. It is a fundamental operation for a successful plant breeding program. The FAO International Treaty is a multilateral system making available plant genetic resources for plant breeding and scientific purposes.

## **Plant Breeding**

13. Successful plant breeding is an expensive and complex activity. Breeding new varieties of plants requires a substantial investment in terms of skill, labor, material resources, money and time. It is not only the act of creating new varieties by the use of plant genetic resources, but also requires anticipation of the demands and acceptance of farmers more than ten years in advance. It is a real economical enterprise.
14. Plant breeding, and its creation of new varieties of plants with higher performance, is one of the most effective tools for sustainable agricultural development and food security.
15. Increasing yield potential and stability, adaptation to specific agro-climatic conditions (drought, extreme temperature, soils salinity and toxicity, etc.), quality improvements, including adaptation to the various demands of the stakeholders in the agricultural chain (from the farmer to the consumer), and resistance to pests and disease constitute the main breeding objectives worldwide.
16. It is important to note that, whilst new varieties of plants require good technical management, to allow the full expression of their potential, they are cost-effective in terms of inputs required (e.g. labor, fertilizers and other treatments). If the new variety is selected on the basis of variety trials, according to the selection criteria defined by users (participative selection), it should fulfill, as far as possible, their requirements. These trials show that new varieties bring an additional value to users in comparison to indigenous local varieties.
17. Successful plant breeding that responds to the needs of society requires an appropriate economic incentive. Breeders, whether public or private, will strive to develop the improved varieties that their clients require to improve their income. Provided that the consumers needs are reflected through adequate market prices for food, breeding will be directed to food crops. The effects will then be a quantitative and qualitative increase in food production to respond to the varying demands and needs of an ever-growing population. The strategy to achieve this must allow the maximum genetic progress, either in the short- or long-term, with the best use of available means (time, space, material, skill, money, etc.) This requires not only astute management of plant genetic resources, but also of all available physical and human resources.

## **Plant Variety Protection**

18. The implementation of the Global Plan of Action (GPA) for the conservation and sustainable use of plant genetic resources for food and agriculture of the FAO, adopted in Leipzig, Germany, in June 1996 could, particularly in developing countries, have as a consequence an increased availability of varieties in terms of both quantity and quality, therefore allowing sustainable agricultural development. This requires a system of plant variety protection. How could this Global Plan of Action be implemented without promoting a system for the development of strong public or private breeding programs? How would it otherwise be possible to reward those public or private institutions who are prepared to such expensive research and development?
19. The response to all these questions is a national system of plant variety protection. This system gives incentive to creativity and technological innovation, in the field of plant breeding, by recognizing the breeder's right. It is an intellectual property right, which means that the authorization of the right holder is required for specific acts concerning propagating material of the protected variety. The system of plant variety protection accorded by the International Convention for the Protection of New Varieties of Plants ("UPOV Convention") provides a balanced approach, which takes into account small farmers' traditional practices of saving seed for the subsequent growing period and allows the use of protected varieties for further breeding.
20. The effectiveness of the protection under the UPOV system is enhanced through various devices developed and operated by the Union and its member States, enabling robust internationally harmonized technical examination and exchange of technical information among member States. One of such devices is a collection of UPOV Test Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability, which has been drafted by the Technical Committee of UPOV and its four Crop Technical Working Parties and covers now almost 200 crop species. The drafting of UPOV Test Guidelines involves experts of non-member States of UPOV and other international organizations, such as the International Plant Genetic Resource Institute (IPGRI), the International Rice Research Institute (IRRI), etc., thus increasing the technical robustness of the UPOV Test Guidelines.
21. One of the advantages for new member States of UPOV is that they immediately enjoy the benefits of 40 years' experiences and international cooperation in all matters related to plant variety protection, including

technical approaches to plant variety examination and technical cooperation programs provided by UPOV and its member States.

22. Plant variety protection is a form of intellectual property right, which provides an incentive for plant breeding through national legislation. It provides legal security encouraging investment in plant breeding and the seed sector. This system of plant variety protection permits an important contribution to the improvement of food security, agricultural income and, therefore, to the wellbeing of society as a whole.

### **General Conclusion**

23. The current context urges the safeguard of plant genetic resources in order to make them available and accessible, without restriction, to breeders. The conservation of those resources is an essential operation for the success of plant breeding programs.
24. The system of plant variety protection is an astute system, which stimulates the breeder's expertise to develop plant genetic resources into new products with added value, the new protected variety, which remains accessible for further research and plant breeding. Therefore, through recognition of the right of the breeder, the system of plant variety protection gives incentive to the development of plant breeding programs, particularly in developing countries. These programs contribute significantly in resolving the inadequacy between the growth rate of food production and the rate of demographic growth.
25. Many African countries have chosen to implement plant variety protection based on the UPOV system.

## **1.5 An Overview of The Plant Breeding Program and Conservation of Plant Genetic Resources in Sudan**

**Abdalla B. El- Ahmadi, El Tahir I. Mohamed and Others  
Agricultural Research Cooperation, Republic of the Sudan**





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### **Historical:**

The earliest efforts in plant breeding were made in cotton when the British initiated their project of growing the crop in Sudan in the second decade of the 20<sup>th</sup> century. Those efforts were serious and rather continuous compared to attempts of varietal improvement in other crops in the first half of that century. Personal interests as well as world incidents (Wars) seem to be the causes behind the preliminary and intermittent efforts for improving varieties for crops like millet, sorghum and wheat. Scarcity of research staff could be one of the main reasons for the lack of work in crops other than cotton, especially all the scientists were recruited from abroad till 1957 when the first Sudanese one joined the Research Division in the Ministry of Agriculture. Gradual interest in genetic improvement and problems solving in general increased in crops other than cotton as more Sudanese scientists returned from abroad after training in the second half of the century. At present there is an active breeding program for all the major crops in ARC. However, the intensity of work varies from one crop to the other and fluctuates in time depending on available funds and personnel.

Collection of local germplasm for the different crops when available was carried out by national and foreign missions during different times in the 20<sup>th</sup> century. They included collections for cotton, sorghum, millet, maize, sesame, wheat, some leguminous crops and vegetables. Some of those collections were deposited and conserved in World Collection in USA, ICRISAT and probably in other places. Most of the genetic collections prior to 1980 were used as an active germplasm for variety improvement inside Sudan and lost by time. After 1980 a plant Genetic Resource unit (PGR) was established. Initially it was intended for vegetable crops, but later it expanded to include other crops.

### **Present Situation of Plant Breeding**

The reconstruction of ARC in 1980 when the administrative units were based on programs of crops and research stations gave plant breeding of those crops some strength among other research activities. However the main limiting factors for that strength have always been funding and trained scientists. More emphasis has been given to the main cultivated crops in the country.

## **1- Cotton:**

This is the major export crop and has always received emphasis in variety improvement.

Sudan is considered as one of the richest countries in the presence of land races and wild relatives of cotton. They had been and still represent good resources of desirable traits e.g. blackarm resistance. With the absence of international centers of research in cotton, introduction of germplasm depends on personal contacts among the scientists from different national programs.

At present the breeding program in cotton is handled by seven breeders. All fibres type from the long fine staple to the short fibre type are developed to meet the different market requirements. In addition to quality, high yield, resistance to disease and insects, and early maturity are some of the objectives of cotton breeding improved released varieties are made available to the farmers by propagation by ARC and public production schemes and the private sector never interfaces in the development and production of cotton varieties. The situation with respect to the availability of improved varieties is secure at present and the future as more promising lines are coming out in the pipe line.

## **2-Sorghum:**

This is the main staple food and sometimes an export crop. Serious variety improvement was initiated since 1952. Objectives included high yield, grain quality, resistance or tolerance to drought, striga and midge as well as hybrid synthesis for favorable environments.

Sorghum is considered as an indigenous species to Sudan where there is wide diversity of land races. At present more than 3000 accessions have been collected and conserved by the PGR Unit in ARC. Variety improvement relied to a great extent on that diversity and introduced germplasm from India, Ethiopia and USA constituted only 10% in the program. Purification of some farmer's landraces like korakola, Arfa-Gadamac and Eriana is one of the approaches for improvement. Other approaches are also conventional i.e. collection, introduction hybridization and selection. Many improved varieties including some combinable ones were released between 1975-1995. Some of those varieties found acceptance and were grown commercially in large scale. They included Dabar/1, Dwarf, White Milo and Gadam al Hamam. Other improved releases came in the

eighties and nineties of the last century. They included two hybrids, one of which was grown commercially for many years and is still being grown.

Based on the large diversity of sorghum in Sudan, the variety improvement program is of high potential and many promising lines suitable for the different environments are coming forward.

### **3-Pearl Millet:**

This is the second staple food produced in Sudan after sorghum. It is adapted to the dry areas of Western Sudan (less than 400 mm of rain) where 95% of the crop is produced. However, the crop received very little attention in research and serious variety improvement was initiated in 1974. Local collections from landraces (170 entries) as well as a large number of introductions were tested in the rainfed areas of Western Sudan (Elobeid) and the irrigated conditions of Gezira Research Station from 1977 until now. Testing of more than 6000 entries culminated in the release of one cultivar (Ugandi) in 1981 and another one (Dahabaia) in 1999. The present cultivar improvement consist of: (a) improvement of Ugandi by back crossing to the landraces with desirable traits; (b) continuation of testing of introductions and local collection; (c) purification and maintenance of desirable farmer's landraces; (d) Building a stock of millet germplasm by introduction and local collections for new accessions.

The improved released cultivars are not available to the farmers who are dependent on their own seeds from the traditional farmers landraces, because of the difficulty of maintaining and seed increase of the highly out crossing millet. Recently the Arab Sudanese seed company, a private sector, initiated and operated a project of seed activity in millet. With only two breeders in ARC working in a difficult crop like millet for diverse environments, programs improvement of millet is likely to be slow.

### **4-Wheat:**

This is a temperate region crop but has been introduced to Northern Sudan from early times. Very few local collections were made but an intensive program of introductions was initiated by 1965. With the intentions of expanding the cultivation of the crop to the central irrigated plains of the country rigorous testing was made at Gezira and New Halfa Research Stations in addition to Hudeiba in the North. Between 600 to 1000 lines are received annually from CIMMYT and ICARDA (International Centers) for the last 25 years. Introductions are also made from countries with similar environments like Egypt and India. Variability of germplasm was also increased by hybridization which was initiated by the end of the sixties. Selection and testing has been practiced on the above mentioned populations with the objectives of increasing yield, adaptation to the short season, tolerance to heat and moisture stress, resistance to stem and leaf rust as well as good quality for bread making. The

program has been successful in achieving most of its objective, and about 15 improved varieties had been released. The recently released and the commercially grown ones are maintained by ARC and propagated by ARC and other public and private production entities.

The program had been funded from foreign sources and a large number of improved lines has been developed and can be very useful for future improvement if they are maintained and conserved.

#### **5- Groundnut:**

This is one of the main food, feed and export crops in the country. Serious efforts of plant breeding started from the end mid fifties and almost continued with minimum interruption since then. Objective of the breeding program has to cater for adaptation to a wide range of environments- irrigated and rainfed areas. Specific objectives include, high yield, high oil quality, early maturity drought tolerance and resistance to *Aspergillus* high oil content, high protein and the large seeded confectionery types are also parts of the objectives.

Germplasm is mainly acquired through introduction (USA and ICRISAT) and hybridization, selection and testing are the normal procedure for improvement. An attempt to increase genetic variability is made using irradiation by Gamma rays and some lines from this effort seem to be promising with respect to earliness and drought tolerance.

In the last two decades more than six improved varieties have been released and they meet many of the objectives mentioned above. However, the recently released ones did not reach the farmer due to lack of seed industry, but they are maintained by ARC.

#### **6-Sesame:**

This is one of the important oil crops in the country and is also one of the major export products. The intensive genetic improvement was initiated since the early fifties. A large number of local germplasm and introductions were subjected for screening and testing. At first the objectives of improvement were concerned with the growth habit, number of capsules, shortening inter- node and reducing losses from shattering later interest were directed towards high yield, seed color resistance to diseases and suitability for mechanical harvesting.

Foreign funding from (UNDP, IDRC) enhanced the variety improvement program to a large extent, More genetic material was introduced from IBPGR, India, China, Korea, Japan, Venezuela, Mexico and USA. The local Land-races proved to have high potential for improvement and proved to be high yielding and adapted to the environment. However, they lack good quality especially

uniform white seed color. Many improved varieties have been released from both local and introduced germplasm. Their maintenance and preliminary seed increase is the responsibility of ARC. Due to lack of proper agencies of seed industry, the varieties get mixed when they are not renewed within a suitable time.

## **7-Lugumes:**

Research in this group was directed towards the important ones that constitute a main dish and a source of protein in the Sudanese diet. They include Faba bean, Hard bean, Lentil and chickpea. Variety improvement has been practiced in all of them but more emphasis has been directed towards Faba bean.

### **(i) Faba bean:**

Variety improvement in this crop was initiated from the early sixties. The objectives can be summarized in high yield, good quality, resistance to some diseases and insects and tolerance to suboptimal irrigation. Germplasm is sourced from hundreds of landraces and thousands of accessions from Egypt, Ethiopia, ICAARDA, Europe and Russia. The conventional approach of hybridization and selection was always used but selection among mutants by x-ray was also attempted in the early seventies. In the last twenty years eight improved varieties were released for the traditional areas of the crop in the North as well as for the new areas in the central irrigated plains. Maintenance of the early released varieties is facing problems but the recently released ones are maintained by ARC. Most of the released varieties did not find their way to the farmers because of seed multiplication problems.

### **(ii) Hard bean (*Phaseolus vulgaris*)**

Similar to Faba variety improvement was initiated since the early sixties. High yield, and resistance to disease are some of the objectives but quality is very important in this crop. The procedure followed in the variety improvement is mainly by screening from local landraces and from introduction. Seven improved varieties were released with the qualities that meet the local needs (large white) and for export including red seed colored type for African countries.

### **(iv) Chickpea:**

The improvement program on chickpea continued for more than 30 years. Germplasm is sourced mainly by introduction of advanced breeding lines. The main objectives for improvement are: high yield large seeded types

and resistance to wilt/root rot diseases. Recently 3 new improved varieties were released.

## **8-Horticultural Crops:**

Research on horticultural crops started by the mid sixties but except for onion variety improvement came later in other crops.

### **(i) Tomato:**

The main objectives of variety improvement are high yield, good quality (fruit size) and resistance to diseases like TYLCV, bacterial spot and resistance/tolerance to high temperature. The source of germplasm relied on local collections as well as on introduction. Four new and improved genotypes have been released in the last ten years. However, they did not reach the farmers for the same reason poor seed industry.

### **(ii) Onion:**

Genetic improvement in onions dates back to 1965. Evaluation included both introductions and local collections. Objectives of improvement included resistance to diseases (Pink root rot) in addition to yield and quality. The effort culminated in the release of 3 cultivars. The seeds of these cultivars are maintained and increased for limited commercial use.

### **(iii) Fruit trees:**

Work on fruit trees was started in 1967 by introducing 58 varieties and 19 root stocks of citrus from Florida, USA. Since then 13 varieties of grape fruit has been released for the different production regions. (Sinnar, New Halfa and Jebel Marra). Also releases included 12 Volencia oranges and 6 mandarin varieties. Six rootstocks were released for grape fruit, five for orange, three for mandarin, two lemon and three for lime.

The break through for improvement of banana came when selection on irradiated William banana lines introduced from IAEA resulted in the release of one variety which is suitable for export and another to be released very soon.

Genetic improvement of date palm is done by selection from local race. This has resulted in the release of nine cultivars in Darfur area and two male cultivars for New Halfa area.

## **9- Forage and Range Crops:**

Very little work has been done on the improvement of forage crops. Introduction from private foreign companies has resulted in the release of 3 hybrids sorghum suitable for forage production in Sudan.

Very little progress has been achieved in the improvement of range species during the eighties and the work was terminated since then.

## **10-Forest Trees:**

Similar to forage crops interest in the improvement of forest trees has come out very recently. Introduction of germplasm from foreign source (Australia) has resulted in the release of two varieties for use in areas prone for desertification.

### **New Techniques in Plant Breeding**

Most of the approaches followed in plant breeding in Sudan were and still conventional. However, ARC is aware of the importance of the dynamic and rapidly growing biotechnology. With the limited available funds and trained staff the efforts of ARC in the use of the new techniques are rather shy.

#### **a) Tissue Culture:**

Two labs have been established and are mainly working in

- (i) Micropropagation of clean plant materials in Banana, Potato, Sugarcane and Date palm.
- (ii) Double haploid production in wheat where over one thousand of lines of wheat were developed and ready for testing.

#### **b) Molecular Marker:**

Two labs are under development and some of the activity is already underway:

- 1- Molecular tagging of induced mutants for cotton fiber attachment and resistance to fusarium wilt.
- 2- Development of molecular markers for resistance to post – Barakat race of bacterial beight of cotton.

Other applications of the molecular marker are under development.

At present there is no advanced activity of biotechnology in ARC such as genetic transformation or any branch of genetic engineering.



## **The Plant Genetic Resources Program in the Agricultural Research Corporation**

### **Background:**

The plant genetic resources program is one of the programs within the research program system of the Agricultural Research Corporation (ARC). It is the only program in the country that deals mainly with the collection, conservation, evaluation and documentation of the local genetic resources of the different agricultural plant crops in the Sudan. It started in the early 1980s as a unit within the horticultural research section for the conservation of the local genetic resources of horticultural crops. It has been developed into a separate program since 1995 with the process of restructuring in the ARC, which has become effective since then.

### **Objectives:**

The overall objective of this program is to conserve the agro-biodiversity for the different crop plants in the Sudan from deterioration and complete loss and to enhance the utilization of such genetic resources in the genetic improvement programs. This objective is being addressed through the following specific objectives:

1. Collection and conservation of samples from the local farmers' varieties of the crops and their wild relatives, and conservation of breeder's lines.
2. Enhancement of the utilization of such genetic resources through characterization and evaluation for the main desirable characters such as productivity and resistance towards pests and diseases.
3. Proper documentation of the data and information relevant to such genetic resources to facilitate their retrieval, analysis and use.
4. Protection of the national rights on the local genetic resources through building a national system that regulates the access to such genetic resources and provide for sharing the benefits arising from their utilization.

### **Facilities:**

The Plant Genetic Resources (PGR) program is being at present operated through a PGR Unit, which is run by a number of specialized technical staff.

The unit is equipped with facilities for a seed bank in Wad Medani, which is used for the preservation of the collected seed samples from the genetic resources. The programs of work in the unit are executed by three research scientists, two of them are in the Gezira Research Station (Wad Medani) and one, who recently joined the program, is stationed in Kassala Research Station in the eastern region.

### **Conserved Germplasm:**

A total of 5815 accessions are preserved at present in the seedbank of the PGR Unit in Wad Medani. They are composed of seed samples that have been collected from different crops and obtained from different parts of the country (Table 1). They include field crops like sorghum, pearl millet and sesame, in addition to horticultural crops like okra, onion, melons, watermelon, hot pepper, some spice crops and medicinal plants. It is worth mentioning that the biggest portion of this collection is composed of sorghum germplasm which amount to about 3000 accessions.

### **Activities:**

Although facilities and financial resources are too limited to cover the different aspects of activity, still some activities are being conducted in the following fields:

1. Maintenance of the material under conservation by storage in deep freeze chests at  $-20^{\circ}\text{C}$  with periodical testing. Some research activities are being carried out by the unit in this area such as a research program being conducted to develop low cost seed preparation and storage techniques for the germplasm of crops like sorghum.
2. Characterization of the material under conservation by growing samples of them in the field and describe them using the standardized descriptor lists provided by the International Plant Genetic resources Institute (IPGRI). It is worth mentioning here that about 3000 sorghum accessions have already been characterized during the three seasons 1999, 2000 and 2001.
3. Multiplication and regeneration of the material under conservation under conditions that maintain the genetic integrity of the accessions and produce good quality seeds for conservation and utilization.
4. Evaluation of the germplasm for some desirable characters like resistance to pests and diseases. In this regard almost all the

Sudanese sorghum collection has been preliminary evaluated for resistance against the Striga in collaboration with the weed scientists in the ARC. Resistance to some viral and / or fungal diseases has been studied in some of the accessions of melons and okra. Currently a program for purification and production of pure lines is being executed within the genetic resources of crops like okra, hot pepper and watermelon. The sorghum germplasm is also being used by scientists in the PGR Unit and in other programs for evaluation for drought resistance, insect resistance and F1 hybrid production.

5. Efforts are being exerted to collect more genetic resources from different geographical regions without great success due to shortage in funding and lack of transportation facilities.
6. Data and information on the conserved germplasm are being stored and handled using a personal computer.
7. The PGR Unit and program is actively involved in initiating some national activities to develop national legislations and frameworks for the regulation of the access to the indigenous genetic resources and for biosafety against the risks and hazards of the genetically modified crop varieties.

#### **Future plan:**

The present PGR Unit is considered as a nucleus for a national plant genetic resources program under the umbrella of the ARC. It is perceived to be a centrally coordinated program with a central genebank facility to which five regional units in the different geographical regions are attached. The central genebank will be responsible for the base collection of the germplasm under conservation, while the regional units will be equipped with small genebank units for the conservation of the active collection for those accessions collected from within the region. Some specialized laboratories will be attached to the central genebank like an in-vitro culture facility and a molecular biology laboratory. A national documentation system will be established and administered from the center. Multiplication, regeneration, characterization and preliminary evaluation will be the responsibility of the regional units. Some evaluation programs could be carried out in the center. Access to the germplasm will be under the responsibility of the center. Establishment of in-situ conservation activities will be a shared responsibility between the center and the regional units.

To establish such comprehensive national program there is a need to strengthen and expand on the capacity of the present unit with qualified personnel, transportation facilities, genebank facilities, laboratory equipment and buildings.

**Table 1. Accessions conserved in the PGR Unit / ARC**

<b>Crop</b>	<b>Number of accessions</b>
<b>Sorghum</b>	3071
<b>Pearl millet</b>	682
<b>Maize</b>	10
<b>Rice</b>	3
<b>Sesame</b>	104
<b>Okra</b>	308
<b>Hot pepper</b>	365
<b>Watermelon</b>	215
<b>Melon</b>	189
<b>Pumpkin</b>	51
<b>Onion</b>	46
<b>Tomato</b>	166
<b>Rocket</b>	43
<b>Jewsmallow</b>	31
<b>Radish</b>	30
<b>Purselane</b>	20
<b>Cowpea</b>	33
<b>Faba bean</b>	24
<b>Beans</b>	23
<b>Chickpea</b>	7
<b>Hyacinth bean</b>	10
<b>Pigeon pea</b>	9
<b>Lupin</b>	8
<b>Roselle</b>	46
<b>Coriander</b>	23
<b>Fennel</b>	28
<b>Fenugreek</b>	25
<b>Other medicinal and aromatic plants</b>	172
<b>Others</b>	73
<b>Total</b>	5815

## **Protection of Plant Varieties and Breeder's Rights in Sudan:**

There is no specific law for the protection of varieties and breeder's rights in the Sudan. The Seed Law of 1990 includes a reference to the breeder's rights in Chapter 3, Section 2, which is entitled: Breeder, Cultivation and Propagation (Rights of breeders and maintenance breeders and their commitments). According to Article 14 in this chapter the variety breeders and maintenance breeders have the rights for contracting with the Seed Administration, and to comply to all commitments within such contracts. They specifically have the right to produce crop seeds according to the scientific methodologies laid by the administration. They have the right to produce any of the seed degrees: foundation seed, registered seed and / or certified seed.

In the Seed Bye-law (1995) the protection of varieties and breeder's rights has been dealt with in a detailed manner in Chapter 3 under the title: Protection of Varieties and Breeder's Rights.

In this chapter the breeder's rights have been covered in Article 7 as following:

- 1- A variety breeder has the following rights after the release and registration of the variety:
  - a- To maintain the variety by himself or by another maintenance breeder.
  - b- To propagate the different seed degrees or delegate such right to others to whom the different conditions and criteria in the law apply.
  - c- To sell the certified seeds or delegate such right to others according to the law.
- 2- The right on the variety expires after twenty years unless the registration of the variety is cancelled.
- 3- Such right is transmitted to the legal successors of the breeder after his death.
- 4- If the variety has been bred by more than one breeder, the right, in case of the death of one of those breeders,

will be shared between the legal successors and the other breeder(s) as being agreed upon between all of them. They also have the right to organize such rights and commitments the way they prefer.

- 5- As a commitment, the variety breeder has to make available breeder's and foundation seeds with the quality and quantity that agreed upon in the program submitted when registering the variety.

**Article 8 includes the following provisions that regulate the right for transmission of the breeder's right:**

- 1- The transmission of the breeder's rights should be done through a written contract between the breeder and the person to whom the right is transmitted with clear conditions.
- 2- The transmission of the rights could be complete or partial.
- 3- The person to whom the right is transmitted has also the right to transmit such right to any other person for doing part of the work when necessary, provided that the breeder agrees on that.
- 4- The breeder has the right to take any legal measures against those to whom the right has been transmitted in case of any infringements to the contract conditions.

**Compulsory transmission of the breeder's rights is allowed according to Article 9, which regulate that in the following:**

- 1- The Seed Council can decide to transmit the breeder's rights, either completely or partially in case of not complying to the conditions stated in Article 7(5) or in case of complete or partial failure to run a maintenance or propagation program which might affect the needs of the national economy.
- 2- The compulsory transmission decision should include the duration, scope and the geographical area covered by that transmission of the right.
- 3- The holders of the breeder's rights have the right to appeal to the Minister of Agriculture against the decision of compulsory transmission of the right.

Chapter 2 of the Seed Bye-law (1995), which is on the registration of crop varieties, deals in some way with the breeder's rights. In Article 3(1) of this chapter it has been stated that registration of any agricultural crop varieties means the guarantee of the legal right of the person who applies for registration in the commercial exploitation of a variety. The registration is allowable for the released varieties and for their parents. A variety could only be registered if it meets the following conditions:

- a- It has not been registered before under the same or another name.
- b- The variety has to have an economical value which is not available in the current varieties and needed for national economy.
- c- There should be a guarantee for the running and propagation of the variety as needed by the national economy.
- d- The breeder has to have permanently a stock of the breeder's seeds for the sustainability of the maintenance and propagation programs.

The followings are required for registering the hybrids produced outside the country and which proved to be suitable for production inside the country:

- a- Seeds of the hybrid (F<sub>1</sub> generation seeds) have to be produced inside the country, unless there is an exception provided by the Seed Council.
- b- All information required for inspection has to be submitted in order to ensure the high quality standards of the hybrid seeds.

Registration of a variety could be canceled by the Variety Release Committee in the either of the following cases:

- a- If there is a change in the important economical characters of the variety.
- b- The loss of the uniformity and genetic stability of the variety.
- c- The economic value of the variety becomes of no importance to the national economy.
- d- The breeder applies for cancellation of the variety registration.
- e- The breeder stops maintaining the variety.

**1.6 . Provisions of the Law on the Protection of New Plant  
Varieties of the Kingdom of Morocco**

**Mr. Amar Tahiri,  
Chief, Service of Seeds and Seedlings Control,  
Directorate of Plant Protection, Technical Controls and Fraud  
Repression,  
Ministry of Agriculture, Rural Development, Water and Forestry  
Kingdom of Morocco**





## **1.6 Provisions of the Law on the Protection of New Plant Varieties of the Kingdom of Morocco**

*Mr. Amar Tahiri,  
Chief, Service of Seeds and Seedlings Control,  
Directorate of Plant Protection, Technical Controls and Fraud Repression,  
Ministry of Agriculture, Rural Development, Water and Forestry  
Kingdom of Morocco*

### **CHAPTER I**

#### **GENERAL PROVISIONS**

##### **Article 1**

New plant varieties (varieties) shall be protected under the provisions of this Law and of the texts implementing this Law.

##### **Article 2**

**For the purposes of this Law:**

- (a) “variety” means a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder’s right are fully met, can be
- defined by the expression of the characteristics resulting from a given genotype or combination of genotypes,
  - distinguished from any other plant grouping by the expression of at least one of the said characteristics and
  - considered as a unit with regard to its suitability for being propagated unchanged.
- (b) “propagating material for the production of plants” means
- reproductive material such as seed and fruit;
  - vegetative propagating material such as plants or parts of plants, cuttings, tubers, bulbs, rhizomes.

- (c) “breeder” means
- the person who has bred, or discovered and developed, a variety;
  - the person who is the employer of the aforementioned person or who has commissioned the latter’s work, except where otherwise agreed by contract;
  - the successor in title of the first or second aforementioned person, as the case may be.
- (d) “breeder’s right” means the right of the breeder provided for in this Law.
- (e) “Competent Office” means the governmental services determined by regulation for the application of this Law and its implementing regulations.

## **CHAPTER II**

### **CONDITIONS OF PROTECTION**

#### **Article 3**

The grant of the breeder’s right shall not be subject to any conditions other than those laid down in Article 5 of this Law, provided that the variety is designated by a denomination in accordance with the provisions of Article 14 below, that the applicant complies with the formalities provided for by this Law and its implementing regulation and that he pays the fees referred to in Article 60 below

#### **Article 4**

Only those varieties shall be protected that belong to the genera and species included in the list drawn up by the Office which shall state for each genus or species those elements covered by the breeder’s right.

#### **Article 5**

A breeder’s right shall be granted if following the prior examination referred to in Article 50 below, the variety is recognized to be new, distinct, uniform and stable.

## **Article 6**

The variety shall be deemed to be new if, at the date of filing of the application for a breeder's right, propagating or harvested material or a transformed product of the variety has not been sold or otherwise disposed of to others, by or with the consent of the breeder, for the purposes of exploitation of the variety for more than one year in Morocco or for more than four years or, in the case of trees and vines, for more than six years abroad.

## **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.

In particular, any other variety shall be deemed a matter of common knowledge if there exists for that variety in any other country an application for protection, provided that such application leads to the granting of a breeder's right, or an entry in an official variety register, as of the date of the application or of the entry, as the case may be. A variety may also be deemed a matter of common knowledge by reference to various factors such as cultivation or marketing already in progress, inclusion in a reference collection, or precise description in a publication.

## **Article 8**

The variety shall be deemed to be uniform if, subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics.

## **Article 9**

The variety shall be deemed to be stable if its relevant characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle.

## **Article 10**

Any plant variety may be granted a title of protection known as a "plant variety certificate."

The right to protection for a variety shall belong to the first to file an application, unless proved otherwise.

## **Article 11**

A breeder's right may be applied for by:

- Moroccan natural and legal persons;
- Foreign natural and legal persons having their place of residence or their registered offices in Morocco;
- nationals of States whose legislation affords to Moroccan nationals protection that is at least equivalent to that provided by this Law and natural and legal persons having their place of residence or registered offices on the territory of such States.

## **Article 12**

Any breeder who has duly filed an application for the protection of a variety with a State that affords to Moroccan nationals protection at least equivalent to that provided by this Law (the "first application") shall, for the purpose of filing an application for the grant of a plant breeder's right for the same variety with the Competent Office (the "subsequent application"), enjoy a right of priority for a period of 12 months. This period shall be computed from the date of filing of the first application. The day of filing shall not be included in the letter.

## **Article 13**

In order to benefit from the right of priority referred to in Article 12 above, the breeder shall, in the subsequent application, claim the priority of the first application. The Competent Office may require the breeder to furnish within a period of three months as from the filing date of the subsequent application a copy of the documents that constitute the first application, certified to be a true copy by the authority with which that application was filed, together with samples or any other evidence that the variety which is the subject matter of both applications is the same.

The breeder shall be allowed a period of two years after the expiration of the period of priority or, where the first application is rejected or withdrawn, a period laid down by the Competent Office as from the rejection or withdrawal, in which to furnish to the Competent Office any information, document or material required by this Law for the purpose of the examination referred to in Article 50 below.

Events occurring within the period referred to in Article 12 above, such as the filing of another application or the publication or use of the variety that is the

subject matter of the first application, shall not constitute a ground for rejecting the subsequent application. Such events shall also not give rise to any third-party right.

#### **Article 14**

A variety shall be designated by a denomination which will be its generic designation. Such denomination shall not:

- (a) be liable to mislead or to cause confusion concerning the characteristics, value or identity of the variety or the identity of the breeder, or be liable to cause confusion with any other denomination that has already been filed or registered for an existing variety of the same botanical species or of a similar species;
- (b) be contrary to public policy, morality or international conventions;
- (c) consist solely of figures except where this is an established practice for designating varieties of the species concerned.

If the same variety has already been filed or registered in another State, the denomination that has been used must be adopted unless it is not suitable for reasons of a linguistic nature, of public policy or of morality, or unless the denomination does not satisfy the requirements of the first paragraph above. Where such is the case, the breeder shall be required to propose another denomination in accordance with Article 41 below

#### **Article 15**

Any person who offers for sale or markets propagating material of a protected variety on the territory of Morocco shall be required to use the denomination of that variety, even after the end of the term of protection, subject to third-party rights.

Prior rights of third parties shall not be affected. If, by reason of a prior right, the use of a variety denomination is forbidden to a person who, under the provisions of the first paragraph above, is obliged to use the denomination, the Competent Office shall require the breeder to propose another denomination for the variety.

When a variety is offered for sale or marketed, it shall be permitted to associate a trademark, trade name or other similar indication with a registered

variety denomination. If such an indication is so associated, the denomination must nevertheless be easily recognizable.

### **CHAPTER III**

#### **SCOPE OF PROTECTION**

##### **Article 16**

The breeder's right shall cover:

- (a) the protected variety,
- (b) any variety that is not clearly distinguishable in accordance with Article 7 above from the protected variety,
- (c) any variety that is essentially derived from the protected variety, where the protected variety is not itself an essentially-derived variety and
- (d) any variety whose production requires the repeated use of the protected variety.

Subject to the provisions of Articles 17 and 18 below, the following acts in respect of the propagating material of the protected variety and of the varieties referred to in the first paragraph above shall require the authorization of the breeder:

- production or reproduction (multiplication);
- conditioning for the purpose of propagation;
- offering for sale;
- selling or other marketing;
- exporting;
- importing;
- stocking for any of the purposes mentioned above.

Subject to the provisions of Articles 17 and 18 below, if the breeder has not been in a position to exercise his right with respect to the propagating material, he may exercise his right concerning the acts referred to in the second paragraph above with respect to the harvested material or the transformed produce.

For the purposes of item (c) above, a variety is "essentially derived from another variety (initial variety)" if

- (a) the variety is predominantly derived from the initial variety, or from a variety that is itself predominantly derived from the initial variety,

while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety,

- (b) the variety is clearly distinguishable from the initial variety and,
- (c) except for the differences which result from the act of derivation, the variety conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety.

### **Article 17**

The breeder's right shall not extend to:

- acts done privately and for non-commercial purposes;
- acts done for experimental purposes;
- acts done for the purpose of breeding other varieties, and also acts referred to in the second and third paragraphs of Article 16 above in respect of such other varieties on condition that:
  - \* the protected variety is not used repeatedly in order to produce the new variety;
  - \* the new variety is not essentially-derived from the protected variety where the latter variety is not itself an essentially-derived variety;
  - \* the new variety is clearly distinguishable from the protected variety;
- and to acts done by farmers for propagating purposes on their own holdings by using the product of the harvest which they have obtained by cultivating the protected variety, with the exception of fruit trees and ornamental and flower plants.

### **Article 18**

The breeder's right shall not extend to acts concerning material of the protected variety or a variety essentially derived from the protected variety which has been sold or marketed by the breeder or with his consent, unless such acts:

- (a) involve further propagation of the variety in question or
- (b) involve an export of material of the variety, which enables the propagation of the variety, into a country which does not protect



varieties of the plant genus or species to which the variety belongs, except where the exported material is for final consumption purposes.

For the purposes of the first paragraph above, “material” means in relation to a variety:

- (a) propagating material of any kind,
- (b) harvested material, including entire plants and parts of plants, and
- (c) any product made directly from the harvested material.

### **Article 19**

The term of protection shall be determined by the Office for each species. It may not be less than 20 years for agricultural crops and not less than 25 years for trees and vines.

The term of protection shall begin with the issue of the certificate.

## **CHAPTER IV**

### **TRANSFER AND LOSS OF RIGHTS**

### **Article 20**

The rights deriving from an application for a certificate or from a certificate may be transferred in whole or in part.

They may be the subject, in whole or in part, of the grant of an exclusive or non-exclusive exploitation license.

The rights afforded by an application for a certificate or a certificate may be invoked with respect to a licensee who fails to comply with the limits set out in the license in accordance with the preceding paragraph.

Subject to the case referred to in Article 61 below, transfer of the rights referred to in the first paragraph shall not affect rights acquired by third parties prior to the date of the transfer.

The acts comprising a transfer or a license as referred to in the first two paragraphs shall be set out in writing, on pain of nullity.

### **Article 21**

Any public or private law person may, on expiry of three years after the issue of a certificate or of four years after the filing date of an application, obtain a compulsory license under that certificate, subject to the conditions set out in Articles 22 to 24 below, if at the time of the request, and save for legitimate reasons, the holder of the certificate or his successor in title:

- (a) has not begun to exploit the subject matter of the certificate on the territory of Morocco nor has made effective and serious preparation to exploit it or
- (b) has not marketed the product which is the subject matter of the certificate in a quantity sufficient to satisfy the needs of the domestic market or
- (c) if exploitation or marketing of the variety in Morocco has been abandoned for more than three years

### **Article 22**

The application for a compulsory license shall be presented to the competent court. It shall be accompanied by proof that the applicant was unable to obtain a license from the holder of the certificate and that he is in a position to exploit the variety in a serious and effective manner.

A compulsory license may only be non-exclusive. It shall be granted under specific conditions, particularly as to its duration, its scope and the amount of the royalties thereunder.

Such conditions may be modified by a decision of the competent court, at the request of the holder of the certificate or of the licensee.

### **Article 23**

Any transfer of the rights under a compulsory license shall be subject, on pain of nullity, to authorization from the competent court.

### **Article 24**

If the holder of a compulsory license does not comply with the conditions on which the license was granted, the holder of the certificate and, where appropriate, the other licensees may request the competent court to withdraw that license.

### **Article 25**

A variety essential to human or animal life or which involves public health may be exploited *ex officio* by any person who can give the necessary technical and professional guarantees.

*Ex officio* exploitation shall be decided by an administrative order.

### **Article 26**

As from the day of publication of the administrative act which decides the *ex officio* exploitation of a plant variety certificate, any person who has the necessary technical and professional qualifications may request the grant of a license known as an "*ex officio* license."

Such license may only be non-exclusive. It shall be applied for and granted subject to the conditions laid down by regulation.

An *ex officio* license shall be granted under specific conditions, particularly as to its duration and its scope.

The royalties under an *ex officio* license shall be agreed by the parties or, failing agreement between them, their amount shall be laid down by the competent court.

An *ex officio* license shall take effect as of the date of notification to the parties of the act granting the license.

### **Article 27**

If the holder of an *ex officio* license fails to comply with the required conditions, forfeiture may be declared in accordance with the conditions laid down by regulation.

### **Article 28**

The State may at any time obtain *ex officio* for the needs of defense a license to exploit a plant variety that is the subject matter of an application for a

certificate or of a plant variety certificate, whether exploitation is to be carried out by the State itself or on its behalf.

The *ex officio* license shall be granted by means of an administrative order under the conditions laid down by regulation.

The administrative order shall lay down the conditions under the license. The royalties under the *ex officio* license shall be agreed by the parties or, failing agreement between them, their amount shall be laid down by the administrative court of Rabat.

The license shall take effect as of the date of the application for an *ex officio* license.

### **Article 29**

The rights deriving from an *ex officio* license may be neither assigned nor transferred.

### **Article 30**

The rights of the owner of a plant variety certificate shall be cancelled:

- (1) if it is established that the protected variety no longer fulfills the conditions set out in Articles 8 and 9,
- (2) if he is unable to furnish to the Competent Office the information, documents or plant material used for the maintenance of his variety,
- (3) if he fails to propose, in the event of cancellation of the denomination of the variety after grant of the title, another denomination,
- (4) if he does not pay the fees for services rendered, where appropriate, for maintaining his right.

Cancellation shall be ordered in accordance with the conditions established by regulation.

If cancellation is ordered on the grounds of item 4 above, the holder of the certificate may, within six months following the expiry of the prescribed period, lodge an appeal for reinstatement of his rights if he can give legitimate reasons for his failure to pay the fees for services rendered. However, such appeal shall not prejudice any rights acquired by third parties.

A breeder whose rights are liable to be cancelled under items 2 or 3 above shall be summoned to remedy the situation by means of a notice served on him by the Competent Office. If such summons has remained without effect on expiry of a period of two months as from receipt of the notice, the breeder's rights shall be cancelled.

### **Article 31**

The cancellation of a breeder's right shall be notified to the holder of the certificate. It shall be entered in the National Register of Plant Variety Certificates and published in the Plant Variety Protection Bulletin.

### **Article 32**

Seizure of a certificate shall be effected by means of an extrajudicial instrument served on the owner of the certificate, on the Competent Office and on any persons holding rights in the certificate; as a result of seizure, no subsequent changes to the rights deriving from the certificate may be invoked against the creditor effecting the seizure.

On pain of nullity of the seizure, the creditor effecting the seizure shall be required, within the prescribed period of time, to petition the competent court for validation of the seizure and for the purposes of offering the certificate for sale.

### **Article 33**

The holder of a certificate may at any time surrender in whole or in part the rights deriving from the certificate.

Surrender shall be effected by a written statement addressed to the Competent Office. It shall take effect on the day of its publication in the Plant Variety Protection Bulletin referred to in Article 59 below.

However, surrender may be withdrawn prior to publication in the Bulletin referred to in the preceding paragraph.

Where real property rights, under a pledge or license, have been entered in the National Register of Plant Variety Certificates, surrender shall only be admissible if accompanied by the consent of the holders of such rights.

### **Article 34**

At the request of any person who can prove a legitimate interest, the competent court may be requested to declare a plant variety certificate null and void:

- if it is established that the variety was not new and distinct at the time the breeder's right was granted or
- if it is established that the information and documents concerning uniformity and stability furnished by the breeder were not effectively satisfied at the time the breeder's right was granted or
- if it is established that the breeder's right was granted to a person not entitled thereto, unless it is transferred to the person entitled thereto.

## **CHAPTER V**

### **JOINT OWNERSHIP OF CERTIFICATES**

#### **Article 35**

Subject to the provisions of Article 38 below, joint ownership of an application for a certificate or of a certificate shall be governed by the following provisions:

- (a) Each joint owner may exploit the new plant variety for his own benefit, subject to equitable compensation for the other joint owners who do not personally exploit the variety or who have not granted licenses. Failing amicable agreement, such compensation shall be laid down by the competent court.
- (b) Each joint owner may take action for infringement for his own exclusive benefit. The other joint owners shall be notified of the action for infringement. Judgment shall be deferred until such notification has been proved.
- (c) Each joint owner may grant to a third party a non-exclusive license for his own benefit subject to equitable compensation for the other joint owners who do not personally exploit the new variety or who have not granted a license. Failing amicable agreement, such compensation shall be laid down by the competent court.

However, the draft licensing agreement shall be notified to the other joint owners, accompanied by an offer for transfer of the share at a specified price.

Within three months of such notification, any joint owner may oppose the granting of a license on condition that he acquires the share of the joint owner wishing to grant the license.

Failing agreement within the time limit laid down in the preceding paragraph, the price shall be set by the competent court. The parties shall have one month from notification of the court decision to forego the granting of a license or the purchase of the joint ownership share, without prejudice to any damages that may be due. Costs shall be borne by the renouncing party.

- (d) An exclusive license may only be granted with the agreement of all the joint owners or with the authorization of the court.
- (e) Each joint owner may, at any time, assign his share. The joint owners shall have the right of preemption during a period of three months as from notification of the intended assignment. Failing agreement on the price, such price shall be set by the competent court. The parties shall have a period of one month as from notification of the court's decision to forego the sale or the purchase of the joint ownership share, without prejudice to any damages which may be due; the costs shall be borne by the renouncing party.

### **Article 36**

The provisions of Articles 960 to 981 of the DOC shall not apply to joint ownership of an application for a certificate or of a certificate.

### **Article 37**

The joint owner of an application for a certificate or of a certificate may notify the other joint owners that he relinquishes his share in their favor. Once the relinquishment has been entered in the National Register of Plant Variety Certificates or, in the case of an unpublished application for a certificate, as from its notification to the Competent Office, such joint owner shall be relieved of all obligations towards the other joint owners. The latter shall divide the relinquished share between them in proportion to their rights in the joint property, except where otherwise agreed.

### **Article 38**

The provisions of Articles 35 to 37 above shall apply in the absence of any agreement to the contrary.

The joint owners may derogate therefrom at any time by means of a joint ownership agreement.

## **CHAPTER VI**

### **FILING OF APPLICATIONS FOR PLANT VARIETY CERTIFICATES**

#### **Article 39**

Applications for plant variety certificates shall be filed with the Competent Office in the form and subject to the conditions laid down by regulation.

Natural and legal persons not having a place of residence or a registered office in Morocco shall be required to appoint a representative having a place of residence or a registered office in Morocco.

Except as otherwise stipulated, the power of attorney of the representative appointed in accordance with the preceding paragraph shall extend to all acts that relate to exercise of the breeders' right and to receipt of all notifications referred to in this Law, with the exception of withdrawal of the application for a plant variety certificate or renunciation in whole or in part of the rights deriving from such certificate.

#### **Article 40**

The benefit of the filing date of the application shall be acquired if all elements required by regulation in accordance with the first paragraph of Article 39 above have been furnished on filing and if the fees for services rendered established in accordance with Article 60 of this Law have been paid.

If the filing does not contain the above-mentioned elements, the application shall be declared inadmissible and returned to the applicant. Any fee that has been paid will be refunded to the applicant.



Any material errors are to be remedied within two months following notification made to the applicant, failing which the application shall be rejected and returned to the applicant.

#### **Article 41**

A provisional reference may be given at the time of filing of the application in place of a denomination in order to designate the variety which is the subject matter of the application. In such case, the denomination shall be proposed, on pain of inadmissibility of the application, within two months of the notification addressed to the holder of the application by the Competent Office.

#### **Article 42**

A copy of the application for a plant variety certificate shall be returned to the applicant, on filing, bearing an attestation of the day and time of filing of the application and including a registration number.

#### **Article 43**

The application shall be entered in the National Register of Applications for Plant Variety Certificates referred to in Article 58 below in the order of filing and under the number that has been allocated to the applicant.

This number shall be shown on all notifications addressed to the applicant up to issue of a plant variety certificate, if appropriate.

#### **Article 44**

Up to issue of a plant variety certificate, the applicant may request correction of any material errors ascertained in the filed elements.

The request shall be submitted in writing and shall contain the wording of the modifications proposed by the applicant. It shall be entered in the National Register of Applications for Plant Variety Certificates and shall only be admissible if accompanied by evidence of payment of the required fee for services rendered.

## **CHAPTER VII**

### **PROSECUTION OF APPLICATIONS FOR PLANT VARIETY CERTIFICATES**

#### **Article 45**

Each duly filed application for a plant variety certificate shall be published in the Plant Variety Protection Bulletin referred to in Article 59 below.

The particular purpose of such publication shall be to inform all persons having an interest therein of the application for a plant variety certificate.

As from the day of publication referred to in the preceding paragraphs, all persons may inspect the application as entered in the National Register of Applications for Plant Variety Certificates.

#### **Article 46**

Within a period of three months as from the date of publication referred to in the preceding Article, any person having an interest therein may submit observations in writing to the Competent Office.

Such observations shall be reasoned and may only concern the fact that the variety applied for is not eligible for protection in accordance with the provisions of Articles 5 and 14 of this Law.

#### **Article 47**

Any opposition concerning the breeder's claim to the variety for which a plant variety certificate is sought shall be submitted directly to the competent courts.

It shall be entered in the National Register of Applications for Plant Variety Certificates.

#### **Article 48**

Where the variety denomination proposed by the breeder or his successor in title was not included in the initial application or where the breeder proposes, at the request of the Office, a new denomination, such denomination shall be published in the Bulletin referred to in Article 59 below.

#### **Article 49**

Any observations submitted shall be notified by the Competent Office to the holder of the application.

The holder shall have a period of one month as from the day on which he confirms receipt of the notification to submit his arguments or his defense.

## **Article 50**

Once the application has been duly registered, the Competent Office shall prosecute the application for a plant variety certificate and, where appropriate, examine the observations relating thereto.

During prosecution, a prior examination of the variety shall be effected to ascertain whether the variety is new, distinct, uniform and stable in accordance with Article 5 of this Law.

The Competent Office shall determine the list of domestic or foreign technical bodies authorized to carry out the prior examination of the varieties for which a plant variety certificate is sought.

## **Article 51**

Prosecution shall be suspended at the written request of any person who furnishes proof that he or she has instituted before a competent court proceedings to claim ownership of the application for the plant variety certificate. However, the tests ordered by the Office may be carried out.

Prosecution shall be resumed once the court decision on the proceedings referred to in the first paragraph above becomes final. It may also be resumed at any time with the written consent of the person who has instituted the proceedings claiming ownership. Such consent shall be irrevocable. During that period, the holder of the application may not withdraw the application without the written consent of the person who has instituted the proceedings to claim ownership. Further, such person shall be required to participate in the prosecution of the application in the same way as the holder of the application.

## **Article 52**

When the various measures of the prosecution have been completed, a summary report of the results of the prosecution shall be notified to the holder of the application. The applicant shall have two months to submit his observations. He may, during that period, inspect the complete examination file at the relevant service of the Competent Office.

Any person who has submitted observations in accordance with the provisions of this Law shall be informed of the conclusions of the report which concern his intervention. At his request, the Competent Office may authorize him to inspect the file concerning that intervention. He may submit further observations within the same period of time as referred to above.

## CHAPTER VIII

### ISSUE OF PLANT VARIETY CERTIFICATES

#### **Article 53**

On expiry of the time limit referred to in the preceding Article 52, the Competent Office shall take a decision on the application. It may decide either the issue of a plant variety certificate or the rejection of the application or an additional examination in accordance with the conditions and time limits that it shall determine.

Its decision shall be reasoned. It shall be notified to the applicant and, where appropriate, to persons having made observations.

#### **Article 54**

The plant variety certificate shall be issued by the Competent Office in accordance with the conditions set out by regulation. It shall be drawn up in the name of the holder of the application for a plant variety certificate. If the holder of the application is not the breeder, the name of the latter shall be included in the plant variety certificate.

The plant variety certificate shall take effect as of the date of the application.

#### **Article 55**

The certificate shall be entered in the National Register of Plant Variety Certificates.

#### **Article 56**

The issue of a plant variety certificate shall be published in the Plant Variety Protection Bulletin within a period of three months as from the date of notification of issue made to the holder of the plant variety certificate.

#### **Article 57**

As from the date of publication referred to in Article 56 above, any person may inspect the plant variety certificate as entered in the National Register of Plant Variety Certificates.

The Competent Office shall keep the elements of the certificate application files relating to titles of protection, in the original or as a reproduction, until a period of five years has lapsed after the end of protection.

The National Registers of Applications for Plant Variety Certificates and of Plant Variety Certificates shall be kept indefinitely.

## **CHAPTER IX**

### **MISCELLANEOUS**

#### **Article 58**

The Competent Office shall keep a National Register of Applications for Plant Variety Certificates and a National Register of Plant Variety Certificates.

Applications for plant variety certificates shall be entered in chronological order in the National Register of Applications for Plant Variety Certificates.

Additional particulars or information relating to each application for a certificate, of which the list shall be laid down by regulation, shall also be entered in that Register.

Plant variety certificates shall be entered in the National Register of Plant Variety Certificates in their order of issue.

The list of additional particulars or acts to be entered in that Register shall be laid down by regulation.

The courts shall address to the Competent Office a full and gratuitous copy, for entry of the additional notices subsequent to a court decision, of those decisions that concern the existence, scope and exercise of rights deriving from the protection afforded by this Law.

#### **Article 59**

The Office shall publish a "Plant Variety Protection Bulletin."

The frequency and content of the Bulletin shall be laid down by regulation. Acts concerning grant of a certificate, transfer of ownership, grant of a right of exploitation or a pledge, in relation to a plant variety certificate, cancellation of a certificate, surrender in whole or in part of the rights under a certificate may only be invoked against other persons if they have been duly published in the Plant Variety Protection Bulletin.

### **Article 60**

An order issued in accordance with the provisions of the first paragraph of Article 17 of the Basic Finance Law promulgated by Dahir No. 1-72-260 of 9 Sha'ban 1392 (September 18, 1972) shall lay down the fees for services rendered by the State in application of this Law and its implementing texts.

## **CHAPTER X**

### **LEGAL PROCEEDINGS**

#### **Article 61**

If a plant variety certificate has been sought either for a plant variety appropriated from the person who has bred or discovered and developed the variety, or his successors in title, or in violation of a statutory or contractual obligation, the injured person may claim ownership of the application for the certificate or of the plant variety certificate.

Proceedings shall be statute-barred three years after the publication of the issue of the certificate.

However, in the event of bad faith at the time of grant or of acquisition of the certificate, the time limit shall be of three years after the expiry of such certificate.

As from the day on which a person has furnished proof of having instituted proceedings, the owner of the application for a certificate or of a certificate may not withdraw such application or renounce such certificate in whole or in part except with the written consent of the person who has instituted proceedings.

#### **Article 62**

Any violation of the rights of the owner of a plant variety certificate as set out in Article 16 of this Law shall constitute an infringement implying the civil liability of the person committing the violation.

The holder of a compulsory or *ex officio* license as referred to in Articles 21, 26 or 28 of this Law and, unless otherwise agreed, the holder of an exclusive right of exploitation may institute the liability proceedings referred to in the first paragraph above if, after notification, the owner of the certificate has not instituted such proceedings.

The holder of a certificate shall be entitled to take part in proceedings instituted by a licensee under the preceding paragraph.

Any holder of a license shall be entitled to take part in proceedings instituted by the holder of the certificate in order to obtain damages for any prejudice he has personally suffered.

### **Article 63**

Acts committed prior to publication of the issue of the certificate shall not be held to violate the rights deriving from a certificate. However, acts committed after a true copy of the application for a certificate has been notified to a person presumed liable may be ascertained and prosecuted.

### **Article 64**

The holder of an application for a plant variety certificate or of a certificate shall be entitled, with a court authorization, to proceed with a detailed description, with or without seizure, of any plants or parts of plants or of any elements of reproduction or vegetative propagation alleged to have been obtained in violation of his rights. This right shall also be available to the assignee of an exclusive right of exploitation or the holder of an *ex officio* license, subject to the conditions set out in the second paragraph of Article 62 above.

Where the claimant fails to petition the court within a period of 15 days as from the day on which the seizure or the description takes place, the description or seizure shall be automatically null and void, without prejudice to any damages which may be claimed.

### **Article 65**

Detailed description, with or without seizure of the plants, part of plants or elements of reproduction or vegetative propagation of the variety that is alleged to be counterfeited, under Article 64 above, shall be ordered by the presiding judge of the court within whose jurisdiction the operations are to be carried out.

The order shall be given on a simple request and on presentation of either the plant variety certificate or, in the case referred to in Article 63 of this Law, of an authentic copy of the application for a plant variety certificate.

If the request is presented by the assignee of an exclusive right of exploitation or by the holder of a compulsory or an *ex officio* license as referred to in Articles 21, 26 or 28 of this Law, the petitioner shall be required to prove failure to act on the part of the holder of the plant variety certificate after having been notified and invited to institute proceedings.

#### **Article 66**

If seizure is ordered, the court may require the petitioner to furnish a guarantee to be deposited before the seizure is effected. On pain of nullity and of damages awarded against the official of the registry or the bailiff, the latter shall be required, prior to carrying out the seizure, to give to the holders of plants, parts of plants or elements of reproduction or vegetative propagation of the variety concerned a copy of the order and, where appropriate, of the act recording the deposit of a guarantee. Those same holders shall be given a copy of the seizure report.

#### **Article 67**

At the request of the injured party, and where such measure proves necessary to enforce the prohibition on continued infringement, the court may order confiscation to the benefit of the injured party of any plants or parts of plants or elements of reproduction or vegetative propagation obtained in violation of the rights of the owner of the plant variety certificate and, where appropriate, of the instruments specifically intended for use in the reproductive cycle.

The value of the confiscated articles shall be taken into account when calculating the indemnity to be awarded to the beneficiary of the sentence.

#### **Article 68**

The civil and criminal proceedings under this Chapter shall be statute-barred after three years counted from the acts concerned.

The institution of civil proceedings shall suspend the limitation of criminal proceedings.

#### **Article 69**

Where a variety that is the subject matter of an application for a certificate or a plant variety certificate is exploited for the needs of defense by the State or its contractors, subcontractors and subsidiary suppliers, without a license having been granted to them, the court hearing the case may not order either cessation or interruption of exploitation nor confiscation as provided for in Article 67 above.



If an expert opinion or a description, with or without seizure, is ordered by the presiding judge of the court hearing the case, no expert opinion or description or seizure shall be carried out and no investigation in the enterprise shall be undertaken if the contract for research or reproduction or propagation comprises a defense security classification.

The same shall apply where research, reproduction or propagation are carried out in a military establishment.

The presiding judge of the court hearing the case may, if so requested by the entitled person, order an expert opinion which may be carried out only by persons approved by the governmental authority responsible for defense and in the presence of its representatives.

Such exploitation shall automatically incur the liability under this Article for the persons concerned.

#### **Article 70**

The presiding judge of a court hearing infringement proceedings, acting in summary jurisdiction, may provisionally prohibit, subject to a daily fine, the continued performance of the acts alleged to be infringing or may subject continuation of the acts to the provision of guarantees intended to cover the indemnification of the holder of the plant variety certificate or the holder of an exclusive right of exploitation.

A request for prohibition or constitution of guarantees shall be admitted only if the substantive proceedings appear warranted and are instituted within a short period calculated as of the day on which the holder of the certificate or the holder of an exclusive right of exploitation obtained knowledge of the facts on which the proceedings are based. The court may subject prohibition to the provision by the plaintiff of guarantees intended to cover possible indemnity for the prejudice suffered by the defendant if the infringement proceedings subsequently prove unwarranted.

#### **Article 71**

The production and business secrets of the parties concerned shall be safeguarded.

The other party shall not be given knowledge of any evidence liable to disclose such secrets except where compatible with their safeguard.

## **Article 72**

Civil disputes arising between the parties from the application of this Law shall be heard by the first instance courts located at the seat of the appeal court district.

The competent first instance courts and the districts in which such jurisdictions exercise the tasks allocated to them shall be laid down by regulation.

## **Article 73**

Notwithstanding, where appropriate, the penalties laid down by special laws, particularly that concerning the repression of fraud, any person who knowingly violates the rights of the holder of a plant variety certificate, as defined in Article 16 of this Law, shall be liable to a fine of between 3,000 and 30,000 Moroccan dirhams.

The court may also order destruction of the product and/or propagating material in dispute.

In the event of a repeated offense, imprisonment of between two months and one year may also be ordered. An offense shall be deemed to be repeated within the meaning of this Article if the offender has been finally convicted of the same offense within the preceding five years.

## **Article 74**

Public proceedings to apply the penalties laid down in Article 73 above may only be instituted by the public prosecutor on a complaint by the injured party.

The court hearing the case may not take a decision until the civil court has confirmed the existence of the offense in a final decision. Nullity of the plant variety certificate or matters of the ownership of such certificate may only be pleaded by the defendant before the civil court.

## **Article 75**

Any person who improperly claims to be the holder of a certificate or of an application for a plant variety certificate shall be liable to a fine of between 3,000 and 30,000 Moroccan dirhams.

In the event of a repeated offense, the fine may be doubled. An offense shall be deemed to be repeated within the meaning of this Article if the offender has been finally convicted of the same offense within the preceding five years.

## CHAPTER XI

### TRANSITIONAL PROVISIONS

#### Article 76

By derogation from the provisions of Article 6 above, an application for protection may also be submitted, during a transitional period of one year as from the entry into force of this Law, in respect of varieties that have been offered for sale, marketed or distributed in Morocco or abroad prior to the entry into force of this Law. If protection is granted, its duration shall be reduced by the number of full years that have elapsed between the time at which the variety was offered for sale, marketed or distributed for the first time and the time at which the application was submitted.

The same rule shall apply *mutatis mutandis* to varieties of species newly entered in the list of species to be protected after entry into force of this Law.

## 2- Program

Tuesday, December 17, 2002

9.30 - 10.00: Opening Ceremony

Welcome addresses by:

- the Representative of the Republic of the Sudan
- the Representative of the International Union for the Protection of New Varieties of Plants (UPOV), Geneva
- the Representative of the Arab Organization for Agricultural Development (AOAD), Khartoum

10.00 - 10.30: Coffee Break

10.30 - 11.30: Introduction to Intellectual Property and Its Economic Importance:

- ◆ Definitions and General Aspects of Intellectual Property

**Speaker: Mr. Aziz Farag, Consultant, Cooperation for Development Bureau for Africa, WIPO, Geneva**

- ◆ The Economic Importance of Intellectual Property

**Speaker: Mr. Aziz Farag**

11.30 - 12.30: Introduction to Plant Variety Protection under the UPOV Convention

**Speaker: Mr. Rolf Jördens, Vice Secretary-General, UPOV, Geneva**

12.30 - 12.45: Coffee Break

12.45 - 13.45: Conservation of Plant Genetic Resources, Plant Breeding and Plant Variety Protection

**Speaker: Mr. Paul Senghor, Senior Program Officer, UPOV, Geneva**

13.45 - 14.30: General Discussion

**Wednesday, December 18, 2002**

**9.30 - 10.30:** Overview of the National Breeding Program Including  
Plant Genetic Resources Conservation

**Speaker:** Mr. Salih Hussein, Director General,  
Agricultural Research Corporation,  
The Republic of the Sudan

**10.30 - 11.30:** Provisions of the Law on the Protection of New Plant Varieties  
of the Kingdom of Morocco

**Speaker:** Mr. Amar Tahiri, Chief, Service of Seeds and  
Seedlings Control, Directorate of Plant Protection,  
Technical Controls and Fraud Repression,  
Ministry of Agriculture, Rural Development,  
Rabat, The Kingdom of Morocco

**11.30 - 12.00:** Coffee Break

**12.00 - 13.00:** Roundtable Discussion

**13.00 - 13.30:** Closing Ceremony

### **3- Opening Ceremony Speeches**

#### **3.1 Speech of Dr. Rolf Jördens, Vice Secretary-General, UPOV**

OPENING address by Dr. Rolf Jördens, Vice Secretary-General, UPOV, Geneva

Your Excellency Minister of Agriculture and Forestry, Dr Magzoub El Khaliffa Ahmed,

Your Excellency Mr. Director General of the Arab Organization for Agricultural Development (AOAD), Salem Al Lozi  
Ladies and Gentlemen,

It is a pleasure for me to welcome you all in this beautiful center of the AOAD. I would like to thank you for participating in this National Seminar on Intellectual Property in the Field of Agriculture, jointly organized by the International Union for the Protection of New Varieties of Plants (UPOV), the World Intellectual Property Organization (WIPO) and the Arab Organization for Agricultural Development (AOAD), in cooperation with the Government of the Republic of Sudan.

It is a particular honor to convey to you the greetings of the Director General of WIPO, Dr. Kamil Idris, who is also the Secretary-General of UPOV.

This national seminar is the first meeting in which UPOV is involved in your country. UPOV is an intergovernmental organization based in Geneva. Its task is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society.

New varieties of plants are one of the most powerful tools to enhance agricultural productivity, to improve food security, to raise income in agricultural sector and to contribute to overall development.

UPOV is available to assist governments who express the wish to draft and implement a national legislation on plant variety protection. This is the first seminar organized jointly by AOAD, WIPO and UPOV, and in cooperation with countries of the Arab League, on intellectual property in the field of agriculture. I hope and wish that this positive

cooperation with the Arab World will be maintained and strengthened in the forthcoming years.

On behalf of the Director General of WIPO and Secretary General of UPOV, Dr. Kamil Idris, I should like to thank the Government of the Republic of the Sudan for the excellent conditions set to host this seminar. I wish us all a successful seminar. I am sure it will provide us with the opportunity to have a fruitful exchange on intellectual property in agriculture, in general, and on plant variety protection under UPOV Convention, in particular.

### 3.2 Speech of Dr. Salem AL Lozi , Director General, AOAD

بسم الله الرحمن الرحيم

كلمة معالي الدكتور سالم اللوزي  
المدير العام  
للمنظمة العربية للتنمية الزراعية

معالي السيد الدكتور مجنوب الخليفة ، وزير الزراعة والغابات ، راعي أعمال حلقة العمل الدراسية.  
اصحاب المعالي الوزراء  
اصحاب السعادة السفراء وممثلي المنظمات العالمية  
السيد ممثل المنظمة العالمية للملكية الفكرية  
السادة الضيوف الافاضل

السلام عليكم ورحمة الله تعالى وبركاته ، وكل عام وأنتم بخير ،

يسعدني في هذا الصباح أن أرحب بكم في رحاب المنظمة العربية للتنمية الزراعية، بيت العرب ، في افتتاح حلقة العمل الدراسية حول حقوق الملكية الفكرية للأصناف النباتية الجديدة بجمهورية السودان ، والتي تعقد تحت رعاية معالي الدكتور مجنوب الخليفة وزير الزراعة والغابات بالتعاون مع المنظمة العالمية للملكية الفكرية (WIPO) ، والاتحاد الدولي لحفظ الاصناف النباتية الجديدة (UPOV). ويأتي انعقاد هذه الحلقة في اطار علاقات التعاون المتطورة بين المنظمة العربية للتنمية الزراعية والمنظمة العالمية للملكية الفكرية والتي توجت بتوقيع اتفاقية تعاون بين المنظمين ، وكان من ثمارها عقد هذه الحلقة الدراسية القطرية في السودان ، اضافة الى الاتفاق على عقد حلقة عمل قومية حول الملكية الفكرية في القطاع الزراعي خلال الربع الأول من العام القادم بمشيئة الله تعالى ، كما نأمل أن يتم عقد الحلقة الدراسية القطرية الثانية بالسودان في العام المقبل حول حفظ حقوق الملكية الفكرية في قطاع الثروة الحيوانية.

أيها السيدات والسادة..

يأتي إهتمام منظمنا بالسودان الشقيق ، الذي يحتضن مقر المنظمة العربية للتنمية الزراعية ، نظراً للميزة النسبية الزراعية التي يتمتع بها السودان والذي يزخر بموارد زراعية متنوعة من حيث المناخ والأراضي والموارد البشرية ، وأيضاً للإهتمام المتزايد الذي توليه حكومة السودان للقطاع الزراعي وتنميته وتطويره ، لا سيما وأن هذا القطاع الاقتصادي الهام يشهد كل يوم المزيد من الانجازات ، تحت قيادة معالي الدكتور مجنوب الخليفة وزير الزراعة



والغابات ولقد لمسنا نفس هذا الاهتمام بالسودان وبقية الدول العربية في المنظمة العالمية للملكية الفكرية ممثلة في مديرها العام الأخ الدكتور كامل ادريس ، فله منا نيابة عن أصحاب المعالي وزراء الزراعة العرب كل الشكر والتقدير .

أيها السيدات والسادة ..

إن الهدف الرئيسي من عقد هذه الحلقة يتمثل في تسليط الضوء على أهمية حقوق الملكية الفكرية في القطاع الزراعي وفي سائر القطاعات الاقتصادية ، ولخلق المزيد من التنسيق بين الجهات العاملة في هذا المجال في السودان الشقيق ،

وستتناول هذه الحلقة الموضوعات المتعلقة بالأهمية الاقتصادية للملكية الفكرية لحماية الأصناف النباتية الجديدة في إطار مهام الاتحاد الدولي لحماية الأصناف النباتية الجديدة ، حفظ الأصول الوراثية النباتية ، تربية النبات وحماية الأصناف النباتية ، كما ستتناول هذه الحلقة عرضاً للبرنامج القومي لتربية النبات في السودان متضمناً حفظ الأصول الوراثية النباتية للأصناف المستتبطة ، إضافة إلى استعراض للقانون المغربي لحماية الأصناف النباتية الجديدة،

وختاماً ، نتمنى من الله التوفيق والسداد والنجاح لمداولات هذه الحلقة وأن تكون هذه الحلقة حافزاً ومشجعاً لبذل المزيد من الجهود العلمية لمربي وعلماء النبات وخبراء حفظ الأصول الوراثية ، كما أرجو صادقاً أن تسهم هذه الحلقة في تعزيز وتفعيل التنسيق المطلوب بين سائر الجهات العاملة في مجال الملكية الفكرية بالسودان ممثلة في وزارات الزراعة والغابات ، والعدل ، والتجارة ، والمستشارية الاقتصادية لمتابعة الانضمام لمنظمة التجارة العالمية ، وكليات الزراعة بجامعة السودان المختلفة ، وقضاة محاكم الملكية الفكرية وغيرهم من الجهات ذات العلاقة ، ولا يفوتني في هذا المقام أن أتوجه لهم جميعاً بالشكر على تليبتهم دعوتنا للمشاركة في فعاليات هذه الحلقة والاستفادة من مداولاتها.

كما أرجو أن أتوجه بجزيل الشكر والتقدير لكل الذين ساهموا معنا في عقد هذه الحلقة ، وأخص بالشكر وزارة الزراعة والغابات والمنظمة العالمية للملكية الفكرية والاتحاد الدولي لحفظ الأصناف النباتية الجديدة والسادة الباحثين والعلماء الأجلاء ، والشكر موصول للأخ الدكتور مجنوب الخليفة وزير الزراعة والغابات لرعايته

الكريمة لأعمال هذه الحلقة ، كما أخص بالشكر حكومة وشعب السودان الكريم المضيف لاستضافته للمنظمة ورعايته لأنشطتها وبرامجها وتقديم كل التسهيلات والخدمات اللازمة لتسهيل مهامها والقيام بمسئولياتها على أحسن وجه .

كما لا يفوتني أن أتوجه بالشكر والتقدير لضيوفنا الكرام الذين شرفونا بحضور هذا الحفل ، مع خالص امنياتي لكم بالتوفيق والنجاح وما التوفيق الا من عند الله تعالى .

والسلام عليكم ورحمة الله تعالى وبركاته ،،

### 3.3 Speech of Dr. Magzoub el Khalifa Ahmed, Minister of Agriculture and Forestry, Republic of the Sudan

بسم الله الرحمن الرحيم

كلمة معالي الدكتور مجذوب الخليفة أحمد  
وزير الزراعة والغابات - جمهورية السودان

الأخ الكريم البروفيسير مبارك مجذوب وزير التعليم العالي والبحث العلمي  
الدكتور فيصل حسن ابراهيم وزير الزراعة بولاية الخرطوم ،  
الأخ الكريم الدكتور سالم اللوزي مدير عام المنظمة العربية للتنمية الزراعية  
الأخ الفاضل السيد رولف جوردنز رئيس الاتحاد الدولي لحماية الأصناف النباتية الجديدة  
الأخ ممثل المنظمة العالمية للملكية الفكرية - الوايبو  
أخوتي السفراء  
أخوتي العلماء

السلام عليكم ورحمة الله تعالى وبركاته ،

أولاً يسعدني أن تتعقد هذه الورشة العلمية في السودان والتي بادرت بها المنظمة العربية مع الاتحاد الدولي لحماية الأصناف النباتية الجديدة (UPOV) ومنظمة حماية الملكية الفكرية (WIPO) حول أهم الموضوعات للأصناف النباتية المتجددة ، وهذا الموضوع يأتي من أهمية الكبرى في هذا الوقت التي تسود فيه التنمية العلمية في العالم من أجل زيادة الإنتاجية وحماية لحقوق المنتجين والعلماء ، وكذلك إنتاج الأصناف الجيدة والأكثر صحة في عالم اليوم. ونحن في السودان آلينا وشرعنا في الاهتمام بهذا البعد من خلال مراكزنا البحثية العريقة وعلماعنا الكرام في إيجاد العديد من الأصناف الزراعية التي تتناسب مع بلادنا ، ولحسن الطالع بأن ذلك في وقت تراجع فيه القوانين في السودان وإحداث مستشارية الحوار حول الانضمام لمنظمة التجارة العالمية، ومع وزارة العدل نناقش ونراجع قوانيننا الآن لتتواءم مع القوانين العالمية في هذه المجالات ولتحفظ لنا أصولنا النباتية وحقوق علمائنا الأجلاء ، وهذا الاتحاد (UPOV) الذي انضمت إليها قرابة الخمسين دولة معظمها من دول العالم المتقدم وهو يأتي الآن في هذا الحوار الحر والعلمي واحسبه سيقدم فيه كثيراً من الأسئلة من إخواننا هنا وهناك ليستبين لنا في السودان أهمية هذا الاتحاد والمنظمة الفكرية ورؤانا المستقبلية للانضمام إليها ، ولتنسيق قوانيننا وتحضيرها بما ينسجم مع الرؤية العالمية ، هذه الحلقة تأتي في وقت هام وثنمين ذا قيمة خاصة في العالم ، والمعلوم انه في العام الماضي 2000 في نوفمبر في روما شرف السودان برئاسة الجمعية العمومية في منظمة الأغذية والزراعة العالمية ، حيث تمت إجازة الاتفاقية الدولية حول الأصول النباتية والحيوانية بعد حوار دام أكثر من سبعة سنوات وخلافات علمية عميقة وتضارب مصالح عديدة بين الدول النامية والدول الأكثر تقدماً . انحازت معظم الدول الأكثر تقدماً مع الدول النامية في هذا الاجتماع لشراكة علمية عادلة تحفظ حقوق المزارعين التقليديين وحقوق الدول في أمنها الغذائي وحقوقها في إنتاجها الطبيعي ، ثم تدعم التطور العلمي وحقوق الملكية للدول والأفراد والعلماء دون أن يكون ذلك حاجز علمي وقيداً على الإنتاجية المحلية وتداولها المحلي مع حفظ الترتيبات التي تعنى بالأشجار ولتلك الأصناف المستتبطة الجديدة ، وكذلك دون أن يكون ذلك حاجزاً لمزيد من

الفوارق بين إنتاج الدول المتقدمة وتسجيلها الذي تعتمد عليه أكثر والدول الأقل نمواً ، وهذا يتطلب منا العمل في جامعاتنا ومراكزنا البحثية ووزاراتنا للتخصيص للمشاركة العلمية للاندماج في الأسرة الدولية اقتصادياً وعلمياً وتشريعياً ، نستفيد من هذه الورشة أي ما فائدة .

ولابد من عدد من الأسئلة لأنني لا أريد أن أكون مرحباً فحسب لكن هنالك عدد من الأسئلة الهامة . الدول المتقدمة المكونة من الولايات المتحدة الأمريكية وبريطانيا وروسيا والصين وفرنسا وغيرها وقليل من الدول النامية هي المشاركة الآن في المسائل الدولية ، والسؤال هو ما هي المساعدة المرجوة في تحقيق القاعدة العلمية ودعم العلماء في أبحاثهم الاستباقية لأصناف جديدة يعملون بها ، وما هي الترتيبات لحماية التشريعات المحلية في بلاد الفقر فيه الغالب والإنتاجية هي المدخل للخروج من الظروف الاقتصادية المتعددة ، والاستفادة من الإمكانيات الطبيعية من مياه وأراضي وثروات حيوانية ومناخات متعددة موجودة في هذه البلاد ، علماً أن معظم الأصول النباتية الجديدة التي سجلت في (WIPO) والدول أصولها الطبيعية كانت في بلدان متعددة من الدول النامية والأمثلة والشواهد كثيرة في هذا الجانب ، لابد ، حقيقة ، من وقفة تدعم هذا التطور والانسجام في الأسرة الدولية وحماية المربين في الزراعة التقليدية وحقوق المزارعين والأمن الغذائي العالمي السليم والوطني في كل الأقطار ، بمعالجة جديدة ليس فقط الدخول في اتفاقيات والتوقيع عليها من حيث هو ثم التأمل في الخروج وإنما بروية مرنة كما في المنظمات الدولية الاقتصادية الآن التي تعطي ميزة خاصة للدول النامية ولفترات طويلة من الزمن تعينها على الالتحاق وحفظ حقوقها وعلى دفع قاعدتها العلمية وعلى دفع العلماء الذين يشاركون بقدر كبير ومستوى عالي على المستوى المحلي والإقليمي والعالمي ، نحن إذ نشجع وبقوة هذه الورشة العلمية ، والأخ البروفيسور رولف رئيس الاتحاد والأخ الكريم مندوب منظمة الملكية الفكرية على حضورهم ومشاركتهم في السودان والإخوة العلماء الأجلاء ورعاية الأخ الكريم الدكتور سالم اللوزي ، وتحية للدكتور كامل إدريس ، نأمل أن تخرج بتوصيات ونقاط جديدة واستراتيجية غير تقليدية تجمع بين التوافق والنقد البناء للخروج بأنسب صورة تمكنا حقيقة من الاستفادة من هذه الاتحادات لصالح المنطقة العربية كلها ولصالح الأسرة الدولية والإنسانية.

وأتمنى لكم التوفيق.

والسلام عليكم ورحمة الله تعالى وبركاته .

4- List of Participants

Dear	First Name	Last Name	Title	Organisation
1 Prof.	Minghani Osman	Ibnaoaf	Advisor	Ministry of Science and Technology
2 Dr.	Abd Elliah Badawi	Mohamed	Director, Rainfed Crops Research, Centre for Arid and Semi-arid areas	University of Gezira, Faculty of Agricultural Sciences
3	Fatima Hajnour Elahir	Hajnour	Legal Advisor	Ministry of Science and Technology
4	Eman Youssef	Akasha	Legal Advisor	Ministry of Economy and Finance- Strategic Stock Authority- Legal Dept.
5 Prof.	Haasan Selim	El-Hassan	Expert	AOAD
6	Henedi	Awadelliah		Haggar Industrial Group (private sector)
7	Eman Mohamed Sharif	Mohamed	Graduate	Sudan University for Science and Technology, Faculty of Agriculture- Plant Protection
8 Prof.	Haasan Abrahman	Mustad	Coordinator of Studies and Research	Sudan University for Science and Technology- College of Forestry and Range Sciences
9 Dr.	Mohamed El-Hassan	Ahmed	National Coordinator/ Sesame President	Agricultural Research Cooperation
10 Prof.	Ali Elkhider	Kambal	Professor Plant Breeding	University of Khartoum- Faculty of Agriculture
11	Mohamed Ahmed	Mehmoud	Chairman Seeds Council	Ministry of Agriculture and Forestry
12	Fabwa Salih	Elisayeb	Legal Consultant	FABA Law Firm for IP Services
13	Mahjoub Mohamed	Salih	Legal Advisor	Ministry of Agriculture and Forestry
14 Mr.	Muzamil Abdella	Muzamil	Registrar General of Intellectual Property	Ministry of Justice
15 Dr.	Mohamed Ahmed Mohamed	Khair	Director of the Gezira Research Station and National coordinator of pasture & forage- ARC	Ministry of Science and Technology
16 Dr.	Mohamed Ahmed Isa	Setti	Dean, Faculty of Agriculture	Omdurman Islamic University
17 Dr.	Adil Omer	Salih	Research Scientist (plant breeder)' Head of Horticultural Research Section	Agricultural Research Cooperation
18 Dr.	Mohamed Ahmed Ali	Dingle	Agricultural expert, WTO coordination and policy unit and advisor to the Ministry of Agric.	Ministry of Agriculture and Forestry
19 Mrs.	Farida Abdalla	Raihan	Senior Legal Advisor- Head of Patent Division	Ministry of Justice
20 Dr.	Ali Khalifehiah	Mohamed	Research Professor of Horticulture	Agricultural Research Cooperation

4- List of Participants Continued

	Dear	FirstName	Last Name	Title	Organisation
21		Widad AbdelRahman	Abdalla	Director of WTO Unit	Ministry of Agriculture and Forestry
22	Dr.	Ibrahim NourEldin	Eizein	Sorghum Breeder & National Coord. of Sorghum Research Program	Agricultural Research Cooperation
23	Dr.	Ahmed S.	El Wakeel	Coordinator, NBSAP	Higher Council for Environmental & National Resources
24	Dr.	Ibrahim Mohamed Doka	Mohamed	Sugarcane Breeder	Ministry of Industry
25		Mohamed Ali Mohamed	Eizaki	Agronomist	Ministry of Industry
26	Dr.	Abu Bakr A.R	Kamil	Lecturer- College of Forestry and Range Sciences	Sudan University for Science and technology
27		Siham Osman	Mohamed	Legal Counsel	Ministry of Justice
28		Nadia Abubakr	Khalid	Legal Advisor	Ministry of Justice
29		Nadia Abdarrahman Ibrahim	Eiagra	Legal Advisor	Ministry of Justice
30		Karamallah Nasser	All	Legal Advisor	Ministry of Justice
31	Hon.	Nahid Alif	Ismail	Judge	Judiciary- Court of Intellectual Property
32	Hon.	Magda Ahmed Ibrahim	El Neweiri	Judge	Judiciary
33		Kamal Mahjoub	Ali	Director of Plant Quarantine	Ministry of Agriculture and Forestry
34	Prof.	Gafaar M.	Elhassan	Professor of Horticulture-Faculty of Agriculture	University of Khartoum- Faculty of Agriculture
35	Prof.	Salih Hussein	Salih	Director General ARC	Agricultural Research Cooperation
36	Mr.	Abu Bakr Abdiraheem	Mekki	Advocate, Secretary General Sudanese Intellectual Property Association	General Sudanese Intellectual Property Association
37	Dr.	Eltahir Ibrahim	Mohamed	Head, Plant Genetic Resources Unit	Agricultural Research Coorpo
38	Prof.	Mamoon I.	Dawelbeit	Director General- Technology Transfer and Extension Administration	Ministry of Agriculture and Forestry
39	Prof.	Abdalla B.	Elahmedi	DDG - ARC	Agricultural Research Coorpo
40	Dr.	Eihag Hassan	Abu el Gasim	Breeder and National Coordinator of Millet Program	Agricultural Research Coorpo
41		Mohamed Abdel Farag	Khamees	Director, Seed Administration	Ministry of Agriculture and Forestry
42	Prof.	Ibrahim Eljack	Mursal	Cotton Breeder	Agricultural Research Coorpo
43		Sana Ali A	Agarib	Head, Plant Quarantine Office- Plant Protection Dept.	Khartoum Airport

