PLANT BREEDERS' RIGHTS AND INTERNATIONAL AGRICULTURAL RESEARCH CENTRES

A DISCUSSION PAPER

by: M. Heuver
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THE CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

TECHNICAL ADVISORY COMMITTEE

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TAC SECRETARIAT
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONAL

November 1981

Dr. Ralph W. Cummings
Chairman
Technical Advisory Committee to the CGIAR
812 Rosemont Avenue
Raleigh, North Carolina 27607
USA

Dear Dr. Cummings

I am pleased to submit herewith a discussion paper on Plant Breeders' Rights and International Agricultural Research Centres of the CGIAR as requested by the Technical Advisory Committee.

This study was conducted by Ir. M. Heuver (Director of the Research Station for Arable Farming and Field Production of Vegetables; chairman of the Board for Plant Breeders' Rights in the Netherlands), Dr. J.J. Hardon (Directorate of Agricultural Reserach) and Mr. K.A. Fikkert (legal department, Ministry of Agriculture and Fisheries). Important inputs were made by Ir. H. Vos and Ir. R. Duyvendak (both of the Government Institute for Research on Varieties of Cultivated Plants). Helpful suggestions were also made by various officials of FAO, Centre Directors, Members of the CIMMYT-Staff, officials of the Plant Variety Protection Office in Washington and others.

The three main consultants participated in this activity in a personal capacity. Hence the views expressed are their own. They found the subject both interesting and very complex. Many different points of views were encountered while discussing P.B.R. with various people, ranging from concerned members of the public, government officials to representatives of private industry. An attempt was made to give a fair coverage of various issues.

The objective of this paper is not to give answers, but to provide information and raise issues for a workshop to be organized by the TAC.

Hopefully it provides a useful analysis of the current situation.

Respectfully submitted

(Jaap J. Hardon)

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CHAPTER I - INTRODUCTION

1.1. This report is addressed to the Technical Advisory Committee (TAC) of the Consultative Group on International Agricultural Research (CGIAR). It has been prepared by some people in the Netherlands involved in variety testing and plant variety protection in consultation with appropriate sources of expertise and parties concerned, in particular during a joint meeting of TAC and Centre Directors (Ibadan, June 1981) (See report of the 26th TAC meeting AGD/TAC:IAR/81/129 paras 258-267. TAC Secretariat FAO Rome, August 1981) and additional discussions with Cimmyt, Mexico, the Plant Variety Protection Office, Washington, and the Plant Production and Protection Division and The Legal Office of the FAO.

It is a discussion paper presenting the findings of the above mentioned consultancy group on Plant Breeders' Rights and the implications for the plant breeding activities and breeders' stock release of the International Centres.

It is not a review of P.B.R.-legislation or a study on the legal provisions and procedural steps involved in plant variety protection in various countries.

1.2. The terms of reference were as follows :
With the general guidance of TAC and its Secretariat, and in consultation with appropriate sources of expertise and parties concerned :

a) - to review the draft list of issues prepared by TAC as regards P.B.R. and their implications for genetic resources, IARC's and developing countries, and to indentify those issues which deserve special attention by TAC, the CGIAR and the IARC's;

b) - to examine relevant aspects bearing on these issues, as related to both UPOV and USA type schemes, their advantages and disadvantages;

c) - to assess the probable long-term effects of the introduction of P.B.R.-legislation by developing countries on the role, activities, policies and need for IARC's;

d) - to prepare a discussion paper presenting the findings of the consultant's analysis on the above three points and outlining policy guidelines for the CGIAR system in relation to P.B.R., with alternatives as required, for review by a working group representative of the main parties concerned.

Annexe 1 provides a draft list of issues on P.B.R. submitted by TAC for consideration to the consultants.

1.3. No attempt is made to directly participate in the current debate in how far P.B.R. effects the rate of genetic erosions and contributes to a concentration of plant breeding in multinational corporations (See amongst others the book "Seeds of the Earth: a private or public resource" by P. Mooney 1979). The authors recognize that these aspects are part of a complex but do not recognize a simple cause and effect relationship.

The aim is on providing objective information on P.B.R. in order to stimulate constructive discussion, with emphasis on the effects P.B.R. may have on the IARC's and on plant breeding in developing countries.

1.4. The issues related to P.B.R. and genetic erosion and the effect of P.B.R. on genetic resources have already been addressed by an IBPGR-consultant (See report by Prof. E. Åberg: The Relationship between Plant breeding, Germplasm collection and Plant Breeders' Rights. AGP:IBPGR:81/16, IBPGR Secretariat, Rome, January 1981). In the report it is stated that:

1.5. "The dangers of genetic erosion need to be taken seriously. Certainly "advanced plant breeding is substantially directed towards special goals. "Therefore breeding lines of little interest to development towards such "goals may be neglected. But this is no more serious after Plant Breeders' "Rights were introduced than before when commercial interests also played "an important role in the establishment of plant breeding goals. The serious-"ness of genetic erosion is therefore really not a question of great "interest to the discussion on Plant Breeders' Rights. It is rather a "question of concern for breeders and genebank specialists regarding the "possibilities of finding ways of avoiding erosion. Breeding lines in

"danger of being lost because they are of no immediate interest to the "breeders should - on the basis of the breeders' judgement - be turned "over to a genebank. It must be the genebank's obligation to register, "evaluate, describe them and keep them alive."

Outline of the report

1.6. After the introduction in chapter I, various aspects of P.B.R. are reviewed in chapter II. Special attention is given to the recognizability of varieties (Distinctness criteria), variety tests and the legal framework. P.B.R. and its administration in both Western Europe and the USA are dealt with in some detail. The UPOV-convention is discussed with special emphasis on those aspects that effect use and distribution of varieties.

In chapter III are discussed the various implications P.B.R. may have on IARC's.

In chapter IV issues raised by TAC are discussed, more or less in summary based on chapters II and III.

The report ends with a summary and conclusion.

CHAPTER II - PLANT BREEDING, SEED PRODUCTION AND DISTRIBUTION AND POSSIBLE LEGISLATION

Plant varieties and their recognition

2.1. Plant breeding and its products - improved plant varieties - are essential components of modern agriculture and agricultural developments. Plant breeding makes use of available genetic variability to "create" varieties which are superior to the original material in certain identified characteristics (yield, disease resistance, quality, specific adaptation, etc.).

2.2. Modern varieties are generally genetically more uniform than traditional varieties. Hence whereas in traditional planting material considerable genetic variation may be stored within populations or land races, in modern varieties this depends largely on variation between varieties. Hence in modern agriculture loss of genetic variability can be compensated for by growing a greater number of varieties. Such varieties should of course be of diverse genetic origin. In many situations this is however largely an academic possibility since in practice often one or only a few varieties are adopted by farmers in a region. Furthermore the genetic background of different varieties is often narrow. Hence it is realistic to assume that many replacements of traditional varieties by modern varieties carry the danger of loss of genetic variation. The dangers of genetic loss are magnified when replacement takes place in centres of diversity of the crop. This situation is rare in developed countries, but much more common in the Third World where most centres of diversity of agricultural crop species are located.

Hence before any introduction on a large scale of (new) varieties is considered, adequate measures should be taken to preserve the original genetic variation in some form. The assumption is that plant breeding is an inevitable part of agriculture development and measures against the introduction of modern varieties are not a realistic alternative.

2.3. Before new varieties are introduced, extensive tests should be carried out to establish the relative merits of new varieties in comparison with the previous material. Once suitable varieties are identified, seed has to be produced for distribution to farmers. Usually farmers have a choice out of a range of varieties.

In countries with a diverse topography, latitude and or climate, extension services usually conduct regional variety trials to allow farmers to make a choice of varieties, best suited to their conditions. The freedom of choice increases when the varieties offered are more diverse and the farmers become more selective.

To allow variety control and seed inspection, measures are generally considered necessary to quarantee type and quality to some objective criteria. The ability to identify varieties is essential in applying these measures.

Where plant breeding, seed production and seed distribution are carried out by government organizations there still needs to be a separate mechanism for testing and assurance and enforcements of quality control standards. However as soon as private enterprise participates in any part of the process, especially in the marketing of varieties, legislation on recognizability of varieties and on the standards the seed must meet, becomes essential to allow adequate controls for consumer protection. In the book "Successful Seed Programs: A Planning and Management Guide" (ed. John E. Douglas) several alternative organizational models are discussed and summarized on page 91 as follows :

2.4. "1. - Private seed enterprises that have their own research programs and
" total control of all seed multiplication and marketing functions.

"2. - Private seed enterprises that receive partial assistance from govern-
" ment - such as publicly bred varieties, seed stocks for further
" multiplication, special credit concessions and subsidies - without
" government interference in pricing.

"3. - Private seed enterprises and seed production activities that get
" maximum government assistance such as equipment and building leases

" and lease-purchase arrangements, special uses of government staffs,
" marketing help, and measures to stimulate "seed multipliers".

"4. - Joint seed enterprises which involve both private and public capital.

"5. - Government seed enterprises and seed activities that have only govern-
" ment participation in all or parts of the seed production and marketing
" programs."

The technical and legislative nature of the control mechanisms are largely determined by the way the seed industry is organized.

Seed legislation

2.5. If a government decides to involve the private sector in seed production and distribution, it is appropriate to lay down legal standards regarding the quality of the seed, including the inspection of the seed production and the seed itself.
In "Seed Legislation" (legislation study no. 16 of the Food and Agriculture Organization of the United Nations) several examples of seed legislation are given.

Legislation or regulations concerning the acceptance of varieties should be enacted in order to determine the characteristics of the varieties. Whether bred by public or private breeders, that knowledge is also of great importance to extension services and for seed control.

2.6. Legislation on seed control and the admittance of (recommended) varieties function independently from a Plant Breeders' Rights-scheme. Seed control mechanisms are essentially established for consumer protection. Lists of recommended varieties are useful for agricultural extension. The farmer, when given a choice between different varieties, requires reliable information on what are the most suitable varieties for his conditions. When he buys seed of a particular variety, he wants to be confident that he gets the variety he asked for, that the seed is of good physical purity and satisfies certain standards of germination capacity. This, in the developed countries, has led to systems of variety testing leading

up to national or regional lists of (recommended) varieties and seed certification.

2.7. The European Economic Community system is given as an example. Within the European Economic Community member-states are required to establish national lists of varieties of agricultural crops whereby acceptance depends both on satisfying the standards of distinction, uniformity and stability (the so-called DUS standards), as well as on meeting tests on agricultural value and use (including yield, resistance to pests and diseases, quality etc.).
For horticultural crops value tests are not a condition for inclusion on the national variety list.
Furthermore, the genetic (and morphological) composure of the varieties must be maintained. In other words, an accepted variety must be kept within its original description, which was made in connection with the acceptance.

2.8. As long as a variety is on the nationallist of an EEC country, propagating material of that variety as such can be produced, certified and marketed. Since for all crops some kind of certification is mandatory and since for most crops only certification of propagating material which is true to variety is permitted, acceptance of the variety is a prerequisite for seed production and distribution in an EEC member-state.

After a certain period a variety, which has been accepted at the national level, is automatically included in the EEC variety list. The effect of the inclusion is that seed of that variety can be traded freely in all EEC countries.

2.9. Although the national and EEC variety lists are called sometimes "restricted lists", the EEC list includes more than 1.100 cereal varieties and during the past 4 years over 50 varieties were added yearly.
For potatoes there are over 300 varieties on the common list. However, it cannot be denied that the system, reflecting the requirements of agriculture in Western Europe, gives no or little opportunity for the inclusion of traditional varieties and land races, as these generally do not satisfy DUS standards.

2.10. Whereas seed legislation provides the legal framework for the acceptance of varieties and the trade of their seeds, actual control is generally enforced through Seed Certification Schemes.

2.11. Major aspects of Seed Certification Schemes are :

a) - Regulations controling the labeling and movement of the seed of established varieties or populations.

b) - Standard systems to check on variety identity and purity by field inspection and laboratory tests.

c) - A legally identified person or institution responsible for maintaining the variety in its described form.

2.12. Generally plant breeders or plant breeding departments/divisions are responsible for maintaining a basic stock of seed of their varieties satisfying DUS standards (Breeders' seed). Breeders' seed is multiplied to pre-basic seed and generally handed over to other organizations responsible for further multiplication. Pre-basic seed is multiplied to basic seed from which seeds will be produced that is distributed to farmers. The latter, under the OECD rules (perhaps characteristically the most elaborate), are generally referred to as "certified seeds". Depending on the multiplication rate of the species, each step may consist of one or more generations.

2.13. Critical steps in the process are multiplication from pre-basic seed (responsibility of the plant breeder) to basic seed (responsibility of the distributor) and of course the production of material offered for sale to farmers. Tests can be done in the field (habitus, varietal characteristics, standard of production, weeds etc.), on trial fields (comparing a sample with a standard sample of the original breeders' seed) and in the laboratory (purity, germination, etc.). Usually various tests are carried out with growing emphasis on tests in trial fields against a standard sample.

It is clear that through a Seed Certification Scheme government can largely regulate seed distribution to farmers and provide consumer protection. Seed legislation (i.e. legislation concerning the acceptance of varieties and

the trade of seed) is not dependent on Plant Breeders' Rights legislation. In fact it would seem advisable to consider the introduction of the latter only after the former is running smoothly.

Plant Breeders' Rights

2.14. In most of the less developed countries plant breeding is carried out by government research organizations while in many developed countries with a market eonomy private industry has become involved as well. Furthermore, plant breeding is carried out by the international agricultural research centres (IARC's), supported by the Consultative Group for International Agricultural Research (CGIAR). The work of the IARC's collectively represents the largest multinational plant breeding effort in the public sector.

2.15. Most countries having private sector involvement in plant breeding, seed production and its distribution have legislation regarding the acceptance of varieties and the trade of seed. A number of those countries has on top of that a special legislation providing some form of legal ownership to the originator of new plant varieties: Plant Breeders' Rights scheme (P.B.R.).

2.16. Plant breeding and breeding research is very costly. The main objective of introducing a PBR scheme is in general to enable originators of new genetic creations to have exclusive rights to their multiplication and sale and thus to stimulate long-term investments in that field. In some countries public plant breeding institutes also take advantage of the P.B.R. scheme in order balance their budgets (e.g. INRA in France and PBI in the United Kingdom). Varietal protection is seen as a necessary condition to insure rewards to private or public plant breeders for their efforts.

2.17. Plant Breeders' Rights are granted according to provisions of national legislation. The sovereignity of the nations and their governments means that the legislation is designed to the economical and social convenience of each country. It is a political and economic decision for which national governments solely are responsible. Since a P.B.R. scheme is a matter of national legislation, a right granted under such a scheme is only valid in

the country in which the title was issued.

Although a PBR scheme can differ from country to country, there are certain patterns which the legal systems of those countries have in common. Those patterns can be found in the UPOV-convention. Nevertheless it is possible for a country to introduce a scheme which is not compatible to the UPOV-convention, like for instance a scheme without a novelty requirement in order to be able to apply the scheme to already existing and known varieties.

The UPOV-convention

2.18. In 1961 some West-European states concluded a convention on Plant Breeders' Rights. The countries bound by the convention form the International Union for the Protection of New Plant Varieties (UPOV). In the convention are set out the minimum conditions which the national PBR schemes must meet. The aim of PBR is to stimulate investments in plant breeding and thereby to develop varieties which are superior to the original material in some identified characters, i.e. varieties with higher yield, higher quality, greater resistance to pests and diseases or, in other words, better adapted to man's needs. The ultimate aim is to improve agricultural production. The incentive is found in the granting of an exclusive right to the originator of a new plant variety.

2.19. A Plant Breeders' Right can only cover a variety as such. In other words the right is granted with respect to a certain combination of characteristics. Difference in one or more important characteristics leeds to a different variety and then to a new object for another Plant Breeders' Right.

Unlike to what it is recognized in the industrial patent legislation, no particular characteristic (gene) or procedure for obtaining the final product can be protected by a Plant Breeders' Right.

2.20. Trademark is a right which, in connection with a variety, can only protect its denomination not the variety as such. In a UPOV-country it is not allowed to have trade-mark-protection on the denomination of a variety which is or has been protected by a Plant Breeders' Right. On the other hand, a breeder

might try to prevent competitors from exploiting his variety through Trademark in non-UPOV countries.

2.21. According to the UPOV-convention a title of protection must be granted to the breeder of a variety, who has asked for varietal protection, when :

a) - the variety is clearly distinguishable from other common known varieties;
b) - the variety is sufficiently homogeneous;
c) - the variety is stable;
d) - the variety has not already been marketed;
e) - the variety has been given a proper denomination.

2.22. The rule mentioned under (a) is meant to avoid that titles will be issued with respect to varieties which hardly differ from each other. If distinctness is already necessary in identifying varieties for extension service and seed certification purposes, this is all the more true in the case of granting exclusive rights in relation to varieties.

Where protection was granted for a variety which later on appears not to be distinct from a variety on which existence was common knowledge on the day of application for the right, the right must be annulled.

2.23. The condition that a variety must be homogeneous (b) means that a variety of which only "breeders' material" (e.g. F2 material in a self-pollinated species) exists, cannot be protected. Also the requirement that the variety must be stable (c), has that consequence. These conditions are also essential in defining the limits of the exclusive rights.

2.24. The requirements relating to Distinctness, Uniformity and Stability (DUS) are worked out for each crop separately. A major factor in this is the mode of reproduction: cross-pollinating, self-pollinating or vegetative multiplication. It is sometimes suggested that stringent requirements for especially uniformity are biologically illogical for cross-pollinating species while at the same time may delay the release of new varieties.

A point in this case is the registration of multilines which requires description and acceptance of the component lines individually.

2.25. On the day of application for the right, the variety must not have been marketed in the state of application or longer than 4 years in another state (d). A right granted for a variety which does not meet that condition must be annulled.

2.26. The variety must be designated by a denomination (d) which must be free for anyone to use in relation to that variety. In principle the denomination should be the same in all UPOV-states and should always be used when propagating material of the variety is commercialized.

2.27. The holder of a Plant Breeders' Right has the exclusive right

- to produce for purpose of commercial marketing
- to offer for sale
- to market

the seed or other propagating material, as such, of the variety concerned properly identified by name. His exclusive position gives the holder of the right the possibility to gain some revenues in return for his achievement and capital investments.

2.28. The right cannot cover the utilisation of the protected variety as an initial source of variation for the purpose of creating other varieties or the commercialization of varieties created in this way unless repeated use of the variety is necessary for the commercial production of another variety (e.g. the use of a protected parental line to produce a hybrid).

Also the production of propagating material for the use on own premises does not generally fall under the scope of the right.

2.29. Finally it should be observed that the production and the marketing of seed (and other propagating material) for purposes other than to grow a crop (e.g. seed of wheat for milling purposes, seed of barley for brewing purposes)

are not acts which are reserved to the holder of the right.

For reasons of public interest the free exercise of the right can be restricted, e.g. by compulsory licences.

The duration of right shall be according to the UPOV-convention at least 15 years. In fact that period is often longer: 20 to 25 years.

2.30. Subject to some restrictions member-states of UPOV must treat resident and nationals of other member-states like their own nationals or residents. In some UPOV-member-states breeders from non-Member-States can obtain P.R.B. as well.

The plant breeder who wants to protect his variety in more than one country has to obtain protection in all those countries separately. There is no multinational or supra-national title of protection.

The system of P.B.R. is a voluntary one. It is up to the breeder of a new variety to decide whether or not he shall apply for protection. The application implies the disbursement of a certain amount of money by the applicant.

Only the breeder (including the discoverer) of the variety or his successor in title can obtain protection. P.B.R. schemes contain provisions to assure that no other person unjustly obtains or keeps the right.

Before the right is granted either the applicant or the granting authority (this depends on national legislation) has to prove that he or his predecessor in title has bred the variety.

2.31. The right shall be annulled if, after granting of the title, the variety appears not to have fulfilled the requirements of distinction and novelty. If the breeder does not or not properly maintains the variety, the rights shall become forfeit.

P.B.R. administration in Western Europe

2.32. Legislation on Plant Breeders' Rights makes some administration activities necessary. These administrative measures are to prevent that the system is misused. No rights can be granted without prior examination of the new variety on distinctness, homogeneity and stability (D.U.S.) and of the issues of breedership, novelty and denomination.

Examination on DUS standards in order to determine the identity of the variety is usually already present for extension service and certification purposes.

In most countries with a P.B.R. scheme a government authority examines the variety on DUS by means of growing tests in the field or in a glasshouse. In other states (e.g. USA) the rights are issued on the basis of examination performed by the breeder. For the purpose of this examination and of the examination of the remaining issues the competent authority may require the breeder to furnish all the necessary information, documents and propagating material.

2.33. It is understandable that the way in which the preliminary examinations are carried out in the various countries vary considerably. To harmonize the variety testing the council of UPOV established some years ago several working parties who prepared for a number of crops guidelines, containing the characteristics, which have to be described, testing the varieties.

It is very important for a proper working of the system to determine as far as possible the objectfor which rights are granted. This can be achieved by a combination of things.

2.34. a. A full description on the basis of a list of agreed characteristics.
b. A description of specific differences with other varieties of all characteristics, which can serve this purpose.
c. To keep a stock of propagating material, which can be replenished when necessary. The stock of this material gives the Authority the possibility to ascertain later on, what the variety was at the time protection was granted and to compare new varieties or suspected material - case of infringement - with the original variety.

2.35. Considerable expertise is required to test varieties, to make good botanical descriptions and to identify differences between varieties that satisfy legal requirements. Comparisons should preferably be made with a collection of varieties already admitted grown under different environmental conditions.

The USA-System

2.36. In the USA, rights in relation to asexually reproduced varieties are granted under the Patent Act for a period of 50 years. This system is not further considered here.

2.37. The United States Plant Variety Protection Act - 1970, applicable to sexually reproduced varieties (Rollin, 1971), is in principle similar to the European P.B.R. schemes. Under that act rights can be granted to the breeder (including the discoverer) of a variety if that variety meets the criteria regarding distinctness, uniformity, stability (DUS standards), novelty and denomination.

According to the US novelty criterium, no right can be granted with respect to a variety if, more than one year before the date of application in the USA,

- that variety was a public variety in the USA; the term "public variety" means a variety sold or used (excluding the use for purposes of testing) or existing and publicly known;

or

- that variety was effectively available in the USA and adequately described by a publication reasonably deemed a part of the public technical knowledge in the USA; the description must include a disclosure of the principal characteristics by which the variety is distinguished;

or

- an application for protection of the variety concerned, based on the same breeders' acts, was filed in a foreign country.

The processing of applications in the USA is based on examination of information supplied by the originator of the new variety. The examination does not necessarily include growing tests by government organization.

The applicant of a Plant Variety Protection certificate has to fill up an
Attachement A : Origin and breeding history of the variety.
Attachement B : Data relevant for determination of the novelty.
Attachement C : Objective description of the variety.
Attachement D : Additional description of the variety.

2.38. At the same time the applicant must declare that he will deposit and replenish periodically viable samples of the variety in a public repository (Fort Collins).

After the payment of a filing fee of $ 250,- and an examination fee of $ 250,-, the Plant Variety Protection Office compares the description of the new variety to all known varieties of the species. The office keeps up to date computer files of varietal descriptions based on standardized description forms for each crop.

2.39. After a screening by computer, the examination on distinctness is completed by the examiner in order to establish whether the applicants' variety is sufficiently distinct from the varieties which are, according to the computer, more or less similar or which are inadequately described in the computer file. If necessary the applicant has to supply additional information in order to establish distinctness.

Other Systems

2.40. Apart from "exclusive rights" there are other systems to stimulate breeding by rewards. One of those is that of issuing "Inventor's Certificate" employed in some countries with a centrally planned economy. In this system, the breeder receives from the government a form of recognition for a bred variety commensurate with its value to agriculture (f.i. judged by the acreage under production).

Another system is, whereby the breeder of a variety is appointed the sole producer of basic seed supported by a Seed Certification Scheme which stipulates that the production cycle starts with certified basic seed. Hence the breeder is rewarded by income derived from basic seed production.

2.41. If a breeder cannot obtain Plant Breeders' Rights in a country in which he wants to introduce his variety, he may be able to protect his interests by means of a civil law agreement or contract. In such a contract he may negotiate conditions similar to those under a licence agreement based on an exclusive right, f.i. through the condition that the licencee will only deliver to the owner of the variety or shall not enter the variety in a specific market, etc. The owner of the variety must however realize that :

- contracts may be overruled by provisions in the law;
- in the case the contract is not honoured, he has only a claim on the licencee, but in the absence of an "exclusive right" he cannot control or effect influence on how the variety is used by third parties.

CHAPTER III - THE INTERNATIONAL CENTRES AND PLANT BREEDERS' RIGHTS

The role of IARC's in Plant Improvement

3.1. Of great importance to agriculture is :

a) A large assortment of plant varieties adapted to different growing conditions.

b) An objective appraisal and advice on the suitability of new plant varieties under the different growing conditions.

c) A rapid transfer of the products of plant breeding to farmers.

3.2. Clearly these requirements guide the activities of the International Centres and make close cooperation with national institutes an essential part of the total operation. A major problem is how to allocate tasks and responsibilities.

In the Report of the Review Committee (CGIAR, September 1981, page 40-41) the following classification of research is adopted followed by some statements on the evolution of the CGIAR system.

3.3. Quote "

(i) basic research - that designed to generate new understanding (e.g. how the partitioning of assimilates is influenced by plant height).

(ii) strategic research - that designed for the solution of specific research problems (e.g. a technique for detecting dwarfing genes in wheat seedlings).

(iii) applied research - that designed to create new technology (e.g. breeding new varieties of dwarf wheat that can respond to high levels of nitrogen without lodging).

(iv) adaptive research - that designed to adjust technology to the specific needs of a particular set of environmental conditions (e.g. incorporating dwarf wheats into farming systems of the rainfed areas of the Pampean Region of Argentina).

It is generally agreed that the original purpose of an International Centre was to generate new technology, i.e. to concentrate on applied research. It is clear, however, that the generation of new technology requires an adequate supply of the results of strategic research, which in turn draws

on the results of basic research.

If the correct function of the International Centres is to generate new technology, it follows that each developing country must at least develop its own capacity for adaptive research. It also follows that institutes other than the Centres themselves must supply the results of strategic and basic research. The place of regional research institutions, such as CATIE or ACSAD, in this model would be to substitute for weak national programmes by undertaking adaptive research for a whole region, and to reinforce national programmes by supplying new technology, not provided by the Centres.

A broad view of the evolution of the CGIAR System suggests that even if this were the original concept of the function of a Centre, it soon became deflected in two ways. First, in order to achieve success, Centres felt obliged to apply some of their resources to adaptive research either because of inadequate national capabilities, or because they could not make effective use of regional organizations. Second, owing to the lack of appropriate results from strategic research, Centres expanded, to a greater or lesser extent, their research capacities for tackling more basic problems. These competing tendencies have implications both for the management of the System and its place in the world pattern." Unquote

3.4. For the present discussion the main issue is how far down the path of variety development IARC's are involved. If the suggestion is accepted that the main objectives of the IARC's are in "applied research", for plant breeding this could be interpreted as collection and screening of genetic material, creation of base-populations for selection programmes and selection and breeding programmes up to variety development. There is however a growing contention that the final steps leading to varieties should be done in national programmes and the IARC's should gradually shift emphasis of their research upwards to include both strategic and applied research.

3.5. Hence ultimately IARC's will primarily release base-populations for further breeding on which P.B.R. are not applicable. Whether it wants or should continue its present very liberal attitude in making breeding material available essentially on request is a decision to be taken by the various

Centres Boards or the CGIAR. However the present situation is that many national breeding programmes are still to weak to accept responsibilities for varietal development and hence the IARC's are still releasing material satisfying or close to the UPOV standards for variety recognition.

Plant Breeders' Rights on varieties based on Centres' material

3.6. The CGIAR network of agricultural research centres is primarily directed at the major food crops (cereals, grain legumes, pulses) and a few fodder crops . In the following discussion no differentiation is made according to the mode of reproduction (self-pollinating, cross-pollinating, vegetative) unless specifically mentioned.

3.7. The primary objective of the IARC's is to have farmers supplied with better varieties. There are sofar no or little restrictions on the distribution and use of IARC genetic materials neither do IARC's claim any legal ownership of such materials.

The present organization of breeding and testing programmes of the IARC's are focussed totally on cooperation with national institutes in developing countries. Involvement of private companies in developing countries is considered a national responsibility. The use of IARC materials by private industry in developed countries is recognized. There are even already examples where IARC material with only minor further selection were submitted for PBR protection in some countries. This however has caused no serious concern within the IARC's as the consequences of this were restricted to some developed countries.

3.8. However it would seem germain to examine in some detail what possible effects the existence of PBR legislation in target countries could have on genetic materials released by the IARC's.

Although different kinds of Plant Breeders' Rights legislation can be visualised, the discussion only takes into account systems compatible to the UPOV convention.

A number of situations can be distinguished :

3.9. a. The material represents a finished variety and is not offered for sale or marketed already. In a country with a P.B.R. scheme a third person, who is not the Centre's successor in title with regard to the breeding work, can in principle not obtain varietal protection since he cannot be considered as the originator, breeder or discoverer of the variety.

In some countries the breeder has to prove that he really bred the variety himself. In the USA this is effected by the required "history of the breeding work". In other countries the burden of proof might rest with the authorities.

b. The material represents a finished variety and is already offered for sale or marketed in the country in which P.B.R. is applied for, or longer than 4 years in another country. By the lack of novelty no Plant Breeders' Right can be granted with regard to that variety.

N.B. According to the USA scheme the variety can have been offered for sale or marketed in the USA during one year previous to the application without destroying the novelty.

c. The material represented is rather uniform and stable but just insufficient in the sense of P.B.R. legislation. No rights can be granted with respect to such material.

d. The material represents a heterogeneous (and instable) collection of plants (e.g. a population). In that case it is certainly not a variety which can be protected by P.B.R.

3.10. Finished varieties of the Centres as mentioned under a) and b) may be used by third persons to create other varieties (by crossings). Those other varieties might be protected by their originators. It is of no importance if the Centres' varieties from which they descend are commonly known, marketed or protected. Of course the new varieties must be distinct by one or more important characteristics from all common known varieties including those from the Centres.

3.11. Also the Centres' material, which does not represent a protectable variety, (situations c) and d)) can be used by others to create protectable varieties (by selection). Those varieties can be protected by their originators or

selectors as well.

The protection, which is only valid in those countries where it has been granted, does not cover the material of the Centre as such. It may happen that two breeders create two varieties from one batch of "centres' material". Both varieties are in principle protectable.

3.12. By using material developed by a Centre the breeder of a protected variety is rewarded for breeding activities for which public funds were used. This is inevitable. On the other hand that way the results of research are made available to agriculture rapidly. It should also be realised that making of the crossings is only a part of the costs involved in producing and introducing a new variety.

The Centres and P.B.R.

3.13. A government of a developing country which through its national programme closely cooperates with one or more international centres, may at some stage decide to introduce a system of P.B.R. The primary objective would most likely be a felt need to stimulate private investment in plant breeding. P.B.R. could also be used to protect government varieties developed with public funds in order to provide financial support to public institutes.

3.14. The introduction of a P.B.R. scheme as well as the policy whether or not to protect varieties developed with public funds are national decisions. Relevant to them is the following. In seeking for protection for its own varieties a government may delay their introduction. On the other side the government would be able to offer a certain preferential position to a private company. In that way the production and distribution of seed of government bred varieties by private industry can be stimulated and supported. Of course such a system must not get detrimental to the aim to furnish the farmers, on reasonable terms, seed or other propagating material of good quality of the adapted varieties.

3.15. The IARC's were established to give research support to agricultural development in the Third World. In plant breeding this has meant support (in the form of varieties and breeding material) to national government organizations since the private industry in plant breeding is still either absent or of minor importance in those countries.

3.16. A relevant question is whether IARC's should keep a claim of ownership of material released to national research organisations or whether with the release, ownership is tacitly transferred to the receiving organisation.

Considering present practice and source of CGIAR funds, it would seem logical to consider national government research organisations in developing countries as the successors in title to the material released to them by the IARC's.

3.17. It might be argued that the IARC's in principle should obtain varietal protection just to raise funds. Theoretically this would of course be possible. However P.B.R. only applies to varieties that satisfy stringent DUS standards, hence finished products rather than breeding populations. Even most of the present IARC's varieties probably do not satisfy these standards, let alone the great bulk of breeding populations made available. Besides usually in most UPOV countries rules stipulate that non-residents can only apply for P.B.R. by enlisting the services of a national, a resident or a national organisation.

3.18. Quite often material is released from which still various varieties can be selected which satisfy distinctness criteria of the UPOV convention. It should be noted that to satisfy standards of homogeneity and stability would considerably increase the work of the IARC's in an area which is considered the responsibility of national organisations (variety development) and delay the release of material.

3.19. The "novelty" requirement would create further problems. Material should not be offered for sale or marketed prior to the application for the protection in the country of application. The offering for sale or marketing in other countries will also damage the "novelty" of a variety if taking place longer than 4 years prior to application.

3.20. The unavoidable conclusion is that present P.B.R. legislation is really designed to protect ownership of finished varieties. If IARC's want to benefit from this protection in full, they would have to be transformed into plant breeding organisations that release finished varieties. Breeding populations would only be released on the basis of formal agreements regulating ownership of varieties developed by the recipient of such materials.

The IARC's would be able to collect considerable royalties from their material. However such an approach would clearly mean a total turning around of the objectives of the CGIAR system which would seem unacceptable to most donors and developing country governments. Hence it does not constitute a realistic alternative.

3.21. Another reason for a Centre to ask for varietal protection is to prevent others from taking undue advantage of the work of the IARC's. It must be clear that the development of a new variety from breeding populations of IARC's by others can result in protectable varieties.

If the breeding work of a Centre does represent a variety or a nearly finished variety, it is legally spoken impossible for a third person, not being the Centres successor in title to obtain rights for that variety because he is not the breeder of the variety.

3.22. IARC's material in later stages of development (i.e. when it starts becoming recognizable as a variety) could be distributed to some authorities in UPOV countries for storage. In case a variety is suspected to originate from such IARC material, the stored seed can be used as reference material to investigate the claim. The possibility of doing this might work as a serious detterent to improper use of IARC's varieties.

3.23. Apart from what, legally spoken, cannot be protected the question remains what should not be protected.

It might be possible for IARC's to enter into agreements with recipients of Centre's material that they will not apply for protection of varieties derived from such materials. It should however be realised that agreements exist only between parties concerned and that these cannot be binding for

others. Hence if a third party obtains the variety the agreement has no value with regard to the issue of absolute rights.

Instead of a contractual arrangement, a possible solution might be a code of ethics among breeders organized in Assinsel. One should however not forget that membership of Assinsel is voluntary and that such a code of ethics can never be enforced.

3.24. If a Centre wants to keep (some) control over breeding material it has distributed in a country that does not have P.B.R. or on material that is not elegible for protection, it can enter into a civil law agreement with the recipients. Through contractual arrangement the Centers can negotiate revenues on their genetic materials or try to achieve that without their consent no private rights will be issued, neither on the material itself nor on varieties derived from it.

Of course it should be realised that few private breeders will spend effort and money on breeding if there is no possibility of obtaining some revenue if he is successful. In fact it is quite possible that even the introduction of finished IARC varieties by private industry requires some form of varietal protection (This may be notably the case with vegetatively reproduced crops such as potatoes).

By allowing varietal protection to third parties on varieties derived from IARC's material it may be possible to cover part of the development costs or give the IARC title to part of the revenues.

In case it concerns a finished IARC variety, it will be necessary that the third party concerned is appointed successor in title to the variety with respect to P.B.R.

P.B.R. in developing countries

3.25. The introduction of P.B.R. is, as has been stated before, the national responsibility of the country concerned.

Before introducing P.B.R., a careful study should be made of the possible advantages and disadvantages of such legislation, notably the effect it may have on the agricultural production system (i.e. the farming community). This of course applies to all countries.

Common reasons for the introduction of P.B.R. are :

1. - Stimulation of private plant breeding in the country itself, although also public financed institutions can benefit from such legislation.

2. - Ease of introducing varieties bred in other countries that have P.B.R. legislation. This may be especially important if a country is suitable for seed production. Breeders are in general reluctant to multiply protected varieties in a country that does not recognize proprietary rights.

3. - In general it is considered reasonable that a breeder is rewarded for a variety commensurate to its use. (Compatible to patents, copy rights and trademarks)

4. - Absence of P.B.R. may stimulate breeding for varieties that have an in-built protection, such as F1-hybrids. The price of seed can be adjusted to include a breeders reward. Only the holder of the parental lines can produce seed of the variety and the farmer is probably prepared to pay the price if he is confident that he will be compensated by higher yields (This of course assumes that the farmer has the necessary credit which may not always be the case. If not, a situation will develop whereby only the more affluent will be able to utilize the better varieties). An obvious disadvantage of hybrid varieties is the need for farmers to buy new seeds every growing season. Furthermore it requires an efficient seed production and distribution system, lacking in many developing countries.

Countries in Europe that have introduced P.B.R. generally observed an increase in private investment in plant breeding. Furthermore, according to Murphy (1980) and Silvey (1978), there is a positive correlation between the rate of introduction of new varieties and yield increases. It is of course difficult to separate yield increases resulting from new varieties from yield increases caused by improved production methods.

Besides, a point of issue is not whether plant breeding can contribute to increased agricultural production (for which there is substantial evidence) but if and when private industry does so more sucessfully than public supported institutions.

Godden and Powell(1981) suggested models for a cost/benefit analysis of the effects of P.B.R. applicable to the Australian situation where P.B.R. is under discussion.

3.26. In at least Argentina, Brasil, Chili, Kenya and Mexico a P.B.R. scheme is under consideration, is in the process of being introduced or has been introduced.

The question has to be faced if and when legal measures should be taken to stimulate private plant breeding in developing countries. In virtually all developing countries, plant breeding is still primarily the responsibility of national government research organizations. In most countries the same still applies as well for seed production and distribution.

If there is interest of private industry to enter the field of plant breeding, this is generally only for the major crops or crops that can command a high seed price (some vegetable crops).

Hence parallel to private industry, government organisations will always have to be maintained as well.

3.27. A system of P.B.R. legislation assumes the existence of :

a. a system to evaluate new varieties;
b. a seed production and distribution system;
c. a technical and administrative body to support and control the systems, mentioned under (a) and (b);
d. a legislation regulating the admittance of varieties and the seed production/distribution (at least when the private sector is involved).

3.28. A logical first step in developing countries would seem to involve private industry and/or farmers organisations/co-operatives in seed production and distribution. It is the general experience that such organisations tend to be more efficient in this field than government organisations (research, extension or others).

Seed production and distribution can be largely regulated by the government through an appropriate Seed Certification Scheme. This should include official testing of varieties in representative areas leading up to lists of recommended varieties (also needed for extension services). Recommended varieties can be multiplied by non-government institutions on a contract basis.

A system of this nature would seem to be largely compatible with the present procedure followed by IARC's in releasing genetic materials to national organisations in developing countries.

3.29. P.B.R.-legislation is in this process a further refinement with the primary objective of stimulating the private sector in the country concerned to invest in plant breeding.

Assuming that the system regarding the admittance of varieties and the seed control systems are working, the introduction of P.B.R. needs only little more technical and administrative organization, since P.B.R. is just an additional component on those schemes.

As a rule the infrastructure and requirements in developing countries are still such that PBR in the sense of the UPOV convention can at present serve no useful purpose over and above what can be achieved with seed legislation and certification schemes.

Long-term views on the work of the IARC's and their relationships to other public and private organisations at the national and international level

3.30. In 3.3. the main objectives of the IARC's are summarized by quoting the Report of the Review Committee of the CGIAR (Sept. '81) and the consequences these views have on plant breeding.

Research at the IARC's is financed from public funds to provide research support to research and development activities in developing countries. The automatic partners are government institutions but there is nothing in the regulations to prevent close cooperation with suitable private organisations. The very liberal policy with respect to the distribution of plant material would seem to have facilitated wide distribution and use and as such has considerable merit.

The main purpose is that farmers are supplied with better varieties and whether this is done through private or public institutions would seem to be of limited concern to the CGIAR;

The issue here is that such a policy does not result in restrictions in the use of the material through undeserved property rights. The IARC's have to provide support to countries which differ widely in development.

Some countries have adequate national breeding operations in progress (often public but in some instances also private) and look to the IARC's basically for new genetic materials and to plug into international testing programmes. Other countries are totally dependent on the IARC's for varieties since they lack breeding programs that have sufficient strength.

IARC's perform a major function in training and institution building. National capacity for variety development will increase. In the interim period, which is going to last still many years, IARC breeding programs will have to cover the full range of strategic research through applied research to at least assistance in adaptive research. For basic research, the systems will continue to rely on specialised institutes outside the system.

3.31. Hence, for the present discussion, it is imperative that IARC's will continue to release genetic materials ranging from breeding populations to finished varieties, specific lines harbouring individual characteristics etc., etc. for many years to come.

CHAPTER IV - SOME ISSUES RELATED TO IARC's AND P.B.R.

How does development of national programmes and plant breeding in the private sector effect the future of the IARC's

4.1. In most developed countries, private and public breeding research complement each other. It is likely that national programs will increasingly take over responsibilities for varietal development from IARC's. This means that the work of the IARC will gradually shift emphasis upstream to include mainly applied and strategic research. A number of plant breeding activities would seem to benefit permanently from an international approach, notably establishment and study of genetic collections (Gene banks), testing materials under wide ranging environmental conditions etc. It is expected that in this sphere there will be continuous need for an international organisation such as the CGIAR, even if in time the need for actual variety development may become questionable.

What would be the effects of the wide introduction of P.B.R. legislation on research programs in the various crops worked upon by the IARC's

4.2. (Differentiation should be made between self-pollinating crops, cross-pollinating crops and crops reproduced vegetatively. Also the products of breeding would seem to be an factor, such as hybrid populations, composite varieties, multilines and others, the release of finished varieties or of segregating populations)

P.B.R. can be applied to all kinds of varieties of all species as long as they satisfy the DUS standards. The criteria for evaluating these standards are set by the national authorities. However clearly some kinds of reproduction (cross-pollinating) and some types of varieties (multilines) can create difficulties as far as homogeneity and stability are concerned. F.i. France does not protect cross-pollinating varieties, the Netherlands do not protect multilines but only the component lines individually.

4.3. According to the principles of UPOV, no third person not being the successor in title of the Centre, can obtain P.B.F. on a finished variety developed by the Centre.

For this the Centre does not have to apply for P.B.R.-protection. However control would be facilitated if some P.B.R. granting authorities were informed of the variety.

Hence whether Centres should themselves apply for P.B.R.-protection would seem to be mainly determined by financial reasons. Hence, independent of applying for P.B.R.-protection, finished varieties are reasonably well protected against pirating.

This is less the case for segregating populations. Again according to the principles of UPOV, a third party can obtain P.B.R. on varieties which have been developed from segregating materials of the Centres.

If the Centres want to prevent that from happening, they seem to have a choice between :

a) - to combine the release of segregating materials with civil law agreements regulating their use, if necessary supported by a "code of ethics" among recipients (Assinsel-code)

b) - to develop only finished varieties.

Should the IARC's release segregating material rather than finished varieties and should they work on hybrids, composites and populations, multilines

4.4. The primary objective of IARC's is to provide supportive research, i.e. breeding populations and other base materials for varietal development. However for the time being many countries still lack adequate research for even varietal development, which means that IARC's also must release finished varieties for those conditions.

4.5. Essentially IARC's should work on whatever varieties or material seems the most appropriate, with a bias towards small farmers needs. An important consideration also is the available capabilities for seed production. It is on the basis of this that work on hybrids is questionable since such material cannot be multiplied by the farmers themselves and create dependance on an outside supply organisation.

4.6. If a Centre wants to start developing hybrid varieties, f.i. in view of yield potential, the following factors should be considered.

- Is the infrastructure and financial situation of the target region adequate for continuous seed supply;
- Are there guarantees that parental lines are properly maintained and seed production and distribution is functioning adequately.

4.7. The answer of ownership of varieties or near-varieties has been discussed.

What would be the effect of P.B.R. on the exchange of breeding material

4.8. P.B.R. does not prevent the use of any protected variety for the purpose of further breeding (through crossing).

Breeding populations and potential varieties developed from them cannot be protected. Hence it is unlikely that private breeders will release breeding material which is being used for varietal development to others, including the IARC's. Private plant breeding is a very competitive business. (In fact many government breeding organisations involved in variety development are equally jealous of their breeding material). For these reasons it is not realistic to assume that private breeding organisation will reciprocate a liberal release of breeding materials from the IARC's.

The reason however is not P.B.R., persé, but a characteristic of private breeding institutions having to survive in a competitive world. On the other hand, if PBR has stimulated the development of a vigorous private industry, breeding material released by IARC's may be worked on more extensively with the chance of better varieties.

What would be the effect of P.B.R. to the legal aspects of IARC mandates, constitutions, agreements with co-operating countries and staff employment

4.9. As long as there is a need for basic genetic research and practical breeding work by the IARC's for the development of agriculture, the IARC mandates should not be influenced by P.B.R. legislation. Only in case a P.B.R. scheme which is a matter of national legislation - would interfere with the diffusion of their results, the Centres should come to an agreement with the co-operating countries in order to guarantee an optimal effect of their work. Employees of the Centres should not be entitled to exclusive rights on creations resulting from their employment.

What would be the effect on the support of the IARC's if they decide to register and protect (either with or without claiming royalties) their breeding results

4.10. This question is only relevant for finished varieties. If the varieties concerned are the results of a co-operation between a Centre and national programs, the decision about registration and protection should be made jointly.

Applying for registration and protection in the various countries as well as the management of it means extra work and administration and consequently extra staff.

Possible revenues through royalties are likely to be deducted from the financial support of the donor countries. The licence shall pass on the royalties charged to his customers. Among them could be developing countries ! Registration and protection without claiming royalties only to prevent others from getting exclusive rights on the varieties concerned is a very cumbersome method. To achieve protection it would be sufficient to inform (some of) the countries where P.B.R. schemes exist about the existence of varieties.

What would be the likelihood of IARC and network materials being commercially patented if the Centres do not register them

4.11. In the P.B.R. schemes compatible with the UPOV principles, rights can be granted with respect to varieties which originate from existing material as long as they are clearly distinguishable from existing varieties. An application for protection on a variety which is not or not sufficiently distinct from an existing variety must fail, legally spoken, in P.B.R. schemes compatible to the UPOV principles. In the connection it deserves consideration to keep P.B.R. granting countries informed about breeding of the IARC's.

What would be the implications for developing countries if they do not enact P.B.R. legislation in terms of access to improved varieties of potential value to their agriculture

4.12. Presence or absence of P.B.R. has of course no effect on movement of breeding materials from IARC's or government institutions.

Privat breeders from abroad are often reluctant to send their varieties for (official) testing if there is no protection of ownership. This explains why commercial plant breeding have a general interest in the breeding of hybrids which have an inbuilt protection (can only be multiplied by the holder of the parent lines).

How serious the absence of P.B.R. effects the availability of suitable varieties from the commercial sector is difficult to judge. After all, the choice under these circumstances is between trade with no protection and no trade at all.

What would be the implications for developing countries of enacting P.B.R. legislation

4.13. In our opinion P.B.R. legislation is the last component in the structure of breeding varieties and producing and distributing seed. When that structure is firm and when there is a need to stimulate local (private) breeding one could consider to introduce P.B.R. scheme on top of other variety and seed schemes.

4.14. Introduction of PBR might have the following implications for the country in question :

- it must have a system including a technical and administrative body to recognize and evaluate varieties;
- it must have a system to control the production and distribution of seed;
- it may attract local seed production of foreign varieties;
- it may stimulate seed production and distribution by private enterprises;
- it may lead to (more) seed production for export propagating operations of which the seed is re-exported;
  Private industry participation might lead to more competition and result in improved availability of good seed at reasonable prices;
- introduction of a scheme compatible to the UPOV principles would enable UPOV membership; such membership results in national or reciprocal treatment of its nationals by other Member-States;
- recognition and evaluation procedures might slow down the introduction of varieties, also those developed in co-operation with the Centres;
- the existence of a PBR scheme in a developing country would force the IARC's and the co-operating national institutes to decide whether or not to apply rights on their varieties; possible revenues through royalties on those varieties might replace financial support of the breeding work for the developing world from donor countries;
- incorrect implementation of exclusive rights in the developing country in question (such as poor availability, high royalties) could effect the co-operation between the IARC's and the national breeding program of that country.

CHAPTER V - SUMMARY AND CONCLUSIONS

a. Examination of varieties and control of the seed production and distribution is of importance to agriculture.

b. As long as breeding of varieties as well as seed production and distribution is in the hands of the government there is little need for legislation. There still need to be a separate mechanism for testing and assurance and enforcements of quality control standards.

c. P.B.R. aims at stimulating long-term investments by private plant breeders. As a rule the infrastructure in developing countries is such that legislation on plant breeding as is applied in UPOV countries can serve no useful purpose. Plant Breeders' Rights should rather be regarded as an additional and finishing touch to an already smoothly running seed production and distribution program.

d. The introduction of PBR is a national decision. The scheme can be ajusted to national needs. The UPOV convention gives the guidelines for an evenly balanced system.

e. A Plant Breeders' Right is a nationally limited right.

f. A Plant Breeders' Right compatible to the UPOV convention relates to a plant variety as such, so to a specific combination of characteristics, not to individual characteristics which may be embedded in the variety.

g. According to the UPOV convention the legal right covers the production for purpose of commercial marketing, the offering for sale and the marketing of propagating material as such.
It does not cover the production of propagating material for the use of one's own premises nor the use of that material in creating another variety, except when the repeated use of the protecting variety is necessary for the commercial production of that other variety.

h. The main difference between the P.B.R.-system in the USA and Western Europe is that, while in Western Europe the authorities themselves establish the report and the description of the variety by tests, in the USA the breeder has to establish the description of the variety.

i. Many developing countries will have to pay more attention to the development of production and distribution programs, so that the activities of the Centres in the field of development of new varieties can benefit the farmers in de developing countries more rapidly.

Additional funds should be created for development of such national programs.

j. We suggest that plant breeding activities at the IARC's should be mainly directed to more multi-disciplinary plant breeding and that in general the finalisation of the varieties should be left to the national institutes.

k. The policy for the co-operation between the Centres and government plant breeding institutes in developed countries that have a PBR legislation should guarantee a free exchange of breeding material. It should prevent private firms from making applications for Plant Breeders' Rigths for varieties that have been developed by the Centres. As a rule however selections from populations bred by the Centres in the present system are illegible for Plant Breeders' Rights.

l. The Centres are dissuaded from applying for Plant Breeders' Rights for varieties they have developed themselves, because it requires time-consuming additional work for selection and administration, while the maintenance of the varieties that are on the plant breeders' list requires contineous attention.

m. In order to prevent unjustified granting of Plant Breeders' Rigths to finalised varieties of the Centres, sufficient publicity about these varieties should be given e.g. through publications or by furnishing (some of) the PBR authorities material and/or descriptions of those varieties.

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DRAFT LIST OF ISSUES FOR THE CONSIDERATION OF THE TAC CONSULTANT ON PLANT BREEDERS' RIGHTS

1. What are the likely effects of extension on plant breeders' rights legislation in developing countries on genetic resources, in particular on:

   (i) the rate and extent of genetic erosion in field crop and pasture plants;

   (ii) access by IARCs and developing countries to these resources as private genetic resources collections expand;

   (iii) the problems of securing financial support for the IARC collections as comparable private collections are built up;

   (iv) the readiness/unwillingness of developing countries to allow expropriation of their endemic genetic resources;

   (v) policies for collection and release of genetic resources from IARC collections.

2. What would be the differential effects of the spread of PBR legislation on the research programmes on the various plants worked on by the IARCs, such as self and cross pollinated crops, vegetatively propagated crops, hybrid materials, composites, multilines, pasture plants, etc., in particular on:

   (i) the need for breeding programmes in the IARCs as large international companies increasingly breed for major crops of interest to developing countries;

   (ii) breeding strategies at the IARCs, such as release of segregating materials rather than finished varieties for national selections, and work on hybrids, composites and populations, multilines, etc.;

   (iii) the interchange of breeding materials;

   (iv) the operation of networks in partnership with developing countries;

   (v) the legal aspects of IARC mandates, constitutions, agreements with cooperating countries, and research staff employment;

(vi) the support for the IARCs if they decide to register (but not claim royalties) on their releases, both among donors and among developing countries who may disinterpret their motives;

(vii) the likelihood of IARC and network materials being commercially patented if the Centres do not register them;

(viii) the long-term impact and role of the IARCs, especially in relation to networks, and the balance between breeding and more basic genetic research;

(ix) the more complex socio-economic effects and impact of their work, including the development of input packages associated with patented varieties of IARC origin.

3. What would be the implications for developing countries:

(i) of not enacting PBR legislation, in terms of access to improved varieties of crops adapted to local conditions;

(ii) of enacting the various types of PBR legislation on:

(a) compatibility with PBR in most important source countries;

(b) implications for national testing and advice procedures;

(c) local seed production;

(d) availability and price of appropriate/adapted varieties;

(e) relations and cooperation with IARCs.

N.B. When reviewing this list TAC noted that the issues related to genetic resources had already been addressed by the IBPGR consultant on PBR. The Committee underlined also that the adoption or not of PBR legislation by developing countries was a matter for these countries to decide. The TAC study would therefore be focussed mainly on those aspects which have implications for the relations and cooperation of IARCs and developing countries.