Food and Agriculture Organization of the United Nations

The International Treaty ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

FIRST MEETING OF THE AD HOC TECHNICAL EXPERT GROUP ON FARMERS' RIGHTS

Rome, Italy, 11-14 September 2018

Proceedings of the Symposium on Possible Interrelations between the International Treaty on Plant Genetic Resources for Food and Agriculture and the International Convention for the Protection of New Varieties of Plants

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Note by the Secretary

This document contains the proceedings of the *Symposium on possible interrelations between the International Treaty on Plant Genetic Resources for Food and Agriculture and the International Convention for the Protection of New Varieties of Plants*, which was successfully held on 26 October 2016 at the headquarters of the International Union for the Protection of New Varieties of Plan (UPOV) in Geneva, Switzerland. The proceedings were previously made available to the Seventh Session of the Governing Body as document, IT/GB-7/17/Inf.14.

The preparations and arrangements for the Symposium were jointly been carried out by the Secretary and the Office of UPOV, in close consultation with the Bureau of the Seventh Session of the Governing Body. This included, in particular, the draft programme and the list of speakers.

The most recent update on the process to identify possible areas of interrelations between the International Treaty and the UPOV Convention and relevant instruments of WIPO, was provided to the Governing Body in the document IT/GB-7/17/7, *Report on the Implementation of Farmers' Rights*.

This document is being made available for the information of the AHTEG and to further assist its discussions, as appropriate.

Food and Agriculture Organization of the United Nations

The International Treaty ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

SYMPOSIUM ON POSSIBLE INTERRELATIONS BETWEEN THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (ITPGRFA) AND THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV CONVENTION)

PROCEEDINGS

Geneva, 26 October, 2016

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OPENING ADDRESS

Francis Gurry
Secretary-General, UPOV

Ladies and gentlemen, a very good morning to you all. It is my great pleasure to welcome you here to this Symposium on possible interrelations between the International Treaty on Plant Genetic Resources for Food and Agriculture and the International Convention for the Protection of New Varieties of Plants.

It is indeed a pleasure for me to be able to welcome first of all Mr Kent Nnadozie who is the new ad-interim Secretary of the International Treaty. It is a great pleasure to have you here this morning. Welcome and thank you for attending.

As well as Dr. Muhamad Sabran, who is the Chair of the Governing Body of the International Treaty. Again a great pleasure to have you here, Dr. Sabran. As well as Mr Raimundo Lavignolle who as you all know is the Vice President of the UPOV Council.

Welcome to you all and thank you very much for attending. Let me use the occasion also to express our appreciation to the outgoing Secretary of the International Treaty, Mr Shakeel Bhatti with whom we had close collaboration over the period of his tenure as Secretary. As you know he was the first Secretary of the International Treaty and was responsible for a great many advances in establishing the international system under the Treaty.

We are very pleased to see so many of you here this morning. We are delighted that there is such a great turnout and it is an indication of the importance you attach to this particular subject matter.

I have only a few messages, if I may, and the first of those would be that both the International Treaty and the UPOV Convention share a common objective. That is a very good start of course. That common objective is to support plant breeding activities. The means by which they pursue the objective of course is different. In the case of the International Treaty, as you all are aware, it is through a system of facilitated access to genetic resources in relation to plants for food and agriculture. In the case of the UPOV Convention of course it is through the encouragement of innovation in the development of new varieties and the protection of the rights of breeders in relation to those new varieties.

This I think is a very good start for the two international instruments. And then I think we can add to that. The consistent statements of Members are that the two instruments should be mutually supportive and compatible. There are as I am sure you are aware 73 countries which have embraced both the International Treaty and the UPOV Convention. That is a very strong indication of the mutual support and capability of the two instruments.

We at the UPOV Office have been cooperating with the Secretariat of the International Treaty for a long period now and there are a number of concrete examples of that cooperation. We cooperated in the organization in 2009 of the Second World Seed Conference and that delivered as I am sure you are aware a very similar message about the mutual compatibility and supportiveness of the two instruments.

If I may I will read a short statement from the Conference, namely the conclusions of the Conference: Governments are strongly encouraged to implement a predictable reliable user friendly and affordable regulatory environment to ensure that farmers have access to high quality seed at a fair price. In particular FAO member countries are urged to participate in the internationally harmonized systems of the OECD, UPOV, the International Treaty and the ISTA. Participation in those systems will facilitate the availability of germplasm, new plant varieties and high quality seed for the benefit of the farmers without which their ability to respond to the challenges ahead will be substantially impaired.

So we had very good cooperation in this instance. We have had cooperation in relation to UPOV's Pluto database to which we gave access to the International Treaty for the purposes of an economic study that they were doing on the Multilateral System of the International Treaty. We have participated in the International Treaty's Platform for the Co-development and Transfer of Technology and since 2014 we have been discussing the question of the possible interrelations between the International Treaty and the UPOV Convention. The Symposium today is a combination of that discussion and an expression of a desire on the part of Members to further deepen the analysis.

The programme today has four sessions. First of all, an overview of the two instruments. Secondly, an analysis of the interrelations between the rights under the two instruments. Thirdly, some experiences of Contracting Parties in implementing the two instruments. Finally, an overview of the initiatives involving the International Treaty and UPOV.

We are very pleased to have such a prominent range of speakers with us today for the Symposium and I thank each of them for their participation and I think we have achieved a wide diversity, across sectors, of all those who are interested in these questions.

So thank you once again for attending.

It is my great pleasure now to hand the floor to Mr Kent Nnadozie, the ad-interim Secretary of the International Treaty. Kent, please you have the floor.

OPENING ADDRESS

Kent Nnadozie
Secretary, ad interim, ITPGRFA

Your Excellencies, delegates, ambassadors and colleagues, ladies and gentlemen, it is indeed a great pleasure for me to be here for this very important meeting.

It is also significant because this is one of the first activities I am undertaking in the new position that I have taken, and I think it is symbolic that it involves an outreach to colleagues and others, as well as international institutions that work in the same area. That symbolizes our openness to collaborating and working together on areas of common interest. As the Secretary-General of UPOV has indicated, the relationship and the collaboration, especially at the Secretariat level, between the International Treaty and UPOV has been ongoing and close. It is my intention to sustain that collaboration and to further deepen it as well.

Francis Gurry has already given an overview of the process for this meeting and the issues that need to be discussed. I sincerely hope that given the spirit of collaboration that we have enjoyed at the Secretariat level, the various stakeholders from different sectors will show the same spirit in the conversations we are going to have here today.

Hopefully, we will take that on and build on it, realizing that there are common objectives, there are common interests, and we all face common challenges and threats as well.

It is by continuous discussion and dialogue that we will identify areas where we can work together, and when there are areas of difficulties or disagreements, this approach will help us to find ways to deal with them, rather than taking adversary positions. It is most important to understand each other's position, so that we can find ways to agree on how to proceed and engage in discussions.

As the Secretary-General of UPOV also indicated, I am equally pleased with the diversity of participants here. I am pleasantly surprised by the number of people who have come to participate in this meeting. I think it is an indication of the importance and the interest in this area. We hope to build on this interest, and reinforce the need for us to continue the discussion and collaboration, and the work that lies before us.

From the International Treaty side, we were given the mandate by our Governing Body to look at areas of interrelations between our respective instruments, jointly with UPOV and the World Intellectual Property Organization, and involving a participatory and inclusive approach. We have accordingly been through a process of inviting input and comments from all stakeholder groups and Contracting Parties of the International Treaty, which we have already made available to some of the committees of the Governing Body. In close consultation with the Bureau of the Seventh Session of the Governing Body, and in coordination with UPOV, we have sought to make the programme of this Symposium as balanced but also as exciting as possible, so as to make it an important part of the participatory and inclusive process envisaged by the Governing Body. At the next session of the Governing Body, we will also make a report of the outcomes and the discussions that we have had from this meeting.

It is my hope that we are going to have a very successful and interesting dialogue. Without taking any further time, I would like to thank you and wish us all a very successful meeting.

Session 1
Overview of the UPOV Convention and the ITPGRFA

OVERVIEW OF THE UPOV CONVENTION

Peter Button
Vice Secretary-General, UPOV

I. UPOV: designed to deliver benefits to farmers – and society as a whole

An important principle behind the concept of the UPOV system is that, by encouraging plant breeding through an effective system of plant variety protection, benefits are provided to farmers. In turn, those farmers are then better able to meet their needs and the needs of society. That translates into the UPOV mission statement which is "to provide and promote an effective system of plant variety protection with the aim of encouraging the aim of new varieties of plants for the benefit of society".

The need for plant breeding

Why do we need to encourage plant breeding? The graph in Figure 1 shows the evolution of wheat yields in France. It clearly demonstrates that, until the advent of scientific plant breeding in the 1950s, yield progress in wheat was very slow. At least half of the increase in wheat yields has been attributed to plant genetics, i.e. plant breeding, which is why many countries have decided to introduce a system of plant variety protection.

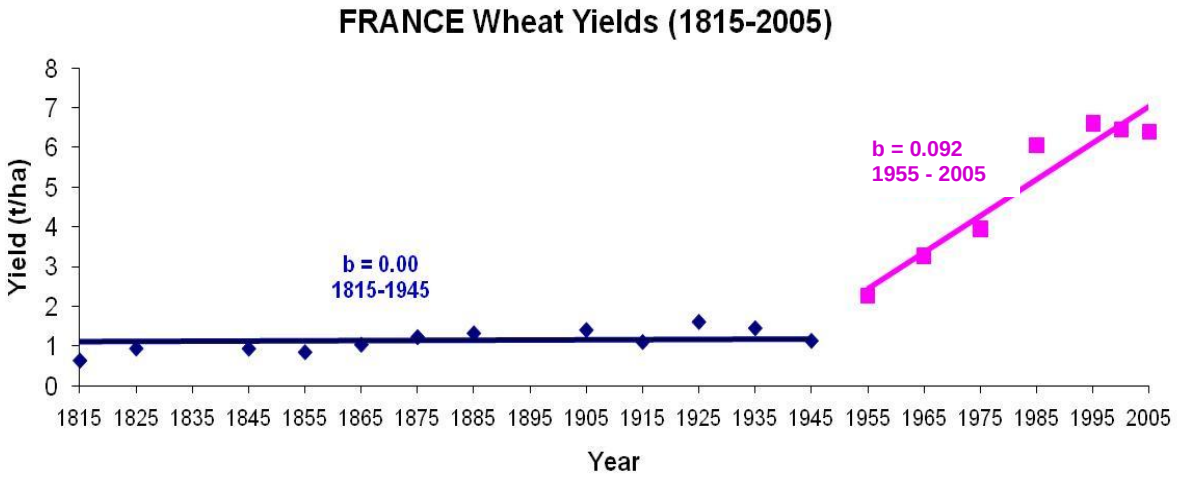


Figure 1. The evolution of wheat yields in France

Source: Bernard Le Buanec, Second World Seed Conference (Rome, September 2009)

Successful plant breeding is a complex task. In the case of wheat, traits which breeders need to address can include the following:

Physiology:

- Lodging
- Height
- Earliness
- Resistance to sprouting

Diseases:

- Mildew
- Yellow rust
- Brown rust
- Septoria nodorum
- Septoria tritici
- Eyespot
- Fusarium ear blight
- Orange wheat blossom midge

Yield:

- Treated/untreated conditions
- Early sown/late sown crops
- Light soil/heavy soil conditions

End user qualities:

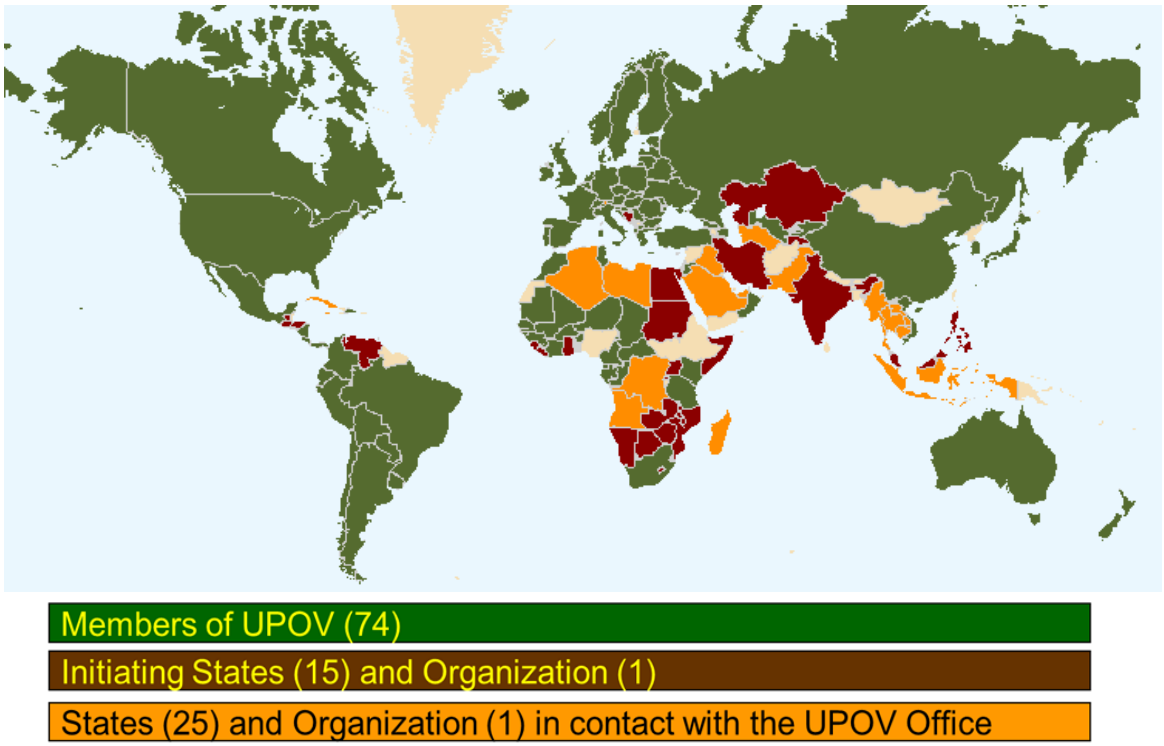
- Bread-making suitability
- Biscuit-making suitability
- Animal feed quality

Furthermore, the demands in relation to many of those traits can change over time. For example, diseases evolve and market requirements can change. When also considering that it can take 10-15 years to produce a new variety, it is easy to see the challenge that breeders face in producing a successful variety. It is also clear that the possibility of all the required traits combining by chance in a single plant without a breeder's intervention, and that plant evolving in a farmer's field into a population of similar plants containing all those traits, is very low.

The need for a system of plant variety protection

The challenges for breeders, outlined above, demonstrate the need for an effective system of plant variety protection (PVP) which, by granting to breeders a plant breeder's right (PBR), provides an incentive for investment in plant breeding.

As of October 2016, UPOV has 74 members covering 93 states (see Figure 2). In addition, there are 15 states and 1 organization which have initiated the procedure to become a UPOV member and a further 25 states and one organization that have been in contact with UPOV for guidance on developing their laws.



The boundaries in this map do not imply the expression of any opinion whatsoever on the part of UPOV concerning the legal status of any country or territory.

Figure 2. Situation in relation to UPOV

II. Systems regulating plant genetic resources

UPOV is only concerned with protected plant varieties. However, there is a spectrum of plant genetic resources that are not protected plant varieties and are, therefore, not affected by UPOV or PBRs. In particular, genetic resources in the form of wild populations, landraces and unprotected plant varieties are not regulated by UPOV. They may be regulated by other treaties or schemes including, for example, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Convention on Biological Diversity (CBD) and seed marketing regulations, but not by UPOV.

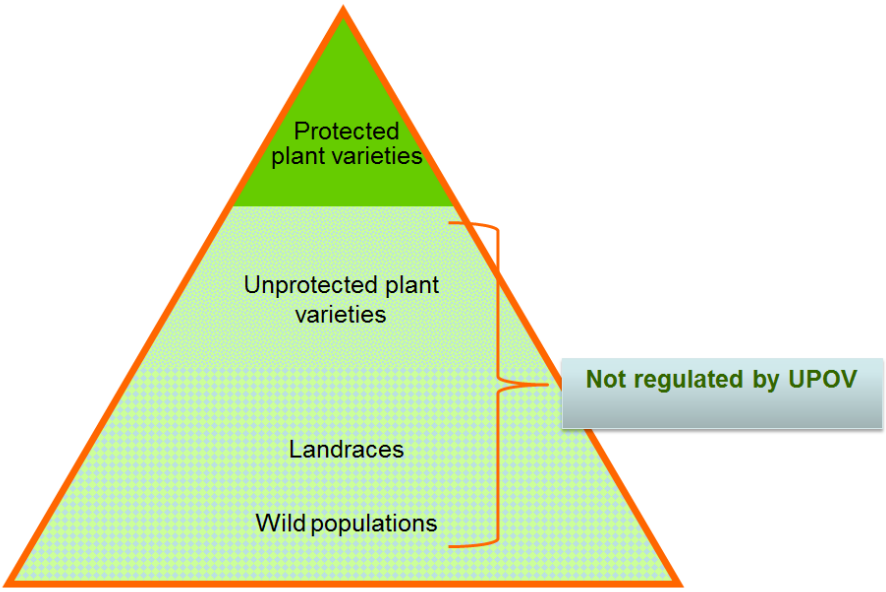


Figure 3. Systems regulating plant genetic resources

Benefits of PVP for farmers

Returning to UPOV, plant breeders' rights were developed to ensure benefits to farmers: breeders only receive an income from PBRs if their varieties deliver benefits to farmers. UPOV does not require farmers to grow protected varieties and the basis of the UPOV system is that farmers will not use protected varieties unless they can foresee benefits for themselves. The UPOV Report on the Impact of Plant Variety Protection[1] explained that it is not possible to detail all the benefits, or even the range of benefits, of the introduction of new varieties of plants, because the scope is enormous. However, two recent publications have highlighted benefits to farmers at different levels, in different regions of the World.

The first publication was a study "The economic, social and environmental value of plant breeding in the European Union: an ex post evaluation and ex ante assessment" [2] which found that 1.2 million European farmers and farm workers would have been 30% worse off without plant breeding in just the period 2000-2014, earning Euros 7,000 less annually (on average), and putting rural jobs at risk. It was reported that by 2030, that figure could be up to Euros 14,000. Secondly, UPOV recently published[3] a video explaining the benefit of a new variety for small holder blackberry farmers in Ecuador. In this case, the new variety had the benefit of being thornless, thereby avoiding injuries to the farmers during harvest, but also meeting the needs of the marketplace.

[1] UPOV Publication no. 353 (2005) (http://www.upov.int/edocs/pubdocs/en/upov_pub_353.pdf)
[2] Conducted by HFFA Research GmbH, corresponding author: Steffen Noleppa (HFFA Research Paper 03/2016)
[3] PVP in Ecuador (http://www.wipo.int/multimedia-video/es/upov/pvp_ecuador.mp4)

The specific needs of farmers are taken into account in the exceptions to the scope of the right provided by the UPOV Convention. Under the 1991 Act of the UPOV Convention (see Article 15(1)(i)), a compulsory exception sets out that the breeder's right does not extend to "acts done privately and for non-commercial purposes". With subsistence farming, it is observed that the farmer produces barely enough food for their own consumption and that of their dependents. Thus, the propagation of a protected variety by a farmer exclusively for the production of a food crop to be consumed by that farmer and the dependents of the farmer, may be considered to fall within the meaning of acts done privately and for non-commercial purposes. Under the 1991 Act of the UPOV Convention (see Article 15(2)), there is also an optional exception to the breeder's right according to which UPOV members can decide to allow farmers to replant seed on their own farms without the authorization of the breeder, under certain circumstances.

Farmers as breeders – and the importance of diversity of breeders

The UPOV system is designed to deliver the benefits of new plant varieties to farmers. However, farmers are not only recipients of new varieties; they can also be breeders of new varieties in their own right. The UPOV Convention does not make any constraints on who can be a breeder and there is a wide diversity of breeders using the UPOV system, which is an important strength (see Figure 4). Breeders can, for example, be individuals, small or large organizations, and they can be in the form of a community, such as a farmers' cooperative. The Symposium on the Benefits of Plant Variety Protection for Farmers and Growers[4] provided an example of an individual rice farmer-breeder in the Republic of Korea and of an individual potato farmer-breeder in the Netherlands. It also provided examples of a group of rice farmers that had developed new varieties of gentians and a farmers' cooperative in Spain that was developing new varieties in a range of agricultural and horticultural crops. More recently, we have received information that, in Viet Nam, eight of the 148 PBR applications in 2015, were by farmer breeders (seven varieties of rice and one variety of orange).

[4] Symposium on the Benefits of Plant Variety Protection for Farmers and Growers (2012) (http://www.upov.int/meetings/en/details.jsp?meeting_id=26104)

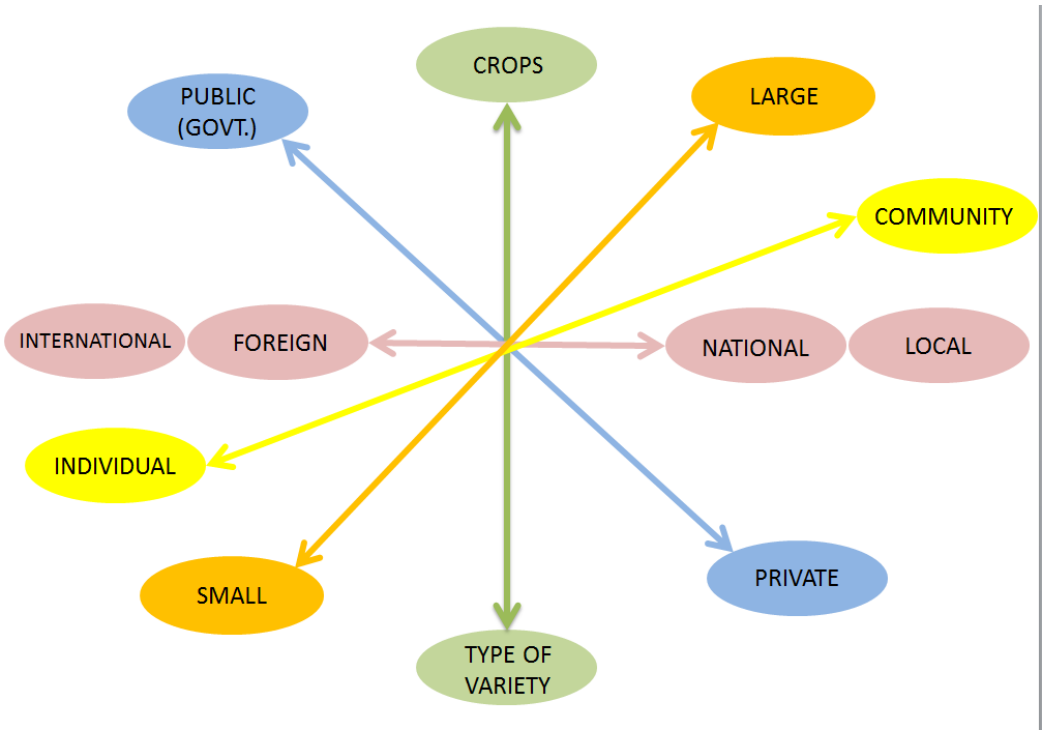


Figure 4. Diversity of breeders and breeding

In terms of diversity of breeding, another important element is consideration of the public and private sectors. The UPOV system is widely used by both public- and private-sector breeders. The UPOV system also has a key role to play in supporting public-private partnerships and is one of the areas in which UPOV has collaborated most closely with the ITPGRFA. Plant science research is essential but, in terms of delivering benefits to farmers, results cannot just be measured in terms such as the number academic publications. For example, advances in an important individual trait will not result in added value to farmers if deficiencies in other traits mean that it is not a viable variety for farmers to grow. To ensure that farmers have varieties suited to their needs and circumstances requires considerable investment in testing and in the transmission of information on variety performance to famers; it also requires the production of high quality seed. The role of PVP in underpinning investment in these aspects is sometimes over-shadowed by the importance of the initial plant breeders' work; however, it is an essential aspect and one in which PVP can support the development of public-private partnerships. An example of such partnerships is for public institutes to use the private sector in testing their varieties and disseminating high quality seed to the farmers. In such partnerships, there are also examples of how the public sector uses PVP to maximize delivery of public good. One example was provided at the Seminar on Plant Variety Protection and Technology Transfer: the Benefits of Public-Private Partnership[5] by the Agriculture Research Council of South Africa (ARC). The ARC explained that it protects its varieties in order to target benefits for small-holder farmers; for

[5] Seminar on Plant Variety Protection and Technology Transfer: the Benefits of Public-Private Partnership (2011) (http://www.upov.int/meetings/en/details.jsp?meeting_id=22163)

example, when it licenses varieties to the private sector it can use PVP to ensure that material is provided to small-holder farmers and that they will participate in the value chain.

When considering diversity, it is also necessary to consider the range of species. Figure 5 illustrates that the number of genera/species for which UPOV members have received PBR applications is over 3,500 and that this has continuously increased every year since the beginning of UPOV.

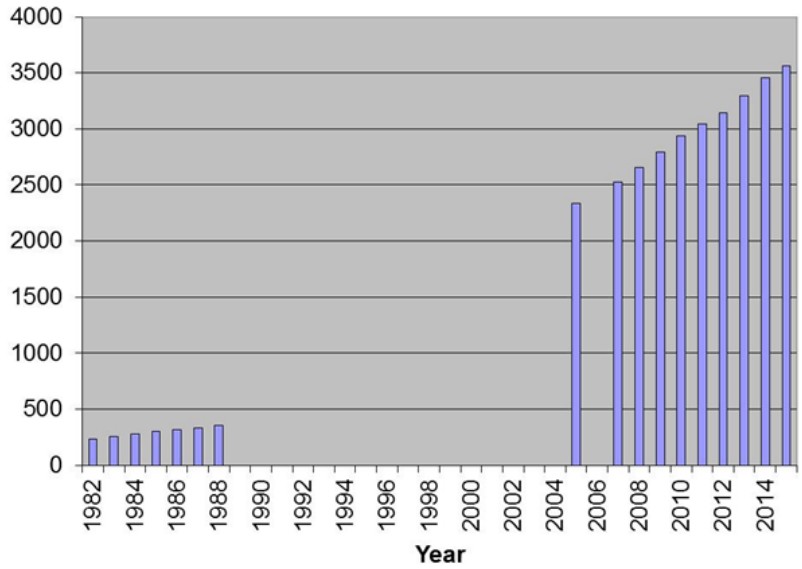


Figure 5. Number of plant genera and species for which protection is sought (UPOV members)

Finally, to understand the role of UPOV, it is necessary to consider the international dimension. At the domestic level, the UPOV system has a vital role to play in stimulating breeding. However, by joining UPOV, a UPOV member sends a signal to breeders that they have an internationally-recognized, effective system in place, which encourages breeders from around the world to release their best new varieties for the benefit of farmers and society in that country. UPOV membership facilitates access to varieties, which creates new domestic and international markets for farmers.

This aspect is illustrated in Latin America in Figure 6, in terms of the number of applications by non-resident breeders around the time of UPOV membership. When considering small-holder farmers, benefits are not restricted to the ability to feed their family on a regular basis. New plant varieties have the potential to enable small-holder farmers to achieve a decent income that enables them to support the health and education of their families. This is illustrated, for example, by the development of the cut-flower industry in Kenya (see Figure 7). After the introduction of PVP and UPOV membership, Kenyan growers gained access to high value new

varieties that enhanced export potential. Exported volumes of cut-flowers increased by three-fold while the value of those exports increased by eight-fold to around USD 400 million.

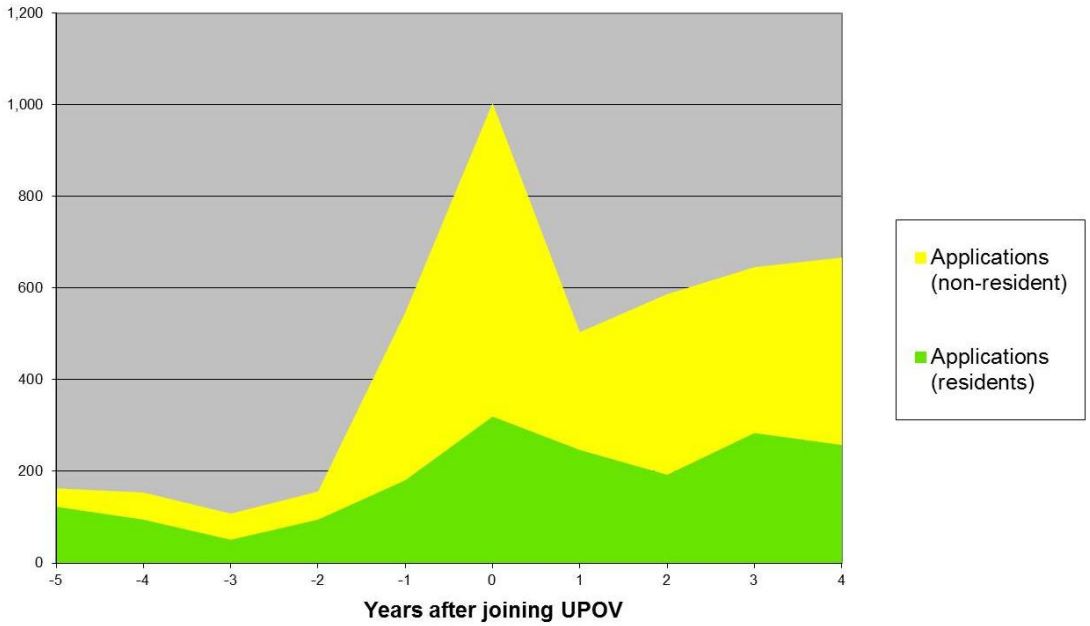


Figure 6. Latin America Countries acceding to UPOV between 1994 and 2000

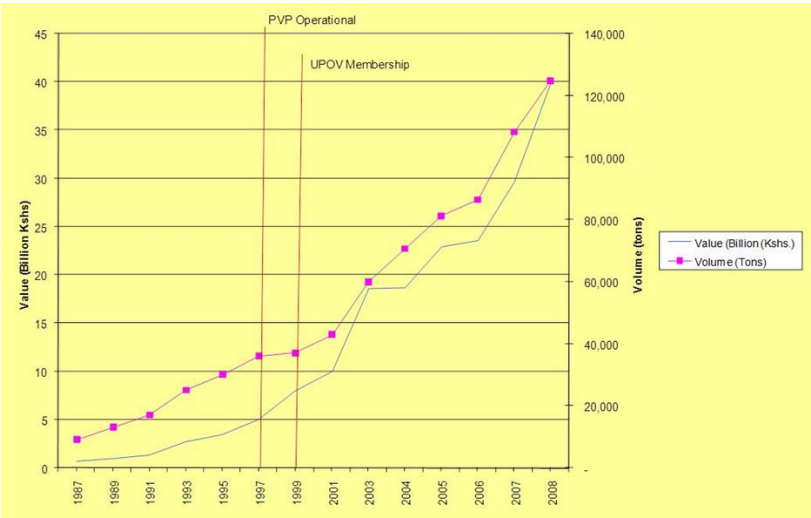


Figure 7. International Market Development – Export of Kenyan Cut Flowers

Source: Evans Sikinyi, Second World Seed Conference (Rome, September 2009)

III. Access to plant genetic resources

A principal common theme between the UPOV Convention and the ITPGRFA is plant genetic resources, and an important synergy between the UPOV Convention and the ITPGRFA lies in the "breeder's exemption" in the UPOV Convention. UPOV considers that plant breeding is a fundamental aspect of the sustainable use and development of genetic resources. It is of the opinion that access to genetic resources is a key requirement for sustainable and substantial progress in plant breeding. The concept of the "breeder's exemption" in the UPOV Convention, whereby acts done for the purpose of breeding other varieties are not subject to any restriction, reflects the view of UPOV that the worldwide community of breeders needs access to all forms of breeding material to sustain greatest progress in plant breeding and, thereby, to maximize the use of genetic resources for the benefit of society.

OVERVIEW OF THE ITPGRFA

Kent Nnadozie
Secretary, a.i., ITPGRFA

1. Importance of Plant Genetic Resources for Food Security and Sustainable Development

Plant genetic resources for food and agriculture (PGRFA) are essential for future food security and sustainable development. Over the last few decades, agriculture has undergone enormous changes as a result of technological advances, changing human needs and desires, and a growing population. Crop yields and food production have increased dramatically through a combination of improved crop varieties and intensification of crop production. The need for increased production will continue as climatic conditions change and the world's population continues to grow. It is projected that the current population of around 7.2 billion will rise to 9.3 billion by 2050. This scenario would require that food production increase by 60 percent globally to meet the rising food demand by 2050, and by a further 100 percent in developing countries, if it is to meet demand at current levels of consumption. However, efforts to meet food demand should not be limited to certain crops. Crop diversity is also critical in strategies to improve food security, nutrition, production, and in addressing other issues related to social, economic and cultural dimensions.

The importance of plant genetic resources cannot be overemphasized. Plant genetic resources are the raw material that farmers and breeders need to improve both quality and quantity, and to adapt to a changing climate. For generations, farmers have drawn on thousands and thousands of different plant genetic resources in order to breed the major crops that today feed the world. Farmers have relied on crop genetic diversity to evolve patterns of production and respond to socio-ecological changes and challenges. Crop diversity, food security and climate change are closely linked in diverse and complex ways. In fact, the world is facing a triple challenge that consists of countering the loss of crop diversity, and using it more effectively to achieve and maintain food security under the growing pressures of climate change. Agricultural crop varieties, and the particular traits they contain, form the very basis of our food security. In this context, crop diversity and plant genetic resources are a precondition to achieving food security. Nations are interdependent in terms of their crop diversity, as no country is self-sufficient in these resources; they all depend for their food and agriculture on crops that originated elsewhere. Furthermore, in the context of climate change, there is an ever increasing urgency to develop new crop varieties with greater tolerance to drought, flooding and extreme temperatures, as well as resistances to pests and diseases. For all these reasons, the continued exchange of genetic material among countries is imperative.

Many crops cannot survive in nature: maize, with its very tight ears, cannot seed itself. Compared with the original wild *teocinte*, maize is almost unrecognizable.

2. The International Treaty

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) was adopted by the FAO Conference on 3 November 2001, through Resolution 3/2001. The International Treaty entered into force on 29 June 2004, after being ratified by 40 countries, and it became operational in 2007. As of 2017, there are 144 Contracting Parties to the International Treaty.[6]

The International Treaty is a key legal and policy instrument for coping with the challenges of countering the loss of crop diversity, and achieving food security under growing climate change. It is the main international agreement of a legally binding nature with the overall goal of achieving global food security through the management of plant genetic resources. The objectives of the International Treaty are:

- the conservation and sustainable use of plant genetic resources for food and agriculture;
- the fair and equitable sharing of benefits derived from their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security.

The International Treaty provides effective policy responses to global challenges through its main provisions, as follows:

Conservation and sustainable use of Plant Genetic Resources for Food and Agriculture

The International Treaty makes provisions to ensure that crop diversity is effectively conserved for present and future generations, and used in a sustainable way. Conservation in the context of the International Treaty also entails the collection, characterization, evaluation and documentation of PGRFA. Thus, Articles 5 and 6 of the International Treaty propose non-exhaustive enumerations of measures and activities to be undertaken at national level for the conservation and sustainable use of crop diversity. Contracting Parties commit themselves to integrate such measures into their agricultural policies, strategies and development programmes. Articles 5 and 6 of the International Treaty highlight the importance of approaching *in situ* and *ex situ* conservation in a complementary way. While emphasizing the role of farmers, indigenous peoples and local communities for on-farm and *in-situ* conservation, the provisions

[6] Membership status: http://www.fao.org/plant-treaty/countries/membership/en/

equally highlight the importance of international collaboration for the establishment of an efficient network of *ex situ* collections. More specifically, regarding sustainable use of PGRFA, Article 6 defines a number of measures for the Contracting Parties to adopt, including:

- agricultural policies that promote diverse farming systems;
- research that benefits crop diversity and farmers;
- participatory plant breeding;
- broadening the range of genetic material available to farmers;
- promotion of locally adapted crops;
- support for on-farm diversity; and
- reviewing regulations concerning variety release and seed distribution.


Farmers' Rights

For the first time, the efforts and the enormous contribution of farmers worldwide – including local and indigenous communities – to the development and conservation of crop diversity is expressly recognized in an international legally binding instrument, through Article 9 of the International Treaty. National governments are enjoined to implement Farmers' Rights by protecting relevant traditional knowledge; by making provision for farmers to participate equitably in sharing benefits; and by ensuring that farmers participate in national decision-making related to plant genetic resources. In addition to these provisions, the importance of the rights of farmers to save, use, exchange and sell farm-saved seed/propagating material is affirmed.

Farmers' Rights, as established in Article 9 of the International Treaty, are also supported by other provisions of the International Treaty, including the preamble and a number of measures proposed for the promotion of conservation and the sustainable use of PGRFA, as well as certain provisions linked to benefit-sharing under the Multilateral System, and to the Funding Strategy.


The Multilateral System of Access and Benefit-sharing

A cornerstone of the International Treaty is the Multilateral System of Access and Benefit-sharing. It aims both to facilitate access to plant genetic resources for food and agriculture, and sharing, in a fair and equitable way, the benefits arising from utilization of these resources. The Multilateral System covers a list of 64 of our most important crops, established according to the criteria of food security and interdependence.

The Multilateral System treats these crucial plant genetic resources as a pooled public good, under special terms and conditions. It provides for both multilateral access and multilateral benefit-sharing. Those who want to use the plant genetic resources in the system do not need to negotiate access agreements on a case-by-case basis. Instead, the resources are available to anyone who requires them, under a standard contract, known as the Standard Material Transfer Agreement. The International Treaty also recognizes that facilitated access to these plant genetic resources is in itself a major benefit. This makes it possible for farmers and plant breeders, in both the public and private sectors, to have access to the widest possible range of resources that are crucial for global food security. It also benefits the seed and biotechnology industries, by providing an agreed international framework, within which to plan their investments. The Multilateral System makes very specific and innovative provisions for monetary benefit-sharing. Monetary benefits resulting from the utilization of plant genetic resources in the Multilateral System are shared through a multilateral mechanism. A recipient who commercializes a product that incorporates material accessed from the Multilateral System shall pay an equitable share of the benefits arising from the commercialization of that product, except whenever such a product is available without restriction to others for further research and breeding.

For the purpose of receiving such funds, the International Treaty establishes a Benefit-sharing Fund, which is also open for voluntary contributions by institutional donors. The Fund is under the direct control of the International Treaty's Governing Body. Moneys in the Fund go to support projects that produce a direct impact on conservation and sustainable use of plant genetic resources in the field, as well as capacity-building. The Multilateral System also identifies and makes provision for a wide range of other forms of benefit-sharing, including the exchange of information, access to and transfer of technology, and capacity-building. The principle aim of the benefit-sharing arrangements is to improve the conservation of, and the potential to use – in a

sustainable manner – plant genetic resources for food and agriculture, particularly for the benefit of farmers in developing countries.

Benefit-sharing Fund

The Benefit-sharing Fund (BSF) is an innovative mechanism that seeks to share the global benefits that arise from the use of PGRFA directly with those who actively contribute to the conservation and sustainable use of crop diversity. The BSF:

- supports projects aimed at smallholder farmers in developing countries who conserve and sustainably use PGRFA;
- helps to accelerate the conservation and use of plant genetic resources on a global scale;
- has funded 3 project cycles to date;
- has supported projects in over 45 developing countries.
- **Results since 2009:**
  - **1 000 000 people** have benefited from activities directly or indirectly, half of whom are women;
  - **3 000 important food crop varieties** have been characterized to help identify valuable traits, particularly those resilient to climate change;
  - **3 000 accessions** of food crops have been made available to the international scientific community through the International Treaty's Multilateral System;
  - **200 partners** have been engaged globally, including governments, research institutions, NGOs and grassroots organizations.

The Global Information System

Another important component of the International Treaty's work is the development of a Global Information System (GLIS) to facilitate the exchange of information, based on existing information systems for scientific, technical and environmental matters related to plant genetic resources for food and agriculture (Article 17). At its Sixth Session, in 2015, the Governing Body adopted the Vision and the first Programme of Work on the Global Information System. The Vision states that GLIS "integrates and augments existing systems to create the global entry point to information and knowledge for strengthening the capacity for PGRFA conservation, management and utilization". The Governing Body also translated the Vision into seven

objectives and a Programme of Work with concrete activities for the period 2016-2022. The Programme of Work on GLIS takes into account the development of linkages with FAO systems and the Convention on Biological Diversity's Clearing House Mechanism, among other systems. The Programme of Work will also contribute to the development of national and regional inventories and information systems and networks.

3. Summary

Plant genetic resources for food and agriculture are essential for sustainable agriculture and food production, as they provide the building blocks for farmers, breeders and scientists to develop new plant varieties necessary to cope with the environmental and socio-ecological changing needs and requirements. Thus, global food security, especially in a time of climate change, greatly depends on the conservation and sustainable use of plant genetic resources.

The progress of the International Treaty – as a global instrument aimed at the conservation and sustainable use of plant genetic resources – has been steady, and is reflected in the growing number of members (Contracting Parties) and in the increasing number of genetic materials being shared through its Multilateral System of Access and Benefit-sharing. It has established a global system of international cooperation, which provides facilitated access to plant genetic materials for breeding, training and agricultural research and ensures that users share benefits derived from the use of those materials. The International Treaty also recognizes the enormous contribution of farmers to the conservation and development of the diversity of crops, and encourages governments to promote the realization of Farmers' Rights.

Session 2
Analysis of the Interrelations between Farmers' Rights and Plant Breeders' Rights under the ITPGRFA and the UPOV Convention

FARMERS' RIGHTS AND BREEDERS' RIGHTS: A FALSE CONFLICT

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I. Why is this debate important?

Some suggest that the conflicts around the concept of farmers' rights are due to a difference of opinion between two camps: those who promote breeders' rights and those who oppose them. This might be true but this difference might also derive from a lack of understanding regarding the concepts at stake and the underlying contexts.

The Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty), in its Resolution 8/2013 adopted at its fifth session, requested the Secretary of the Treaty to "*invite UPOV and WIPO to jointly identify possible areas of interrelations among their respective international instruments.*"[7] This decision of the Governing Body led to the current exercise of identifying and analysing interrelations between farmers' rights and breeders' rights with the participation of all parties concerned. This is important since many countries that are Contracting Parties to the Treaty are also UPOV members and it is important to have a discussion and to look at ways how obligations deriving from the two treaties can be implemented in a harmonious way. There are numerous perceptions and misperceptions around this topic and an open discussion is a good way to clarify these and define ways forward.

In the following, the author intends to examine the concepts and the contexts and analyze the interrelations from that perspective before drawing conclusions.

II. The rights considered

1. What are breeders' rights and why are they important?

Plant breeding is the science of adapting the genetics of plants for the benefit of society with the overall aim of improving the quality, diversity and performance of crops to develop plants that are better adapted to human needs.

The development of a new variety can easily take up to 12-15 years. The plant breeding process starts with the selection of genetic resources presenting the desired characteristics which are then crossed and recombined. Then from the mixed lines and breeding material so developed the best plants are selected and stabilized which can take up a number of years. The newly developed variety then needs to be tested in different climates, which again is a lengthy process. At the end, the new and improved variety presenting added value for the farmer has to be multiplied for distribution. This process is not only time-consuming but also costly, which requires plant breeders to invest up to 20 % of their annual turnover into the development of new varieties, which is higher than in most other industries focused on research and innovation.

[7] See point 3 of Resolution 8/2013 "Implementation of Article 9, Farmers' Rights" (Annex 8 to the Report of the Fifth Session of the Governing Body: http://www.fao.org/3/a-be607e.pdf

Plant breeding is a process that originates from genetic resources and results in genetic resources. Thus, the product of a plant breeder, a new plant variety, is biological material, which is particularly easy to copy being generally self-reproducing. For this reason, plant breeders require an effective intellectual property protection system.[8] However, at the same time, access to all forms of plant material including commercially available protected plant varieties is indispensable for a successful plant breeding industry thus ensuring that it will always be based on as much genetic diversity as possible.

As regards the legal background for the protection of new varieties of plants, one first needs to consider general conventions pertaining to intellectual property rights. In that sense, the World Trade Organisation (WTO) Agreement on Trade Related Aspects of Intellectual Property Rights of 1994 (TRIPs) is the most comprehensive and relevant framework to look at, which provides certain criteria concerning the availability, scope and use of intellectual property rights and requires its Members to set up a legal framework complying with such criteria. Regarding the protection of plant varieties, Article 27(3)(b) of the TRIPs Agreement provides for a choice between patents, an effective *sui generis* protection system or a combination thereof.

Generally, in most countires around the world that adopted IP protection for new plant varieties, the system is based on the International Convention of the Protection of New Varieties of Plants (UPOV Convention). In essence, the breeders' right[9] provided for in the UPOV Convention gives the title holder the right to subject a number of acts[10] with regard to the propagating material[11] of the protected variety to his/her authorization. Any plant variety that meets the protection criteria of commercial novelty, distinctness, uniformity and stability (DUS) can enjoy protection.[12] It is very often alleged that the plant breeders' rights system only offers protection to commercial breeders and seed companies however, this is a false perception since according to the UPOV Convention anybody who has bred or discovered and developed a variety can be a breeder.[13]

Since decades plant breeders all over the world have been benefitting from the *sui generis* intellectual property system based on the UPOV Convention which provides effective IP protection for new plant varieties as such and fits the specific nature and needs of the breeding industry. This system strikes the right balance since it provides for effective protection allowing breeders to obtain return on their investments and – at the same time - it guarantees the continuous flow of improved plant varieties by safeguarding access to genetic variability for

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[8] *"Plant breeding requires a substantial time, up to 20 years to create a new variety, and monetary investment. Without the potential revenue stream of royalties, there would be no incentive for breeders to develop new and improved varieties."* Ekvad, M.: Connected to customers; Ensuring that plant breeders can do their jobs, the Community Plant Variety Office shares its reasons for 20 years of success. IN: European Seed, Volume 2, Issue 3, p. 14-15.

[9] Throughout this paper when reference is made to breeders' rights, the rights as provided for in the UPOV 1991 Convention are meant. This is because it is the opinion of the author that the UPOV 1991 Convention provides the most effective protection system for new varieties of plants and is the form of protection that must be considered as necessary for modern, innovative plant breeding to flourish.

[10] Those acts are: production or reproduction; conditioning for the purpose of propagation; offering for sale; selling or other marketing; exporting; importing; stocking for the mentioned purposes (Article 14(1) UPOV 1991).

[11] The breeder's right extends also to the harvested material of the protected variety under certain strict conditions as laid down in Article 14(2) of the UPOV 1991 Convention. The breeder's right also extends to so-called essentially derived varieties as well as varieties that are not clearly distinguishable and varieties the production of which requires the repeated use of the protected variety (see Article 14(5)(a) of UPOV 1991).

[12] See Articles 6 to 9 of UPOV 1991.

[13] See Article 1 (iv) of UPOV 1991.

further breeding through the so-called breeder's exemption.[14] This exemption is a key cornerstone of the plant breeders' rights system and has always been relied upon by breeders for further improvement on each other's varieties and boosted innovation in plant breeding.

2. What are farmers' rights and why are they important?

Already at the beginning of human civilization early farmers started to select plants for specific features such as faster growth, larger seeds or sweeter fruits conserving and adapting their varieties for their needs and for future generations.

The concept of farmers' rights first emerged on the international level in 1986 at the first meeting of a working group established under the Commission on Plant Genetic Resources (CPGR), an intergovernmental body that was charged with the implementation and the monitoring thereof of the International Undertaking on Plant Genetic Resources.[15] It appears that the concept emerged out of the common understanding that it was fair and legitimate to recognize and reward the contribution of farmers to the conservation of plant genetic resources. Throughout the following years the discussion evolved and the concept of farmers' rights became more tangible in a resolution adopted in the FAO Conference in 1989 (Resolution 5/89).[16] This resolution confirmed the understanding that farmers' rights mean „rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources [...]" and reiterated the need to recognize and reward such contributions of farmers and enable them to continue this endevor.

Following the adoption of the Convention on Biological Diversity (CBD) in 1992, new negotiations started in order to set a legally binding access and benefit-sharing regime adapted to plant genetic resources, thus a process to revise and further develop the International Undertaking, in the light of the CBD, was launched in 1993. It appears that farmers' rights were in the mandate of such discusions as of the beginning[17] and were also one of the most contested issues during the negotiations.[18] The negotiations resulted in the concept of farmers' rights as we have it today in Article 9 of the Treaty.

What is really meant by the elements of Article 9?

When thinking about Article 9 and the concept of farmers' rights as embedded therein, it is important to keep in mind the historical context as outlined above but it is equally important to observe the structure of the article. Article 9(1) recognizes the enormous and continuous

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[14] See Article 15(1)(iii) of UPOV 1991.

[15] The International Undertaking, adopted in 1983 and adhered to by 113 countries, was the first international instrument, though not legally binding, that considered the importance of plant genetic resources, their conservation and sustainable use and in particular the need for unrestricted access to plant genetic resources.

[16] Resolution 5/89, together with Resolution 4/89 and Resolution 3/91, is part of the interpretation of the International Undertaking and was annexed to it, as a complementary means of interpretation. See paragraph 8 of document CPGR-Ex1/94/3 background document on the revision of the International Undertaking prepared for the first extraordinary session of the CPGR: http://www.planttreaty.org/sites/default/files/e1w3e.pdf

[17] See paragraph 3 of document CPGR-Ex1/94/3 background document on the revision of the International Undertaking prepared for the first extraordinary session of the CPGR: http://www.planttreaty.org/sites/default/files/e1w3e.pdf

[18] Andersen, R.: Historical context; Evolving international cooperation on crop genetic resources. IN: Farmers' Crop Varieties and Farmers' Rights, Challenges in taxonomy and law (ed: Halewood, M.), Routledge, 2016.

contribution of farmers to the conservation and development of plant genetic resources. This paragraph, in legal terms, does not provide for anything but is rather of a political nature giving credit to the work of farmers over the past centuries and setting the context of the concept of farmers' rights. It also confirms the approach that seems to crystalize from the historical development of the concept, which the author understands as meaning that farmers' rights is a tool to enable farmers to continue their important contribution to conservation and sustainable use of plant genetic resources. As such, even though it does not provide for any right, this paragraph is key in understanding the meaning of the other provisions of Article 9.

Article 9(2) provides that Contracting Parties should take measures to promote and protect farmers' rights and lists the following as being part of the concept of farmers' rights: (a) protection of traditional knowledge relevant to PGRFA; (b) the right to equally participate in sharing benefits arising from the utilization of PGRFA; (c) the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA. From this text it appears that measures to implement these elements of farmers' rights were seen by the Contracting Parties as most important in achieving an effective realization of such rights. The list however is not exhaustive,[19] as measures in other areas that may relate to farmers' rights may also be relevant in implementing this concept. This is important to bear in mind when analysing the effectiveness of implementation in the different countries and when looking at the interrelations with breeders' rights. Regarding Article 9(2) it also has to be underlined that the introductory text of the paragraph clearly sets the scene, which is that implementing farmers' rights is a responsibility for national governments and thus, must be adapted to the national needs, priorities and realities. Again, ignoring this context may easily lead to a false analysis of the concept of farmers' rights and its interrelations with breeders' rights.

Finally, there is also Article 9(3) which states that "*[N]othing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.*" When looking at Article 9, it cannot be ignored that Article 9(3) appears in a negative formulation as opposed to the positive and enabling formulation of Article 9(2). It is the understanding of the author that placing the element of the right to save, use, exchange and sell farm-saved-seed in a paragraph separate from paragraph 2 does not mean that this element is not part of the rights that national governments should consider when realizing farmers' rights. However, it is clear that it is not listed among the elements in respect of which Contracting Parties should take measures to promote and protect. On the contrary, from the text of Article 9(3) it appears that this right is considered to exist and to be implemented in national laws, as appropriate. The level of action required from Contracting Parties to implement the different elements of farmers' rights is not the same in Article 9(2) and Article 9(3) since the latter does not require Contracting Parties to proactively take measures.

How does Article 9 relate to the whole of the Treaty?

In order to understand the concept of farmers' rights it is important not to look at it in isolation but in the context in which it appears, meaning in the context of the whole of the Treaty. In its Article 1(1) the Treaty sets out its objectives which are declared to be „*the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, [...], for sustainable agriculture and food security*." In part two of the Treaty, which is containing general provisions, the obligations of Contracting

[19] Article 9 paragraph 2 states that Contracting Parties should "take measures to protect and promote Farmers' Rights, including: […]" where the word "including" indicates that there can be other elements to farmers' rights that Contracting Parties consider important to take measures to protect and promote.

Parties to implement conservation and sustainable use are set out together with a list of suggested measures that may assist implementation of such objectives. Regarding the implementation of the third objective, access and benefit-sharing, the Treaty establishes the Multilateral System in part four. In between these two parts, there is part three of the Treaty, which is Article 9, farmers' rights. Some argue that farmers' rights is the core of the Treaty however, in the view of the author farmers' rights is one element of implementing the overall objectives of the Treaty, just like Articles 5, 6, 12 and 13. These provisions are all equally important and cannot be placed in a hierarchy. Having said that, the elements of Article 9 should also be interpreted in that spirit, meaning that they should be implemented by Contracting Parties in a manner and for the purpose to enable farmers to continue their contribution to conservation and sustainable use. In that sense, it is the conviction of the author that the most important element of farmers' rights is the right to participate in decision making. This is the first element of farmers' rights that Contracting Parties should implement since only with the involvement of farmers is it possible for governments to define the necessary enabling environment.

III. Interrelations between Farmers' Rights and Breeders' Rights

1. Two conventions, two different purposes

When analysing the relationship or interrelations between farmers' rights and breeders' rights one has to remember that those concepts emerged in different contexts and exist in two different international treaties. On the one hand, breeders' rights is an individual private intellectual property right provided for in the UPOV Convention the objective of which is to encourage the development of new varieties of plants, for the benefit of society. On the other hand, farmers' rights is a collective right embedded in the Treaty the aim of which is the conservation and sustainable use of PGRFA and the fair and equitable sharing of benefits. Breeders' rights, as all intellectual property rights, are granted to the breeder for a limited period in time, in counterpart for the innovation he brings and makes available to the society. Whereas farmers' rights essentially mean the right of the farmers community to an enabling environment which allows them to conserve and sustainably use plant genetic resources.[20] Since the nature of these two rights as well as the context in which they exist are very different from each other, analysing interrelations cannot consist in an article by article scrutiny of the conventions at stake but should rather look at how these conventions fit and can exist together. This approach appears to be supported also by the preamble of the Treaty where it is noted that the „*Treaty and other international agreements relevant to this Treaty should be mutually supportive with a view to sustainable agriculture and food security*".[21]

2. The areas of interrelations

As mentioned, the UPOV Convention is not directly aimed at conservation, sustainable use and access and benefit-sharing but is concerned with creating a framework that allows breeders to get a fair return on their investments in counterpart for the innovation they provide to the society.

[20] See also recital 7 of the Treaty's preamble: "*Affirming that the past, present and future contributions of farmers in all regions of the world, particularly those in centres of origin and diversity, in conserving, improving and making available these resources, is the basis of Farmers' Rights;*"

[21] See recital 9 of the Treaty's preamble. Also see recitals 10: "*Affirming that nothing in this Treaty shall be interpreted as implying in any way a change in the rights and obligations of the Contracting Parties under other international agreements;*" and 11: "*Understanding that the above recital is not intended to create a hierarchy between this Treaty and other international agreements;*"

Nevertheless, breeders' rights, and thus the UPOV Convention, do have a link to sustainable agriculture and food security since the underlying reason for having breeders' rights is to stimulate continuous investment and innovation in plant breeding for ensuring food security. In that sense, one can also argue that the UPOV Convention even underpins the objectives of the Treaty since it stimulates plant breeding and plant breeding activities involve active conservation and sustainable use of plant genetic resources. Furthermore, the system of plant breeders' rights also generates considerable benefits for farmers, growers and the society at large.

Beyond these general observations, there are of course a few areas where clear linkages can be identified between farmers' rights and breeders' rights when looking at the individual elements of Article 9.

One such area is the right to equitably participate in sharing benefits arising from the use of plant genetic resources. In order to better understand what is meant by benefit-sharing it is useful to look at Article 13 of the Treaty which discusses benefit-sharing in the context of the Multilateral System. Article 13(1) states that the facilitated access to plant genetic resources is a major benefit in itself and Article 13(2) further notes that the following mechanisms are recognized by the Treaty as constituting fair and equal ways of benefit-sharing: „*the exchange of information, access to and transfer of technology, capacity-building, and the sharing of the benefits arising from commercialization*".

The breeders' right system as foreseen in UPOV clearly supports this benefit-sharing element of farmers' rights through the breeders' exemption, as mentioned above. As everybody who crosses and selects plants is considered to be a breeder, free (more than facilitated) access and free breeding is allowed for everybody under this exemption: (professional) breeders, farmers, public research institutes, gene banks and amateurs alike. The genetics of all varieties are thereby freely available to anybody for further development and to collect knowledge. In practice this means that all the information and technology included in the variety is also readily available for its users. The fact that the variety is physically available for further use directly enables information exchange as well as technology transfer.

Another area of interrelations is Article 9(3), the right that farmers have to save, use, exchange and sell farm-saved-seeds, subject to national law, and as appropriate. Since the scope of the breeders' right covers acts such as production or reproduction, offering for sale as well as selling or other marketing of the propagating material (e.g. seeds), one would be immediately inclined to state that there is an interrelation and perhaps even a conflict between breeders' right and farmers' rights. Before drawing such conclusions it is however important to go back to the context of farmers' rights and to remember what farmers are we talking about and what varieties those farmers use in their endeavour of conservation and sustainable use.

Article 9 talks about farmers' rights based on the contribution of farmers to the conservation and development of plant genetic resources. It does not talk about small farmers or big farmers, it talks about all farmers. Undoubtedly, it intends to recognize and further encourage the work of such farmers in conservation and sustainable use of plant genetic resources. This however does not define the types of farmers the provision covers but rather the context in which farmers' rights should be understood. A commercial farmer can also be involved in conservation activities on some parts of his lands and nothing in Article 9 suggests that only subsistence or small-scale farmers should be able to rely on farmers' rights.

In order to understand the interrelations with regard to the right to save, use, exchange and sell farm-saved-seeds, let's look at some categories of farmers, their activities and the rights and exceptions provided for in the UPOV Convention.

It is very often argued that subsistence farmers who mainly produce for consumption in their own families and communities are the ones who are key in conservation and sustainable use of plant genetic resources and that they cannot continue their activities due to restrictions in breeders' rights. First of all, it is the understanding of the author that these farmers in most cases use locally adapted varieties that they have developed from older genetic resources. For such varieties or heterogenous material, there is no concern to raise with regard to breeders' right since such varieties are normally not subject to breeders' rights (unless the farmers themselves apply for it). Subsistence farmers are certainly encouraged to use also newer, modern varieties in order to improve their livelihoods, which may in turn be subject to breeders' rights. However, the UPOV Convention does not only provide for rights but also provides for important exceptions, which formulate limitations to the breeders' right. One such exception that is relevant for subsistence farmers is the private, non-commercial use exception according to which „*acts done privately and for non-commercial purposes*" do not fall under the scope of the breeders' right. Subsistence farmers by definition are understood to act for private, non-commercial purposes and therefore have complete freedom regarding any acts with protected varieties, including exchange, barter or sales of farm-saved-seeds to their neighbours or other subsistence farmers.

Leaving the category of subsistence farmers, one would consider all other farmers as commercial farmers. However, one can still distinguish between small-scale farmers and large-scale farmers. As mentioned, such farmers may have a mixture of activities some of which will be more relevant for conservation and sustainable use of plant genetic resources than others. Small-scale farmers may be fully or partially focussing their activities on producing old and locally adapted varieties for local markets and even large farmers may have some parts of their lands where they grow such material. As said earlier, such old and locally adaptad vareties are normally not protected by plant breeders' rights and thus there is no interrelation or interface to consider.

As to the use of protected varieties by small-scale though commercial farmers it is arguable that such activity fits into the purpose of conservation and sustainable use. In case small-scale farmers use modern varieties with the view to adapt those to the local conditions and environment, they very likely do breeding or development and thus their activities would be covered by the breeder's exemption. If however such farmers use protected varieties and save and re-use the product of their harvest they are carrying out acts which normally fall under the scope of the breeder's right. The UPOV Convention also foresees a so-called agricultural (or farm-saved-seed exemption) in its Article 15(2) which Contracting Parties can decide to implement. According to this exception, „*Contracting Parties may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings the product of the harvest which they have obtained by planting, on their own holdings, the protected variety [...]*". There is a recommendation to Article 15(2) of UPOV 1991 which reminds that this exemption should be implemented by Contracting Parties in a way that reflects common, existing practices on the territory of the given Contracting Party. It is often argued that this exemption is too restrictive since it does not allow the exchange and sales of farm-saved-seeds and even requires farmers (as an implementation of the criteria of "reasonable limits and safeguarding the legitimate interests of the breeder") to pay a royalty to the holder of the breeder's right. In this respect, it must be noted that many Contracting Parties have used the flexibility offered by this provision to exempt small-scale farmers from payments of royalties on their use of farm-saved-

seeds.[22] When it comes to exchange or sales of farm-saved-seeds by a small-scale commercial farmer, the legislation on breeders' rights subjects these acts to the authorization of the right holder. Given that it is arguable if these activities of the farmer fall within the context of farmers' rights and knowing that the right holder must have the opportunity to recoup his investments, it seems fair to allow the right holder to decide under what conditions he authorizes the farmer to commecially exploit his innovation (for a limited period of time).

When it comes to larger, commercial farmers, the same logic applies that the breeder should be able to recoup his investments to be able to continue his breeding activities. It would in the end be detrimental to progress in breeding, since the incentives to further innovate would be lower or even lost, and society and food security would suffer. In this regard it is worthwhile to mention the example of the implementation of Article 15(2) of UPOV 1991 in EU law. Article 14 of the Community plant variety rights regulation (Regulation (EC) No. 2100/94) provides for a derogation from the breeder's right and states in its paragraph 3 that the conditions of this derogation are to be set taking into account the legitimate interests of the breeder ***and the farmer***. The balancing of such interests led the legislator to conclude that the royalty on farm-saved-seeds should be substantialy lower than on certified seeds and in case no agreement is reached between the farmer and the breeder, the royalty is set at 50% of the royalty on certified seeds by default.[23]

There are two other elements of Article 9(2), the protection of traditional knowledge and the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources. Regarding these elements, the author cannot see any interrelations between breeders' rights and farmers' rights. Regarding traditional knowledge, UPOV is not relevant as it provides for the protection of plant varieties but it does not concern traditional knowledge. As to the right to participate in making decisions on matters of conservation and sustainable use, Article 9(2) refers to the national level. UPOV is an international convention thus it does not have any direct relevance or impact for this element of farmers' rights. It is however good to mention in this context that participation of farmers' groups in decision-making at UPOV level is ensured.

Further, the author is of the view that since Article 9(2) is not an exhaustive list, other elements can also be taken into account when looking at interrelations between systems. One such element is the availability of new, modern varieties of plants. The availability of modern varieties is of key importance for farmers not only in their activities of development or adaptation of plant genetic resources to their local environments and circumstances but also as a factor that may allow them to develop their livelihoods and/or businesses, and in that sense the availability of such modern varieties is very relevant for farmers' rights. It is a matter of fact that the system of plant breeders' rights has boosted innovation in plant breeding over the past decades and made it possible for breeders to bring always better genetics to the farmers and growers. If a farmer wishes to adapt these new genetics to local conditions that would not be impeded by breeders' rights as it would fall under the compulsory breeders' exemption.

[22] This is for example the case of EU legislation (Regulation 2100/94, Article 14(3), third indent: http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1476442732803&uri=CELEX:01994R2100-20080131), as well as of many national legislations in EU Member States. Further on, it can be noted that even if small-scale farmers were not exempted from payment, economically it might not be worthwhile for a right holder to enforce his rights and collect royalties from such farmers.

[23] It has to be noted however that the default royalty level of 50% is considered by European breeders to be unfairly low since the genetics of the farmed-saved-seed are the same and thus the profit it brings to the farmer is also the same compared to certified seeds. It is therefore technically not justified to have only 50% of royalties.

IV. Is there a conflict between farmers' rights and breeders' rights under the Treaty and the UPOV Convention?

As described in the previous chapter, there are some areas of interrelations but it is the view of the author that there is no conflict between the two identified rights as they are provided for under the Treaty and the UPOV Convention. However, it must be underlined that the implementation of both Article 9 of the Treaty and of the elements of the UPOV Convention, in particular of Article 15(2), is subject to national law and is to be completed by national governments, as appropriate. It is for the good reason that these provisions have been formulated this way since many concepts embedded therein may have different meanings and situations may be very different from country to country. These differences cannot be ignored by the international community and therefore implementation, in a harmonious and mutually supportive way, must be left to national laws.

It is enough to think about notions such as subsistence farmers, small-scale farmers, commercial scale activities, local markets and it quickly becomes obvious that there is no „one size fits all" interpretation of these notions that could be applied in all the Contracting Parties of UPOV and the Treaty. For instance what is considered to be a small farm in one country may already qualify as a farm of decent size in another.[24]

It is the opinion of the author that both the Treaty and the UPOV Convention allow sufficient flexibility and provide sufficient considerations to the Contracting Parties to find the balance between the two systems when implementing them in their national laws. Bodies that may have powers to scrutinize conformity of national laws with the provisions of the relevant international instruments should also be mindful of the abovementioned national needs and realities.

V. Conclusions

Having regard to the above, it is the overall conclusion of the author that the exercise of identifying possible areas of interrelations between the Treaty and the UPOV Convention, which the Secretary of the Treaty was requested by the Governing Body of the Treaty to carry out, is a useful one and will certainly enhance an even more conscious and mutually supportive implementation of the respective instruments by national governments. Besides this, the author wishes to draw three conclusions that she believes could move this discussion forward.

Conclusion no. 1: There is a need to have a common understanding of the issues.

As described also in the above, the two concepts, breeders' rights and farmers' rights, that are looked at in this exercise do not exist in isolation but in well-defined contexts. This debate does not make much sense until those who are involved in it seek to come to a common understanding

[24] For the sake of an example, even within the European Union it was not possible to define small farmers by referring to the size of the land as differences in Member States are huge. For this reason, the definition of small farmer in the Regulation 2100/94 is based on production (see Article 14(3), third indent, second sub-indent).

of the notions and issues that are at stake. To get there, it is the view of the author that it is indispensible to examine and assess the contents of the two rights in their defined context.

Conclusion no. 2: Implementation must be adjusted to national realities and respect the objectives of both Conventions.

As mentioned above, it is for a reason that the implementation of both Article 9 and some provisions of the UPOV Convention (such as Article 15(2)) are subject to national law and are therefore in the responsibilities of national governments. Differences in the needs and realities in the 144 Contracting Parties of the Treaty and 74 Contracting Parties of UPOV may be huge and there is no „one size fits all" solution. Implementation must be adapted to national situations, as appropriate, while respecting the objectives of both Conventions.

It is perhaps worth mentioning that this does not mean that countries are not encouraged to look at existing examples of implementation in other countries. Rather the contrary; learning from each other is very important in this exercise. However, learning does not mean copying but understanding and adapting.

Conclusion no. 3: Mutually supportive implementation should be about understanding, collaboration and respect for each others' mechanisms.

This exercise is about exploring interrelations between two systems and identifying balanced ways of implementing obligations. This exercise is about understanding each other and about constructively building bridges between two systems which may seek different declared goals but in principle stand for the same overall purpose: benefitting society and ensuring food security.

SOME THOUGHTS ON THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE AND UPOV

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I. Introduction

We are all aware of the well documented pressures on agriculture to feed an ever growing population with a diminishing arable land base and the impacts of climate change. It is no exaggeration to state that accomplishing this is critical to prevent starvation and malnutrition on a very large scale. Absolutely essential to achieving this goal are increased productivity and improved nutritional quality of the foods we eat. Fundamental to that is a combination of the best sustainable agronomic practices and appropriate crop varieties. The varieties must be productive, meet standards for nutritional quality, meet the needs of the processor and end user, resist abiotic and biotic stresses, use water and nutrients efficiently, and must be suited to the production system in which they are grown by having appropriate maturity, harvestability and standability. We need plant breeders from all sectors to have all the tools possible at their disposal.

Plant breeding is carried out by professionals and amateurs in the public and private sectors. The bulk of private sector focus is on major crops. Profit margins in the seed industry are very small and thus companies must focus on those crops in which a profit can be made. Therefore crops in which hybrid systems provide enough heterosis to bestow a significant advantage and large acreage crops are the ones which receive priority for commercial breeders. Maize, soybeans, cotton and Canola/Rapeseed are examples. Smaller acreage crops and those where much of the seed sown each year is farm saved seed receive less attention from the private sector because it is much more difficult to realize a profit on variety development in these crops. Therefore there is a greater proportion of the breeding and variety development carried out by the public sector. Crops such as barley, oat and flax are examples. Regardless of the crop worked on or the sector in which they operate plant breeders are all reliant on genetic variation. A key source of that variation is plant genetic resources held in genebanks around the world.

II. Modern plant breeding and plant genetic resources

Plant breeders rely on many tools to produce improved varieties. In addition to the technical and biological tools, access to genetic variability is crucial. Without that, progress is impossible. Breeders typically have two phases to their breeding program. One focuses on variety development and commercialization the other on germplasm development. The vast majority of the breeder's effort is devoted to the former. It is important to build linkage blocks of beneficial genes which suit the material to local conditions and needs. Many of the important agronomic

and quality traits are controlled by many genes and have low heritability. Even with modern molecular selection tools this is a slow and difficult process taking many years to develop a pool of locally adapted materials "trained populations". Introducing exotic unadapted material disrupts the carefully structured balance and thus breeders avoid it if they can in the variety development phase of their program. Chances of success are much higher when both parents of a cross are adapted to the target conditions. New varieties which are the direct result of a cross between a locally adapted parent and an exotic parent such as a genebank accession are very rare. New genes are introduced through the germplasm development phase of their programs. It will usually take several generations of crossing to adapted materials before the exotic genes can be successfully deployed into commercial varieties. Despite these difficulties it is essential for breeding programs to bring in new diversity. That is made easier if new germplasm is well characterized and that information readily available.

As a result the use of accessions from genebanks especially unimproved materials is quite low. Data from IRRI for example indicates that less than 1% of their large genebank is used in variety development. This does not mean that these genetic resources are a useless archive. On the contrary they are invaluable insurance and it is impossible to predict which new breeding challenge will be met by which accessions. Over time they will be used. Use can be facilitated by good characterization of each and every entry in a gene bank. This is an expensive activity because of its complexity and the sheer numbers involved. Furthermore one cannot predict which genes will provide resistance for disease biotypes which have not yet evolved.

III. Roles of the ITPGRFA and UPOV

What then are the roles of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) (Treaty) and the Union for the Protection of Plant Varieties (UPOV), in supporting the development of these new improved varieties and thus benefiting farmers and the general public worldwide? Simply stated the Treaty supports the conservation and sustainable use of plant genetic resources for food and agriculture and the equitable sharing of the benefits arising out of their use. UPOV provides and promotes an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society. The Treaty then provides for the creation and maintenance of a vast, accessible storehouse of genetic variability which is an essential resource for breeding programs everywhere. Variety protection regimes provide a means for breeders to protect their creations and thus provide a means to generate a revenue stream which is critical for the survival of the variety development programs both private and public. This is very important at a time when governments are withdrawing from variety development and Universities are getting out of the plant breeding business. Margins for commercial plant breeding are very narrow and return on investment is essential for survival. Keeping a good balance of private and public breeding effort in place is important especially for lower acreage crops. Thus these two organizations the Treaty and UPOV are complementary to each other.

The Treaty and UPOV are both based on the special nature of plant genetic resources for food and agriculture. New and improved crop varieties are an absolute necessity for feeding the peoples of the world and enhancing the livelihoods of farmers worldwide. There is

interdependency among countries for genetic resources. No country is self-reliant for crop genetic diversity. Current and future improvements are built on past accomplishments. Farmers and crop improvers since the dawn of time have contributed to shaping genetic variability to suit their needs and to be adapted to their production environment. It is impossible to identify and quantify the contributions of any particular peoples who have helped shape the variability over time and space. Thus we consider the resources to be the heritage of humankind. Benefits should accrue to all.

The preamble to the Treaty acknowledges the special nature of the Plant Genetic Resources for Food and Agriculture (PGRFA); "Convinced of the special nature of plant genetic resources for food and agriculture their distinctive features and problems needing distinctive solutions" "Cognizant that plant genetic resources for food and agriculture are a common concern of all countries, in that all countries depend largely on plant genetic resources for food and agriculture that originated elsewhere". No country is self-sufficient. Imagine for example Ireland without potatoes, Italy without tomatoes, Brazil without soybeans, Colombia without coffee, China without maize, Nigeria without cassava, Canada without canola or the USA without wheat. In all cases these crops are very important to these countries but originated in other parts of the world. If we look at barley as an example it has spread from the Middle East throughout Europe over a period of 10,000 years. The migrating peoples, each along the way, incrementally adding to the genetic variation and adaptation. Dr. R. Waugh, James Hutton Institute, Invergowrie, Scotland, has studied the genetic variation in the landraces and primitive varieties in the region where barley was first cultivated and the countries to which it has spread. The genotypes in Spain, England and Scandinavia are very different from those in the Middle East and from each other. So many peoples have contributed to shaping the genotypic variation over the millennia that it would be impossible to single out any group of people who have contributed more than others. Similar patterns have occurred for other crops. Thus one has to ensure that all benefits arising from the use of these genetic resources are shared equitably and promote agricultural progress for all growers.
Thus the Treaty has focused on multi-lateral measures; the multi-lateral system of access and benefit sharing, the standard Material Transfer Agreement (SMTA) and the benefit sharing fund. The latter is targeted to germplasm conservation, characterization of the germplasm and training of personnel especially in developing countries.

The primary benefit of PGRFA is in their use to create improved varieties. This requires access to these improved varieties by farmers. It also requires access to the genetic resources by plant breeders and other researchers. Use of the resources is facilitated by the availability of sound characterization data. The flow of improved varieties clearly depends on the existence of plant breeding programs. Private sector programs by their very nature must make a profit or they cease to exist. Margins in this industry are very low so any factors which reduce the margin for profit are detrimental. In many countries public sector breeding programs which have a mandate to develop and release varieties for commercialization have been greatly reduced in number. Those that remain are also reliant on returns from variety sales and often on commodity check-offs to bolster inadequate funding from government sources. The voluntary check-offs, by the way, are testament to the farmers' belief in the benefits of a flow of improved varieties. Anything that hinders either access to genetic resources or improved varieties is detrimental.

The UPOV framework provides a basis for national variety protection laws. The UPOV agreements recognize the special nature of Intellectual Property (IP) vested in plant varieties. All varieties are built on the basis of preceding genotypes. Unlike mechanical devices plants are self-reproducing. Protection is needed in order to recognize the creative contributions of plant breeders and to facilitate the generation of funds which in turn pay for the breeding programs of both private and public institutions. In return protected varieties are freely available for further breeding or research with or without the permission of the right holder. Other forms of Intellectual Property protection such as trade secrets, contracts and utility patents are not well suited to crop varieties. Patents are too restrictive, the patent holder has exclusive rights over use and in most jurisdictions there is no breeder or research exemption.

IV. Benefits

Farmers' Rights are set out in the Treaty. The responsibility of realizing Farmers Rights rests with national governments. It is reasonable to expect that all farmers, all of whom have contributed over the decades should benefit from their use. The question is how. Some view the right to use farm saved seed for own use as the most important benefit. Many farmers would not agree. Access to a continuous flow of improved varieties is more important to them. Article 9.3 of the Treaty states that "Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm saved seed/propagating material, subject to national law as appropriate." Countries which are members of UPOV have national laws which do place some, appropriate restrictions on the use of farm saved seed. The Treaty recognizes this and thus sanctions it. Article 15(2) of UPOV'91 does provide contracting members the flexibility to allow farmers to use farm saved seed for their own use. It does not permit the sale of farm saved seed for seed purposes. Each country can tailor their legislation to their unique circumstances. Many countries do involve farmers in policy development for germplasm acquisition and management, for variety registration and plant variety protection legislation. Thus these regimes can take farmers' needs into account in drafting and enforcing legislation and regulations in these areas.
As stated earlier the greatest benefit from the use of PGRFA is their use in variety development putting improved varieties in the hands of farmers worldwide. The SMTA does provide for payment where PGRFA from the Treaty are used to develop new varieties. Many countries use an almost identical MTA for non-Annex 1 crops. Given the ten year time lag in variety development and the fact that a number of countries did not start using the SMTA until years after the TREATY adoption, it is not surprising that payments have been slower than many have expected but they are expected to increase. Payments are not compulsory if the varieties are freely available for further breeding and other research as is the case where varieties are protected by Plant Breeders' Rights. These payments could well be increased if Annex 1 was expanded to include all crops important for food and agriculture. It may well be useful to revise the standard material transfer agreement to make payments value based and have clear termination clauses.

A number of organizations have made voluntary contributions to the Treaty Fund. Many national organizations contribute large amounts of in-kind assistance to genebanks by increasing seed of genebank accession, by characterizing those accessions and by training staff. International

organizations such as the CGIAR centers also carry a large load in conserving genetic resources of many food crops, important to developing countries. They also characterize the resources and make them freely available. The Centers play a significant role in training genebank staff. The Centers also play a very important role in pre-breeding, incorporating valuable traits into a range of adapted genetic backgrounds. These Centers are financially supported by development aid from many countries around the world. The contributions from international aid agencies and philanthropic organizations from many countries have been used for decades to support the conservation, sustainable use and benefit sharing of PGRFA. These contributions have been made to developing countries some of which are centers of origin or centers of crop diversity.

V. In summation:

- Achieving the goals of the Global Plan of Action requires, amongst other things, a tremendous effort by all plant breeders to produce new and improved varieties of all crops for all farmers worldwide.

- The Treaty and UPOV are complementary to each other. Both recognize and support the critical importance of plant genetic resources for food and agriculture and their special nature.

- Realization of the primary benefit of PGRFA, improved variety development, is supported by the Treaty and the viability of breeding programs is supported by UPOV compliant protection regimes.

- UPOV agreements provide for farmers to save seed for their own use and allow free use of protected varieties for further research and breeding.

- There is a need to expand the number of crops in Annex 1 to eventually include all crops of importance for food production. That will enhance the use of these resources and enhance the benefits.

- It may be useful to revise the terms of the SMTA to make them value based and to include clear termination clauses.

- Working together co-operatively and focusing on important issues will do wonders for what we all want: A secure supply of safe of nutritious food for all and a viable livelihood for farmers everywhere.

RECONCILING FARMERS' AND PLANT BREEDERS' RIGHTS

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I. Introduction

Farmers' Rights to save, reuse, exchange and sell farm-saved seed/propagating material, to maintain and create agro-biodiversity, and to manage plant genetic resources for food and agriculture (PGRFA), need to be protected and promoted. This applies particularly to smallholder farmers who have always managed and adapted their agro-biodiversity in the face of changing conditions by conserving, exchanging and adapting seeds thereby ensuring local and global food and nutrition security. The implementation of plant breeders' rights requires careful consideration in order not to weaken the role of smallholder farmers in their management of plant genetic resources.

The right of farmers to save, use, exchange and sell farm-saved seeds and other propagating materials is a central component of Farmers' Rights as enshrined in the International Treaty on Plant Genetic Resources for Food and Agriculture of the FAO (the FAO Treaty).[1] The FAO Treaty also includes the rights of farmers to participate in decision-making regarding, and in the fair and equitable sharing of the benefits arising from the use of, plant genetic resources for food and agriculture, as fundamental to the realization of Farmers' Rights (Preamble & Article 9).

In order to support the implementation of Farmers' Rights, the Governing Body of the Treaty adopted Resolution 8/2013 at its Fifth Session in Muscat, Oman, "request[ing] the Secretary to invite UPOV and WIPO to jointly identify possible areas of interrelations among their respective international instruments." In addition, through Notification GB6-028, the Governing Body invited Contracting Parties, stakeholders, and others to share any relevant information on the identification of interrelations between the FAO Treaty, especially its Article 9, and relevant instruments of UPOV and WIPO, pursuant to Resolution 8/2013.

This document provides Oxfam's position regarding this Resolution on the interrelations between the FAO Treaty and UPOV Convention in light of its recognition and support for Farmers' Rights, and presents some recommendations for improvement of the interface between these two international instruments.

II. Oxfam and the Sowing Diversity = Harvesting Security (SD=HS) Programme

Oxfam's vision is a just world without poverty. We believe that people can build and strengthen their own livelihoods, provided their rights are respected and implemented. The Sowing Diversity = Harvesting Security (SD=HS) Programme supports the rights of local and indigenous peoples

[1] This Treaty has also been referred to as the Seeds Treaty or its acronym ITPGRFA.

and smallholder farmers, largely women, by enabling them to access and develop plant genetic resources for food and agriculture suited to their needs. This also enables these actors to manage agro-biodiversity in the context of adapting to climate change. The programme aims to develop farmers' capacities in managing their genetic diversity and supports communities to claim their rights to do so effectively. Central in this context are the Right to Food as well as Farmers' Rights. The programme supports communities to participate in decision-making processes related to these rights and aims for structural changes by engaging in necessary policy reform.

Farmers are the original plant breeders that created the basis of agro-biodiversity that exists today. Farmers today continue to improve food crop diversity through continuous adaptation to diverse and changing socio-economic, cultural and political conditions as well as changes in agro-ecological circumstances where adverse conditions are intensified due to climate change. Local and indigenous peoples and smallholder farmers manage their seeds and actively utilize Plant Genetic Resources for Food and Agriculture (PGRFA), subjecting cultivars under various selection pressures, testing, selecting and evaluating seeds, encouraging introgression and even actively crossing varieties to create new diversity. Seeds are saved for replanting, exchanged as public goods with family members and neighbours, or sold in the local markets. This is the system by which smallholder farmers maintain and create crop genetic diversity, in the process using agro-biodiversity for adaptation to opportunities and pressures related to markets, on- and off-farm livelihoods, and climate change.

Multiple seed systems provide farmers with seeds. Generally speaking, one can distinguish formal and commercial seed systems from the so-called 'informal' or farmers' seed systems. In the latter farmers are the main developers, producers and distributors of seed. The application of Intellectual Property Rights (IPRs) to new plant varieties or plant genetic material is one of the characteristics of formal and commercial seed systems. The direct and indirect consequences of the application of IPRs on plant varieties for farmers' seed systems require careful analysis and consideration so that it does not weaken the role of smallholder farmers in PGRFA management. Smallholder farmers cannot be seen as mere end-users of innovations from the formal system, since this would not recognize their practices and traditional role in the management of PGRFA. Such reduction to the role of end-user would create undesirable dependency and dis-empowerment, and would result in a major loss of innovation in agriculture as smallholder farmers continue to provide the world with new, diverse and adapted cultivars.

III. UPOV and Plant Breeders' Rights

Intellectual Property Rights give a person an exclusive right over the use of his/her creation for a certain period of time. The WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) requires member countries to "provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof".[2] Least Developed Countries (LDCs) have till 2021 to comply with the TRIPS agreement or until the moment that

[2] TRIPs Article 27(3)b. Available at https://www.wto.org/english/tratop_e/trips_e/t_agm2_e.htm.

they cease to be a LDC.[3] One example of a sui generis system is provided by the International Union for the Protection of New Varieties of Plants (UPOV), which aims to provide and promote an effective system of plant variety protection through which breeders of new plant varieties can be granted a Plant Breeder's Right (PBRs). The rationale is that since plant breeding is a long and expensive process, while plant varieties can be easily and quickly reproduced, breeders need protection to recover their investments and encourage further plant breeding.

Once granted a plant breeders' right, the authorisation of the plant breeder is required for various uses including the production or multiplication and sales of the protected variety (Article 14). This nullifies the right of farmers to save, use, exchange and sell farm-saved seed where protected varieties are concerned. However, UPOV 1991 contains an optional 'farmers' privilege', through which countries may allow farmers to save and reuse seed of a protected variety "on their own holding" and "within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder" (Article 15.2). This means that the exemption may only apply to a limited set of crops and does not allow for any form of exchange of farm-saved seed across the fence. In addition, farmers may need to remunerate the breeder for re-using seed of a protected variety. In other words, UPOV's farmers' privilege does not fully recognize Farmers' Rights as enshrined in the FAO Treaty.

The UPOV 1991 Convention also contains a 'breeders' exemption' which allows protected varieties to be freely used for the purpose of breeding new varieties thereby allowing any breeder to have access to the latest improvements and new variation (Article 15.1.iii). This is an important difference with patent law, which plays an increasingly important role in plant breeding. In contrast to plant breeders' rights, patent law does not usually include a breeders' exemption. It is important to note that farmers and breeders alike depend on the continuous use of multiple existing crop varieties for the creation of new varieties. By not allowing for the free use of protected materials for further breeding, patents have an outright negative impact on innovation and the maintenance and development of agro-biodiversity, and promote further market concentration in the breeding sector. In particular, patents do not allow farmers to use, exchange or sell farm-saved seed of a patented variety. For these reasons, Oxfam strongly opposes patents on plants and propagating materials. Although the UPOV 1991 Convention contains a breeders' exemption, it is in its current form a barrier to the full realisation of Farmers' Rights.

IV. UPOV's lack of recognition of Farmers' Rights: How can this be overcome?

UPOV hampers the full realisation and implementation of Farmers' Rights in three main ways:
The rights to save, use, exchange and sell farm-saved seed/propagating material (FAO Treaty Preamble & Article 9.3). Most importantly, the UPOV 1991 Convention does not allow smallholder farmers to freely save, exchange and sell farm-saved seed of a protected variety. Several studies have shown that smallholder farmers in developing countries depend on the informal exchange of farm-saved seed for their seed security. In particular, a recent study, drawing conclusions from 9660 observations across six countries and covering 40 crops, shows

[3] This transition period can be further extended according to Article 66.1 of the TRIPS Agreement (WTO document IP/C/64, 12 June 2013).

that smallholder farmers' access 91% of their seed from informal systems with the majority (51%) being bought from local markets.[4] Smallholder farmers access new improved varieties from the formal sector mainly through the same informal channels of seed exchange and local trade, primarily because farmers have very limited access to retailers or cannot afford the price of their seed.[5] Furthermore, the quality and the timely supply of these seeds are often unreliable in the remote, marginal areas. By not allowing for the practice to freely save, exchange and sell farm-saved seed/propagating material with regard to varieties protected by plant breeder's rights, smallholder farmers can be criminalized and their main channel to access and fully utilize new varieties produced by the formal sector is blocked.

Under its Frequently Asked Questions, UPOV states that "UPOV Contracting Parties have the flexibility to consider, where the legitimate interests of the breeders are not significantly affected, in the occasional case of propagating material of protected varieties, allowing subsistence farmers to exchange this against other vital goods within the local community."[6] This interpretation of UPOV's private and non-commercial use exemption (Article 15.1.i) is too narrow as any person farming for subsistence needs will aim to sell some of his or her harvest after a good season, or exchange seed with, for example, family members living outside the local community. Furthermore, the term 'vital good' is unclear and leaves unanswered if cash would qualify as vital good.

Whereas UPOV's interpretation of the private and non-commercial use exemption has been notably narrow and restrictive,[7] the European Seed Association holds that "Subsistence farmers

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[4] McGuire, S.J., and Sperling, L. (2016). Seed systems smallholder farmers use. *Food Security*, 8(1), pp. 179–195. Available at http://link.springer.com/article/10.1007/s12571-015-0528-8.

[5] Louwaars, N.P., & De Boef, W.S. (2012). Integrated seed sector development in Africa: A conceptual framework for creating coherence between practices, programs, and policies. *Journal of Crop Improvement*, 26, pp. 39–59. Available at: http://www.tandfonline.com/doi/abs/10.1080/15427528.2011.611277.

[6] See: http://www.upov.int/about/en/faq.html#Q30. Despite its limited scope, this interpretation of Article 15.1.i is already broader than UPOV's interpretation of the same Article in its explanatory notes from 2009, which states: "[…] private acts which are undertaken for commercial purposes do not fall within the exception. Thus, a farmer saving his own seed of a variety on his own holding might be considered to be engaged in a private act, but could be considered not to be covered by the exception if the said saving of seed is for commercial purposes. […] The wording [….] suggests that it could allow, for example, the propagation of a variety by an amateur gardener for exclusive use in his own garden (*i.e. no material of the variety being provided to others*), since this may constitute an act which was both private and for non-commercial purposes. Equally, for example, the propagation of a variety by a farmer exclusively for the production of a food crop *to be consumed entirely by that farmer and the dependents of the farmer living on that holding*, may be considered to fall within the meaning of acts done privately and for non-commercial purposes. Therefore, activities, including for example "subsistence farming", where these constitute acts done privately and for non- commercial purposes, may be considered to be excluded from the scope of the breeder's right, and farmers who conduct these kinds of activities freely benefit from the availability of protected new varieties." (http://www.upov.int/edocs/expndocs/en/upov_exn_exc.pdf, p. 5, italics added). This interpretation does not seem to allow for the exchange of seeds amongst smallholder or subsistence farmers.

[7] For example, in examining the conformity of the Malaysian PVP law with the UPOV 1991 Convention, the UPOV secretariat expressly stated that "It is recommended to delete Section 31(1)(e) of the Act as the exchange of protected material for propagating purposes would not be covered by the exceptions under Article 15 of the 1991 Act." Section 31(1)(e) of the Malaysian Protection of New Plant Varieties Act contained the following exception:

in developing countries however are not prohibited to exchange seed with or sell seeds to other subsistence farmers as according to the UPOV 1991 Convention the protection conferred by a plant breeders' right does not extend to acts done privately and for non-commercial purposes."[8]

Oxfam urges UPOV to establish a proper and explicit balance between Farmers' Rights and Plant Breeders' Rights in order not to obstruct the practice of seed exchange and trade amongst smallholder farmers, thus enhancing seed and food security as well as continuous innovation of the plant genetic resources used by smallholder farmers. This should be done by providing a clear interpretation of the private and non-commercial use exemption, allowing smallholder farmers to freely save, exchange and sell farm-saved seed of protected crop varieties amongst themselves and in local markets, and to assist (prospective) member states to include such interpretation in their national legislation. In order to make such broadened exemption to the breeders' right legally and practically operational, a more precise definition of the targeted category of farmers is necessary. For example, the Ethiopian draft Plant Variety Protection (PVP) bill defines a smallholder farmer as someone whose total earnings from sales of crops produced do not exceed the average household income. By linking to a countries' average income, this approach can equally be applied to different countries.[9]

a) *Protection of traditional knowledge and the right to equitably participate in benefit-sharing (Article 9.2.a/b)*

UPOV does not support or facilitate Member States to align their Plant Variety Protection law with other international obligations under the Convention on Biological Diversity, the Nagoya Protocol and the FAO Treaty concerning the protection of traditional knowledge and benefit-sharing. The UPOV Conventions do not include concrete mechanisms that aim to prevent misappropriation of genetic resources and associated traditional knowledge. Some countries and CSOs have proposed to include disclosure requirements in PVP applications in order to verify the origin of the plant material used in breeding programmes and whether this material has been acquired lawfully and in full respect of Access and Benefit-Sharing (ABS) provisions.[10] UPOV has repeatedly rejected these proposals on grounds that it "could not accept this as an additional condition of protection since the UPOV Convention provides that protection should be granted to plant varieties fulfilling the conditions of novelty, distinctness, uniformity, stability and a suitable denomination and does not allow any further or different conditions for protection."[11]

"any exchange of reasonable amounts of propagating materials among small farmers." (UPOV doc. C(Extr.)/ 22/2, available at http://www.upov.int/edocs/mdocs/upov/en/c_extr/22/c_extr_22_2.pdf).

[8] European Seed Association, Position on Plant IP Protection and Biodiversity, ESA_11.0049, 6 January 2011: Available at http://www.euroseeds.org/esa110049-esa-position-plant-ip-protection-and-biodiversity.

[9] See for more information: De Jonge, B., Munyi, P. (2016). A Differentiated Approach to Plant Variety Protection in Africa. *The Journal of World Intellectual Property*. Volume 19, Issue 1-2, March 2016, pp. 28–52. Available at http://onlinelibrary.wiley.com/enhanced/doi/10.1111/jwip.12053.

[10] For example, the Indian Protection of Plant Varieties and Farmers' Rights act requires applicants, amongst other things, to include a "declaration that the genetic material or parental material acquired for breeding, evolving or developing the variety has been lawfully acquired" (Article 13.h). Available at http://www.wipo.int/wipolex/en/details.jsp?id=2401.

[11] UPOV's reply of January 23, 2009, to the letter of the executive secretary of the secretariat of the convention on biological diversity (CBD) of December 19, 2008. Available at http://www.upov.int/about/en/key_issues.html.

Oxfam urges UPOV to facilitate and support the possibility for Member States to secure that Plant Breeders' Rights are only granted to applicants that can show compliance with relevant ABS requirements in order to prevent misappropriation of genetic resources and associated traditional knowledge. Whereas the UPOV conditions of protection are novelty, distinctness, uniformity, stability and a suitable denomination, UPOV should additionally recognize and facilitate measures that secure verification of compliance with relevant national and/or international ABS requirements in assessing grants for plant breeders' rights. This can be done as part of the administrative requirements for filing an application for the grant of a breeder's right.

b) The right to participate in making decisions (Article 9.2.c)

Repeatedly, (prospective) UPOV members establish or upgrade their PVP laws 'behind closed doors' without a transparent and inclusive decision-making process. This does not respect the right of farmers "to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture" as enshrined in Article 9.2.c of the FAO Treaty. A recent example is the exclusion of farmer organisations from the Arusha negotiations following which the African Regional Intellectual Property Organization (ARIPO) adopted the Arusha Protocol.

UPOV should promote transparency and democratic accountability in its decision-making processes and that of its (prospective) members. In respect to its own decision-making processes, UPOV should facilitate the constructive and active participation of farmers and provide accessible and unrestricted information. In particular, participation by farmer organisations and other stakeholders from developing countries should be promoted and financially supported. Regarding its (prospective) members, UPOV should promote transparent and inclusive decision-making processes with respect to the development or amendment of PVP laws.[12]

V. Towards mutually supportive implementation of UPOV and the FAO Treaty

For new members, UPOV demands strict conformity with its UPOV 1991 Convention. With the exception of South Africa and Argentina, all members were developed countries at the time this Convention was adopted. Since the adoption of the WTO TRIPs Agreement, several developing countries have joined UPOV for various reasons, including requirements in free-trade agreements. Despite the very different membership profile today, and a drastically changed context of relevant international treaties, the CBD, its Nagoya Protocol and the FAO Treaty having been adopted since, the UPOV 1991 Convention has so far remained unchanged. New members are expected to conform to a rigid PVP model that was never designed with the specific characteristics of developing countries and their diverse seed systems in mind. This fixed model creates challenges for new and existing members as it leaves them practically no room to accommodate new or amended provisions in support of Farmers' Rights in their PVP legislation, in line with the needs of their smallholder farmers.

[12] See for more information: Dutfield, 2011, Food, biological diversity and intellectual property: The role of the international union for the protection of new varieties of plants (UPOV). Intellectual property issue paper no. 9. Geneva: QUNO, p 17. Available at http://www.quno.org/resource/2011/2/food-biological-diversity-and-intellectual-property.

In order to support the implementation and realisation of Farmers' Rights, in particular regarding local and indigenous communities and smallholder farmers in developing countries, Oxfam urges UPOV to consider and follow up the following recommendations:

- *Allow and support smallholder farmers the full execution of their right to save, exchange and sell farm-saved seed of protected varieties*

- *Allow and support Member States to implement measures in their PVP law that secure compliance with relevant (inter)national obligations dealing with the protection of traditional knowledge and benefit-sharing relevant to PGRFA*

- *Improve transparency and democratic accountability in decision-making processes on PVP laws at the national and international levels, including by promoting and ensuring the full and active participation of farmers and their organisations in the further implementation of UPOV at the national and international levels*

By taking these recommendations seriously, UPOV can support Farmers' Rights and "the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centers of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources, which constitute the basis of food and agriculture production throughout the world". Without the above recommendations being fulfilled, Oxfam is of the opinion and will promote that developing countries better develop their own *sui generis* systems of plant variety protection, which - while being fully compliant with the WTO-TRIPS Agreement, allows countries to balance their PVP law with the need to protect Farmers' Rights and to comply with other relevant international treaties dealing with the protection of traditional knowledge and benefit-sharing.[13]

[13] See for more information: Correa, C.M., Shashikant, S. and Meienberg, F. (2015) Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991. APBREBES. Available at http://www.apbrebes.org/news/new-publication-plant-variety-protection-developing-countries-tool-designing-sui-generis-plant.

INTERNATIONAL CONTRADICTIONS ON FARMERS' RIGHTS: THE INTERRELATIONS BETWEEN THE INTERNATIONAL TREATY, ITS ARTICLE 9 ON FARMERS' RIGHTS AND RELEVANT INSTRUMENTS OF UPOV[1]

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I. Introduction

The fifth and sixth sessions of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereinafter referred to as "the International Treaty") called for the identification of interrelations between the International Treaty and UPOV in the context of implementation of Article 9 of the International Treaty, which pertains to "Farmers' Rights".

Article 9.1 of the International Treaty acknowledges the "enormous contributions" that the local and indigenous communities and farmers "have made and will continue to make" not only in the conservation but also the "development of plant genetic resources" which constitute the foundation for food and agriculture globally.

Existing literature provides irrefutable evidence of the contribution of farmers particularly smallholder farmers and their important role in the development of plant genetic resources for food and agriculture (PGRFA) as well as food security.[2]

Article 9.2 of the International Treaty places the responsibility of realizing Farmers' Rights with national governments, adding that each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers' Rights, including:

a. protection of traditional knowledge relevant to PGRFA;
b. the right to equitably participate in sharing benefits arising from the utilization of PGRFA; and
c. the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA.

The use of "including" in Article 9.2 means that the list of what is considered to be Farmers' Rights is non-exhaustive or open.

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[1] This paper is based on the submission of Third World Network and Berne Declaration (now Public Eye) to the International Treaty on the subject of interrelations which was published in October 2015 and is available at http://www.twn.my/title2/intellectual_property/info.service/2015/ip151003/457628655560ccf2b0eb85.pdf

[2] See FAO factsheet, "Smallholders and family farmers" at http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/Factsheet_SMALLHOLDERS.pdf; IFAD & UNEP (2013) "Smallholders, food security and the environment", available at http://www.ifad.org/climate/resources/smallholders_report.pdf

Article 9.3 of the International Treaty states: "Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate".

The importance of the abovementioned elements and in particular farmers' right to save, use, exchange and sell farm-saved seed/propagating material is reinforced by the Preamble of the International Treaty which states:

"Affirming also that the **rights** recognized in this Treaty ***to save, use, exchange and sell farm-saved seed and other propagating material, and to participate in decision-making regarding, and in the fair and equitable sharing of the benefits*** arising from, the use of plant genetic resources for food and agriculture, ***are fundamental to the realization of Farmers' Rights, as well as the promotion of Farmers' Rights at national and international level***".

Farmers' Rights is a core component of the International Treaty and as such its full implementation is a pre-requisite to achieving the objectives of the International Treaty. **However, there is much concern that the instruments and/or activities of UPOV are not supportive of Farmers' Rights, and even undermine those rights, thereby hindering full realization of those rights.**

This paper highlights some of the conflicts between the instruments/activities of UPOV and implementation of Farmers' Rights.

II. Article 27.3(b) of the WTO-TRIPS Agreement & Sui Generis PVP Legislation

Article 27.3(b) of the WTO-TRIPS Agreement requires WTO Members to provide for protection of plant varieties. However it also allows WTO Members complete freedom to determine the modalities of such protection. Important to note is that the Article 27.3(b) obligation does not apply to WTO members which are least developed countries (LDCs), as they enjoy a transitional period until July 1, 2021, during which period they need not implement the TRIPS standards.[3] This transition period may be extended upon request.[4]

The only condition established by Article 27.3(b) is to provide "effective sui generis protection". "Sui generis" means "unique", "of its own kind", thus WTO Members have broad policy space to define how the protection is conferred. UPOV Convention is not mentioned in this provision. Hence, WTO Members may opt for *sui generis* protection that is not UPOV-compliant.

UPOV Conventions especially its 1991 Act is generally considered to be an inappropriate legal framework for developing countries as it was conceived for the agricultural systems and modalities of seed production prevailing in the US and European countries. In fact, developing

[3] See Decision of the WTO TRIPS Council adopted on 11 June 2013 (IP/C/64) at https://www.wto.org/english/tratop_e/trips_e/ta_docs_e/7_1_ipc64_e.pdf

[4] Article 66.1 of the TRIPS Agreement.

countries were conspicuously absent in the process of creating the UPOV Conventions.[5]

Therefore several countries (e.g. India, Malaysia, Thailand, Ethiopia) have opted to depart significantly from the one-size fits all model of UPOV 1991 and adopt innovative national PVP legislation that balance the different interests (public interests, commercial breeders and smallholder farmers), as well as advances the key requirements and objectives of the International Treaty, the Convention on Biological Diversity (CBD) and its Nagoya Protocol on access and benefit sharing (Nagoya Protocol).

For example Section 39(1)(iv) of India's Protection of Plant Varieties and Farmers' Rights Act 2001 states: "a farmer shall be deemed to be entitled to save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this Act in the same manner as he was entitled before the coming into force of this Act: Provided that the farmer shall not be entitled to sell branded seed of a variety protected under this Act."

This shows it is entirely possible to put in place a *sui generis* PVP legislation that advances implementation of Article 9. However as shown below, there are significant pressures on Parties to the International Treaty to adopt the UPOV 1991 model and forgo Farmers' Rights; hence, the importance of also recognizing and resolving the conflicts between UPOV and Article 9 of the International Treaty.

III. Conflicts between UPOV and implementation of Farmers' Rights

1. Farmers' right to save, use, exchange and sell farm-saved seed and other propagating material

This right is fundamental to the realization and promotion of Farmers' Rights, at the national and international level.

There are major differences between the UPOV Acts of 1978 and 1991 and the implications for farmers' right to save, use, exchange and sell farm-saved seeds/propagating materials are discussed below.

UPOV 1978

Article 5 of UPOV 1978 provides for breeders' rights but this is limited to "production for purposes of commercial marketing, the offering for sale and the marketing of the reproductive or vegetative propagating material, as such, of the variety". As such it is generally accepted that farmers using the protected varieties have the freedom to save and exchange farm-saved seed/propagating material. However "commercial marketing" and "offering for sale" of the

[5] The 1991 Act was negotiated by only 20 UPOV member countries, out of which only one (South Africa) was a developing country, 17 developing countries participated as observers See Carlos M. Correa et al. (2015), « Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991 », APBREBES, available at http://www.apbrebes.org/news/new-publication-plant-variety-protection-developing-countries-tool-designing-sui-generis-plant

propagating material of protected variety needs the authorization of the right holder. In contrast to UPOV 1991 (discussed below), UPOV 1978 offered greater leeway to implement Farmers' Rights. It is worth noting that though UPOV 1978 provided more flexibility, there are still limitations to implementation of Farmers' Rights.

In any case the ratification of UPOV 1978 is no longer possible. New members joining UPOV have to be in line with UPOV 1991. UPOV members that have already ratified the 1978 Act do not have any obligation to ratify the Act of 1991. Several members of UPOV (Norway, China, Brazil, etc,) have decided to remain with UPOV 1978 and to not ratify UPOV 1991.

UPOV 1991

UPOV 1991 greatly expands the scope of breeders' rights and severely limits Farmers' Rights.

Article 14 of UPOV 1991 expands breeders' rights to producing, conditioning, offering for sale, selling or other marketing, exporting, importing or stocking in relation to the propagating material, as well as harvested material obtained through unauthorized use of propagating material.

An optional exception to breeders' right is provided under Article 15(2) of UPOV 1991 which states: "[…] within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, […] permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety […]".

UPOV's Guidance on Article 15.2 advocates the following interpretation: "The Diplomatic Conference recommendation indicates that the optional exception was aimed at those crops where, […] *there was a common practice of farmers saving harvested material for further propagation.* […] The wording 'product of the harvest' indicates that the *optional exception may be considered to relate to selected crops where the product of the harvest is used for propagating purposes, for example small-grained cereals where the harvested grain can equally be used as seed* […] Examples of factors which might be used to establish reasonable limits and to safeguard the legitimate interests of the breeder are the size of the farmer's holding, the area of crop concerned grown by the farmer, or the value of the harvested crop. Thus, '*small farmers' with small holdings (or small areas of crop) might be permitted to use farm-saved seed to a different extent and with a different level of remuneration to breeders than 'large farmers'*. […] For those crops where the optional exception is introduced, *a requirement to provide remuneration to breeders might be considered as a means of safeguarding the legitimate interests of the breeders*." (emphasis added)[6]

In sum, this optional exception (also often referred to as "farmers' privilege") allows farmers to save seed and replant on their own holdings only certain crops and subject to certain conditions

[6] "Guidance for the Preparation of Laws based on the 1991 Act of the UPOV Convention" (UPOV/INF/6/4), p. 68-69 available at http://www.upov.int/edocs/infdocs/en/upov_inf_6.pdf

(e.g. payment of remuneration to the right holder). This limited (optional) exception would not allow national laws to permit smallholder farmers to freely exchange or sell farm-saved seed/propagating material (e.g. small amounts or for rural trade).

Another relevant exception is Article 15(1)(i) which states breeders' rights shall not extend to "acts done privately *and* for non-commercial purposes".

UPOV's guidance and interpretation of the scope of the exception is extremely restrictive and narrow. It states: "[….] acts which are *both* of a private nature *and* for non-commercial purposes are covered by the exception. Thus, *non-private acts, even where for non-commercial purposes*, *may be outside the scope* of the exception …" (emphasis added)

"Furthermore, […] private acts which are undertaken for commercial purposes do not fall within the exception. Thus, a farmer saving his own seed of a variety on his own holding might be considered to be engaged in a private act, but could be considered not to be covered by the exception if the said saving of seed is for commercial purposes. The wording [….] suggests that it could allow, for example, the propagation of a variety by an amateur gardener for exclusive use in his own garden (i.e. *no material of the variety being provided to others*), since this may constitute an act which was both private and for non-commercial purposes. Equally, for example, the propagation of a variety by a farmer exclusively for the production of a food crop *to be consumed entirely by that farmer and the dependents of the farmer living on that holding*, may be considered to fall within the meaning of acts done privately and for non-commercial purposes.."(emphasis added)[7]

The exception as elaborated above would not cover exchange of seeds among farmers as UPOV's Guidance explicitly mentions "exclusive use in his own garden (i.e. no material of the variety being provided to others)" and consumption entirely by people "on that holding". Even the multiplication of the protected variety to produce food crops to be consumed by a neighbour (not living on the holding) is not seen as falling within the scope of the exception. The interpretation applied by UPOV does not address the needs and realities of especially smallholder farmers who, in their daily lives, do exchange seeds/propagating material and sell them at the local market.[8]

Most revealing of the conflict between UPOV 1991 and Article 9 of the International Treaty is UPOV's response to Farmers' Rights provisions enacted by Parties to the International Treaty.

For example, in examining the conformity of Malaysia's national PVP legislation with UPOV 1991 UPOV stated that "the exchange of protected material for propagating purposes would not be covered by the exceptions under Article 15 of the 1991 Act" and on that basis recommended deletion of Section 31(1)(e) of Malaysia's Protection of New Plant Varieties Act 2004 which

[7] See supra, note 6

[8] McGuire, S.J., and Sperling, L. (2016). Seed systems smallholder farmers use Food Security, 8(1), pp. 179–195

contained the following exception: "any exchange of reasonable amounts of propagating materials among small farmers."[9]

In the case of the Philippines, UPOV found the farmers' exception in Section 43(d) of the PVP legislation to be incompatible with the 1991 Act. Section 43(d) states:

"The Certificate of Plant Variety Protection shall not extend to: ... d) The traditional right of small farmers to save, use, exchange, share or sell their farm produce of a variety protected under this Act, except when a sale is for the purpose of reproduction under a commercial marketing agreement. The Board shall determine the condition under which this exception shall apply, taking into consideration the nature of the plant cultivated, grown or sown. This provision shall also extend to the exchange and sale of seeds among and between said small farmers: Provided, That the small farmers may exchange or sell seeds for reproduction and replanting in their own land."

In its comments UPOV notes inter alia "if 'exchange, share or sell (*sic*) of their farm produce of a variety protected under this Act' is for the purpose of reproduction, those acts would constitute infringements to the breeder's right [...] The exchange and sale of seeds among and between said small farmers […] would constitute an infringement to the breeder's right."[10] UPOV called for the Section to be amended, meaning deletion of provisions that safeguards Farmers' Right.

In response to increasing criticisms over the adverse implications of UPOV's provisions for Farmers' Rights, in October 2014, the UPOV Council adopted a list of Frequently Asked Questions which states that "within the scope of the breeder's right exceptions […], UPOV Contracting Parties have the flexibility to consider, where the legitimate interests of the breeders are not significantly affected, in the occasional case of propagating material of protected varieties, allowing subsistence farmers to exchange this against other vital goods within the local community."

This has been criticized for being "legally incorrect and deliberately misleading" as UPOV's response is not supported by the text and interpretation of Article 15 and practices of UPOV which have consistently rejected provisions in PVP legislation that allow exchange of seeds/propagating material.[11] Moreover, how is a farmer to know when the breeders' rights are not affected and exchange is allowed.

In any case, only "occasional exchange" is allowed, meaning that exchange of seeds/propagating material as a regular component of farming practices is still not recognized by UPOV.[12]

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[9] UPOV doc. C(Extr.)/ 22/2 available at http://www.upov.int/edocs/mdocs/upov/en/c_extr/22/c_extr_22_2.pdf.
[10] UPOV doc. C(Extr.)/24/2 available at http://www.upov.int/edocs/mdocs/upov/en/c_extr/24/c_extr_24_02.pdf
[11] See APBREBES Report on the UPOV Autumn Session 2014, Newsletter Issue #11, available at www.apbrebes.org/files/seeds/files/newsletter11%2018nov2014short.pdf
[12] Carlos M. Correa et al. (2015), « Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991 », APBREBES, available at http://www.apbrebes.org/news/new-publication-plant-variety-protection-developing-countries-tool-designing-sui-generis-plant

In summary:

The discussion shows that UPOV especially its 1991 Act is NOT conducive for the implementation of the farmers' right to freely use, save, exchange and sell seed/propagating material.

In contrast, countries that are NOT members of UPOV, are better placed to realize Farmers' Rights, as they may implement a *sui generis* regime (e.g. as in India, Malaysia, Philippines) that allows farmers especially smallholder farmers to freely save, use, exchange and sell seeds/propagating material.

The effects of restrictions on farmers' right can be quite devastating. A human rights impact assessment of UPOV that examined the potential impact of UPOV in the Philippines, Peru and Kenya concludes: "*UPOV 91 restrictions* on the use, exchange and sale of farm-saved PVP seeds *will make it harder for resource-poor farmers to access improved seeds*. This could *negatively impact on the functioning of the informal seed system*, as the beneficial inter-linkages between the formal and informal seed systems will be cut off. Moreover, *selling seeds is an important source of income for many farmers*. From a human rights perspective, restrictions on the use, exchange and sale of protected seeds could *adversely affect the right to food*, as seeds might become either more costly or harder to access. *They could also affect the right to food, as well as other human rights*, by reducing the amount of household income which is available for food, healthcare or education".[13]

2. Protection of traditional knowledge relevant to PGRFA (Article 9.2(a))

Traditional knowledge is the basis of local innovation, *in situ* seed conservation, and essential for food security and creation of agrobiodiversity.[14] It is applied by farmers in the selection, preservation and storing of seed and is also the basis of the informal seed system, which is crucial to achieve food security in many developing countries.[15] However the wealth of farmers' practices goes largely unnoticed and unacknowledged by UPOV.

There is no provision recognizing that breeders have (over generations) been sourcing and continue to source their genetic material from farming communities. In addition, UPOV does not have mechanisms to deal with misappropriation of plant genetic resources and associated traditional knowledge or to facilitate benefit-sharing (see below).

Moreover, UPOV's restrictions on saving, exchanging and selling protected seed comes at the expense of farmers gradually losing their know-how related to seed selection and preservation.

[13] "Owning Seeds, Accessing Food – A human rights impact assessment of UPOV 1991 based on case studies in Kenya, Peru and the Philippines," October 2014. Available at www.evb.ch/fileadmin/files/documents/Saatgut/2014_07_10_Owning_Seed_-_Accessing_Food_report_def.pdf

[14] IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development). 2009. Synthesis Report – A Synthesis of the Global and Sub-Global IAASTD Reports (edited by B. McIntyre).

[15] Joseph Wekundah (2012) 'Why Informal Seed Sector is important in Food Security', African Technology Policy Studies Network

They would also gradually lose their ability to make informed decisions about what to grow and on which type of land, how to respond to pest infestation, or how to adapt their seed system to changing climatic conditions.[16] The process of "deskilling" of farmers – which is already underway with the decline of local agrobiodiversity – could become more acute with restrictions on use of seeds introduced through UPOV 91-style laws.[17]

In summary:

UPOV does not protect traditional knowledge. Its system is crafted to further the interests of commercial breeders and its restrictions on saving, exchanging and selling protected seeds has detrimental effects on traditional knowledge.

3. The right to equitably participate in sharing benefits arising from the utilization of PGRFA (Article 9.2(b))

Disclosure of origin and evidence of compliance with access and benefit sharing requirements in intellectual property applications is widely seen as a crucial tool to prevent misappropriation of genetic resources and associated traditional knowledge and to facilitate implementation of prior informed consent and fair and equitable benefit sharing arising from the utilization of such resources and knowledge.

There are numerous documented cases of misappropriation.[18] For example Hammond found that Seminis (a subsidiary of Monsanto) planted farmers' carrot seeds from Turkey, and through a simple process of selection – mainly selecting plants that were slow to bolt and which had a desirable root shape and shade of purple (associated with health benefits) – emerged with a new carrot variety over which it has obtained PVP protection in the United States and Europe.[19]

Disclosure requirements have been incorporated into intellectual property legislation in many countries, and have been advocated by many different countries in international forums such as the WTO, the CBD and the World Intellectual Property Organization (WIPO). A PVP application is an important checkpoint to monitor and enhance transparency with regard to utilization of genetic resources and associated traditional knowledge, and compliance with access and benefit-sharing rules.[20]

An example of a disclosure obligation in PVP legislation is provided by Section 12 of Malaysia's national PVP legislation, which stipulates that an application must:
"… (e) contain information relating to the source of the genetic material or the immediate parental lines of the plant variety;

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[16] See supra, note 13
[17] See supra, note 13
[18] McGown, J., (2006). "Out of Africa: Mysteries of Access and Benefit Sharing", Edmonds Institute, available at http://bit.ly/1uSCXHa; Hammond, E., (2013). "Biopiracy Watch: A compilation of some recent cases", Vol. 1. Third World Network, Penang.
[19] Hammond, E., (2014). "Biopiracy of Turkey's purple carrot", Third World Network, available at http://www.twn.my/title2/intellectual_property/info.service/2014/ip140212.htm
[20] See supra note 12

(f) be accompanied with the prior written consent of the authority representing the local community or the indigenous people in cases where the plant variety is developed from traditional varieties;
(g) be supported by documents relating to the compliance of any law regulating access to genetic or biological resources."

Another example is Article 18(1) of India's PVP and Farmers' Rights Act, which stipulates that an application for registration must:
"… (e) contain a complete passport data of the parental lines from which the variety has been derived along with the geographical location in India from where the genetic material has been taken and all such information relating to the contribution, if any, of any farmer, village community, institution or organization in breeding, evolving or developing the variety;
(h) contain a declaration that the genetic material or parental material acquired for breeding, evolving or developing the variety has been lawfully acquired."

However, the UPOV Convention has been interpreted as preventing Contracting Parties from establishing a disclosure obligation as a condition for registration of a plant variety.[21]

In applying this approach, UPOV has deemed inconsistent with its regime legislation proposed by some Members of the International Treaty, such as Malaysia, India and required removal of disclosure obligations (with regard to origin, prior informed consent and compliance with access and benefit-sharing legislation) before allowing accession to the Union. Peru deleted from its draft legislation a disclosure-of-origin obligation in anticipation of UPOV's opposition.[22]

In summary:

UPOV has taken the position that disclosure requirements are incompatible with its provisions, which in turn limits countries' ability to effectively implement Article 9.2(b) of the International Treaty. Further UPOV lacks mechanisms to prevent misappropriation and facilitate benefit-sharing arising from the utilization of plant genetic resource developed by farmers.

In contrast, developing countries opting for *sui generis* PVP legislation (e.g. Malaysia and India) are able to put in place appropriate mechanisms including a disclosure requirement to implement fair and equitable benefit sharing and safeguard against misappropriation.

4. **The recognition of the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world (Article 9.1)**

[21] See supra note 6, pp. 33-34.
[22] See supra note 13

The word “farmer” does not appear in UPOV 1978, while in UPOV 1991, “farmer” is only mentioned in Article 15.2 with regard to the limited farm-saved seed exception. There is nothing in the Acts, which could be interpreted as recognition of the contribution farmers, local and indigenous communities have made and continue to make with regard to PGRFA. Such recognition or consideration of Farmers’ Rights is similarly lacking with regard to decisions taken during UPOV sessions as well as the activities of the UPOV Secretariat.

Instead UPOV’s instruments and activities are heavily tilted in favour of commercial breeders, to the detriment of Farmers’ Rights and interests. For example, farmers’ varieties in most cases cannot be protected as they often cannot meet the uniformity or stability criteria.

Another inequality, which could be observed, is regarding essentially derived varieties (EDVs). UPOV 1991 extends breeders’ rights to varieties essentially derived from the protected variety. This means that if a farmer makes a small derogation from a protected variety (e.g. by selection), the farmer would need authorization from the breeder (of the protected variety) to commercialize the newly bred variety (as it would be considered an EDV). The given rationale for EDVs is to prevent claims for plant breeder rights (PBRs) on newly bred varieties, which are essentially similar to the initial protected variety.

However, if a public or private commercial breeder uses a variety bred by farmers (not protected by PBRs) to breed a new plant variety, the breeder may obtain PBRs but the farmer has no rights. As noted above, UPOV refuses to allow the introduction of a disclosure of origin requirement and any mechanism to prevent misappropriation and facilitate benefit sharing arising from the utilization of plant genetic resource developed by farmers.

In addition, as discussed above, UPOV undermines the exercise of farmers’ right to freely use, save, exchange and sell seeds/propagating material, which facilitates farmer experimentation and breeding that has underpinned their contribution to the conservation and development of PGRFA.

In summary:

UPOV’s instruments and activities fail to give due recognition to the contribution of local, indigenous communities and farmers, or acknowledge their continuing important role in the development of plant genetic resources. Its instruments (especially UPOV 1991), while safeguarding the interests of commercial breeders are detrimental to the interests of farmers, including local and indigenous communities.

5. The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA (Article 9.2 (c)

In 2009, then UN Special Rapporteur on the Right to Food recommended that governments put in place “mechanisms” for the active participation of farmers in decisions related to PGRFA

"particularly in the design of legislation covering [...] the protection of plant varieties so as to strike the right balance between the development of commercial and farmers' seed systems"[23]

In this context, a major concern is that UPOV's technical assistance is focused on the promotion of UPOV 1991. It does not require the beneficiary country to put in place mechanisms for farmers' participation in the formulation of national PVP laws. In fact, UPOV is known to support processes that are not participatory or inclusive of farmers or their representatives.

For example, UPOV provided extensive technical assistance to the African Regional Intellectual Property Organization (ARIPO) in the development of a regional PVP Protocol (Arusha Protocol). At least 13 ARIPO members are categorized by the UN as Least Developed Countries. This regional process had significant implications nationally, as it is about adopting a centralized system for the grant and administration of PVP modelled on UPOV 1991. Farmer organizations and civil society groups raised numerous concerns over the appropriateness of such a legal framework for the ARIPO region given the views and interests of smallholder farmers that make up 80% of the agricultural system in the ARIPO region have not been taken into account. Concern was also raised over the flawed, non-participatory and non-transparent process by which the Protocol was being developed.

In January 2016, the Alliance for Food Sovereignty Africa (AFSA) wrote a letter to all UPOV Members expressing "outrage at the deliberate exclusion of smallholder farmers and civil society in key meetings negotiating a PVP Arusha Protocol […] despite their numerous requests".[24]

The letter asserts the Arusha Protocol has major implications on Farmers' Rights at the national level for the ARIPO members that are also members of the International Treaty. "And yet no effort was made to operationalize Article 9.2(c) of ITPGRFA, which is about Farmers' Rights to participate in decision-making on matters."[25]

"Even worse is that international organizations such as UPOV and WIPO have intentionally enabled the non-fulfilment of Article 9.2(c) of the ITPGRFA and the undermining of Farmers' Rights as these organizations have supported this flawed and illegitimate ARIPO process."[26]

In Summary:

UPOV facilitates national and regional processes where farmers' right to participate in making decisions is ignored.

6. Pressure to Give Up Farmers' Rights

[23] UN General Assembly Document (A/64/170), "Seed Policies and the right to food: enhancing agrobiodiversity and encouraging innovation" available at http://www.srfood.org/images/stories/pdf/officialreports/20091021_report-ga64_seed-policies-and-the-right-to-food_en.pdf

[24] See http://afsafrica.org/open-letter-to-members-of-the-international-union-for-the-protection-of-new-varieties-of-plants-upov-2/

[25] ibid

[26] ibid

As highlighted above, the WTO TRIPS Agreement gives countries full freedom to put in place PVP systems that are suitable for their own agricultural systems, and several countries have done so.

However at the same time it cannot be ignored that there is enormous pressure on developing country governments, many of whom are Parties to the International Treaty, to adopt the UPOV 1991 model for the protection of plant varieties. In particular developed countries negotiating bilateral and regional North-South free trade agreements (FTAs) make it a requirement for developing countries to adopt the UPOV 1991 model and/or become a party to the 1991 Act[27]. In fact, many developing countries that have ratified UPOV 1991 have done so to comply with obligations imposed in FTAs with the USA or the European Union.

This pressure is accompanied by one-sided (and in some cases even inaccurate or misleading) information about the benefits of the UPOV system. Usually no information is provided on alternative *sui generis* PVP systems, the importance of the informal seed sector and Farmers' Rights.

Countries joining UPOV 1991 have very little room to manoeuver, as they have to present their legislation to the UPOV Council for assessment of conformity with the 1991 Act.[28] To assess conformity, the UPOV Secretariat scrutinises a country's legislation, rejecting any clause that in its view is inconsistent with its understanding of the 1991 Act. Only if the decision is positive (in conformity) can the said country become a Member of UPOV 1991.

This has been illustrated above in the case of Malaysia and the Philippines, whereby UPOV called for the deletion of provisions implementing Farmers' Rights on the basis that they were inconsistent with the 1991 Act.

In summary:

The incoherence and conflicts in the international legal system is hindering Parties to the International Treaty from implementing all elements of Farmers' Rights.

IV. Conclusion

Based on the above discussion, it is apparent that in contrast to UPOV, alternative non-UPOV *sui generis* PVP systems offers Parties to the International Treaty full freedom to put in place mechanisms to implement all aspects of Farmers' Rights.

It is important to note that many independent expert reports have actually recommended that developing countries do not join the UPOV system[29] as it offers a rigid model inappropriate for

[27] GRAIN (2016),Trade agreements privatising biodiversity, available at https://www.grain.org/attachments/3734/download

[28] Article 34(3) of the 1991 Act.

[29] For example, The UPOV Convention, Farmers' Rights and Human Rights - An integrated assessment of potentially conflicting legal frameworks" published by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development" (June 2015) available at

developing countries where farmer managed seed systems (informal seed systems) and the practices of freely saving, using, exchanging and selling seeds are prevalent.

Parties to the International Treaty should learn from the experiences of countries that are implementing non-UPOV *sui generis* systems, and design PVP systems that are more suited to their national agricultural systems and realities. Towards this end several tools have been developed.[30]

This paper has also highlighted several conflicts between the requirements of UPOV and realization of Farmers' Rights by Parties to the International Treaty. These conflicts need to be recognized and may be addressed by UPOV Members explicitly recognizing that governments have full flexibility in designing national PVP legislation *inter alia*:

- To allow farmers, especially smallholder farmers to freely save, use, exchange and sell farm saved seed/propagating material;
- To put in place provisions/mechanisms to protect traditional knowledge and to implement fair and equitable benefit sharing arising from the utilization of PGRFA, including disclosure of origin and evidence of prior informed consent and benefit sharing;
- To put in place provisions/mechanisms to recognize the past, present and future contributions of farmers in the conservation, sustainable use and development of PGRFA.

With regard to farmers' right to participate in decision-making, it is important that UPOV respects and promotes its implementation especially in its provision of technical assistance. Such participation should be in line with internationally recognized principles of participation, and in particular include timely access to information (covering process and substance); be inclusive, independent, impartial, transparent and non-discriminatory processes and mechanisms; pay special attention to biodiversity-enhancing and disadvantaged groups, in particular smallholder farmers; the right to be meaningfully consulted at each phase of legislative drafting and policy-making; to voice opinions and criticism; to submit proposals; and comments and inputs need to be taken into account in the decision.[31]

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https://www.giz.de/fachexpertise/downloads/giz2015-en-upov-convention.pdf ; UNDP (2008) "Towards a Balanced Sui Generis Plant Variety Regime", available at http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/toward-a-balanced-sui-generis-plant-variety-regime.html; See also supra note 23.

[30] Carlos M. Correa et al. (2015), see supra note 12 ; UNDP 2008, ibid.

[31] Chee Yoke Ling et al. (2016), Farmers' Right to Participate in Decision-making – implementing Article 9.2 (c) of the International Treaty on Plant Genetic Resources for Food and Agriculture, APBREBES, available at http://www.apbrebes.org/files/seeds/files/PE_farmers%20right_9-16_def-high.pdf?pk_campaign=part

CIVILISED SOCIETY RESTS UPON FARMERS AND PLANT BREEDERS

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I. Introduction

Agriculture began some 8-10,000 years ago at various places in the world as humans selected for characteristics that made wild plants easier to harvest for their edible parts. For example, the act of collecting seed heads of wild wheat preferentially selected ears of wheat that did not shatter and disperse seed naturally. Through this process, wild plant species were transformed into domesticated species. It is now known from comparing DNA sequences of domesticated and their progenitor wild species that a significant amount of genetic diversity (30-50%) was not transferred from the wild species to the domesticated species due to a "bottlenecking" effect of selection around critical genes that were involved in the domestication process. A significant amount of genetic diversity that may be of future use to improve crop plants therefore still resides only in the wild species of cultivated species.

Crops were initially domesticated in primary centres of diversity of the wild species. Various strains of landraces or farmer-varieties developed due to natural selection by the environment (maturity, cold tolerance, drought tolerance) and according to farmer preferences through mass selection for characters such as straw quality, grain size, and taste. The degree to which landraces could evolve to be better adapted was limited according to,

1) the amount of useful diversity that existed in the crop in that particular location,

2) opportunities to increase the diversity of the genetic base through mixing with other genetically diverse landraces of the same species

3) the limited ability of mass selection to result in differences for heritable traits, especially including those controlled by many genes of individually small effect, e.g. genes contributing to yield increase, and

4) by failing to create new genetic diversity that would otherwise have been forthcoming through making parental crosses. Absence of controlled pollinations was a significant limitation in self-pollinated crops such as wheat and barley where reliance for creating new diversity within and among landraces was necessarily limited to natural outcrossing events (approx. 5% in wheat) which would then only involve neighboring plants.

Humans carried seed or vegetative propagules of landraces to adjacent areas creating secondary and tertiary centres of diversity where selection continued. Additional variation became possible when landraces from different areas of adaptation were introduced. However, as seeds were progressively carried from one region to another, further diversity was successively lost during each stage of migration due to inadequate sampling of the crop population. Consequently, by the time cereal landraces had reached northern Europe from the centre of domestication in the fertile crescent of the Middle East it can be expected that much of the original diversity had been lost to a succession of "bottlenecking" events.

Global transfer of landrace varieties accelerated greatly once a connection had been made between the Old and New Worlds in the 16th C. As a result of the pattern of domestication events (Figure 1) and subsequent migratory routes of landraces in the hands of farmers and traders, no single country or region, no matter how diverse their agricultural or natural flora, can be self-sufficient for all the crops, sources of calories, fat, protein, agricultural production, and agricultural value. On average, countries today are from 60-75% dependent upon crops that were initially domesticated in foreign countries. These mutual dependencies among nations explain why the multi-lateral system of the FAO International Treaty of Plant Genetic Resources for Food and Agriculture (ITPGRFA) is so critically important to allow farmers and breeders, and thus society as a whole, access to global sources of cultivated germplasm.

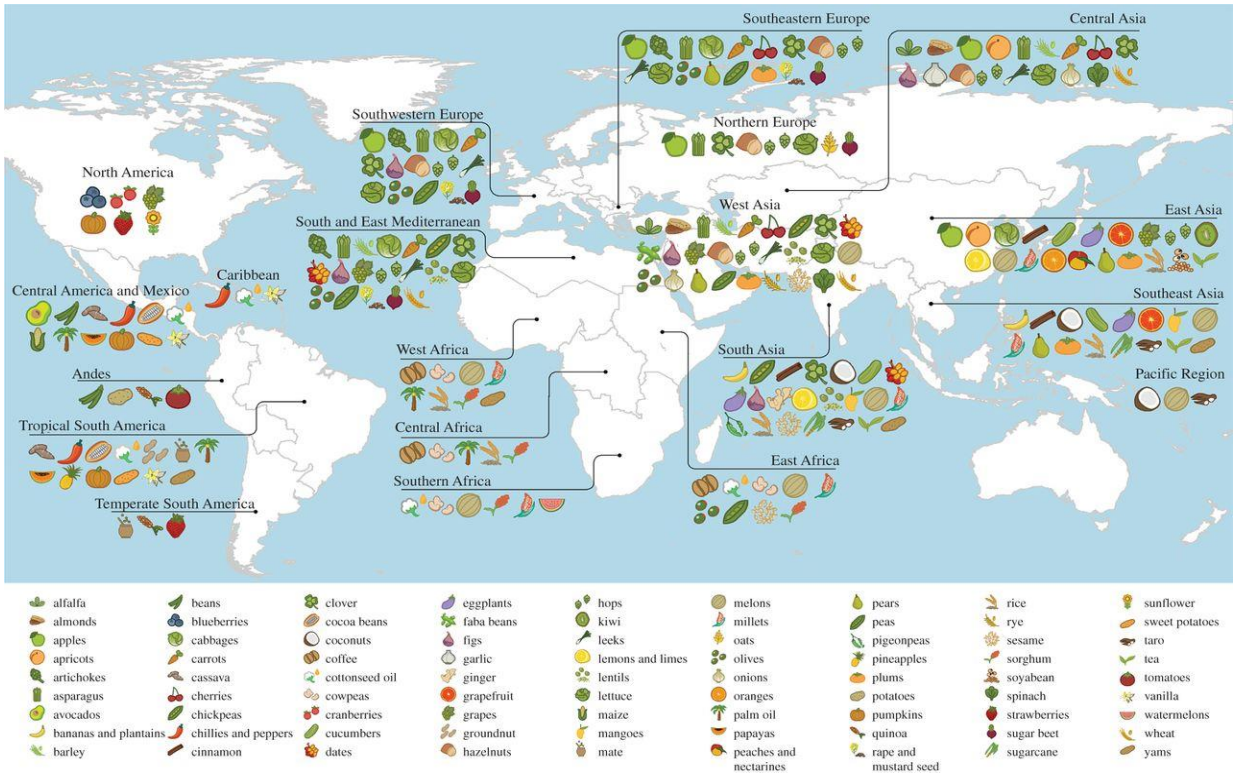

Figure 1. Primary regions of diversity of major agricultural crops worldwide (Khoury, et al., 2016 Proc. Royal. Soc. 283:20160792.

Multi-lateral access to germplasm for further breeding is also critical because there is global vulnerability, including to climate change, and attacks by pests and disease (Figure 2).

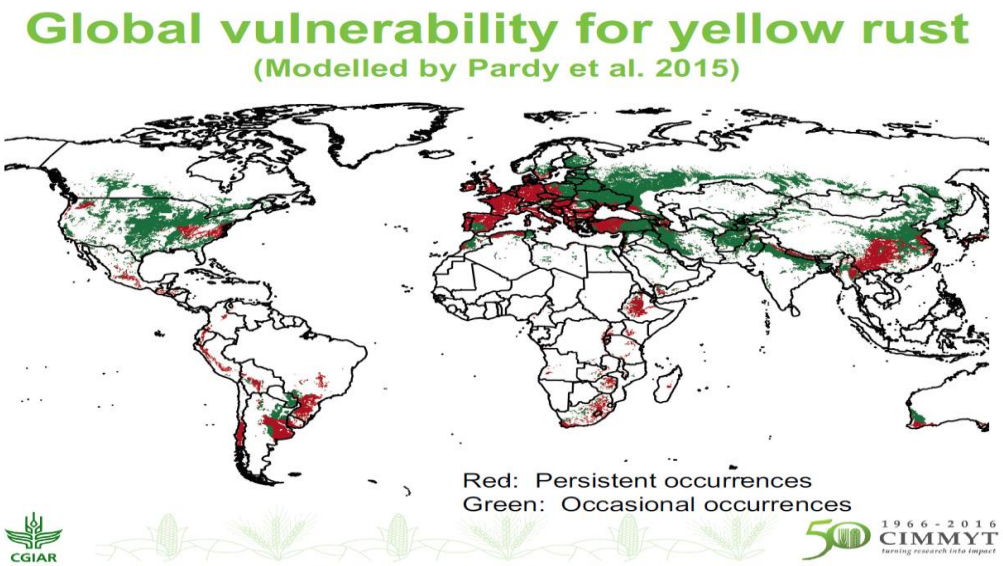

Figure 2. Global vulnerability for yellow rust in wheat. (Pardy et al 2015. CIMMYT Symposium, 2016)

Crop pests and diseases breed in large numbers, very quickly, and can readily cross international borders (Figure 3). For example, even a moderate infection of rust produces 32 trillion spores per hectare per day. Rusts can cause infections hundreds to thousands of kilometres away. Rust spores can travel from Africa to Perth in Australia in 3-4 days and transatlantic spread is possible.

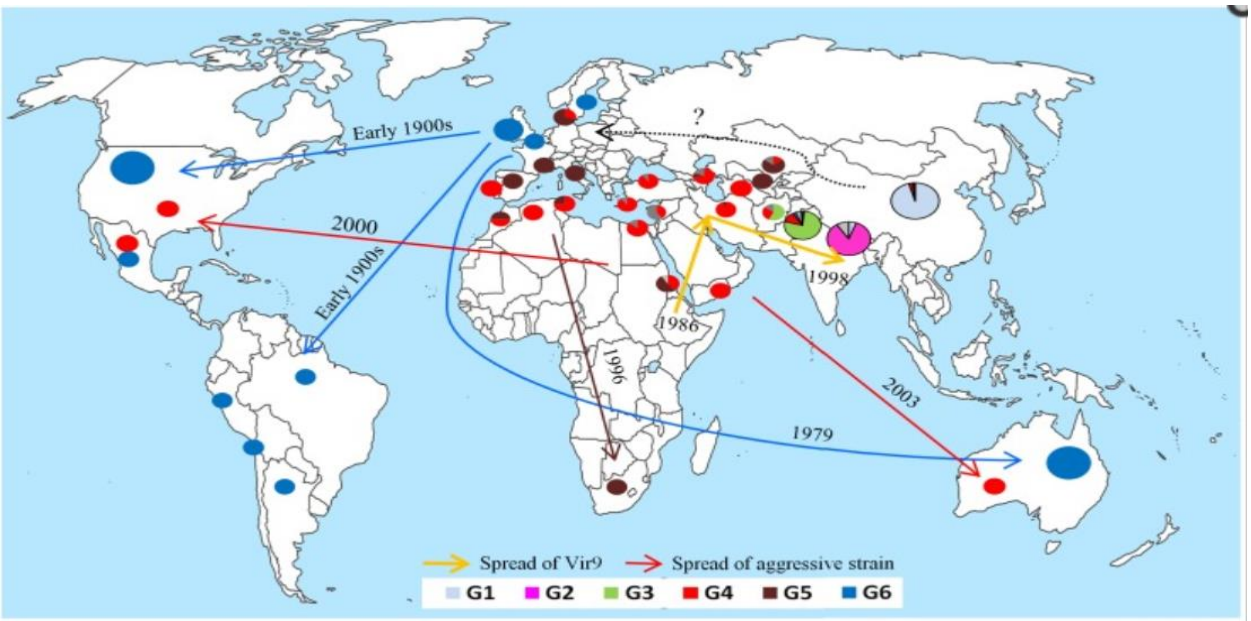

Figure 3. Origin and migration routes of recently emerged populations of wheat yellow rust. (Ali et al. (2014) PLoS Pathog 10.1371/journal.ppat.1003903.

II. Historical and recent crop yields

1. U.K. (England) Wheat

Figure 4 shows wheat yields achieved in England from 1250-current day.

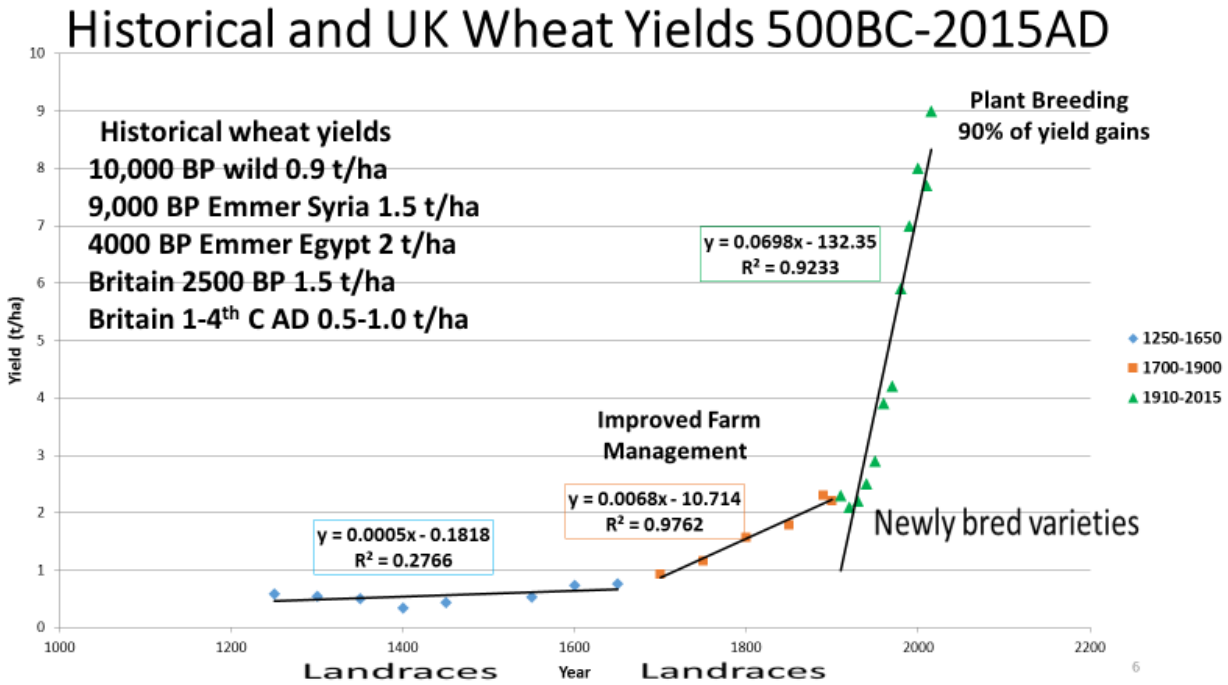

Figure 4. Historical and recent wheat yields Great Britain 500 BC – 2015 AD. (from Apostolides, English Agricultural Output, 2012; Bell, 2008 The mechanism of evolution Oxford Univ Press, Araus et al 2003, Clark, 1991, UK Gov DEVRA)

All wheat grown in the U.K. was comprised entirely of farmer or landrace varieties until the advent of wheat breeding in the early 1900s. Landrace yields in Medieval and Renaissance times were below 1 t/ha until midway into the 18th Century. In fact, English wheat yields were historically well below those previously achieved in the fertile crescent (approx. 1.1 – 2.5 t/ha) during most of the previous 7-8 millennia following domestication. Increased wheat (and other crop) yields began to occur in the U.K. during the 1700s as a result of improved farm management, including improved crop rotations, seed sowing, use of manure and lime. The rate of yield advance then increased 10 fold after the 1930s due to further improvements in farm management including improved fertilizer, weed and pest control coupled with genetic improvements as a result of plant breeding. During 1946-1981 60% of yield gain was due to genetics, since 1982 plant breeding has contributed 90% of yield gains in wheat on UK farms (Mackay et al 2010 Theor Appl Genet doi:10.1007/s00122-010-1438-y).

Wheat landraces grown using modern farm management practices have been found to yield approx. 33% of modern varieties (Ninov et al. 2014). Hence, at least 3x the land area of equivalent suitability for wheat production would be required if the UK was to rely today entirely on wheat landrace agriculture. The impossibility of such a production system is shown by examining Figure 5 which shows the wheat production area of England in 2010 using modern varieties.

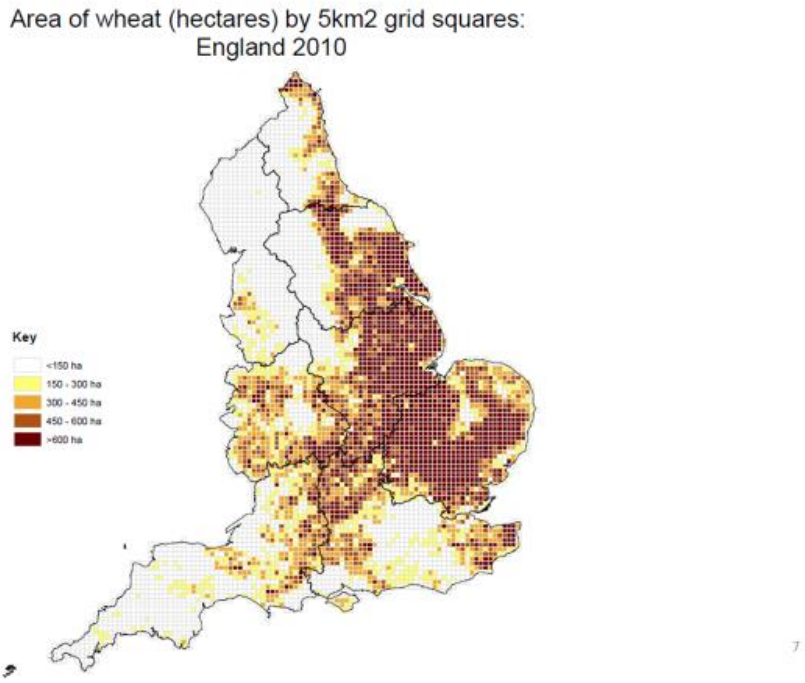

Figure 5. The area of England sown to modern wheat varieties in 2010 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183108/defra-stats-foodfarm-landuselivestock-june-detailedresults-cropmaps111125.pdf).

2. U.S. Maize yields 1866-2016.

Farmer developed maize landraces constituted the totality of U.S. maize production until the 1930s when hybrids started to replace landraces on farms. Maize had previously been introduced into the land area that would later become known as the U.S. around 3500 BP in the southwest and 800 AD in the northeast. The most productive U.S. maize landraces were developed by U.S. farmers following the hybridization of the southern dents with the northern flints in the mid-Atlantic States of the U.S. during the latter part of the 18th C to create the Corn Belt Dent racial complex. However, yields of U.S. maize were on an annually declining trend during 1865-1935, the era of cultivating open-pollinated farmer landrace varieties (Figure 6). Yields prior to the 1930s were declining because the only, or at least the easiest way at that time especially as immigrant farmers were arriving from Europe, to increase U.S. maize production was by taking more land into cultivation. Maize cultivation spread westwards into regions where landraces had previously not been grown. Consequently, the genetic diversity present in U.S. maize landraces and the pace at which improved adaptation could occur as a result of visual selection without control of pollination or improved selection methods (i.e. without plant breeding), was unable even to maintain yield levels. Yields of US maize only began to increase in the 1930s as a combined result of improved farm management and plant breeding. Annual yield gains rose further from the 1960s due to further improvements in breeding and farm management. From 1930-approx 1990 farm yield gains in Iowa could be apportioned approximately equally to improved farm management and plant breeding. A more recent study (Smith et al 2014 Ch 6 in

Yield Gains in Major U.S. Field Crops ISBN:978-0-89118-620-5) showed that yield gains on Iowa farms today are due 75% to plant breeding.

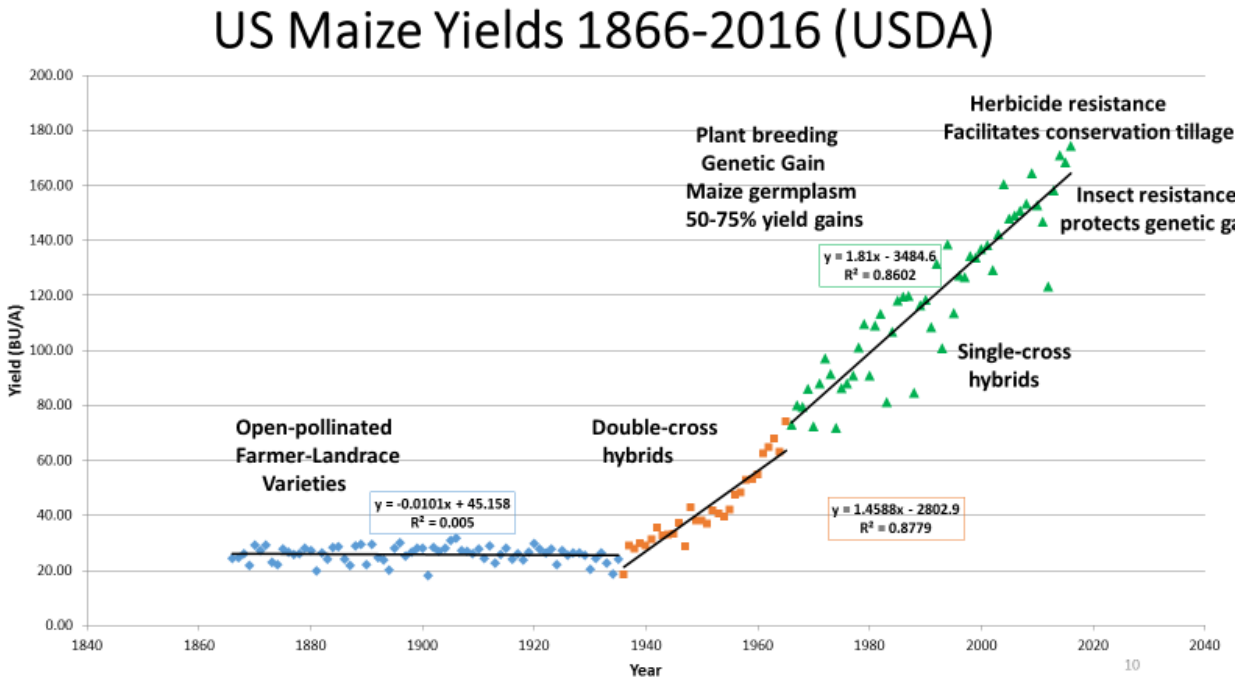

Figure 6. Yields of U.S. maize 1865-2016 (2016 yields are estimated)

If maize landraces were used on US farms today using modern farm management practices, then yields approximating 33% of yields cultivating modern hybrids might be expected. In other words, at least 3x the US land area planted today would be required to bring home the 2016 maize crop. The practical impossibility of such an agricultural system can be understood by examining the area of US farmland planted to maize for 2015 (Figure 7).

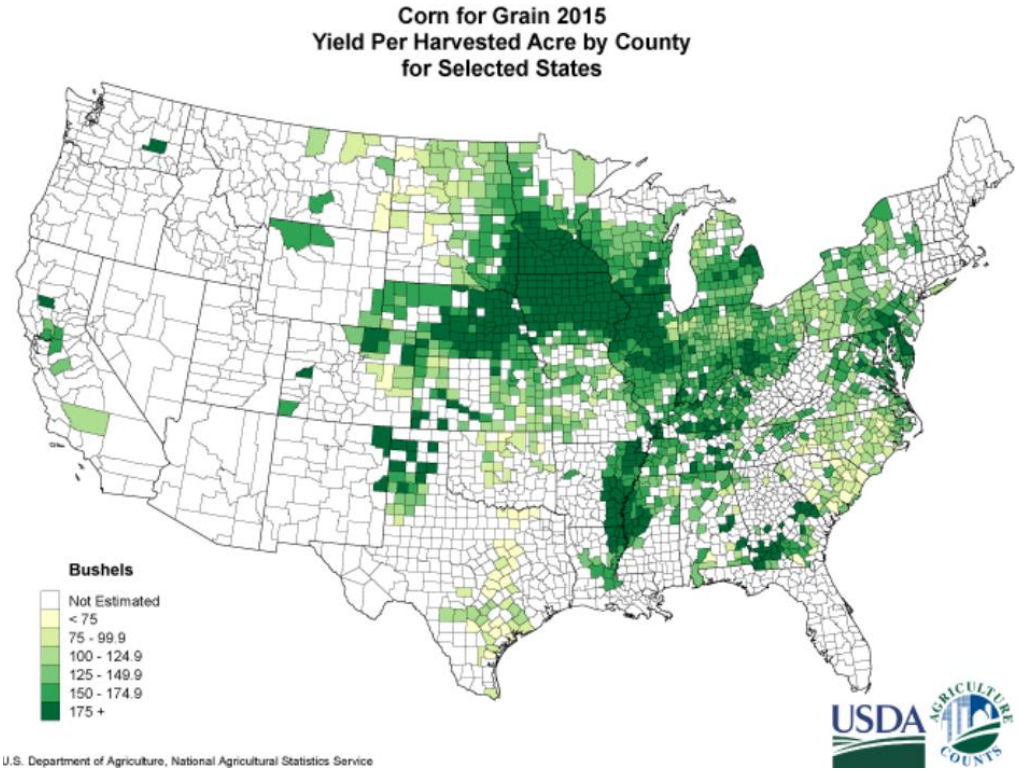

Figure 7. Maize for grain, yield per harvested acre by county in 2015.
(https://www.nass.usda.gov/Charts_and_Maps/Crops_County/cr-yi.php)

III. The contribution of cultivating wheat landraces to global wheat production.

1. **Numbers of farmers and farm sizes globally.**

It has been estimated that there are 570 million farmers in 161 countries. Farm size data are also available for 111 of these countries wherein reside 460 million farmers (Figure 8).

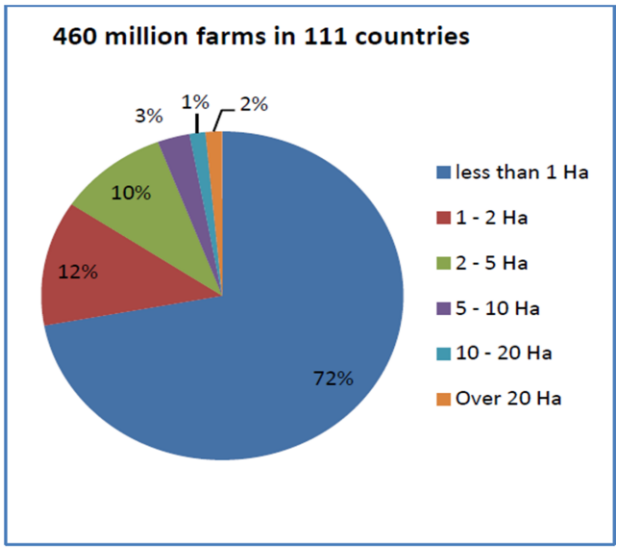

Figure 8. Farm size managed by 460 million farmers in 111 countries (Lowder et al. 2014. ESA working Paper No. 14-02. FAO, Rome).

I will adopt a working hypothesis that most farmers cultivating less than 5 Ha, if they are cultivating wheat are more likely to be cultivating wheat landraces than modern varieties. On this assumption that represents globally approx. 93% of wheat farmers. However, it would be a false assumption to then simply extend the reasoning to say that 93% of global wheat production is achieved through cultivation of landraces by over 500 million farmers on farms that are less than 5Ha in area. Such reasoning is false because 1) most global wheat production is harvested from modern varieties and 2) modern wheat varieties yield significantly more than wheat landraces.
CIMMYT (Reynolds et al., 2008 International Symposium on Wheat Yield Potential: Challenges to International Wheat Breeding, 197 pp.) published a report documenting wheat yields and % usage for both landraces and modern varieties in rainfed and in irrigated conditions for countries with a history of landrace usage during 1955-1995. Landrace usage was more prevalent in rainfed conditions. Usage of landraces by 2005 was either nil or declining for most of these countries (Table 1). Nevertheless, landrace usage remained uncharacteristically high in Iran providing 38% of that country's wheat production and in Ethiopia, providing 88% of that country's wheat production. However, in global terms these amounts of wheat production were very small as each of those countries contributed 2.3% and 0.3%, respectively of total global wheat production. These data show that total contribution of wheat landraces to global wheat production was well below 1% by 1995. Nonetheless, it is important to recognize that millions of farmers and their families today rely for much, if not all their household needs, on the cultivation of landraces. Their livelihoods could be improved by additional plant breeding support that would also facilitate their access to a wider global diversity of genetic resources. Additional breeding support through publicly funded national and international breeding programs, contributions by Non-Governmental Organizations (NGOs) and including prospects for farmer participation in variety selection and in breeding per se could provide millions of farmers with improved choices of varieties better adapted to meet their household livelihood needs.

Global Wheat Production 2005 Landrace contribution
729 million tonnes (CIMMYT publ.)

Country	Global rank	% Global production	% country landrace production
China	2	15.3%	0
India	3	11.5%	0.24%
Pakistan	10	3.4%	1.3% declining
Turkey	11	3.3%	5.0% (now <1%)
Iran	15	2.3%	38% declining
Kazakhstan	16	1.8%	0
Mexico	30	0.5%	0.2%
Morocco	31	0.5%	<1.0%
Ethiopia	35	0.3 %	88% (96% rainfed)
Nepal	>38	<0.2%	2.9% declining
Tajikistan	>38	<0.2%	1.2% declining

Table 1. % contribution by countries with wheat landrace cultivation to the individual countries production, trend in use of landraces within country and rank and % contribution of each country to global wheat production of 729 million tonnes. 2005 production year data (FAO STAT) and computed from Reynolds et al., 2008 (International Symposium on Wheat Yield Potential: Challenges to International Wheat Breeding, 197 pp).

It was also possible from data provided by Reynolds et al (2008) to calculate rate of yield increase for wheat landraces in these countries. On average, rate of yield increase under rainfed conditions was 13 kg/ha/yr and 11 kg/ha/yr under irrigated conditions. In contrast, yield gains using modern wheat varieties in the Yaqui Valley of Mexico during the same era (largely irrigated) was 80 kg/ha/yr. Wheat yields (rainfed) in the UK during 1950-2000 rose at a rate of 106-130 kg/ha/yr.

Mean wheat landrace yields increased at rate of 12 kg/ha/yr in these countries (Reynolds et al. 2008). Under the assumption that between 25-50% of yield gain came from improved genetic adaptation (3-6 kg/ha/yr) then starting in 1930 it would take between 1,500 and 3,000 years for U.K. wheat yields to reach levels already achieved today (12 t/ha). Even this prediction is probably over-optimistic as it is based on the assumptions that: 1) mass selection can contribute to even 25% of yield gains, 2) English farmers would have access to all the genetic diversity necessary to increase yields, allow adaptation to changing climates, and 3) epidemics of rusts and mildews would not have destroyed the UK's entire production and breeding stock of wheat germplasm that would under this scenario be arrayed annually on farms.

2. Why is rate of yield gain cultivating landraces and practicing mass selection so low?

There are several reasons why yield advances through the cultivation and evolution of landraces with higher yields has been so slow compared with rates achieved by plant breeding. These reasons include:

1) Farmers have more limited access to diversity, primarily from local/regional sources compared to plant breeders who can access germplasm nationally and internationally,
2) Breeding creates and releases vastly more genetic diversity upon which selection can then act by making cross-pollinations between parent plants and creating segregating populations. Note that making breeding crosses with species such as maize where pollen is released in abundance from the male tassels which are physically separated by several metres from the female ear is relatively easy compared to the special, intricate, and painstaking work necessary to make a pollination in wheat or barley (Figure 9), Making breeding crosses is not a traditional component of developing wheat or barley landraces,
3) Breeding utilises controlled pollinations which allows tracking of the heritable contributions of both parents whereas mass selection keeps no track of specific maternal contributions while the paternal contribution is essentially a random sampling of anonymous pollinator parents,
4) Breeding selection uses replicated field plots and sophisticated experimental design and data analyses tools to base selection as much as possible on heritable or genotypic factors,
5) Plant breeders have access to off-season nurseries and other sophisticated tools that allow breeding cycles to be achieved more quickly, precisely, and efficiently, and
6) Plant breeders can access genetic diversity from wild relatives, which harbor significant amounts of genetic diversity that was excluded from being in the cultivated species during the domestication process thereby again allowing breeder to access a broader pool of potentially useful genetic diversity.

Figure 9. Making a breeding cross in wheat requires cutting the anthers (male pollen production) out (left), collecting male pollen from another plant (right), capturing the pollen in a plastic bag (centre), placing the bag over the plant that previously had had its anthers cut off, allowing the pollen to fall upon the stigma of the "female" plant , and sealing the bag to ensure no other pollen contaminates the cross (centre).

Another reason why levels of production and yield gains are relatively low in landrace agriculture is because most farmers chose to cultivate landraces for reasons other than to increase yield. Figure 10 shows the mean rankings of characteristics that 1026 Turkish households who cultivated wheat landraces during 2009-2014 provided (BW = bread wheat, DW = durum wheat) (Morgounov et al 2016 Crop Sci 56).

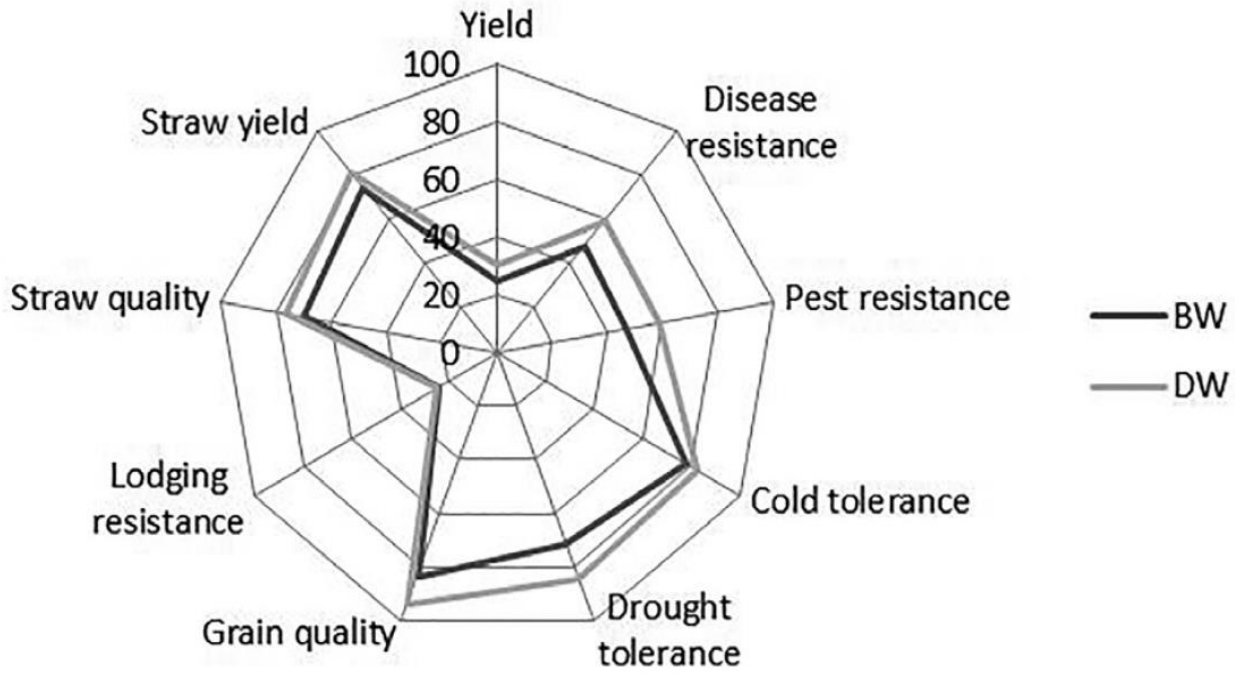

Figure 10. Mean rankings of characteristics that 1026 Turkish households who cultivated wheat landraces during 2009-2014 provided (BW = bread wheat, DW = durum wheat) (Morgounov et al 2016 Crop Sci 56).

The chief reasons that households chose to cultivate bread-wheat landraces were (in order of priority highest-lowest), 1) Grain quality, 2) cold tolerance, 3) drought tolerance, 4) straw yield, 5) straw quality, 6) disease resistance, 7) pest resistance, 8) yield, and 9) lodging resistance. Preferences for durum wheat were very similar.

IV. Options and opportunities available to farmers and breeders with respect to UPOV 1991

Figure 11. shows exemptions to the breeders right using the UPOV 1991 model.

Figure 11. Exceptions to the Breeders Right 1991 Act of the UPOV Convention (UPOV).

UPOV does not restrict in any way activities farmers have traditionally practiced using their traditional varieties. With UPOV 1991 farmers can continue freely to re-plant, exchange, barter, and sell seed harvested from traditional farmer varieties.

Under the UPOV 1991 Act no-one, including farmers, breeders, gardeners, is prohibited from 1) breeding with a variety that is protected by PVP and 2) using a protected parent to develop a new variety or landrace. Allowed breeding usage also includes swapping, exchanging, bartering or selling a new variety so developed and its progeny provided a new variety is not so very similar to the initial protected variety that it would be classified as an Essentially Derived Variety (EDV). The odds of creating an EDV from a bi-parental cross are remote. Generation of a putative EDV usually requires specific breeding actions such as making repeated crosses (backcrosses) of the protected variety, insertion of one or a few genes using biotechnology, selection of a mutant, use of marker assisted selection to purposely get close to the protected variety might lead to an EDV. Subsistence farmers are completely removed from all obligations according to UPOV 1991. And countries have flexibility in establishing thresholds based on farm size or farm production in relation to whether and under what terms farmers can save harvested seed of protected varieties to replant their own holdings. European guidelines allow all farm holdings that annually production less than 90 tonnes of grain to freely reseed their own holdings with seed harvested from protected varieties. Thresholds, for example based upon farm size or production threshold can be selected on a country basis to demarcate between farms that are primarily non-commercial compared to those that are primarily commercial operations. Such thresholds applied globally would automatically exempt approx. 95% or more farms from farm saved seed obligations.

UPOV does not allow sale of seed harvested from protected varieties for the purpose of replanting. This makes sense because copying seed is a purely commercial venture and does nothing to increase genetic diversity or improve productivity through breeding. An ability to sell

harvested seed from protected varieties when that simply involves copying seeds that were never part of the traditional farming system does not contribute to the goals of improving sustainable agricultural production, nor does it contribute to the further development of farmer landraces or other varieties.

Farmers and breeders have additional options and opportunities by adopting the UPOV 1991 system. Additional opportunities include:

1) additional choices of varieties with the potential to better fit some or all of their farming and household needs, i.e. new genetic diversity for cultivation and
2) freely allows further breeding including landrace development following hybridization with protected variety, i.e. new genetic diversity for further landrace development.

There are many examples where farmers have allowed maize hybrids to pollinate their local landrace varieties to developed so-called "creolized" seed providing productivity gains and allowing improved farm management Ivan Heerwarden et al 2009, Their Appl. Genet 119:875-888). Similarly, there are many examples where farmers continue to grow landraces on less productive soils while planting their more fertile soils with modern varieties to provide increased cash income.

V. Conclusions

Optimally every farmer, regardless of size or location, should annually have access to a range of varieties that would collectively fit his or her household and commercial needs better than in previous years. To make this goal a reality requires that more plant breeding be applied and the results be made available to a greater number and diversity of farmers. Providing improved varietal choices to a diversity of farmers, to better meet household and livelihood needs across a diversity of challenging biotic and abiotic stresses, and across a diverse range of rapidly evolving socio and economic environments is a critically important goal to be achieved.

Achieving such a goal requires not only more total plant breeding effort, but also a greater diversity of breeding approaches to best fit farmer needs and circumstances. UPOV encourages breeding primarily by commercial breeders. Breeders in U.S. publicly funded universities also apply for PVPs. However, the global needs of farmers and society for plant breeding requires greater efforts and more diverse approaches than commercial breeding alone can provide. This is the case in terms of the diversities of crops, locations and changing socio-economic environments in which farmers find themselves.

Strong programs that are funded publicly, including through Foundations and NGOs are required, both nationally and internationally, to conserve germplasm, conduct basic research, and to develop new varieties for farmers primarily in regions and circumstances where commercial breeding operations do not fill the needs. There are important roles of farmers in the selection process through participatory breeding programs. Farmers themselves can also become plant breeders. In fact, much, if not most plant breeding in the U.S. and Europe began literally in the hands of farmers, inquisitive hobby breeders (e.g. Henry A. Wallace), and horticulturalists. Greater participation by farmers in selecting varieties to release for cultivation (farmer-

participatory breeding) also helps align the goals and practices of breeding programs with solving the practical challenges that farmers face on a daily basis.
Useful genetic resources are present in modern varieties, wild species, and landraces. However, breeding with landraces and wild relatives entails longer-term and higher risk research programs. The UPOV and the FAO ITPGRFA provide not only complementary, but also synergistic approaches to improving agriculture across the whole diversity of farms and farming systems. UPOV does not restrict any traditional activities using farmer developed varieties. In fact, UPOV provides access to anyone to new sources of diversity that can be freely used in further breeding. In contrast, selling seeds that are simply copies of modern varieties improves neither landraces nor modern varieties and does not increase genetic diversity. Copying seed, whether that seed represent a farmer variety, landrace or newly bred variety is simply making more of the same. Copying seed does not serve the goals of sustainably increasing agricultural production.

The ITPGRFA, which was recently ratified by the United States, through the multilateral system and the Global Plan of Action, together with UPOV provide complementary and synergistic support to plant breeding. Critical means to improve variety choices and thus to improve farm-household livelihoods are 1) the multilateral system and 2) the priority areas as laid out in the FAO Global Plan of Action. It is important to understand that the priority action areas of the GPA collectively constitute a coherent whole. It makes no sense for these priority areas to be conceived as separate buckets or silos. For example, ex situ conservation is a crucial element of supporting sustainable agricultural production.

Society depends upon BOTH farmers AND breeders to sustainably provide food for healthy and nutritional diets in the face of an increasing multitude of challenges including from weather, pests, diseases, requirements to help protect the environment, and rapidly changing socio-economic pressures. This year sees the 20th anniversary of the passage of the GPA. I would therefore ask each of you to consider whether joint advocacy by farmers AND breeders might be more successful in persuading Parties to step up to their agreed obligations to fund the GPA. For this support to happen I believe it will be important that farmers and plant breeders collectively state that the GPA represents equally good and necessary policy today, as it did when developed with widespread governmental support in Leipzig, during 1996.

DISCUSSION

Session 2: Analysis of the Interrelations between Farmers' Rights and Plant Breeders' Rights under the ITPGRFA and the UPOV Convention

Guy Kastler: Thank you for giving me the floor. I am a smallholder farmer from France. I am speaking on behalf of La Via Campesina. We believe that the rights of farmers, and their involvement in decision-making, mean that farmers should be able to express their views around the table with regard to farmers' rights, and we ask that we be able to express our views at some discussions. Previously, we did not get a reply and that is why I am speaking here from the back of the room. I have three points I want to make.

Firstly, I would like to protest against what I would call propaganda when we hear that yields cannot be achieved through local varieties, and that is a disaster. If we had not had varieties' selection for over a century we would still have the same yields as a century ago. There are multiple examples where we see that farmers' varieties and selection have led to increased yields, particularly in organic agriculture; these yields are similar to some of the more recent yields achieved by other agricultural practices. However, farmers' varieties are ignored because according to the UPOV DUS criteria, they are not uniform, they are unstable and they do not offer the same yields.

Now secondly, with regard to the legal concept of access and benefit-sharing and also with regard to selection, UPOV says that the exception of plant breeders in the selections has to do with non-monetary benefit-sharing, where breeders select their seeds from the farmers around the world in the context of the Multilateral System of the Treaty. However, farmers do not have access to this exception, because whenever farmers want to undertake a varietal adaptation and selection, they do it in their fields and under their particular local agricultural conditions; and of course the farmer would also be selling the harvest in order to make a living, and this is what UPOV bans in all countries. This means that the farmers are not given access to the benefits, nor granted the right to benefit from this selection exemption.

Now my third point is as follows: This is something that nobody has discussed. I have been here since Monday, and I can tell you that almost nobody has mentioned this. I am referring to a threat of relevance to everybody. I am talking about a threat represented by new patents on genetic resources; the specific varieties which are banned in many legislations, and something that only exists in a computer. We are talking about patents here on genetic information. This is a major danger for us as farmers, because what they are doing is patenting and getting patent protection on our seeds that we are sowing in our fields.

This is also a threat for the Multilateral System of the Treaty, because the protection granted by these patents can extend to all genetic resources in the Multilateral System, meaning that at the end of the day we do not have the multilateral aspect, but a privatized patent system. It is also a threat for UPOV in the sense that the breeders who protect varieties are going to find out that if there is a patent on genetic resources covering a particular variety, then they are going to lose their rights to that variety.

Therefore, my message, that I want to make clear to UPOV, is to allow a fair balance between the rights of breeders and the rights of farmers, which is also in the interest of UPOV. Otherwise, in less than ten years, we will just hear about patents, and not farmers being able to speak up. The whole UPOV system may collapse. Thank you very much for allowing me to speak.

Francois Burgaud: Thank you, Chair. I am from a French plant breeders' organization, and my comment is mainly for Sangeeta and Bram de Jonge. I am always uneasy with the way in which there is an insistence on farmers' rights when we are talking about selling seeds bred by others. It is as though we should limit farmers to just being able to copy. I have to say that I am surprised to hear that in the draft declaration on farmers' rights issued by La Via Campesina there is Article 2 which says the following: "Farmers have the right to enjoy all human rights and fundamental freedoms covered in the Universal Declaration on Human Rights." Now we all know that in the Universal Declaration on Human Rights Article 27 says that everybody has the right to protection of moral and material rights and protection for their creations. Now I do not know if we are talking about artistic, literary or cultural creation. However, what we are talking about with farmers is that they have created something which contributes to an intellectual property, and we are talking about offering protection to people who have worked hard on that. Therefore, a farmer who has bred a new variety should have the right to protection for what they have created.

Well, we could have a discussion looking at what are the most balanced systems, and whether we are talking about the 1991 or the 1978 UPOV Act we feel that UPOV is the most balanced system, and we can take India as an example of a country with legislation that protects farmers. I think that is going too far, particularly if we are talking about the Convention here and the (International) Treaty. We know very well that India has not actually met all of its obligations under the (International) Treaty regarding their genetic resources.

So you cannot bring everything into the UPOV Convention. As a result, UPOV leaves a lot of leeway for states to implement the Convention. There are exceptions. For instance, many farmers do not have to pay when they are using plant varieties. And so what we are talking about here is having a balance between allowing someone who breeds a variety and allowing them to make a living, without at the same time opening up the floodgates, giving access to everybody to genetic resources.

Carmen Gianni: I am from the National Seed Institute in Argentina. I do not know if I can say it is a pleasure or not. I have been involved in UPOV and FAO, working on these issues for 20 years now, and my impression is that we are talking about issues that should be complementary rather than contradictory. Now what I mean is that I think that nobody here in this room is contesting the contribution made by farmers around the world with regard to selecting new varieties, seeking to achieve the improvements that UPOV is aiming at.

However, UPOV is focusing on varieties that can be sold. Now particularly in FAO, we need to look at who the farmer is that we are trying to protect, because if we look at Article 9.1, we see that we are talking about farmers around the world and indigenous communities as well, who are seeking to protect their genetic resources.

If we think about the farmers in UPOV, are these the same farmers that are covered in FAO? Therefore, the countries have a problem in implementing the treaties, because if we look at the

large-scale farmers, are these the ones that are actually covered by the FAO (International) Treaty? Well as far as we are concerned, no, this is not the case. We think that the farmers covered by the UPOV Convention are those who use these plant varieties, as was shown in the presentations; they are using varieties that are protected by UPOV.

So I am talking about farmers who in the context of FAO protect biodiversity, and they are the smallholder farmers. They have local varieties and if we do not actually provide a better definition, then I think we are going to get bogged down in our discussions, because I think we need to really separate some of these issues. I think we are talking about an issue which really is a problem for countries when implementing the treaties. Perhaps we do not need to specify who the farmers are. One thing I would like for us to take away from this meeting is that we define which farmers are not covered by FAO. If we are talking about the large-scale farmers, for instance, I would like someone to explain this to me, at least which farmers are not covered.

Responses from the panelists:

Bram de Jonge: I am not sure whether I got fully the last question from Argentina, but I have the feeling that it relates to what was mentioned earlier, a fear about opening the floodgates. I mean what are we talking about? Yes, farmers covered by the UPOV Convention are farmers who use protected varieties in commercial systems. At the same time, there are smallholder farmers who are far remote from that, because they simply do not have access to all these resources, and live in marginal areas. But of course there is an overlap where the seeds go everywhere.

I think the question is, which farmers are we now talking about, and under which system should they be covered? I do not think that you are opening up the floodgates if you recognize that many smallholder farmers in developing countries simply cannot afford to buy the protected varieties each and every year. So they will not only exchange, they will not only save, they will also exchange amongst themselves. That is what they've always been doing. I really think that these are not the kind of farmers they are focusing on. Why should these channels of access to protected varieties be limited? We are talking about what UPOV members probably call 'subsistence farmers', even though subsistence is involving exchange and local trade in my regard.

It would be good to continue on that, and I really do not see that the flood gates will be opened. I think this is a responsibility of helping smallholder farmers.

Maybe one thing to add, when we had our meeting with Peter Button for some different people coming together in Cape Town, we also had someone from the African Farm Organization, which was on the far right side of being a large, large-scale commercial farmer. His advice was, if we talk about the smallholder farmers, we should lean back as far as possible. They need our support. They need to have the freedom to grow, to make the decisions which varieties they want to use, including protected varieties, and even if they only can get it from a local market and selling them and buying them. Thank you very much.

Session 3
Experiences of the Contracting Parties in Implementing the UPOV Convention and the ITPGRFA

ARGENTINA

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I. Introducción

Argentina es miembro de la Unión Internacional para la Protección de las Obtenciones Vegetales (UPOV) desde el 25 de diciembre de 1994, tenemos un sistema de protección para las variedades vegetales creado por le Ley de Semillas y Creaciones Fitogenéticas Nº 20247 de 1973 reglamentada por primera vez en el año 1978, el primer título de propiedad se concedió en el año 1980.

Con respecto a la regulación sobre el acceso a los recursos fitogenéticos, Argentina es un miembro reciente del Tratado Internacional sobre los Recursos Fitogenéticos para la Alimentación y la Agricultura (TIRFAA) a partir del 15 de agosto de 2016 y aún no somos miembros del Protocolo de Nagoya, pero vamos en camino de serlo[69].

Aún no tenemos legislación nacional que regula el acceso a los recursos fitogenéticos, pero nuestra Constitución Nacional contiene disposiciones al respecto.

El Instituto Nacional de Semillas no solo tiene funciones en concesión de derecho del obtentor, sino también en regular todo lo que se relaciona con semillas -- mercado, producción, comercio, importación, exportación de cualquier material de propagación.

Vamos a enfocarnos en tres aspectos principales que están íntimamente relacionados con los tratados que son objeto de este simposio:

- La semilla de uso propio,
- cuando concedemos derechos de obtentor o propiedad, a variedades de especies nativas ¿Qué medidas tomamos con respecto al acceso a los recursos genéticos?, y
- Un sistema de certificación de semillas para especies forestales nativas. Cuyo objetivos es más el tema de uso sostenible de recursos.

II. La semilla de uso propio

La Ley de Semillas y creaciones fitogenéticas 20147/73 establece la semilla de uso propio respecto de las variedades con propiedad en su artículo 27 de la siguiente forma:

> **Art. 27.** — No lesiona el derecho de propiedad sobre un cultivar quien entrega a cualquier título semilla del mismo mediando autorización del propietario, o quien

[69] desde el 9 de marzo de 2017 Argentina es miembro del Protocolo de Nagoya de la CDB

> reserva y siembra semilla para su propio uso, o usa o vende como materia prima o alimento el producto obtenido del cultivo de tal creación fitogenética.

Queda claro que quien "reserva y usa semilla para uso propio" está fuera del alcance del derecho del obtentor.

Acá cubre varios aspectos, pero el que nos interesa particularmente es lo que está justo en el centro de la definición. Que dice, quien reserva y usa semilla para uso propio. Así, bastante amplia es la definición en la legislación nacional. Hasta el presente, se ha implementado de manera tal que no tiene limitaciones en cuanto a especies ni en cuanto al volumen ni el número de generaciones que se puede reservar esa semilla.

El decreto reglamentario (Decreto 2183 del año 1991) aporta más aclaraciones para la interpretación de estas disposiciones en su artículo 44:

> **Art. 44. -** No se requerirá la autorización del obtentor de una variedad conforme lo establece el artículo 27 de la Ley 20.247, cuando un agricultor reserve y use como simiente en su explotación, cualquiera sea el régimen de tenencia de la misma, el producto cosechado como resultado de la siembra en dicho lugar de una variedad protegida.

Así se aclara que la "reserva y producción" de semilla, se refiere a cuando se reserva producto de la cosecha para ser utilizado como material de propagación.

Entonces fue necesario, para definir claramente y dar seguridad tanto a los titulares de las variedades, como a los agricultores que hacían semilla de uso propio, definir un poco más claramente lo que es la acción de guardar semillas y reservar producto de la cosecha para ser usado como semilla de uso propio.

En el año 1996, el INASE emite la resolución 35 a fin de dar aún más detalles, esto tiene 20 años de vigor en Argentina, establece claramente las condiciones que se tienen que dar para qué se dé un uso de semillas de uso propio dentro de lo que establece el artículo 27 que vimos al principio.

La Resolución Nº 35 establece las condiciones que deben cumplirse para beneficiarse de las disposiciones del Artículo 27 de la Ley de Semillas:

> **Artículo 1º -** Son condiciones para que se configure "la excepción del agricultor" prevista en el artículo 27 de la ley Nº 20.247 las que se mencionan a continuación

a) Ser agricultor
b) Haber adquirido legalmente la semilla originaria.
c) Haber obtenido la semilla actual a partir de la semilla legalmente adquirida.
d) Reservar del grano cosechado el volumen de semilla que se utilizará para posterior siembra, individualizándola por variedad y cantidad, previo a su procesamiento.

No existirá excepción del agricultor cuando éste haya adquirido la semilla a sembrar por otro medio distinto al de la propia reserva, ya sea a título oneroso o gratuito (compra, canje, donación, etc.).

e) El destino de la semilla reservada deberá ser la siembra por el agricultor en su propia explotación para su propio uso.
No se hallan comprendidos en el art. 27 de la ley Nº 20.247 destinos distintos a la siembra por parte del agricultor.
Quedan expresamente excluidos los destinos de venta, permuta o canje por el mismo agricultor o por intermedio de interpósita persona.
La excepción sólo beneficia al agricultor y no a terceras personas.

f) La semilla reservada para uso propio deberá mantenerse separada del grano, conservando su identidad e individualidad desde el momento en que es retirada del predio por el agricultor y mantenida dicha identidad durante toda la etapa de su procesamiento, acondicionamiento y depósito hasta el momento de su siembra en el predio del agricultor.

g) El interesado para hacerse beneficiario a la excepción del agricultor deberá acreditar el cumplimiento de las condiciones señaladas en este artículo.

Y de esas condiciones, la primera es ser un agricultor. Parece obvio cuando hablamos de ser un agricultor, pero en la producción agrícola hay muchos actores. No todos los actores son agricultores, pero algunos de esos actores a veces tienen acceso a los productos de la cosecha con la intención de tomar ese producto de la cosecha y usarlo para semilla, cuando no fueron ellos quienes lo produjeron.

Entonces, es claro definir que quien puede hacer el uso propio tiene que ser el agricultor.

El poder de policía del INASE de Argentina

¿Por qué para nosotros esto fue importante de definir estos criterios más detallados? Porque el INASE de Argentina no solo concede los títulos de protección, si no que en las acciones y poderes e incumbencias que tenemos dentro del control de comercio, está el control de todas las semillas, que se está comercializado y de todo lo que se siembra, con la posibilidad de intervenir, decomisar, destruir, según el tipo de incumplimiento o infracción a la Ley de Semillas que haya ocurrido.

Dentro de esos controles que el INASE efectúa, está también la debida autorización de la semilla por parte del titular de la variedad protegida. Dentro de esas acciones de poder de policía que tenemos en la aplicación de la ley, era necesario tener una claridad para las acciones de los inspectores del instituto. Y ese resultado es la resolución de hace 20 años.

Otra condición es que el agricultor haya adquirido legalmente la semilla inicial. No podemos terminar legalizando algo que empieza ilegal. La semilla de uso propio, tiene que obtenerse a partir de una semilla que se adquirió legalmente, dentro de lo que establece la ley. No puede de

semilla obtenida de otra manera o que no se pueda justificar el origen legal de la semilla inicial. Estos tres puntos son muy importantes.

También tiene que haber separado el producto de la cosecha, la cantidad que va a guardar de semillas. No puede estar todo mezclado. No poder definir qué es cosecha, qué es semilla, cuando se toma la decisión de lo que se va a usar como semilla tiene que estar claramente definido e identificado. La semilla tiene un tratamiento diferente al producto de la cosecha, la semilla debe mantener su poder germinativo, estar clasificada por variedad, etc, en definitiva, el tratamiento diferencial que tiene la semilla con respecto a lo que es la producción de grano. Cuando se decide reservar semilla, lo más común es que reciba un tratamiento diferencial a lo que es el grano. Son todas pruebas de que estamos en presencia de material que será usado para futuras siembras.

Siguiendo con las condiciones, tiene que ser sembrado. El objetivo es reservarse para que el agricultor lo siembre en su propio establecimiento. Si yo soy agricultor, lo puedo sembrar pero en mi establecimiento. En esa interpretación de establecimiento, no significa un único predio o que lo que obtuve en un determinado lote o parcela, lo tenga que sembrar exclusivamente en ese lote o parcela. Lo que es el predio de un agricultor puede estar formado por diferentes parcelas, dicho de otra manera, el predio o explotación de un agricultor puede estar formado por diferentes lotes y parcelas que no necesariamente pueden estar físicamente uno junto al otro. Pero sí, tiene que ser, el establecimiento que explota el agricultor. No se puede intercambiar entre predios de diferentes agricultores. Tampoco es relevante la forma de tenencia de la tierra, lo relevante es que es agricultor es quien la explota.

Los otros propósitos que no sean la siembra por el agricultor en su propio establecimiento no estarían comprendidos en lo que sería la excepción del artículo 27 que hace a la excepción del uso propio para las variedades protegidas.

Las variedades no protegidas no están dentro del alcance de estas disposiciones, las cuales se aplican exclusivamente a las variedades con propiedad.

También, esa posibilidad de reservar semilla a partir del producto de la cosecha beneficia al agricultor y no a terceras partes. No autoriza el intercambio de la semilla entre agricultores de variedades protegidas.

Se establece que la semilla debe ser mantenida separada y que debe estar identificada cuando se saca del establecimiento. Es práctica común que los agricultores separan producto de la cosecha y lo sacan de su establecimiento para ser procesado fuera del establecimiento por un procesador de semillas. Esa es una gran oportunidad para que haya desvíos en las semillas de uso propio conforme al artículo 27 de nuestra ley. Existe el riesgo de que se pueda convertir en mercado ilegal de semillas, que es algo que en la Argentina, nos afecta bastante. Entonces, la

necesidad de mantener debidamente identificados los lotes de semillas de un agricultor cuando van a una planta procesadora de semillas para que puedan ser procesados, limpiados, clasificados, lo que corresponda hacer, depende del tratamiento que el agricultor le quiera hacer, tiene que mantener la identidad durante todo el proceso de la variedad de la semilla y quien es el agricultor al cual pertenece. Y cualquier persona que quiera reclamar ese derecho debe probar todas estas condiciones que está obligado a cumplir. Hay diferentes procedimientos establecimos en Argentina para probar esto. No voy a entrar en detalle porque el tiempo apremia, pero estas son las condiciones que se deben probar.

III. Concediendo propiedad a variedades de especies nativas locales

La concesión de protección de derecho de obtentor a variedades de especies nativas. En Argentina, hemos concedido 40 títulos de propiedad a variedades de las siguientes especies nativas:

Bromus catharticus Vahl.
Macroptilium erythroloma (Mart. et Benth)
Macroptilium lathyroides (L.)Urban
Paspalum dilatatum Poiret.
Paspalum notatum
Trichloris crinita
Mecardonia procumbens (Mill.) Small
Nierembergia linariaefolia
Tecoma sp
Tabebuia heptaphylla
Ilex dumosa reisseck var. dumosa
Ilex paraguaiensis
Axonopus fissifolius

Si las comparamos con la cantidad de títulos que se han otorgado, cerca de 4 mil, 40 no parece tanto. Pero sin embargo lo consideramos algo interesante. Al no tener aún ley de acceso, aplicamos directamente la Constitución Nacional, que establece claramente en su artículo 124,

> **Artículo 124**.- Las provincias […….].
>
> Corresponde a las provincias el dominio originario de los recursos naturales existentes en su territorio.

La Constitución Nacional establece que el dominio de los recursos, la propiedad de los recursos naturales en Argentina pertenece a las provincias. Y los recursos fitogenéticos son considerados recursos naturales en Argentina. Entonces, ¿cómo hacemos para compatibilizar una norma de rango constitucional con la ley de semillas y el Convenio de la UPOV? En UPOV tenemos acordado que se puede pedir en forma voluntaria si el solicitante lo quiere presentar. No

tenemos la obligación de pedirlo, pero en Argentina lo pedimos. Entonces nosotros empezamos a pedir la autorización de la provincia de haber accedido legalmente, de acuerdo al mecanismo que cada provincia puede establecer y de la oficina que cada provincia establezca. No es algo que este regulado a nivel nacional, pero como les dije, no hay ley. Los solicitantes nos trajeron convenios, autorizaciones, lo cual nosotros no tenemos la potestad de verificarlo. Pero si sabemos que han cumplido debidamente con lo que establece la Constitución. Que es, que si el recurso pertenece a la provincia, le han pedido autorización a la provincia para acceder al recurso y para trabajar en mejoramiento vegetal y obtener variedades a partir de ese recurso. O sea, la provincia detentora de ese recurso está al tanto. Han sido siempre el Instituto Nacional de Tecnología Agropecuaria (INTA) y las universidades públicas quienes han protegido estas variedades. Tenemos inclusive algunos casos de ornamentales nativas que fueron protegidas por el INTA en Argentina. En el exterior también fueron protegidas en otros miembros de UPOV y que están recolectando cobrando regalías y que el 50% de esas regalías vuelven a las provincias y a quien las provincias considera que son los detentores de ese recurso fitogenético. O sea, que a pesar de que no tenemos una norma, no hemos tenido problemas en el sentido del acceso y de que prueben el acceso en el caso de especies nativas.

IV. Un sistema de certificación de semillas para especies forestales nativas.

El Instituto Nacional de Semillas tiene funciones más allá de la concesión del derecho del obtentor y la certificación de semillas. En Argentina hay un recurso forestal nativo muy importante que es el *Prosopis* spp. que justamente figura en el anexo 1 del TIRFAA propuesto por Argentina Tenemos una norma cuyo objetivo es poder obtener semilla certificada y que el agricultor pueda ver al recurso, o sea a las plantas de esta especie, no como un recurso exclusivamente para madera. Los *Prosopis* spp., son leguminosas que tiene muy buena leña, y muy buena madera. Entonces el recurso primero que es, lo talamos, hacemos madera y hacemos carbón.

El objetivo de la normativa es ver al recurso como un productor de semilla para la implantación de bosques de especies nativas, para lo cual es necesario que se identifiquen individuos destacados. La norma establece que tiene que haber un aislamiento con otros *Prosopis* spp. con los cuales se pueden cruzar y se pueden producir semillas certificadas. Esto es muy importante en la Ley de Promoción Forestal Argentina porque hay un subsidio para la promoción forestal en Argentina y este subsidio sólo se consigue si se usa semilla certificada. Y al no haber variedades vegetales en el listado nacional era un problema y no se podía certificar la semilla, por lo tanto la plantación de bosques nativos se veía en alguna medida impedida de obtener los beneficios de las leyes forestales por no tener semillas certificadas. En el proceso de certificación de la semilla se tienen que referenciar los individuos o el rodal, que es el conjunto de individuos a partir del cual se puede identificar la semilla. Se trabajó con las provincias detentoras del recurso natural del bosque, de ese bosque central semiárido que tenemos en Argentina donde figura esta especie, y las provincias que lo tienen están al tanto y saben de este sistema. Lo hemos trabajado con universidades, con el INTA; todo un conjunto de actores incluyendo a los agricultores también para poder brindar una herramienta para uso sostenible del recurso natural.

V. Conclusiones

Finalmente las conclusiones que sacamos nosotros de la experiencia en nuestro país son:

1. La necesidad de haber regulado detalladamente el uso propio para que pueda, por un lado permitir el mismo tal como lo confiere la ley de semillas y por el otro que no brinde oportunidad para el menoscabo de la propiedad de las variedades al enmascarar acciones fuera de la ley
2. A pesar de no tener aún ley que regule el acceso a los recursos fitogenéticos el INASE, en el trámite de concesión de derechos de obtentor solicita voluntariamente a los obtentores la documentación de las provincias sobre el debido acceso al recurso
3. Los obtentores han presentado siempre la documentación solicitada
4. Hay otras acciones del INASE que también contribuyen al uso sostenible de los recursos fitogenéticos, como la certificación de semilla de especies nativas.

SHARING CANADA'S EXPERIENCE IMPLEMENTING THE ITPGRFA AND UPOV

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I. Introduction

Existing international agreements related to plant breeding and genetic resources can play an ever increasing role in supporting sustainable agricultural growth/productivity, genetic/crop diversity, and food security. It is important that Contracting Parties to both the International Union for the Protection of New Varieties of Plants (UPOV) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) seek out ways to successfully implement these agreements, in a mutually support manner, in order to fully leverage the benefits offered by these legal instruments. UPOV is an intergovernmental organization that was established in 1961 and is based in Geneva, Switzerland. The purpose of UPOV 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. The UPOV Convention provides a consistent and harmonized intellectual property framework at the international level, which encourages investment in the development of new plant varieties, and dissemination of these innovations to farmers. In order to become a member, a country or intergovernmental organization must have a Plant Breeders' Rights (PBR) or Plant Variety Protection (PVP) law that meets the minimum requirements of the UPOV Convention.

The ITPGRFA is a comprehensive agreement that aims to establish a global system which provides farmers, plant breeders, and scientists with access to plant genetic resources. One of the key benefits of the ITPGRFA, is the "Multilateral System", which grants each member facilitated access to important food and forage crops covered by the Treaty. The Multilateral System is essentially a global gene pool of plant genetic resources which can be shared cooperatively by all members. The mechanism for obtaining specific genetic resources is through a standardized contract referred to as a "*Standard Material Transfer Agreement" (SMTA)*. This document regulates transfers and exchanges of plant genetic material, prevents their misuse, and ensures that any commercial benefits that arise are fairly and equally shared. The SMTA is a binding private bilateral contract between the provider and recipient which states the terms and conditions for use of the genetic resource. Agricultural researchers, breeders (private and public), farmers, and genebanks, all benefit from facilitated access to plant genetic resources using SMTA's. The Treaty also recognizes the enormous contribution of farmers to the diversity of food and agricultural crops, and ensures that they receive fair and equitable benefit sharing from the use of these genetic materials.

II. Compatibility of the ITPGRFA and UPOV

The preamble of the ITPGRFA states that: "*Recognizing that this Treaty and other international agreements relevant to this Treaty should be mutually supportive with a view to sustainable agriculture and food security*" and "*Affirming that nothing in this Treaty shall be interpreted as implying in any way a change in the rights and obligations of the Contracting Parties under other international agreements"* (ITPGRFA, 2009). As such, it is understood that the ITPGRFA is intended to complement other existing international treaties related to plant genetic resources, and not create a hierarchy between them. The 1991 Act of the UPOV Convention contains several provisions restricting the breeder's right, which support accessibility to plant genetic resources. Specifically, in regards to acts done for; 1) *breeding new varieties 2) experimentation and research* and 3) *private and non-commercial purposes*. The intent of these provisions is to facilitate unrestricted access to PBR protected varieties for the purposes of conducting research and contributing to the global body of scientific knowledge, as well as, to ensure that farmers, and society in general, benefit from continuous improvements in plant varieties. Additionally, the compulsory exemption for private and non-commercial purposes ensures that individuals engaged in subsistence farming would not be required to seek authorization from the holder of the right to use and propagate PBR protected varieties. Article 15 (2) of UPOV'91 contains an optional provision for Contracting Parties which allows farmers to save and condition seed harvested from the planting of a PBR protected variety (known as the *farmers' privilege*) for replanting on their own holdings without infringing the breeders' rights. The ITPGRFA itself recognizes the importance of the UPOV "breeder's" and "researcher's" exemptions in Article 13.2. (d)(ii) of the Treaty which states that genetic resources should be "*available without restrictions to others for further research and breeding…*". ITPGRFA guidance documentation provides interpretation that PBR protected varieties are not subject to the Benefit-sharing Fund since PBR does not limit accessibility:

> "*Insofar as the breeder's exemption clause allows for further agricultural research and breeding, a PBR can be interpreted as not restricting access to PGRFA according to the terms of the International Treaty. In that case, breeders are free to protect a new variety that incorporates crop genetic material from the Multilateral System with a PBR without being subjected to the mandatory requirement of paying a share of their monetary benefits from commercialization into the Benefit-sharing Fund. However, they would still be encouraged to pay an equitable share of the monetary benefits into the Benefit-sharing Fund on a voluntary basis*." (FAO, 2011).

As such, it is clear that compatibility exists between these two international legal instruments. It is the responsibility of Contracting Parties to create legislation, regulations, polices, and programs that support the over-arching goals of both instruments, namely sustainable agricultural growth/productivity, genetic/crop diversity, and food security.

III. Canada's Experience Implementing UPOV and ITPGRFA

Implementation of a UPOV Based Plant Breeders' Rights (PBR) Act

Canada's *Plant Breeders' Rights* (PBR) *Act* came into force on August 1, 1990, and was originally based on the 1978 Act of the International Convention for the Protection of New Varieties of

Plants (UPOV'78). The *PBR Act* was intended to stimulate investment and innovation in plant breeding, provide Canadians greater access to foreign varieties, and facilitate the protection of Canadian varieties in other countries. As required by the legislation, ten years after the *Plant Breeders' Rights (PBR) Act* was enacted a study was conducted to examine its impact on the agriculture, horticulture, and ornamental sectors. A report was tabled in Parliament demonstrating that PBR in Canada had a positive impact on horticulture and agriculture industries (CFIA, 2002). There have been improvements in the yields and quality of many crops and an expansion of the area under production. Farmers and nurserymen have greater access to more and better varieties. In addition, some sectors of the horticulture and agriculture industries have enhanced their export capability, or have become net exporters of products. This includes the floriculture, nursery, potatoes, and pulse sectors. Since enactment of PBR, there has been an increase in investment in plant breeding, research and infrastructure. The *PBR Act* has lowered the barriers to market entry for small and medium sized enterprises by enabling them to acquire protection and establish business opportunities in plant breeding and seed propagation. Of all the areas evaluated in the study, the *PBR Act* appeared to have had the most significant impact on accessing foreign varieties. Virtually every industry sub-sector was unanimous in their support for the importance of the *PBR Act* in enabling them to develop partnerships, linkages, and to improve their access to foreign varieties as a result of the legislation. The report also concluded that farmers were direct beneficiaries of the *PBR Act*, garnering access to a much wider selection of varieties than in the past. The study concluded that the rate of varietal development in the 10 years after the *PBR Act* came into force, increased at a much faster pace than at any time before enactment of the legislation. The 10 year report also concluded that Canada should consider amending its legislation to conform to UPOV'91. After national consultations were conducted, and with strong support from the stakeholder community (i.e. breeders, producers, seed trade), Canada amended its *PBR Act* on February 27th, 2015 to conform to UPOV'91. Canada then deposited its instrument of ratification with UPOV on June 19th, 2015, and become bound by the Convention one month later on July 19th, 2015.

Implementation of the ITPGRFA

Canada recognizes that no country is self-sufficient in plant genetic resources, and that all countries depend on the genetic diversity in crops from other regions of the globe. As such, sustainable agriculture productivity and global food security are dependent on international cooperation and the exchange of genetic resources. All of Canada's major crop species originated from other parts of the globe (e.g. wheat, barley, rapeseed, maize, soybean, potato, etc.). As such, Canada's participation in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) is important to secure facilitated access to millions of samples plant genetic resources from fellow member countries (ECCC, 2016). Canada ratified the ITPGRFA on June 10, 2002, and its domestic laws are consistent with the Articles of the Treaty. The Treaty entered into force in 2004 after 13 countries deposited their instruments of ratification with the Director-General of the Food and Agricultural Organization of the United Nations (FAO). The Canadian federal government is responsible for administering the ITPGRFA, and holds gene bank collections in the following repositories:

- Plant Gene Resources of Canada, Saskatoon, Saskatchewan

- Canadian Clonal Genebank, Harrow, Ontario
- Potato Gene Resources Repository, Fredericton, New Brunswick

In total, over 110,000 seed and 3,000 clonal accessions are available under the terms of the Standard Material Transfer Agreement (SMTA). Canada holds the principal world base collections for barley and oat, as well as the duplicate world base collections for pearl millet, oilseed, and crucifers (AAFC, 2015).

Farmer participation in decision making processes

Farmers play an instrumental role in decision making, not solely with respect to genetic resources, but in the development and implementation of all agricultural policies. For instance, Canada employs mechanisms for farmer participation in parliamentary, legislative, and regulatory processes, as well as, policy development and program implementation. The following is a non-exhaustive list of the ways in which farmers participate in agricultural decision making process:

Parliamentary

Standing Committee on Agriculture and Agri-Food (SCAAF) is a committee established by Standing Orders of the House of Commons to examine any issue related to Canada's agriculture and agri-food industry. It has the mandate to study and report on all matters related to the Canadian agriculture portfolio including; bills, expenditures, and ongoing activities of organizations that are part of its purview. It is also a public forum where specific events or initiatives affecting the sector can be addressed (SCAAF, 2016).

Standing Committee on Agriculture and Forestry (SCAF) is similar to SCAAF, but is the Senate committee mandated to examine issues related to Canada's agriculture and forestry sectors. Again, similar to the House of Commons committee, it is a public forum where specific events or initiatives affecting the sector can be addressed (SCAF, 2016).

Legislative

Plant Breeders' Rights Advisory Committee (PBRAC) is a legislatively mandated committee with the function of advising the Commissioner in the application of the *Plant Breeders' Rights Act*. Section 73 of the Act, requires the Minister of Agriculture to constitute a committee from representatives of "*breeders of plant varieties, dealers in seeds, growers of seeds, farmers, horticulturists*…" (PBR, 2015).

Regulatory

Canada Gazette is the official newspaper of the Government of Canada and publishes new statutes, regulations, proposed regulations, decisions of administrative boards and government notices. It serves as a vehicle which facilitates the process of engaging the public in voicing any concerns about proposed regulations. Canadians can actively contribute to the regulatory

process by sending their comments or concerns on the subject under consultation, to the appropriate department or agency (CG, 2016).

Agricultural Programming

Agriculture Value Chain Roundtables bring together federal/provincial/territorial policy makers with industry leaders across the value chain, including input suppliers, producers, processors, food service industries, retailers, traders, and associations, to enhance the competitiveness and profitability of various segments of the agricultural sector (e.g. seeds, grains, pulses, beef, pork, organic, etc.) (AAFC, 2016).

- *Agriculture Policy Framework* is an agreement that outlines the policy and program priorities in the agricultural sector, that will be delivered by the federal, provincial, and territorial governments during a five-year period. The Government of Canada is currently consulting with farmers, industry, and other interested stakeholders, on the next iteration of agriculture policy and programming framework (Growing Forward 3), which will be launched on April 1, 2018.
- *Variety Registration – Recommending Committees* (VR-RC) are committees which test, evaluate the merit of, and recommend varieties for registration in Canada (e.g. cereals, pulses, oilseeds, etc.). Variety registration is a national listing of varieties which meet value for cultivation and use criteria, and can be legally sold in Canada. Each recommending committee reflects the full value chain of individuals in crop specific variety development, production, processing, marketing, and the seed trade (CFIA, 2015).

Input from the farm community forms the basis of effective legislative, regulatory, and policy initiatives designed to advance the agriculture and agri-food sector. Farmers are involved in every step of the process, and are the direct beneficiaries of these initiatives.

IV. Case Study: Wheat

The best way to demonstrate the interrelations between the ITPGRFA and UPOV, and how the Articles of each instrument are applied, is to examine a specific crop. Wheat is Canada's largest crop on a per acre basis, with farmers seeding 9,406,000 hectares in 2016. Favourable growing conditions in 2016 are expected to increase production to 30.5 million tonnes. This is only the second time in 25 years that Canadian wheat production will exceed 30 million tonnes, and production increases are largely due to improved yields, as total seeded and harvested area is actually declining. The national average yield is expected to be 48.9 bushels per acre in 2016, which represents a 14.3% increase over 2015, which was 42.8 bushels per acre. Canada exports a significant portion of its wheat production to other countries. It is estimated that Canada will export 21,000,000 tonnes of wheat in 2016, with a market value of $8.1 billion CAD ($6.2 billion USD).

Annual investment wheat varietal development and research is approximately $56 million (CAD). The largest portion of investment, 72%, is funded by the public sector via federal taxes. It is estimated that public institutions receive approximately $5 to $6 million per year in royalties and

license fees, underpinned by PBR protection, which assists in providing sustainable funding to breeding programs. However, direct farmer contributions from voluntary levies on grain production also contribute to the sustainable funding of wheat public sector breeding programs. In 2015, producer organizations collected $28 million dollars from wheat levies, known as "check-offs" to support wheat research and marketing activities. Private sector investment in wheat breeding and research is only $6 million, but it is expected to increase in future (CSTA 2014).

Farmer Participation in Wheat Breeding. In 1981, a group of 12 producer organizations banded together to form the Western Grains Research Foundation (WGRF), with the sole purpose to invest in field crop research that would benefit western Canadian farmers. Since that time, over the course of thirty-five years, the WGRF has invested $90 million (CAD) in wheat and barley development through partnerships with public institutions (i.e. Agriculture and Agri-Food Canada (AAFC), University of Saskatchewan, University of Manitoba, University of Alberta, and Alberta Agriculture and Forestry). The WGRF funding model is based on a voluntary levy, known as a "check-off", which is a flat rate per tonne applied to the grain produced from all wheat varieties. Under the WGRF model, farmers not only fund the research and development projects, but also oversee and direct the allocations to the areas of highest priority and benefit to the farming community. These investments have had a significant positive impact on varietal development. Over 200 new varieties of wheat and barley have been released through WGRF-supported programs, offering greater yield gains, better pest and disease resistance, stress tolerance and higher quality characteristics. Over 88% of the total acreage for Canada Western Red Spring (CWRS) production can be attributed to varieties developed with WGRF funding. Similarly, over 94% of Canada Western Amber Durum (CWAD) production can be attributed to varieties supported through WGRF funding (WGRF, 2016). The WGRF estimates that for every dollar invested into wheat research and varietal development, producers receive a return of $20.40 dollars in value on their initial investment. Almost all wheat varieties bred in Canada apply for PBR protection. The WGRF enters into royalty sharing agreements with its partners when these new varieties are released and licensing agreements are established. PBR helps protect the investments that both farmers and taxpayers have made in wheat varietal development.

Grower Participation in Wheat Technology Transfer. SeCan is a not-for profit association of over 700 independent Canadian seed businesses, including farmers, engaged in seed production, processing and marketing. SeCan is the largest seller of certified seed to Canadian farmers, offering 480 different varieties spanning 27 crop types. Its mandate is to ensure that new varieties are made available to every seed grower and processor in Canada who wishes to have access to that variety. Additionally, it allows farmers to purchase new varieties from any retailer they choose, with minimal restrictions. Approximately, 50% of the CWRS wheat acreage in Canada are SeCan licensed varieties. Similarly, about 54% of the Canadian Prairie Spring (CPS) acreage in Canada are of varieties licensed to SeCan. Finally, approximately 62% of all acreage for CWAD are varieties exclusively licensed to SeCan. Historically, SeCan largely accessed varieties bred by publically funded breeding institutions, including those receiving direct producer funding. However, more recently, SeCan has also established licensing agreements for privately bred varieties. Since 1976 when SeCan was created, it has returned more than $97

million (CAD) in royalties, to breeding institutions for re-investment. In 2015 SeCan released its annual report which projected large scale multi-year increased investments in plant breeding with public institutions, including a $3.5 million (CAD) 10 year investment in the University of Saskatchewan – Crop Development Centre, with farmer support from the Saskatchewan Wheat Development Commission (SeCan, 2015). SeCan uses PBR to protect the investments made by its members, and those made by public, private, and producer entities.

Wheat Partnerships - Leveraging Private, Public, and Producer Investment

Recently, Canadian farmers have been involved in new models to support additional investment in wheat breeding, specifically, creating opportunities to leverage private sector investment. For instance, in 2015, the Canadian Government announced the first of its kind $3.4 million (CAD) public-private-producer (4P) partnership to support CPS wheat breeding. The Canadian federal government has invested $1.2 million (CAD) in a public sector breeding program located in Lethbridge, Alberta. Additional funding will be contributed by the Alberta Wheat Commission, a producer organization, and Canterra Seeds, a small domestic seed company (Country Guide, 2015). Similarly, as mentioned previously, SeCan, the University of Saskatchewan – Crop Development, and a farmer organization the Saskatchewan Wheat Development Commission entered into a $3.5 million partnership to increase breeding efforts for CWAD varieties. It is expected that private, public, and producer cooperative investment models for funding plant breeding will continue to increase, with recent amendments to Canada's *PBR Act*, and UPOV'91 ratification.

Farmers Benefit from Improved Wheat Genetic Resources

Several studies have been conducted recently on the rate of genetic gain in yield and quality improvements in wheat, since this crop was first grown on the Canadian Prairies. One study showed that between 1860 and 2000 CWRS wheat cultivars increased in grain yields, reduced in plant height, had greater stem strength, as well as gradual increases in protein content and dough strength (Hucl et al., 2015). Similarly, a study conducted by Iqbal showed that since 1885 breeding efforts in the CWRS class of wheat resulted in a reduction in the days to maturity and improved disease resistance, as well as yield improvements and increases in the level of protein. Thomas noted that rates of yield gain prior to 1990 averaged 0.35% per year in CWRS wheat cultivars, much lower than the global average for wheat gain internationally. However, after 1990 to the present, CWRS rates of yield gain improved dramatically to 0.67% per year, higher than the global average of 0.62%. Thomas also observed that creation of a Western Research Checkoff in 1992, which is now administered by the WGRF, increased the level of investment in wheat breeding, and refocussed research efforts. In addition, introduction of PBR in the early 1990's also provided a mechanism of value capture through royalties, which provided a sustainable source of funding for breeding programs.

Canada has in place a regulatory process for mandatory registration of new wheat varieties before they can be legally sold in the marketplace. In order to obtain "Variety Registration" the new variety must meet specific merit and quality criteria (similar to value for cultivation and use – VCU in other countries). Since 1923, 389 wheat varieties have been registered for sale in Canada (includes; spring, durum, and winter wheats). From the 1920's until the end of the

1970's, only an average of 12 new wheat varieties were registered per decade. In the 1980's, the number of new varieties registered for sale in the Canadian marketplace increased 34 per decade. In the 1990's and 2000's the number gain jumped to 71, and 97, respectively. The trend of increasing availability of new wheat varieties in the marketplace continues today. In less than a seven year period from 2010 to 2016, 114 new wheat varieties have been registered. Since the mid-1990's, most new wheat varieties registered in Canada also seek PBR protection. However, data suggest that the duration of PBR rights for wheat tends to be much less than the full entitlement of 18 years under the UPOV'78 based *PBR Act*, and 20 years under the recently amended UPOV'91 based *Act*. In fact the average duration of PBR protection is 7 years, at which the breeder voluntarily surrenders his/her protection, or the right is revoked for failing to pay the annual maintenance fee. Of the 389 wheat varieties registered for sale in the Canadian marketplace, only 117 or 30% currently hold PBR protection. The remaining 272 wheat varieties would be considered "public domain" and not subject to intellectual property protection.

It is evident that Canadian farmers are the beneficiaries of increased investment and effort in wheat breeding. Several studies have shown that since wheat was first grown on the Canadian Prairies; yields, protein content, and disease resistance have improved, while plant height and days to maturity have decreased. As stated in the WGRF report, for every dollar investment by farmers in wheat research and varietal development, they observed a $20.40 dollar return in terms of improved productivity. In addition, farmers now have much greater choice in sourcing varieties best adapted and suited to meet their needs. Farmers can also choose to use newer varieties which tend to have PBR intellectual property protection, or varieties for which the PBR protection has expired or is surrendered. To ensure that farmers have the correct information about which new varieties have PBR intellectual property protection, the seed sector and government have cooperated to develop tools for farmers. PBRfacts.ca is a website which explains the rights and obligations for the entire value chain (e.g. farmers, seed retailers/cleaners/processors, and grain buyers/handlers, etc.) under both the UPOV'78 and UPOV'91 based *PBR Acts* (CSTA, 2015). In addition, a searchable online database has been created which allows farmers to look up all registered varieties and determine their intellectual property status (e.g. protected under UPOV'78, UPOV'91, or unprotected public domain varieties).

V. Conclusions

Canada's experience in implementing the ITPGRFA and UPOV has been very positive. The farming community plays a critical role in decision making, not solely with respect to plant genetic resources, but in all aspects (e.g. legislative, regulatory, policy development, and program implementation) related to administration of the agricultural sector. As such, Canada fulfills its obligations under Article 9.2 c) of the ITPGRFA. In addition, for many crops such as wheat, producers make investments in varietal development through the purchase of certified seed, and through voluntary "check-offs". PBR is used to protect these investments, and often producer associations share in the royalties generated to ensure a sustainable funding model for re-investment in plant breeding. In the case of wheat, $5-6 million dollars (CAD) annually from the sale of PBR protected certified seed, and through licensing agreements, is remitted back to public breeding institutions to re-invest in breeding. Seed growers also play a critical role in technology

transfer and the collection of royalties. As an example, SeCan, Canada's largest seller of seed has remitted $97 million (CAD) in royalties back to breeding institutions for re-investment. The agriculture sector is continuing to explore mechanisms to increase the levels of funding and maximize capabilities in plant breeding. One such way is through public/private/ producer cooperative arrangements, known as 4P partnerships. Since ratification of UPOV'91, the agricultural sector has witness several new 4P partnerships. It is clear that Canada's farmers have been the direct beneficiaries of improvements in wheat genetic resources. Since wheat was first grown in western Canada; grain yields have increased, protein content has increased, disease resistance has increased, plant height has decreased, and days to maturity has decreased. Rates of genetic gain in terms of yield have also increased in the past 25 years since the creation of producer funding models, and the use of PBR to protect new varieties. As the example of wheat illustrates, Canadian farmers equitably participate in sharing in the benefits from using genetic resources, fulfilling obligations to Article 9.2 b) of the ITPGRFA. Canada's experience in implementing 9.3 of the ITPGRFA has also been successful. Farmers have the ability to save, use, exchange, and sell farm-saved seed, but this is subject to domestic laws, namely the *PBR Act* and the *Seeds Act*. In the case of wheat, of the 389 varieties registered for sale, only 30% have a PBR currently in-force, and the average duration of protection is 7 years. Once PBR protected wheat varieties are surrendered, or expired, they are considered public domain, and available without IP restrictions. Many PBR protected wheat varieties, once surrendered or expired, are released into the general reference collection of Plant Gene Resources Canada and then subject to the ITPGRFA "Multilateral System". Canada's experience is that both the ITPGRFA and UPOV, when successfully implemented, can contribute to agricultural growth and productivity, as well as, improved genetic/crop diversity. As an exporter of agriculture and agri-food products, it also allows Canada to contribute to greater food security and food diversity globally.

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EXPERIENCES OF THE CONTRACTING PARTIES IN IMPLEMENTING THE UPOV CONVENTION AND THE ITPGRFA – EUROPEAN UNION

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I. Introduction

New improved plant varieties are pivotal in ensuring better yields and adaptability to changing climatic and environmental conditions, thereby contributing to long-term food security. In addition, biological diversity is an essential source of genetic material and a building block in achieving innovation in the field. As plant breeding is at the very root of the food chain, the effects of innovation are felt right through that chain – meeting needs of farmers and growers, fostering sustainable production, better nutrition and an improved quality of life within a greener economy including protection of biological diversity. The sovereign rights of nations to control access to their biological diversity to safeguard and inter alia equitable sharing of benefits arising out of the utilization of genetic resources were established in the Convention of Biological Diversity (CBD).

II. Memberships and legislative situation

The European Union (EU) has been a member of the UPOV Convention since 29 July 2005. The EU legislation on Community Plant Variety Rights (CPVR) is aligned to the UPOV 1991 Act since 1994. As regards the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) the EU has been a Contracting Party since 31 March 2004. The ITPGRFA has not been transposed as such into EU legislation and there is no overarching EU strategy on plant genetic resources, however, some aspects are implemented in various EU legislative frameworks and strategies. The conservation of genetic resource (e.g. gene banks) lies within the EU Member States.

III. CPVR regime

The CPVR regime contributes to creating a sound investment environment for research and development of new plant varieties with the aim to boost innovation in the EU for the benefit of all – including consumers, farmers and businesses. It establishes a strong intellectual property rights system to protect innovation and thus helps the plant breeding sector to remain competitive in the global economy of today.

1) CPVR legislation

The CPVR legislation was developed in the spirit of the internal market of the EU – today over 500 million people in 28 Member States - whereby the implementation of the regime was given to an EU agency, the Community Plant Variety Office (CPVO). The legislation complies with the TRIPS agreement as regards the provision that each Member shall provide for the protection of plant varieties either by patents or by effective sui generis systems or by any combination

thereof'. It is aligned with the UPOV 1991 Act which is an internationally recognised agreement and co-exists with national regimes in the EU Member States.
The body of legislation consists of the basic Council Regulation (EC) No 2100/94 on Community Plant Variety Rights and three Implementing Regulations: Proceedings before the CPVO (Commission Regulation (EC) No 874/2009), fees payable to the CPVO (Commission Regulation (EC) No 1238 /95) and agricultural exemption (Commission Regulation (EC) No 1768/95). More information can be found on the following website:
http://ec.europa.eu/food/plant/plant_property_rights/legislation/index_en.htm.

2) CPVO
EU's intellectual protection regime for plant varieties, in force since 1995, can be considered as a success. CPVO manages the world's biggest regime of variety protection. Over the past 20 years, CPVO has granted over 30 000 Community plant variety rights to varieties of more than 1700 plant species. Today, around 2500 applications/year are received of which 93% are made on-line and around 25 000 rights are currently in force. More information can be found on the following website: http://www.cpvo.europa.eu.

3) Agricultural exemption (farm saved seed)
An important provision in the CPVR legislation in relation to farmers' rights is the agricultural exemption. In order to safeguard agricultural production and the legitimate interests of both farmers and breeders, farmers are authorised to use for propagating purposes in the field, on their own holding, the product of the harvest of a variety which is covered by a Community Plant Variety Right. The exemption concerns a list of species of some agricultural crops: fodder plants, cereals, potatoes and oil and fibre plants which are commonly used as farm saved seed in the EU. Six conditions are laid down including e.g. equitable remuneration for the holder of the CPVR and derogation to small farmers for payment. In principle 50% of the amounts charged for the licensed production are used for the remuneration. Other conditions concern monitoring compliance as a matter of exclusive competence of holders, and an obligation to provide information on request of the holder by farmers and suppliers of processing services or by official bodies involved in the monitoring of agricultural production. Detailed rules are laid down in the implementing rules (Commission Regulation (EC) No 1768/95).

Following the EU working group on farm saved seed and some later surveys, it seems that it is highly important to reach an agreement between the farmers and breeders organisations on the collection of the royalties as to ensure an effective and functioning system.

4) Breeder's exemption
The EU has applied the internationally recognised principle of free access to protected varieties. In order to stimulate plant breeding, acts done for the purpose of breeding, or discovering and developing other varieties are exempted in the CPVR legislation. The free access to protected varieties could be interpreted as benefit sharing in the meaning of ITPGRFA.

5) Evaluation of CPVR legislation
An external evaluation of the CPVR legislation was carried out in 2010-2011 with the aim to evaluate whether the regime has reached its 1995 targets and its strengths and weaknesses as

well as to make proposals for the future of the CPVR regime in a changing agricultural world. The results show that the regime functions well and has met its objectives. The stakeholders are generally satisfied and the legislation serves as an incentive to breeders to invest in research and develop new plant varieties and it also meets sustainability goals. More information about the evaluation can be found on the following website:
http://ec.europa.eu/food/plant/plant_property_rights/evaluation/index_en.htm

IV. Other EU legislation plant reproductive material

The CPVR legislation should not be confused with the EU legislation on the marketing of plant reproductive material (12 basic Directives), which regulates the general market access of varieties and plant reproductive material. Technical requirements on variety registration and certification are laid down as to ensure their identity, health and quality. The EU plant variety database includes around 40 000 plant varieties of agricultural and vegetable species for EU farmers and growers to use.
Specific legislation on conservation varieties with less stringent rules has been laid down to support in situ conservation and use of plant genetic resources in the spirit of the ITPGRFA. The derogation rules concern varieties traditionally grown in certain regions, threatened by genetic erosion and varieties with no intrinsic value for commercial production but developed growing under particular conditions. Currently around 1160 such varieties are listed in the EU Common Catalogues.

V. EU legislation on agriculture

In the framework of EU legislation on the Common Agricultural Policy a number of measures contribute to the aims of the ITPGRFA. Community programs on the conservation, characterisation, collection and utilisation of genetic resources in agriculture (Council Regulation (EC) No 870/2004) facilitate the conservation and development of plant genetic resources (http://ec.europa.eu/agriculture/genetic-resources). Moreover, protection of traditional knowledge is implemented through the rules on the protection of geographical indications and designations of origin for agricultural products and foodstuffs (Commission Regulation (EC) No 1898/2006 laying down detailed rules of implementation of Council Regulation (EC) No 510/2006) and the rules on quality schemes for agricultural products and foodstuffs (Regulation (EU) No 1151/2012).

INTERACTION BETWEEN ITPRGFA AND UPOV CONVENTION – UNITED KINGDOM EXPERIENCE

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I. Background

The UK became a contracting party to the first UPOV Convention for the Protection of New Varieties of Plants in 1968. National legislation was revised in 1997 and the UK subsequently acceded to the 1991 Convention in 1999. The UK became a contracting party to the International Treaty for Plant Genetic Resources in Food and Agriculture in 2004. The objectives and articles of the ITPGRFA are implemented through a national policy for Genetic Resources in Food and Agriculture that was adopted in 2004, revised in 2007 and maintained by successive governments.

To understand the UK's experience as a contracting party to the UPOV Convention and the International Treaty, it is important to have an overview of UK agriculture. It is a relatively small country, with a total land area of 224,000 km^2, and is densely populated, with about 64 million people. Farming types are diverse, largely in adaptation to the climate and geography. In general, the UK is warmer, drier and with better soils towards the south and east, becoming cooler, wetter, hillier and with poorer soils to the north and west. About 70% of the land area is farmed, of which about 25% is cropped, 40% managed grassland, and 25% rough grazing. Holdings are large by European standards, with a high level of mechanisation, specialisation and productivity. The UK produces about 60% of its food, with agriculture making up about 1% of GDP. Food and drink manufacturing makes up a further 7% of GDP.

II. Plant genetic resources

The UK has significant plant genetic resources, made up of landraces, heritage varieties and crop wild relatives. Much of these resources are held in *ex situ* collections, some of global significance, reflecting the relatively long history of plant collecting and breeding. They reflect the species most important to UK agriculture, currently and in the recent past, most of which are not native. The collections funded by government and under official control have been designated under the Multilateral System and material is freely available through Standard Material Transfer Agreements. There is also a significant number of privately funded collections, most of which make material available for research and breeding.

In general, society shows a high level of interest in plant genetic resources for food and agriculture, especially by small farmers and gardeners. As a result, heritage varieties are widely grown, although on a small scale and making only a small contribution to food production. The underlying concept is that the plant genetic resources are owned by society as a whole.

In addition to these collections as part of the Multilateral System, the UK provides some support to plant genetic resources in food and agriculture in developing countries including through its Darwin Initiative and support for CGIAR, Biodiversity International and the Global Crop Diversity Trust.

III. Farmers' rights and use of plant varieties

Almost all agricultural production uses modern improved varieties developed for UK conditions, with plant breeding playing a significant part in the large increase in food production since the first plant variety rights legislation in 1964. Consequently, almost all commercially grown varieties have plant variety rights and farmers have a good understanding of the value of plant breeding and the need for a viable industry. This has led to broad acceptance of the 1991 UPOV Convention and the balance between the needs of farmers and breeders. Some issues remain, such as the species and types where farmers can save their own seed of protected varieties, the definition of holding and the level of royalty payable.

Much of the success in achieving this balance lies in effective negotiation between breeders' and farmers' organisations, ongoing communication of the issues to farmers, and efficient processes for collecting royalties on farm saved seed. Other than providing the legal framework, government plays only a small role.

This near total use of protected varieties in commercial scale agriculture is also part of the explanation for the general view that plant genetic resources represented by landraces, heritage varieties, and crop wild relatives are owned by society as a whole.

IV. Plant genetic resources and seeds marketing legislation

The derogations in European Union legislation for conservation varieties (Commission Directive 2008/62/EC) and 'amateur vegetable varieties' (Commission Directive 2009/145/EC) have to some extent facilitated the marketing of seed of landraces and heritage varieties in the UK. A good example is bere barley, a series of landraces in the Scottish islands, where seed is marketed for eventual use in malt whisky production. Other examples are seed for local production of heritage varieties of potatoes and some vegetables.

However, the legislation is not easy to manage, given the large number of gardeners, high level of interest, and small quantities of seed marketed. The UK authorities take a risk-based approach to implementation, responding to complaints when received. This is considered an acceptable balance between the objectives of the ITPGRFA and the objectives of EU seeds marketing legislation.

KENYA: INTERACTION BETWEEN THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (ITPGRFA) AND THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV)

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I. Introduction

Kenya's territory lies astride the equator, with the East African Rift valley cutting through longitudinally and covering a diverse expansive terrain together with fresh and salty water lakes. The country also borders the Indian Ocean to the south east. Kenya covers 581,309 km^2 and has a population of approximately 45 million people. It has a warm and humid tropical climate on its Indian Ocean coastline. The climate is cooler in the savannah grasslands around the capital city, Nairobi, and especially closer to Mount Kenya, which has a permanent snow cap on its peaks. Further inland, in the Nyanza region, there is a hot and dry climate which becomes humid around Lake Victoria, the largest tropical fresh-water lake in the world. This gives way to temperate and forested hilly areas in the neighbouring western region. There is an expansive area in the Rift valley characterized by diverse climatic conditions and diverse landscape dotted with mountains and lakes due to volcanic activity. The north-eastern regions along the border with Somalia and Ethiopia are arid and semi-arid areas with near-desert landscapes.
This diverse relief endows Kenya with diverse agro-ecologies. Areas under human occupation range from warm and dry lowlands to wet highlands. The wide diversity in agro-ecological conditions has resulted in a wide diversity in naturally occurring plants. Communities living in different areas have conserved plants, which they use for different purposes and there is much traditional knowledge associated with the species. Breeders have always collected farmer varieties and landraces and used them to develop improved varieties that are adapted to a variety of environments.

Kenya's Agriculture
Agriculture contributes 51% of the GDP, 26% directly and 25% indirectly. It accounts for 65% of Kenya's exports and 60% of foreign exchange earnings. It is the principal source of rural income and livelihoods and supplies 18% of formal employment and over 70% of employment in rural areas. It is the main source of raw materials for agro-industries.

II. Implementation of the UPOV Convention and ITPGRFA in Kenya

The Kenyan Constitution makes express requirements for protection of intellectual property rights associated with plant materials and the need for conservation and sustainable utilization of the same. Specific provisions include:

a. Article 40 (5), which states, *"The State shall support, promote and protect the intellectual property rights of the people of Kenya*", and

b. Article 11 (3) (*b),* which states, *"Parliament shall enact legislation to recognise and protect the ownership of indigenous seeds and plant varieties, their genetic and diverse characteristics and their use by the communities of Kenya*".

This law has since been enacted and became effective 21st September 2016

- *The UPOV Convention*

The Plant Breeders' Rights Legislation became operational in 1975 under the Seeds and Plant Varieties Act (Cap 326) of 1972. The Act was revised in 1991 to conform with developments in the liberalized seed industry. The implementing regulations, the Plant Breeders Rights Regulations were gazetted on 25 November 1994. Consequently, the Plant Breeders Rights Office, under the Kenya Plant Health Inspectorate Service, was established in 1997 to implement the Act and the regulations.

Kenya joined UPOV in 1999 under the 1978 Convention. In 2012, the Seeds and Plant Varieties Act was amended to incorporate components of the 1991 UPOV Convention. On April 11, 2016, Kenya deposited the instrument of accession to the 1991 UPOV Convention. Kenya is now bound by the 1991 UPOV Convention effective from May 11, 2016. Kenya therefore operates a Plant Variety Protection (PVP) Office, which offers protection for all plant genera and species.
The PVP office has received a total of 1522 applications and issued 566 grants. The number of applications and grants per year stand at 71 and 42 respectively based on data for the last four years.

- *The ITPGRFA*

Establishment of a National Gene bank was initiated in 1983 and became fully operational in 1987. It started as a Crop plant genetic resources Centre and was expanded to cover the entire plant diversity in 2000. Kenya acceded to the ITPGRFA in 2003. The Seeds and Plant Varieties Act was amended in 2012 and 2016 to create and operationalise a Plant Genetic Resources Centre with functions aligned to components of the ITPGRFA. The Genetic Resources Research Institute (GeRRI) was established under the Kenya Agricultural and Livestock Research No. 17 of Act 2013. GeRRI is Responsible for Conservation and use of Genetic Diversity – the basis for Biodiversity. Close to 50,000 accessions comprising about 2,000 plant species conserved. GeRRI houses the Global repository of sesame, Duplicate repository of African sorghum, millets and pigeon peas and 10 of the species are both new to conservation and to science.

Other efforts towards implementation of ITPGRFA include: Development of a National Strategy, establishment of a National Platform and development of PGRFA Conservation and Use Regulations with provisions on Farmers' rights, Access and benefit sharing. Resource mobilization and capacity building efforts are ongoing.
The legal framework for both the UPOV Convention and ITPGRFA is in the Seeds and Plant Varieties Act. Implementing regulations for plant variety protection are under review while those of the Plant Genetic Resources are under preparation.

The focal point for the UPOV Convention is the Kenya Plant Health Inspectorate Service (KEPHIS), while the focal point for the ITPGRFA is the Genetic Resources Research Institute (GeRRI) established under the Kenya Agricultural and Livestock Research (KALR) Act of 2013. Both KEPHIS and KALRO are statutory bodies under the Ministry of Agriculture, Livestock and Fisheries.

III. Interaction between UPOV and ITPGRFA

Breeders obtain plant germplasm for breeding either directly from farmers, or from collections preserved at the Gene bank. This creates the need for benefit sharing resulting from varieties protected after the breeding exercise. Implementation of the concept of Prior informed Consent (OIC) and Mutually Agreed Terms (MAT) therefore becomes necessary.

Most of the PVP applications in Kenya are for varieties of ornamental and agricultural crops. The diversity of crops under PVP application has been increasing over the years. Currently, applications are being received for varieties of crops that have not been included in PVP before. These include the 'traditional high value crops', previously referred to as 'orphan crops'. Some of the locally developed varieties are derived from farmer varieties and landraces. These include varieties of maize, beans, cowpeas, green grams, sorghum, finger millet, sweet potato, grasses and traditional vegetables. Many of these varieties are developed by public breeders and a considerable number has been submitted for protection.

- *The Case of Cenchrus ciliaris*

Cenchrus ciliaris has for many years been utilized by pastoralist communities as a naturally occurring rangeland grass in the semi-arid parts of Kenya. An application for protection of a variety of *Cenchrus ciliaris* was gazetted in 2014. Following publication, an objection was made by the Kerio Valley Development Authority (KVDA), a Parastatal responsible for initiating development projects in marginalized (arid and semi-arid) areas.

The objection is based on an argument that *Cenchrus ciliaris* has been held and maintained by communities for many years and should not be subject to plant variety protection. After deliberations with the parties, it was agreed that "side by side" comparisons be done to establish if the variety in question is distinct from landraces held by farmers. The Kenya Agricultural and Livestock Research Organization (KALRO) breeders have been working on the crop and have collections, which have been planted alongside the variety under objection for comparison. The issue of benefit sharing may arise even if distinctness is established, as local communities have conserved the germplasm from which the new variety is developed for many years.

- *The Case of Traditional Vegetables*

A breeder has applied for protection of varieties of 5 traditional vegetables. These are selections derived from farmer varieties and landraces, whose characteristics have not been documented before in descriptors. There is much traditional knowledge associated with these species regarding their use as food and medicine. Questions on benefit sharing are likely to arise.

IV. Harmonization Efforts

Plant Genetic Resources Regulations once developed will streamline the process of access and benefit sharing. Guidelines on farmer exceptions for plant breeders' rights on selected species will partly deal with the question of farmers' rights. The National Platform on Plant Genetic Resources for Food and Agriculture brings together all players in the area of genetic resources and creates a forum for implementation of ITPGRFA while considering other treaties and conventions.

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EXPERIENCES OF NORWAY IN IMPLEMENTING THE 1978 ACT OF THE UPOV CONVENTION AND THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES OF FOOD AND AGRICULTURE

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I. Introduction: plant breeding is needed for ever

The fact that plant breeding is and will always be needed is the backbone of Norway's policy for implementing the UPOV Convention and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA; the Treaty). The process of developing improved and adapted varieties is a task that never will be finalised due to the continued evolutionary development of diseases, changing climate condition as well as developments in consumer preferences. What we need is therefore a robust system that ensures that plant breeding will continue to take place for ever. A key element in such a system, is access to plant genetic resources for food and agriculture (PGRFA). Simply said - without access, no plant breeding.

The need for access is linked to the cumulative characteristics of plant breeding. You cannot invent a plant variety from a great idea on paper only, but you need other plant varieties as building blocks.[3] The importance of access is recognised in the principle of "breeders' exemption" in Plant Variety Protection (PVP) laws. This exemption facilitates access to other protected varieties. The Treaty supplements this by providing facilitated access to also non-protected varieties, crop wild relatives and traditional varieties of crops listed in its Annex 1. The Treaty's specialised system for access and benefit sharing reflects the fact that all countries are interdependent on genetic resources from other countries, that plant breeding relies on the use of numerous genetic resources. [4] Hence, the Treaty obviates the buildup of bilateral mechanisms for the exchange of genetic resources. Such bilateral agreements may lead to major practical problems and costs associated with tracking of the genetic resource's origin etc.[5] The main purpose of the multilateral system is to serve plant breeding, which is done either by professional

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[1] National focal point to ITPGRFA and CGRFA
[2] National focal point to UPOV
[3] However, there is a process of "dematerialisation" taking place with the increasing effectiveness by the convergence of ever more cost-effective, rapid and efficient characterisation techniques at the genotypic, phenotypic and accession level of genetic resources on the one hand and the increasing computational capacities for processing and utilising the resulting big data sets in modern plant science and breeding on the other.
[4] For illustrative cases of interdependence, see e.g. Marleni Ramirez et al. (2013): "Demonstrating interdependence on plant genetic resources for food and agriculture", pp. 39-61 in Michael Halewood, Isabel Lòpez Noriega, and Selim Louafi (eds): *Crop Genetic Resources as a Global Commons*, Earthscan from Routhledge
[5] The benefits of the Multilateral System of the Treaty were important reasons for Norway's ratification of the Treaty.
https://www.regjeringen.no/contentassets/46503437ce824a35b107252ea1e84c83/no/pdfs/stp200320040051000dddpdfs.pdf

plant breeders at public universities or commercial companies or on-farm by farmers and local communities, or in a combination thereof.

At the core of the ITPGRFA is also the focus on conservation and sustainable use of PGRFA. Without conservation efforts, we would lose important traits needed for future plant breeding. PGRFA also relies on sustainable use in order to be conserved. The Treaty lists several possible measures for sustainable use, including research that maximize intra- and inter-specific variation for the benefit of farmers, promote plant breeding with the participation of farmers, broadening the genetic base of crops and increasing the range of genetic diversity available to farmers as well as expanding the use of local and locally adapted crops, varieties and underutilized species. These efforts are contributing to the continued access to a richest possible gene pool for future breeding. At the same time, the need of farmers to access diverse and adaptive varieties is stressed.

UPOV's mission statement 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.[6] One important rationale for implementing the UPOV system in Norway was to enhance the plant breeder's revenue for the investment made in the breeding process in order to be able to continue to breed further.[7] The UPOV system promotes the development of varieties that are distinct, uniform and stable. Such varieties have contributed greatly to improved productivity. However, the protection provided in the UPOV system is not necessarily sufficient as a funding mechanism to ensure the needed funding of activities such as pre-breeding for the broadening of the genetic base of a crop, or for breeding for a small and specialised market, or a marked with low purchasing power. Or for breeding of varieties not aimed for DUS-qualification. The Treaty complements this approach by stressing the need also for non-DUS varieties in order to adapt the production to different agro ecological conditions and cultivation practices[8].

In sum, we are arguing that both UPOV and the ITPGRFA are specialised instruments in support of plant breeding. Plant breeders' rights are a kind of intellectual property rights (IPR) that are tailored to fit the characters of the plant breeding innovation process. When analysing the usefulness of PVP it’s however necessary to have a balanced approach and be clear on how they can contribute to plant breeding and when there are other measures that are needed to ensure the desired plant breeding. Membership of UPOV is beneficiary to Norway. At the same time, it's far from sufficient being member of UPOV in ensuring plant breeding in Norway.

II. Breeding in Norway

[6] http://www.upov.int/about/en/mission.html

[7] Ot.prp. nr. 15 (1992-93) "Om lov om planteforedlerrett" (Norwegian bill of Law regarding Plant Breeder's Rights)

[8] ITPGRFA Article 6 lists several possible measures for sustainable use of PGRFA, including "strengthening research which enhances and conserves biological diversity by maximizing intra- and inter-specific variation for the benefit of farmers"; "broadening the genetic base of crops and increasing the range of genetic diversity available to farmers"; and "strengthen the capacity to develop varieties particularly adapted to social, economic and ecological conditions, including in marginal areas".

Plant breeding in Norway is quite limited, particularly compared to breeding in aquaculture and animals. Norway is world leading in the breeding of Atlantic salmon. Also in the breeding of pigs and cows, Norwegian companies are doing well. In 2015 for example, Norway's cattle genetics cooperative, Geno, reported record global sales.[9] The Norwegian Red is currently the most popular exported cattle breed worldwide.

Plant breeding is relatively small in Norway compared to animal and fish breeding. It is interesting to note the global success of the animal and fish breeding. The main business strategies in these fields is to be in the lead, always providing better germplasm than those offered by their competitors. The nature of plant and animal breeding is different. While animal breeding is a continuous improvement of a breed, plant breeding in general terms is a process of periodically replace varieties with new, improved varieties. Nevertheless, this example shows the possibility to have global success in breeding without the use of IPRs.

III. Experiences with UPOV

Norway joined UPOV in 1993. Among the clear benefits of this, is easier access to foreign germplasm. The main Norwegian breeding company, Graminor, is also representing several varieties in the Norwegian market owned by foreign companies. The PVP legislation is thus supportive of providing more options to Norwegian farmers and growers. A common international framework for PVP also facilitates the export of Norwegian developed varieties. It is limited potential for export of Norwegian material since they are developed for special conditions in Norway. Nevertheless, Graminor has recently been quite successful in their export to Finland.[10]

Due to the small scale of plant breeding in Norway, it is costly to maintain a national system for DUS-testing. Therefore, the Norwegian authority has closed its own program for DUS-testing, and has started to buy these services in Finland. Such collaboration would have been possible without UPOV, but being members of the same international instrument, is favourable.

Graminor is organised as a private company, but is mainly owned by a farmers' cooperative and the Norwegian state. Despite more than 20 years of UPOV membership, there is still need for public funding of breeding in order to ensure continued breeding investments in crops where the commercial value of the total market is limited. This is linked to the agro ecological structure of Norway, being located far up North with short summers and long days. These special light conditions is limiting the potential of import of foreign bred varieties.

In 2004/2005 it was a proposal from the government at the time to implement the 1991 Act of the UPOV Convention. The main motivation was to increase the income potential of Graminor by giving them the opportunity to collect royalties from farmers using farm saved seeds. However, due to massive public resistance and also a change in government later that year, Norway kept

[9] http://www.genoglobal.com/GenoGlobal/Newsarchive/norwegian-red-genetics-reach-global-hig/
[10] http://graminor.no/nyheter/show/15

its adherence to the 1978 Act. The main argument was that the 1978 Act provides for a better balance between Plant Breeders' Rights and Farmers' Rights.

IV. The relevance of Farmers' Rights

The recognition of Farmers' Rights in the International Treaty is based on the fact that farmers' rights are essential for conservation and sustainable use of PGRFA as farmers are custodian and innovators of crop genetic diversity. This is predominantly important in crops where the production takes place in the genetic centre of diversity of the crop, and the genetic variation in landraces is immense. This is e.g. the case for some of the meadow species in Norway. The crop genetic diversity has been developed by the active selection of farmers' and local communities. Therefore, the legal space for farmers' rights to save, sell and exchange varieties is crucial as part of the efforts to maintain crop genetic diversity for the future. Furthermore, farmers' seeds systems provide reservoirs of PGRFA of great importance to agricultural production in light of climate change and other challenges in agriculture, such as emerging pests and diseases.

"The man on the photo is a Spanish melon farmer that Jose Esquinas- Alcazàr, former Secretary of the CGRFA of the Food and Agriculture Organization, met during his research in melon. This Spanish farmer's fungus-resistant melon genes help farmers across the world today."

Particularly in developing countries, farmers' seed systems are the main source of seed for the majority of farmers, and these systems are embedded in local cultures and provide important means to maintain identity and traditions. So, what's the relevance of this to Norway today?

Very few of Norway's older landraces of cereals, potatoes and vegetables have been preserved for future generations.[11] Almost all have now disappeared. For fruit and berries the picture is

[11] For an overview of crop genetic resources in Norway, see Regine Andersen (2012): "Plant genetic diversity in agriculture and farmers' rights in Norway", FNI Report 17/2012, available at http://www.farmersrights.org/pdf/FNI-17%20RA.pdf

brighter, but very little breeding and development have been done in this area, so diversity is threatened all the same. In earlier times there was an abundance of original Norwegian meadow plants, but also here, much has vanished. The modernization of agriculture has undoubtedly resulted in greater efficiency in production, but it has also led to considerable genetic erosion, also in Norway. Furthermore, the seed regulations have been a challenge. Regine Andersen (2012) writes: "From a free market environment in which farmers could sell all types of seed to each other, almost everything was banned in 2004. Farmers were not only forbidden to sell seed among themselves, they couldn't exchange seed material or give it away. Only government authorized seed shops were allowed to sell seed, excepting though seed of varieties that weren't on the official list of varieties. The variety recognition criteria were so stringent that most of the old varieties would be rejected. Farmers could only continue to cultivate what they already had on their farms in 2004. If they lost some varieties, lost interest in the work or for any other reason stopped saving and cultivating them on their farms, the varieties would go out of production, and no other farms would be able to take over. The regulations made it almost impossible to conserve plant genetic diversity on farms and it would have only been a matter of time before this work ceased altogether."

There are major examples of the usefulness of traditional varieties in today's agriculture. *Phleum* (timothy) is the most important animal feed in Norway, and the old landrace Grindstad is the most widely used variety in Southern Norway. Grindstad has been on the market since 1916. The seed regulations were amended in 2014, allowing for the registration of conservation varieties. As of December 2016, 11 conservation varieties are approved: 3 potatoes, 1 rye, 1 barley, 4 wheat varieties and 2 vegetables.

In Norway, farmed saved seeds are used on approximately 25% of the cultivated area. The current Norwegian PVP law allows for this without farmers having to pay any royalties. However, farmers' are not allowed to sell or exchange farmed saved seeds of protected varieties without the authorisation and possible remuneration to the owner of the variety.

V. Mutually supportive implementation

Keeping the 1978 Act is a deliberate choice to implement UPOV and the International Treaty in a mutually supportive manner. Bearing in mind the concerns and perspectives of the ITPGRFA when implementing the PVP regulations has helped us to better utilise the synergies between the instruments, but also to better address possible objectives of conflict.

The Treaty and UPOV could in many ways be looked upon as complementary systems, with plenty of options for synergies and ways in which one could strengthen the other. Also, there are areas of potential conflicts of objectives. The clearest conflict of policy objectives is maybe between the rights for farmers to save, sell and exchange seeds on the one hand, and on the other hand, the need for recognising the right of breeders to commercialize protected varieties. In Norway, we considered the best way of balancing these two legitimate objectives, by keeping the 1978 Act. Thus, Norwegian farmers can freely use farm-saved seeds of certified material on their own holding. In addition, Norway also continues with some public funding of plant breeding.

Another example of mutually supportive implementation, is the inclusion of requirement of disclosure of origin in both the PVP and patent laws. This is a first step of ensuring fulfilment of access and benefit sharing obligations. Furthermore, since 2009, Norway has given an annual contribution to the Benefit-sharing Fund of the International Treaty that equals to 0,1 % of seed sales in Norway.

VI. International policy

In addition to sharing some of our national experiences, we would also like to share some of Norway's policy at the international level in regard to Farmers' Rights and Plant Breeders' Rights.

In 2014, Norway organised an informal meeting of national focal points to UPOV and the ITPGRFA respectively from several European countries in Oslo. We consider such meeting areas to be useful since there are few occasions for interactions among people following the different international instruments. This meeting also identified several options for how to address interrelations between UPOV and the ITPGRFA. In order to identify how the international instruments could be implemented in support to each other, one starting point could be to point out some relevant challenges for parties of each agreement and then identify how the implementation of the other could contribute to meet those challenges.

The ITPGRFA could e.g. be supportive of UPOV by increasing the recognition of plant breeding and breeders in the Governing Body resolutions and documents as well as by increased valuation of the non-monetary benefits of new varieties. UPOV could on the other hand be supportive of the ITPGRFA by improving the participation by breeders in the MLS (by including protected varieties into the MLS; by including expired varieties into the MLS), contribute to user-based benefit-sharing; clarify the legal space for farm-saved seeds (exceptions to Plant Breeders' Rights) and consider if the 1991 Act of the UPOV Convention is too restrictive for potential new UPOV members, it could be considered to create a less comprehensive system for Plant Breeders' Rights ("UPOV light") as an option to those countries. This will reflect the fact that the different acts of UPOV were developed in parallel with the development of the agricultural sector of OECD countries, while the agricultural sector of many new countries might not be as mature yet.

Norway has also been part of organising global meetings on Farmers' Rights. The meeting in Zambia 2007 was crucial for forming the understanding of Farmers' Rights as recognized in the Treaty and to keep it on the agenda of the sessions of the Governing Body.[12] The meeting in Ethiopia in 2010 documented several success stories and experiences related to the different provisions of the Article 9 of Farmers' Rights and elaborated the need for guidelines (explanatory note) for their implementation.[13] Participants at the Global Consultation on Farmers' Rights at Bali, Indonesia, 27–30 September 2016, shared views, experiences and examples of best practices related to the implementation of Farmers' Rights. They also identified a range of issues

[12] Report of the meeting is available at http://www.farmersrights.org/pdf/farmers_rights_lusaka_consultation_final_report.pdf

[13] The input paper presented by Ethiopia based on the global consultations is available at http://www.planttreaty.org/sites/default/files/gb4c01e.pdf. The full report of the global consultations in 2010 is available at http://www.farmersrights.org/pdf/FNI%20Report%201-2011%20Farmers%20Rights.pdf.

that may affect the realization of Farmers' Rights, and discussed a draft list of recommendations to the Governing Body in this regard.[14]

What's in common of these events that Norway has been involved in organising, is the broad participation with representatives of different stakeholders. Transparency and inclusiveness have also been a priority to Norway at the general meetings of UPOV and the International Treaty. At ITPGRFA meetings, Norway has often funded the participation of representatives of farmers' organisations through Norwegian NGOs. Due to our value of transparency and broad participation, Norway has also argued for making the documents of the Consultative Committee of UPOV publically available and its meetings open to observers. Norway is including representatives of civil society in the official Norwegian delegation to both UPOV and the ITPGRFA. In the treaty context, we have the impression that this is fairly common, while at UPOV sessions, we are not aware of other countries doing so.

Norway strongly believes that the most effective means to prevent mistrust is transparency and participation. The best way to secure harmonization between different international obligations is therefore to continue an open dialogue with different NGOs, intergovernmental organisations and other relevant actors who are affected by UPOV and ITPGRFA.

VII. Conclusion

Plant breeding needs to develop varieties suitable for different agro ecological conditions. Therefore, there is a need to balance the implementation of Plant Breeders' Rights and Farmers' Rights according to the national context. Norway has in the last decade had good experiences in increasingly strengthen the interaction between the national focal points of the respective instruments. Since there is still untapped potential for enhanced mutual supportiveness when implementing the UPOV Convention and the Treaty at both the international and national levels, such collaboration is essential. We would also stress the need for broad participation of various stakeholders in transparent and inclusive processes as the best way forward in order to achieve the different objectives of UPOV and the International Treaty.

[14] http://www.fao.org/plant-treaty/news/detail-events/en/c/445335/

DISCUSSION

Session 3: Experiences of the Contracting Parties in Implementing the UPOV Convention and the ITPGRFA

Emanuel Sackey: Thank you very much, Mr Chairman. I am from the African Regional Intellectual Property Organization. From the morning session, and looking at both the international dimensions and national experiences, what is coming out very clearly to me is the fact that probably we need to resolve the issue of farmers' privilege. UPOV highlighted earlier in its presentation the relationship between protected varieties and farmers' rights, and I would like to make the assumption that this issue has also to do with unprotected varieties and land races. How then do we move this whole process forward? My second question is, at what point can farmers' rights then be extended to protected varieties, as was highlighted by the Vice Secretary-General of UPOV?

Another issue which is also mentioned, and I listened to the presentation from Mr Parker and then also Mr Andrew Mitchell from the UK relating to the second component of this interrelationship, is the notion of participation of farmers in the decision-making process. One of the challenges that we are facing, particularly in developing countries, is the fact that we are always questioned; did you involve farmers in this whole process? As I was listening to Mr Parker, who enumerated a whole range of approaches for farmer participation, I was just mirroring that into the ARIPO process, the Arusha Protocol development, which I think was mentioned earlier on this morning, and I was looking at the fact that we had involved farmer organizations. We use an inclusive process. We use a consultative process. So Mr Chair and distinguished panelists, could we just get some understanding of what exactly is this, the scope of this farmer participation in decision-making processes, so that we can also resolve this issue in going forward?

Thank you very much.

Susan Bragdon: Thank you very much. I'm with the Quakers UN Office. I have a comment and then a question. It seems to me that a lot of what we're talking about is that we have drivers and enhanced outcomes that are behind each treaty. Outcomes are going to be different, because what drives them, what created them, is very different. So it may not always be a matter of incompatibility, but just the focus, and the outcomes are going to be different accordingly.

UPOV, as we heard from Peter Button this morning, is an incentive to create, for people to invest in research and development for plant breeding. This is a means to recoup investment. So that implies that the focus is going to be on where there is a market, and not necessarily targeting nutritional or other societal needs where there isn't a market.

We would expect then the focus of UPOV to be on things like soy, wheat, flowers, ornamentals – those kinds of products where you would expect there to be a market. I think it was Mr Parker who several times mentioned that UPOV and the (International) Treaty are both necessary to support sustainable agricultural growth and crop and genetic diversity. It seems to me what we really need to see is pluralistic approaches that are needed to allow simultaneous development

of different breeding and seed systems, and governments also need to be involved to right potential imbalances.

My question for Mr Parker is, is there a correlation that we have seen between UPOV and an impact on public investment in research and development and breeding, on agriculture and dietary diversity, and on nutritional outcomes?

Responses from the panelists:

Anthony Parker: Thank you very much for that question. It is a very interesting question, and I have to say in the Canadian context, what we have experienced is that the Government of Canada now becomes a very active participant in the utilization of plant breeders' rights, and part of the reason for that is in addition to the taxpayer dollars that we pour into plant breeding.

It also becomes a sustainable mechanism to continue long-term funding in plant breeding programmes and in that respect, they don't become so dependent on market forces in some respects, and the volume of the variety demanded in the marketplace.

The other aspect I want to touch on is that element of focusing PBR on solely those markets that have already developed. In fact, we have seen some innovative things happen, and I wouldn't underestimate the ability of breeders to create new markets for products.

We have an example in Canada that is a very interesting one, and that is of a species known colloquially as HASKAP, and it is a type of berry that actually comes from the tundra of Siberia. An innovative plant breeder at the University of Saskatchewan took this on and now has created a market within Canada, and we expect it to go worldwide – a very nutritious new species to be used in dietary – a new species to be consumed, this berry, and in fact it is very high in antioxidant levels. This researcher is actually using plant breeders' rights to sustain his public research to continue.

So I would encourage you not to solely focus on this idea that PBR is a mechanism to sustain new markets. It is an outlet for creativity in terms of plant breeding, to help sustain innovation and new varieties coming to marketplace.

Andrew Mitchell: I suppose it is a question I would answer in the much wider context of how in the UK we develop any new government policy or changes to legislation, and there is just a full expectation that all interested parties, indeed the wider public, have an opportunity to contribute and be involved. In the particular area of plant variety rights, we are working very closely with the three agricultural industry representative organizations covering farmers, breeders and the seed production companies.

When introducing the 1991 UPOV Convention and developing the legislation to do that, there would have been a very wide process of firstly informal consultations with those organizations, and then when the legislation is ready for publication and comment in draft form, it will be published on the Internet and open for public consultation for anything from two to three months. If we do not do that properly, organizations and individuals feel that their views are not being heard, listened to, and then we will get letters from members of Parliament and letters to ministers.

Ultimately, we are accountable through the elected representatives in Parliament and the government.

Bell Batta Torheim: Well, it was presented like a farmers' privilege belongs to kind of protected varieties, while farmers' rights are related to unprotected varieties. I think that the dichotomy is more linked to the language of UPOV, but not the approach of the (International) Treaty. The focus of the (International) Treaty in terms of farmers' rights is not on the size of the farmer, or what kind of seed he is using, but the degree of contribution to conservation and sustainable use of plant genetic resources.

So the approach is a bit different. Farmers' rights are linked to all kinds of PGRFA, but the key is to what degree farmers are still contributing to the conservation and sustainable use of PGRFA.

And you also asked where is the limit, how much participation do you need in order to say that you have had proper participation?

I think this is linked to many other discussions on farmers' rights that we had, for example, in the global consultation on farmers' rights in Bali at the end of September. There are many experiences on how this could be done, and also many would like to have all of these experiences collected, as a tool for countries to implement. It has also been raised that there is a need for guidelines, for example, how to implement farmers' rights – a voluntary guideline, which is quite common in, for example, the Commission on Genetic Resources, to develop which countries could (use to) get an idea (of) how to ensure participation, what are the different models of participation in development of laws and policies in this field. Thanks.

Niels Louwaars: Thank you. I am from the Netherlands. Focusing on this discussion now, I am interested to know, how many farmers do you involve in the discussions in Norway itself, and how do you organize it with farmers?

Bell Batta Torheim: How many farmers is difficult to say. We have a general system for involvement of all kinds of stakeholders, including farmers. Every time we develop a new law or major policy, there will be public hearings, or you will have committees that will prepare the law, in an inclusive manner.

What is very special in Norway as well, is the funding of agriculture. Every year, we have negotiations between the main farmers' unions and the government about funding. There are many channels involving farmers in Norway, including on genetic resources.

We had, for example, advisory boards on genetic resources, including representatives of farmers' unions, but also specifically farmers engaged still in the conservation and sustainable use of farms, and they are not so many.

Gerhard Portz: I represent IGN/AbL, Germany. I have a question for Mr Mitchell. You said plant genetic resources belong to society, not just to the farmers, and I heard from Argentina that there was a question for me as a farmer if I think that rice and grains have put thousands of years of plant breeding behind them. I wonder how much industrial intellectual property is there from the farmer, and how much from society? Compensation is requested from farmers, you have the farmers' privilege, but you should pay for everything. Well, what about the work and the land, and the plant that has been grown? It belongs to all society, and not just to the farmer.

Pat Mooney: I represent the ETC Group, an international civil society organization headquartered in Canada. Thank you, Chair. I very much appreciated the country presentations. I was wondering if Argentina in particular had any comment or concern about the implications for the seed industry and for farmers in Argentina of the proposed mergers that are taking place now between these major seed and pesticide companies.

There was a debate last week in Rome during the Committee on World Food Security where it was proposed by some governments that there be an emergency debate on the implications of the seed and pesticide mergers for food security. It was blocked by some of the countries, but there still was a side corner debate. One of the points that came out was that the mergers would lead to higher seed prices, and could lead to further steps and monopoly concentration that could be damaging to many developing countries.

Argentina was cited as one of the examples for that, because it is so important, particularly for the pesticide industry, as a major market for pesticides. There were concerns that this would require again an increase in subsidies that would need to be paid by governments to farmers, that it would lead to an increase in seed prices, and perhaps to some risk to national companies as well. I do not know if Argentina has looked at that in terms of its own seed industry. Thank you.

Andrew Mitchell: Well I suppose I find that a slightly difficult question to answer directly. My mind is going back to the graph Stephen Smith showed of the increase in wheat yields in the UK more or less following the introduction of plant variety rights in the 1960s.

So for me, the answer lies in the distinction between plant genetic resources as an input to plant breeding, as distinct from the product of 50 to 100 years of plant breeding, which has been done by plant breeders, not by farmers. The farmers are using the product of modern plant breeding, which, in the way it works in the UK, is a different thing from the plant genetic resource that is owned by society. Thank you.

Raimundo Lavignolle: Thank you very much for that question. First of all, we haven't analysed that in the Institute. That has not been something that we have studied, nor is it under the control of the national government. We are not in charge of business mergers, and so we do not really have much to say about that from the Government's perspective.

Regarding the national and foreign presences in the seed markets, we have high range companies, mostly in soy and wheat, with 60 million hectares and 40 million for wheat approximately. They are all national in wheat, and with soy there were two national businesses, two domestic businesses who were in charge of the lion's share of the domestic market. Then after a merger, the biggest soy market continues to be a domestic one, and it was one of the biggest ones in Mercosur regarding soy breeding. That answer was in relation to merging with multinationals.

Regarding the cost of seeds, this is linked to the yield, the economic yield that the producer can achieve. You have to look at the yield itself. That is what the farmer will look at when deciding what to plant, and that depends also on the currency exchange rate. That is something beyond the control of the Government. Thank you very much.

Pat Mooney: I am surprised, because Argentina has quite a well regarded anti-competition office, as do other governments, and any country in which the merged entities choose to operate has the right to actually intervene and say whether or not they will accept the merger within the jurisdiction of that country. I know several countries, including my own, are looking into the mergers to see whether or not they feel it is safe for competition.

So it is not just where their headquarters are, but it is actually where they operate that counts. What we'll see, and that was discussed last week in Rome, was that if the mergers go through as proposed, three companies will control 60 percent of global commercial seed sales, and the same three companies will control 71 percent of pesticide sales. That is a tremendous control over the food system at the beginning of the food chain.

And I think while we are concerned here about crop diversity and genetic diversity, we have also got to be concerned about diversity in competition, and if the systems we have in place including UPOV lead to an environment in which there is such a constraint on competition, that should be a worry for us.

When we first got into looking into the seeds issue decades ago, there were thousands of companies involved in commercial plant breeding around the world and public sector institutions. Now we're down to three dominant companies, so I would hope that that should be a concern to both UPOV and of course to national governments. Thank you.

Raimundo Lavignolle: Thank you. We do have an anti-competition office, which is not under the Ministry of Agriculture but rather under the Production Ministry, and I do remember that yes, we have been receiving questions over and over again. Given that the anti-competition office regulates competition in the domestic territory, we are asked about the percentage of the market share that this merger represents in order to deal with competitiveness issues, every time there are mergers locally. There was a report that was issued with an analysis by that office, but this has nothing to do with your original question about the global mergers, because we only have jurisdiction in Argentina. Thank you.

Stig Tanzmann: I represent Bread for the World, Germany, a church-based development organization. We as an organization are working with very poor communities, rural communities, a lot of indigenous communities, a lot of farmer communities. For us, the question of participation in these processes and negotiations, if a country joins or not, or regional group joins or not, is not a question if farmers or indigenous people can participate, but it has to be an outreach in my understanding to this most vulnerable group who will be most affected by it, because certain practices or certain rights of them will not be able to be fulfilled anymore.

When we have done our duty, they should first of all reach out, and that is what we haven't seen in the past. Especially in the African context, where a lot of our partners have been isolated, when they should have been consulted upfront, asked to take part.

To me, that would also be a question, especially regarding the European Union. How do you differentiate between your internal interests as the European Union, who has a strong seed industry and wants to see some benefits from UPOV, and farmers' rights or development?

Because that is what should be most relevant for a lot of developing countries. That is where they have their strengths, and that is where a lot of farmers, indigenous people still need support. Thank you.

Päivi Mannerkorpi: Mr Chairperson, first, shortly on the companies that merge and the global concentration. This is a situation we have in many other areas, not just in the seed sector, but I agree; we have a concern in relation to food security.

But I am sure like in the case of Argentina, or also in the European Union, we will apply our competition rules, and there will be a very careful analysis of the situation, and I am sure this will also take place in other parts of the world.

On the participation of farmers and farmers' communities, I could give an example of the European Union, where we have quite a lengthy process if we want to create something new. Normally, we start by evaluating the old law. We need to do an impact assessment, including all possible options – of deleting legislation, abolishing legislation, or soft law, or having a completely new approach. Also, in this impact assessment, we should address crops, and we always address maize in the European Union, because we have a special policy on maize. Then finally, the legal proposal is prepared by the Commission, and during the whole process, the stakeholders are consulted, including the public. So they are public consultations. We hope this can serve as a model to any countries of the world.

As regards the question on our development policies, in terms of intellectual property protection of varieties, we want to support the UPOV 91 Act. We feel it is a good model. However, at the same time, I think UPOV member countries should look at their situations where they stand. I would also like to raise the issues on national laws, on marketing of seed and plant propagating material, because this is often confused with the rules on variety protection. Those marketing rules are very often much more important for the access of farmers to new plant varieties, and whether they want to exchange or sell seed.

In relation to new UPOV countries, the Commission has always stressed the importance at the same time to take care of the plant genetic resources, the traditional varieties.

Session 4
Overview of initiatives involving the ITPGRFA and UPOV

OVERVIEW OF INITIATIVES INVOLVING THE ITPGRFA AND UPOV

Kent Nnadozie and Tobias Kiene
Secretary, ad interim, ITPGRFA, FAO; Technical Officer, ITPGRFA, FAO

The International Treaty places a great deal of importance on working in partnership with others to achieve its objectives. Contracting Parties and stakeholders are encouraged to join forces in various areas of conservation, sustainable use, and access and benefit-sharing for sustainable agriculture and food security. And the Secretary and its team are tasked with closely cooperating with other international organizations and treaty bodies, to foster mutually supportive implementation of the various instruments and support the realization of the objectives of the International Treaty.

The Governing Body has reiterated this partnership approach, and regularly calls upon Contracting Parties, stakeholders and the Secretary to undertake a variety of activities in this regard, including with UPOV.

It is therefore not surprising that there are plenty of initiatives and activities involving the International Treaty and UPOV. Some highlights are singled out and briefly presented in the following.

1. Non-monetary benefit-sharing

The International Treaty was one of the first international legal instruments to operationalize the principle of sharing benefits arising from the use of genetic resources. And benefit-sharing under the International Treaty takes a variety of forms that can be grouped around four types, namely: information exchange, technology transfer, capacity-building, and monetary benefit-sharing through the International Treaty's Benefit-sharing Fund.

The sharing of non-monetary benefits was well recognized by the fathers of the International Treaty as being crucial for achieving its objectives, and there is no doubt that it continues to be crucial, alongside the sharing of monetary benefits.

In this context, under the International Treaty, Contracting Parties have established the Platform for the Co-Development and Transfer of Technologies. This is an innovative mechanism to build partnerships for the codevelopment and transfer of technologies relevant to plant genetic resources for food and agriculture. Its objective is to establish a 'one-stop shop' for coherent technology packets, based on an understanding of technology codevelopment and transfer pathways. The Platform is currently operating under the presidency of the Indonesian Agency for Agricultural Research and Development.

UPOV is participating in the Platform as a technical advisory partner. In this role, UPOV has been actively contributing to discussions on empowering stakeholders to utilize technologies for the

conservation, characterization, evaluation and use of plant genetic resources for food and agriculture.

Moreover, the International Treaty and UPOV have cooperated at the interface of monetary and non-monetary benefit-sharing: when the Treaty started a process on how to further enhance the functioning of the Multilateral System, several economic studies were being prepared by a team of researchers. One of the sources of data they could use was information contained in the PLUTO database of UPOV. The access that was provided to PLUTO was appreciated by the Governing Body, which in Resolution 1/2013 "thank[ed] the Council of UPOV for the practical support that has been provided to the International Treaty in the context of non-monetary benefit-sharing initiatives by the Office of UPOV, following the decision of its Council."

2. Farmers' Rights

The International Treaty was the first international legally binding instrument to recognize the efforts and enormous contribution of farmers of all regions of the world to the development and conservation of plant genetic resources for food and agriculture. It gives governments responsibility for implementing Farmers' Rights, and lists measures that could be taken to protect, promote and realize these rights.

It is well worth remembering that the Governing Body started the process to explore possible areas of interrelations between the International Treaty and relevant instruments of UPOV and the World Intellectual Property Organization in the context of Farmers' Rights. Following that decision in 2013, in 2015 it requested the Secretary, in its Resolution on Farmers' Rights "to jointly, and including through a participatory and inclusive process, as appropriate and subject to availability of resources, finalize the process for identification of possible areas of interrelations between their respective instruments and the Treaty."

The International Treaty and UPOV collaborated intensively to advance this process, and to ensure participation from as broad a range of stakeholders as possible, in this Symposium.

The Secretary of the International Treaty was also invited to attend sessions of the UPOV Council and the UPOV Consultative Committee, and he was glad to accept this invitation, so that he could provide background information to Members of UPOV about this important process.

Building on the importance that the International Treaty attaches to Farmers' Rights, at its last session the Governing Body encouraged Contracting Parties to organize meetings and consultations on this issue. In response to this invitation, a number of workshops and regional consultations were held. For example a Regional Consultation took place in Zimbabwe and a workshop was staged in Geneva. In addition, Indonesia and Norway co-organized the Global Consultation on Farmers' Rights in September 2016 in Bali, Indonesia. The Global Consultation was intended to facilitate dialogue among countries and stakeholders, to advance on the elaboration of options to support national implementation of Farmers' Rights by bringing together a broad range of stakeholders. Almost 100 participants from 37 countries from all FAO

regions, representing all stakeholder groups, attended the event and made it a considerable success.

The Office of UPOV actively participated in the Global Consultation, and its presence was warmly welcomed by the organizers and participants.

3. Information initiatives and mutual attendance of meetings

The International Treaty Secretariat and the Office of UPOV have organized a variety of information events. In 2009, for example, they co-organized, together with other partners, the Second World Seed Conference at FAO headquarters in Rome, under the theme *Responding to the challenges of a changing world: The role of new plant varieties and high quality seed in agriculture*. The Declaration from the World Seed Conference stressed the need for the mutually supportive implementation of the international framework relating to seeds and plant genetic resources for food and agriculture, in particular the International Treaty and UPOV. It also "strongly encouraged [governments] to implement a predictable, reliable, user friendly and affordable regulatory environment to ensure that farmers have access to high quality seed at a fair price."

On another occasion, the International Treaty Secretariat collaborated with the Office of UPOV in the side event *Encouraging the use of Plant Genetic Resources for the Benefit of Society*, which was held in 2014 at a meeting of the FAO Commission on Genetic Resources for Food and Agriculture.

In December 2015, both the International Treaty Secretariat and the Office of UPOV participated in a workshop organized in Dubai by the Ministry of Environment and Water of the United Arab Emirates. The event, supported by the FAO Sub-regional Office for the Gulf Cooperation Council (GCC) States and Yemen, focused on the International Treaty's implementation and the benefits and opportunities of both the International Treaty and the UPOV Convention.

The workshop provided an excellent opportunity for both Secretariats to further explain the objectives and activities under each instrument, as well as to discuss with participants at national level the needs for harmonious and mutually supportive implementation.

Finally, the International Treaty Secretariat and the Office of UPOV regularly attend each other's meetings, including Sessions of the Governing Body, meetings of the Ad Hoc Technical Committee on Sustainable Use, a High-level Roundtable, or the UPOV Council, and the UPOV Consultative Committee, as mentioned earlier.

4. Conclusion

Based on its mandate and on guidance from the Governing Body, the Secretariat of the International Treaty closely cooperates with other international organizations and treaty bodies, to support Contracting Parties in implementing the International Treaty.

In this sense, we look forward to continuing our fruitful cooperation with UPOV in areas of mutual interest, for sustainable agriculture and food security.

OVERVIEW OF INITIATIVES INVOLVING THE ITPGRFA AND UPOV

Peter Button
Vice Secretary-General, UPOV

A number of joint initiatives involving the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and UPOV have already been very well described by Tobias Kiene in his excellent presentation. Therefore, I will try to avoid repetition in this paper, except where the UPOV perspective on a particular initiative might provide some added insight.

From a UPOV perspective, one of the most important joint initiatives involving the ITPGRFA and UPOV was the Second World Seed Conference "Responding to the Challenges of a Changing World: The Role of New Plant Varieties and High Quality Seed in Agriculture". The Conference had the objective to identify the key elements that are necessary to ensure a suitable environment for the development of new varieties, the production of high quality seeds and their delivery to farmers[84].

The declaration from the Second World Seed Conference stated that:

> "Urgent government measures and increased public and private investment in the seed sector are required for the long term if agriculture is to meet the challenge of food security in the context of population growth and climate change.
>
> "Governments are strongly encouraged to implement a predictable, reliable, user friendly and affordable regulatory environment to ensure that farmers have access to high quality seed at a fair price. In particular, FAO member countries are urged to participate in the internationally harmonized systems of the Organization for Economic Cooperation and Development (OECD), the International Union for the Protection of New Varieties of Plants (UPOV), the International Treaty on Plant and Genetic Resources for Food and Agriculture (ITPGRFA) and the International Seed Testing Association (ISTA). Participation in those systems will facilitate the availability of germplasm, new plant varieties and high quality seed for the benefit of their farmers, without which their ability to respond to the challenges ahead will be substantially impaired. The conference emphasized the important role of both the public and the private sectors to meet the challenges ahead and the benefits when the two work together. The Second World Seed Conference emphasized that agriculture needs to provide sustainable food security and economic development in the context of current and future global challenges. The Conference highlighted the critical role of new plant varieties and high quality seed in providing a dynamic and sustainable agriculture that can meet those challenges. It concluded that governments need to develop and maintain an enabling environment to encourage plant breeding and the production and distribution of high quality seed. […]

[84] The Second World Seed Conference, which was held in Rome on September 8-10, 2009, was jointly organized by the Food and Agriculture Organization of the United Nations (FAO), the International Union for the Protection of New Varieties of Plants (UPOV), the Organisation for the Economic Cooperation and Development (OECD), the International Seed Testing Association (ISTA) and the International Seed Federation (ISF).

"Conference conclusions:

- Plant breeding has significantly contributed and will continue to be a major contributor to increased food security whilst reducing input costs, greenhouse gas emissions and deforestation. With that, plant breeding significantly mitigates the effects of population growth, climate change and other social and physical challenges.
- ITPGRFA is an innovative instrument that aims at providing food security through conservation, as well as facilitated access to genetic resources under its multilateral system of access and benefit-sharing. The multilateral system represents a reservoir of genetic traits, and therefore constitutes a central element for the achievement of global food security.
- Intellectual property protection is crucial for a sustainable contribution of plant breeding and seed supply. An effective system of plant variety protection is a key enabler for investment in breeding and the development of new varieties of plants. A country's membership of UPOV is an important global signal for breeders to have the confidence to introduce their new varieties in that country.
- […]"

It is pleasing to see that, since 2009, a number of additional FAO members have decided to participate in the internationally harmonized systems provided by UPOV, ITPGRFA and also the OECD and ISTA.

In 2012, UPOV members approved the participation of the Office of the Union in the ITPGRFA Platform for the Co-Development and Transfer of Technologies, which is an initiative in line with the declaration of the Second World Seed Conference in emphasizing "the important role of both the public and the private sectors to meet the challenges ahead and the benefits when the two work together".

UPOV databases have been an important resource for the ITPGRFA in recent years. In 2011, UPOV was approached by the Secretariat of the ITPGRFA for assistance in a research project on the economics of the Multilateral System of the ITPGRFA, an initiative that was clearly of strategic importance for the future success of the ITPGRFA. The Council of UPOV readily agreed with the request of for the Office of the Union to cooperate with ITPGRFA on the project, based on information available from the Plant Variety Database (PLUTO). In 2013, UPOV members agreed that the Office of the Union explore how the information in the PLUTO, GENIE and UPOV Lex databases might be made available through ITPGRFA Platform for the Co-Development and Transfer of Technologies, mentioned above.

In relation to ITPGRFA activities, UPOV has participated in the: High Level Round Table on the Importance of the International Treaty on Plant Genetic Resources for Food and Agriculture in Meeting the Climate Change Challenges, Enhancing Food Security and addressing Agro-biodiversity Erosion, in 2010; the ITPGRFA initiative to Promote Public-Private Partnerships for Pre-Breeding "Towards an International Public-Private Partnership for Pre-Breeding" in 2013; and the "Global Consultation on Famers' Rights" organized by the Governments of Indonesia and Norway and with the support of the Secretariat of ITPGRFA, in 2016.

In December 2015, as explained by Tobias Kiene, UPOV and the ITPGRFA participated in the "Workshop on the International Treaty on Plant Genetic Resources for Food and Agriculture and preparation for the accession to the International Convention for the Protection of New Varieties of Plants", organized by the Ministry of Environment and Water of the United Arab Emirates, in collaboration with the ITPGRFA, UPOV, the International Center for Agricultural Research in the Dry Areas (ICARDA) and the International Center for Biosaline Agriculture (ICBA).

In recent years, as reported by Tobias Kiene in his presentation, the Governing Body of the ITPGRFA has been considering interrelations between UPOV and the ITPGRFA. During the discussions at the Governing Body, at which UPOV is invited to participate, it was highlighted that there needed to be more exchanges of information between the Contracting Parties and stakeholders of the two organizations. One of the suggestions was to organize events at the fringes of each other's sessions to inform the different stakeholders about the different systems. It was in response to that suggestion that, with the Secretary of the International Treaty, UPOV organized a side-event at the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture of the Commission on Genetic Resources for Food and Agriculture (CGRFA) in July 2014. The focus of the event was on how UPOV encourages the use of plant genetic resources for the benefit of society. Taking us up to date from there, Tobias Kiene has already explained in some detail the process that led to the event that is taking place today, which UPOV has been very pleased to co-organize and host.

As demonstrated by the information summarized here, UPOV is keen to work with the Secretariat of the ITPGRFA, to contribute to relevant activities of the ITPGRFA and, of course, to continue to participate in the sessions of the Governing Body in order that Contracting Parties to the ITPGRFA and to the UPOV Convention maintain effective communications.

I am sure that the wealth of information and discussion at this Symposium will help UPOV and the ITPGRFA to further enhance cooperation in the future.

DISCUSSION

Session 4: Overview of initiatives involving the ITPGRFA and UPOV

Niels Louwaars: Thank you, Chair. Thanks for these commendable joint activities. I would like to come back to the discussion this morning, where both Bram and Szonja discussed opportunities to create some policy space at the national level, probably to allow smallholders and subsistence farmers. Okay, definitions have had to be formulated to exchange seed which would create tremendous linkage between UPOV and the Farmers' Rights article in the (International) Treaty. I would very much like the two gentlemen to comment on that, to come back to that discussion this morning and give their views on that proposal.

Patrick Ngwediagi: Thank you, Mr Chairman. I am from the United Republic of Tanzania. I do not have much to say about these current presentations, but I wanted to make a contribution to the presentation and discussions that happened in the morning, and in particular on the issue of participation of farmers and stakeholders and developmental policies. As far as Tanzania is concerned, what has been presented by Canada and presented from the UK does apply in Tanzania, because the process of developing policies, legislation in our Constitution is legally binding and stakeholders including farmers have to be involved.

Therefore, the development of UPOV compliant Plant Breeders' Rights Act in Tanzania needed to follow the same process.

Then there was the issue of involving farmers or stakeholders in the development of the Arusha Protocol. I of course don't want to speak on behalf of ARIPO, because they are here today, but since Tanzania hosted this meeting, we were somehow responsible for the invitations, and in the invitations we excluded some people, following established principles of diplomatic conferences. Therefore, the process consisted of consultations among the countries, and their governments have to meet and make decisions. Tanzania, in collaboration with ARIPO, invited government representatives to make a decision, and that decision was supposed to reflect national positions based on previous consultations with their stakeholders. And that is what happened. There was no involvement of UPOV at that stage, and for UPOV also, some of the officials were there, but they were not involved in deciding who would participate. Thank you very much.

Tobias Kiene (ITPGRFA): Well thank you very much to both gentlemen for your questions, which are very important. I think it's fair to say that the Contracting Parties of the (International) Treaty have always been concerned about ensuring that smallholder farmers and the broad range of stakeholder groups that belong to the (International) Treaty community are well represented in all of the processes, including the intersessional processes.

Let me just take the example of the ongoing MLS enhancement process. When the Governing Body established the Working Group to Enhance the Functioning of the MLS, it decided that besides the regional representatives, the Working Group shall also comprise representatives of four stakeholder groups, and those include farmers and civil society organizations.

And then we also had a variety of small meetings in the lead up to the global consultation on Farmers' Rights, where the (International) Treaty Secretariat was also seeking to ensure that all stakeholders were able to participate.

So, I think that our constituency is constantly seeking to ensure that farmers are included in all of the (International) Treaty processes. Thank you.

Peter Button (UPOV): Yes. And thank you to Neil for the question, and I think you rightly pointed out that this is a matter at the national level in terms of national policy space. I think we had excellent presentations this afternoon from contracting parties to both treaties – the UPOV Convention, the International Treaty – to demonstrate how there can be different combinations in the context of a particular country to ensure the International Treaty and the UPOV Convention are implemented in a mutually supportive way.

The way that is done, clearly there were differences, but they were within the scope of both treaties and, as Tobias said, it is very important at the international level, through initiatives such as the Global Consultation, that both treaties are understood, to ensure that people make informed choices. I think it was particularly helpful. We appreciated very much to have the chance to be present at the Global Consultations in Bali.

Then there can also be national initiatives, and we heard also a good example of how the International Treaty and UPOV were working together at the national workshop in the UAE, and I think that is a good example of how this can work, and how we can work together both at the international level and at the national level within the scope of our remits. Thank you.

François Meienberg: Thank you very much. I am from an organization called APBREBES, a network which is also an observer at UPOV, and from Public Eye, an organization based in Switzerland. I would like to take up the question that has been raised by others about the follow-up, and I think it is important to discuss this follow-up on different levels. I think we heard this morning that at least some speakers saw some conflicts between the treaties. There was maybe a task inside UPOV to listen to these potential areas of conflicts, and to maybe revise some explanatory notes, to speak again about definitions on subsistence farmers and so on after all.

I think this could help for a better mutual implementation. Nevertheless, I think there is also a lot of work to be done by individual countries, and I would especially like to speak about all of the countries which are already members of UPOV, but have just ratified the Act of 78.

I think in this case also for me, an outcome of the discussion we had this morning, it is important that they analyse if they have a lot more flexibility under the Act of 78 to also fulfill the obligations of the (International) Treaty, and therefore to stay with the Act of 78 and not ratify the Act of 91.

We heard Norway followed this, and other countries have done so which still have 78, although since many years they would have had the possibility to ratify the Act of 91.

Then we have still I think one of the biggest groups of the members of the International Treaty which have so far not ratified a UPOV Act, and I think in this case, there should also be an analysis if there is another way, if there is a possibility to implement a PVP law and in the same way, implement a law which is also supportive of the obligations under the (International) Treaty, and maybe then they will choose to act, to choose a generous law and not turn UPOV. But this is then a discussion which has to be held on national levels.

But I think the goal is to have both, to have a kind of support of breeding, to have a kind of PVP law and to specially also implement the obligations under the (International) Treaty. Thank you very much.

CLOSING REMARKS

Chairperson/Raimundo Lavignolle:

Thank you very much.

I think we all agree that we need both plant breeding and also plant genetic resources, so I think that everybody in this room can agree to that.

All of us, of course we think to do our best to get the best of our treaties. Together with Muhamad Sabran, now my friend after being here all day together, we will now try to make a synthesis of this Symposium, a brief synthesis, but at the same time trying to include the main ideas and remarks, from this day of hard work, and present it to you.

So we start with summarizing in four concluding remarks.

We have seen the objectives and benefits of both treaties, the UPOV Convention and the International Treaty for Plant Genetic Resources for Food and Agriculture.

It is important to interpret and implement the two Treaties in a mutually supportive way in the context of each Contracting Party.

Chairperson/Muhamad Sabran:

I would like to add that the Symposium has highlighted the need to involve all stakeholders in the process.

Moreover, in order to succeed in the objectives of both the UPOV Convention and the International Treaty, it is important for the two organizations to work together and to provide the necessary support.

Chairperson/Raimundo Lavignolle:

Now coming to the end, to the very end, there are a lot of people to thank and there has been a lot of work behind the scenes to get this event done and run smoothly. There are a lot of people that put a lot of work into it. I want to thank the Secretariat of UPOV and the Secretariat of the International Treaty. They have both worked very hard to make this successful meeting happen.

Also, I thank the speakers/presenters. They made their time to come here to reach us and to share their knowledge and experience in a very comprehensive way.

Lastly, I thank you all, the participants, in particular those participants who made interventions, always in a positive way.

Chairperson/Muhamad Sabran:

With that, we close the Symposium. Let us have a final applause for all.

ANNEX 1. LIST OF PARTICIPANTS

I. PARTICIPANTS

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