

OECD SEED SCHEMES

A Synthesis of International Regulatory Aspects that Affect Seed Trade



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LIST OF ABBREVIATIONS

AOSA	Association of Official Seed Analysts
AOSCA	Association of Official Seed Certifying Agencies
CEMAC	Communaute Economique et Monetaire de l'Afrique Centrale
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GIPB	Global Partnership Initiative for Plant Breeding Capacity Building
GPA	Global Plan of Action
IP	Identity Preserved
IPPC	International Plant Protection Convention
ISF	International Seed Federation
ISTA	International Seed Testing Association
MLS	Multilateral System of Access and Benefit-Sharing
NDA	National Designated Authority
OAPI	Organisation africaine de la propriété intellectuelle
OECD	Organisation for Economic Co-operation and Development
OIC	Orange International Seed Lot Certificate
PGRFA	Plant Genetic Resources for Food and Agriculture
QA	Quality Assurance
QDS	Quality Declared Seed
RPPO	Regional Plant Protection Organization
SADC	Southern African Development Community
SMTA	Standard Material Transfer Agreement
SPS	Sanitary and Phytosanitary
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UPOV	International Union for the Protection of New Varieties of Plants
WTO	World Trade Organization

I. INTRODUCTION

1. World population will increase from 6.9 billion in 2010 to 9.3 billion people in 2050; and agriculture will play a fundamental role in meeting the world's growing demand for food, feed and fibre. In order to feed the world population in 2050, agricultural production will have to almost double, and most of the incremental output will have to come from increases in yields (FAO, 2009).¹

2. High-quality seed is a pre-requisite to achieve maximum outputs and good returns for farmers. In many countries crop production and seed trade are also important sources of rural employment and foreign income. In 2011, the commercial world seed market was valued at US\$ 42 billion, and the value of internationally traded seed was estimated at US\$ 8.2 billion in 2010 (ISF, 2011).²

3. To strengthen the seed sector, it is crucial that seed growers and companies adhere to policies that guarantee quality standards and appropriate regulatory features. Many countries have adopted seed laws. Standards differ, but considerable efforts have been – and continue to be – made to harmonize national seed laws and seed trade regulations.

4. A number of international organisations, conventions and treaties deal with the regulation of seed trade, ranging from access to delivery of quality seeds to growers. Together they provide an international regulatory framework by overseeing the interests of breeders, producers and consumers. Among these organisations are the Organisation for Economic Co-operation and Development (OECD), whose Seed Schemes are globally recognized for the certification of seed moving in international trade. The International Seed Testing Association (ISTA) developed globally recognised standard procedures for seed sampling and testing. The International Union for the Protection of New Varieties of Plants (UPOV) provides breeders of new plant varieties with an intellectual property protection. The International Seed Federation (ISF) provides seed companies with trade and arbitration rules. Besides, there are the international conventions and treaties hosted by the Food and Agriculture Organization of the United Nations (FAO) that provide the international regulatory framework for related aspects of seed trade, including plant health and phytosanitary measures, access and benefit-sharing for plant germplasm and use of pesticides. Annex 1 provides a schematic overview of the different regulatory systems and actors in the seed supply chain.

5. An appropriate regulatory framework helps to promote competitive seed markets and lowers barriers to trade. This paper discusses regulatory aspects related to seed trade and the role of international organisations in trade harmonisation and the establishment of international standards. Special attention is paid to the OECD Seed Schemes and their contribution to the development of an international seed certification framework as well as their links to other international organisations.

6. This paper corresponds to the strategic plan of the OECD Seed Schemes. The plan aims to further strengthen the work of the Schemes and its value to Member countries. To achieve this goal, five key strategic areas are defined. Strategic area C, for example, is to enhance policy awareness through better linkages to seed related issues. Within each strategic area, different objectives are defined to achieve the strategic goal. This paper contributes to the objective of “providing a better understanding of the impacts of the harmonisation of seed standards and regulations on international trade through specific research studies”, within strategic area C.

¹ FAO (2009), High-Level Expert Forum on How to Feed the World in 2050, Rome, 12-13 October.

² ISF (2011), Seed Statistics. Available at: http://www.worldseed.org/isf/seed_statistics.html

7. This document is intended as an information document for policy-makers in Member countries of the OECD Seed Schemes and in countries interested in joining the Schemes. Additionally, it could serve as an educational tool for new participants in the Schemes.

8. The paper proceeds as follows: Section II provides an overview on seed certification; Section III discusses aspects of seed testing, and section IV reviews phytosanitary measures. Section V sheds light on plant variety protection. Section VI discusses capacity building at the international level, while section VII looks at international rules for trade and arbitration. Section VIII concludes.

II. SEED CERTIFICATION

9. Seed certification is a quality assurance process. Seed intended for domestic or international markets is controlled and inspected by official sources in order to guarantee consistent high quality for consumers. This is done by i) controlling the seed in previous generations; ii) carrying out field inspections during the multiplication process to ensure there is little contamination and that the variety is true to type; iii) growing samples in control plots of the known seed to ensure that the progeny conform to the characteristics of the variety and iv) seed quality testing in laboratories.

10. Of all the regulatory standards relating to seed laws, certification probably varies the most between different countries and parts of the world. Almost all countries developed their own certification standards (some have accepted the OECD Seed Schemes Rules as their national standards). In some countries certification is obligatory and in others optional. Some certification schemes focus on the genetic characteristics; in others, varietal certification is complemented by tests carried out in order to check laboratory standards, such as minimum germination, minimum analytical purity and seed health.

The OECD Seed Schemes: A globally recognized seed certification system

11. The OECD Seed Schemes provide an international framework for the certification of seed. They aim to facilitate seed trade by reducing technical barriers, improving transparency and lowering transactions costs. The OECD Seed Schemes were set up in 1958 with the objective to encourage the use of seed of consistently high quality in participating countries. There are currently 58 Members of one or more of the OECD Seed Schemes worldwide.

12. The Seed Schemes authorise the use of labels and certificates for seed produced and processed for international trade according to agreed principles. One of the main principles is that OECD certification is applied only to those varieties that are officially recognised as distinct and having an acceptable value in at least one participating country. Further, certified seed must be related directly through one or more generations to authentic Basic Seed of a variety. In addition, satisfactory conditions for the production and processing of Basic and Certified Seed must be ensured and verified by field inspection and post-control tests.

13. An OECD list of varieties eligible for seed certification is regularly published and available online and in hard copy. For a country to use the OECD labels, it is required to register the species and varieties in the OECD list of varieties. The list contains most internationally traded varieties, and it has grown progressively over the last 30 years. There are currently 49 899 varieties and 200 species listed.

14. The rules of the Seed Schemes cover seven groups of species, constituting seven distinct and independent Schemes. In response to the needs of Member countries, the rules are regularly amended. In the past years, the Seed Schemes faced a number of challenges, including the authorisation of companies to perform some seed certification activities, seed multiplication abroad and the move to large-scale seed production facilities. Some of these challenges reflect the shifting roles and responsibilities of the public

and private sector. Scientific and technical developments also resulted in further adaptation of the rules of the Schemes.

15. In order for a country to participate in the OECD Seed Schemes, several criteria must be met: The country must provide a description of the national seed certification scheme and a copy of the national rules and procedures governing variety registration and seed certification. Particular attention is paid to the country's national rules regarding previous cropping, isolation, verification of varietal identity and varietal purity standards. The country must also prove that it has a national list of varieties which includes only those varieties that are – according to international guidelines – distinct, uniform and stable. In the case of agricultural species, varieties must have an acceptable value for cultivation and use. These criteria ensure a harmonization of seed certification standards. Once a country has been accepted into the OECD Seed Schemes, its certification standards are considered equivalent to all other Member countries within the same Scheme.

16. The success of international seed certification also depends upon close co-operation between maintainers, seed producers, traders and the designated authority (appointed by the government) in each participating country. Frequent meetings between authorities of participating countries allow for the exchange of information, discussion of concerns and preparation of new rules and updates of the Seed Schemes. The body in charge of seed quality control in most countries is the National Designated Authority (NDA), which is responsible to ensure that seeds meet all required standards for certification.

Other seed certification systems

17. Besides the OECD Seed Schemes, there are also a number of other seed certification systems. They are discussed in the following. In the United States, for example, seed certification is not mandatory. Some of the commercial seed is certified by independent certifying agencies, such as those which are members of the Association of Official Seed Certifying Agencies (AOSCA), and this is done on a voluntary basis. AOSCA promotes and facilitates the movement of seed in local, national and international markets through the co-ordination of official seed certification agencies acting to evaluate, document and verify that a seed meets certain accepted standards.³ AOSCA has a number of certifying agencies located in North and South America, Australia, New Zealand and South Africa.

18. AOSCA also offers a quality assurance (QA) program for varieties, hybrids, brands or blends that are generally not marketed as certified seed. Seed conforming to these program standards may be identified by the AOSCA QA trademark. The guidelines are very similar to the certification scheme. In addition, AOSCA offers Identity Preserved (IP) programs that may be used to address transgenic crops to assure that certain products meet tolerance levels of genetic material derived from biotechnology. Shipments meeting the IP program criteria may be identified by the AOSCA IP trademark

19. In the European Union (EU) “marketing of seed (including seed potatoes) is regulated by Directives agreed and implemented by all 27 Member states”⁴. The Directives are based on two main pillars: i) a registration of varieties and ii) the certification of seed. This system is compulsory for the listed species covered by EU Directives. Marketing is limited to certified seed of registered varieties for field crops species regulated at EU level. For vegetable crops, seed can be commercialised as standard seeds.

20. Registration of varieties in the EU Common Catalogues is a precondition for marketing seed of agricultural and vegetable crops in the EU. For a variety to be registered, it needs to be distinct, uniform

³ See www.aosca.org

⁴ See European Commission, Directorate-General Health and Consumers:
http://ec.europa.eu/food/plant/plant_propagation_material/index_en.htm

and stable. It also needs to be tested according to national protocols or protocols of the Community Variety Rights Office or UPOV. Moreover, varieties of agricultural species need to meet the criteria for value of cultivation and use. Technical examinations are conducted by official authorities in EU Member states. In the certification process, the requirements concerning e.g. varietal identity and purity, specific purity, germination capacity and freedom from harmful organisms are checked by the authorities (official certification) or by the operators (certification under official supervision). Fixed rules exist for field inspections, seed sampling and analyses by laboratories. The responsibilities of breeders, maintainers, producers and suppliers of seed are subject to rules. In order to import seed and forest reproductive material in the EU from third countries, national provisions governing seed production and control and variety maintenance in the third countries are checked and considered by the EU as equivalent in order to afford the same assurances as regards seed produced and controlled within the EU. The EU rules are aligned with international standards.

21. In Latin America, seed laws vary considerably between nations, but the number of seed laws has increased in the past decade. “During 2000, in Latin America in general, governments pushed to update plant variety legislation that included seed certification and variety registration, and in many cases, as a compulsory system. At the same time, government seed agencies encouraged participation from the seed industry by delegating some of the official activities related to seed certification”⁵. Many Latin American countries established seed certification mechanisms.

22. On the African continent, a regional harmonization of seed rules and regulations has been undertaken in various regional economic communities of Africa including the Southern African Development Community (SADC), the Economic Community of West African States (ECOWAS) and the Communauté Economique et Monétaire de l’Afrique Centrale (CEMAC). ECOWAS, for example, introduced a new regulation on the harmonisation of rules governing quality control, certification and marketing of plant seeds and agricultural plants in 2008. The purpose of this regulation is to: i) develop the West African Catalogue of Plant Species and Varieties that lists the varieties whose seed may be marketed in Member countries without restrictions; (ii) facilitate local production of quality seeds; (iii) facilitate seed trade amongst ECOWAS Member States; (iv) facilitate timely and convenient access by farmers to quality seeds; (v) create a positive investment climate for the private seed industry; and (vi) promote public-private partnerships.⁶

III. SEED TESTING

23. Seed tests provide farmers, seed traders and regulators with information on the quality of seed before it is sown. Seed quality can be described as the overall value of the seed, resulting from genetic characteristics and from all other factors affecting the development, maturation and storability of the seed. Seed testing laboratories evaluate these characteristics. Quality attributes tested in seed test laboratories include minimum physical purity and limits on seeds of other crops and weed species; minimum germination; limits on moisture contents and limits on seed-borne diseases. Other quality aspects evaluated by a laboratory may include seed size and weight, seed vigour, seed viability and varietal quality assessment, which may include the detection of genetically modified organisms.

The International Seed Testing Association

24. The International Seed Testing Association (ISTA) was founded in 1924. Its primary purpose is to develop and issue standard procedures for seed sampling and testing and to promote a uniform application of these procedures for the evaluation of seed intended for the market. This is accomplished

⁵ Seed Association of the Americas (2009), Seed Movement in the Americas. Available at www.saaseed.org

⁶ See www.ecowas.int

through the publication of International Rules for Seed Testing, a laboratory accreditation system, the ISTA international certificates and the dissemination of knowledge in seed science and technology.⁷ In 2011, ISTA Members represented 72 countries and 201 analytical or research laboratories in the public and private sector.

25. The ISTA Rules describe principles and definitions and lay down detailed standardised methods, techniques and procedures for seed sampling, testing and reporting results. The pillars of seed quality control tests developed by ISTA are: sampling; analytical purity; other seed determination; germination; moisture content; seed viability; diagnostic seed health and varietal tests. More recently, the ISTA Rules have been extended to include the detection of genetically modified organisms in seeds. Thus, the methods in the ISTA Rules aim to either meet regulatory needs or to satisfy technical and commercial evaluation objectives regarding the potential of seeds.

26. ISTA's programme of laboratory accreditation, established in 1995 and specifically designed for seed testing, aims to strengthen the system of validated standard testing methods and standard methods of communicating results. In 2011, ISTA had 120 accredited public and private laboratories from 56 countries all over the world. To be accredited a laboratory must establish a quality assurance system, pass audits and obtain satisfactory results in the ISTA proficiency test programme. Therefore, the ISTA accreditation system ensures the competence of laboratories, their independence and impartiality and their uniform operation according to common standards.

27. ISTA international certificates can only be issued by ISTA accredited laboratories. They guarantee: the identity of the seed lot with a single reference; the traceability of the analysis; the competence of the laboratory that did the analysis; the use of validated methods and standard units and the use of standard reporting languages. Today, the ISTA Orange International Seed Lot Certificate (OIC) is widely used for international trade. The ISTA Rules and the OIC are referred to, or often embedded, in national laws or regulation schemes.

Other seed testing organisations

28. The Association of Official Seed Analysts (AOSA) is an organisation of laboratories representing the United States and Canada. Its membership is extended to allied laboratories, affiliate members and honorary members. AOSA was formed to ensure uniformity and accuracy in methods, results and reports in response to the development of seed laws by individual states. AOSA rules for seed testing are adopted by most states and ensure that the testing methods and competence levels of analysts are standardized between laboratories. AOSA's role is also to influence and assist in the enforcement of appropriate seed legislation at state and federal levels.⁸

29. Another organisation, similar to AOSA, is the Society of Commercial Seed Technologists, which is comprised of commercial, independent and government seed technologists. Established in 1922, the Society functions as a liaison between AOSA and the American Seed Trade Association.⁹ The Society of Commercial Seed Technologists has developed over the years into an organisation that trains and provides accreditation of seed technologists, researches and develops rule changes and publishes training materials.

30. ISTA and AOSA provide the seed industry with standardized uniform seed evaluation methods for seed law enforcement and testing of seed. They also provide a monitored system for training and

⁷ See www.seedtest.org

⁸ See www.aosaseed.com

⁹ See www.seedtechnology.net

educating seed technologists to the required standards. To reduce complications with the interpretation of seed testing rules, both organisations work together to harmonize seed testing rules.

IV. PHYTOSANITARY MEASURES

31. Phytosanitary measures are government legislations, regulations and procedures that regulate, restrict or prevent the import and marketing of certain plant species or plant products. These measures aim to prevent the introduction and spread of plant pests across international boundaries or to limit the economic impact of regulated non-quarantine pests. This is undertaken in a way that does not limit trade while making trade in plants and plant products safe.

Sanitary and Phytosanitary Agreement (SPS)

32. The movement of seed in international trade is based on the principles laid down by the Agreement on the Application of Sanitary and Phytosanitary Measures (WTO-SPS Agreement) of the World Trade Organization (WTO), agreed in January 1995. The agreement allows countries to set their own phytosanitary measures, but these must have a sound scientific basis. It is a requirement that “they should be applied only to the extent necessary to protect human, animal or plant life or health. And they should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail”¹⁰.

33. The WTO-SPS agreement “restricts the use of unjustified sanitary and phytosanitary (SPS) measures for the purpose of trade protection. The aim of the agreement is to maintain the sovereign right of any government to provide the level of health protection it deems appropriate, but to ensure that these sovereign rights are not misused and do not result in unnecessary barriers to international trade”¹¹.

34. The WTO-SPS agreement also “encourages governments to establish national SPS measures consistent with international standards, guidelines and recommendations”¹². International standards can be higher than the national standards of some countries, but the SPS Agreement allows governments to decide whether they use national or international standards.

Harmonization of phytosanitary regulations

35. The International Plant Protection Convention (IPPC) is currently recognized by the WTO-SPS Agreement as the only international standard setting body for plant health. These standards are used to harmonise phytosanitary measures worldwide with the aim to prevent the introduction and spread of pests of plants, plant products and other regulated articles and to promote appropriate measures for their control. The framework for the development of national phytosanitary measures is established by the IPPC. The Convention is governed by the Commission on Phytosanitary Measures, which adopts international standards for phytosanitary measures. Currently 177 governments adhere to the IPPC.

36. There are three primary areas of activity under the IPPC relevant to seed trade: i) development and implementation of international standards for phytosanitary measures; ii) exchange of official phytosanitary information to facilitate trade and iii) a substantial capacity development programme to assist developing countries in building their national capacities to meet their international phytosanitary obligations.

¹⁰ See World Trade Organization, Sanitary and Phytosanitary measures website, Available at: www.wto.org/english/tratop_e/sps_e/sps_e.htm

¹¹ Ibid

¹² Ibid

37. Currently there are nine Regional Plant Protection Organizations (RPPOs) worldwide that facilitate the international harmonization of national phytosanitary measures and collaborate with the IPPC Secretariat in fulfilment of the IPPC objectives.¹³ In the 27 Member States of the EU, one main plant health Directive sets out the measures against the introduction of organisms harmful to plants or plant products and against their spread within the EU. The objective of the EU plant health legislation is to protect the EU territory against organisms which would endanger agriculture and forestry, public and private green, natural environment and food security. In addition, various EU Directives on the marketing of seed and plant propagating material include certain plant health requirements.

V. PLANT VARIETY PROTECTION

38. New varieties of plants with improved characteristics – such as increased yield potential or disease and drought tolerance – improve and diversify agricultural production. There are various ways to protect new varieties, including plant variety protection and patents. The WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) obliges its signatories to implement a system for the protection of plant varieties through patents, an effective *sui generis* system or a combination of both.¹⁴

Plant Variety Protection (PVP) and UPOV

39. The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organisation, which was established in 1961 by the International Convention for the Protection of New Varieties of Plants (the “UPOV Convention”). The mission 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.

40. The UPOV Convention provides the basis for UPOV Members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right. The Convention specifies acts that require a breeder's authorization in respect of propagating material of a protected variety and – under certain conditions – in respect of the harvested material. In brief, this means that the authorisation of a breeder is required to propagate a protected variety for commercial purposes.

41. Under the UPOV Convention, the breeder's right is only granted where the variety is i) new; ii) distinct from existing, commonly known varieties; (iii) uniform; and (iv) stable and has suitable denomination. The breeder's right does not extend to acts done i) privately and for non-commercial purposes, ii) for experimental purposes and iii) for the purpose of breeding other varieties. Like all intellectual property rights, plant breeders' rights are granted for a limited period of time, at the end of which protected varieties pass into public domain.¹⁵

42. UPOV Members signal their intention to protect plant breeders on the basis of principles that have gained world-wide recognition and support. National plant breeders obtain the possibility of obtaining protection in the territories of other members, and foreign breeders are provided with an incentive to invest in plant breeding and the release of new varieties on national territory. Indeed, the UPOV report on the impact of plant variety protection demonstrated that the introduction of the UPOV system of plant variety protection was associated with an improved access to foreign plant varieties, enhanced domestic breeding programmes and an increased number of new varieties.

¹³ See www.ippc.int/index.php?id=13310

¹⁴ See article 27.3b of the TRIPs Agreement, available at www.wto.org/english/docs_e/legal_e/27-trips_04c_e.htm

¹⁵ See www.upov.int

43. In order to become a UPOV Member, the advice of the UPOV Council in respect of the conformity of the law of the future member with the provisions of the UPOV Council is required. This leads to a high degree of harmony in those laws and thereby facilitates the co-operation between members in the implementation of the system.

44. Cooperation between UPOV Members also includes the technical examination of plant varieties. It is based on arrangements whereby one member can conduct tests on behalf of others or whereby one member accepts the test results produced by others as the basis for the decision on the grant of a breeder's right. Through such arrangements, members are able to minimize the cost of operating their protection systems, and breeders are able to obtain protection in several territories at relatively low cost.

45. The effectiveness of the UPOV system is enhanced by the provision of guidance and information materials, such as explanatory notes, information documents, guidelines and electronic databases.

46. At the regional level, the European Union, since 1995, operates a regional system that has been established by Community legislation. The system allows intellectual property rights, valid throughout the 27 Member states, to be granted for new plant varieties. This system is in conformity with the UPOV 1991 Act, and the EU is a member of UPOV. In Africa, since 1999, a regional system has been established by OAPI (Organisation africaine de la propriété intellectuelle) that includes 16 Member states and is as well in conformity with the UPOV 1991 Act.

Exchange of germplasm and the International Treaty on Plant Genetic Resources for Food and Agriculture

47. The International Treaty on Plant Genetic Resources for Food and Agriculture (the "International Treaty") is an international legally binding instrument governing access and benefit-sharing for plant genetic resources for food and agriculture (PGRFA).

48. The objectives of the International Treaty are the conservation and sustainable use of PGRFA and the fair and equitable sharing of benefits arising out of their use – in harmony with the Convention on Biological Diversity – for sustainable agriculture and food security. It was negotiated within the Food and Agriculture Organization of the United Nations with the main goals of facilitating the exchange of plant genetic material for research and breeding and of balancing the interests of all involved stakeholders, including commercial breeders and farmers. It came into force in June 2004 and currently counts 127 Contracting Parties.¹⁶

49. By agreeing to make available to each other 64 of the most important food and forage crops, the Contracting Parties to the International Treaty established a global gene pool, namely the Multilateral System of Access and Benefit-sharing (the MLS). Facilitated access to PGRFA in the gene pool is accorded through a standard material transfer agreement (SMTA), adopted in 2006 and currently utilised on a global scale.

50. The International Treaty allows for intellectual property rights on new plant varieties obtained from material derived from the MLS in order to re-compensate plant breeders for their efforts. At the same time it triggers the sharing of monetary and non-monetary benefits for farmers, especially those in developing countries. In practice, any restriction to further research and breeding of a commercialised product incorporating material derived from the MLS (typically, a new plant variety), triggers a mandatory payment into a multilateral benefit-sharing fund. This fund is also open to voluntary contributions by the private sector and grants by institutional donors. Resources in the benefit-sharing fund are managed by the

¹⁶ See www.planttreaty.org

Contracting Parties to the International Treaty to finance projects in developing countries for the conservation and the sustainable use of crop diversity.

51. The International Treaty advocates the promotion and protection of farmers' rights, by setting forth a non-exhaustive list of measures that the national governments of the Contracting Parties should take. Those measures are: the protection of traditional knowledge of relevance to PGRFA; the right to equitable benefit-sharing and the right to participate in national decision making related to PGRFA.

VI. CAPACITY BUILDING AT THE INTERNATIONAL LEVEL

52. The Food and Agriculture Organization of the United Nations (FAO) plays a leading role in the conservation and use of PGRFA for sustainable increases in agricultural production. It provides a forum for dialogue and information exchange for international standard setting as well as technical assistance for the development of national policies and legislations for implementation of international regulatory frameworks.

53. Development and strengthening of seed sector has been part of FAO's programme for over thirty years, and a key element in FAO's activities since the adoption of the Global Plan of Action (GPA) for the Conservation and Sustainable Utilization of PGRFA in 1996. The GPA has provided a globally agreed framework for countries to adopt supportive policies and programmes for optimal harnessing of plant genetic resources. It was revised in 2011 to address the new and emerging challenges of food security and climate change and calls for strengthening capacities and partnerships among all stakeholders. The second Global Plan of Action was adopted in November 2011.

54. Strengthening seed systems is a priority area of the second GPA. A main activity is to support the development of an enabling environment through the development of appropriate seed policies and regulatory frameworks. Technical cooperation is provided to the supporting components of the International Treaty on PGRFA through strengthening germplasm management, plant breeding and the seed sector, including appropriate biotechnology, building capacities at national level, and increasing the effective implementation of the GPA.

55. FAO provides assistance to its Member states in seed policy and legislation development and capacity building in the following ways:

- *National seed policy*: FAO provides a technical and facilitating role in the development of national seed policies through a participatory process involving the key stakeholders in the public and private sector. It deals with how the following means can be best used to develop the seed sector: seed quality assurance schemes including seed quality control and variety release procedures; legislation; extension services; manpower development; credit and subsidies; local seed enterprises; taxation; international cooperation etc.
- *Regional harmonization of seed regulations*: FAO also provides a technical and facilitating role in the harmonization of seed regulations at regional level, which is recognized as vital for the development of the seed sector, because it facilitates cross-border movement of seeds and provides a broader market for seed enterprises. By facilitating cross-border seed trade, the harmonization of seed regulations also allows countries with seed deficits to trade more easily with neighbouring countries with seed surpluses, thereby promoting seed security.
- *Seed production and quality assurance*: In terms of seed production and quality assurance, FAO provides assistance to its Member countries in developing and improving national or sub-national

seed programmes for seed production. Activities range from the support of early generation seed multiplication by national research institutions to the support of small-scale seed enterprises.

- *Quality Declared Seed*: FAO has developed the Quality Declared Seed (QDS) system through expert consultations with Member countries in 1993 (revised in 2006). These guidelines are aimed at assisting small-scale farmers as well as specialists in seed production, field agronomists and agricultural extension agents to initiate the production of quality seed. The system provides an approach for countries that want to initiate a seed quality assurance system and is particularly designed for countries with limited resources. The QDS system is less demanding than certified seed quality assurance systems but guarantees a satisfactory level of seed quality.

56. FAO is collaborating with a number of regional seed associations in Africa, Asia and regional economic communities to bring together public institutions and private companies to strengthen seed systems. It has developed a joint initiative with ISF, ISTA, OEDC and UPOV to facilitate the development of the seed sector. A strategic approach is adopted in order to link the formal and informal seed sector; develop local seed enterprises; strengthen seed policies and legislation at national and regional levels and improve national and regional information systems for seed security. FAO assists in collecting and sharing accumulated experiences, including best practices and country case studies illustrating transitional processes in developing countries.

57. The Global Partnership Initiative for Plant Breeding Capacity Building (GIPB)¹⁷, established by FAO, is a multi-party initiative of knowledge institutions committed to developing stronger and effective plant breeding capacity. It has assessed national plant breeding and associated biotechnology capacity worldwide and developed a series of in depth studies. The GIPB aims at enhancing the capacity of developing countries to improve crops through better plant breeding and delivery systems.

VII. INTERNATIONAL RULES FOR TRADE AND ARBITRATION

58. Unlike the previous organisations, where participants were mainly governments, the International Seed Federation (ISF) is an international organisation whose members are national seed associations and seed companies. With members spread over 70 developed and developing countries on all continents, ISF represents the large majority of the world seed trade and plant breeders' community. It serves as an international forum where issues of interest to the seed industry are discussed.¹⁸

59. The mission of the ISF is to facilitate the international movement of seed, related know-how and technology; to mobilize and represent the seed industry at a global level; to inform its members and to promote the interests and the image of the seed industry. In order to fulfil its mission, the ISF promotes strong co-operation among national and regional seed associations. It endeavours to work in partnership with organisations responsible for international treaties, conventions and agreements and those that shape policies that impact the seed industry.

60. To support international seed business, ISF developed a corpus of 'commercial laws', including trade rules and arbitration rules (procedural rules for dispute settlement in the areas of trade).

61. Trade rules clarify and standardize contractual relations between buyers and sellers at the international level. They are developed keeping in mind international trade of seed and the production of seed from seed-stock of the buyer. The trade rules aim at providing seed traders with guidelines and standards for preparing a good contract and achieving mutual satisfactory trade. They are constantly updated; following the evolution of the economy and modern technologies. The trade rules are

¹⁷ See <http://km.fao.org/gipb/>

¹⁸ See www.worldseed.org

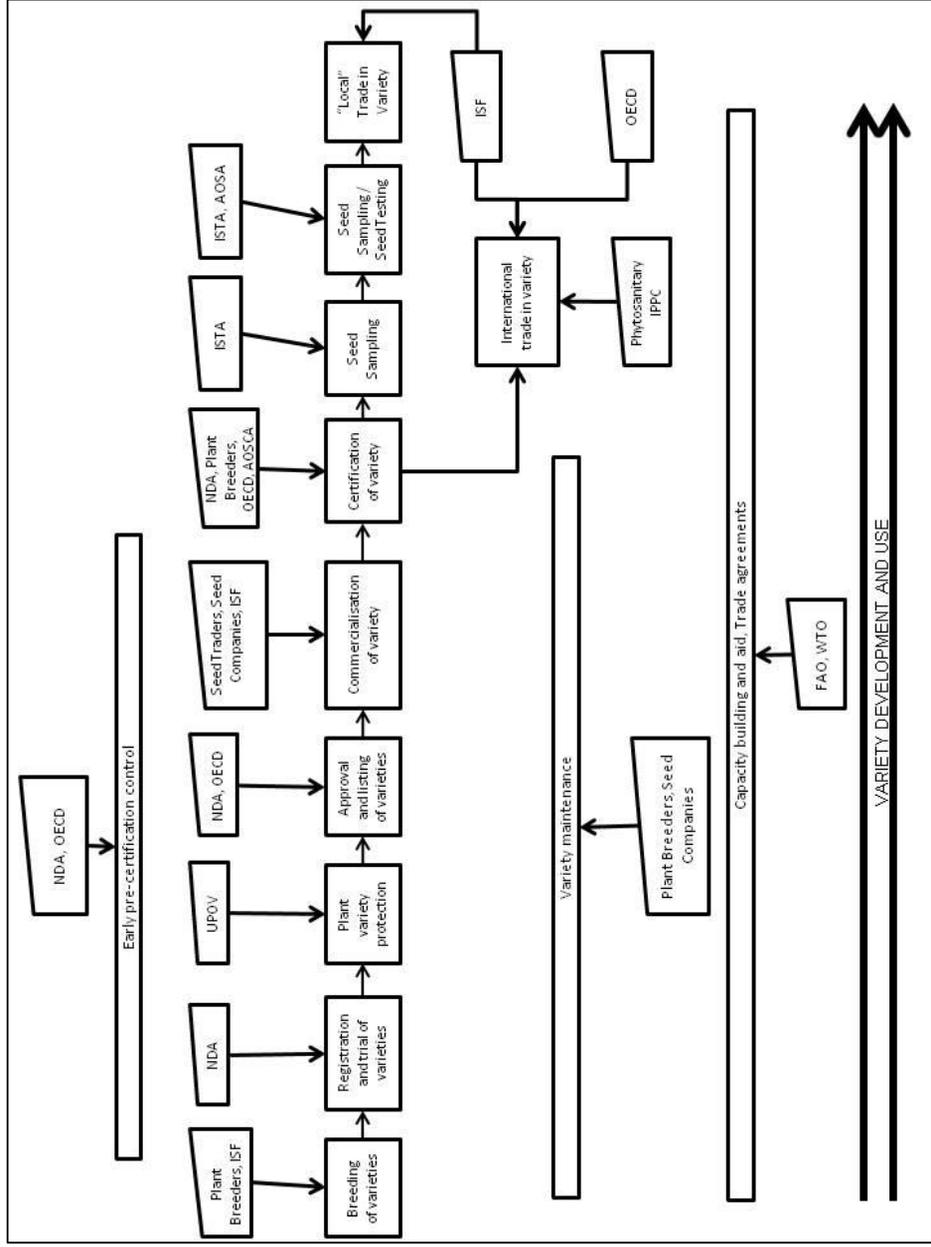
complemented by procedural rules for mediation, conciliation and / or arbitration when resolving disputes on trade and intellectual property issues.

VIII. CONCLUDING REMARKS

62. All the regulatory aspects discussed in this paper affect world seed trade: between which countries trade occurs, how it takes place and the shape of the agricultural sector within the exporting and importing countries. Despite the existence of a number of regulatory bodies, whose objectives are to harmonize regulations and encourage regional or international seed trade, there are still considerable differences in seed laws and regulations on a national scale. These differences mean that seed cannot always move freely between countries. It also highlights the importance of international schemes that require Member countries to satisfy a number of criteria, thus assuring that necessary standards for safety and quality are met for the movement of seed throughout the world. Predictable and reliable regulatory environments will facilitate trade between trading parties, thereby ensuring that high-quality seed can be made available to farmers.

ANNEX 1

Figure 1: Overview of international organisations and other actors in the seed supply chain



ANNEX 2

Further information on different regulatory aspects that affect world seed trade can be found at:

Organisation	Website
Association of Official Seed Analysts (AOSA)	www.aosaseed.com
Association of Official Seed Certifying Agencies (AOSCA)	www.aosca.org
Food and Agriculture Organization of the United Nations (FAO)	www.fao.org/agriculture/crops/en
International Seed Federation (ISF)	www.worldseed.org
International Seed Testing Association (ISTA)	www.seedtest.org
International Union for the Protection of New Varieties of Plants (UPOV)	www.upov.int
Organisation for Economic Co-operation and Development (OECD)	www.oecd.org/tad/seed
World Trade Organization	www.wto.org

Agriculture plays a fundamental role in meeting the world's growing demand for food, feed and fibre. Farmers worldwide will have to produce more food in a sustainable way and with fewer resources; and access to high quality seed is an important factor in facing these challenges.

To strengthen the seed sector it is essential that seed producers adhere to policies that guarantee quality standards and appropriate regulatory features. A functioning regulatory framework helps to promote competitive seed markets and lowers trade barriers, thereby providing a better choice of quality seed for farmers.

This document reviews regulatory aspects related to the seed trade and the role of international organisations in trade harmonisation and the establishment of international standards. Special attention is paid to the OECD Seed Schemes and their contribution to the development of an international seed certification framework. The document discusses seed certification, seed testing and phytosanitary measures. It also sheds light on plant variety protection, capacity building at the international level and international rules for seed trade and arbitration.