



COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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IMPACT OF IMPLEMENTATION OF SEED LEGISLATION ON DIVERSITY OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

1. At its Seventeenth Regular Session, the Commission on Genetic Resources for Food and Agriculture (Commission), considered the document Status and trends of seed policies and laws¹ (hereafter referred to as the ‘preliminary study’), and took note of the review² undertaken. The Commission requested that FAO undertake, in coordination with the International Treaty on Plant Genetic Resources for Food and Agriculture and in consultation with the International Union for the Protection of New Varieties of Plants (UPOV). These case studies should consider the effects of seed policies, laws and regulations on:

- i). on-farm diversity of plant genetic resources for food and agriculture (PGRFA);
- ii). smallholders’ access to sufficient, affordable, diversified and locally adapted PGRFA, including farmers’ varieties and landraces (FVLs); and
- iii). Food security and nutrition under the different seed systems.

In addition, the Commission requested FAO to clarify the terms “farmers’ seed systems”, “informal seed systems”, “formal seed systems” and “integrated seed systems”, taking into account submissions by Members and observers.³

2. Seed policies, laws and regulations are instruments used to provide farmers with assurance about the quality of seeds and planting materials which they use. Usually, these instruments stipulate processes for evaluating and registering crop varieties as eligible for commercial production and sale, systems to assure the genetic purity (true-to-type), analytical purity (freedom from contamination), germination potential, and other quality aspects of seeds and planting materials that are sold.⁴ Competent authorities are usually designated by countries to enforce these seed production and quality standards. These authorities, along with the seeds covered by the regulatory instruments, and the organisations that breed the crop varieties, produce, assure the quality, market and distribute the seeds are referred to as the “formal seed system”.

3. The “farmers’ or informal seed system”, on the other hand, refers to the situations in which regulatory frameworks are not used or followed and a competent seed authority does not provide regulatory oversight during the process of seed production and commercialization. Under the informal system, the propagules of crop varieties, including FVLs which may have been originally developed and released within the formal system or have arisen through selection by farmers or via natural selection, are produced, multiplied, sold, exchanged or otherwise distributed without registration, inspections or controls by a competent seed authority. Seeds and planting materials are obtained in farmers’ seed systems via diverse channels, including household production, exchanges between farmers, and sales in local markets, etc. “Integrated seed systems” refer to types of coexistence between formal and farmer systems. This coexistence may arise on its own accord, or be fostered through coordinated activities.⁵

4. In many countries, particularly developing countries, a large proportion, in fact, most of the seeds and planting materials of many crops, especially staples, are sourced from farmers’ seed systems. Informal seed systems therefore play an important role for the conservation and sustainable use of PGRFA, particularly for FVLs.⁶ Seed policies and laws may affect, directly or indirectly, the functioning of farmers’ seed systems. For example, it may be difficult or even impossible to register FVLs as they usually do not meet the requirements of seed legislation, for example the genetic purity standards. Moreover, seed laws may prohibit the sale or even non-commercial exchanges of seeds of varieties that are not registered officially. Such marketing restrictions, some would argue, may have an

¹ CGRFA-17/19/9.3.

² CGRFA-17/19/9.3/Inf.1.

³ CGRFA-17/19/Report, paragraph 67.

⁴ Voluntary Guide to National Seed Policy Formulation.

⁵ Louwaars, N., P. Le Coënt, and T. Osborne. 2009. *Seed systems and Plant Genetic Resources for Food and Agriculture. Thematic background study for the Second Report on the State of the World’s Plant Genetic Resources*. Rome.

⁶ FAO. 2019. *Voluntary Guidelines for the Conservation and Sustainable Use of Farmers’ Varieties/Landraces*. Rome. (also available at <http://www.fao.org/3/ca5601en/ca5601en.pdf>).

impact on the conservation and sustainable use of PGRFA given that they diminish the spectrum of cultivars that would otherwise be available to farmers.

II. BACKGROUND AND METHODS

Background

5. In 2018, the texts of seed legislations of 94 countries and two regional organizations (the Andean Community and the European Union) that are stored in the FAOLEX database⁷ were reviewed against a list of 15 questions⁸ which sought to ascertain the impacts of the instruments on the diversity of PGRFA, especially FVLs. These questions addressed i) the scope of the seed legislation; ii) requirements for varieties to be registered prior to their commercialization; iii) the existence of a seed quality control system; and iv) representation of farmers in the governing bodies of national seed authorities. For each question, a set of possible answers, reflecting the range of possible legislative provisions, was provided and the answers coded accordingly. This constituted the preliminary study.

6. The preliminary study's findings, summarized under five major parameters, were:

- i). Registration requirements for seed producers. In nearly three quarters of the countries studied, seed producers were required to be registered in order to operate.
- ii). Variety registration. Crop variety registration was required for the commercial production or sale of seeds and planting materials of crop varieties in 74 percent of the countries reviewed. To be eligible for registration, a variety was required to meet the criteria of distinctness, uniformity and stability (DUS) and value for cultivation and use (VCU) in 69 and 37 percent, respectively, of the countries studied. DUS and VCU requirements may constitute significant hurdles for registering FVLs, which usually do not meet these criteria.
- iii). Seed quality control. Some form of seed quality control was required by 77 percent of countries for seed to be commercialized, with 62 percent of them requiring seed certification in particular. In 29 percent of countries, the sale of seeds that were not certified was explicitly banned. As small-scale farmers may find it difficult to obtain certification, seed quality control may make it difficult, if not impossible, for those farmers to produce seeds that would be recognized legally. This would pose an additional hurdle to the sale of seeds of FVLs, which would typically not be quality assured, and may affect the diversity of PGRFA, therefore.
- iv). Representativeness of decision-making bodies. In 35 percent of the countries studied, it was required that representatives of seed producers be amongst the members of the governing council or board of the national seed authority, while the memberships of the representatives of seed consumers (farmers) in these bodies were required in 28 percent of the countries.
- v). Multiple aspects of legislation in combination. Twenty-six percent of the countries studied had a compulsory registration system for all varieties of every crop that is sold, but also recognized farmers' seed systems in their legal documents. This implies that seed legislations in some countries may explicitly accommodate and support both the formal and farmers' seed systems at the same time. In contrast, 28 percent of countries required both the registration of all the varieties of every crop and the certification of their seeds as preconditions for the sale of seeds, implying therefore that the commercialization of all seeds was regulated.

7. The preliminary study neither explored if and how seed policies and laws were implemented and enforced nor the administrative practices of national authorities. For many countries, it remained

⁷ <http://www.fao.org/faolex/en/>

⁸ CGRFA-17/19/9/3/Inf. 1 lists the questions asked and the countries reviewed.

unclear whether FVLs could be registered as varieties or if the seeds of such varieties could be produced or exchanged commercially. The current study was therefore aimed at exploring the actual implementations of regulatory provisions and the functioning of the relevant mechanisms. The results would provide further insights to the findings of the preliminary study and enable a better understanding of how seed policies and seed laws may affect the diversity, especially on-farm, of PGRFA.

Methods

8. The possibility for the legal commercialization or exchange of FVLs was used as a yardstick for inferring whether or not the provisions of seed policies and seed laws were favourable for on-farm diversity. On this basis, two sets of countries were identified from the preliminary study. One set, made up of 12 countries, had legislative provisions whose probable impact, if fully implemented, would be to restrict the use of FVLs. For reasons of brevity, this set is referred to as ‘restrictive’ in this report. The other set, made up of 26 countries, had provisions that potentially would enhance diversity or at the least, not limit it. This set of countries is referred to as ‘favourable’ in this report.

9. The criteria for assigning the 12 countries to the ‘restrictive’ group were that a) the scope of their seed regulatory instruments covered all seeds and planting materials in the country, i.e. there were no exemptions for certain crop species or classes of seed; b) there was a compulsory registration system for all varieties; and c) that it did not appear to be possible to register FVLs. The sole criterion for assigning the 26 countries to the ‘favourable’ set was that the registration of FVLs did appear to be possible in those countries. These 38 countries were surveyed for this study in order to determine whether, in fact, the assumptions regarding the criteria that underpinned ‘restrictive’ or ‘favourable’ and their effects on FVLs were true.

10. A questionnaire, consisting of 14 questions (Appendix), was developed for the in-depth study. The questions were grouped according to three themes: crop varietal registration; seed quality assurance; and the promotion and/or sale of FVLs. The first theme was further divided into two sub-themes: the registration of FVLs and the enforcement of variety registration regulations. The second theme was also sub-divided into two: the enforcement of seed quality assurance regulations and alternative systems for seed quality assurance, respectively. Most questions were closed, offering respondents a defined choice of possible answers. However, there were some open-ended questions for which respondents could provide detailed answers and examples. To harmonize the responses, definitions of key terms were provided along with the questionnaire. For instance, ‘seed’ referred to both true (or botanical seeds) and to vegetative planting materials. For the purpose of the questionnaire, FVLs were defined as: varieties that are often genetically and phenotypically heterogeneous, are recognized or associated with traditional uses, knowledge, habits, dialects and celebrations of the people who developed and continue to grow them. Because of their heterogeneity, FVLs tend not to meet the requirements of DUS of most seed laws/policies.

11. The questionnaire was administered as a Google Form in English, French and Spanish languages. For each country, it was sent to the officially-appointed National Focal Point (NFPs) for monitoring the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture, with a request that they complete the questionnaire in consultation with their respective national seed authorities.

12. Of the 38 countries identified from the preliminary study, only the 30 which had officially-appointed NFPs were surveyed for the current study. Completed questionnaires were returned by 18 NFPs, a response rate of 60 percent. These countries were from Africa (5), Asia (4), Latin America and the Caribbean (5), North America (1), and Europe (3). Seven of the countries (two from Africa, one from Asia, four from Latin America and the Caribbean) were from the group with legal frameworks that were deemed potentially ‘restrictive’ while the other 11 countries were from the group with legal frameworks deemed ‘favourable’ (three countries each from Africa, Asia and Europe, one each from Latin America and the Caribbean and from North America).

13. This questionnaire-based methodology, focusing on NFPs, did not explore the effects of seed policies, laws and regulations on food security and nutrition, nor did it assess smallholders' access to sufficient, affordable, diversified and locally adapted PGRFA, including FVLs.

14. The key findings of the survey are presented in this document.

III. IMPLEMENTATION OF SEED POLICIES AND LAWS

15. The results of the survey are presented in five sections below: registration of FVLs; enforcement of variety registration regulations; enforcement of seed quality assurance regulations; alternative systems for seed quality assurance; and promotion of the production and/or sale of FVLs. The frequency of responses to each question is shown in Appendix II, disaggregated into the potentially 'restrictive' and 'favourable' groups.

Registration of farmers' varieties/landraces (FVLs)

16. In many countries, marketing of seeds requires that the variety has been evaluated and registered in the national variety list or catalogue. A national listing procedure implies that only one name is allowed to be associated with a variety, that attributes are measured in agronomic performance trials and that a full variety description is recorded in the national variety list. This requirement may affect the functioning of farmers' seed systems directly or indirectly as farmers typically do not register their varieties and will therefore often not be able to commercialize seeds of their varieties. This is because variety registration usually requires that a variety meets the DUS criteria. Though there may be some flexibility in how this requirement is interpreted and applied, typically, FVLs might often not meet these criteria.

17. Of the 18 countries in this study, 14 reported that variety registration was required as a prerequisite for the commercialization of seeds. These were made up of five (out of the seven) in the 'restrictive' group, and nine (out of the 11) with a 'favourable' framework. For a further two countries (one 'restrictive', one 'favourable'), registration was required for some species only while for two others (one from each group), variety registration was not a prerequisite for the sale of seeds.

18. Subsequent questions specifically explored the formal registration of FVLs on a variety list. Out of 18 countries, 13 stated that it was possible to register FVLs formally. These consisted of four (or 57 percent) of those with 'restrictive' legal frameworks and nine (or 82 percent) of those with 'favourable' legal provisions. It is noteworthy therefore that over half of the potentially 'restrictive' countries reported that it was possible to register FVLs. Though two of the 'favourable' countries stated that FVL registration was not possible, the reasons given for this related to practical considerations, such as DUS requirements and the associated costs. This indicated that FVL registration was not, in fact, prevented but rather that the requirements were so difficult to accomplish as to be impractical. Furthermore, in both of these countries, FVLs were promoted by farmers' groups, conducting yield trials and promoting the sustainable use of these varieties, despite the fact that they had not been registered.

19. Five countries reported that it was not possible to register FVLs. Out of these, one provided a mainly economic justification to the effect that its domestic market was too small to make the registration of FVLs worthwhile. This implied that it was "not necessary" to register FVLs rather than "not possible". This same country listed many FVLs which were promoted in the country by farmers' groups and conservation organizations. The other four countries had regulatory requirements for registering varieties that were so difficult to meet for FVLs as to be impractical.

20. Of the 13 countries for which FVL registration was possible, six (one in the potentially 'restrictive' set and five in the potentially 'favourable' set) reported that registration procedures for FVLs were different from other varieties. Four of these six countries had more relaxed DUS requirements, while another two had a simplified process for registering FVLs. The remaining seven countries did not report any differences between the procedures for registering FVLs and other varieties.

21. Seven of the 18 countries had registered FVLs in the past decade with one of them belonging to the potentially 'restrictive' set. Interestingly, of the twelve countries that allowed the registration of FVLs, nearly half (five -- made up of three 'restrictive' and two 'favourable') had not registered any FVL. This implies that there may not be widespread interest in registering FVLs, or that other barriers, beyond legislative ones, prevent their registration in these countries.

22. Applications to register FVLs were refused in only three countries (one 'restrictive', two 'favourable'). The reasons for rejecting the applications were high susceptibility to disease, discrepancies between the variety description and what was observed in the field and the lack of permission from the source community.

23. There were farmers' groups or organizations that were interested in registering FVLs in half of the countries surveyed. However, in three of those nine countries it was not possible to register FVLs, with one of them in the 'favourable' set of countries. In those countries, regulatory requirements, particularly DUS, were deemed to pose practical barriers to the registration of FVLs. However, in these same countries FVLs were promoted by farmers' groups, seed producers and community seed banks even if not registered on a national variety list.

24. In a minority of countries (five of the 18), challenges to registering FVLs may have restricted their commercialization and thus potentially their utilization. In contrast, the six countries that modified registration procedures for FVLs (par. 19 above) potentially enhanced the diversity of PGRFA, by so doing.

Enforcement of variety registration regulations

25. A minority (five out of eighteen) of the countries stated that if they were notified that unregistered varieties were being commercialized, they would always take enforcement action. The remainder stated that whether they would take enforcement action would depend on considerations such as the scale of commercialization, the species involved, or the sale location (e.g. input dealer versus open-air market), while three countries stated they would not normally take enforcement action on sales of unregistered varieties.

26. Regarding the enforcement of regulations, ten countries (three out of the seven 'restrictive' countries and seven of the 11 'favourable' ones) reported taking action against the illegal sale of the seeds of unregistered varieties. Five of these took such actions only rarely (every few crop seasons or less frequently). Frequent enforcement actions were taken by three 'favourable' countries (27 percent) and two 'restrictive' countries (29 percent). A further eight countries, evenly split between the two contrasting groups, reported not having taken action against unregistered varieties.

27. In both the 'favourable' and 'restrictive' countries, staple cereals, vegetables and cash crops (e.g. cotton, soybean) were the main crops for which action had been taken against the commercialization of unregistered varieties.

28. Whether or not a country was in the potentially 'restrictive' or 'favourable' legislative scenarios did not appear to affect the pattern of responses about the enforcement of varietal registration rules. As most actions were taken against staple cereals, horticultural or cash crops, these findings suggested that sales of FVLs are not commonly subjected to enforcement action.

Enforcement of seed quality assurance regulations

29. Countries have adopted different systems for seed quality control to ensure that the crops which farmers grow are what they expect while procuring seeds. One quality control system is seed certification (voluntary or compulsory), whereby a neutral party carries out inspections to verify if the variety is registered and true-to-type, and the quality of the seed lot with respect to germination, health and absence of contaminants. Countries define the quality assurance system or systems they use based on the specific quality problems found in each crop, and may designate different systems to be applied to different crop species, or different seed producers.

30. Nearly all countries required that any seed sold commercially must be certified or have some other recognized form of quality assurance, at least for some species. Overall, a third of countries (two

from the 'restrictive' set, four from the 'favourable') implemented quality assurance regulations in a strict manner, and would, upon notification, take actions against infringements. A context-specific approach was more common: a further two 'restrictive', and six 'favourable' countries stated that they considered other factors, such as large sales volumes, before acting to enforce the applicable regulations. In the remaining countries (three 'restrictive', one 'favourable') the authority usually did not take any enforcement action against infringements.

31. Eleven of eighteen countries had taken action against the sale of seed without quality assurance. Five of the 'restrictive' countries took such action, four of them frequently (nearly every season), and one rarely. Six of the 'favourable' countries took action, three did so frequently, one occasionally (every few seasons), and two rarely (once or twice in past 10 years). The remaining countries (seven of the eighteen responding) had not reported taking enforcement action against seed sold without quality assurance; five were in the 'favourable' set, and two were from the 'restrictive' set. It was notable that two of the seven countries with a potentially 'restrictive' legislative framework had not taken enforcement action against infringements. For both sets of countries, enforcement actions were taken against infringements relating to industrial crops, or introduced cash crops (e.g. soybean in Latin America), with a few cases for staple food crops. Again, there were no reports of enforcement actions pertaining to FVLs.

32. The enforcement of quality assurance regulations did not appear to restrict the use of FVLs. Sales in the informal sector were not frequent targets of enforcement, as the focus was on seeds of commercial crops in the formal sector.

Alternative systems for seed quality assurance

33. Some countries recognise Quality Declared Seeds⁹ (QDS) while others set out clear rules for the labelling of seeds and compliance with sundry quality standards as alternative quality assurance protocols to seed certification. Both QDS and producer-labelled quality assurance systems apply to registered varieties. These two systems are considered more amenable to seeds produced by farmers' communities, small-scale farmers, farmer-breeders and various other seed producers. This is because their quality standards may be lower or easier-to-meet and incur less testing and administrative costs than a fully-fledged seed certification scheme.

34. Of the eighteen countries surveyed, half – four from the 'restrictive' countries, and five from 'favourable' ones – recognized other quality assurance standards besides seed certification. Four countries (two from each group) had legislation that permitted non-certified seeds to be commercialized provided that minimum quality standards (stipulated by national regulations) were met, with accurate labelling. One 'restrictive' country recognized QDS alongside certified seeds as a legitimate seed quality assurance regime.

35. The recognition of alternate standards in some countries could enhance the utilization of FVLs if it facilitated their commercialization. In the countries that recognize alternative standards, however, it was not clear if these standards have been applied to FVLs.

Promotion of the production and/or sale of FVLs

36. Only three countries (all 'favourable') reported special provisions or incentives to promote the multiplication and commercialization of FVLs. The support included targeted budgetary provisions, a separate variety list for FVLs, and national policies that explicitly target the development and promotion of FVLs.

37. It is expected that the availability of FVLs and farmers' access to them would be increased in countries that had specific measures to promote them. In these three countries, these targeted measures have likely been beneficial to the on-farm diversity of PGRFA, though the level of impact, if any, was not ascertained.

⁹ FAO. 2006. *Quality declared seed system*. Rome. (also available at <http://www.fao.org/3/a-a0503e.pdf>).

IV. KEY FINDINGS AND CONCLUSIONS

38. The differences between the potentially ‘restrictive’ and favourable’ sets of countries in the implementations of seed laws and policies were not as marked as the provisions of their respective seed regulatory instruments had seemed to suggest. For instance, even for the supposed biggest area of difference in the seed regulatory instruments, i.e. the ability to register FVLs, four of the seven potentially ‘restrictive’ countries responded that FVL registration was, in fact, legally possible. The assumption of a high level of homogeneity within the two sets of supposedly different countries was therefore not borne out by the results of the study. This is understandable considering that, seed laws would not usually exclude FVLs explicitly from registration. However, often FVLs will not meet the registration requirements implying that their registration may not be possible in practice.

39. Thus, the provisions of the seed regulatory instruments used in the classification were not sufficiently sensitive parameters for predicting how their implementation may actually affect the diversity of FVLs. The sampling for any future studies must be based on other more sensitive criteria that would capture within country variations – as countries do, in fact, implement regulations differently across crops. Higher value crops tend to be subject to more stringent regulations than staple crops, for instance.

40. There was no indication that the commercialization of the seeds of unregistered FVLs was restricted through the implementation or enforcement of seed laws or policies. Eight countries (four from each set) did not report taking any action against the sale of unregistered varieties. Where punitive action was taken against the sale of unregistered varieties, this was mostly in relation to industrial (e.g. soybean) or horticultural species (e.g. vegetables), with no indication that FVLs were targeted specifically for sanction. In fact, it would seem that the enforcement of seed policies, laws and regulations mainly focused on ‘high value’ crops, rather than unregistered FVLs.

41. While the registration of FVLs was often difficult – in countries with ‘restrictive’ and ‘favourable’ seed laws/policies alike – seed laws and policies were often only partially (e.g., for certain crops) or not enforced at all by the relevant enforcement agencies. Eight countries (four from each group) did not report taking any action against the marketing of unregistered varieties, while only five of the 18 countries stated that they would always take enforcement action following notification that unregistered varieties were being commercialized.

42. However, the lack of enforcement of regulations that bar the commercialization of certain seeds does not necessarily mean that such regulations have no effect. Even where regulations are not enforced, citizens may refrain from forbidden actions, such as the marketing of unregistered FVLs, in order to comply with the law or directive.

43. There were only three instances of farmers attempting and failing to register FVLs. The reasons for the rejections (i.e. disease susceptibility, discrepancies between the claimed and verified performance of the variety, and the failure to demonstrate that permission for the use of the germplasm had been obtained from the source community) would have prevented the registration of any other variety irrespective of how it was bred or by whom. However, the seemingly low number of cases in which the registration of FVLs failed does not necessarily mean that registration requirements have no effect. In fact, given the DUS and VCU requirements for varieties of some plant species, farmers might usually not attempt to register FVLs, unless the law makes explicit provision for that, for example through modified DUS requirements.

44. In the instances where farmers’ groups or organizations had expressed an interest to register FVLs but where regulations made it difficult or expensive to do so, there was no indication that informal sale or exchange FVLs had been prevented; they were just sold and exchanged without being registered.

45. A number of countries had provisions in their legislations that protected practices such as sales of seeds between farmers, or had provisions that effectively exempted crops of less commercial value and the informal seed systems in which their seeds were sold from the scope of regulation. It could therefore be inferred that, at least in the limited number of countries analysed, the enforcement of

national policies, laws and regulations was not usually directed at FVLs and that, therefore, their negative impacts on the diversity of PGRFA would be negligible.

46. An absence of restriction does not necessarily imply the active promotion of FVLs. This is because of the 12 countries (four 'restrictive', eight 'favourable') where registration of FVLs was indicated to be possible, five countries (two of them 'restrictive, three 'favourable') had not registered any FVLs. This could be due to a lack of interest, need or of the human or material resources to register FVLs. The non-registration of FVLs, in spite of the opportunity to do so, may also be on account of a lack of incentives. This would be the case if, for instance, there were no tangible benefits, such as higher prices or increased market share, that might accrue from the additional investments of time and resources required for crop varietal registration.

47. Only three countries reported provisions to promote the production or sale of FVLs, with six countries reporting registration procedures for FVLs that were different from other varieties, generally more simplified. It may be worthwhile for countries to devote efforts to incentives for the greater commercialization of FVLs.

48. Farmers' groups or other organizations may not be seeking FVL registration. In seven of the 12 countries where FVL registration was indicated to be possible, there was no reported instance of farmers' groups or other organizations having requested the registration of FVLs. This lack of requests may be due to the reasons stated above – the task of registering a FVL may be too onerous for the farmers' groups, or the benefits may just not be worth the additional efforts. It could be inferred that in situations where the enforcement of variety registration was not mandatory for all crops and varieties or not enforced strictly, there may not be strong incentives for registering FVLs. As noted in one country where FVLs were not registered, but were widely promoted and marketed by NGOs and farmers' groups, variety registration was seen as 'not necessary' for promoting the production and/or sale of the seeds of FVLs.

49. These findings are based on a relatively small sample of 18 countries whose NFPs responded to a survey. The sample is not representative of all countries with seed laws and policies, nor does it reflect all possible scenarios for seed laws and policies. While NFPs responding to the survey were expected to reflect all aspects of implementation of seed laws and policies in their countries and to consult with the National Seed Authority and possibly other stakeholders, as necessary for that purpose, it is not clear to what extent they actually did. For a more in-depth picture of the possible impacts of the implementation of seed policies and laws, a broader and more diverse group of stakeholders of each participating country might have to be interviewed, preferably in person. Therefore, these findings should not be considered as definitive, but rather as first step to developing hypotheses for more refined future examination of any possible relationships between the implementation of seed policies and laws on one hand and the diversity of PGRFA available to, and used by, farmers on the other.

50. Many factors, such as agricultural policies, urbanization, market development, or social change affect the diversity of PGRFA. Their effects must therefore be factored into any considerations of the possible impacts of seed policies and laws on the range of PGRFA that are available to farmers. It should also be borne in mind that seed policies and laws may, in fact, exert positive, even if indirect, impacts on the diversity of PGRFA. This is because the predictability that they provide may serve as incentives for the formal seed sector to produce or import new varieties, impacts that may not be immediately apparent.

51. Evidence gathered over longer periods of time could improve the understanding of how changes in seed legislation may affect the diversity of seed supply. However, the inferences from even such a longitudinal study of policy implementation may be affected by the dearth of rigorous baseline data on PGRFA diversity before seed policies and laws were enacted. This would make it difficult to estimate any subsequent changes and to establish cause and effect relationships.

52. Any future study of the impacts of seed policies and laws should not use proxy evidence but rather inquire directly with multiple stakeholders – such as farmers, seed producers, seed authorities, plant breeders, agricultural extension agents, etc.

ANNEX I**QUESTIONNAIRE****A. VARIETY REGISTRATION****1. Does the commercialization of seeds in your country require, in principle:**

a) Registration of varieties

- Yes
- No
- Some yes, some no

b) Quality certification of the seeds

- Yes
- No
- Some yes, some no

B. VARIETY REGISTRATION OF FARMERS' VARIETIES/LANDRACES (FVL)**2. Can FVL (of at least certain species) be formally registered?**

- No - Please explain why registration not possible for FVL
- Yes – please answer following:
 - a) Is the PROCEDURE for REGISTERING FVL different than for other varieties? (please explain briefly, how it is different);
 - b) Are REGISTRATION REQUIREMENTS for FVL different than they are for other varieties? (please explain briefly, how these requirements are different);
 - c) Is ANY OTHER ASPECT of VARIETY REGISTRATION different for FVL than for other varieties? (please explain briefly, how these aspects are different).

3. Can only FVL belonging to a specific set of crops be registered?

- Yes - Please indicate the sets of crops for which FVL registration is available
- No - FVL registration is available for all species

4. Have FVL, according to your knowledge, been registered in your country during the last 10 years?

- Yes - Please list them
- No
- Don't know

5. Have there been cases in your country where an application to register a FVL was refused?

- Yes - If so, please list cases and provide brief details
- No
- Don't know

6. Are you aware of farmers' groups in your country who are wanting to register a FVL?

- Yes** - please give brief details of specific examples: e.g. which crops, farmers' groups involved, if they had made an application
- No**, we have no evidence of such an interest
- Don't know / Unclear**

C. SALE OR EXCHANGE OF SEEDS OF UNREGISTERED VARIETIES

7. If the law in your country prohibits the sale or exchange of seeds of unregistered varieties (of at least certain species), HOW is this law being enforced?

- Strictly** - Authority takes action upon disclosure
- Flexibly** - Authority takes action depending on considerations like scale of commercialization (e.g. medium or large scale), species, conservation status, type of sale (e.g. farmer-to-farmer), or location of sale (e.g. local market)
- Relaxed** - Authority usually does not take action
- Don't know / Unclear**

8. Are you aware of cases in which authorities have taken action against the illegal use or the sale or exchange of unregistered varieties?

- Yes**
- a) How often has this happened? : **i) frequently** (nearly every crop season, or more than once a season), **ii) occasionally** (once every few seasons), **iii) rarely** (has happened once or twice at most)
- b) *In the last* three years, have fines/prosecutions for this been **i) more frequent; ii) about the same**, or **iii) less frequent** than in the past?
- c) Which crops were involved?
- No**

D. SALE OR EXCHANGE OF UNCERTIFIED SEEDS

9. Do seeds (for at least certain species/varieties) have to be certified, or to comply with another defined seed quality standard, to be sold, or even exchanged?

(Quality assurance here refers to certified seed, or other quality standard that is officially-recognized in national legislation. Other possible standards could be Quality Declared Seeds, or Truthfully-Labelled, for example.)

- Yes**
- No**
- Don't know / Unclear**

10. If the law in your country prohibits the sale of seeds (for at least certain species/varieties) that are not certified, or do not have another form of quality assurance, how is this law being enforced?

- Strictly** - Authority takes action upon disclosure
- Flexibly** - Authority takes action depending on considerations like scale of commercialization (e.g. medium or large scale), species, conservation status, type of sale (e.g. farmer-to-farmer), or location of sale (e.g. local market)
- Relaxed** - Authority usually does not take action
- Don't know / Unclear**

11. Are you aware of cases in which authorities have taken action against the illegal use, or the sale or exchange, of seed that was NOT certified (or that did not have any other form of officially-recognized quality assurance)?

(Quality assurance here refers to certified seed, or other quality standard that is officially-recognized in national legislation. Other possible standards could be Quality Declared Seeds, or Truthfully-Labelled, for example.)

- Yes**
 - a) How often has this happened? : **i) frequently** (nearly every crop season, or more than once a season), **ii) occasionally** (once every few seasons), **iii) rarely** (has happened once or twice at most)
 - b) *In the last* three years, have fines/prosecutions for this been **i) more frequent; ii) about the same, or iii) less frequent** than in the past?
 - c) Which crops were involved?
- No**

E. SEED QUALITY ASSURANCE AND FVL PROMOTION

12. Other than certified seed, does your country also recognize a different quality standard for seed or planting material, such as Quality Declared Seeds?

- Yes** – please provide details
- No** – we recognize only one set of quality standards for seed or planting material
- Don't know / Unclear**

13. Approximately how many field seed inspectors are currently working in your country?

14. Are there special provisions or incentives to promote the production and sale of FVL?

- Yes** - please provide details
- No**
- Don't know / Unclear**

ANNEX II

TABLES OF FINDINGS

Table 1. Requirements for the commercialization of seeds in the country

Question: does commercialization of seeds require, in principle	Sample group	Some cases		
		Yes	yes, some no	No
1a. Registration of varieties?	Potentially 'restrictive'	5	1	1
	Potentially 'favourable'	9	1	1
	ALL Countries	14	2	2
1b. Quality certification of seeds?	Potentially 'restrictive'	4	2	1
	Potentially 'favourable'	9	1	1
	ALL Countries	13	3	2

Table 2. Registration of farmers' varieties / landraces be registered in the country

Question	Sample group	Yes No	
		Yes	No
2. Can farmers' varieties / landraces be formally registered?	Potentially 'restrictive'	4	3
	Potentially 'favourable'	9	2
	ALL Countries	13	5
2a. If yes, is procedure for registering farmers' varieties / landraces different than for other types of varieties?	Potentially 'restrictive'	1	3
	Potentially 'favourable'	5	4
	ALL Countries	6	7

Table 3: Registration of farmers' varieties / landraces (FVLs) on a variety list

Question	Sample group	Yes	No	Don't know / unclear
4. Have FVL, according to your knowledge, been registered in your country during the last 10 years?	Potentially 'restrictive'	1	5	1
	Potentially 'favourable'	7	4	-
	ALL Countries	8	9	1
5. Have there been cases in your country where an application to register a FVL was refused?	Potentially 'restrictive'	1	4	2
	Potentially 'favourable'	2	5	4
	ALL Countries	3	9	6
6. Are you aware of farmers' groups in your country who are wanting to register a FVL?	Potentially 'restrictive'	3	2	2
	Potentially 'favourable'	6	-	5
	ALL Countries	9	2	7

Table 4. Enforcement of regulations regarding sale of exchange of unregistered varieties: authorities' response to notification

Question	Sample group	Strictly	Flexibly	Relaxed*
7. If the law in your country prohibits the sale or exchange of seeds of unregistered varieties, how is this law being enforced?	Potentially 'restrictive'	2	2	2
	Potentially 'favourable'	3	6	1
	ALL Countries	5	8	3

* Strictly - authority takes action upon disclosure; Flexibly - authority takes action depending on considerations like scale of commercialization (e.g. medium or large scale), species, conservation status, type of sale (e.g. farmer-to-farmer), or location of sale (e.g. local market); Relaxed - authority usually does not take action. Note: Two answers of "Don't know", one from each sample group, not recorded.

Table 5. Enforcement of regulations regarding sale of exchange of unregistered varieties: frequency of authorities' response

Question	Sample group	If yes, how often has action been taken? *				No
		Yes	Frequently	Occasionally	Rarely	
8. Are you aware of cases in which authorities have taken action against the illegal use or the sale or exchange of unregistered varieties?	Potentially 'restrictive'	3	2	1	-	4
	Potentially 'favourable'	7	3	2	2	4
	ALL Countries	10	5	3	2	8

* Frequently - nearly every crop season; occasionally – once every few crop seasons; rarely – has happened once or twice at most.

Table 6. Enforcement of regulations regarding sale or exchange of seed that has not undergone quality assurance: authorities' response to notification

Question	Sample group	Strictly	Flexibly	Relaxed*
10. If the law in your country prohibits the sale of seeds (for at least certain species/varieties) that are not certified, or do not have another form of quality assurance, how is this law being enforced?	Potentially 'restrictive'	2	2	3
	Potentially 'favourable'	4	6	1
	ALL Countries	6	8	4

* Strictly - authority takes action upon disclosure; Flexibly - authority takes action depending on considerations like scale of commercialization (e.g. medium or large scale), species, conservation status, type of sale (e.g. farmer-to-farmer), or location of sale (e.g. local market); Relaxed - authority usually does not take action.

Table 7. Enforcement of regulations regarding sale of exchange of that has not undergone quality assurance: frequency of authorities' response

Question	Sample group	If yes, how often has action been taken? *			No	
		Yes	Frequently	Occasionally		Rarely
11. Are you aware of cases in which authorities have taken action against the illegal use, or the sale or exchange, of seed that was NOT certified (or that did not have any other form of officially-recognized quality assurance)?	Potentially 'restrictive'	5	4	0	1	2
	Potentially 'favourable'	6	3	1	2	5
	ALL Countries	11	7	1	3	7

* Frequently - nearly every crop season; occasionally – once every few crop seasons; rarely – has happened once or twice at most.

Table 8. Recognition of other seed quality assurance standards

Question	Sample group	Yes	No	Don't know / unclear
12. Other than certified seed, does your country also recognize a different quality standard for seed or planting material, such as Quality Declared Seeds?	Potentially 'restrictive'	4	3	-
	Potentially 'favourable'	5	6	-
	ALL Countries	9	9	-

Table 9. Incentives or measures to support the sustainable use of farmers' varieties / landraces

Question	Sample group	Yes	No	Don't know / unclear
14. Are there special provisions or incentives to promote the production and sale of FVL?	Potentially 'restrictive'	-	7	-
	Potentially 'favourable'	3	5	3
	ALL Countries	3	12	3