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GLOBAL NETWORKING ON ON-FARM MANAGEMENT OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

Plant Genetic Resources for Food and Agriculture

1. “Plant genetic resources for food and agriculture” (PGRFA) means “any genetic material of plant origin of actual or potential value for food and agriculture”. “Genetic material” means “any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity¹.” PGRFA thus include wild ancestors or related species of modern crops, i.e. crop wild relatives (CWR); wild plants harvested for food; farmers’ varieties/landraces and modern varieties developed by breeders.

Recent Steps Taken Towards Establishing a Global Network on On-Farm Management of PGRFA

2. The Commission on Genetic Resources for Food and Agriculture (the Commission), at its Fifteenth Regular Session held in January 2015, requested FAO to convene before the Eighth Session of the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group), subject to availability of extrabudgetary funds, an informal multi-stakeholder dialogue to discuss options for networking for *in situ* conservation and on-farm management, its functions, governance and budgetary requirements, in particular to ensure its long-term funding. The informal multi-stakeholder dialogue was held on 6 and 7 June 2016.

3. Following this, FAO presented a concept note on *Global networking on in situ conservation and on-farm management of plant genetic resources for food and agriculture*² to the Commission at its Sixteenth Regular Session, held from 30 January to 3 February 2017. The concept note reflected the outcomes of the informal multi-stakeholder dialogue and the recommendations provided by the Working Group. The Commission took note of the informal multi-stakeholder dialogue, reviewed the concept note on *Global networking on in situ conservation and on-farm management of plant genetic resources for food and agriculture* and referred it to the Working Group for further consultations.

4. Notwithstanding the complementarity of *in situ* conservation and on-farm management of PGRFA, there are substantive differences between the themes, especially in terms of stakeholder base and their respective legal and policy instruments. In view of these and in accord with the opinion of the Bureau of the Seventeenth Regular Session of the Commission in May 2017, two separate concept notes have been prepared proposing the establishment of a global network for each of the themes.

5. This document, prepared for consideration by the Working Group, underscores the need for, and analyses the feasibility of, a global networking mechanism for on-farm management of PGRFA. The document further provides an overview of the financial implications of a global network for on-farm management of PGRFA and suggests steps and means necessary to establish such network.

II. THE IMPORTANCE OF ON-FARM MANAGEMENT OF PGRFA

6. Considerable progress has been made in safeguarding and providing access to crop genetic diversity in *ex situ* germplasm collections. Over the years, desired traits found in PGRFA conserved *ex situ* have been successfully incorporated into improved varieties of many crops. However, despite the significant progress that has been made in the systematic conservation of PGRFA in *ex situ* genebanks, this approach alone is insufficient to provide effective conservation and management of all categories of potentially useful PGRFA. It is unlikely that *ex situ* conservation will ever be sufficiently comprehensive as to conserve the full spectrum of genetic diversity of all plant populations relevant to food and agriculture. Furthermore, genebank collections may be lost in times of civil strife and natural disasters, or due to sub-standard management. PGRFA managed sustainably on-farm are therefore serving as a considerable live repository and natural backup for *ex situ* collections worldwide.

¹ International Treaty on Plant Genetic Resources for Food and Agriculture, Article 2.

² CGRFA-16/17/Inf.20

7. Local crop diversity and the agricultural systems they constitute therefore require safeguarding and a much higher valorization than is currently the case. A significant amount of local crop diversity is only maintained in farmer's fields, especially under low-input and small-scale production systems. Conserving plants through on-farm management also facilitates the continuous local adaptation of farmers' varieties and races over time³. These PGRFA are adapted to specific ecosystems, climatic conditions and farming practices, representing a diverse and rich repository of traits. The diverse suite of farmer's varieties/landraces underpins the livelihood of millions of farmers throughout the world. Local crop diversity is therefore particularly relevant for food security and nutrition, rural development and the resilience of farming systems, especially under the prevailing climate change scenarios. The challenge of producing more food sustainably with fewer inputs might be reachable only if the broadest possible diversity of PGRFA can be accessed and used as sources of new traits.

8. Much of the local crop diversity found in farmers' fields is inadequately conserved, documented, valued or studied on-farm. This is worrisome especially with regard to the prospects of small-scale farmers' contributions to the eradication of hunger by 2030 as committed to in the Sustainable Development Goals⁴. With the rapidly dwindling numbers of these types of farmers and their production systems, this rich repertoire of PGRFA, and the traits that they harbour, may be lost permanently. As highlighted in *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture*, there is a need for better characterization of local materials, improvement through breeding and processing, greater access to information, promoting increased consumer demand and more supportive policies and incentives⁵.

9. The obvious value of PGRFA maintained on-farm is their contribution to food security, nutrition and dietary diversity, as well as livelihoods of farming communities. However, the diversity is also a rich source of traits for breeding crop varieties that are adapted to changing environmental conditions, and for improving crop productivity and quality. Currently, various drivers of genetic erosion, including changes in agricultural practices, the introduction of modern crop varieties, changes to land use, climate change and other factors, are increasingly threatening the continued existence, and hence availability, of these resources. Maintaining and maximizing the genetic diversity of crop production systems is therefore a way to reduce risks resulting from changing biotic and abiotic stresses and thereby enhance the resilience of production systems.

10. There is therefore an urgent need for concerted action, including at the global level, on on-farm management of farmers' varieties and landraces. This is a necessary complement to *ex situ* conservation activities. The hurdles that must be scaled in order to achieve this goal include the redressing of the pervading fragmented conservation efforts, the absence of harmonized protocols, the currently low priority accorded to this theme by governments and development partners, and the lack of an enabling policy environment and appropriate marketing infrastructures. These challenges threaten the availability of these resources at a time when they are increasingly needed for crop improvement. This is compounded by the need for increased resilience, which is conferred by diversity, threatened by climate change and other drivers of food insecurity and malnutrition.

III. ON-FARM MANAGEMENT OF PGRFA: A GLOBAL PRIORITY

11. Promoting and supporting on-farm management of PGRFA have become firmly established key components of crop conservation strategies. The Second Global Plan of Action⁶ (Second GPA) includes in its objectives "to use the knowledge generated during the past two decades in order to promote and improve the effectiveness of on-farm conservation, management, improvement and use of PGRFA".

³ Villa, T., Maxted, N., Scholten, M., & Ford-Lloyd, B. (2005). Defining and identifying crop landraces. *Plant Genetic Resources*, 3(3), 373-384. <https://doi.org/10.1079/PGR200591>

⁴ <https://sustainabledevelopment.un.org/sdg2>

⁵ FAO 2010. *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture*. Rome, pg. 42. <http://www.fao.org/docrep/013/i1500e/i1500e.pdf>

⁶ <http://www.fao.org/docrep/015/i2624e/i2624e00.htm>

The Second GPA directly addresses the importance of networking through its Priority Activity 14 on “Promoting and strengthening networks for plant genetic resources for food and agriculture.

12. The International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty) also promotes on-farm management of PGRFA, such as in Articles 5 (conservation), 6 (sustainable use) and 9 (Farmers’ Rights). Within the Funding Strategy of the Treaty (Article 18), Contracting Parties agree that priority will be given to the implementation of agreed plans and programmes for farmers in developing countries, who conserve and sustainably use PGRFA. As a result, on-farm management of PGRFA is one of the three priorities of the Treaty’s Benefit-sharing Fund⁷. The Treaty also encourages the participation of all relevant institutions, including governmental, private, non-governmental, research, breeding and other institutions, to participate in international networks (Article 16.2).

13. There are several international initiatives and programmes that support the on-farm management of PGRFA, including through the support of the Global Environment Facility and of major non-governmental organizations, such as Oxfam International. Bioversity International is currently implementing several multi-country activities related to on-farm management of farmers’ varieties and landraces

IV. THE NEED FOR AND FEASIBILITY OF A GLOBAL NETWORK ON ON-FARM MANAGEMENT

14. The necessity for greater attention to crop diversity essential for food security, including through on-farm management of PGRFA, is a recurring theme in the Commission’s work. FAO has prepared the Draft Voluntary Guidelines for the Conservation and Sustainable Use of Farmers’ Varieties/Landraces⁸, which could guide the development of national plans for the conservation and sustainable use of these resources. This body has stressed the need for improved collaboration and coordination at national, regional and global levels on this theme. Perhaps on account of these and the complementary activities of other partners, the conservation and sustainable use of farmers’ varieties/landraces are becoming increasingly mainstreamed within national programmes – even if, granted, much more still needs to be done.

15. However, overall, the initiatives addressing the management of PGRFA outside genebanks tend to be fragmented, not aligned to conservation strategies, and lack the coordination required to coalesce into effective national, regional and global mechanisms. Importantly, the increased interest in this area has yet to be translated into a comprehensive global strategy for on-farm management of farmers’ varieties and landraces. There is no overarching platform, network or forum to foster collaboration and synergies. A global networking mechanism could potentially address this shortcoming, ensure a greater impact of the efforts made at all levels and ultimately reinforce conservation and sustainable use of PGRFA on-farm.

16. A global survey of managers, policy-makers and practitioners, involved in *in situ* and on-farm conservation was carried out by FAO in 2012. Of the 1168 respondents, 90 percent supported the establishment of a global network for *in situ* conservation and on-farm management of plant genetic resources for food and agriculture⁹. The survey also highlighted the lack of a coordinated approach to initiatives for conserving crop diversity on-farm (including farmers’ knowledge and practices that underpin this diversity) as well as creating associated benefits for the farmers involved.

17. Success with the establishment of a global network for on-farm management of PGRFA would depend on how topical the international community considers its goals and functions. Once set up, the feasibility will depend largely on the continued relevance of the aims, the commitments of the partners,

⁷ For an overview of approved projects, see <http://planttreaty.org/content/benefit-sharing-fund>

⁸ CGRFA/WG-PGR-9/18/Inf.4

⁹ Borgen Nilsen, L., Abishkar, S., Dulloo, M. E., Gosh, K., Chavez-Tafur, J., Blundo-Canto, G. M., & de Boef, W. S.(2013). The relationship between national plant genetic resources programmes and practitioners promoting on-farm management: Results from a global survey. *Plant Genetic Resources Characterization and Utilization*, 12, 143–146. <https://doi.org/10.1017/S1479262113000269>

robustness of the underpinning political will and the resources available. There are already regional, global and crops specific networks relating to crop genetic resources in existence: global organizations such as CGIAR and United Nations Environment Program (UNEP)¹⁰; regional networks such the Pacific Community (SPC)¹¹ and the European Cooperative Programme for Plant Genetic Resources (ECPGR)¹²; and crop-specific networks such as MusaNet¹³ and CoGent¹⁴, amongst others.

18. The existence of these initiatives, over several years and decades, demonstrates that committed partners do unify behind a set of compelling objectives. These networks and initiatives catalyse the sharing and dissemination of information, enable the pooling of resources to operate at scale, provide internal quality assurance, and engender critical mass for advocacy and for shaping policy development. Given the threats to the diversity of farmers' varieties/landraces that are most effectively managed on-farm, it is time for a joint effort of all stakeholders involved to band together in order to safeguard and use these PGRFA sustainably.

V. GOAL OF GLOBAL NETWORK ON ON-FARM MANAGEMENT OF PGRFA

19. A global network on on-farm management of PGRFA would provide a platform for scientific discussion, information sharing, policy development, technology transfer and collaboration on research and development. The Multistakeholder Dialogue, held in July 2016, identified as a possible goal of the network to:

Contribute to the implementation of the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture and the achievement of Sustainable Development Goal Target 2.5 by strengthening on-farm management and sustainable use of plant genetic resources for food and agriculture, taking into account the complementarity of different in situ and ex situ conservation approaches and the need to balance them¹⁵.

20. Upon inception, the network could decide to base discussions of its goal on the above text. For the moment, no existing global network addresses this goal and there seems to be agreement among stakeholders that a global network could indeed help strengthen on-farm management without losing sight of the important role of *ex situ* conservation and the need to balance and wisely coordinate different conservation approaches.

VI. FUNCTIONS AND ACTIVITIES OF A GLOBAL NETWORK ON ON-FARM MANAGEMENT OF PGRFA

21. To ensure efficiencies and avoid the duplication of efforts, the global network should have functions currently not covered by any other entity and which are best devolved to a network. Possible functions and activities of the network could therefore include:

- Raising awareness about the importance of on-farm management of PGRFA among policy makers, the private sector and the local communities;
- Advocating the role and important contribution of farmers and indigenous peoples and local communities to the conservation of PGRFA on-farm;
- Facilitating collaboration, coordination, development of strategic partnerships among organizations, projects and stakeholders as means to pool resources, avoid duplications of efforts and assure complementarities and synergies among on-going activities;

¹⁰ <https://www.unenvironment.org/>

¹¹ <http://www.spc.int/>

¹² www.ecpgr.cgiar.org

¹³ www.musanet.org

¹⁴ www.cogentnetwork.org/

¹⁵ CGRFA-16/17/Inf.21, Annex II.

- Facilitating the participation of stakeholders and the preparation of submissions to national, regional and international policy fora, including the Commission, the Governing Body of the Treaty and the Conference of the Parties of the Convention on Biological Diversity when discussing matters relevant to on-farm management of PGRFA;
- Facilitating exchange of information about experiences, methodologies and lessons learned that enhance on-farm diversity and promote relevant knowledge and practices, including of local and indigenous communities and farmers¹⁶;
- Helping to develop joint conservation and use strategies, which may promote the rationalization of conservation efforts and facilitate the continued use of local farmers' varieties/landraces; and
- Conducting studies, e.g. the analysis of models for strengthening the relationships between conservation (*ex situ* and *in situ*) and on-farm management of PGRFA.

VII. GOVERNANCE, STRUCTURE AND MANAGEMENT OF A GLOBAL NETWORK ON ON-FARM MANAGEMENT OF PGRFA

22. In considering the establishment of a network, numerous governance options may be considered. To ensure the coordination and support of the network in its initial phase, it may be useful to establish a Facilitation Committee consisting of selected members of the "community of practice", as well as a few key resource persons from international organizations or research institutes. The mandate of this committee would be to prepare for meetings of the network. Subject to the availability of the necessary financial resources, FAO could facilitate the preparation of meetings, including an inaugural meeting.

23. The network would consist of a number of interrelated organizations bound by a common set of goals that address on-farm management of farmers' varieties and landraces. It should be open to all stakeholder groups. It should be transparent. Moreover, its meetings should be held, where possible, back-to-back with other relevant meetings, such as sessions of the Commission's Working Group.

24. Importantly, irrespective of the mechanism ultimately adopted, particular attention should be paid to the direct involvement of farmers and farming communities in all steps of all processes, as conservation and sustainable use of farmers' varieties/landraces directly involves their knowledge and livelihood. To this extent, the inclusion of community seed banks and the farmers that support them might be crucial from the onset.

25. An initial "community of practice" could be set up as a common platform where information, lessons, tools and methodologies can be disseminated. A "community of practice" may also be convened around one or several multistakeholder projects.

26. As a managed coalition of interrelated entities, network members could cooperate and collaborate on the basis of common objectives and agreed functions and activities of the network. Resources and capacity should be available for activities such as planning, communications, travel, meetings, network publications such as newsletters and meeting reports, and network strengthening, including the preparation of successful proposals for submission to donors.

VIII. FINANCIAL IMPLICATIONS OF A GLOBAL NETWORK ON ON-FARM MANAGEMENT OF PGRFA

27. The costs for the establishment and running of the global network will depend on the agreed functions and structure, as well as the scope of its activities, the number of meetings foreseen and the staff required to deliver on programmes of work. However, some initial funds, estimated at

¹⁶ For instance, network members could benefit from learning about what worked in other places regarding the imperative of balancing the need to promote diversity of local varieties, on one hand, with the diverse types of systems that promote access to quality seeds and planting materials of well-adapted crop varieties on the other.

USD 238 750 (Table 1), at the minimum, would be required for the organizing and hosting an inaugural meeting which would catalyse further development of a full-fledged global network.

Table 1: Preparation of the inaugural meeting of a network on on-farm management of PGRFA

Items of Expenditure		Cost (USD)	Total (US\$)
Meeting logistics	Direct Costs of the Meeting (interpretation, messengers)	45 000	85 000
	Document preparation	15 000	
	Documentation (translation/printing)	25 000	
Participants' travel	60 participants	60 000	60 000
Human resources (HR) [as FAO in-kind contribution]	P4 (25%) for 12 months	55 250	78 750
	G4 (25%) for 12 months	23 500	
Staff travel		15 000	15 000
Grand total			238 750

Table 1 contains, as an example, the draft budget for an inaugural meeting of the network. The draft budget is based on the assumption that FAO would facilitate the preparation of the 2-days inaugural meeting. It is estimated that the total cost for holding an inaugural meeting for a network is USD 238 750.

IX. MEANS AND STEPS NECESSARY TO ESTABLISH A GLOBAL NETWORK ON ON-FARM MANAGEMENT OF PGRFA

28. It is important to consider concrete immediate steps that will engender the desired 'ownership' by the stakeholder base. One important step taken was the multi-stakeholder dialogue on *in situ* conservation and on-farm management of PGRFA held in June 2016. It brought together a very diverse range of different stakeholders involved in *in situ* conservation and/or on-farm management such as Bioversity International; *Movimiento de los Pequeños Agricultores* (MPA) of Brazil; the National Gene Bank of Egypt; the Chinese Academy of Sciences; the Globally Important Agricultural Heritage Systems (GIAHS) and the Centre for Sustainable Development and Environment (CENESTA) of Iran. These stakeholders have all expressed the desire to strengthen the conservation and sustainable use of farmers' varieties/landraces through on-farm management, and agreed that collaborating in a globally coordinated mechanism would be a means to achieving this aim.

29. Having demonstrated that there is a desire amongst critical stakeholders for an impactful global community of practice on on-farm management of PGRFA, a logical next step must entail the formalization of the relationship. The subject matter is highly relevant to the mandate of FAO. Therefore, FAO is well-placed to leverage its extensive convening mechanisms to facilitate the establishment of a formal network.

30. As an immediate next step towards the establishment and operationalization of the global network on on-farm management of PGRFA, it is proposed that an inaugural meeting be held immediately prior to the Tenth Session of the Working Group in 2020 (see indicative budget in Table 1). The objective of this inaugural meeting would be to decide on the goals and functions, governance, structure, management, partnerships, funding and a first programme of work of the global network. These decisions ought to be taken jointly by those who decide to contribute to, and to be part of, the network.

31. An important outcome of the inaugural meeting could be the setting up of a ‘convening committee’ that could translate the discussions at the meeting into concrete outputs, such as goals, structure, governance and funding mechanisms.

32. Ultimately, the desired global network would be shaped, *inter alia*, by the structure and formal status of the networking mechanism as agreed by its constituents. However, at this stage, it is assumed that the network would, at least initially, not have any formal legal status. It would be essential to involve the widest spectrum of relevant stakeholders from the outset in devising the modalities for global networking. Stakeholders should include governmental as well as non-governmental organizations, farmers and farmer community organizations, community seed bank representatives, indigenous and local communities, civil society organizations, international organizations as well as the private sector, and members of existing national and regional networks involved in on-farm conservation and sustainable use of PGRFA.