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OPTIONS TO RAISE AWARENESS OF THE ROLE OF GENETIC RESOURCES FOR FOOD SECURITY AND NUTRITION

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I. INTRODUCTION

1. Genetic resources for food and agriculture (GRFA) are the strategic reservoir on which all our food production depends. GRFA are important to maintain and increase productivity to feed a growing population, improve food quality by enhancing nutritional content, strengthen the stability and resilience of production systems, help communities and producers recover from disasters, and provide adaptation options for future changes in production conditions and needs. Maintaining GRFA is a global task that requires collaboration and cooperation at all levels between all relevant stakeholders.
2. A Special Event on *Food Security and Genetic Diversity* was organized prior to the Fifteenth Regular Session of the Commission on Genetic Resources for Food and Agriculture (Commission)¹. It showed that access to and the sustainable use of genetic resources for food and agriculture are relevant to all four pillars of food security: availability, access, utilization and stability. In the follow-up to the event, the Commission requested its Secretary to continue raising awareness of the important role of genetic resources for food security and to strengthen collaboration with the Committee on World Food Security in this endeavour.² It further requested its Secretary to identify options for specific activities in this regard, for consideration of the Commission at its next session when it would review its MYPOW.
3. This document summarizes the roles of genetic resources for food security and nutrition, reports initiatives undertaken by FAO since the last Session of the Commission to raise awareness of the roles of GRFA for food security and nutrition and identifies options to increase awareness of the roles of GRFA for food security and nutrition and the need for adequately reflecting them in food security policies and programmes.

II. THE CONSERVATION AND SUSTAINABLE USE OF GENETIC RESOURCES AND FOOD SECURITY AND NUTRITION

4. Food security has its origins in “freedom from hunger” and has over time evolved into a broader concept. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Food security has four dimensions: availability, access, utilization and stability. The nutritional dimension is integral to the concept of food security³.
5. The concept of nutrition places emphasis on access to, and consumption and utilization of adequate food, care and feeding practices, education, and on health and sanitation. The United Nations Committee on Economic, Social, and Cultural Rights⁴ considers the right to adequate food as realized “when every man, woman and child, alone or in community with others, have physical and economic access at all times to adequate food or means for its procurement. The core content of the right to adequate food implies (...) the availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture (and) the accessibility of such food in ways that are sustainable and that do not interfere with the enjoyment of other human rights (...) Accessibility encompasses both economic and physical accessibility.”
6. Despite progress made, around 800 million people still suffer from chronic hunger; hunger and food insecurity are mostly expressions of rural poverty. With globally increasing incomes, other forms of malnutrition are increasing: 1.9 billion people worldwide are overweight, and over 2 billion people are affected by micronutrient deficiencies. Food security and nutrition are therefore related, but not synonymous concepts.
7. Any strategy that aims to raise awareness of the important role of genetic diversity for food security and nutrition therefore needs to demonstrate the link between genetic diversity, the four

¹ <http://www.fao.org/nr/cgrfa/events/en/>

² CGRFA-15/15/Report, paragraph 74.

³ CFS: 2009/2 Rev. 2; CFS 2012/39/4.

⁴ E/C.12/1999/5 – General Comment 12, pp 6, 8 and 13.
<http://www2.ohchr.org/english/bodies/cescr/comments.htm>

dimensions of food security and the nutritional demands, taking into account the different needs and priorities of food insecure and other malnourished people.

Availability

The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid)

8. Production intensification and breeding for productivity, particularly of major cereal staples and livestock species, have resulted in improved food availability. Over the past decades, yields increased by 1-2 percent annually, of which about up to half can be attributed to genetic gains. The conservation and sustainable use of genetic resources for food and agriculture were and remain essential to facilitate and secure these genetic gains. They are also essential to broaden the relatively small group of animal and plant species and breeds/ varieties that currently provide the bulk of food production globally and to overcome the current trend focussing on a limited number of plant and animal species and varieties/ breeds that tends to result in a declining range of genetic diversity within farmed animals and plants.

9. Trade-offs can exist between increasing food availability through import or food aid, and the continued use of local genetic resources. In the past, the primary focus of breeders and researchers was often on raising yields (availability) but, unfortunately, such increases were at times at the cost of the nutritional content of foods (utilization). Also, high-yielding staple crops and animal source foods, at times supported through subsidies, are sometimes outcompeting local, more diverse and nutritious foods. The dietary role of nutritious species such as millets, indigenous fruits and vegetables and root and tubers is therefore diminishing, even in countries where they were traditionally grown and consumed.

Access

Access by individuals to adequate resources (or entitlements) for acquiring appropriate foods for a nutritious diet

10. The significance of the “access” pillar of food security lies in the need not only to ensure that sufficient food is available, but that individuals are able to acquire the food and nutrients they need. Food insecurity is primarily caused by a lack of physical and economic access to the resources needed to secure enough food and provide a nutritionally adequate diet both in terms of quantity (energy) and quality (variety, diversity, nutrient content, and food safety). This includes insufficient income or lack of access to productive assets and other resources that would otherwise allow the poor, vulnerable and marginalized to purchase food or produce it. Improving access by individuals to resources over which the individuals can establish command given the legal, political, economic and social arrangements of the community in which they live is therefore the main challenge to be addressed in order to eradicate hunger in the coming decades.

11. Food production at household level generally requires the use of genetic resources that are well adapted to the local environment, particularly in areas where the environment is harsh and other inputs (e.g. pesticides, veterinary medicines and supplementary feed) are difficult to access. The conservation and sustainable use of genetic resources and access to genetic material allows farmers, including livestock-keepers and fisher-folks, to improve and diversify food production and thus access to enough food. However, where access to other essential productive assets, such as land and water, is lacking, access to improved genetic resources alone will not improve access to food. Genetic resources that provide a range of different products (e.g. natural fibres from plants and animals) and services (e.g. transport services provided by animals) also contribute to the diversification of income to buy foods.

12. It is estimated that by 2050, more than two-thirds of the world population will be living in urban areas and therefore often not be in a position to produce food themselves. Increasing incomes and high rates of urbanization will bring about rapid changes in food consumption patterns, affecting nutrition, food distribution channels and food production. Dietary patterns shift towards more demand for processed, animal-source and energy-rich foods which sometimes have low nutritional content. For

poor urban consumers, access to food depends on available income and on whether diverse, nutritious food is accessible in their vicinity.

13. While much attention has been paid to increased production on the farm to meet demands, equally critical are the supply chains that connect farmers to urban consumers and provide affordable access to nutritious, diverse and safe food. Cities contain the largest demand for high-value products such as fruits, vegetables and dairy, where small-scale and family farmers can have an advantage because the products are labour intensive, and local/ regional product markets or markets honouring genetic diversity can be developed. Developing food systems that link farmers to cities can have an enormous impact on rural poverty alleviation, agricultural development and GRFA management. These options are underpinned by different uses of genetic resources for food and agriculture.

Utilization

Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all where all physiological needs are met

14. Utilization it is commonly understood as the way the body makes the most of various nutrients in the food. The nutritional status of individuals is determined by the good biological utilization of food consumed. However, utilization also includes food storage, processing, and health and sanitation as they relate to nutrition. Also household food selection, preparation and allocation practices as well as child care practices have an impact on food utilization. Lastly, food utilization depends on the access to energy for food processing and food preservation.

15. Agricultural growth, if focused on large-scale farming and on few species or commodities, does not necessarily have a positive impact on utilization if it does not benefit the nutritionally insecure. Similarly, while increased household income tends to improve caloric intake, it does not necessarily improve nutrition, especially not that of women and children. Food- and water-borne diseases, such as parasitic and other infections-hamper food utilization. The lengthening of food chains is creating new challenges and concerns regarding incidences of food safety, plant and animal health issues and emerging zoonotic diseases, contamination and antimicrobial resistance, all of which may influence health and food utilization.

16. Species and variety/ breed diversity allows for diverse diets, with their combinations assisting in the uptake and metabolization of nutrients, especially micronutrients. Genetic resources are essential to enhance the nutritional value of foods. Food composition data show that differences in nutrient contents between varieties of the same food are often as important as between foods. Intake of one variety rather than another can make the difference between micronutrient deficiency and micronutrient adequacy⁵. Differences between species and varieties also exist in disease/ pest resistance, processing and storage traits, some of which can be modified by selection. Knowledge systems, including traditional knowledge systems, related to food production and food processing influence food utilization, for example as indicated by gender-specific trait prioritization in participatory plant breeding.

Stability

Access to adequate food at all times

17. To be food secure, a population, household or individual must have access to adequate food at all times. In other words, availability and access to food should not be at risk as a consequence of sudden shocks (e.g. economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity).

18. The conservation and sustainable use of genetic resources may contribute to the resilience of agricultural production systems. Increasing intra-specific diversity can have beneficial effects in terms of: risk management; improved productivity; responding to consumer demand; and for supporting control by communities. Significant traditional breed/ variety diversity continues to be managed by smallholder farmers, and is used for example in addressing drought avoidance or resistance, or for

⁵ FAO. Biodiversity and nutrition - A common path.

http://www.fao.org/fileadmin/templates/food_composition/documents/upload/Interdocumento.pdf .

increased resilience to pests. Species diversity in integrated systems (e.g. crop-livestock-fish-tree) can assist in buffering against harvest failure in one species. Mixes of species and varieties can be used to extend growing seasons, and to deliver optimum performance/results in variable environments. Especially in the advance of climate change, such focus on the sustainable management of biodiversity for food and agriculture can deliver very positive results for longer term resilience. Awareness of the important role of genetic diversity to the adaptation of our food production systems to biotic and abiotic changes will be essential to mainstream genetic diversity across food security and nutrition policies and programmes.

III. FAO ACTIVITIES

Awareness raising

19. Since the last session of the Commission in January 2015, FAO has continued to raise awareness of the important role of genetic resources for food security. Relevant activities include the following:
20. FAO published the Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition⁶, endorsed by the Commission at its last session. The guidelines which contain a section on awareness-raising were presented at events during the Thirteenth Conference of the Parties to the Convention on Biological Diversity.
21. The Commission Secretariat, together with the Strategic Programme (SP) 1 *Contribute to the eradication of hunger, food insecurity and malnutrition* and SP2 *Make agriculture more productive and sustainable*, prepared and published in October 2015 an information sheet on *Genetic resources for food security and nutrition*⁷. Other sector-specific awareness-raising activities are reported in the relevant documents.⁸
22. FAO continues to maintain and update the FAO/INFOODS Food Composition Database for Biodiversity a new version of which⁹ was published in April 2016 with about 1400 new lines of data.
23. As a follow-up to the Second International Conference on Nutrition (ICN2), held by FAO and WHO from 19 to 21 November 2014, FAO designed a *Compendium of indicators for nutrition-sensitive agriculture*¹⁰ to support the design of nutrition-sensitive food and agriculture investments and the selection of appropriate indicators for monitoring these investments and their impact on nutrition and the impact pathways. The document provides an overview of indicators that can be relevant as part of a nutrition-sensitive approach, together with guidance to inform the selection of indicators.
24. FAO, jointly with WHO and other international partners, is building a Global Individual Food consumption data Tool (GIFT) to better inform agricultural and food policies and programmes at global, national and sub-national level. Using data sets on individual food consumption from Bangladesh, Burkina Faso, Philippines and Uganda, the draft GIFT dissemination tool was pilot-tested in 2014–2015.¹¹
25. FAO prepared since the last session of the Commission the draft report on *The State of the World's Biodiversity for Food and Agriculture*¹². The draft includes a section describing the contribution of biodiversity for food and agriculture to the four pillars of food security and to nutrition. The state and trends of wild foods are also presented, with preliminary findings that among the more than 2400 wild food species reported by countries to FAO for this report at least 600 are reported as being at risk. Wild foods are important for food security and nutrition in many countries. They are

⁶ <http://www.fao.org/documents/card/en/c/68b200ba-928a-4db9-a6ac-6b8fdc3c464b/>

⁷ <http://www.fao.org/3/a-i5049e.pdf>

⁸ CGRFA-16/17/13, CGRFA-16/17/16, CGRFA-16/17/19

⁹ <http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/>

¹⁰ <http://www.fao.org/3/a-i6275e.pdf>

¹¹ http://www.fao.org/fileadmin/user_upload/nutrition/docs/assessment/FAO-WHO_GIFT_Project_Brief_March2016.pdf

¹² CGRFA-16/17/Inf.10

often wild relatives of domesticated species, have potential for domestication and provide a pool of genetic resources for hybridization and selection.

26. FAO, together with the United Nations Environment Programme, supports the implementation of the Biodiversity for Food and Nutrition Project, a multi-country, multi-partner initiative led by Brazil, Kenya, Sri Lanka and Turkey, funded by the Global Environment Facility and coordinated by Bioversity International. The project aims at increasing knowledge of and exploring the nutritional value, cultural significance and market access of traditional plants for healthy diets, thereby contributing to their continued sustainable use and conservation.¹³

Collaboration with the Committee on World Food Security

27. In response to the Commission's request, the Secretariat co-organized on the occasion of the Forty-third Session of the Committee on World Food Security (CFS), together with the Government of Brazil, NEPAD/African Union and the Slow Food Foundation for Biodiversity, a side event on *Genetic Diversity for Food Security and Nutrition: Integrating genetic resources for food and agriculture in food security policies and programmes*¹⁴. The event offered an opportunity for delegates, policy makers and experts to exchange information on and discuss possibilities of improving the linkages between the conservation and sustainable use of GRFA and the eradication of hunger, food insecurity and malnutrition.

28. The High-Level Panel of Experts of the CFS presented a report on *Sustainable Agricultural Development for Food Security and Nutrition: What Roles for Livestock?*¹⁵ at the Forty-third Session of the CFS. Subsequently, the CFS recommended to foster policy coherence for food security and nutrition and strengthen coherence between sectoral policies and programmes, building on guidance from relevant international and regional intergovernmental organizations and agreements, including the Global Plan of Action for Animal Genetic Resources. It also recommended sector and production system specific actions¹⁶.

IV. OPTIONS TO RAISE AWARENESS FOR THE ROLE OF GENETIC RESOURCES FOR FOOD SECURITY AND NUTRITION

29. When requesting the Secretariat "to continue raising awareness of the important role of genetic resources for food security" and "to identify options for specific activities in this regard"¹⁷, the Commission did not specify which target audience these activities should have and at which level (national, regional or international) they should take place.

30. Awareness-raising is a dynamic process, usually integrated in a large-scale initiative that comprises multi-disciplinary and social marketing, formal and non-formal education and public participation. It thrives on engaged people, aims at the innovative and sustainable change of practices, behaviours and lifestyles, guides communication processes and media interventions within and among social groups, and is a pre-requisite and a tool for change at the same time.¹⁸

31. Awareness-raising may be limited to a rather small group, e.g. policy and decision makers, or may aim at large groups like certain stakeholder groups or the whole population of a country or even several countries. Awareness-raising may include the preparation of specific publications, for example, of a case study demonstrating the link between genetic diversity and food security and

¹³ <http://www.b4fn.org/>

¹⁴ <http://www.fao.org/cfs/cfs-home/plenary/cfs43/side-events/39/en/>

¹⁵ http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-10_EN.pdf

Summary report at

http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_S_and_R/HLPE_2016_Sust-Agr-Dev-FSN-Livestock_S-R_EN.pdf

¹⁶ CFS 2016/43 REPORT

¹⁷ CGRFA-15/15/Report, paragraph 74

¹⁸ GTZ RioPlus 2006. Strategic Communication for Sustainable Development A conceptual overview, <https://www.cbd.int/cepa/toolkit/2008/doc/strategic%20communication%20for%20sustainable%20development.pdf>

nutrition. On the other hand, awareness-raising may take the format of comprehensive public information or education campaigns which may build on a whole range of communication tools and materials. A limited number of awareness-raising options, ranging from the preparation of communication strategies to a few concrete examples, are presented below.

Development of communication strategies

32. The development of a communication strategy, whether at national or global level, might usually follow a cycle of analysis, planning, production and reflection¹⁷. A detailed analysis of the state of awareness of the role of genetic resources for food security and an assessment of the knowledge of the target audience and of existing awareness-raising activities should be undertaken prior to the development of awareness-raising activities. Objectives of a communication strategy could include:

- Strengthening awareness of the roles and demonstrate for multiple audiences and sectors the relevance of biodiversity for food security and nutrition;
- Providing tools for capacity-development; and
- Urging additional actions where they are needed.

33. Obviously, a communication strategy is most effectively and efficiently developed at national level, as technical content, collaboration with other sectors and stakeholders, and the method of message delivery and choice of media are usually context specific. However, FAO, under the guidance of the Commission, could develop the message for use by multipliers at national level.

Improving the knowledge base

34. Information showing the link between agricultural biodiversity, dietary diversity and improved nutrition outcomes is often fragmented and not easily accessible. Therefore, strengthening ongoing efforts to collect, manage and make accessible information demonstrating the value of genetic resources for enhancing food availability and diet quality could be useful to demonstrate the importance of genetic resources for food security. In addition, information could be collected on how the enhanced use of 'orphan' or underutilized species, varieties and breeds may contribute to both, the conservation of GRFA and the broadening of the food base, with many underutilized species having highly nutritious value.

Mainstreaming biodiversity across sectors

35. Awareness raising ultimately aims at better use of genetic diversity for food security and nutrition, and improved mainstreaming across sectors. There is a rising trend of cross-sectoral involvement of different stakeholders in promoting GRFA with respect to food security and nutrition, aiming at overcoming the disconnect between the biodiversity, agriculture, trade and health sectors and other sectors (including education, tourism and culture). Governments could set up cross-sectoral national food and nutrition security committees to ensure policy coherence. Mainstreaming the use and conservation of GRFA into food security and nutrition policies requires an inclusive and synergistic process, involving many sectors - public and private - and the civil society. Three examples are given below.

Nutrition education

36. Nutrition education starts in childhood. Various tools exist aiming to educate parents and children as to the importance of a balanced and healthy diet. Policies and tools to advocate a healthy diet in preschools, schools, public institutions, at the workplace and at home may at the same time communicate the important role GRFA play in facilitating a healthy diet. Practical examples of mainstreaming biodiversity across nutrition education include school gardens around or near to schools, tended at least partly by learners. School gardens in many countries are run for a variety of reasons, including the promotion of a healthy diet and nutrition education.

Social support programmes

37. Similarly, biodiversity may be mainstreamed in school feeding programmes aiming at improving the nutrition of students. Schools and relevant authorities may decide to link school feeding

programmes to other policy goals, such as the conservation and sustainable use of GRFA, and therefore encourage the purchase of diverse ingredients from local traditional communities.

38. Public procurement programmes can be linked to food security and nutrition policies, and thereby address equity at the production and consumption levels. They ensure that people facing food insecurity have access to food. They can also promote social and economic inclusion in rural areas, by prioritizing purchase from indigenous peoples and local communities or from small-scale producers, and the purchase of specific products, such as foods from traditional or underutilized species, or production practices such as organic agriculture.

Market development

39. The limited appreciation and use of diverse GRFA is a main cause of their loss. In many countries, traditional foods are produced mainly for home consumption or disseminated through traditional markets. Marketing channels for these foods are often poorly organized. Market development and access of smallholders to markets and services could entice smallholders and indigenous peoples to continue or increase the production of such foods. Guidance and tools are available from several organizations¹⁹, including on the enhanced organization of smallholders in cooperatives.²⁰

40. Access to appropriate technology or marketing infrastructure can assist in improving the processing properties of traditional and indigenous foods and improve their shelf life as well as their image.

41. Nutrition policies promoting a diversified, balanced and healthy diet are sometimes underpinned by legal and economic incentives supporting the production, marketing and consumption of foods that are produced locally and derived from traditional and rare varieties. Such incentives could also reflect the value of specific GRFA. Relevant incentives include

- Certification schemes and labels to bolster the market value of specific foods;²¹
- Marketing schemes for extractive products, such as wild foods, aiming to ensure commercialization at a fair price and to prevent resource overexploitation; and
- Support and strengthen access of small-scale producers to markets and thereby the inclusion of local populations involved in utilising local GRFA, for example under public procurement schemes.

V. GUIDANCE SOUGHT

42. The Commission may wish to

- i. Invite countries to raise awareness of the important role of the conservation and sustainable use of GRFA for food security and nutrition;
- ii. Invite countries to integrate GRFA into their food security and nutrition policies, including public research and extension programmes, public procurement and education policies, with the aim to arrive at policies that support food security, adequate nutrition and the conservation and sustainable use of GRFA;
- iii. Request FAO to prepare a Background Study Paper defining the contribution of GRFA to the four pillars of food security; and

¹⁹ FAO Sustainable Food Value Chains Knowledge Platform <http://www.fao.org/sustainable-food-value-chains/what-is-it/en/>; FAO Smallholder business models for agribusiness-led development Good practice and policy guidance <http://www.fao.org/docrep/015/md923e/md923e00.pdf> ; OECD-FAO Guidance for Responsible Agricultural Supply Chains <http://mneguidelines.oecd.org/OECD-FAO-Guidance.pdf>

²⁰ FAO 2012. Enabling rural cooperatives and producer organizations to thrive as sustainable business enterprises http://www.fao.org/fsnforum/sites/default/files/files/82_cooperatives/SUMMARY_82_EN_rural_cooperatives.pdf

²¹ FAO 2010. Linking people, places and products. A guide for promoting quality linked to geographical origin and sustainable geographical indications. Rome.

- iv. Request FAO to report on a regular basis on relevant awareness-raising activities of FAO.