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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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REVIEW OF WORK ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE AND NUTRITION

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Fifteenth Regular Session, endorsed the *Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition* (Voluntary Guidelines).[1] The Voluntary Guidelines provide examples of how mainstreaming could be implemented depending on each country's needs and capabilities, as appropriate. The Commission stressed that the implementation should be based on scientific evidence and consistent with relevant international obligations and requested FAO to report on the implementation of the Voluntary Guidelines at its Seventeenth Regular Session.[2] At its Sixteenth Regular Session, the Commission, in revising the major outputs and milestones of its Multi-Year Programme of Work, decided to review its work on genetic resources for food and agriculture (GRFA) and nutrition at the same session.[3]

2. The Voluntary Guidelines are divided into three main elements: research, implementation and awareness. The research element aims at: improving knowledge of the nutritional benefits of consuming food from different varieties, cultivars and breeds of plants and animals, as well as wild, neglected and underutilized species; at filling research gaps on food composition; and at addressing specific country nutrition issues through biodiversity for food and agriculture. The implementation element aims at putting activities into action that integrate biodiversity for food and agriculture into nutritional and nutrition-related policies, programmes and action plans. The third element aims at increasing the awareness of the general public and other stakeholders of the importance of foods from different varieties, cultivars and breeds of plants and animals, as well as wild, neglected and underutilized species, in addressing malnutrition.

3. The present document summarizes work undertaken by FAO, in collaboration with partners, on genetic resources diversity and nutrition and to support the implementation of the Voluntary Guidelines.

II. FAO ACTIVITIES

4. FAO's work continues to reflect at different levels the important role of genetic resources for food security and nutrition. Together with the United Nations Environment Programme, FAO supports the implementation of the Biodiversity for Food and Nutrition (BFN) Project (2012–2018), a multi-country, multi-partner initiative led by Brazil, Kenya, Sri Lanka and Turkey, funded by the Global Environment Facility (GEF) and executed by Bioversity International. The project adopted a three-pillar approach for mainstreaming biodiversity for food and nutrition into policies and practices by: providing evidence, influencing policy, and raising awareness. Results provide increasing evidence of the nutritional value of biodiversity. This evidence underlines the need to promote biodiversity mainstreaming across policies and markets, including school feeding and public procurement programmes. While knowledge of nutrient diversity and genetic diversity is growing, most activities reported to date aim at widening the diversity of species used for nutrition and healthy diets, and to simultaneously support the conservation of local and underutilized species by their continued or increased use, including through value chain development. The BFN Project remains to date the only such comprehensive programme.

5. The implementation of the Voluntary Guidelines at country level remains a challenge. Although actors at global, regional and national levels are implementing a range of activities under each of the three main elements, resulting in an overall increasing integration of biodiversity for food and agriculture into nutritional and nutrition-related policies, programmes and action plans, there is a need to step up efforts.

[1] CGRFA-15/15/Report, paragraph 24; *Appendix C*.
[2] CGRFA-15/15/Report, paragraph 25.
[3] CGRFA-16/17/Report, *Appendix C*.

6. While general awareness of healthy eating and of the role genetic diversity may play for a healthy diet is increasing, mainstreaming the role of genetic diversity below the species level for healthy nutrition remains a challenge.

Research, data collection and indicators

7. FAO continues to regularly update the FAO/INFOODS Food Composition Database for Biodiversity. The following updates have been made in 2018:

- publication of the Global Food Composition Database for Pulses;[4]
- publication of the Global Database for Pulses on Dry Matter Basis;[5]
- publication of the Global Food Composition Database for Phytate.[6]

8. The BFN Project generated nutrition data for 195 prioritized neglected and underutilized species, including data on selected within-species diversity, with nutrition potential, either through food composition analysis or data compilation from already existing sources. Brazil, Kenya and Turkey have contributed food composition data to the FAO/INFOODS database. Brazil, Turkey and Sri Lanka have contributed with reports on nutritional indicators for biodiversity that focus on food composition and food consumption. At the national level these data have been made available via the Biodiversity Nutritional Composition Database as part of the Information System on Brazilian Biodiversity (SiBBr),[7] a new national portal in Turkey and additions to the Turkish Food Composition database TürKomp, as well as a new national portal in Sri Lanka. In Kenya, nutritional analysis of priority species has resulted in the updating of the National Food Composition Table that was launched in September 2018 and will be hosted in the Nutrition Portal of the Ministry of Health.

9. FAO and Bioversity International prepared *Guidelines on assessing biodiverse foods in dietary intake surveys*[8]. The Guidelines defined 'biodiverse foods' as foods identified at an appropriate level with sufficient taxonomical detail; this means at species level for wild foods and underutilized foods, and at the level of variety/ cultivar/ breed for domesticated foods.

10. The Global Individual Food Consumption Data Tool (GIFT),[9] developed by FAO, jointly with WHO and other international partners, aims at strengthening nutrition information systems, makes publicly available food-based indicators, derived from gender and age disaggregated data on individual food consumption, and provides national baseline indicators for selected countries.

11. FAO is undertaking a two-year multi-country (Cambodia, Ethiopia and Zambia) research project to identify the best way to implement the Minimum Dietary Diversity–Women (MDD–W) data collection, thus to improve the indicator as presented in the FAO *Compendium of Indicators for Nutrition-Sensitive Agriculture.*[10] The MDD–W is a dichotomous, food-based indicator that allows rapid collection of individual food consumption data for women of reproductive age (15–49 years) to assess dietary diversity and micronutrient adequacy of women's diets.

12. In 2018, FAO, in collaboration with the African Union Commission, African governments (through the New Partnership for Africa's Development [NEPAD]), UNICEF, companies (Google, Mars), scientific bodies and civil society organizations, established the

[4] http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/
[5] http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/
[6] http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/
[7] The Biodiversity Nutritional Composition Database under the System on Brazilian Biodiversity (SiBBr) is the result of a joint effort of the BFN Project, the Ministry of the Environment and the Ministry of Science, Technology, Innovation and Communications in Brazil. Besides food composition data, the platform also includes a bank of recipes of Brazilian native species. National databases such as the BFN Sri Lanka and BFN Turkey Web sites also hold nutrition composition information from countries.
[8] "Kennedy G., Lee W.T.K., Termote C., Charrondière R., Ji Yen and Tung A. (2017) Guidelines on assessing biodiverse foods in dietary intake surveys. FAO, Rome. http://www.fao.org/3/a-i6717e.pdf
[9] http://www.fao.org/gift-individual-food-consumption/overview/en/
[10] FAO. 2016. Compendium of indicators for nutrition-sensitive agriculture (http://www.fao.org/3/a-i6275e.pdf).

African Orphan Crop Consortium (AOCC). The AOCC goal is to sequence, assemble and annotate the genomes of 101 traditional African food crops by the end of 2019 to improve their nutritional content.

Implementation at country level

13. The Commission, at its Sixteenth Regular Session, invited countries to integrate genetic resources for food and agriculture into their food security and nutrition policies, including public research and extension programmes, public procurement and education policies, and market and value chain development, with the aim of arriving at policies that support food security, adequate nutrition, and the conservation and sustainable use of GRFA.[11] It requested FAO to assist countries in this regard and called upon donors and relevant international organizations to make financial resources available.

14. The Voluntary Guidelines recommend the incorporation of biodiversity considerations into Food-Based Dietary Guidelines (FBDGs). FBDGs are a set of evidence-based, easily understood, behaviourally focused messages that constitute a government's recommendation to its population on healthy (and sometimes explicitly sustainable) eating. Recommending the consumption of diverse foods in FBDGs can enhance production that conserves and make sustainable use of biodiversity; FBDGs can also have a significant influence on public procurement and food-provision programmes.

15. A review by FAO[12] showed that the practicalities of integrating biodiversity-focused advice into FBDGs can be challenging. Most of the analysed national FBDGs recommend eating a variety of foods, but remain at the species level without addressing intra-species diversity. For example, they refer to eating foods from different food groups (e.g. combining rice and beans), or varying the foods within a group (e.g. eating apples one day and pears the next). However, locally adapted FBDGs have the potential to be an important means of promoting consumption of diverse and underutilized locally available foods. Brazil provides an example of FBDGs linked to local food biodiversity and food cultures.

16. School feeding programmes are important not only for food security but also for nutrition education. Through collaboration between FAO and the Instituto Nacional de Tecnología Agropecuaria (INTA), Argentina, biodiversity has been mainstreamed in a number of school feeding programmes in Argentina through the Nutritional Valorization of the Puna and Prepuna Catamarqueña Diet Project, thus raising youth awareness of the importance of preserving local biodiversity for nutrition, heath and food sovereignty. The 2017 United Nations System Standing Committee on Nutrition (UNSCN) Discussion Paper, Schools as a System to Improve Nutrition: A New Statement for School-based Food and Nutrition Interventions,[13] highlights some ways in which school feeding programmes can be diversified by linking to local neglected and underutilized species.

17. Following the Second International Conference on Nutrition (ICN2) and the declaration of the UN Decade of Action on Nutrition[14] from 2016 to 2025, Brazil became the first country to make SMART[15] commitments in 2017 as part of the Decade with 38 commitments based on the Second National Food and Nutrition Security Plan (PLANSAN 2016–2019). One of the commitments states that Brazil will "establish and monitor the National Socio-biodiversity Programme, in articulation with the Interministerial Agroecology and Organic Production Chamber and with the National Agroecology and Organic Production Commission."

18. BFN Project countries have piloted a multisectoral, inter-disciplinary approach to mainstreaming biodiversity for improved nutrition – linking evidence to policy, markets and

[11] CGRFA-16/17/Report, paragraph 20.
[12] Gonzalez Fischer, C. & Garnett, T. 2016. *Plates, pyramids, planet. Developments in national healthy and sustainable dietary guidelines: a state of play assessment*. Rome, FAO, and Oxford, UK, Food Climate Research Network. (available at http://www.fao.org/3/a-i5640e.pdf).
[13] https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB.pdf
[14] https://www.who.int/nutrition/decade-of-action/en/
[15] SMART: Specific, Measurable, Achievable, Relevant and Time bound.

awareness – that is replicable in other countries. Significant progress was made in mainstreaming agricultural biodiversity conservation and sustainable use into nutrition, health and education, as well as in promoting new marketing options for biodiverse foods with high nutritional value, for example:

- In Brazil, the updated version of the Brazilian Ordinance 163/2016 – now 284/2018[16] – sets a market price for 100 socio-biodiversity products (read neglected and underutilized), contributes to better understanding and dissemination of knowledge on these species, and ultimately enhances their promotion and sustainable use including school feeding programmes and public food procurement:[17] The Brazilian draft Food Security and Nutrition Action Plan 2018–2022 and the establishment of a Family Farming Identification Seal (SIPAF) support farmers that manage socio-biodiversity products. Value chains for the feijoa fruit (*Acca sellowiana*) were developed and links strengthened with initiatives and projects which aim to develop markets for locally sourced underutilized native species.
- In Turkey, the Turkey Dietary Guidelines 2016 include biodiversity, and several policies are mainstreaming biodiversity for improved nutrition: Agricultural Research Master Plan (2016–20), Healthy Nutrition and Active Life Program, the Nutrition Friendly School Program, Nutrition and Health Research of Turkey (2017), Technical and Vocational Education and Training (TVET) programmes, the National Biodiversity Strategy and Action Plan (NBSAP) and the Healthy Nutrition and Active Life Program 2014–2017. Post-harvest studies on the foxtail lily and golden thistle were completed by the Turkish Fruit Research Institute.
- Sri Lanka created new market outlets for the sale of traditional agrobiodiversity species in public hospitals.
- In Western Kenya, linking of farmers to local schools for the provision of underutilized, nutrient-rich species continued in 2018.[18] The County of Busia has developed a Biodiversity Conservation Policy – the first of its kind across Kenya's 47 counties – that recognizes the importance of traditional foods for nutrition and food security and has allocated resources to conserve regional food biodiversity, with specific provisions for designated conservation areas and further incorporation of native species into school meals as well as linking smallholder farmers to institutional markets.
- Brazil, Kenya, Sri Lanka and Turkey have each produced Policy Briefs with identified key messages and actions for policy-makers to better mainstream for improved nutrition.

Awareness raising

19. The 2017 High Level Panel of Experts (HLPE) Report 12, *Nutrition and food systems*, refers to the role of biodiversity conservation and use as key drivers for food system change and their ability to adapt to climate change[19].

20. The Global Forum on Food Security and Nutrition organized an online consultation on *Mainstreaming biodiversity in agriculture, fisheries and forestry for improved food security and*

[16] http://www.b4fn.org/countries/brazil/

[17] UNSCN. 2017. Discussion Paper *Schools as a System to Improve Nutrition: A New Statement for School-based Food and Nutrition Interventions* contains a case study from Brazil on the diversification of school feeding and institutional food procurement using this policy ordinance (Case Study H). https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB.pdf

[18] UNSCN. 2017. Discussion Paper *Schools as a System to Improve Nutrition: A New Statement for School-based Food and Nutrition Interventions* contains a case study from Kenya on food and nutrition biodiversity in Busia County (Case Study I). https://www.unscn.org/uploads/web/news/document/School-Paper-EN-WEB.pdf

[19] HLPE. 2017. *Nutrition and food systems.* A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome; FAO. 2012. *Sustainable diets and biodiversity: Directions and solutions for policy, research and action*. Proceedings of the International Scientific Symposium Biodiversity and sustainable diets – united against hunger 3–5 November 2010, Rome.

better nutrition prior to the Multi-stakeholder Dialogue on Biodiversity Mainstreaming across Agricultural Sectors,[20] which highlighted the importance of biodiversity for improved nutrition, including by providing concrete field experiences, such as the case of mud crab farming in India showing how the preservation of this local species and of its natural habitat (mangroves) can improve the protein intake in seasons of fishing decrease.[21] The Dialogue's working groups considered specific aspects of biodiversity mainstreaming, including certification and voluntary standard schemes to protect local biodiversity such as the promotion of Geographical Indication for *Saba Senegalensis* in Senegal.

21. FAO's Regional Office for Asia and the Pacific, at the Thirty-Fourth Session of the FAO Regional Conference for Asia and the Pacific, launched a publication *future Smart Food: Rediscovering Hidden Treasures of Neglected and Underutilized Species for Zero Hunger in Asia*[22] that highlights the role of neglected and underutilized species (NUS) as entry points for addressing hunger and malnutrition from a food system perspective.

22. FAO held a High-Level Expert Seminar on Indigenous Food Systems *Building on Traditional Knowledge to achieve Zero Hunger* in November 2018 with a strong focus on food biodiversity. Subsequently, FAO will be hosting the secretariat of the Indigenous Food Systems Hub. Furthermore, FAO and the Secretariat of the Convention on Biological Diversity (CBD) organized an Agriculture Day during the 14th Conference of the Parties to the CBD in Egypt in November 2018, which included a session on the importance of biodiversity for food and nutrition. Biodiversity for food and nutrition were also a theme during the Second International Symposium on Agroecology[23].

23. Under the BFN Project, information events fostering greater appreciation of biodiversity for food and nutrition as a resource for development and well-being have been conducted in the four countries; in addition, farmer/producer capacity to use and benefit from BFN has been strengthened through training and exchange visits to partner countries. For example, 2 374 women farmers across ten Turkish provinces were trained on the conservation and sustainable use of biodiversity, including foraging guidelines, and market and nutrition information, and Brazil translated the Voluntary Guidelines into Portuguese. Sri Lanka hosted an island-wide Biodiversity Food Festival with a national cooking competition including winners from all districts, in 2017.The following knowledge products have been made available on the BFN Web site:[24]

- the online course *Mainstreaming Biodiversity for Food and Nutrition: Benefits for agriculture, health and livelihoods;*[25]
- a Biodiversity for food and nutrition mainstreaming toolkit;[26]
- 36 case studies linking agricultural biodiversity to nutrition and market outcomes;
- recipes using local underutilized nutritious crops from the target countries including the Kenya Recipes Book released in 2018.

[20] http://www.fao.org/about/meetings/multi-stakeholder-dialogue-on-biodiversity/en/
[21] http://www.fao.org/3/CA0978EN/ca0978en.pdf
[22] http://www.fao.org/3/I9136EN/i9136en.pdf
[23] http://www.fao.org/about/meetings/second-international-agroecology-symposium/about-the-symposium/en/
[24] http://www.b4fn.org/
[25] http://www.b4fn.org/e-learning/
[26] http://www.b4fn.org/the-mainstreaming-biodiversity-toolkit/

III. GUIDANCE SOUGHT

24. The Commission may wish to:

i. invite countries to raise awareness of and implement the *Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition*, including capacity development and the incorporation of sub-species level biodiversity considerations in national food-based dietary guidelines;
ii. invite countries to develop suitable policy frameworks, including fiscal policies, and support enhanced market outlets for biodiverse and nutritious foods;
iii. invite countries to promote healthy diets, including by creating and/or diversifying public procurement and school feeding programmes that include local biodiverse foods;
iv. invite countries to share their best practices and lessons learned in mainstreaming biodiversity into nutrition policies and programmes, and request FAO to compile these, for consideration by the Commission at its Nineteenth Session;
v. invite countries and request FAO to continue improving the scientific evidence base for biodiversity and nutrition, including in INFOODS, and exploring the possibility of new indicators such as nutrient productivity; and
vi. request FAO to improve biodiversity mainstreaming into nutrition education.