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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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MONITORING THE IMPLEMENTATION OF THE SECOND GLOBAL PLAN OF ACTION AND PREPARING *THE THIRD REPORT ON THE STATE OF THE WORLD'S PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE*

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its last session, considered the preparation of *The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture* (Third Report). It endorsed the outline¹ as well as a timeline for the Third Report and took note of the provisional budget. The Commission also welcomed the full integration of the preparation of the Third Report with the monitoring process for the implementation of the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (Second GPA). It recommended reviewing the list of thematic studies following the assessment of the implementation of the Second GPA at its next regular session.

2. In the light of recent experience with country reporting on the implementation of the Second GPA, the present document provides a new monitoring scheme and a revised timeline for both, the monitoring of the implementation of the Second GPA and the preparation of the Third Report. The proposed new monitoring scheme will simplify routine reporting and give countries more time to report on the implementation of the Second GPA. The new monitoring scheme will also align the reporting on the implementation of the Second GPA with the monitoring of country activities contributing to the implementation of Sustainable Development Goal (SDG) target 2.5. The proposed new timeline would also result in the postponement of the presentation of the draft Third Report to the Commission by two years; the draft Third Report would be presented to the Nineteenth, rather than the Eighteenth Session of the Commission. The present document provides, in addition, a revised list of thematic background studies to be prepared in support of the Third Report.

II. BACKGROUND

3. FAO launched the first report on *The State of the World's Plant Genetic Resources for Food and Agriculture* (First Report) in 1996 during the Fourth International Technical Conference on Plant Genetic Resources². The full version of the report was published in 1997³. *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture* (Second Report) was presented to the Commission in 2009 and published by FAO in 2010. The Second Report updates the First Report and focuses on changes and developments that have occurred since 1996. It gives an assessment of the status and trends of plant genetic resources for food and agriculture (PGRFA) and identifies the most significant gaps and needs.

4. Both reports generated global policy responses. In response to the findings of the First Report, the Commission negotiated and 150 countries attending the Fourth International Technical Conference on Plant Genetic Resources in 1996 adopted the rolling Global Plan of Action on the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture (GPA). In response to the Second Report, the Commission revised the GPA and the FAO Council, on behalf of the FAO Conference, adopted the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (Second GPA), in 2011.⁴ The Second GPA is a framework, guide and catalyst for action at national, regional and international levels to create an efficient system for the conservation and sustainable use of PGRFA, including seed systems. It provides a comprehensive and flexible tool for countries to adopt policies and programmes for the conservation and sustainable management of PGRFA, and calls for strengthening capacities and linkages among all stakeholders through a combination of appropriate policies, use of scientific information, farmers' knowledge and joint action. Updating the rolling Global Plan of Action also strengthens its role as a supporting component of the International Treaty on Plant Genetic Resources for Food and Agriculture.

5. In 2007, the Commission agreed on the preparation of the Third Report and, at its last session, endorsed a timeline for its preparation. This timeline reflected the full integration of the preparatory process for the Third Report with the process of monitoring the implementation of the Second GPA. The timeline envisaged two rounds of periodic reporting based on the agreed indicators and a

¹ CGRFA-15/15/Report, *Appendix F*.

² ITC-PGR/96/REP, paragraphs 13-14.

³ <ftp://ftp.fao.org/docrep/fao/meeting/015/w7324e.pdf>

⁴ CL 143/REP, paragraph 43.

corresponding Reporting Format for monitoring the status of the implementation of the Second GPA. According to the timeline, a first implementation assessment was due at this session of the Working Group and the forthcoming session of the Commission. The draft Third Report, based on the results of the first and of a second implementation assessment, complementary Country Reports, thematic studies and other relevant sources of information would have been presented to the Tenth Session of the Working Group in 2020 and the Eighteenth Session of the Commission in 2021.

6. The results of the first assessment of the implementation of the Second GPA are contained in the document *Summary assessment of the implementation of the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture*.⁵ Given the relatively small number of countries that provided information during this first monitoring round, the assessment is not representative of the global state of implementation of the Second GPA. It is therefore important to consider how country reporting may be simplified, the number of countries reporting be increased and the monitoring and country reporting schemes be adjusted to produce meaningful implementation assessments and a Third Report that is representative of the global state of conservation and sustainable use of PGRFA.

7. Another reason to review the timeline and monitoring scheme is SDG target 2.5. In March 2016, the UN Statistical Commission at its Forty-seventh Session, agreed on indicators proposed by the Inter-Agency and Expert Group on Sustainable Development Goal Indicators, including indicator 2.5.1, *Number of plant and animal genetic resources for food and agriculture secured in either medium or long term conservation facilities*.⁶ Countries are expected to report, usually in March of every year, on SDG indicator 2.5.1. Countries reporting on SDG indicator 2.5.1 will therefore have to provide on an annual basis data required for indicators 19 to 21 for monitoring the Second GPA. The proposed new monitoring scheme accommodates the new reporting requirement for PGRFA under SDG indicator 2.5.1.

III. REVISED TIMELINE

8. National Focal Points (NFPs) reported between October 2015 and March 2016 for the first assessment of the implementation of the Second GPA. NFPs were requested to provide information on activities carried out between 1 January 2012 and 30 June 2014. NFPs were invited to provide (i) through the WIEWS' Reporting System, information in response to 51 questions, developed on the basis of the 63 Commission-agreed indicators, and (ii) an expert judgement (NFP rating) on the level of implementation of each indicator. The NFP ratings were used to elaborate three Higher-order Composite Indices (HCIs), one for each of the three PGRFA targets adopted by the Commission in 2013. Unfortunately, as of March 2016, 35 NFPs only had completed the online Reporting Format (answering on average 67 percent of the questions). An additional eight countries reported only partially (about 16 percent of the questions answered). For one specific question and its three indicators associated with *ex situ* collection holdings, data on about 3.6 million accessions were gathered from 71 countries and 12 international centres. Thirty-two countries reported directly to FAO on 1.17 million accessions. Data for the remaining 39 countries and most of the international centres were sourced from EURISCO and Genesys.

9. Given the relatively small number of countries that provided information during this first monitoring round, the assessment is not representative of the global state of implementation of the Second GPA. Based on experiences gained during the first assessment, it can be concluded that NFPs and other reporting entities require, at least initially, assistance and guidance in providing data on the implementation of the Second GPA. Subsequent "quality checking" of the information provided requires considerable human resources from FAO's side. The following adjustments seem therefore

⁵ CGRFA/WG-PGR-8/16/3.

⁶ Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture; Target 2.5: By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

necessary: to allow as many countries as possible to complete the first monitoring round; to simplify country reporting and to give countries more time to finalize their Country Reports contributing to the Third Report. The revised timeline is contained in Table 1. A more detailed timeline is contained in *Appendix I*.

(i) *Extension of reporting deadline for first monitoring period, including (optional) simplification*

10. To enable a larger number of NFPs to complete the first monitoring round (spanning from 1 January 2012 to 30 June 2014), and to reduce the workload for NFPs, it is suggested to extend the deadline for first-round country reports to 31 December 2017. By that deadline, countries which had not yet reported on their activities undertaken between 1 January 2012 and 30 June 2014 will continue to be able to report on them through the WIEWS Reporting System. Countries are requested to report by using the Reporting Format. However, NFPs who do not see themselves in a position to provide such detailed information, are given the option to only provide NFP ratings. The NFP ratings will allow FAO to update the HCIs for 2012-2014 and report them to the Working Group in 2018 and the Commission in 2019.

Table 1: Revised timeline for monitoring the implementation of the Second GPA and preparing <i>The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture</i>					
Reports to the Working Group and the Commission	Information sources	Timeline			
		ITWG-8 2016	ITWG-9 2018	ITWG-10 2020	ITWG-11 2022
		CGRFA-16 2017	CGRFA-17 2019	CGRFA-18 2021	CGRFA-19 2023
Second GPA implementation assessment (2012-2014)	Data provided by NFPs or other sources				
Report on feasibility of composite indices for PGRFA SDG 2.5 Report					
SDG 2.5 Report					
Second GPA implementation assessment (2015-2019) Third Report SDG 2.5 Report	Data provided by NFPs or other sources on the basis of agreed indicators, country reports and thematic studies and other relevant sources				

(ii) *Extension of second monitoring period/ Postponement of Country Reports and Third Report*

11. Originally, NFPs were supposed to submit their second monitoring reports (on the period spanning from July 2014 to December 2016), including the Country Report for the Third Report, by June 2018. To reduce the reporting burden of NFPs, it is suggested to extend the second monitoring period by three years until December 2019. NFPs would then be given 12 months, i.e. until December 2020, to provide information on their implementation of the Second GPA using the Reporting Format and to prepare, by the same deadline, Country Reports in line with Guidelines to be reviewed and endorsed by the Commission at its Seventeenth Session in 2019. Subsequently, FAO will prepare the Third Report and provide a first draft to the Eleventh Session of the Working Group in 2022 and the Commission's Nineteenth Session in 2023.

(iii) *Annual reporting on SDG target 2.5*

12. Finally, in order to meet the commitment of countries to report to the UN Statistical Commission on SDG target 2.5, it is proposed that NFPs, starting in 2017, report annually by 31 March to FAO on their *ex situ* holdings as at 30 November of the previous year, using the descriptors question 6.2 of the Reporting Format⁷. Based on information received from NFPs, FAO will report annually on the *ex situ* holdings to the UN Statistical Commission.

13. FAO will continue to provide assistance to countries in reporting to FAO through WIEWS. It will also elaborate, on an annual basis, the status of implementation of SDG target 2.5 and share results with the Working Group and the Commission. A progress report on the status of preparation of the Third Report will be submitted to the Tenth Session of the Working Group and the Eighteenth Session of the Commission. Thematic studies will be prepared in 2019/2020. A list of thematic studies, as revised in response to the Commission's request, is given in *Appendix III*.

IV. THE NEW WIEWS

14. WIEWS is the platform made available by FAO for the periodic preparation of reports on the state of the world's PGRFA. Since its establishment, WIEWS has been one key component of the FAO Global System for the Conservation and Sustainable Use of PGRFA. In 2000, WIEWS was among the first databases of FAO that provided access to officially appointed users for reporting and updating through the Internet.

15. With the adoption of the Second GPA, a new monitoring framework, based on 63 indicators for the 18 Priority Activities of the Second GPA and a reporting format that serves to collect the information to elaborate these indicators has been set up. FAO made available the WIEWS Reporting System for the Second GPA that facilitates reporting by NFPs under the new monitoring framework.

16. More information will be gathered in the course of the second monitoring round and the preparation of the Third Report, including HCIs and their associated expert ratings on the Second GPA indicators. All this information will be published through the new WIEWS portal, through an intuitive interface which is currently under development and may be presented at the Commission's next session.

V. REVISED PROVISIONAL BUDGET

17. The revision of the timeline requires adjustments of the provisional budget of the Third Report. Monitoring the implementation of the Second GPA and preparing the Third Report will require substantial human and financial resources. For this purpose, technical adjustments will need to be made to the existing software for which extra-budgetary resources will be required. Financial support will also be required to enable the full participation of developing countries in the process, including for organizing national stakeholder consultations, assessing the implementation of the Second GPA and preparing country reports.

18. For the preparation of the Third Report, it is estimated that about USD 3 040 000 will be required (see *Appendix II*), approximately USD 1,972,000 in extra-budgetary funds and USD 1 068 000 from FAO's Regular Programme. The Regular Programme contributions given for the next biennium and beyond are indicative and subject to the approval of the Programme of Work and Budget by the FAO Conference. The budget would support the monitoring of the implementation of the Second GPA as well as the preparation of Country Reports in 120 countries, the production of five thematic studies and the publication of the Third Report in all official languages. A lack of funding would put at risk or delay the preparation of the Third Report.

19. The total cost of the preparation and publication of the First Report amounted to USD 5.5 million and was fully supported with extra-budgetary resources received from France, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United States of

⁷ CGRFA-15/15/Inf.9

America⁸. For the Second Report, the total cost was about USD 3.8 million of which USD 2.3 million was provided as extra-budgetary resources, including contributions from Canada, Italy, Japan, the Netherlands, Norway, and Spain⁹.

VI. GUIDANCE SOUGHT

20. The Working Group may wish to

- Review and revise, as necessary: the proposed timeline for the Third Report (*Appendix I*); the estimated budget (*Appendix II*); and the list of thematic studies (*Appendix III*), for review by the Commission.
- Recommend that the Commission invite donors to provide the necessary extra-budgetary resources to support the preparation of the Third Report, ensure the participation of developing countries and least developed countries in the preparation of assessments of the status of implementation of the Second GPA as well as the preparation of Country Reports in 120 countries, the production of five thematic studies and the publication of the Third Report in all official languages.

⁸ *The State of the World's Plant Genetic Resources for Food and Agriculture*. Preface endnote 10, page 8.

⁹ CGRFA/WG-PGR-3/05/3, paragraph 20

APPENDIX II

CORE ACTIVITIES AND REVISED PROVISIONAL BUDGET FOR MONITORING THE IMPLEMENTATION OF THE SECOND GPA AND PREPARING THE THIRD REPORT – 2016 TO 2023¹⁰ (AMOUNTS IN USD 1 000s)

	2016-2017		2018-2019		2020-2021		2022-2023		TOTAL		
	RP ^{11,12}	EB	RP ^{20,21}	EB	RP ^{20,21}	EB	RP ^{20,21}	EB	RP	EB	RP+EB
Mobilize funding for the process and the report	6		11		11		11		44	0	39
Coordinate the reporting process and communications	60		64		102		87		313	0	313
National stakeholder consultations for GPA-2 assessments (through NISM) and country reports preparation ¹³		270		300		900			0	1470	1470
Analyse data and prepare a synthesis					55				55	0	55
Upgrade, maintain and moderate WIEWS	95		74		74		56		299	0	299
Development of thematic background studies ¹⁴			8	40	16	85			24	125	149
Coordinate the updating of and update the appendices					21	10			21	10	31
Edit and publish draft of The Third Report					179	50	44	20	223	70	293
Format, translate (into 5 languages) the Third Report							14	215	14	215	229
Publish the Third Report and its in-brief version							61	82	61	82	143
Launch the Third Report (communication strategy)							19		19	0	19
TOTAL	161	270	157	335	458	1050	292	317	1068	1972	3040

RP = Regular Programme; EB = Extra Budgetary

¹⁰ It is assumed that the Nineteenth Regular Session of the Commission will take place in early 2023.

¹¹ Estimated Regular Programme contribution to the preparation process and the Third Report, covering mainly salaries for Professional and General Staff.

¹² Subject to the approval of PWB by FAO Conference

¹³ Assistance to 90 developing countries to produce an assessment on the implementation of the Second GPA (budgeted at USD 3,000/country) and to 120 developing countries to convene national workshops with stakeholders to produce an assessment on the implementation of the Second GPA and a country report (budgeted at USD 10,000/country)

¹⁴ Support the development of thematic studies and other necessary background material and expert meetings for the Report, according to the priorities identified by the Commission. Budgeted at USD 25,000/study for 5 thematic studies

APPENDIX III

REVISED LIST OF THEMATIC STUDIES

The context and background to the Third Report shall be provided through commissioned studies on themes that are relevant to the conservation and sustainable use of PGRFA. These may include emerging issues and trends in relevant scientific and technological advances. They may also include evolutions to the policy landscapes and other factors that may have implications for the conservation and sustainable use of PGRFA with regard to their utility in both food security and nutrition and environmental protection. The first draft of the Third Report will be produced in about seven years' time from now.

In response to the Commission's request, a revised list of thematic studies is provided below. This list is based on anecdotal evidence on current trends and is tentative. It is being provided on the expectation that relevant developments which may influence the eventual choices of themes and their contents might occur in the intervening period. These expected developments include the publications of studies being conducted by the Commission. It is therefore envisaged that the identified themes will be subjected to a continuing process of review by the Commission and Working Group in order to ensure their continuing relevance and in order to align the publication to other relevant activities in the Commission's Multi-Year Programme of Work. This continuing review will also permit the articulation of precise research questions for the studies closer to the publication date of the Third Report. The tentative themes are:

- Climate change. Erratic extreme weather events will continue to impact on where and how PGRFA are conserved and used. For instance, climate change will affect the distribution of CWR and wild plants harvested for food due to its impacts on their natural habitats. On the other hand, changing climatic conditions may also predispose these PGRFA to the development of adaptive features as part of ongoing evolutionary processes. Regarding use, a major thrust of crop improvement efforts shall be the development of resilient and input-use efficient crop varieties. Non-adapted germplasm, including CWR, will serve as the sources of traits for generating such varieties.
- Nutrition. Hidden hunger, i.e. micronutrient deficiency, and obesity are becoming established public health concerns. Increasingly therefore, the enhancements of quality and nutritional traits in improved varieties of staple crops are becoming standard plant breeding objectives. The unlocking of the largely untapped potentials of PGRFA will be critical to success as will be the developments, adaptations and revisions of protocols for assays. A review of the state of the art in the sustainable use of PGRFA to improve nutrition would therefore be an important part of the Report.
- Characterization and evaluation of germplasm. New efficiency-enhancing tools and methods are increasing our capacities for generating large amounts of reliable data on germplasm at cost- and time-efficient rates previously unimaginable. For instance, Focused Identification of Germplasm Strategy (or FIGS) permits the predictive characterization of yet uncharacterized germplasm by letting the investigator assign potential phenotypic or genotypic properties based on environmental information of the collecting sites or data on already characterized samples. The average costs for generating molecular genetic data have decreased sharply in the recent past. This, coupled with increasing availability of critical masses of skilled personnel, is permitting the routine use of high throughput molecular genetic platforms to generate unprecedented amounts of data quickly and cheaply. Genotyping by Sequencing (or GBS), whereby whole genome sequences of several samples of individuals are used to catalogue variations, is one example of the benefits of the relatively cheap and quick assays. The potentials that these more accessible assays portend for extending the benefits of molecular biology to the characterization and evaluation of under-researched crops and plant species are enormous. In like manner, high throughput screening platforms, including those based on imaging, are being used to generate copious amounts of phenotypic characterization and evaluation data. When such phenotypic data are related to genotypic information, this is known as phenomics. This is

revolutionising not only how phenotypic data are generated but also the establishment of cause-effect relationships between expressed traits and the heritable factors that influence them. Access to genomic information and the bioinformatics skills to utilize them in breeding programmes will be crucial for the widespread use of such technologies for food security by developing countries.

- Safety duplicates. The safety duplication of unique accessions represents a fundamental practice to reduce the risk of loss of germplasm diversity in *ex situ* collections. On the other hand, duplication of accessions beyond some reasonable level is not necessary and drains financial resources which could otherwise be used for other urgent tasks. As highlighted by the Second Report, a significant increase in the number of genebank holdings is due to a large proportion of these holdings being duplicates. Ways and means to reduce the number of unintended duplications in *ex situ* collections should be further explored. A valuable contribution of such a study would be the definition of what constitutes a “safety duplication” and the proposition of its criteria. This has become necessary in order to delineate between “black box” collections that contain samples that are largely unmonitored from de facto “safety duplication” collections that must involve the active management of the stored accessions.
- New plant breeding techniques. Recombinant DNA techniques have been used to introduce traits that were not readily accessible from germplasm collections into crop varieties. For a variety of well-documented reasons, the official release and cultivation of crop varieties produced through genetic transformation, known as genetically modified organisms, has been constrained by different regulatory regimes in many parts of the world. New plant breeding techniques, based on genome editing, for instance, are recently being used to generate new plant variants in different parts of the world. Policy makers are striving to determine how best to classify the varieties arising from these techniques that do not involve the introduction of foreign hereditary materials. Other new methods involve aspects of cisgenesis, reverse breeding, synthetic genomics. All these may engender significant impacts on regulatory mechanisms and hence, access to new crop varieties. The Third Report will review these emerging techniques especially as for some of them, there are already products in the pipeline.