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# COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

## Item 5.3 of the Provisional Agenda

### Fifteenth Regular Session

Rome, 19 – 23 January 2015

## PREPARATION OF *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 (the Commission), at its last Session, endorsed the proposed timeline for the preparation of *The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture* (Third Report) and requested FAO to provide a detailed outline of the Third Report, including suggested chapters and thematic areas, as well as a revised estimated budget indicating Regular Programme contributions, for consideration by the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group) and the Commission, at their next sessions. The Commission stressed that the monitoring of the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (Second GPA) and the preparation of the Third Report should be fully integrated. To facilitate both, the Commission requested FAO to upgrade the existing computer application for monitoring the implementation of the Second GPA in order to enable the use of the relevant indicators, and to assist countries in the use of the computer application when requested.<sup>1</sup>

2. The Working Group, at its Seventh Session, considered the preparation of the Third Report and agreed on several recommendations, including that:

- the Secretariat include in the introduction to the Third Report both a summary of the most relevant policies and a section on genetic erosion and vulnerability of plant genetic resources for food and agriculture (PGRFA);
- the scope of the thematic study on current and expected impacts of climate change include the importance of PGRFA for the adaptation of agriculture to climate change;
- the Commission consider requesting FAO to commission a thematic study on safety duplication and unintended duplication of genebank accessions;
- the preparatory process for the Third Report be fully integrated with the monitoring of the Second GPA;
- a detailed timeline be provided, including information on deadlines for country submissions; and that
- the Commission invite donors to provide the necessary extra-budgetary resources to facilitate the preparatory process of the Third Report, in particular the participation of developing countries and least developed countries.<sup>2</sup>

3. This document provides background information with regard to the preparation of previous reports, provides a detailed timeline for the preparation of the Third Report that is closely synchronized with the monitoring of the Second GPA and presents a detailed outline for the Third Report, including suggested chapters and thematic areas, as well as an estimated budget integrating the monitoring of the implementation of the Second GPA and the preparation of the Third Report.

## II. BACKGROUND

4. 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 Resources. The full version of the report was published in 1998. *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 with the best data and information available and particularly focuses on changes and developments that have occurred since 1996. It gives an assessment of the status and trends of PGRFA and identifies the most significant gaps and needs.

5. 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

<sup>1</sup> CGRFA-14/13/Report, paragraph 26.

<sup>2</sup> CGRFA-15/15/14, paragraphs 24 – 25.

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).<sup>3</sup> 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 supportive policies and programmes for 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 action.

6. In 2007 the Commission agreed on the preparation of the Third Report and at its last session endorsed a timeline for its preparation, as given in *Table 1*. *Table 1* focusses on the main products and reflects the full integration of the preparatory process for the Third Report with the process of monitoring the implementation of the Second GPA. An assessment of the implementation of the Second GPA based on the indicators for the implementation of the Second GPA, will be presented to the Working Group and the Commission in 2016/2017. The Third Report will be based on Country Reports and other additional sources of information.<sup>4</sup> *Appendix I* to this document provides a more detailed timeline, including proposed deadlines for country submissions.

<b>Table 1: 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></b>				
<b>Reports to the Working Group and the Commission</b>	<b>Information sources</b>	<b>Timeline</b>		
		<b>ITWG-8 2016  CGRFA-16 2017</b>	<b>ITWG-9 2018  CGRFA-17 2019</b>	<b>ITWG-10 2020  CGRFA-18 2021</b>
Second GPA implementation assessment	Data provided through NISM or other sources on the basis of agreed indicators			
Report on feasibility of composite indices for PGRFA				
Third Report	Data provided through NISM or other sources on the basis of agreed indicators, country reports and thematic studies and other relevant sources			

### **III. DETAILED OUTLINE OF THE THIRD REPORT ON THE STATE OF THE WORLD'S PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE**

7. While building upon previous reports, the Third Report will provide up-to-date information on the global status of the conservation and use of PGRFA. The Third Report will document the

<sup>3</sup> CL 143/REP, paragraph 43.

<sup>4</sup> The review of the implementation of the Second GPA for the Commission's next session, as foreseen in the Strategic Plan for the Commission on Genetic Resources for Food and Agriculture 2014-2023, will be based on a report on FAO activities in support of the implementation of the Second GPA, including on the development of composite indices.

developments in policies, processes, practices, advances in science and technology that impact PGRFA at the global, regional and national levels especially in regard to their contributions to food security, nutrition and the safeguarding of ecosystems. It will aim to identify gaps and needs that must be addressed in order to attain the dual goals of conserving PGRFA while utilizing them sustainably.

8. The Third Report will reflect the structure of the Second GPA. It will cover the four key areas and identify gaps and needs within them, focusing on the main changes since the last report. The Third Report, it is suggested, could therefore fall into the following main chapters: (1) Introduction; (2) Conservation of PGRFA; (3) Sustainable use of PGRFA; (4) Institutional and human capacities for PGRFA conservation and use. While the Third Report will be primarily based on country reports, in-depth thematic studies may provide further information on specific aspects of the conservation and sustainable use of PGRFA. A detailed outline is contained in *Appendix III* to this document. A list of possible thematic studies is given in *Appendix IV*, for information.

#### **IV. UPGRADING OF THE COMPUTER APPLICATION FOR MONITORING THE IMPLEMENTATION OF THE SECOND GLOBAL PLAN OF ACTION**

9. WIEWS is FAO's information system for PGRFA and operates since 1983 as the key information system for the preparation of global assessments of the status 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. In the follow-up to the adoption of the new approach for monitoring the implementation of the GPA, Commission Members established National Information Sharing Mechanisms (NISMs) for which a computer application was developed and supported under WIEWS.

10. Updating WIEWS, improving its functionalities, increasing its accessibility and user-friendliness are therefore key concerns for FAO. Accordingly, FAO redesigned WIEWS to fully integrate the monitoring system of the Second GPA based on the indicators adopted by the Commission in 2013. A beta version of the new WIEWS has been released in 2014 and is being tested at the time of the finalization of this document. WIEWS now allows countries to report to the Commission in line with the Reporting Format.<sup>5</sup> The new system is accessible through the Internet for both data entry and retrieval. The databases of WIEWS and NISMs have been merged into one integrated database achieving efficiencies in terms of system administration, maintenance and data management. WIEWS continues to provide the WIEWS *instcode*, a globally used unique identifier system for institutions holding germplasm. NISMs' multi-language feature has been preserved. Other features, including data input, data search, dataset import and dataset export have been improved with latest available web technology and a more user-friendly and portable interface.

11. WIEWS continues to be a crucial repository of PGRFA data, which is widely used by key global institutions. The WIEWS *instcode* continues to be the most widely used unique identifier system for institutions holding germplasm. A recent set of studies analyzing the potential monetary and non-monetary benefits arising from the International Treaty on Plant Genetic Resources for Food and Agriculture relies to a considerable extent on data drawn from WIEWS.<sup>6</sup> With the full integration of the implementation monitoring component with the country reporting process for the Third Report, WIEWS is expected to play an even more important role in the future.

#### **V. PROVISIONAL BUDGET**

12. The preparation of the Third Report will require substantial human and financial resources to gather high-quality data and information in a sustained manner and to enable countries to

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<sup>5</sup> CGRFA-15/15/Inf.9.

<sup>6</sup> Moeller, N.I. & Stannard, C. (2013). Identifying benefit flows. Studies on the potential monetary and non-monetary benefits arising from the International Treaty on Plant Genetic Resources for Food and Agriculture, pp. 41; 44; 257 (available at: [http://www.planttreaty.org/sites/default/files/Identifying\\_Benefit\\_Flows.pdf](http://www.planttreaty.org/sites/default/files/Identifying_Benefit_Flows.pdf))

provide/update assessments to WIEWS via NISMs. 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, establishing and updating NISMs and preparing country reports.

13. For the preparation of the Third Report, it is estimated that about USD 3.241,000 will be required (see *Appendix II*), approximately USD 2,112,000 in extra-budgetary funds and USD 1,129,000 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 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 four 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.

14. 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 America.<sup>7</sup> 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 Spain.<sup>8</sup>

## VI. GUIDANCE SOUGHT

15. The Commission may wish to

- Review and revise, as necessary: the proposed timeline for the Third Report (*Appendix I*); the estimated budget (*Appendix II*); the proposed outline for the Third Report (*Appendix III*); and the list of thematic studies (*Appendix IV*).
- Invite donors to provide the necessary extra-budgetary resources (*as set out in paragraph 13 above and Appendix II*) 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 four thematic studies and the publication of the Third Report in all official languages.

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<sup>7</sup> *The State of the World's Plant Genetic Resources for Food and Agriculture*. Preface endnote 10, page 8.

<sup>8</sup> CGRFA/WG-PGR-3/05/3, paragraph 20

## APPENDIX I

TIMELINE FOR MONITORING THE IMPLEMENTATION OF THE SECOND GPA AND  
PREPARING THE THIRD REPORT

2013												2014											
6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12					
			GB-5										WG-7										
GPA 2 Rep Format																							
		CSL																					
				Composite indices model study																			
				Working document on preparation of SoW III																			
	Upgrading of WIEWS and GPA2 software application																						
																		Pilot GPA 2 monitoring					

  

2015												2016											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
CGRFA-15															WG-8						CGRFA-16		
GPA 2 Monitoring (reporting period 2012-14)						Assessment of GPA 2 implementation																	

  

2017												2018											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
															WG-9						CGRFA-17		
GPA 2 Monitoring (reporting period 2014-2016) and preparation of country reports for SoW III																							
																							Preparation of the draft SoW III

  

2019												2020											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
															WG-10						CGRFA-18		
Preparation of the draft SoW III															SoW III						SoW III		

GB = Governing Body of the International Treaty on PGRFA; WG = Working Group on PGRFA; GPA2 = Second GPA; CSL = Circular state letter; CGRFA = Commission; SoW III = Third Report

## APPENDIX II

**PROPOSED CORE ACTIVITIES AND BUDGET FOR MONITORING THE IMPLEMENTATION OF THE SECOND GPA AND PREPARING THE THIRD REPORT – 2014 TO 2021<sup>9</sup> (AMOUNTS IN US\$1000S)**

	2014-2015		2016-2017		2018-2019		2020-2021		TOTAL		
	RP <sup>10</sup>	EB	RP <sup>8,11</sup>	EB	RP <sup>8,9</sup>	EB	RP <sup>8,9</sup>	EB	RP	EB	RP+EB
Mobilize funding for the process and the report	11		11		11		11		44	0	44
Coordinate the reporting process and communications	77		80		82		64		303	0	303
National stakeholder consultations for GPA-2 assessments (through NISM) and country reports preparation <sup>12</sup>		520		520		520			0	1560	1560
Analyse data and prepare a synthesis	55				54				109	0	109
Upgrade, maintain and moderate WIEWS and NISMs	116		67		67		49		299	0	299
Development of thematic background studies <sup>13</sup>					24	160			24	160	184
Coordinate the updating of and update the appendices					21	22			21	22	43
Prepare and publish Second GPA implementation report			14						14	0	14
Prepare and publish draft of The Third Report					185	22			185	22	207
Prepare the Third Report for ITWG-PGR-10					14	33			14	33	47
Prepare the Third Report for CGRFA-18							22	18	22	18	40
Format and translate (into 5 languages) the Third Report							14	215	14	215	229
Publish the Third Report and it's in-brief version							61	82	61	82	143
Launch the Third Report (communication strategy)							19		19	0	19
<b>TOTAL</b>	<b>259</b>	<b>520</b>	<b>172</b>	<b>520</b>	<b>452</b>	<b>757</b>	<b>240</b>	<b>315</b>	<b>1129</b>	<b>2112</b>	<b>3241</b>

RP = Regular Programme; EB = Extra Budgetary

<sup>9</sup> It is assumed that the Eighteenth Regular Session of the Commission will take place in early 2021.

<sup>10</sup> Estimated Regular Programme contribution to the preparation process and the Third Report, covering mainly salaries for Professional and General Staff.

<sup>11</sup> Subject to the approval of PWB by FAO Conference

<sup>12</sup> Assistance to 120 developing countries to convene national workshops with stakeholders to produce 2 assessments on the implementation of the Second GPA and country reports. Budgeted at USD 13,000/country

<sup>13</sup> 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 40,000/study for 3 thematic studies

## APPENDIX III

### PROPOSED OUTLINE FOR THE THIRD REPORT

#### Executive Summary

##### Chapter 1. Introduction

This chapter will provide the context for the Third Report. It will present a critical review of relevant developments of global, regional, and national importance that impact on the management of PGRFA. These may include population trends and demography as they relate to food and nutritional security and climate change and other drivers that impact on the conservation and sustainable use of PGRFA. Other topical issues may include reviews on the prevailing needs and perspectives of stakeholders and the defining trends of their interventions along the PGRFA management continuum. As in previous editions, the emerging challenges and opportunities that may encompass advances in science and technology, intellectual property rights regimes, public-private partnerships, the roles of civil society, etc. that may have evolved since the Second Report will be treated. The introduction will also include a summary of the most relevant policies and a section on genetic erosion and vulnerability of PGRFA.

##### Chapter 2. Conservation of PGRFA

**[Relevant CGRFA Target: *By 2020, the genetic diversity of cultivated plants and their wild relatives, as well as of wild food plant species is maintained in situ, on farm, and ex situ in a complementary manner.*]**

###### A. *In situ conservation*

Crop wild relatives and wild harvested plant species are increasingly recognized as invaluable repositories of genes for introducing desirable traits into crops as means for enhancing food and nutritional security. The global attention accorded the imperative of conserving this irreplaceable trove of heritable traits that could be gainfully deployed in crop improvement, in manners that permit easy access to them, is expected to increase considerably. Landraces and underutilized local and traditional crops are at increasing risk of being lost and on-farm conservation and management are recognized as means to stem the genetic erosion that threaten these resources. Taken in concert, information from country assessments of the implementation of the Second GPA, country reports and the envisaged thematic studies should provide a valid overview on the status of conservation and use of PGRFA on farms and in wild and managed ecosystems, including genetic reserves.

###### B. *Ex situ conservation*

*Ex situ* collections will likely continue to be the centerpiece of PGRFA conservation and use. Information on the status of germplasm collection, conservation and characterization to be gleaned from national assessments and reports, and updates on international initiatives will together provide an authoritative inference on the statuses of conservation, distribution and exchange, evaluation and utilization, and research for PGRFA held in genebanks. This will enable a treatise on the trends (including opportunities and challenges) that impacts *ex situ* conservation. For instance, the means and extent of gaps in gene bank germplasm holdings, targeted collecting and germplasm exchange levels, the security of collections, regeneration, data and information management, and the full range of *ex situ* strategies (storage of orthodox and recalcitrant seed, various culture conditions, and field gene banks, gardens, and arboreta) shall be showcased.

The above information and results will be analyzed in the context of what has changed or emerged since the Second Report, with an emphasis on the gaps and needs going forward.



### **Chapter 3. Sustainable Use of PGRFA**

**[Relevant CGRFA Target: *By 2020, there has been an increased use of plant genetic resources for food and agriculture to improve sustainable crop production intensification and livelihoods while reducing genetic vulnerability of crops and cropping systems.*]**

In both the First and Second Reports, a chasm can be discerned between the potential for PGRFA – to contribute well adapted crop varieties to sustainable agricultural and economic development, enhance food and nutritional security, allay poverty, and promote health and dietary diversity – and the actual extent to which the resources have been harnessed to do so. This disconnect will still be evident in the Third Report, but it will be a goal of this chapter to document the extent to which the situation has improved in the intervening period since 2009.

Questions to be addressed will include:

- i. Will there have been progress in the extent of use of PGRFA in crop improvement, including base-broadening activities through pre-breeding?
- ii. Do characterization and evaluation of germplasm result in enhanced use of the germplasm in breeding programs?
- iii. What is the relationship between access to germplasm and national crop and variety diversity?

Country-level information on plant breeding capacity, analysis of seed systems (formal and informal), and promotion of crop diversification and neglected and underutilized species will give an important snapshot of the extent of gains achieved in use and deployment of PGRFA. An important aspect of crop production systems for assessing the utility of PGRFA is in the extent of their contributions to the mitigation of disaster situations via the resilience of crop varieties and seed systems. The chapter will conclude by teasing out identified gaps and needs and projections on how to address these.

### **Chapter 4. Institutional and Human Capacities for PGRFA Conservation and Sustainable Use** **[Relevant CGRFA Target: *By 2020, people are aware of the values of plant genetic resources for food and agriculture and institutional and human capacities are strengthened to conserve and use them sustainably while minimizing genetic erosion and safeguarding their genetic diversity.*]**

The management of PGRFA entails more than the germplasm and those who directly work with it. The roles of national policies, legislations, regulations, economics, infrastructure, education, etc. on the management of PGRFA will constitute the overarching subject for this chapter. The country responses to assessment indicators and the country reports will be mined for PGRFA management indices like the status of National PGRFA Programmes, networks, and information systems. This chapter will also take into account current information available from, and ongoing work under, the International Treaty on PGRFA. Considering that up to 15 years that would have passed since the coming into force of the International Treaty on PGRFA, this chapter will also highlight the critical role it has played so far, outlining some key developments and reviewing some of the major progresses made in its implementation, and would be seeking to answer such questions as:

- i. Has access to germplasm become easier and exchange improved?
- ii. How effective has use of the standard material transfer agreements been in facilitating access and exchange, and how extensive have the multilateral exchange opportunities been?
- iii. What is the nature of benefits so far derived by key stakeholders, and have benefits (both perceived and actual) increased over time?
- iv. What is the status of national human resources capacity related to PGRFA?
- v. How well integrated into national agricultural and economic priorities are matters relating to the management of PGRFA?
- vi. Have legal and policy frameworks been instituted for facilitating PGRFA access and benefit sharing?

The extent of the promotion of the conservation and use of PGRFA and the creation of awareness will also be reflected in this chapter. Finally, the conclusions will track the prevailing trends since the

publication of the Second Report with the aim to identify progress made and the gaps and needs to be addressed.

**Annexes**

Annex 1. List of countries that provided information for the preparation of the Third Report

Annex 2. Regional distribution of countries

**Appendices**

Appendix 1. Status by country of national legislation related to PGRFA

Appendix 2. Major germplasm collections by crop and institute or organization

Appendix 3. State of diversity for major and minor crops

## APPENDIX IV

### THEMATIC STUDIES

The role of thematic studies for the Third Report will be to provide context and background information on relevant themes that may include advances in scientific and technological methodologies, resources, opportunities, and challenges that impact countries' capacities to conserve PGRFA and use them sustainably as means to enhance crop production and protect the environment. At this point, some five or more years before the compilation of a first draft of the Third Report, it is not possible to anticipate with certainty what topics will be relevant for thematic studies. However, going by antecedents and the topical issues relating to the management of PGRFA, candidate studies on below themes (or combinations of) may include:

- Current and expected impacts of climate change on the conservation and use of PGRFA according to the latest assessments and predictions and the importance of PGRFA for the adaptation of agriculture to climate change. Consequences of climate change may become more evident; nations may have become more or less effective at adapting to and mitigating climate change impacts; global and regional strategies for coping with climate change may have emerged; etc.
- The latest methodologies and technologies for identifying, measuring, and monitoring genetic diversity, genetic erosion, and genetic vulnerability as part of the management of PGRFA. The concept of genetic erosion is intuitive, but documenting data have been hard for many reasons. Relevant novel advances would be presented, with emphases on costs and feasibility of their deployments at national levels.
- Advances in molecular biology (including genomics, the other –omics and recombinant DNA techniques) that permit enhanced efficiencies and increased assay throughputs will impact significantly the capacities for identification, conservation, and use of PGRFA. Initially available for the few major crops and its applications restricted – by costs and know-how – almost exclusively to developed countries, molecular biology is being used increasingly for minor crops and in developing countries also. For instance, the continuing reduction in costs and myriad collaborative initiatives – aimed at generating public goods – have made the sequencing of the genomes of a number of ‘orphan’ crops possible and thereby generating robust genomics resources that are mostly accessible in the public domain. It is plausible therefore to explore, say, in the next five years what new frontiers, especially for use of PGRFA, that these initiatives would have opened.
- 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.