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CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY SERVING AS THE MEETING OF THE PARTIES TO THE CARTAGENA PROTOCOL ON BIOSAFETY
Eighth meeting
Cancun, Mexico, 4-17 December 2016
Item 12 of the provisional agenda*

REPORTS OF THE CAPACITY-BUILDING WORKSHOPS ON THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS

1. In its BS-VII/10 paragraph 5(d), the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety requested the Executive Secretary to organize, in cooperation with relevant organizations, subject to the availability of funds, capacity-building activities such as online and face-to-face training workshops on sampling, detection and identification of living modified organisms to assist Parties in fulfilling the requirements under Article 17 and towards achieving the relevant outcomes of the Strategic Plan.

2. In response to the decision, the Secretariat organized two regional workshops, with support from the Government of Japan, through the Japan Biodiversity Fund, and the Government of the Republic of Korea, through the Korea Biosafety Capacity Building Initiative.

3. The objectives of the workshops were to provide theoretical and hands-on training on (a) sampling, detection and identification of living modified organisms in the context of the Cartagena Protocol on Biosafety, and (b) laboratory methodologies used for the analysis of test samples, as well as to share experiences and assess national needs and gaps for the effective implementation of the relevant outcomes under the Strategic Plan for the Cartagena Protocol.

4. The first workshop was organized in collaboration with the Slovenian National Institute of Biology and the Slovenian Ministry of the Environment and Spatial Planning, for the benefit of countries in the Central and Eastern European region in Ljubljana, Slovenia, from 7 to 11 March 2016.

5. The second workshop was organized in collaboration with the Intersecretarial Commission on Biosafety of Genetically Modified Organisms on behalf of the Government of Mexico and the Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados, for the benefit of Spanish speaking countries in the GRULAC region in Mexico City, Mexico, from 15 to 19 August 2016.

6. The reports of the two workshops are attached hereto.

* UNEP/CBD/BS/COP-MOP/8/1.

REPORT OF THE CENTRAL AND EASTERN EUROPEAN WORKSHOP ON THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS[1]

Ljubljana, 7-11 March 2016

INTRODUCTION

1. At its seventh meeting, the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety requested the Executive Secretary to organize, in cooperation with relevant organizations, capacity-building activities such training workshops on sampling, detection and identification of living modified organisms (LMOs) to assist Parties in fulfilling the requirements under Article 17 and towards achieving the relevant outcomes of the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011-2020.[2]

2. With support from the Government of Japan through the Japan Biodiversity Fund, the Government of the Republic of Korea through the Korea Biosafety Capacity Building Initiative and in collaboration with Slovenian National Institute of Biology and the Slovenian Ministry of the Environment and Spatial Planning, the Secretariat held the Central and Eastern European Workshop on the Detection and Identification of Living Modified Organisms in Ljubljana from 7 to 11 March 2016, with the objective of providing theoretical and hands-on training on:

"(a) Sampling, detection and identification of LMOs in the context of the Cartagena Protocol on Biosafety;

"(b) Laboratory methodologies used for the analysis of test samples;

"(c) Sharing experiences and assessing national needs and gaps for the effective implementation of the relevant outcomes under the Strategic Plan for the Cartagena Protocol.

3. The workshop was attended by ten participants from ten Parties in the Central and Eastern European region (Bulgaria, Georgia, Hungary, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Slovakia, Tajikistan and Turkey). The list of participants is contained in annex I.

ORGANIZATIONAL MATTERS

ITEM 1. OPENING OF THE WORKSHOP

4. The workshop was opened by Mr. Charles Gbedemah on behalf of Mr. Braulio Dias, Executive Secretary of the Convention on Biological Diversity, at 9:30 a.m. on Monday, 7 March 2016. In his remarks, Mr. Gbedemah welcomed the participants to the workshop and noted the importance of detection and identification of LMOs for the effective implementation of the Protocol.

5. On behalf of the Ministry of Environment and Spatial Planning of Slovenia, Mr. Martin Batič welcomed the participants and the Secretariat. He emphasized the importance of effective training in the field of detection and identification of LMOs and the pivotal role that international and regional networks of detection and identification laboratories play in stimulating cooperation and information sharing among laboratories.

6. Ms. Tamara Lah Turnšek, director of the National Institute of Biology, also welcomed the participants to the workshop and recalled the history of the Institute and its key involvement in the

[1] Originally issued as UNEP/CBD/BS/DI/WS/2016/2/3.

[2] Available at http://bch.cbd.int/protocol/issues/cpb_stplan_txt.shtml.

establishment of the Slovenian Biosafety Framework. She reiterated the vital role of detection and identification in the successful implementation of the provisions of the Cartagena Protocol on Biosafety.

7. After self-introductions by the participants, Ms. Dina Abdelhakim of the Secretariat introduced the workshop objectives and its organization of work and invited participants to consider and adopt the provisional agenda circulated by the Secretariat as document UNEP/CBD/BS/DI/WS/2016/1/1. The agenda was adopted without amendments.

ITEM 2. OVERVIEW OF BIOSAFETY AND THE CARTAGENA PROTOCOL ON BIOSAFETY

8. Under this agenda item, Ms. Manoela Miranda and Ms. Abdelhakim of the Secretariat gave an overview of the Protocol's provisions and recent developments related to the detection and identification of LMOs, including:

(a) Relevant provisions under the Cartagena Protocol on Biosafety;

(b) Information exchange through the Biosafety Clearing-House;

(c) Relevant decisions of the COP-MOP and the Strategic Plan for the Cartagena Protocol;

(d) Other international biosafety-related bodies and organizations;

(e) Overview of the activities of the Network of Laboratories for the Detection and Identification of Living Modified Organisms.

9. Furthermore, Ms. Jana Žel introduced the participants to the activities of the Department of Biotechnology and Systems Biology within the National Institute of Biology. In her presentation Ms. Žel discussed the various research and development projects that were underway in the department as well as its facilities. She emphasized their role as a national reference laboratory for the detection of LMOs and their products. She also noted that as part of its mandate, the National Institute of Biology performed analysis on a regular basis for other countries in Europe.

ITEM 3. INTRODUCTION TO THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS IN THE CONTEXT OF THE CARTAGENA PROTOCOL ON BIOSAFETY

10. In opening the hands-on portion of the workshop, Ms. Mojca Milavec outlined the practical and theoretical activities of the workshop. Ms. Milavec provided an overview of the importance of laboratories establishing an operational strategy that would enable them to efficiently operate within their National Regulatory Framework to detect and identify LMOs. Ms. Milavec also shared information on the sources of reference material and tools that are used in her laboratory.

3.1. Laboratory sampling and preparation of test samples

11. Under this agenda item, a presentation was made by Ms. Tina Demšar on the theory and general principles of handling test samples for LMO detection and identification in a regulatory context. Ms. Demšar introduced key concepts and considerations regarding the adequate size of bulk samples that arrive at the laboratory, strategies for reducing the size of bulk samples to test samples while maintaining sample integrity, and the steps for homogenizing samples from commonly encountered matrices, including corn, soybean and rapeseed as well and their food products, such as noodles, cookies and cereals. Strategies to avoid contamination during handling and preparation of test samples were also discussed. Ms. Demšar followed her presentation with a practical demonstration of the steps involved in sample homogenization, including appropriate methods for handling the samples and cleaning equipment to avoid cross contamination of samples.

3.2. Procedures for the extraction and purification of DNA from test samples

12. Under this agenda item a presentation was made by Ms. Demšar on the methodologies used for extracting and purifying DNA from test samples. Her presentation included an overview of the various methods that can be used for DNA extraction while focussing on the key steps involved in the DNA extraction process and the significance of each step to the outcomes of the analysis. This was followed by a brief discussion on DNA quantification methods.

13. Furthermore, Ms. Demšar also discussed considerations on the use of controls to ensure that no contaminants are introduced during the extraction procedure and discussed the presence of inhibitors and troubleshooting options to minimize their effect when extracting DNA from difficult samples such as highly processed products, samples with high fat or starch content.

14. Following the theoretical presentation, Ms. Demšar and Mr. Dejan Štebih guided the participants through a hands-on practical exercise to extract DNA from various samples using a silica column-based method.

3.3. Testing methods and analysis of results

15. In introducing this agenda item, Ms. Milavec presented the theory behind a number of methodologies and techniques that are used to detect, identify and quantify LMOs including a comparison of the advantages and limitations of each method, as well as important considerations in the adoption of particular methods in the laboratory.

16. The presentation comprised an overview of common protein-based methods, such as lateral flow strip tests, ELISAs and western blots. This was followed by a discussion on DNA-based detection, identification and quantification methods based on the polymerase chain reaction (PCR), including end-point and real-time PCR. The discussion also provided an overview of the principles behind the “matrix approach” as a tool to facilitate the process of screening samples for the presence of LMOs using PCR.

17. In elaborating on the use of DNA-based detection, identification and quantification methods, Mr. Štebih presented the theory and practical considerations involved in the set up and analysis of different types of PCR.

18. Finally, Ms. Milavec introduced the theory behind new and emerging methodologies that can be used to detect, identify and quantify LMOs, including digital PCR and loop mediated isothermal amplification (LAMP) method.

19. Following the presentations, Mr. Štebih and Ms. Demšar guided the participants through a hands-on practical exercise to prepare and analyse a sample using real-time PCR.

3.4. Considerations on quality assurance and quality control

20. In this session, Ms. Milavec made a series of presentations on the various aspects that need to be considered for the establishment of a quality assurance and quality control system (QA/QC) in an LMO detection laboratory. The topics covered in her presentation included an overview of several guidance documents and standards that can be used to guide the implementation a laboratory’s QA/QC system. Furthermore, consideration on effective laboratory organization, documentation and method verification were also discussed.

21. Participants shared their experiences in the implementation of their laboratory’s QA/QC systems, and discussed the challenges, needs and gaps in their laboratories.

3.5. Reporting of testing results

22. Under this agenda item, Ms. Milavec made a presentation on how a report may be structured to effectively communicate the laboratory's findings to the regulatory authority in a clear and concise manner. Her presentation also included the typical contents in a laboratory report, a description of relevant reporting guidelines and the use of appropriate reporting language as well as considerations for reporting uncertainty.

ITEM 4. CONCLUSIONS AND RECOMMENDATIONS

23. Under the agenda item, participants were invited to put forward their conclusions from the workshop and propose recommendations, including future actions to facilitate the implementation of activities relating to the detection and identification of LMOs at the national and regional levels, for consideration by the Conference of the Parties serving as the meeting of the Parties to the Protocol at its eighth meeting.

24. The participants of the workshop agreed that a series of online activities by the group would facilitate the consolidation of the knowledge gained during the workshop and encourage the sharing of information between labs within the region, including an open discussion to provide the participants with an online forum to discuss experimental procedures and troubleshooting approaches.

25. As such the participants of the workshop suggested that the Secretariat could organize online discussions through the Biosafety Clearing House (BCH) to facilitate participants continued sharing of knowledge and practical experiences on the following topics:

"(a) *Sample preparation*: Sharing of practical experiences and knowledge on adequate sample size for various matrices, considerations for adequate sample storage and procedures for sample homogenization were among the issues to be discussed under this topic with the view to developing a reference table to be shared among the group;

"(b) *Extraction methods*: Compilation of information and best practices on the most efficient extraction procedures for specific matrices and considerations for troubleshooting difficult samples;

"(c) *Testing methods*: Assemble an inventory of commonly used testing methods and experiences involving the adaptation of such methods to specific purposes.

26. Furthermore, the participants agreed that the online discussions will be moderated. Volunteers were identified from within the group to moderate each of the topics of discussion. It was agreed that the moderators will also take the lead in drafting the necessary documents to serve as a basis for the discussions.

27. Participants also agreed among themselves that the Secretariat will draft a tentative work plan with a timeline for the activities that have been agreed upon. The draft work plan is available as annex II.

28. In making their recommendations, participants agreed that the Conference of the Parties serving as the meeting of the Parties to the Protocol may wish to:

"(a) Encourage Parties to establish, support, and participate in regional and subregional LMO detection networks to promote technical cooperation within the field and, subject to the availability of funds, provide the networks with opportunities to host training workshops;

"(b) Encourage Parties to establish effective mechanisms to support the workflow for sampling, detection and identification by, for example, providing the relevant officials at the border and

LMO detection laboratories with the appropriate mandates within the Party's regulatory system to sample, detect and identify LMOs;

"(c) Encourage Parties to make funds available for the training of laboratory personnel in the field of the detection and identification of LMOs, including the provision of co-financing opportunities;

"(d) Request the Executive Secretary to continue organizing, in cooperation with relevant organizations, subject to the availability of funds, capacity-building activities such as online training and face-to-face meetings/workshops in the fields of sampling, detection and identification of LMOs, with a specific emphasis on the topics of (i) sampling at the border; (ii) establishment and maintenance of quality assurance and quality control systems; and (iii) interpretation of the results of LMO analysis reports.

ITEM 5. EVALUATION OF THE WORKSHOP

29. Participants were invited to complete an evaluation of the workshop and propose suggestions for improvements. A summary of the results of the evaluation is attached as annex III.

30. Furthermore, participants expressed appreciation to the Government of Japan through the Japan Biodiversity Fund, the Government of the Republic of Korea through the Korea Biosafety Capacity Building Initiative. They also extended their gratitude to the Slovenian Ministry of the Environment and Spatial Planning and the National Institute of Biology for hosting the workshop as well as the Secretariat for organizing it.

ITEM 6. ADOPTION OF THE REPORT

31. A draft report was circulated online among the workshop participants for their comments for a period of one week. The Secretariat made the necessary amendments into the final version of the present report.

ITEM 7. CLOSURE OF THE WORKSHOP

32. The workshop closed at 1:45 p.m. on 11 March 2016.

Annex I

LIST OF PARTICIPANTS

PARTIES

Bulgaria

1. Ms. Krasimira Ivanova
   Laboratory of Biological Monitoring and GMO
   Executive Environment Agency
   136 Tzar Boris III Blvd.
   Sofia 1618, Bulgaria
   Tel.: 00359 898 44 35 67
   Email: krasimiranew@gmail.com

Georgia

2. Ms. Mariam Sulkhanishvili
   Environmental Supervision Department
   Ministry of Environment and Natural Resources Protection
   6 Gulua Street
   Tbilisi 114, Georgia
   Tel.: +995 598 390645
   Email: mariamsulkhanishvili123@gmail.com

Hungary

3. Ms. Petra Beringer
   Food and Feed Safety Directorate,
   Microbiological National Reference Laboratory, GMO team
   National Food Chain Safety Office
   81. Mester Str.
   Budapest H-1095, Hungary
   Tel.: +3620 967 3844
   Email: beringerp@elbc.hu

Kyrgyzstan

4. Ms. Damira Ashyralieva
   Department of Prevention of Diseases and Sanitary and Epidemiological Surveillance
   Ministry of Health
   535, Frunze Str.
   Bishkek City
   Kyrgyzstan
   Tel.: 9.9631232301e+011
   Email: ashyr14@mail.ru

Latvia

5. Ms. Lilija Kovaļčuka
   Institute of Food Safety, Animal Health and Environment
   Lejupes 3
   Riga LV-1076, Latvia
   Tel.: +371 29632730
   Email: Lilija.Kovalcuka@bior.lv

Lithuania

6. Ms. Simona Pilevičienė
   Molecular Biology and Genetically Modified Organism Unit
   National Food and Veterinary Risk Assessment Institute
   Kairiukscio-10
   Vilnius 8409, Lithuania
   Tel.: +370 6866 8043; +370 5 278 0458
   Email: spileviciene@vet.lt

Republic of Moldova

7. Ms. Elena Cernolev
   University Center of Molecular Biology
   Academy of Sciences
   18 Padurii Street
   Chisinau MD-2002, Republic of Moldova
   Email: cezodra@gmail.com

Slovakia

8. Ms. Miroslava Feketová
   Department of Molecular Biology NRL
   Central Control and Testing Institute of Agriculture
   Matúškova 21
   Bratislava 833 16, Slovakia
   Tel.: + 421 905500044
   Email: miroslava.feketova@uksup.sk

Tajikistan

9. Mr. Vladimir Lekarkin
Research Laboratory for Nature Protection
Committee for Environmental Protection
47 Shevchenko Street
Dushanbe, Tajikistan
Tel.: + 992 919033979
Email: lekarkinv@hotmail.com

Turkey

10. Ms. Emine Anayol
Central Research Institute for Field Crops/-
Biotechnology Research Center/Tissue Culture and Transformation
Ministry of Food, Agriculture and Livestock
P.O. Box 78 Bagdat Cad. Istanbul Yolu, No 208
Yenimahalle, Ankara 6171, Turkey
Email: emineanayol@yahoo.com

RESOURCE PERSONS

11. Mr. Martin Batič
Ministry of the Environment and Spatial Planning
Dunajska 47
Ljubljana 1000
Slovenia
Tel.: +386 1 478 7402
Fax: +386 1 478 7420
Email: martin.batic@gov.si, martin.batic1@guest.arnes.si
Web: http://www.biotechnology-gmo.gov.si/eng

12. Ms. Tina Demšar
Department of Biotechnology and Systems Biology
National Institute of Biology
Vecna Pot 111
Ljubljana 1000
Slovenia
E-mail: tina.demsar@nib.si

13. Ms. Mojca Milavec
Department of Biotechnology and Systems Biology
National Institute of Biology
Vecna Pot 111
Ljubljana 1000
Slovenia
E-mail: mojca.milavec@nib.si

14. Mr. Dejan Štebih
Department of Biotechnology and Systems Biology
National Institute of Biology
Vecna Pot 111
Ljubljana 1000
Slovenia
Email: dejan.stebih@nib.si

15. Ms. Jana Žel
Department of Biotechnology and Systems Biology
National Institute of Biology
Vecna Pot 111
Ljubljana 1000
Slovenia
E-mail: jana.zel@nib.si

SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY

16. Ms. Dina Abdelhakim
Biosafety Division, Secretariat of the Convention on Biological Diversity
413 St. Jacques Street, Suite 800
Montréal, QC, H2Y 1N9
Canada
Tel.: +1 514 764 6355
E-mail: dina.abdelhakim@cbd.int

17. Mr. Charles Gbedemah
Biosafety Division, Secretariat of the Convention on Biological Diversity
413 St. Jacques Street, Suite 800
Montréal, QC, H2Y 1N9
Canada
Tel.: +1 514 287 7032
E-mail: charles.gbedemah@cbd.int

18. Ms. Manoela Miranda
Biosafety Division, Secretariat of the Convention on Biological Diversity
413 St. Jacques Street, Suite 800
Montréal, QC, H2Y 1N9
Canada
Tel.: +1 514 287 8703
E-mail: manoela.miranda@cbd.int

Annex II

PLAN OF WORK

Activity	Moderator	Tentative dates
Online Discussion: Sharing of knowledge and experience on sample preparation	Ms. Krasimira Ivanova	9-23 May 2016
Online Discussion: Compilation of information on extraction methods	Ms. Mojca Milavec	30 May - 12 June 2016
Online Discussion: Inventory of available testing methods	Ms. Miroslava Feketová	20 June - 4 July 2016
Drafting of outlines on each of the chosen topics	Ms. Krasimira Ivanova, Ms. Mojca Milavec, Ms. Miroslava Feketová and SCBD	4 July – 1 August 2016
Online Discussion: Drafting of outline on best practices for sample preparation	Ms. Krasimira Ivanova	1-15 August 2016
Online Discussion: Drafting of outline on information on extraction methods	Ms. Mojca Milavec	22 August – 5 September 2016
Online Discussion: Follow up discussion on testing methods	Ms. Miroslava Feketová	12-26 September 2016

Annex III

EVALUATION QUESTIONNAIRE

Participants were invited to undertake an exercise to evaluate the workshop by completing the questionnaire below. Participants were instructed to select one of the boxes that best reflected their assessment of the workshop.

Ten participants representing Parties took part in the exercise. The number of respondents for each option is shown below.

A. OBJECTIVES OF THE WORKSHOP

Level of satisfaction					
How useful was the workshop in improving your knowledge or understanding of:					
The provisions of the Cartagena Protocol?	-	-	-	1	9
The role that detection and identification of LMOs plays under the Protocol?	-	-	-	3	7
Parties' obligations under the Protocol that rely on the detection and identification of LMOs?	-	-	1	3	6
Laboratory sampling and preparation of test samples?	-	-	-	2	8
Methods for the extraction and purification of DNA from test samples?	-	-	-	2	8
Testing methods and analysis of results?	-	-	-	1	9
Considerations on quality assurance and quality control?	-	-	1	-	9
Existing capacities and experience in other countries?	-	-	2	1	7

B. OVERALL WORKSHOP ASSESSMENT

Level of satisfaction					
Did the workshop meet your expectations?	-	-	-	-	10
How well organized was the workshop?	-	-	-	2	8
How did you find the balance between presentations and discussions?	-	-	-	2	8
Was the workshop useful?	-	-	-	-	10
Overall, how would you rate the workshop?	-	-	-	1	9

[Original: Spanish]

REPORT OF THE GRULAC WORKSHOP ON THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS[3]

Mexico City, 15-19 August 2016

INTRODUCTION

1. In decision BS-VII/10, adopted at its seventh meeting, the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety (COP-MOP) requested the Executive Secretary, among other things, to organize, in cooperation with relevant organizations, capacity-building activities such training workshops on sampling, detection and identification of living modified organisms to assist Parties in fulfilling the requirements under Article 17 and towards achieving the relevant outcomes of the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011-2020.[4]

2. The Secretariat organized the GRULAC Workshop on the Detection and Identification of Living Modified Organisms with support from the Government of Japan through the Japan Biodiversity Fund and the Government of the Republic of Korea through the Korea Biosafety Capacity Building Initiative and in collaboration with the Intersecretarial Commission on Biosafety of Genetically Modified Organisms (CBIOGEM) on behalf of the Government of Mexico and the Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados (CNRDOGM). The workshop was held in Mexico City from 15 to 19 August 2016.

3. The objectives of the workshop were to provide theoretical and hands-on training on (a) sampling, detection and identification of living modified organisms (LMOs) in the context of the Cartagena Protocol on Biosafety, and (b) laboratory methodologies used for the analysis of test samples, as well as to share experiences and assess national needs and gaps for the effective implementation of the relevant outcomes under the Strategic Plan for the Cartagena Protocol.

4. The workshop was attended by a total of 18 participants from 13 Parties (Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru and Uruguay). The list of participants is contained in annex I.

ORGANIZATIONAL MATTERS

ITEM 1. OPENING OF THE WORKSHOP

5. The workshop was opened by Ms. Natalhie Campos Reales, Director of Policy and Regulatory Affairs at the Executive Secretariat of the Intersecretarial Commission on Biosafety of Genetically Modified Organisms (CBIOGEM), on behalf of the Government of Mexico at 9:30 a.m. on Monday, 15 August 2016. In her opening remarks, Ms. Campos Reales welcomed the participants to the workshop and emphasized the importance of expert collaboration and effective training in the field of detection and identification of living modified organisms and highlighted the overarching role of detection and identification in the successful implementation of various provisions of the Cartagena Protocol on Biosafety.

6. On behalf of the Executive Secretary of the Convention on Biological Diversity, Ms. Dina Abdelhakim welcomed the participants to the workshop. In her welcoming remarks, she noted the importance of detection and identification of living modified organisms as a cross-cutting issue for the

[3] Originally issued as UNEP/CBD/BS/DI/WS/2016/2/2.

[4] Available at http://bch.cbd.int/protocol/issues/cpb_stplan_txt.shtml.

effective implementation of the Protocol. She also thanked the Government of Mexico for hosting the meeting and the Governments of Japan and the Republic of Korea for their financial support.

7. The Deputy Director for Detection of Genetically Modified Organisms, Ms. Maria Guadalupe Barrera Andrade, in her opening remarks, welcomed the participants to the laboratory facilities and expressed her gratitude for the opportunity to share her experience and knowledge of laboratory set-up, handling and analysis of LMO samples. She expressed the hope that that the workshop would not only provide the participants with hand-on training, but also promote an effective opportunity to address common challenges for establishing and maintaining collaboration.

8. After a round of introductions by the participants, the Secretariat explained the objectives and programme of work of the workshop and invited participants to consider and adopt the provisional agenda prepared by the Secretariat (UNEP/CBD/BS/DI/WS/2016/2/1). The agenda was adopted without amendments. The participants agreed to work in two subgroups with a view to facilitating access to the practical hands-on sessions of the workshop.

ITEM 2. OVERVIEW OF BIOSAFETY AND THE CARTAGENA PROTOCOL ON BIOSAFETY

9. Under this agenda item, the Secretariat presented an overview of the Protocol's provisions and recent developments related to the detection and identification of living modified organisms, including:

(a) Relevant provisions under the Cartagena Protocol;

(b) Relevant decisions of the Conference of the Parties serving as the Meeting of the Parties to the Cartagena Protocol and the Strategic Plan for the Cartagena Protocol;

(c) Activities of the Network of Laboratories for the Detection and Identification of Living Modified Organisms;

(d) The Biosafety Clearing-House.

10. Following the presentation, Ms. Campos Reales presented an overview of the history of modern biotechnology and recent advances in the development of living modified organisms. In her presentation, she also introduced some of the challenges related to the detection and identification of living modified organisms.

11. Ms. Melina Perez Urquiza of the Centro Nacional de Metrología made a presentation explaining the importance of applying the principles of metrology to the detection and identification of living modified organisms. She also discussed the significance of using validated methods for the detection, identification and quantification of living modified organisms as well as the importance of having access to certified reference materials during the testing process.

12. Finally, Ms. Barrera Andrade provided an overview of the history and activities of CNRDOGM. She emphasized the role of CNRDOGM as a national reference laboratory for the detection of living modified organisms and discussed the various research and development projects that are under way in the laboratory.

ITEM 3. INTRODUCTION TO THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS IN THE CONTEXT OF THE CARTAGENA PROTOCOL ON BIOSAFETY

3.1. Laboratory sampling and preparation of test samples

13. During this session of the workshop, participants were introduced to the theory and general principles of receiving bulk samples and preparing and handling test samples for the detection and identification of living modified organisms in a regulatory context.

14. Key concepts and considerations were introduced regarding the criteria for receiving bulk samples with regard to their packaging and size. That was followed by an overview of the methodology for homogenization of samples from commonly encountered matrices. Strategies for preparing suitable test samples as well as procedures for avoiding and minimizing contamination during sample handling and homogenization were also discussed. The session concluded with a practical demonstration of the steps for sample homogenization.

3.2. Procedures for the extraction and purification of DNA from test samples

15. In this session, the theoretical methodologies for extraction and purification of DNA from test samples were explained. An overview of the various options of DNA extraction methods was provided, with a focus on the common key steps involved in the DNA extraction process from commonly encountered matrices and the significance of each step to the outcome of the analysis.

16. This was followed by a comparative analysis of the advantages and disadvantages of each method, including considerations such as DNA yield and the presence of inhibitors, as well as a brief discussion on DNA quantification methods. Possible options for troubleshooting problems encountered when extracting DNA from difficult samples, such as highly processed products or samples with high fat or starch content were also discussed.

17. Following the theoretical introduction, the participants took part in a practical exercise to extract DNA from plant leaves using a magnetic bead-based method.

3.3. Testing methods and analysis of results

18. Participants were introduced to the theoretical aspects behind a number of methodologies and techniques that can be used to detect, identify and quantify living modified organisms. The lecture comprised of an overview of common protein based methods, such as lateral flow strip tests, enzyme-linked immunosorbent assays (ELISAs) and western blots. This was followed by a discussion on DNA-based methods for detection, identification and quantification of living modified organisms, specifically, the polymerase chain reaction (PCR). The discussion also covered a comparison of the advantages and limitations of each method.

19. In elaborating on the use of DNA-based methods for detection, identification and quantification of living modified organisms, the participants were provided with an in-depth explanation of the theory behind PCR as well as an overview of the specific principles regarding real-time PCR and a detailed explanation of how to analyse the resulting data to obtain quantitative information about the presence of DNA from living modified organisms in the sample. The discussion also provided an overview of the principles behind the “matrix approach” as a tool for facilitating the process of screening for the presence of and identifying living modified organisms in samples using PCR.

20. Finally, the participants were introduced to the theory behind new and emerging methodologies that can be used to detect, identify and quantify living modified organisms, with particular focus on digital PCR and the LAMP method. Furthermore, a presentation was made by Mr. Jorge Ramírez of the

National Autonomous University of México on the use of microarrays, their development and their possible application in the detection and identification of LMOs.

21. Following the presentation, the participants took part in a practical exercise to prepare a real-time PCR reaction and analyse the results.

3.4. Considerations on quality assurance and quality control

22. In this session, a series of presentations were made on the various aspects that need to be considered for the establishment of a quality assurance and a quality control system (QA/QC) in a laboratory. The presentations were followed a discussion of the various aspects of method validation as well as an overview of several guidance documents and standards that can be used to direct the implementation of a laboratory's QA/QC system. Furthermore, considerations on other aspects of QA/QC, such as effective laboratory organisation, equipment monitoring, document control and method verification, were discussed.

23. A presentation was made by Ms. Laura Tovar, Director of Information and Fostering Research at the Executive Secretariat of CIBIOGEM, on the experiences of the Red Nacional de Laboratorios de Detección, Identificación y Cuantificación de Organismos Genéticamente Modificados. In her presentation, Ms. Tovar provided an overview of the objectives and achievements of the network, and how the joint work of the various laboratories in the network facilitated the provision of high quality services for the detection and identification of living modified organisms in Mexico. The presentation included experiences on how the interaction between laboratories generated useful collaborations and led to the implementation of projects for the development of certified reference materials.

3.5. Reporting of testing results

24. In this session, a discussion took place on the essential elements of a report as a tool for effectively communicating the laboratory's findings to the regulatory authority in a clear and concise manner. The discussion also included a description of relevant reporting guidelines and the use of appropriate reporting language as well as considerations for reporting uncertainty.

25. Following the theoretical discussion, the participants took part in a hands-on exercise to demonstrate how reports are generated using an automated laboratory information management system.

ITEM 4. CONCLUSIONS AND RECOMMENDATIONS

26. Under the agenda item, participants were invited to share their views on the workshop and propose recommendations, including future actions to facilitate the implementation of activities relating to the detection and identification of LMOs, for consideration by the Conference of the Parties serving as the meeting of the Parties to the Protocol at its eighth meeting.

27. The participants in the workshop agreed that further online activities of the group would not only facilitate the consolidation of the knowledge gained during the workshop but also encourage the sharing of information and networking between laboratories within the region.

28. Consequently, the participants of the workshop suggested that the Secretariat could organize online discussions through the Biosafety Clearing House (BCH) on:

"(a) *Establishment of a network of LMO detection and identification laboratories within the GRULAC region:* Brainstorming on strategies and ways forward for the establishment of a network of LMO detection and identification laboratories within the GRULAC region with the view to creating synergies amongst the laboratories and developing inter-laboratory studies within the region (Moderators: Ms. María Guadalupe Barrera Andrade and Mr. Andrés Felipe Vela Rojas);

"(b) *Experimental procedures and troubleshooting approaches:* maintaining an open discussion forum within the BCH to provide the participants with a platform to discuss experimental procedures, troubleshooting approaches, training opportunities and possible sources of funding, among other things.

29. In making their recommendations to the Parties, the participants agreed that the Conference of the Parties serving as the meeting of the Parties to the Protocol might wish to:

(a) Encourage Parties to establish, support and participate in regional and subregional networks for the detection of living modified organisms with a view to promoting technical cooperation and, subject to the availability of funds, provide the networks with opportunities to host training workshops;

(b) Encourage Parties to make funds available for the training of laboratory personnel in the field of the detection and identification of living modified organisms, including the provision of co-financing opportunities;

(c) Request the Executive Secretary to continue organizing, in cooperation with relevant organizations and subject to the availability of funds, capacity-building activities, such as online and face-to-face training activities in the fields of sampling, detection and identification of living modified organisms, with specific emphases on (i) environmental sampling; (ii) developing reference materials; (iii) validation procedures; and (iv) measurement of uncertainty.

ITEM 5. EVALUATION OF THE WORKSHOP

30. Participants were invited to complete an evaluation of the workshop and propose suggestions for improvements. A summary of the evaluation results is contained in annex II.

ITEM 6. ADOPTION OF THE REPORT

31. A draft report was circulated online among the workshop participants for their comments for a period of one week. The Secretariat incorporated the necessary amendments into the final version of the present report.

ITEM 7. CLOSURE OF THE WORKSHOP

32. Closing remarks were made by Ms. Mayrén Zamora Nava, Director of the Centro Nacional de Referencia de Plaguicidas y Contaminantes, from the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food of Mexico. In her remarks, Ms. Zamora acknowledged the efforts of Parties to strengthen local capacities and reiterated the importance of detection and identification of living modified organisms for the successful implementation of the provisions of the Cartagena Protocol. She also expressed the hope that the training provided to the participants during the workshop would help them to carry out their work more effectively, and establish fruitful collaborations.

33. Participants expressed appreciation to the Government of Japan through the Japan Biodiversity Fund and the Government of the Republic of Korea through the Korea Biosafety Capacity Building Initiative. They also extended their gratitude to the Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados for hosting the workshop as well as the Executive Secretariat of CBIOGEM and the CBD Secretariat for organizing it.

34. The workshop drew to a close at 4:30 p.m. on 19 August 2016.

Annex I

LIST OF PARTICIPANTS

PARTIES

Bolivia (Plurinational State of)

1. Ms. Delia Adela Rojas Herrera
   Técnico en control y monitoreo
   Ministerio de Medio Ambiente y Agua
   Calle Capitán Castrillo N 434
   La Paz, Bolivia (Plurinational State of)
   Email: delirojas@gmail.com

Brazil

2. Ms. Regina Melo Sartori Coelho
   Investigadora, Ministério da Agricultura, Pecuária e abastecimento
   R. Da Divisa S/N, Sector Jao
   Goiânia 74674-025
   Brazil
   Tel.: +55 62 32327203
   Email: regina.sartori@agricultura.gov.br

Colombia

3. Mr. Andrés Felipe Vela Rojas
   Coordinador del laboratorio de OVM
   Instituto Nacional de Vigilancia de Medicamentos y Alimentos
   Carrera 68D No 17-11/21
   Bogota, Colombia
   Email: avelar@invima.gov.co

Costa Rica

4. Mr. Emanuel Mauricio Araya Valverde
   Investigador en Biología Molecular
   Centro Nacional de Innovaciones Biotecnológicas
   San José, Costa Rica
   Email: earaya@cenat.ac.cr, emaraya@gmail.com

Cuba

5. Ms. Madeline Blanco de Armas
   Jefe del Laboratorio de Biología Molecular y especialista principal
   Centro de Investigaciones Científicas de la Defensa Civil
   La Habana, Cuba
   Email: madeniba@infomed.sld.cu

Dominican Republic

6. Ms. Atharva Veda Rosa de la Cruz
   Investigadora, Instituto de Innovación en Biotecnología e Industria
   Calle Olof Palme, Esq. Núnez de Cáceres, Distrito Nacional
   Santo Domingo, Dominican Republic
   Email: atharva23@hotmail.com

Guatemala

7. Ms. Wendy del Milagro Paiz Méndez
   Jefe del Área de Microbiología de Alimentos
   Laboratorio Nacional de Salud
   Ministerio de Salud Pública y Asistencia Social
   Villa Nueva, Guatemala
   Email: paiz.wendy@lns.gob.gt, wenpaiz@yahoo.com

Honduras

8. Ms. Estela Yamileth Aguilar Alvarez
   Docente investigador y coordinador del laboratorio de Microbiología Ambiental y bioprospección
   Zamorano Agricultural University
   Apartado Postal 93
   Tegucigalpa, Honduras
   Email: eaguilar@zamorano.edu, esteyaa@yahoo.com

Mexico

9. Mr. Aldo Bernal
   Departamento de Control y Verificación de Permisos de Liberación de OGM
   SENASICA/SAGARPA
   Boulevard Adolfo Ruiz Cortines No. 5010, Piso 7, Colonia Insurgentes
   Cuicuilco, Delegación Coyoacán
   México D.F. C.P. 04530
   Mexico
   Tel.: (044) 5527 8431 94
   Email: aldo.bernal@senasica.gob.mx

10. Ms. Beatriz Isunza Saldaña
Dirección de Bioseguridad para Organismos Genéticamente Modificados
SENASICA/SAGARPA
Boulevard Adolfo Ruiz Cortines No. 5010, Piso 7, Colonia Insurgentes
Cuicuilco, Delegación Coyoacán
Mexico D.F. C.P. 04530
Mexico
Tel.: 04455 37188654
Email: beatrizisunzas@gmail.com, beatriz.isunza@senasica.gob.mx

11. Ms. Adriana López
Área de Bioseguridad para Organismos Genéticamente Modificados
SENASICA/SAGARPA
Boulevard Adolfo Ruiz Cortines No. 5010, Piso 7, Colonia Insurgentes
Cuicuilco, Delegación Coyoacán
Mexico D.F. C.P. 04530
Mexico
Tel.: 595 9570926
Email: Adriana.lopez@senasica.gob.mx

12. Mr. Juan Gabriel Ramírez Pimentel
I.T. de Roque / División de Estudios de Posgrado e Investigación
Tecnológico Nacional de México
Km 8 Carretera Celaya – Juventino Rosas. Roque.
Celaya, Gto. C.P.
Mexico, 38110
Tel.: (52) 46115903 Ext. 155
Email: garamirez@itroque.edu.mx

13. Mr. Ángel Ramírez Suárez
Dirección General de Metrología de Materiales
Centro Nacional de Metrología
Km 4.5 Carretera a Los Cués,
El Márquez, Querétaro C.P. 76246
Mexico
Tel.: 7222040993
Email: aramirez@cenam.mx

14. Ms. Alma Zuñiga
General Coordination of Pollution and Environmental Health
Instituto Nacional de Ecología y Cambio Climático
Periférico Sur 5000, 3er piso Insurgentes Cuicuilco,
Coyoacán, México Distrito Federal - 04530
Mexico
Tel.: 001 52 55 54246400 Ext 13327
Email: alma.zuniga@inecc.gob.mx

Panama

15. Ms. Sara Mercedes Ahumada Ruiz
Directora Nacional de Análisis, Autoridad Panameña de Seguridad de Alimentos
Autoridad Panameña de Seguridad de Alimentos
Ricardo J Alfaro Avenue, Sun Towers Mall,
2nd Floor, Office 70
Panama, 0834-02726
Email: sahumada@aupsa.gob.pa, sahumadaruiz@hotmail.com

Paraguay

16. Mr. Danilo Fernández Ríos
Asesor de la Comisión Nacional de Bioseguridad Agropecuaria y Forestal (CONBIO)
Universidad Nacional de Asunción
Campus Universitario de La UNA
San Lorenzo, Paraguay
Email: danilofernandezrios@gmail.com, dfernandez@facen.una.py

Peru

17. Mr. Jorge Enrique Alcantara Delgado
Director de la Subdirección de Regulación de la Innovación Agraria
Instituto Nacional de Innovación Agraria
Av. Molina No. 1981, La Molina
Lima, Peru
Tel.: +51 1 349 2600
Email: jalcantara@inia.gob.pe

Uruguay

18. Ms. Ana Paola Panizza Scasso
Consultora en Bioensayos y Microbiología
Departamento Laboratorio Ambiental, DINAMA
Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente
Av. Italia 6201, Modulo 14, 1er piso
Montevideo C.P. 11500
Uruguay
Email: paola.panizza@mvotma.gub.uy, pao.panizza@gmail.com

LOCAL RESOURCE PERSONS

19. Ms. María Guadalupe Barrera Andrade
Subdirectora de Detección de OGMS
SENASICA/SAGARPA
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Tel.: +52 55 5905 1000 ext. 53039
Email: maria.barrera@senasica.gob.mx

20. Ms. Natalhie Beatriz Campos Reales
Executive Director, Policy and Regulatory Affairs
Comisión Intersecretarial de Bioseguridad de los Organismos Genéticamente Modificados
San Borja 938, Del Valle, Benito Juárez
México D.F. 03100
Mexico
Tel.: +52 55 5575 6878 Ext 40
Fax: +52 55 5575 7618 Ext 30
Email: ncampos@conacyt.mx

21. Ms. Melina Pérez Urquiza
Coordinador Científico B
Dirección General de Metrología de Materiales
Centro Nacional de Metrología
Mexico
Tel.: +52(442)211-0500; +52(442)211-0504 #3920
Email: meperez@cenam.mx

22. Mr. Jorge Ramírez
Responsable de la Unidad de Microarreglos
Unidad de Microarreglos
Universidad Nacional Autónoma de México
México, D.F.
Mexico
Tel.: (55) 5622-5753
Email: jramirez@ifc.unam.mx

23. Ms. Laura Esther Tovar Castillo
Director for Information and Promotion of Research
Comisión Intersecretarial de Bioseguridad de los Organismos Genéticamente Modificados
San Borja 938, Del Valle, Benito Juárez
México D.F. 03100
Mexico
Tel.: 53227873
Email: ltovar@conacyt.mx

24. Vianny Cortes Viguri
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: vianney.cortes@senasica.gob.mx

25. José Luis Juárez Vargas
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: dgiaap.iica24@senasica.gob.mx

26. Gabriela Victoria Roblero Bartolón
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: gabriela-roblero@hotmail.com

27. Raúl Flores Cardoso
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: dgiaap.iica21@senasica.gob.mx

28. Vanessa Fuentes Morales
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: dgiaap.iica22@senasica.gob.mx

29. Jonathan Nathaniel Cervantes Zurita
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email:cervantesjonathan57@gmail.com

30. Santiago Valentín Galván Gordillo
Centro Nacional de Referencia en Detección de Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: dgiaap.iica23@senasica.gob.mx

31. José Esquivel Bautista
Centro Nacional de Referencia en Detección de
Organismos Genéticamente Modificados
Km 37.5 Carretera Federal México-Pachuca, colonia
Centro, Tecámac, Estado de México. C.P. 55740
Mexico
Email: jeb005@hotmail.com

SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY

32. Ms. Dina Abdelhakim
Secretariat of the Convention on Biological Diversity
413 St. Jacques Street, Suite 800
Montreal, QC, H2Y 1N9
Canada
Tel.: +1 514 764 6355
E-mail: dina.abdelhakim@cbd.int

Annex II

EVALUATION QUESTIONNAIRE

Participants were invited to undertake an exercise to evaluate the workshop by completing the questionnaire below. Participants were instructed to select one of the boxes that best reflected their assessment and level of satisfaction in response to each question.

A total of 18 participants took part in the exercise. The number of respondents for each option is shown below.

A. OBJECTIVES OF THE WORKSHOP

Level of satisfaction					
How useful was the workshop in improving your knowledge or understanding of:					
The provisions of the Cartagena Protocol?	-	-	1	10	7
The role that detection and identification of LMOs plays under the Protocol?	-	1	-	8	9
Parties' obligations under the Protocol that rely on the detection and identification of LMOs?	-	-	1	8	9
Laboratory sampling and preparation of test samples?	-	-	-	5	13
Methods for the extraction and purification of DNA from test samples?	-	-	1	3	14
Testing methods and analysis of results?	-	-	-	2	16
Considerations on quality assurance and quality control?	-	-	1	5	12
Existing capacities and experience in other countries?	-	-	1	8	9

B. OVERALL WORKSHOP ASSESSMENT

Level of satisfaction					
Did the workshop meet your expectations?	-	-	-	2	15
How well organized was the workshop?	-	-	-	5	12
How did you find the balance between presentations and discussions?	-	-	1	4	12
Was the workshop useful?	-	-	-	-	17
Overall, how would you rate the workshop?	-	-	-	2	15