

**Technical Working Party on Automation and Computer Programs TWC/39/9****Thirty-Ninth Session  
Alexandria, United States of America, September 20 to 22, 2021****Original:** English  
**Date:** September 22, 2021

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**REPORT**

*Adopted by the Technical Working Party on Automation and Computer Programs*

*Disclaimer: this document does not represent UPOV policies or guidance*

Opening of the session

1. The Technical Working Party on Automation and Computer Programs (TWC) held its thirty-ninth session, hosted by the United States of America and organized by electronic means, from September 20 to 22, 2021. The list of participants is reproduced in the Annex to this report.
2. The session was opened by Ms. Beate Rücker (Germany), Chairperson of the TWC, who welcomed the participants and thanked the United States of America for hosting the TWC session.
3. The TWC was welcomed by Mr. Jeffery Haynes, Commissioner, Plant Variety Protection Office, AMS, Science & Technology Program, United States Department of Agriculture (USDA).

Adoption of the agenda

4. The TWC adopted the agenda as reproduced in document TWC/39/1 Rev.

Short reports on developments in plant variety protection*(a) Reports on developments in plant variety protection from members and observers*

5. The TWC noted the information on developments in plant variety protection from members and observers provided in document TWC/39/3 Prov. The TWC noted that reports submitted to the Office of the Union after September 3, 2021, until September 22, 2021, would be included in the final version of document TWC/39/3.

*(b) Reports on developments within UPOV*

6. The TWC received a presentation from the Office of the Union on latest developments within UPOV, a copy of which is provided in document TWC/39/2.

Tools and methods for DUS examination*(a) Development of software for the improved COYU method (splines) (documents TWC/39/5 and TWC/39/5 Add.)*

7. The TWC considered document TWC/39/5 and received a presentation from an expert from the United Kingdom, a copy of which is provided in document TWC/39/5 Add.
8. The TWC noted the progress on software development for COYU Splines and that evaluation versions of the software had been released in August 2021. The TWC noted that the Office of the Union had issued Circular E-21/116 on August 4, 2021, inviting experts to evaluate the software and report outcomes by December 31, 2021, to the expert from the United Kingdom.
9. The TWC agreed to invite the expert from the United Kingdom to report outcomes of the software evaluation at the first session of the Technical Working Party on Testing Methods and Techniques (TWM), in

2022. The TWC noted that results of the test campaign of the COYU Splines software were expected to be available in 2022 and agreed to invite the expert from the United Kingdom to report developments at the first session of the TWM.

*(b) Big Data Platform for DUS Examination (document TWC/39/7)*

10. The TWC received a presentation on ‘Big Data Platform for DUS Examination’ from an expert from China. A copy of the presentation is provided in document TWC/39/7.

Phenotyping and image analysis (document TWC/39/8)

11. The TWC received a presentation on ‘Optical Markers: new technology applied for barley, wheat & soybeans variety recognition’ from an expert from Argentina. A copy of the presentation is provided in document TWC/39/8.

12. The TWC noted that Argentina was considering the use of the new technology in DUS examination and agreed to invite the expert from Argentina to report developments at the first session of the TWM.

Development of guidance and information materials (documents TWP/5/1 and TWC/39/4)

13. The TWC considered documents TWP/5/1 and TWC/39/4.

*Program for the development of relevant guidance and information materials*

14. The TWC noted the program for the development of relevant guidance and information materials, as set out in document TWP/5/1, Annexes I and II.

*(a) Information documents*

Exchange and use of software and equipment

15. The TWV considered documents TWP/5/5 and TWC/39/6.

*Document UPOV/INF/16 “Exchangeable Software”*

16. The TWC noted that the Council, at its fifty-fourth ordinary session, had adopted in the procedure by correspondence, document UPOV/INF/16/9 “Exchangeable software”.

17. The TWC noted that the Office of the Union had issued on April 8, 2021, Circular E-21/030 inviting the designated persons of the members of the Union in the TC to provide or update information regarding the use of the software included in document UPOV/INF/16/10 Draft 1 “Exchangeable software” to the Office of the Union by May 7, 2021.

18. The TWC noted that the Office of the Union had received a proposal from China to include in document UPOV/INF/16 software “DUS Excel 2.0 - Data Analysis System for DUS Testing of Plant Varieties”.

*Statistical Analysis Software: DUSCEL 3.0 (document TWC/39/6)*

19. The TWC received a presentation from an expert from China on statistical analysis software DUSCEL3.0 for management and analysis of data and photos of DUS trials. A copy of the presentation is provided in document TWC/39/6.

20. The TWC noted that the software was still under development. The TWC agreed to invite experts to contact China for cooperation in the further development of the software and agreed to invite China to report developments at the first session of the TWM.

*Document UPOV/INF/22 “Software and equipment used by members of the Union”*

21. The TWC noted that the Council, at its fifty-fourth ordinary session, had adopted in the procedure by correspondence, document UPOV/INF/22/7 “Software and equipment used by members of the Union”.

22. The TWC noted that the Office of the Union had issued on April 8, 2021, Circular E-21/030 inviting the designated persons of members of the Union in the TC to provide or update information in document UPOV/INF/22/8 Draft 1 “Use of software and equipment” to the Office of the Union by May 7, 2021.

23. The TWC noted that the TC, at its fifty-seventh session, would be invited to consider whether to include any proposed software or equipment in document UPOV/INF/22/8 Draft 1, on the basis of the recommendation of the TWC at its thirty-ninth session, or whether to request further guidance from other relevant bodies.

*Availability of documents UPOV/INF/16 “Exchangeable software” and UPOV/INF/22 “Software and equipment used by members of the Union” in a searchable form*

24. The TWC noted that the information in documents UPOV/INF/16 and UPOV/INF/22 would be available in a searchable format on the UPOV website.

(b) *TGP documents*

Revision of document TGP/5 “Experience and cooperation in DUS testing”, Section 6 “UPOV Report on Technical Examination and UPOV Variety Description”

25. The TWC considered document TWP/5/14.

*Testing facility and location*

26. The TWC agreed to amend document TGP/5 Section 6, chapters “UPOV Report on Technical Examination” and “UPOV Variety Description”, as set out in document TWP/14, to read as follows:

Chapter: UPOV Report on Technical Examination

13. Testing station facility(ies) and place location(s)

[...]

16. Date and document number of UPOV Test Guidelines

17. Date and/or document number of Reporting Authority’s test guidelines

Chapter: UPOV Variety Description

Item 11 to read “Testing station facility(ies) and place location(s)”

*Additional information to be included in DUS test reports*

27. The TWC noted the proposal to revise document TGP/5, Section 6 “UPOV Report on Technical Examination and UPOV Variety Description” to include additional information in DUS test reports and whether alternative approaches to provide the desired information might be appropriate.

*TGP/8 Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability (Revision)*

(i) Data Processing for the Production of Variety Descriptions for Measured Quantitative Characteristics

28. The TWC considered document TWP/5/10.

29. The TWC noted that the TC had agreed to invite the TC Chairperson in conjunction with the Office of the Union to develop proposals on next steps for developing guidance, to be presented to the TWPs and the TC at their sessions in 2021.

30. The TWC agreed with the inclusion of the guidance on “Different forms that variety descriptions could take and the relevance of scale levels” in document TGP/8 Part I Section 2 “Data to be recorded” as new Section 2.5.

31. The TWC agreed that members of the Union should be invited to propose the inclusion of software incorporating their methods for converting observations into notes in document UPOV/INF/16 or document UPOV/INF/22, as appropriate, with a reference to the availability of such methods in document TGP/8 Part I, new Section 2.5.

(ii) The Combined-Over-Years Uniformity Criterion (COYU)

32. The TWC considered document TWP/5/11.

33. The TWC considered the proposed revision of document TGP/8, Section 9 “The Combined-Over-Years Uniformity Criterion (COYU);” on the basis of the draft presented in the Annexes to document TWP/5/11.

34. The TWC agreed that further consideration would be required on whether to remove guidance on COYU moving average from document TGP/8, Section 9, and replace it by the explanation on the improved method (COYU Splines), on the basis that explanation on COYU moving average was made available on the UPOV website.

35. The TWC agreed that further discussion would be required on using COYU when a candidate had a level of expression in a characteristic outside that seen in other varieties (extrapolation) and agreed to invite the United Kingdom to make a presentation at the first session of the TWM.

36. The TWC noted that a report on evaluation versions of software for COYU Splines was provided in documents TWC/39/5 and TWC/39/5 Add.

Variety denominations

37. The TWC considered document TWP/5/6.

*Possible revision of document UPOV/INF/12 “Explanatory Notes on Variety Denominations under the UPOV Convention”*

38. The TWC noted the developments concerning a possible revision of document UPOV/INF/12 “Explanatory Notes on Variety Denominations under the UPOV Convention” at the CAJ, at its seventy-sixth session, by correspondence, and at its seventy-seventh session, as set out in document TWP/5/6, paragraphs 9 to 22.

*Possible development of a UPOV similarity search tool for variety denomination purposes*

39. The TWC noted the developments concerning a possible UPOV similarity search tool for variety denomination purposes, as set out in document TWP/5/6, paragraphs 28 to 36.

Information and databases

*(a) UPOV information databases*

40. The TWC considered document TWP/5/4.

GENIE database and UPOV code system

41. The TWC noted that 177 new UPOV codes had been created in 2020 and a total of 9,213 UPOV codes were included in the GENIE database.

Amending the UPOV code system to provide information on variety groups or types

42. The TWC agreed with amending the UPOV code system to provide information on variety types, groups and denomination class, as set out in document UPOV/INF/23/1 Draft 2.

43. The TWC agreed with the proposal of the TWA, at its fiftieth session, to consider a limit to the number of characters used in the appended element, to avoid unnecessarily long extensions.

Proposals for amending UPOV codes

44. The TWC noted that the proposals for amending UPOV codes in document TWP/5/4 had been made on the basis that they would be made in conjunction with the adoption of document UPOV/INF/23/1.

45. The TWC noted that a timetable for implementing the proposed changes would be presented to the TC for approval at its fifty-seventh session.

*TWP checking*

46. The TWC noted the invitation to check the amendments, new UPOV codes or information, and UPOV codes used in the PLUTO database for the first time, as reproduced in document TWP/5/4, Annex IV, and submit comments to the Office of the Union by December 31, 2021.

PLUTO database

47. The TWC noted the summary of data contributions from members of the Union to the PLUTO database from 2016 to 2020, as presented in document TWP/5/4, Annex V.

*(b) Variety description databases*

48. The TWC considered document TWP/5/2.

49. The TWC noted the reports made at the TWPs in 2020 on databases containing morphological and/or molecular data.

*(c) UPOV PRISMA*

50. The TWC considered document TWP/5/3 and noted the developments concerning UPOV PRISMA.

51. The TWC noted the comment made by an expert from the United Kingdom on the need to encourage uptake of training and support by the users of UPOV PRISMA.

Increasing participation in the work of the TC and the TWPs

52. The TWC considered document TWP/5/12.

*Participation at the TC and TWP meetings by electronic means*

53. The TWC noted the information on participation via electronic means at the TWPs and TC in 2020.

54. The TWC noted the measures to improve virtual meetings held in the future, as set out in document TWP/5/12, paragraphs 14 to 20.

*Proposals to encourage participation in TWPs and TC in the future*

55. The TWC considered the possible measures for physical and virtual participation at TWP meetings, as set out in document TWP/5/12, paragraph 26.

56. The TWC noted the proposed measure “to organize Test Guidelines subgroup discussions by electronic means prior to the TWPs instead of during the TWPs.”

57. The TWC agreed with measures (b) “to organize virtual preparatory workshops prior to the TWPs” and (c) “to offer the possibility to provide comments and questions on documents in advance of the meeting.”

58. The TWC considered measures (d) “to organize electronic participation during the TWPs [...]” and (e) “to have virtual meeting sessions for part of the day [...]” and agreed as follows:

- To alternate one year of physical meeting with another of online meeting;
- To have roundtables for introducing participants and break-out sessions to facilitate new participants to establish contacts for international cooperation.

Matters of information*(i) Revision of Test Guidelines*

59. The TWC noted document TWP/5/13 and the process for partial revision of Test Guidelines for including characteristics from the table of characteristics in the technical questionnaires.

*(ii) Guidance for drafters of Test Guidelines*

60. The TWC considered document TWP/5/8.

61. The TWC noted that the web-based TG template and database of characteristics would be migrated to cloud servers by 2022, including an upgrade to new technologies in infrastructure and program to address issues reported by users and enabling use for drafting individual authorities' test guidelines.

62. The TWC noted that the Office of the Union would issue a circular to identify requirements of UPOV members for the development of individual authorities' test guidelines using the web-based TG template.

63. The TWC noted that training on the web-based TG template could be organized via electronic means upon experts' request.

Molecular techniques

64. The TWC considered document TWP/5/7.

*Developments at the nineteenth session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular*

65. The TWC noted the papers presented at the nineteenth session of the BMT, held in 2020, as set out in document TWP/5/7, paragraph 12.

66. The TWC noted that the BMT would hold its twentieth session jointly with the TWC, during the week of September 20, 2021.

67. The TWC noted the draft agenda for the BMT at its twentieth session, to be held in 2021, as set out in document TWP/5/7, paragraph 14.

*Merger of the Working Group on Biochemical and Molecular Techniques and DNA-profiling in Particular (BMT) and the Technical Working Party on Automation and Computer Programs (TWC)*

68. The TWC noted that the Council had established the Technical Working Party on Testing Methods and Techniques (TWM) encompassing the work of the TWC and BMT, to take effect from 2022.

69. The TWC noted the terms of reference for the TWM, as reproduced in document TWP/5/7, paragraph 17.

"17. The Council approved the establishment and the following terms of reference for the TWM, to encompass the work of the TWC and BMT:

Title:

Technical Working Party on Testing Methods and Techniques (TWM)

Tasks:

As directed by the Technical Committee, to:

- (a) Consider methods relevant for the examination of DUS.
- (b) Review and provide guidance on software and equipment relevant for:
  - (i.) DUS trial design and data analysis
  - (ii.) Data recording and transfer

- (iii.) Image analysis
- (iv.) Biochemical and molecular data.
- (c) Consider matters relating to trial design and data analysis;
- (d) Consider the possible application of biochemical and molecular techniques in DUS testing;
- (e) Develop guidelines regarding the management and harmonization of databases;
- (f) If appropriate, establish guidelines for biochemical and molecular methodologies and their harmonization;
- (g) Review general developments in biochemical and molecular techniques;
- (h) Maintain an awareness of relevant applications of biochemical and molecular techniques in plant breeding;
- (i) Provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of essential derivation and variety identification."

*Session to facilitate cooperation in relation to the use of molecular techniques*

70. The TWC noted the information provided by participants at the nineteenth session of the BMT on their work on biochemical and molecular techniques and areas for cooperation, as reproduced in document TWP/5/7, Annex I.

*Review of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ('BMT Guidelines')"*

71. The TWC considered a draft revision of document UPOV/INF/17/1 on the basis of document UPOV/INF/17/2 Draft 5 and document TWP/5/7, Annex II.

*Cooperation between international organizations*

Inventory on the use of molecular marker techniques, by crop

72. The TWC noted that, on October 16, 2020, the Office of the Union issued Circular E-20/189 inviting members to complete the survey on the use of molecular marker techniques, by December 15, 2020.

73. The TWC noted that the results of the survey would be presented to the Technical Committee, at its fifty-seventh session, to be held in 2021.

Lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques

74. The TWC noted that the TC, at its fifty-sixth session, had agreed that another joint OECD, UPOV, ISTA workshop on molecular techniques should be organized in the near future.

75. The TWC noted that the TC had agreed that a joint OECD, UPOV, ISTA workshop on molecular techniques would be an opportunity to discuss the definitions used in molecular techniques with a view to their harmonization.

Joint document explaining the principal features of the systems of OECD, UPOV and ISTA

76. The TWC noted that a draft joint document explaining the principal features of the systems of OECD, UPOV and ISTA will be presented for consideration by the TC at its fifty-seventh session.

Cooperation in examination

77. The TWC considered document TWP/5/9.

78. The TWC noted that members of the Union have the possibility to update information on a person(s) to be contacted for matters concerning international cooperation in DUS examination by:

(i) updating information when invited to provide information for document TC/[xx]/4 “List of genera and species for which authorities have practical experience in the examination of distinctness, uniformity and stability”; and/or

(ii) notifying the Office of the Union by sending an e-mail to upov.mail@upov.int.

79. The TWC noted the development of a package of compatible IT tools to address the technical and related administrative concerns that prevent cooperation in DUS examination, as reported in document TWP/5/9, paragraphs 7 to 12.

80. The TWC noted that a presentation on the development of the “DUS Exchange Platform” and the “DUS Arrangement Tool” would be made to the TWPs, at their sessions in 2021.

81. The TWC noted the developments concerning the web-based TG template to enable the drafting individual authorities’ test guidelines (IATG) in different languages, as set out in document TWP/5/9, paragraph 13.

82. The TWC noted that the development of a platform for UPOV member databases containing variety description information would depend on UPOV members indicating which databases they would wish to share.

83. The TWC noted that machine translation technology opportunities would be pursued as a matter of priority to reduce translation costs for UPOV documents in UPOV languages and to make UPOV materials available in a wider range of languages, within available resources.

84. The TWC noted that the CAJ, at its seventy-eighth session would consider:

(i) the policy or legal barriers identified by the TC as preventing international cooperation in DUS examination and possible measures to address those barriers; and

(ii) proposals for developing guidance to encourage members of the Union, on a voluntary basis, to take-over DUS test reports when the applicants could not submit plant material due to phytosanitary or other related issues.

85. The TWC noted that the impact of the proposed plan would be assessed on the basis of the number of cooperation agreements reported by members of the Union, as presented in document C/[xx]/INF/5 “Cooperation in examination”.

#### Date and place of the next session

86. The TWC noted that no invitations for the venue of the first session of Technical Working Party on Testing Methods and Techniques (TWM) had been received. The TWC noted that a decision on the date and place of the first session of TWM would be taken by the Council, at its fifty-fifth session, to be held on October 29, 2021.

87. The TWC noted that UPOV members could contact the Office of the Union with offers of date and place to host the session of TWM in 2022. If an offer was received sufficiently before the fifty-fifth session of the Council, the offer could be considered by the Council at its fifty-fifth session.

88. The TWC agreed that the first session of TWM should be held via electronic means, from September 19 to 23, 2022, if no alternative offer was received from a member of the Union.

89. The TWC agreed to invite the BMT to consider holding the first session of TWM during the week of September 19, 2022, via electronic means.

#### Future program

90. The TWC agreed that documents for the first session of TWM should be submitted to the Office of the Union by July 21, 2022. The TWC noted that items would be deleted from the agenda if the planned documents did not reach the Office of the Union by the agreed deadline.



91. The TWC proposed to discuss the following items at the first session of TWM:
1. Opening of the Session
  2. Adoption of the agenda
  3. Short reports on developments in plant variety protection:
    - (a) Reports from members and observers (written reports to be prepared by members and observers)
    - (b) Report on developments within UPOV (report by the Office of the Union)
  4. Tools and methods for DUS examination (documents invited)
    - (a) Comparison of results obtained for COYD and COYU procedures using different software (document to be prepared by France)
    - (b) Development of software for the improved COYU method (splines) (document to be prepared by the United Kingdom)
    - (c) Extrapolation in relation to COYU (document to be prepared by the United Kingdom and documents invited)
  5. Phenotyping and image analysis (documents invited)
  6. Development of guidance and information materials (documents to be prepared by the Office of the Union)
  7. Variety denominations (document to be prepared by the Office of the Union)
  8. Exchange and use of software and equipment (document to be prepared by the Office of the Union and documents invited)
    - Development of Statistical Analysis Software: DUSCEL (document to be prepared by China)
  9. Information and databases (documents invited)
    - (a) UPOV information databases (document to be prepared by the Office of the Union)
    - (b) Variety description databases (document to be prepared by the Office of the Union and documents invited)
    - (c) UPOV PRISMA (document to be prepared by the Office of the Union)
  10. Increasing participation in the work of the TC and the TWPs (document to be prepared by the Office of the Union)
  11. Molecular Techniques and bioinformatics (document to be prepared by the Office of the Union and documents invited)
  12. Cooperation in examination (document to be prepared by the Office of the Union)
  13. Date and place of the next session
  14. Future program
  15. Adoption of the Report on the session (if time permits)
  16. Closing of the session

92. The TWC adopted this report at the end of the Session.

[Annex follows]

LIST OF PARTICIPANTS

I. MEMBERS

ARGENTINA

Alberto BALLESTEROS (Mr.), Examinador de variedades, Dirección de Registro de Variedades, Instituto Nacional de Semillas (INASE), Secretaría de Agricultura, Ganadería, Pesca y Alimentación, Buenos Aires (e-mail: aballesteros@inase.gov.ar)

AUSTRALIA

Edwina VANDINE (Ms.), Chief of Plant Breeders' Rights, Plant Breeder's Rights Office, IP Australia, Woden (e-mail: edwina.vandine@ipaaustralia.gov.au)

Daniel JACK (Mr.), Senior Product Owner, Integrated Case Management Section, Customer Services Division, IP Australia, Woden (e-mail: daniel.jack@ipaaustralia.gov.au)

Andrew HALLINAN (Mr.), Senior Examiner, Plant Breeder's Rights Office, IP Australia, Woden (e-mail: andrew.hallinan@ipaaustralia.gov.au)

CANADA

Lisa LEDUC (Ms.), Examiner, Plant Breeders' Rights Office, Canadian Food Inspection Agency, Ottawa (e-mail: lisa.leduc@inspection.gc.ca)

CHINA

Kun YANG (Mr.), Deputy Director, Associate Researcher, Beijing Sub-Center of New Plant Variety Tests (MARA) affiliated to Institute of Vegetables and Flowers under Chinese Academy of Agricultural Sciences, Beijing (e-mail: yangkun@caas.cn)

Yaju LIU (Ms.), Department Director, Xuzhou Institute of Agricultural Sciences, Xuzhou (e-mail: yajuliu@163.com)

Dongmei LI (Mr.), Researcher Associate, Institute of Crop Breeding, Heilongjiang Academy of Agricultural Sciences, Harbin Sub-Center for New Plant Variety Tests, Harbin (e-mail: interli02@163.com)

Haitao ZHOU (Mr.), Technical Director, Gongzhuling Sub-center for New Plant Variety Test, Gongzhuling (e-mail: show19830623@aliyun.com)

Xiongfei JIAO (Mr.), Technical Director, Xinzhou Branch Center, Xinzhou (e-mail: moon413@163.com)

Xuhong YANG (Ms.), Senior Examiner, Division of DUS Tests, Development Center of Science and Technology (DCST), Ministry of Agriculture and Rural Affairs (MARA), Beijing (e-mail: yangxuhong@agri.gov.cn)

Xin GAO (Ms.), Assistant Agronomist, Jinzhou Sub-Center of New Plant Variety Tests, Jinzhou (e-mail: 147422387@qq.com)

Hongxing WANG (Mr.), DUS Examiner, Nanjing DUS Testing Center for New Plant Varieties, Nanjing (e-mail: whx821x@126.com)

Dongjian WANG (Mr.), DUS Tester, Shandong Academy of Agricultural Sciences, Jinan (e-mail: why20010021@163.com)

Le Yong FENG (Mr.), Xinzhou Branch Center, Xinzhou (e-mail: 542160366@qq.com)

Yawei SUN (Mr.), Xuzhou Institute of Agricultural Sciences, Xuzhou (e-mail: syw9563@sina.com)

CZECH REPUBLIC

Martin TLÁSKAL (Mr.), Biometrician specialist, Central Institute for Supervising and Testing in Agriculture, Brno (e-mail: martin.tlaskal@ukzuz.cz)

## EUROPEAN UNION

Jean MAISON (Mr.), Deputy Head, Technical Unit, Community Plant Variety Office (CPVO), Angers  
(e-mail: maison@cpvo.europa.eu)

Cécile COLLONNIER (Ms.), Technical Expert, Community Plant Variety Office (CPVO), Angers  
(e-mail: collonnier@cpvo.europa.eu)

## FINLAND

Sami MARKKANEN (Mr.), Senior Officer, Food Chain Division, Plant Production Department, Seed unit,  
Finnish Food Authority, Loimaa  
(e-mail: sami.markkanen@ruokavirasto.fi)

## FRANCE

Frédéric LAFAILLETTE (Mr.), Head of DUS Fodder plant and Turf grasses, Groupe d'étude et de contrôle  
des variétés et des semences (GEVES), Erdre-en-Anjou  
(e-mail: frederic.lafaillette@geves.fr)

Christelle LAVAUD (Ms.), Software developer, Groupe d'étude et de contrôle des variétés et des semences  
(GEVES), Surgères  
(e-mail: christelle.lavaud@geves.fr)

## GERMANY

Beate RÜCKER (Ms.), Head of Division, Bundessortenamt, Hanover  
(e-mail: beate.ruecker@bundessortenamt.de)

Thomas DROBEK (Mr.), Referat 101, Bundessortenamt, Hanover  
(e-mail: thomas.drobek@bundessortenamt.de)

## HUNGARY

Márton PÉCS (Mr.), Agricultural IT Expert, Directorate of Plant Production and Horticulture, National Food  
Chain Safety Office (NÉBIH), Budapest  
(e-mail: pecsm@nebih.gov.hu)

## ITALY

Giorgia SPATARO (Ms.), Researcher, Research Centre for Plant Protections and Certification (CREA-DC),  
Milano  
(e-mail: giorgia.spataro@crea.gov.it)

## JAPAN

Kenji KOBAYASHI (Mr.), Senior Staff, DUS Testing Section, Center for Seed and Seedlings (NCSS),  
National Agriculture and Food Research Organization (NARO), Tsukuba  
(e-mail: kobayashikenji@affrc.go.jp)

Yoshiyuki OHNO (Mr.), Examiner, Intellectual Property Division, Export and International Affairs Bureau,  
Ministry of Agriculture, Forestry and Fisheries (MAFF), Tokyo  
(e-mail: yoshiyuki\_ono300@maff.go.jp)

Kentaro SEKIZAWA (Mr.), Assistant Examiner, Intellectual Property Division, Export and International Affairs  
Bureau, Ministry of Agriculture, Forestry and Fisheries (MAFF), Tokyo  
(e-mail: kentaro\_sekizawa320@maff.go.jp)

Mariko ISHINO (Ms.), Assistant Examiner, Plant Variety Protection Office, Intellectual Property Division,  
Export and International Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries (MAFF), Tokyo  
(e-mail: mariko\_ishino300@maff.go.jp)

## KENYA

Ouma Samuel OGOLA (Mr.), Biometrician, Kenya Plant Health Inspectorate Service (KEPHIS), Nairobi  
(e-mail: osamuel@kephis.org)

## LITHUANIA

Jovita KULIKAUSKAITE (Ms.), Acting Head, Plant Variety Division, State Plant Service under the Ministry of  
Agriculture (MoA), Vilnius  
(e-mail: jovita.kulikauskaite@vatzum.lt)

#### NETHERLANDS

Bert SCHOLTE (Mr.), Head Department Variety Testing, Naktuinbouw NL, Roelofarendsveen  
(e-mail: b.scholte@naktuinbouw.nl)

Lysbeth HOF (Ms.), Researcher, Variety Testing, Naktuinbouw NL, Roelofarendsveen  
(e-mail: l.hof@naktuinbouw.nl)

Hedwich TEUNISSEN (Ms.), Molecular Biologist - Senior scientist, Naktuinbouw NL, Roelofarendsveen  
(e-mail: h.teunissen@naktuinbouw.nl)

#### NEW ZEALAND

Jacqueline BROADHEAD (Ms.), PVR Examiner, Plant Variety Rights Office, Intellectual Property Office of New Zealand, Plant Variety Rights, Ministry of Economic Development, Christchurch  
(e-mail: jacquie.broadhead@pvr.govt.nz)

#### POLAND

Ewa WOJCIŃSKA (Ms.), Head of Database and Programming Department, Research Centre for Cultivar Testing (COBORU), Slupia Wielka  
(e-mail: e.wojcinska@coboru.gov.pl)

Marcin PRZYSTALSKI (Mr.), Statistician, Research Centre for Cultivar Testing (COBORU), Slupia Wielka  
(e-mail: m.przystalski@coboru.gov.pl)

#### REPUBLIC OF KOREA

Oksun KIM (Ms.), Examiner, Korea Seed & Variety Service (KSVS), Gyeongsangbukdo  
(e-mail: oksunkim@korea.kr)

Keum-Soon PARK (Ms.), DUS Examiner, Korea Seed and Variety Service (KSVS), Gyeongsangbuk-do  
(e-mail: ks1012@korea.kr)

#### RUSSIAN FEDERATION

Kirill MOKRINSKIY (Mr.), System Administrator, IT Department, State Commission of the Russian Federation for Selection Achievements Test and Protection, Moscow  
(e-mail: gsk@gosortrf.ru)

#### SLOVAKIA

Lubomir BASTA (Mr.), National Coordinator for the Cooperation of the Slovak Republic with UPOV, Head of DUS testing, Department of Variety Testing, Central Control and Testing Institute in Agriculture (ÚKSÚP), Bratislava  
(e-mail: lubomir.basta@uksup.sk)

Jana KOVACICOVA (Ms.), DUS Expert, Seed Manager of DUS testing, Central Control and Testing Institute in Agriculture (ÚKSÚP), Velke Ripnany (e-mail: jana.kovacicova@uksup.sk)

#### UKRAINE

Yevhenii STARYCHENKO (Mr.), Head, Department of Scientific and Technical Information, Ukrainian Institute for Plant Variety Examination, Kyiv  
(e-mail: starychenko.e@gmail.com)

Olena SVYNARCHUK (Ms.), Senior Research officer, Ukrainian Institute for Plant Variety Examination, Kyiv  
(e-mail: olena.svnarchuk@gmail.com)

#### UNITED KINGDOM

Adrian ROBERTS (Mr.), Head of Operations, Biomathematics & Statistics Scotland (BioSS), Edinburgh  
(e-mail: a.roberts@bioss.ac.uk)

Haidee PHILPOTT (Ms.), Senior Statistician, National Institute of Agricultural Botany (NIAB), Cambridge  
(e-mail: haidee.philpott@niab.com)

Margaret WALLACE (Ms.), Senior Technical Manager, (Agricultural Crop Characterisation), National Institute of Agricultural Botany (NIAB), Cambridge  
(e-mail: margaret.wallace@niab.com)

Caroline POWER (Ms.), Higher Executive Officer Team Leader for UK National Listing & UK Plant Breeders' Rights Administration, Animal and Plant Health Agency (APHA), Cambridge  
(e-mail: caroline.power@apha.gov.uk)

Alex TALIBUDEEN (Mr.), DUS Technical Manager, Agricultural Crops Characterisation, National Institute Of Agricultural Botany (NIAB), Cambridge  
(e-mail: alex.talibudeen@niab.com)

Vanessa MCMILLAN (Ms.), Technical Manager, National Institute Of Agricultural Botany (NIAB), Cambridge  
(e-mail: vanessa.mcmillan@niab.com)

Sally WATSON (Ms.), Consultant Statistician, Statistical Services Branch, Agri-Food & Biosciences Institute, Belfast  
(e-mail: sally.watson@afbini.gov.uk)

#### UNITED STATES OF AMERICA

Jeffery HAYNES (Mr.), Commissioner, Plant Variety Protection Office, AMS, Science and Technology Program, United States Department of Agriculture (USDA), Washington D.C.  
(e-mail: Jeffery.Haynes@ams.usda.gov)

### II. OBSERVERS

#### THAILAND

Aphinya WONGPIA (Mr.), Agricultural Research Officer, Biotechnology Research and Development Office, Ministry of Agriculture and Cooperatives, Pathum Thani  
(e-mail: Aphinya.wongpia@gmail.com)

### III. OFFICER

Beate RÜCKER (Ms.), Head of Division, Bundessortenamt, Hanover  
(e-mail: beate.ruecker@bundessortenamt.de)

### IV. OFFICE OF UPOV

Peter BUTTON (Mr.), Vice Secretary-General

Ben RIVOIRE (Mr.), Head of Seed Sector Cooperation and Regional Development (Africa, Arab Countries)

Leontino TAVEIRA (Mr.), Head of Technical Affairs and Regional Development (Latin America, Caribbean)

Manabu SUZUKI (Mr.), Technical/Regional Officer (Asia)

Jessica MAY (Ms.), Secretary I

Kasumi FALQUET (Ms.), Administrative support

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