

**Technical Working Party for Vegetables**

Fifty-Sixth Session

Virtual meeting, April 18 to 22, 2022

TWP/6/7

Original: English

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**Technical Working Party for Agricultural Crops**

Fifty-First Session

Cambridge, United Kingdom, May 23 to 27, 2022

**Technical Working Party for Ornamental Plants and Forest Trees**

Fifty-Fourth Session

Hanover, Germany, June 13 to 17, 2022

**Technical Working Party for Fruit Crops**

Fifty-Third Session

Virtual meeting, July 11 to 15, 2022

**Technical Working Party on Testing Methods and Techniques**

First Session

Virtual meeting, September 19 to 23, 2022

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**MOLECULAR TECHNIQUES***Document prepared by the Office of the Union**Disclaimer: this document does not represent UPOV policies or guidance***EXECUTIVE SUMMARY**

1. The purpose of this document is to report on developments and present matters for consideration by the Technical Working Parties (TWPs) on the use of biochemical and molecular techniques in DUS examination.

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

2. The TWPs are invited to form discussion groups for the main crops at each TWP to allow participants to exchange information on their work and explore areas for cooperation on the use of biochemical and molecular techniques in DUS examination.

**Cooperation between international organizations**

3. The TWPs are invited to note:

(a) that the results of the survey on the use of molecular marker techniques were made available on the webpage of the fifty-seventh session of the Technical Committee, as set out in paragraph 28 of this document;

(b) that on February 1, 2022, the Office of the Union issued Circular E-2/009 inviting members to continue the survey on the use of molecular marker techniques;

(c) the draft joint document explaining the principal features of the systems of OECD, UPOV and ISTA, as set out in the Annex to this document;

(d) the topics proposed by the TC for a future joint UPOV/OECD/ISTA workshop, as set out in paragraph 35 of this document; and

(e) that on December 13, 2021, the Office of the Union informed OECD and ISTA of the result of the survey, draft joint document and proposed topics for a future joint UPOV/OECD/ISTA workshop. Responses from OECD and ISTA, when available, will be reported to the Technical Working Parties and the Technical Committee.

Developments at the Twentieth Session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular

4. The TWPs are invited to note:
  - (a) the papers presented at the twentieth session of the BMT; and
  - (b) the program of work for the first session of the TWM.

Confidentiality & Ownership of Molecular Information

5. The TWPs are invited to note discussions held at the TWPs and the BMT, at their sessions in 2021, on “Confidentiality & Ownership of Molecular Information”.

Revision of document UPOV/INF/17 “Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction (“BMT Guidelines”)

6. The TWPs are invited to note that a revision of document UPOV/INF/17 “Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction (“BMT Guidelines”) was adopted by the Council, in 2021.

7. The following abbreviations are used in this document:

BMT:	Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular
ISTA:	International Seed Testing Association
OECD:	Organization for Economic Co-operation and Development
TC:	Technical Committee
TWA:	Technical Working Party for Agricultural Crops
TWC:	Technical Working Party on Automation and Computer Programs
TWF:	Technical Working Party on Fruit Crops
TWM:	Technical Working Party on Testing Methods and Techniques
TWO:	Technical Working Party on Ornamental Plants and Forest Trees
TWPs:	Technical Working Parties
TWV:	Technical Working Party for Vegetables

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## SESSION TO FACILITATE COOPERATION IN RELATION TO THE USE OF MOLECULAR TECHNIQUES

9. The TC, at its fifty-fourth session<sup>1</sup>, agreed that discussion groups should be formed for the main crops at each TWP to allow participants to exchange information on their work and explore areas for cooperation (see document TC/54/31 "Report", paragraph 281).

### Technical Working Parties (TWPs)

10. The TWPs, at their sessions in 2021, 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 Annex I to document TWP/5/7 see documents TWV/55/16 "Report", paragraphs 48 and 49; TWO/53/10 "Report", paragraph 57; TWA/50/9 "Report", paragraphs 85 and 86; TWF/52/10 "Report", paragraphs 10 and 11; and TWC/39/9 "Report", paragraph 70).

11. The TWV, at its fifty-fifth session<sup>2</sup>, formed a discussion group to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation. Tomato, lettuce and pepper were discussed during the discussion group.

12. The TWA, at its fiftieth session<sup>3</sup>, held a discussion session to allow participants to exchange information on their work on biochemical and molecular techniques and explore possible areas for cooperation for Soybeans, Potato, Oilseed Rape, Hemp, Faba Bean and Wheat. The TWA agreed to invite presentations to be made at its fifty-first session, to be held in 2022, on biochemical and molecular techniques in the different crops discussed.

13. The TWF<sup>4</sup>, at its fifty-third session, held a discussion session to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation for Apple, Strawberry and Peach. The TWF agreed to invite the experts from the European Union and France to make presentations on the use of molecular techniques in DUS examination of apple varieties, at its fifty-third session.

### Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT)

14. The BMT, at its twentieth session<sup>5</sup>, considered document BMT/20/6 "Session to facilitate cooperation" (see document BMT/20/12 "Report", paragraphs 28 to 35).

15. The BMT recalled 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 the Annex to document BMT/20/6.

16. The BMT noted the information on the discussion groups that had been formed at the Technical Working Parties, at their sessions in 2021, to allow participants to exchange information on their work on biochemical and molecular techniques and explore areas for cooperation.

17. The BMT held a discussion session to allow participants to exchange information on their work on biochemical and molecular techniques and explore possible areas for cooperation.

18. The BMT considered whether UPOV could support harmonization and cooperation between members already using molecular markers in DUS examination or making information or BMT services available to other UPOV members.

19. The BMT agreed that information on the use of molecular markers by crop was important to promote cooperation between UPOV members and agreed to propose that the survey on the use of molecular markers was continued to obtain information from a greater number of UPOV members.

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<sup>1</sup> held in Geneva, on October 29 and 30, 2018

<sup>2</sup> hosted by Turkey and held via electronic means, from May 3 to 7, 2021

<sup>3</sup> hosted by the United Republic of Tanzania and held via electronic means, from June 21 to 25, 2021

<sup>4</sup> hosted by China and held via electronic means, from July 12 to 16, 2021

<sup>5</sup> hosted by the United States of America and organized by electronic means, from September 22 to 24, 2021

20. The BMT agreed that it would be useful to confirm the reasons for not responding to the first survey.
21. The BMT agreed that the possibility to form discussion groups during the sessions should be maintained.
22. *The TWPs are invited to form discussion groups for the main crops at each TWP to allow participants to exchange information on their work and explore areas for cooperation on the use of biochemical and molecular techniques in DUS examination.*

## COOPERATION BETWEEN INTERNATIONAL ORGANIZATIONS

### Background

23. The TC, at its fifty-fourth session<sup>6</sup>, agreed that UPOV and OECD should make progress on the matters previously agreed by the TC, namely (see document TC/54/31 "Report", paragraphs 267 to 271):

(a) to develop a joint document explaining the principal features of the systems of the OECD, UPOV and ISTA;

(b) to develop an inventory on the use of molecular marker techniques, by crop, with a view to developing a joint OECD/UPOV/ISTA document containing that information, in a similar format to UPOV document UPOV/INF/16 "Exchangeable Software", subject to the approval of the Council and in coordination with OECD and ISTA; and

(c) the BMT to develop lists of possible joint initiatives with OECD and ISTA in relation to molecular techniques for consideration by the TC.

24. The TC, at its fifty-fourth session, agreed to invite ISTA to join the initiatives when in position to do so.

25. The full background to this matter is provided in document TWP/5/7 "Molecular Techniques".

### Inventory on the use of molecular marker techniques, by crop

26. The TC, at its fifty-fifth session<sup>7</sup>, agreed to request members of the Union to complete a survey as a basis to develop an inventory on the use of molecular marker techniques, by crop, in coordination with the OECD.

27. In response to the Circular E-20/189 of October 16, 2020, the following 23 members of the Union provided information on the use of molecular marker techniques:

Australia	Lithuania
Belgium	Mexico
Brazil	Netherlands
China	Norway
Czech Republic	Panama
Estonia	Romania
European Union	Spain
France	Slovakia
Germany	Ukraine
Israel	United Kingdom
Japan	United States of America
Jordan	

<sup>6</sup> held in Geneva, on October 29 and 30, 2018

<sup>7</sup> held in Geneva, on October 28 and 29, 2019

28. The results of the survey were presented to the Technical Committee, at its fifty-seventh session, and are available on the following page of document TC/57/8 "Molecular Techniques": see Excel file under [https://www.upov.int/meetings/en/doc\\_details.jsp?meeting\\_id=60596&doc\\_id=542712](https://www.upov.int/meetings/en/doc_details.jsp?meeting_id=60596&doc_id=542712)

29. The TC, at its fifty-seventh session<sup>8</sup>, requested the Office of Union to inform OECD of the result of the survey and to report on the developments at the TC, at its fifty-eighth session (see document TC/57/25 "Report", paragraph 48). On December 13, 2021, the Office of the Union informed the results of the survey to OECD.

30. The TC, at its fifty-seventh session, agreed to continue the survey on the use of molecular markers to obtain information from a greater number of members and to investigate the reasons for members not responding to the first survey.

31. On February 1, 2022, the Office of the Union issued Circular E-22/009 inviting members of the Union to indicate whether they use molecular marker techniques and continue the survey on their use. Further developments on the survey, including additional information provided by members and reasons for not responding to the first survey, will be reported to the TC, at its fifty-eighth session.

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

##### *Background*

32. The TC, at its fifty-fifth session<sup>9</sup>, agreed with the BMT, at its eighteenth session, that relevant elements from the World Seed Partnership and the FAQ on the use of molecular techniques in the examination of DUS, would be a suitable basis for the Office of the Union to develop a draft of a joint document explaining the principal features of the systems of OECD, UPOV and ISTA, in consultation with OECD (see document TC/55/25 "Report", paragraph 182).

##### *Draft joint document*

33. The TC, at its fifty-seventh session, noted that it had approved by correspondence the draft joint document explaining the principal features of the systems of OECD, UPOV and ISTA, as set out in the Annex to this document. The TC requested the Office of the Union to inform OECD and ISTA accordingly."

34. On December 13, 2021, the Office of the Union transmitted the draft joint document to OECD and ISTA. Responses from OECD and ISTA, when available, will be reported to the Technical Working Parties and the Technical Committee.

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

35. The TC, at its fifty-seventh session, agreed to propose the following topics for a future joint UPOV/OECD/ISTA workshop:

- (i) providing information on the use of molecular techniques in each organization;
- (ii) procedure for approval of biochemical and molecular methods in each organization; and
- (iii) possibilities for harmonizing terms, definitions and methods between UPOV, OECD and ISTA.

36. The TC agreed to request the Office of the Union to contact OECD and ISTA to explore suitable dates for a future joint workshop, such as in conjunction with the first session on the TWM, to be held in September 2022.

37. On December 13, 2021, the Office of the Union communicated an invitation to OECD and ISTA to hold another joint workshop on molecular techniques, in conjunction with the first session of the TWM, to be held on September 21, 2022, via electronic means, to include consideration of the topics (i) to (iii) above. Responses from OECD and ISTA, when available, will be reported to the Technical Working Parties and the Technical Committee.

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<sup>8</sup> Held via electronic means on October 26 and 27, 2021

<sup>9</sup> Held in Geneva on October 28 and 29, 2019

38. *The TWPs are invited to note:*

(a) *that the results of the survey on the use of molecular marker techniques were made available on the webpage of the fifty-seventh session of the Technical Committee, as set out in paragraph 28 of this document;*

(b) *that on February 1, 2022, the Office of the Union issued Circular E-2/009 inviting members to continue the survey on the use of molecular marker techniques;*

(c) *the draft joint document explaining the principal features of the systems of OECD, UPOV and ISTA, as set out in the Annex to this document;*

(d) *the topics proposed by the TC for a future joint UPOV/OECD/ISTA workshop, as set out in paragraph 35 of this document; and*

(e) *that on December 13, 2021, the Office of the Union informed OECD and ISTA of the result of the survey, draft joint document and proposed topics for a future joint UPOV/OECD/ISTA workshop. Responses from OECD and ISTA, when available, will be reported to the Technical Working Parties and the Technical Committee.*

#### DEVELOPMENTS AT THE TWENTIETH SESSION OF THE WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES, AND DNA-PROFILING IN PARTICULAR

39. The BMT held its twentieth and final session, hosted by the United States of America and held via electronic means, from September 22 to 24, 2021.

#### Papers presented

40. The papers presented under each of the agenda items of the twentieth session of the BMT were as follows:

*Reports on developments in UPOV concerning biochemical and molecular techniques (document BMT/20/2)*

*Short presentations on new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations (reports by participants)*

*Report of work on molecular techniques in relation to DUS examination*

(a) *Update on IMODDUS activities (documents BMT/20/7)*

(b) *Identifying levels of diversity and developing markers to assist in managing the DUS reference collection of field beans (*Vicia faba*) (documents BMT/20/8)*

(c) *Developing a strategy to apply SNP molecular markers in the framework of winter oilseed rape DUS testing (documents BMT/20/9)*

*Review of document UPOV/INF/17 "Guidelines for DNA-Profilng: Molecular Marker Selection and Database Construction" ("BMT Guidelines") (documents BMT/20/3 and UPOV/INF/17/2 Draft 5)*

*Cooperation between international organizations (document BMT/20/4)*

(a) *OECD Seed Schemes (document BMT/20/10)*

(b) *ISTA report on biochemical and molecular techniques (document BMT/20/11)*

*Confidentiality, ownership and access to molecular data, including model agreement template (document BMT/20/5)*

*Session to facilitate cooperation (document BMT/20/6)*

Future program

41. The TC, at its fifty-seventh session, considered the program of work for the TWM and agreed the following items to be considered at its first session, to be held in 2022, as follows:

*Opening, adoption of the agenda and short reports*

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)

*Guidance and cooperation*

4. Development of guidance and information materials (documents to be prepared by the Office of the Union)
5. Increasing participation in the work of the TC and the TWPs (document to be prepared by the Office of the Union)
6. Cooperation in examination (document to be prepared by the Office of the Union)
7. Information and databases (documents invited)
  - (a) UPOV PRISMA (document to be prepared by the Office of the Union)
  - (b) UPOV information databases (document to be prepared by the Office of the Union)
  - (c) Variety description databases including databases containing molecular data (papers invited)
8. Variety denominations (document to be prepared by the Office of the Union)

*Software and statistical analysis methods for DUS examination*

9. Statistical 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)
10. 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)

*Phenotyping and image analysis*

11. Phenotyping and image analysis (documents invited)

*Molecular techniques*

12. Molecular Techniques and bioinformatics (document to be prepared by the Office of the Union and documents invited)
13. Methods for analysis of molecular data, management of databases and exchange of data and material (papers invited)
14. Report of work on molecular techniques in relation to DUS examination (papers invited)
15. The use of molecular techniques in examining essential derivation<sup>10</sup> (papers invited)
16. The use of molecular techniques in variety identification<sup>2</sup> (papers invited)
17. The use of molecular techniques for enforcement<sup>2</sup> (papers invited)

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<sup>10</sup> "Breeders day"

18. Cooperation between international organizations (document to be prepared by the Office of the Union and papers invited)
19. Confidentiality, ownership and access to molecular data, including model agreement template<sup>2</sup> (papers invited)
20. Session to facilitate cooperation (possible break-out sessions)

*Future program, report and closing*

21. Date and place of the next session
22. Future program
23. Adoption of the Report on the session (if time permits)
24. Closing of the session

42. *The TWPs are invited to note:*

*(a) the papers presented at the twentieth session of the BMT; and*

*(b) the program of work for the first session of the TWM.*

## CONFIDENTIALITY & OWNERSHIP OF MOLECULAR INFORMATION

43. The TWPs and the BMT, at their sessions in 2021, received a presentation on “Confidentiality & Ownership of Molecular Information” by an expert on behalf of the African Seed Trade Association (AFSTA), the Asia and Pacific Seed Association (APSA), the International Community of Breeders of Asexually Reproduced Horticultural Plants (CIOPORA), CropLife International, Euroseeds, the International Seed Federation (ISF) and the Seed Association of the Americas (SAA). A copy of the presentation is provided in document TWV/55/4 (see documents TWV/55/16 “Report”, paragraphs 56 to 61; TWO/53/10 “Report”, paragraphs 62 to 64; TWA/50/9 “Report”, paragraphs 91 to 93; TWF/52/10 “Report”, paragraphs 16 and 17; and BMT/20/12 “Report”, paragraphs 25 to 27).

44. The TWV, at its fifty-fifth session<sup>11</sup>, TWO, at its fifty-third session<sup>12</sup>, and TWA, at its fiftieth session<sup>13</sup>, considered the proposal to revise document TGP/5, Section 3: Model Application Form, to include a request for confidentiality of molecular information of candidate varieties as follows:

*“I/We request that molecular information pertaining to the variety remains confidential and exchange to another UPOV member or examination office is subject to approval by the applicant.”*

45. The TWV noted that some authorities were creating databases with molecular information and using that information for selecting similar varieties and organizing the growing trial.

46. The TWV agreed to request information on whether the proposal could prevent the authority receiving an application from obtaining molecular information from the candidate variety for DUS purposes and whether the proposal was only aimed at preventing the receiving authority from passing on molecular information of the variety to other authorities without approval by the applicant.

47. The TWV noted that a further discussion with breeders will be needed to find a pragmatic solution to address the concerns of the breeders but to prevent unnecessary administrative burden for authorities.

48. The TWV noted that the same presentation would be scheduled for other TWPs at their sessions in 2021, which would allow further consideration of the proposal.

49. The TWO agreed that further discussion would be needed to find a suitable solution to address the concerns of the breeders while preventing unnecessary administrative burden for authorities.

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<sup>11</sup> hosted by Turkey and held via electronic means, from May 3 to 7, 2021

<sup>12</sup> hosted by the Netherlands and held via electronic means from June 7 to 11, 2021

<sup>13</sup> hosted by the United Republic of Tanzania and held via electronic means, from June 21 to 25, 2021



50. The TWA noted the importance of confidentiality of molecular information for breeders and agreed that further discussion would be required on the topic. The TWA noted that confidentiality of molecular information could be subject to legislation in different UPOV members and agreed to invite presentations at its fifty-first session. The TWA noted the expression of interest from Argentina to make a presentation on the topic at the fifty-first session of the TWA.

51. The TWF<sup>14</sup>, at its fifty-third session, noted that the matter of confidentiality and ownership of molecular information had not been considered in any detail in the fruit sector and agreed that further discussion was required. The TWF agreed to invite presentations from members and observers on this topic under the agenda item "Presentation on the use of molecular techniques in DUS examination" at its fifty-third session.

52. BMT, at its twentieth session<sup>15</sup>, noted that discussions on confidentiality, ownership and access to molecular data had been held at the Technical Working Parties, at their sessions in 2021. The BMT noted that the TWPs had invited further discussions on this topic for their next sessions.

53. The BMT agreed to invite presentations on current practices on confidentiality and access to molecular data to be made at the first session of the TWM. The BMT agreed that current practices in UPOV members and observers could provide a suitable basis for further discussions on the topic.

*54. The TWPs are invited to note discussions held at the TWPs and the BMT, at their sessions in 2021, on "Confidentiality & Ownership of Molecular Information".*

#### REVIEW OF DOCUMENT UPOV/INF/17 "GUIDELINES FOR DNA-PROFILING: MOLECULAR MARKER SELECTION AND DATABASE CONSTRUCTION ('BMT GUIDELINES')"

55. The TWPs, at their sessions in 2021, agreed with the 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 (see documents TWV/55/16 "Report", paragraph 50; TWO/53/10 "Report", paragraph 58; TWA/50/9 "Report", paragraph 87; TWF/52/10 "Report", paragraph 12; and TWC/39/9 "Report", paragraph 71).

56. BMT, at its twentieth session<sup>16</sup>, agreed with the revision of document UPOV/INF/17/2 on the basis of document UPOV/INF/17/2 Draft 5 and the Annex to document BMT/20/3 (see document BMT/20/12 "Report", paragraphs 10 to 12).

57. The BMT noted the comments provided by ISF in advance of the session in relation to possible improvements to document UPOV/INF/17 regarding certain technical matters. The BMT agreed to invite ISF to make a presentation on these matters at the first session of the TWM.

58. On September 21, 2021, the Council adopted in the procedure by correspondence the revision of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ("BMT Guidelines") on the basis of document UPOV/INF/17/2 Draft 6 (see document C/55/12 "Outcome of consideration of documents by correspondence", paragraph 32).

*59. The TWPs are invited to note that a revision of document UPOV/INF/17 "Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction ("BMT Guidelines") was adopted by the Council, in 2021.*

[Annex follows]

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<sup>14</sup> hosted by China and held via electronic means, from July 12 to 16, 2021

<sup>15</sup> hosted by the United States of America and organized by electronic means, from September 22 to 24, 2021

<sup>16</sup> hosted by the United States of America and organized by electronic means, from September 22 to 24, 2021

## ELEMENTS FOR DRAFT JOINT DOCUMENT EXPLAINING THE PRINCIPAL FEATURES OF THE SYSTEMS OF THE OECD, UPOV AND ISTA

### The Organisation for Economic Co-operation and Development (OECD)

#### *What are the OECD Seed Schemes?*

The OECD Seed Schemes provide an international framework for the varietal certification of agricultural seed moving in international trade. The Schemes were established in 1958 driven by a combination of factors including a fast-growing seed trade, regulatory harmonisation in Europe, the development of off-season production, the seed breeding and production potential of large exporting countries in America (North and South) and Europe, and the support of private industry. Membership of the Schemes is voluntary and participation varies. There are seven agricultural Seed Schemes.

#### *Participating countries*

59 countries from Europe, North and South America, Africa, the Middle-East, Asia and Oceania currently participate in the OECD Seed Schemes:

ALBANIA	(2)	LITHUANIA	(2)
ARGENTINA	(2)	LUXEMBOURG	(1)
AUSTRALIA	(1)	MEXICO	(1)
AUSTRIA	(1)	MOLDOVA	(2)
BELGIUM	(1)	MOROCCO	(2)
BOLIVIA	(2)	NETHERLANDS	(1)
BRAZIL	(2)	NEW ZEALAND	(1)
BULGARIA	(2)	NORWAY	(1)
CANADA	(1)	POLAND	(1)
CHILE	(1)	PORTUGAL	(1)
CROATIA	(2)	ROMANIA	(2)
CYPRUS <sup>1</sup>	(2)	RUSSIAN FEDERATION	(2)
CZECH REPUBLIC	(1)	SENEGAL	(2)
DENMARK	(1)	SERBIA	(2)
EGYPT	(2)	SLOVAKIA	(1)
ESTONIA	(1)	SLOVENIA	(1)
FINLAND	(1)	SOUTH AFRICA	(2)
FRANCE	(1)	SPAIN	(1)
GERMANY	(1)	SWEDEN	(1)

<sup>1</sup> Source OECD "Note by Turkey

The information in this document with reference to 'Cyprus' relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the 'Cyprus issue'.

Note by all the European Union Member States of the OECD and the European Union

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus."

GREECE	(1)	SWITZERLAND	(1)
HUNGARY	(1)	TUNISIA	(2)
ICELAND	(1)	TURKEY	(1)
INDIA	(2)	UGANDA	(2)
IRAN	(2)	UKRAINE	(2)
IRELAND	(1)	UNITED KINGDOM	(1)
ISRAEL	(1)	UNITED STATES	(1)
ITALY	(1)	URUGUAY	(2)
JAPAN	(1)	ZIMBABWE	(2)
KENYA	(2)		
KYRGYZSTAN	(2)		
LATVIA	(2)		

(1) OECD Member Country  
(2) Non OECD Member Country

Figure 1 Map of Participating Countries in the OECD Seed Schemes (2016)



### *Objectives*

The objectives of the Schemes are to encourage the production and use of “quality-guaranteed” seed in participating countries. The Schemes authorise the use of labels and certificates for seed produced and processed for international trade according to agreed principles ensuring varietal identity and purity.

The Schemes facilitate the import and export of seed, by the removal of technical barriers to trade by assuring identification and origin through internationally recognised labels (“passports”) for trade. They also lay down guidelines for seed multiplication abroad, as well as for the delegation of some control activities to the private sector (“authorisation”). The quantity of seed certified through the OECD Schemes has grown rapidly in recent years and now exceeds 1 million tonnes.

### *How do the Seed Schemes operate*

The success of international certification depends upon close co-operation between maintainers, seed producers, traders and the designated authority (appointed by the government) in each participating country. Frequent meetings allow for a multi-stakeholder dialogue to exchange information, discuss case studies, revise rules and update the Schemes. A wide range of international and non-governmental organisations as well as seed industry networks participate actively in the Schemes.

### *Benefits of the Schemes*

- To facilitate international trade by using harmonised certification procedures, crop inspection techniques and use of control plots. The varietal purity standards for the appropriate species are also agreed and standardised by all member states.
- To provide a framework to develop seed production with other countries or companies.
- To participate in the elaboration of international rules for seed certification.
- To develop collaboration between the public and private sectors.
- To benefit from regular exchanges of information with other national certification agencies and Observer organisations.

### *Annual List of Varieties*

The Annual List of Varieties eligible for OECD certification includes varieties which are officially recognized as distinct, uniform and stable, and possess an acceptable value in one or more participating country. The List contains the seed varieties internationally traded using the OECD seed Schemes. The number of varieties included has grown steadily over the last thirty years. Currently, the number of listed varieties amounts to over 62 000, corresponding to 200 species. The List is available online and updated frequently.

### *Outlook*

As seed “consumers” become more demanding, there are greater needs for uniform seed standards, while at the same time public financial resources for regulation and quality control are limited.

Co-operation among countries and stakeholders in the framework of the Schemes is a response to the concern for a market-responsive regulatory approach. Every country is confronted with a different legal framework, institutional barriers and trade relations whilst the different approaches must remain consistent between countries entering international markets as importers or exporters of seed.

Maintainers and seed companies are responsible for ensuring their varieties remain pure and true to the description and the definitive sample (which is the ‘living description’ of the variety) not only domestically, but also across borders. However, there is a need for minimum criteria to be commonly defined, endorsed and enforced when multiplying seed in large quantities for the trade. The OECD Seed Schemes provide this legal framework at international level.

### *Status of Biochemical and Molecular Techniques (BMT) in the OECD Seed Schemes*

The OECD Seed Schemes do not specifically endorse any laboratory method for determining varietal identity or for determining varietal purity. The traditional OECD methods of using field inspection techniques together with pre- and post- control plots are to be regarded as the required methods of determining varietal identity and varietal purity.

However, the OECD Seed Schemes do recognise that there are occasions where these traditional methods limit the certainty of the varietal determination, and in some cases varieties of some species cannot be identified with certainty using these traditional methods. In these specific circumstances, it might be beneficial to use non-field based techniques such as BMT, which must be seen as supplementing and not replacing the more traditional methods.

For more information on the OECD Seed Schemes see: [www.oecd.org/tad/seed](http://www.oecd.org/tad/seed)

### International Union for the Protection of New Varieties of Plants (UPOV)

Type of Organization: Intergovernmental

#### Membership

[List of UPOV members](#) / [Situation in UPOV](#)

*What is UPOV?*

The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organization based in Geneva, Switzerland. UPOV was established in 1961 by the International Convention for the Protection of New Varieties of Plants (the "UPOV Convention").

The mission of UPOV is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society.

The UPOV Convention provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right.

#### *What does UPOV do?*

UPOV's mission is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society. The main objectives of UPOV are, in accordance with the UPOV Convention, to:

- provide and develop the legal, administrative and technical basis for international cooperation in plant variety protection;
- assist States and organizations in the development of legislation and the implementation of an effective plant variety protection system; and
- enhance public awareness and understanding of the UPOV system of plant variety protection.

#### *What are the benefits of plant variety protection and UPOV membership?*

The UPOV Report on the Impact of Plant Variety Protection demonstrated that in order to enjoy the full benefits which plant variety protection is able to generate, both implementation of the UPOV Convention and membership of UPOV are important. The introduction of the UPOV system of plant variety protection and UPOV membership were found to be associated with:

- (a) increased breeding activities,
- (b) greater availability of improved varieties,
- (c) increased number of new varieties,
- (d) diversification of types of breeders (e.g. private breeders, researchers),
- (e) increased number of foreign new varieties,
- (f) encouraging the development of a new industry competitiveness on foreign markets, and
- (g) improved access to foreign plant varieties and enhanced domestic breeding programs.

In order to become a UPOV member the advice of the UPOV Council in respect of the conformity of the law of a future member with the provisions of the UPOV Convention is required. This procedure leads, in itself, to a high degree of harmony in those laws, thus facilitating cooperation between members in the implementation of the system.

#### *Does UPOV allow molecular techniques (DNA profiles) in the examination of Distinctness, Uniformity and Stability ("DUS")?*

It is important to note that, in some cases, varieties may have a different DNA profile but be phenotypically identical, whilst, in other cases, varieties which have a large phenotypic difference may have the same DNA profile for a particular set of molecular markers (e.g. some mutations).

In relation to the use of molecular markers that are not related to phenotypic differences, the concern is that it might be possible to use a limitless number of markers to find differences between varieties at the genetic level that are not reflected in phenotypic characteristics.

On the above basis, UPOV has agreed the following uses of molecular markers in relation to DUS examination:

(a) Molecular markers can be used as a method of examining DUS characteristics that satisfy the criteria for characteristics set out in the General Introduction if there is a reliable link between the marker and the characteristic.

(b) A combination of phenotypic differences and molecular distances can be used to improve the selection of varieties to be compared in the growing trial if the molecular distances are sufficiently related to phenotypic differences and the method does not create an increased risk of not selecting a variety in the variety collection which should be compared to candidate varieties in the DUS growing trial.

The situation in UPOV is explained in documents TGP/15 “Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)” and UPOV/INF/18 “Possible use of Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)”.

<https://www.upov.int/about/en/faq.html#QB80>

### International Seed Testing Association (ISTA)

#### ISTA’S VISION: UNIFORMITY IN SEED TESTING

Founded in 1924, with the aim to develop and publish standard procedures in the field of seed testing, ISTA is inextricably linked with the history of seed testing. With member laboratories in over 80 countries/distinct economies worldwide, ISTA membership is truly a global network.

Our association produces internationally agreed rules for seed sampling and testing, accredits laboratories, promotes research, provides international seed analysis certificates and training, and disseminates knowledge in seed science and technology on behalf of our membership and governed by its member countries/distinct economies. This facilitates seed trading nationally and internationally, and therefore contributes to food security.

#### ISTA’S MEMBERSHIP 2019

With member laboratories in 82 countries/distinct economies worldwide, ISTA membership is a truly global network. Currently, ISTA membership consists of:

- 235 Member Laboratories, out of which 136 are ISTA accredited
- 63 Associate Members
- 39 Personal Members

#### ISTA’S TECHNICAL WORK

The principle objective of ISTA Technical Committees is to develop, standardise and validate methods for sampling and testing of seed quality, using the best scientific knowledge available. They enhance the **ISTA ‘International Rules for Seed Testing’** and develop ISTA Handbooks on seed methods including sampling and testing. Further they are responsible for the organisation of Symposia, Seminars and Workshops. ISTA Technical Committees regularly hold workshops which provide a platform for training as well as the exchange of information, experience and ideas.

There are 20 Technical Committees in ISTA:

	Technical Committees
1.	Advanced Technologies Committee
2.	Bulking and Sampling Committee
3.	Editorial Board of Seed Science and Technology
4.	Flower Seed Testing Committee
5.	Forest Tree and Shrub Seed Committee
6.	Germination Committee
7.	GMO Committee
8.	Moisture Committee
9.	Nomenclature Committee
10.	Proficiency Test Committee

11.	Purity Committee
12.	Rules Committee
13.	Seed Health Committee
14.	Seed Science Advisory Group
15.	Statistics Committee
16.	Seed Storage Committee
17.	Tetrazolium Committee
18.	Variety Committee
19.	Vigour Committee
20.	Wild Species Working Group

#### ISTA ACCREDITATION PROGRAMME:

ISTA Accreditation verifies whether a laboratory is technically competent to carry out seed sampling and testing procedures in accordance with the ISTA International Rules for Seed Testing. Accredited laboratories must run a quality assurance system, fulfilling the requirements of the ISTA Accreditation Standard. Accreditation can be granted for:

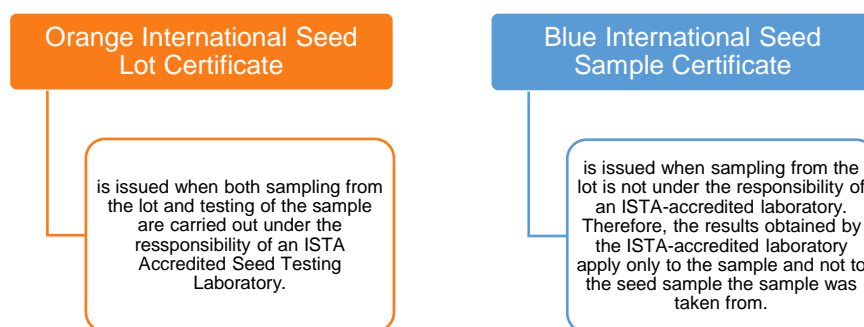
- entities performing sampling only
- laboratories performing testing only
- laboratories performing sampling and testing.

#### ISTA CERTIFICATES: PASSPORT FOR INTERNATIONAL SEED TRADING

Only ISTA-accredited laboratories are authorised to issue ISTA certificates for seed analysis.

By reporting seed test results on ISTA Certificates, the issuing laboratory assures that the sampling and testing has been carried out in accordance with the ISTA Rules. ISTA Certificates are accepted by most authorities and are mentioned in the seed Acts of several countries.

The ISTA certificates are assuring that the results are reproducible, true and represent the quality of the seed.



More than 200,000 ISTA Orange and Blue Certificates are issued every year, facilitating trading of seed internationally.

#### THE STATUS OF BIOCHEMICAL AND MOLECULAR TECHNIQUE (BMT) IN ISTA.

The ISTA International Rules for Seed Testing have included BMTs for many years. For example, BMTs are acceptable for GMO testing under a "performance-based approach"; methods that are frequently used include qualitative and quantitative protein detection analyses and various DNA-based methods. BMTs are used as diagnostic and quantitative assessment tools in seed health testing methods. Testing for species and varieties verification also makes use of BMTs by analysing storage protein profiles for sunflower, maize, oat, barley,

wheat, rye grass and pea or by DNA fingerprint using molecular markers for maize and wheat. As the versatility of these methods increases and the cost of utilizing them decreases, they may in the future play an even larger role in seed testing.

To learn more about ISTA, visit our website: [www.seedtest.org](http://www.seedtest.org)

[End of Annex and of document]