



TWA/45/2

ORIGINAL: English

DATE: June 2, 2016

**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**

Geneva

**TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS****Forty-Fifth Session  
Mexico City, Mexico, July 11 to 15, 2016**

## MOLECULAR TECHNIQUES

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## EXECUTIVE SUMMARY

1. The purpose of this document is to report developments concerning molecular techniques in relation to the Technical Working Parties and OECD/UPOV/ISTA Joint Workshop on Molecular Techniques, and to report a draft question and answer concerning the information on the situation in UPOV with regard to the use of molecular techniques for a wider audience, including the public in general.
2. The TWA is invited to note:
  - (a) the developments in the TWPs and BMT, as set out in paragraphs 5 to 15 of this document;
  - (b) that the BMT, at its fifteenth session, will be invited to develop a list of possible joint initiatives with OECD and ISTA, including the development of a list of terminology (definitions) used by OECD, UPOV and ISTA for consideration at the TC, at its fifty-third session, to be held in 2017;
  - (c) that a Joint OECD/UPOV/ISTA/AOSA Workshop on Biochemical and Molecular Methods will be held in Paris, France, on June 8, 2016; and
  - (d) that the TC, at its fifty-second session, agreed a draft question and answer concerning the information on the situation in UPOV with regard to the use of molecular techniques for a wider audience, including the public in general, as set out in paragraph 23 of this document, and subject to agreement by the CAJ, at its seventy-third session, and the Consultative Committee, at its ninety-second session, the draft will be presented for adoption by the Council, at its fiftieth ordinary session.

3. The following abbreviations are used in this document:

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

4. The structure of this document is as follows:

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#### DEVELOPMENTS IN THE TECHNICAL WORKING PARTIES

5. At their sessions in 2015, the TWV, TWC, TWA, TWF and TWO considered documents TWV/49/2, TWC/33/2, TWA/44/2, TWF/46/2 and TWO/48/2 “Molecular Techniques”, respectively.

6. The TWC, at its thirty-third session, held in Natal, Brazil from June 30 to July 2, 2015, noted an oral report by Mr. Kees van Ettehoven, Chairman of the BMT, highlighting the developments on molecular techniques presented at the fourteenth session of the BMT, held in Seoul, Republic of Korea from November 10 to 13, 2014, in particular: a presentation by the Republic of Korea (see document BMT/14/16 Rev.2 “Use of Molecular Marker Techniques for Selection of ‘Similar Variety’ about ‘Candidate Variety”); the United States of America (see documents BMT/14/5 and BMT/14/5 Add. “The Use of Reference Varieties in Varietal Distinctness: An Approach under Investigation in the United States of America for Potential Application in Plant Variety Protection”); the Netherlands (see Document BMT/14/11 “Ownership and Use of DUS Samples and of DNA and DNA Data During and After the DUS Tests”) and on cooperation between UPOV, OECD and ISTA on molecular techniques (see document TWC/33/30 “Report”, paragraph 110).

7. The TWF, at its forty-sixth session, held in Mpumalanga, South Africa, from August 24 to 28, 2015, noted that molecular marker techniques were being used by many UPOV members for variety identification and were an important tool in cases of enforcement of plant breeder’s rights (PBR). The TWF agreed that it would be useful to provide information to a wider audience that molecular marker techniques were widely used in the context of PBR for variety identification and enforcement of the breeder’s rights (see document TWF/46/29 Rev. “Revised Report”, paragraphs 73 to 75).

8. The TWF noted that France had been using molecular distances in combination with phenotypical distance for optimizing the size of trials in fruit crops since 2000. The TWF agreed that molecular markers also provided useful information on species which the authorities did not hold standard samples of living material.

9. The TWF noted that in many UPOV members breeders were requesting authorities to accept molecular marker information with applications for plant breeder’s rights. The TWF noted that authorities did not require molecular marker information with the application for plant breeder’s rights although some authorities accepted it as complementary information. The TWF noted the concern expressed by some

members on matters relating to the confidentiality of molecular marker information and whether such information could be made available to the public.

10. The TWO, at its forty-eighth session, held in Cambridge, United Kingdom, from September 14 to 18, 2015, noted that some breeders were providing molecular marker information with applications for plant breeders' rights and agreed that unless the information was validated by the authorities it would not have a proven link to the material used in the examination of DUS (see document TWO/48/26 "Report", paragraph 81).

11. The TC, at its fifty-second session, held in Geneva, from March 14 to 16, 2016, noted the report on developments in the TWPs (see document TC/52/29 Rev. "Revised Report", paragraph 127).

#### WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES, AND DNA-PROFILING IN PARTICULAR

12. The role of the BMT is reproduced in the Annex to this document.

13. The Council, at its forty-ninth session, held in Geneva, on October 29, 2015, approved in the calendar of meetings in 2016 that the fifteenth session of the BMT would be held from May 24 to 27, 2016, in Moscow, Russian Federation, with a preparatory workshop on May 23, 2016 (see document C/49/19 "Report", paragraph 56).

14. The TC, at its fifty-second session, noted that the BMT agenda item 5 "Report of work on molecular techniques in relation to DUS examination" would provide an opportunity for UPOV members to report on latest developments concerning the use of molecular techniques in DUS examination, and that this could form the basis to propose new application models for inclusion in document TGP/15 "Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)" (see document TC/52/29 Rev. "Revised Report", paragraph 132).

15. The TC, at its fifty-second session, noted that the European Union was conducting a project on the use of molecular marker techniques in DUS examination in different crops (see document TC/52/29 Rev. "Revised Report", paragraph 133).

#### OECD/UPOV/ISTA JOINT WORKSHOP ON MOLECULAR TECHNIQUES

16. The background to this matter is provided in document TWA/44/2 "Molecular Techniques".

17. The OECD/UPOV/ISTA Joint Workshop on Molecular Techniques was held in Seoul, Republic of Korea, on November 12, 2014, in conjunction with the fourteenth session of the BMT, held in Seoul, Republic of Korea, from November 10 to 13 (see document TWA/44/2 "Molecular Techniques", paragraph 11).

18. The Workshop agreed to propose to invite UPOV, OECD and ISTA to develop lists of possible joint initiatives in relation to molecular techniques. It was noted that, in the case of UPOV, the list could be drafted by the BMT at its fifteenth session, subject to approval by the Technical Committee (see document TWA/44/2, paragraph 15).

19. The TC, at its fifty-second session, agreed that the BMT should include the development of a list of terminology (definitions) used by OECD, UPOV and ISTA in the list of joint initiatives in relation to molecular techniques, for consideration by the TC, at its fifty-third session (see document TC/52/29 Rev. "Revised Report", paragraph 130).

20. The development of a list of joint initiatives in relation to molecular techniques will be considered at the BMT, at its fifteenth session, to be held in Moscow, Russian Federation, from May 24 to 27, 2016.

21. The TC noted the plans for the OECD Seed Schemes to organize a Joint OECD/UPOV/ISTA/AOSA Workshop on Biochemical and Molecular Techniques and received an oral report from the representative of OECD that the joint workshop would be held in Paris, France, on June 8, 2016 (see document TC/52/29 Rev. "Revised Report", paragraph 128).

PRESENTATION OF INFORMATION ON THE SITUATION IN UPOV WITH REGARD TO THE USE OF MOLECULAR TECHNIQUES

22. The background to this matter is provided in document TWA/44/2 “Molecular Techniques”.

23. The TC, at its fifty-second session, agreed a draft question and answer concerning the information on the situation in UPOV with regard to the use of molecular techniques for a wider audience, including the public in general, to read as follows (see document TC/52/29 “Revised Report”, paragraph 131):

“Is it possible to obtain protection of a variety on the basis of its DNA-profile?

“For a variety to be protected, it needs to be clearly distinguishable from all existing varieties on the basis of characteristics that are physically expressed, e.g. plant height, time of flowering, fruit color, disease resistance etc. The DNA-profile is not the basis for obtaining the protection of a variety, although this information may be used as supporting information.

“A more detailed explanation is provided in the FAQ ‘Does UPOV allow molecular techniques (DNA profiles) in the examination of Distinctness, Uniformity and Stability (“DUS”)?’

“See also:

“What are the requirements for protecting a new plant variety?”

24. Subject to agreement by the CAJ, at its seventy-third session, to be held in Geneva, on October 25, 2016, and the Consultative Committee, at its ninety-second session, to be held in Geneva, on October 27, 2016, the draft question and answer concerning the information on the situation in UPOV with regard to the use of molecular techniques for a wider audience, including the public in general will be presented for adoption by the Council, at its fiftieth ordinary session, to be held in Geneva on October 28, 2016.

25. *The TWA is invited to note:*

(a) *the developments in the TWPs and BMT, as set out in paragraphs 5 to 15 of this document;*

(b) *that the BMT, at its fifteenth session, will be invited to develop a list of possible joint initiatives with OECD and ISTA, including the development of a list of terminology (definitions) used by OECD, UPOV and ISTA for consideration at the TC, at its fifty-third session, to be held in 2017;*

(c) *that a Joint OECD/UPOV/ISTA/AOSA Workshop on Biochemical and Molecular Methods will be held in Paris, France, on June 8, 2016; and*

(d) *that the TC, at its fifty-second session, agreed a draft question and answer concerning the information on the situation in UPOV with regard to the use of molecular techniques for a wider audience, including the public in general, as set out in paragraph 23 of this document, and subject to agreement by the CAJ, at its seventy-third session, and the Consultative Committee, at its ninety-second session, the draft will be presented for adoption by the Council, at its fiftieth ordinary session.*

[Annex follows]

ANNEX

ROLE OF THE WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES,  
AND DNA-PROFILING IN PARTICULAR (BMT)

*(as agreed by the Technical Committee at its thirty-eighth session, held in Geneva,  
from April 15 to 17, 2002 (see document TC/38/16, paragraph 204))*

The BMT is a group open to DUS experts, biochemical and molecular specialists and plant breeders, whose role is to:

- (i) Review general developments in biochemical and molecular techniques;
- (ii) Maintain an awareness of relevant applications of biochemical and molecular techniques in plant breeding;
- (iii) Consider the possible application of biochemical and molecular techniques in DUS testing and report its considerations to the TC;
- (iv) If appropriate, establish guidelines for biochemical and molecular methodologies and their harmonization and, in particular, contribute to the preparation of document TGP/15, "New Types of Characteristics." These guidelines to be developed in conjunction with the Technical Working Parties;
- (v) Consider initiatives from TWPs, for the establishment of crop specific subgroups, taking into account available information and the need for biochemical and molecular methods;
- (vi) Develop guidelines regarding the management and harmonization of databases of biochemical and molecular information, in conjunction with the TWC;
- (vii) Receive reports from Crop Subgroups and the BMT Review Group;
- (viii) Provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of essential derivation and variety identification.

[End of Annex and of document]