



TC/43/7

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

TECHNICAL COMMITTEE

Forty-Third Session
Geneva, March 26 to 28, 2007

MOLECULAR TECHNIQUES

Document prepared by the Office of the Union

1. The purpose of this document is to report on developments concerning:
 - (a) “Guidelines for molecular marker selection and database construction (BMT Guidelines)”;
 - (b) the proposal of the Technical Committee (TC) for matters concerning the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders’ rights, technical verification and the consideration of essential derivation to be considered by the *Ad hoc* Subgroup of Technical and Legal Experts of Biochemical and Molecular Techniques (BMT Review Group); and
 - (c) proposals concerning the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT) and the *Ad hoc* Crop Subgroups on Molecular Techniques (Crop Subgroups).

Guidelines for Molecular Marker Selection and Database Construction (BMT Guidelines)

2. At its fortieth session, the TC heard that the BMT had concluded, at its eighth session in Tsukuba, Japan, from September 3 to 5, 2003, that there was an urgent need to harmonize methodologies for the generation of molecular data in order to ensure that the quality of the data produced would be universally acceptable for use in variety characterization. It was also noted that it would be useful to provide guidance on the planning of databases for molecular

data based on different types of markers. On that basis, the BMT agreed that the Office of the Union (Office) should prepare a guidance document (BMT Guidelines).

3. At its forty-second session, held in Geneva, from April 3 to 5, 2006, the TC considered document BMT Guidelines (proj.5) and agreed on amendments for the subsequent draft (document BMT Guidelines (proj.6)), which was to be considered by the Technical Working Party on Automation and Computer Programs (TWC) at its twenty-fourth session, held in Nairobi, Kenya, from June 19 to 22, 2006, and by the BMT at its tenth session, held in Seoul, Republic of Korea, from November 21 to 23, 2006.

4. At its tenth session, the BMT agreed that, on the basis of its recommendations (see document BMT/10/19 "Report", paragraphs 76 to 78), the BMT Guidelines could be proposed for approval by the TC. In relation to Section B: 5.2 "Quality criteria", the expert from the United States of America noted that the International Standards Organization (ISO) and Codex were developing guidelines. The BMT agreed that it would be useful to invite relevant experts to make a presentation on those guidelines at the eleventh session of the BMT.

5. Document BMT Guidelines (proj.7), prepared for consideration by the Enlarged Editorial Committee (TC-EDC) at its meeting held on January 9, 2007, reflected the comments made at the twenty-fourth session of the TWC and at the tenth session of the BMT. The TC-EDC had no comments concerning document BMT Guidelines (proj.7).

6. At its forty-second session, the TC agreed to investigate the possibility of a practical exercise, involving a small number of crops, in the development of an exchangeable database, as set out in paragraphs 14 and 15 of document TC/42/7. It agreed that it would be necessary to set clear terms of reference for that work and agreed that such terms of reference should be considered at its forty-third session. In the meantime, it agreed to invite the BMT, at its tenth session, to suggest suitable crops where such a practical exercise might be appropriate.

7. At its tenth session, the BMT agreed to suggest oilseed rape, potato and rose as suitable crops where a practical exercise in the development of an exchangeable database might be appropriate. It was agreed that the terms of reference to be established by the TC for that work should clarify what was meant by an exchangeable database and whether it referred to the structure of the database or the quality of the data and whether it would involve a test data set rather than the complete set of data which an authority had for the crop concerned.

8. *The TC is invited to:*

(a) comment on document BMT Guidelines (proj.8) and consider whether the BMT Guidelines should be put forward for adoption by the Council at its forty-first ordinary session, to be held in Geneva on October 25, 2007;

(b) agree that relevant experts be invited to make a presentation concerning ISO and Codex guidelines, in relation to quality criteria in molecular techniques, at the eleventh session of the BMT (see paragraph 4); and

(c) consider initiating a practical exercise in the development of an exchangeable database and to consider terms of reference for such an exercise (see paragraphs 6 and 7).

Possible Use of Molecular Tools for Variety Identification in Relation to the Enforcement of Plant Breeders' Rights, Technical Verification and the Consideration of Essential Derivation

9. At its fortieth session, with modification to the wording at its forty-first session, the TC agreed to propose to the Administrative and Legal Committee (CAJ) that it consider the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders' rights, technical verification and the consideration of essential derivation. In that respect, it proposed that those might be matters relevant for consideration by the BMT Review Group.

10. At its fifty-first session (see document CAJ/51/6, paragraphs 24 to 28), the CAJ considered the TC proposal and agreed to invite the BMT Review Group to examine the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders' rights, technical verification and the consideration of essential derivation.

11. In accordance with the agreement of the TC and the CAJ, a meeting of the BMT Review Group was scheduled for the evening of April 6, 2006. In conjunction with the President of the Council and the Chairpersons of the TC and the CAJ, the Office produced a brief document (document BMT-RG/Apr06/1) to aid the BMT Review Group in consideration of appropriate terms of reference / objectives. That document was made available to CAJ and TC members and observers on the UPOV website.

12. At its meeting on April 6, 2006, the BMT Review Group suggested to clarify that the TC and the CAJ intended that the BMT Review Group should consider the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders' rights, technical verification and the consideration of essential derivation by the assessment of possible application models proposed by the TC, on the basis of the work of the BMT and Crop Subgroups (see document BMT-RG/Apr06/2 "Report", paragraph 5). In that respect, the BMT Review Group noted that the role of the BMT in developing possible application models would make it necessary for the terms of reference of the BMT to reflect that role in order for the BMT Review Group to progress further in this area. It also noted that matters concerning the enforcement of plant breeders' rights which might fall within the competencies of UPOV were under discussion in the Consultative Committee.

13. At its seventy-second session, held in Geneva on October 18, 2006, the Consultative Committee noted that the role of the BMT included the following:

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

[...]

“(viii) Provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of essential derivation and variety identification.”

14. The Consultative Committee noted that this provision enabled the BMT to provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of variety identification. The Vice Secretary-General noted that, with regard to the use of molecular tools for variety identification, the current terms of reference of the BMT appeared to be sufficiently broad. As a consequence, there was no immediate need to change the terms of reference of the BMT nor of the BMT Review Group. The BMT could continue its work and report to the TC and the CAJ. The TC and CAJ could identify any matters which the Committee might need to consider.

15. The discussions in the Consultative Committee demonstrated that it would be beneficial to provide an overview of the UPOV bodies involved in the consideration of biochemical and molecular techniques. An overview has now been provided on the first restricted area of the UPOV website at http://www.upov.int/restrict/en/upov_structure_index.html. That overview is also made available to BMT participants who do not have the password to the first restricted area of the UPOV Website, via a temporary password area.

16. *The TC is invited to:*

(a) note the conclusion of the Consultative Committee that the role of the BMT enabled it to provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of variety identification without a need for a change to the existing terms of reference; and

(b) note that an overview of the UPOV bodies involved in the consideration of biochemical and molecular techniques has been provided on the first restricted area of the UPOV website (see paragraph 15).

Proposals Concerning the BMT and the *Ad Hoc* Crop Subgroups on Molecular Techniques (Crop Subgroups)

17. A list of the Crop Subgroups is presented in the Annex to this document, in accordance with the changes agreed by the TC at its forty-second session (see document TC/42/12 “Report”, paragraphs 127 and 128).

18. The Technical Working Party for Vegetables (TWV), at its fortieth session, held in Guanajuato, Guanajuato State, Mexico, from June 12 to 16, 2006, agreed that it would be useful for experts to provide information on work in relation to the use of molecular markers, in particular in relation to disease resistance. Experts from the European Community (tomato), France (tomato, melon, chicory, shallots), Netherlands (tomato, lettuce, asparagus), Spain (pepper) and the International Seed Federation (ISF) (tomato in relation to essentially derived varieties) agreed to prepare documents for information and discussion at the forty-first session of the TWV.

19. At the thirty-fifth session of the Technical Working Party for Agricultural Crops (TWA), held in Beijing, China, from July 3 to 7, 2006, Mr. Henk Bonthuis, Chairman of the BMT, noted that there had been very few meetings of the Crop Subgroups and wondered if Crop Subgroups were still the most appropriate fora for consideration of molecular techniques. An expert from the United Kingdom considered that the Crop Subgroups continued to be important and noted that sufficient time was needed to generate the data for consideration by the Crop Subgroups. However, that expert wondered whether the work on self-pollinated crops and cross-pollinated crops might be combined in a similar way to that agreed for vegetatively propagated crops. Mrs. Françoise Blouet (France), Chairperson of the Crop Subgroup for Oilseed Rape, explained that work was continuing in France in relation to maize and oilseed rape and confirmed that more time was needed to generate the data to be considered by the Crop Subgroups, particularly because data was now being obtained from very large numbers of varieties in contrast to the relatively small numbers used for earlier work presented at the Crop Subgroups. She emphasized the importance of the Crop Subgroups in ensuring that DUS experts reviewed work on molecular techniques in relation to DUS testing. The TWA Chairperson, Mrs. Beate Rücker (Germany), expressed her support for the role of the Crop Subgroups. She also wondered whether the Crop Subgroups should be invited to develop proposals concerning the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders' rights, technical verification and the consideration of essential derivation. Mr. Bonthuis welcomed the discussion and noted that this had been a useful reminder of the importance of the Crop Subgroups for combining DUS and molecular experts. The TWA reaffirmed its support for the work of Crop Subgroups.

Chairmanship of the Crop Subgroup for Wheat and Barley

20. The TWA, at its thirty-fifth session, agreed that there should be clarification on whether Mr. Robert Cooke (United Kingdom) would continue as Chairman of the Crop Subgroup for Wheat and Barley.

21. At the tenth session of the BMT, the Office reported that Mr. Robert Cooke (United Kingdom), Chairman of the Crop Subgroup for Wheat and Barley, had explained that he would be unable to continue in the role of Chairman. The Office explained that a new Chairperson could be proposed by the TWA in 2007, for endorsement by the TC in April 2008, but explained that an interim chairperson could be arranged if there was a need to hold a meeting in the meantime. An expert from the United Kingdom reported that he was unaware of any on-going work on wheat. An expert from Canada reported that there was work being done on barley in Canada, but that it was not anticipated that a meeting would be needed before a new chairperson could be appointed.

Crop Subgroup for Vegetatively Propagated Crops

22. At its thirty-fifth session, the TWA agreed that it would not be necessary to appoint a Chairperson for the Crop Subgroup for Vegetatively Propagated Crops because the meetings were intended to be held in conjunction with the sessions of the BMT and could be chaired by the BMT Chairperson. In addition, it noted that there could be some benefits in organizing sessions at the BMT for vegetatively propagated, self-pollinated and cross-pollinated crops, in order to facilitate discussions on horizontal matters. In response to that proposal, and in conjunction with Mr. Henk Bonthuis, Chairman of the BMT, the draft agenda for the tenth session of the BMT was organized such that the item "Report of work on molecular techniques on a crop-by crop basis" was organized into separate sessions for (a) vegetatively propagated crops; (b) self-pollinated crops; and (c) cross-pollinated crops (see document BMT/10/1 "Draft Agenda", item 6).

23. The Crop Subgroup for Vegetatively Propagated Crops held its first session in Seoul, Republic of Korea, on November 22, 2006, in association with the tenth session of the BMT. Mr. Henk Bonthuis (Netherlands, Chairman of the BMT) chaired the session. The Crop Subgroup for Vegetatively Propagated Crops agreed to propose to the BMT and to the TC that it organize specific sessions at the BMT for vegetatively propagated, self-pollinated and cross-pollinated crops, in order to facilitate discussions on horizontal matters and, subject to such an approach, agreed to propose to discontinue the Crop Subgroup for Vegetatively Propagated Crops. It noted that new, individual crop subgroups could be established if considered appropriate, for example for grapevine.

24. The BMT, at its tenth session, agreed with the approach proposed by the Crop Subgroup for Vegetatively Propagated Crops, that specific sessions be organized at the BMT for vegetatively propagated, self-pollinated and cross-pollinated crops, in order to facilitate discussions on horizontal matters. Subject to that approach, it agreed to propose to the TC to discontinue the Crop Subgroup for Vegetatively Propagated Crops.

Future Program for Crop Subgroups

25. At its tenth session, the BMT agreed that the Crop Subgroups should, in particular, provide a forum for focused discussion of proposals with stakeholders. In that respect, it noted that it may not be most appropriate to hold the meetings in conjunction with meetings of the Technical Working Parties. It agreed that the following program for meetings of the Crop Subgroups might be appropriate:

Crop Subgroup for Rose: to meet in early 2007;
Crop Subgroup for Potato: to meet in Spring 2007; and
Crop Subgroup for Maize: to meet around the end of 2007 or early 2008.

26. Following the tenth session of the BMT, and with the joint agreement of the TC Chairperson, the relevant TWP Chairperson, the relevant Chairperson of the Crop Subgroup and the Office (see document TC/42/12 "Report", paragraph 127), the following Crop Subgroup meetings have been arranged:

Crop Subgroup for Potato: to meet on April 17, 2007, in Quimper, France;
Crop Subgroup for Rose: to meet on April 18, 2007, in Angers, France.

27. The TWA agreed to propose to the TC that consideration be given to inviting the Crop Subgroups to develop proposals concerning the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders' rights, technical verification and the consideration of essential derivation. In its consideration of the TWA proposal, the TC may wish to be aware that the TC agreed to the creation of the Crop Subgroups as proposed by the BMT at the sixth session of the BMT, held in Angers, France from March 1 to 3, 2000 (see document TC/36/11, paragraph 123). With regard to the role of the Crop Subgroups, the following was explained:

Extract from document TC/36/3 Add.:

“23. [At its sixth session, held in Angers, France from March 1 to 3, 2000,] [t]he BMT agreed that real progress could not be expected without intensive discussion in small groups on specific species. It therefore decided to propose establishing *ad hoc* crop subgroups during the eighteen month interval until the next session to make real progress in discussions on possibilities and consequences of the introduction of molecular techniques in DUS testing, the management of reference collection and the judgement of essential derivation.”

The TC may also wish to take into account the observation of the Consultative Committee that the BMT provided “a forum for discussion” on the use of biochemical and molecular techniques in the consideration of variety identification (see paragraphs 13 and 14).

Future program for the BMT

28. As explained in paragraph 25, the BMT, at its tenth session, agreed with the approach proposed by the Crop Subgroup for Vegetatively Propagated Crops, that specific sessions be organized at the BMT for vegetatively propagated, self-pollinated and cross-pollinated crops, in order to facilitate discussions on horizontal matters. Subject to that approach, it agreed to propose to the TC to discontinue the Vegetatively Propagated Crop Subgroup.

29. In order to encourage the presentation of information in relation to the use of molecular techniques in the consideration of essential derivation and in variety identification, the BMT agreed that it would be appropriate to dedicate a specific day to item 11 “The use of molecular techniques in the consideration of essential derivation” and item 12 “The use of molecular techniques in variety identification”, at the eleventh session of the BMT. In particular, breeders and other experts would be offered the possibility to attend for that specific day.

30. *The TC is invited to:*

(a) *note the intention to provide information at the forty-first session of the TWV on work in relation to the use of molecular markers, in particular in relation to disease resistance (see paragraph 18);*

(b) *note the support of the TWA for the work of the Crop Subgroups (see paragraph 19);*

(c) *note that the TWA will be invited to propose a new Chairperson for the Crop Subgroup for Wheat and Barley at its thirty-sixth session (see paragraphs 20 and 21);*

(d) *to consider the proposal of the Crop Subgroup for Vegetatively Propagated Crops and the BMT, to organize specific sessions at the BMT for vegetatively propagated, self-pollinated and cross-pollinated crops and, on that basis, to discontinue the Vegetatively Propagated Crop Subgroup (see paragraphs 22 to 24 and 28);*

(e) *to note the planned program for meetings of the Crop Subgroups for Potato, Rose and Maize (see paragraphs 25 and 26);*

(f) *to consider the TWA proposal to invite the Crop Subgroups to develop proposals concerning the possible use of molecular tools for variety identification in relation to the enforcement of plant breeders' rights, technical verification and the consideration of essential derivation (see paragraph 27); and*

(g) *to note the intention, at the eleventh session of the BMT, to dedicate a specific day to the items concerning "The use of molecular techniques in the consideration of essential derivation" and "The use of molecular techniques in variety identification" (see paragraph 29).*

[Annex follows]

AD HOC CROP SUBGROUPS ON MOLECULAR TECHNIQUES
(BMT CROP SUBGROUPS)

<u>Crop Subgroup for:</u>	<u>Chairperson</u>	<u>TWP</u>
Maize	Mrs. Beate Rücker (Germany)	TWA
Oilseed Rape	Mrs. Françoise Blouet (France)	TWA
Potato	Mrs. Beate Rücker (Germany)	TWA
Rose	Mr. Joost Barendrecht (Netherlands)	TWO
Ryegrass	Mr. Michael Camlin (United Kingdom)	TWA
Soybean	Mr. Marcelo Labarta (Argentina)	TWA
Sugarcane	Mr. Luis Salaiques (Spain)	TWA
Tomato	Mr. Richard Brand (France)	TWV
Wheat and Barley	Mr. Robert Cooke (United Kingdom)	TWA

Vegetatively Propagated Crops

(considers horizontal matters relating to vegetatively propagated crops, including horizontal matters relating to the Crop Subgroups for Potato, Rose and Sugarcane and matters concerning other vegetatively propagated crops)

[End of Annex and of document]