



TWC/24/2

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

**TECHNICAL WORKING PARTY ON AUTOMATION AND
COMPUTER PROGRAMS**

**Twenty-Fourth Session
Nairobi, June 19 to 22, 2006**

**DEVELOPMENTS IN UPOV CONCERNING THE USE OF
MOLECULAR TECHNIQUES**

Document prepared by the Office of the Union

1. The purpose of this document is to report on developments concerning:
 - (a) the document “Situation in UPOV concerning the possible use of molecular markers in DUS examination” (Annex to document TC/40/9 Add.);
 - (b) “Guidelines for molecular marker selection and database construction (BMT Guidelines)”;
 - (c) 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
 - (d) proposals concerning the *Ad hoc* Crop Subgroups on Molecular Techniques (Crop Subgroups).

Document “Situation in UPOV Concerning the Possible Use of Molecular Markers in DUS Examination” (Annex to document TC/40/9 Add.)

2. At its forty-first session, held in Geneva, from April 4 to 6, 2005, the TC reconfirmed that the text of the Annex to document TC/40/9 Add. would be a suitable summary of the situation in UPOV concerning the possible use of molecular markers in DUS examination. That text was reproduced as the Annex to document CAJ/50/4, for consideration by the Administrative and Legal Committee (CAJ).

3. The Annex to document CAJ/50/4 (reproduction of the Annex to document TC/40/9 Add.), was considered by the CAJ at its fifty-first session, held in Geneva on April 7, 2005. At that session, some concerns were expressed regarding the Annex to document CAJ/50/4, and it was agreed that written comments should be sent to the Office of the Union (Office) by the end of April 2005. The CAJ agreed that, on the basis of those comments, a new draft would be prepared by the Office, in conjunction with the Chairperson of the TC, for consideration by the CAJ at its fifty-second session, held in Geneva on October 24 and 25, 2005.

4. Following the fifty-first session of the CAJ, Mrs Julia Borys, Chairperson of the TC, and the Office agreed that it would be important that any redrafting of the text in the Annex to document CAJ/50/4 should involve the other persons involved in the drafting of the original text, namely: Mr. Michael Camlin, former Chairman of the TC, and Mr. Gerhard Deneken, Chairman of Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT). Both Mr. Camlin and Mr. Deneken agreed to work with Ms. Borys and the Office (the “TC Chairperson’s group”) in relation to any redrafting of the text.

5. The comments received by the Office on the Annex to document CAJ/50/4 indicated that clarification was needed on:

(a) whether the document was intended to consider molecular markers in the form of characteristics and/or the use of molecular methods in the examination of DUS using existing characteristics;

(b) whether the document was intended to provide general guidance or guidance on the possible use of molecular markers in specific UPOV Test Guidelines, e.g. the Test Guidelines for the crops and species mentioned in the proposals; and

(c) the relationship and difference between the “options” and the “proposals”.

6. It was clarified that the concerns expressed at the fifty-first session, with regard to the Annex to document CAJ/50/4, did not relate to documents TC/38/14 -CAJ/45/5 and TC/38/14 Add.-CAJ/45/5 Add., which presented the proposals developed in the *Ad hoc* Crop Subgroups, the recommendations of the BMT Review Group concerning those proposals and the opinion of the TC and the CAJ regarding the recommendations of the BMT Review Group.

7. The TC Chairperson’s group noted that the problems concerned the clarity of the explanation of the situation, rather than the situation as agreed by the TC and the CAJ in 2003. Having reviewed the comments received, the TC Chairperson’s group was of the view that those comments had identified important aspects where the text should be improved, but noted that it would not be possible to make the necessary improvements without a substantial

reworking of the text. The TC Chairperson's group also noted that there had been some important discussions at the ninth session of the BMT held in Washington, D.C., United States of America, from June 21 to 23, 2005, which could have a bearing on the situation in due course. In particular, it noted that there had been substantial progress in the drafting of the "Guidelines for molecular marker selection and database construction" (BMT Guidelines) and a good level of agreement on those at that BMT session, which could allow reference to that document in any new version of the Annex to document CAJ/50/4. In addition, it noted that new proposals concerning molecular markers might come forward for consideration and that, furthermore, some of those proposals might not fit completely within the framework of the three options previously discussed.

8. In conclusion, on the basis of the comments received and reflection on those comments, the TC Chairperson's group agreed that a substantial reworking of the Annex to document CAJ/50/4 (reproduction of the Annex to document TC/40/9 Add.) was required. It concluded, after consultation with the Chairman of the CAJ, that such a reworking would have gone beyond the intention of the CAJ at its fifty-first session and agreed that a decision to undertake such a reworking should be first considered by the CAJ and the TC. Furthermore, the TC Chairperson's group noted the developments at the ninth session of the BMT and considered that those developments might be taken into account in any revision of the text.

9. At its fifty-second session, held in Geneva, on October 24 and 25, 2005, the CAJ reviewed the comments received by the Office following the fifty-first session of the CAJ and the conclusions of the TC Chairperson's group, as presented in document CAJ/52/2. Those comments and conclusions are set out in paragraphs 4 to 8, above. The CAJ noted that, on the basis of comments in the CAJ, the document on molecular techniques, contained in the Annex to document CAJ/50/4, required a substantial editorial reworking. It agreed that the comments of the CAJ should be reported to the TC, which could decide whether to undertake the reworking of the document (see document CAJ/52/5 Prov., paragraph 22).

10. At its forty-second session, held in Geneva, from April 3 to 5, 2006, the TC concluded that it would not be appropriate to undertake a reworking of the Annex to document TC/40/9 Add. (Annex to document CAJ/50/4) on the basis of the comments made in the CAJ. It reaffirmed its support for the presentation of the situation, set out in documents TC/38/14 -CAJ/45/5 and TC/38/14 Add.-CAJ/45/5 Add., which presented the proposals developed in the *Ad hoc* Crop Subgroups, the recommendations of the BMT Review Group concerning those proposals and the opinion of the TC and the CAJ regarding the recommendations of the BMT Review Group. In addition, it considered that any proposals to reconsider the situation should be referred to the BMT Review Group.

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

11. The Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular (BMT) 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 should prepare a guidance document ("BMT Guidelines"). Document TWC/23/2 provided information on progress in the development of the BMT Guidelines at that time.

12. Document BMT Guidelines (proj.5), considered by the TC at its forty-second session, in April 2006, reflected the comments made at the twenty-third session of the Technical Working Party on Automation and Computer Programs (TWC), the ninth session of the BMT and the Enlarged Editorial Committee (TC-EDC) meeting of January 10, 2006.

13. The TC agreed to request the BMT, at its tenth session, to be held in Seoul, Republic of Korea, from November 21 to 23, 2006, to review a new draft of the BMT Guidelines (BMT Guidelines (proj.6)), incorporating the comments made at the forty-second session of the TC, and also agreed to invite the TWC to consider that draft at its twenty-fourth session, to be held in Nairobi, Kenya, from June 19 to 22, 2006.

14. At the twenty-third session of the TWC and at the ninth session of the BMT, Mr. Sylvain Grégoire (France), drafter of Section 6 “Databases” of BMT Guidelines (proj.5), suggested that it would be useful to move forward with a practical exercise, involving a small number of crops, in the development of an exchangeable database. He noted that, from an IT perspective, such an exercise would be straightforward, but that it would require all participating partners to identify the markers to be used and to clarify and agree on the status of the information to be included in the database and the accessibility of that data, e.g. to contributing partners or to all interested experts from members of the Union. The representative of the International Seed Federation (ISF) considered that UPOV was the appropriate body to take the matter forward.

15. At the ninth session of the BMT, Mr. Michael Sussman, National Science Laboratory (NSL), United States Department of Agriculture, explained that NSL would be able to participate in ring tests and a pilot database project involving any crops of interest. The relevant experts from the Netherlands and the United Kingdom, involved in the projects presented in documents BMT/9/8 “Research project co-financed by the Community Plant Variety Office (CPVO): Management of winter oilseed rape reference collections”, BMT/9/12 “Analysis of a database of DNA profiles of 734 hybrid tea rose (*Rosa hybrida*) varieties” and involved in the project to characterize all the varieties in the Common Catalogue of the European Union by 2007 (see document BMT/9/14, paragraph 24), indicated their willingness to participate in a pilot database project. It was agreed that the matter should be considered by the relevant Crop Subgroups and the TC.

16. 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.

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

17. At its fortieth session, with modification to the wording at its forty-first session, the TC agreed to propose to the 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.

18. 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

19. In accordance with the agreement of the TC and the CAJ, a meeting of the BMT Review Group was held on April 6, 2006. The meeting discussed the development of appropriate terms of reference and objectives for the work of the BMT Review Group in this area and considered a suitable timetable for its work. A report of the meeting will be posted on the first-restricted area of the UPOV website.

Ad Hoc Crop Subgroups on Molecular Techniques (Crop Subgroups)

20. At its ninth session held in Washington, D.C., United States of America, from June 21 to 23, 2005, the BMT received the following reports of work on molecular techniques on a crop-by-crop basis:

(a) Repeatability and Discrimination Power of SSR Data in the Vegetatively Reproduced Potato Varieties: Impact of "Weak Alleles" (document BMT/9/4);

(b) Assessment of the uniformity of Chinese maize varieties by a set of SSR markers (document BMT/9/5);

(c) Identification of quince varieties using SSR markers developed from pear and apple (document BMT/9/6);

(d) Research project co-financed by the Community Plant Variety Office (CPVO): "Management of Winter Oilseed Rape Reference Collections" (document BMT/9/8);

(e) SNPs in barley: a potential "Option 1" approach (document BMT/9/9);

(f) A microsatellite-based system for the protection of grapevine varieties (document BMT/9/11);

(g) Analysis of a database of DNA profiles of 734 hybrid tea rose (*Rosa hybrida*) varieties (document BMT/9/12);

(h) The potential of SNP markers in expressed genes for identification of potato varieties and determination of distinctness (document BMT/9/13).

21. A report of the discussions of those reports can be found in the report of ninth session of the BMT, document BMT/9/14, paragraphs 27 to 52. As a result of those discussions (see document BMT/9/14, paragraph 61), the BMT invited the relevant Technical Working Parties (TWPs) and the TC to consider:

(a) *Crop Subgroup for Vegetatively Propagated Crops:*

the establishment of a crop subgroup for a range of vegetatively propagated crops which, in conjunction with all interested parties and breeders in particular, could formulate proposals for consideration by the TC and BMT Review Group;

(b) *Crop Subgroup for Wheat and Barley:*

the extension of the Crop Subgroup for Wheat to cover both wheat and barley;

(c) *Crop Subgroup for Grapevine:*

in relation to proposal (a), in the absence of the establishment of a crop subgroup for vegetatively propagated crops, consideration should be given to the establishment of a specific Crop Subgroup for Grapevine.

22. At its forty-second session, the TC agreed to the establishment of a crop subgroup for vegetatively propagated crops, which was expected to meet in conjunction with the sessions of the BMT to consider horizontal matters concerning vegetatively propagated crops. It agreed that the existing Crop Subgroups for Potato, Rose and Sugarcane might continue to meet as individual crop subgroups, in particular in conjunction with the sessions of the relevant Technical Working Parties, where considered useful.

23. The TC agreed to the extension of the Crop Subgroup for Wheat to cover both wheat and barley.

24. A list of the current Crop Subgroups is presented in the Annex to this document.

[Annex follows]

ANNEX

**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 Salaices (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]