



BMT-TWA/Maize/2/2

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

**AD HOC CROP SUBGROUP ON MOLECULAR TECHNIQUES
FOR MAIZE**

Second Session

Chicago, United States of America, December 3, 2007

DEVELOPMENTS IN UPOV
CONCERNING BIOCHEMICAL AND MOLECULAR TECHNIQUES

Document prepared by the Office of the Union

1. The purpose of this document is to report on:
 - (a) the situation in UPOV concerning the possible use of molecular markers in DUS examination;
 - (b) 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; and
 - (c) UPOV Guidelines for molecular marker selection and database construction (BMT Guidelines)
2. An overview of the UPOV bodies involved in the consideration of biochemical and molecular techniques is provided on the first restricted area of the UPOV website at http://www.upov.int/restrict/en/upov_structure_index.html and also made available to participants who do not have the password to the first restricted area of the UPOV Website, via the temporary password area. That overview is also attached as the Annex to this document.

Situation in UPOV concerning the possible use of molecular markers in DUS examination

3. The situation in UPOV concerning the possible use of molecular markers in DUS examination is set out in documents TC/38/14 -CAJ/45/5 and TC/38/14 Add.-CAJ/45/5 Add.. Those documents present the proposals developed in the *Ad Hoc* Crop Subgroups on Molecular Techniques (Crop Subgroups), the recommendations of the *Ad Hoc* Subgroup of Technical and Legal Experts on Biochemical and Molecular Techniques (BMT Review Group) concerning those proposals and the opinion of the Technical Committee (TC) and the Administrative and Legal Committee (CAJ) regarding the recommendations of the BMT Review Group.

4. An overview of the situation in UPOV concerning the possible use of molecular markers in DUS examination, based on documents TC/38/14 -CAJ/45/5 and TC/38/14 Add.-CAJ/45/5 Add., will be presented by the Office of the Union at the second session of the *Ad Hoc* Crop Subgroup on Molecular Techniques for Maize (Crop Subgroup for Maize).

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

5. 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.”

6. 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 Consultative Committee might need to consider.

7. 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 at its tenth session, held in Seoul, Republic of Korea, from November 21 to 23, 2006, that it would be appropriate to dedicate a specific day to the agenda items “The use of molecular techniques in the consideration of essential derivation” and “The use of molecular techniques in variety identification”, at the eleventh session of the BMT, to be held in Puerto de la Cruz, Tenerife, Spain, from May 12^{*} to 14. In particular, breeders and other experts will be offered the possibility to attend for that specific day.

* May 12 will be the “breeders’ day”

8. At its forty-third session, held in Geneva, from March 26 to 28, 2007, the TC noted the conclusion of the Consultative Committee. The TC noted the importance of the TWPs in the consideration of biochemical and molecular techniques and the contact between other UPOV bodies dealing with those matters. It noted the importance of communication between the TWPs, BMT, TC, CAJ and the Council within the existing UPOV structure. The TC also noted the importance of the BMT Crop Subgroups as a forum for DUS experts and molecular specialists to consider matters at a crop specific level. It agreed 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.

Molecular marker selection and database construction

Guidelines for DNA-Profiling: Molecular Marker Selection and Database Construction (BMT Guidelines)

9. At its eighth session held in Tsukuba, Japan, from September 3 to 5, 2003, the BMT concluded 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 should prepare a guidance document (BMT Guidelines).

10. At its at its forty-third session, the TC considered document BMT Guidelines (proj.8) and agreed the following amendments:

Section 6.3.1 (c): to change "locus" to "allele", subject to confirmation by Mr. Sylvain Grégoire (France), the drafter of that section.

The TC agreed that, subject to the amendment above, document BMT Guidelines (proj.8) should be put forward for adoption by the Council at its forty-first ordinary session, to be held in Geneva on October 25, 2007. The Consultative Committee, at its seventy-fourth session, held in Geneva on October 24, 2007, made a preliminary examination of document BMT Guidelines (proj.9). In response to the comments made by some delegations concerning the need for editorial improvements, the Committee agreed that a circular be sent to the Consultative Committee, the TC and the CAJ providing an opportunity to comment within four weeks on document BMT Guidelines (proj.9). Based on the comments received, a new draft of that document will be prepared for consideration by the Editorial Committee at its meeting on January 8, 2008. A further draft incorporating the comments by the Editorial Committee will subsequently be presented to the TC, the CAJ, the Consultative Committee and the Council in April 2008.

ISO and Codex guidelines

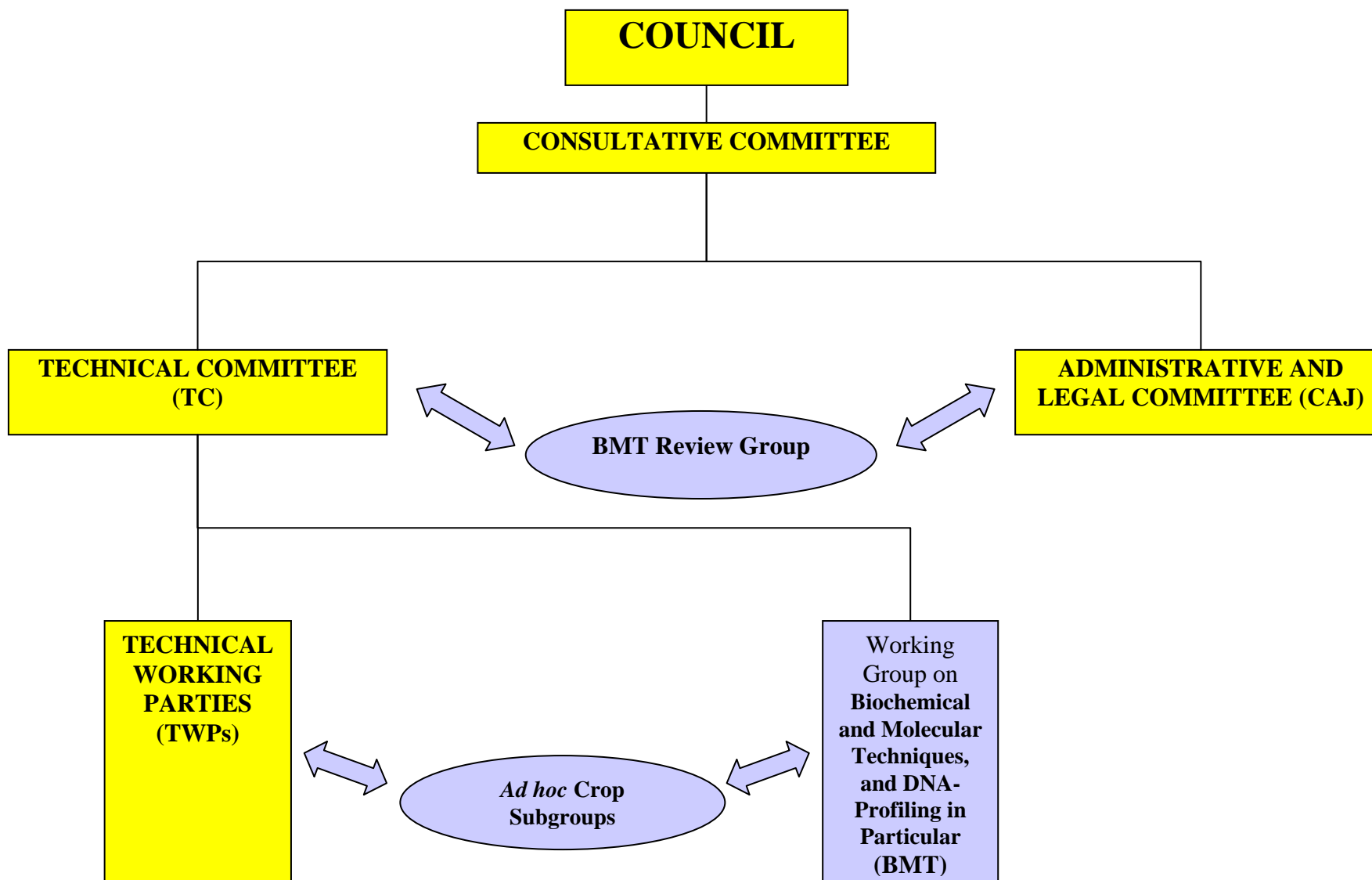
11. The TC agreed that relevant experts be invited to make a presentation concerning ISO and Codex guidelines, in relation to quality criteria in molecular techniques, at the eleventh session of the BMT.

Practical exercise in the development of an exchangeable database

12. 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. 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. 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. At its forty-third session, the TC agreed that the BMT Crop Subgroups for Rose, for Potato and for Oilseed Rape should be invited to consider how to take that matter forward. With respect to the terms of reference for such an exercise, the TC agreed that the exercise should consider both the quality and structure of the data.

[Annex follows]

UPOV Structure: Biochemical and Molecular Techniques



**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.

**TERMS OF REFERENCE OF *AD HOC* SUBGROUP OF TECHNICAL AND LEGAL
EXPERTS ON BIOCHEMICAL AND MOLECULAR TECHNIQUES
("BMT REVIEW GROUP")**

*(as agreed by the Administrative and Legal Committee at its forty-third session,
held on April 5, 2001 (see document CAJ/43/8, paragraph 58))*

1. The BMT Review Group should assess possible application models proposed by the Technical Committee, on the basis of the work of the BMT and crop subgroups, for the utilization of biochemical and molecular techniques in the examination of Distinctness, Uniformity and Stability in relation to the following:
 - (a) conformity with the UPOV Convention, and
 - (b) potential impact on the strength of protection compared to that provided by current examination methods and advise if this could undermine the effectiveness of protection offered under the UPOV system.
2. In conducting its assessment, the BMT Review Group may refer specific aspects to the Administrative and Legal Committee or the Technical Committee for clarification or further information as considered appropriate.
3. The BMT Review Group will report its assessment, as set out in paragraph 1 above, to the Administrative and Legal Committee, but this assessment will not be binding for the position of the Administrative and Legal Committee.

AD HOC CROP SUBGROUPS ON MOLECULAR TECHNIQUES (CROP SUBGROUPS)

At its thirty-sixth session, held in Geneva, from April 3 to 5, 2000 the Technical Committee agreed to the creation of the *Ad hoc* Crop Subgroups proposed by the BMT at its sixth session, held in Angers, France from March 1 to 3, 2000, (see document TC/36/11, paragraph 123)

Extract from document TC/36/3 Add.

“23. [At its sixth session, held in Angers, France from March 1 to 3, 2000] The 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.

“24. The BMT discussed the role of *ad hoc* crop subgroups and its relationship with the Technical Working Parties. It agreed that testing experts in the Technical Working Party should be involved with the discussion in the *ad hoc* crop subgroups. It also agreed that the chairmen of the *ad hoc* crop subgroups should be chosen from experts in the Technical Working Party in question. The role of the *ad hoc* crop subgroups would not be to make any decisions, but to prepare documents that could be a basis of further discussions in the BMT, the Technical Working Parties and the Technical Committee. The BMT confirmed that the Technical Working Parties should be the decision-making bodies for the introduction of new characteristics into DUS testing for each species.

[...]

“26. The BMT discussed the selection of species for the subgroups. A majority of experts supported two criteria, (i) the need for the introduction of molecular techniques in DUS testing (species for which a limited number of characteristics are available and species which urgently need effective methods for the management of reference collection) and (ii) the availability of DNA profiling data and on-going studies.”

At its forty-third session, held in Geneva, from March 26 to 28, 2007, the Technical Committee agreed 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.

The list of Crop Subgroups established by the Technical Committee (TC) is as follows:

<u>Crop Subgroup for:</u>	<u>TWP</u>	<u>TC Session which established</u>
Maize	TWA	thirty-sixth session (2000)
Oilseed Rape	TWA	thirty-sixth session (2000)
Potato	TWA	thirty-eighth session (2002)
Rose	TWO	thirty-sixth session (2000)
Ryegrass	TWA	forty-second session (2006)
Soybean	TWA	thirty-eighth session (2002)
Sugarcane	TWA	thirty-eighth session (2002)
Tomato	TWV	thirty-sixth session (2000)
Wheat and Barley	TWA	thirty-sixth session (2000) / forty-second session (2006)

[End of Annex and of document]