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

**COUNCIL**

**Thirty-Second Ordinary Session**  
**Geneva, October 28, 1998**

PROGRESS REPORT ON THE WORK OF THE TECHNICAL COMMITTEE AND THE  
TECHNICAL WORKING PARTIES

*Addendum prepared by the Office of the Union*

Progress Report on the Work of the Working Group on Biochemical and Molecular  
Techniques and DNA-Profiling in Particular (BMT)

1. The Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular (BMT) held its fifth session at Beltsville, Maryland, United States of America, from September 28 to 30, 1998, under the chairmanship of Mr. Joël Guiard (France). The draft report on the session will be reproduced in document BMT/5/17 Prov. The business of the session is described below.

2. The BMT heard short presentations of research results referring to the following topics: the application of AFLP, SSR, STMS and STS for variety identification and distinction; advantages and limits of these techniques; standardization (reproducibility) of molecular marker systems for variety testing; the use of genes known in one species to derive markers for other closely related species. It discussed the future need for the construction and standardization of databases of DNA profiles of varieties and difficulties in freely accessing such databases and using molecular techniques. It also noted that in some cases there was a high mutation rate in molecular markers, which required that the assessment and control of stability in characteristics obtained with molecular markers should be carefully studied.

3. The BMT heard results of the assessment of variability within varieties and between varieties in ryegrass and rose. In the case of rose, the uniformity level was very high, as had been expected, but for species with other ways of reproduction, additional studies had still to be made. On the other hand, it noted that the mutation of phenotypic characteristics could generally not be detected by molecular markers. It reaffirmed that the greatest shortcoming still remaining was the checking and control of uniformity in characteristics obtained with molecular markers. In this respect, it agreed that the four options in paragraph 34 of document BMT/3/18 (the four options concerning the acceptable level of uniformity for characteristics obtained with molecular markers) should be discussed in the next session together with research results on more and different species.

4. The BMT discussed the use of statistical methods. It heard reports on the comparison of different statistical approaches and of different genetic distance estimators, on the prediction of phenotypic distances using molecular data and on the comparison of AFLP data with pedigree or morphology data. It noted that the choice of the markers and the statistical method to be used depended on whether the purposed use was for distinctness or for essential derivation purpose. It agreed that the advantages and disadvantages of different statistical methods should be discussed further.

5. The BMT heard reports on the discussions on the definition of “variety” held by a Working Group which met on February 12, 1998, and by the Administrative and Legal Committee (CAJ) in its spring session of this year. It also heard from the International Association of Plant Breeders for the Protection of Plant Varieties (ASSINSEL) the position of breeders on the use of DNA profiling on DUS testing. Most participants basically supported the conclusion of the CAJ and favored the second option of the four options discussed in the CAJ, namely that information obtained using a molecular tool could not be used alone for a conclusion on clear distinctness, but may be used only as a complement to phenotypic differences. It reaffirmed that many technical questions, such as uniformity and stability, in the use of molecular tools for DUS testing are still open and needed to be solved before any recommendation on the use of those tools could be made.

6. The BMT discussed again the use of DNA profiling methods by expert witnesses in disputes on essential derivation on the basis of a pilot study on tomato and of remarks from ASSINSEL on its position on the assessment of essential deviation. Regarding essential derivation, the task of the UPOV and national offices was not to judge essential derivation, but to give technical advice on request from courts and to provide the technical guidelines. In this respect, the task of the BMT was to discuss whether molecular techniques and statistical methods could provide an appropriate technical tool for assessing essential derivation. However, its discussion should be limited to the tools alone, and the establishment of threshold levels of genetic distance for decisions on essential derivation was beyond its limits.

7. The BMT discussed the use of DNA profiling for prescreening as a possible tool in DUS testing on the basis of a study on the most similar variety comparison and of a report on a case study and on the discussion on the use of electrophoresis as an aid in prescreening held in the Technical Working Party for Agricultural Crops (TWA) in its twenty-seventh session. It noted that in many cases the molecular distance was poorly correlated with the morphological distance. It will continue discussion on the choice of molecular markers linked to morphological characteristics and the use of molecular markers combined with morphological characteristics for prescreening.

8. The BMT noted that the Council had prolonged the chairmanship of Mr. Joël Guiard (France) to cover the fifth session of the BMT. During its session, the BMT discussed whether discussions should continue in the BMT or should take place in the Technical Committee, in which case the BMT would stop holding sessions. The BMT agreed that it was important to continue its discussions in the BMT as a separate group because the BMT was at present the only forum where testing experts, molecular scientists, statisticians and breeders were able to discuss intensively and exchange their views and information. Continuation of those discussions was needed for further progress. It therefore proposed to have further sessions. [The nomination of the next chairman of the BMT was left to the session of the Technical Committee in Spring 1999 since the next BMT session was expected to be held after the ordinary session of the Council in 1999.]

9. At the invitation of the Community Plant Variety Office (CPVO), the sixth session of the BMT is proposed to take place in Angers, France, in late February or early March 2000, two to three weeks before the session of the Technical Committee. At that session, discussions are planned on the following subjects: (a) a short presentation of biochemical and molecular techniques: new techniques, advantages and limits of different techniques; (b) the assessment of variability within varieties and between varieties, in particular, uniformity and stability in molecular markers; (c) statistical methods: confidence intervals and improvement of precision of distance estimates; graphic representation of genetic distances; comparison of genetic distances with phenotypic distances; combination of information from diverse data types (AFLP, SSR, morphological data, etc.); (d) construction and standardization of databases of DNA profiles of varieties; (e) possibilities and consequences of the introduction of DNA profiling methods for DUS testing; (f) position of breeders vis-à-vis DNA profiling; (g) use of DNA profiling methods by expert witnesses in disputes on essential derivation; (h) use of DNA profiling (combined with morphological characteristics) as a possible tool for prescreening in DUS testing.

10. The BMT agreed to ask all Technical Working Parties to suggest one or two species on which studies and discussions in the BMT should be concentrated.

*11. The Council is invited to note and approve the above information and the proposed program of the BMT.*

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