



BMT/12/24

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

**WORKING GROUP ON BIOCHEMICAL AND MOLECULAR
TECHNIQUES AND DNA PROFILING IN PARTICULAR**

Twelfth Session
Ottawa, Canada, May 11 to 13, 2010

REPORT

*adopted by 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 twelfth session in Ottawa, Canada, from May 11 to 13, 2010. The list of participants is reproduced in Annex I to this report.
2. The BMT was welcomed by Mr. Paul Mayers, Associate Vice-President responsible for Program, Policy and Programs Branch, Canadian Food Inspection Agency (CFIA). A copy of his welcoming address is reproduced in Annex II to this document. Annex III to this document contains an address by Mrs. Barbara Jordan, Associate Vice-President responsible for Policy, Policy and Programs Branch of the CFIA, on behalf of Mrs. Sandra Wing, Vice-President, Policy and Programs Branch of the CFIA, at the occasion of the official dinner on the evening of May 11, 2010.
3. The session was opened by Mr. Andrew Mitchell (United Kingdom), Chairman of the BMT, who welcomed the participants.

Adoption of the Agenda

4. The BMT adopted the Agenda as reproduced in document BMT/12/1 Rev., on the basis that agenda item 10 "The use of molecular markers in examining essential derivation" and item 11 "The use of molecular techniques in variety identification" would be considered after agenda item 3 "Reports on developments in UPOV concerning biochemical and molecular techniques".

Reports on developments in UPOV concerning biochemical and molecular techniques

5. The Office of the Union (the Office) provided a report on developments in UPOV concerning Biochemical and Molecular Techniques, on the basis of document BMT/12/2. In addition, Mr. Joël Guiard (France) made a presentation on the “System for combining phenotypic and molecular distances in the management of variety collections” on the basis of document BMT/12/2 Add..

6. Mr. Guiard explained that the GAIA method, referred to in the “System for combining phenotypic and molecular distances in the management of variety collections”, was explained in document TGP/8 “Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability” and reported that the software was available from the *Group for Study and Control of Varieties and Seeds* (GEVES). He emphasized that the method needed to be calibrated for each location and on a crop-by-crop basis.

7. The BMT considered document BMT/DUS Draft 3 and agreed the following:

General	to delete all references to the terms “Option” and “Proposal” and to replace with the terms “Model” and “Example”
	to replace all references to “molecular characteristics” with an appropriate term such as “molecular markers”
3.1.2	to clarify that the phenotypic distance is based on phenotypic characteristics and to indicate that the GAIA threshold would need to be selected on a case-by-case basis
3.1.3	to read “Calibration of molecular distances in the management of variety collections (see Annex 2)”

8. The BMT agreed that document TGP/15 should be developed separately, but in parallel, to document BMT/DUS. The content of document BMT/DUS would be similar to BMT/DUS Draft 3, i.e. it would explain the development and consideration of all models within UPOV. However, document TGP/15 would contain only models that had received a positive assessment and for which accepted examples could be provided, i.e. Models “Characteristic-specific molecular markers” (Section 3.1.1) and “Combining phenotypic [characteristics] and molecular distances in the management of variety collections” (Section 3.1.2) for the time being.

The use of molecular techniques in examining essential derivation

Standards for Helping to Determine EDV Status in Maize (Zea mays L.) using SSRs and Future Prospects Using SNPs

9. The BMT received a presentation by Mr. Barry Nelson (Pioneer Hi-Bred International Inc), based on document BMT/12/14, a copy of which is provided in document BMT/12/14 Add..

10. Mr. Jörg Schondelmaier (Saaten-Union Biotec GmbH) noted that there were certain differences in the values of the coefficient of variances (CV) for the different sets of markers.

Mr. Nelson considered that, in the case of values of correlations from 0.6 to 0.8, the results could be considered similar. He explained that an advantage of SNP markers with respect to SSR makers was the lower cost of using SNP markers. Mr. Joël Guiard (France) asked whether the selected SNP markers were linked with expressed characteristics. Ms. Elizabeth Jones explained that the SNP markers were selected to cover the genome; they were closely linked to expressed sequences, or were in transcribed sequences.

EDV - The ISF Approach

11. The BMT received a presentation by Mr. Marcel Bruins (International Seed Federation (ISF)), based on document BMT/12/22.

12. In reply to a question related to the use of the Procedure Rules for Dispute Settlement of ISF, Mr. Bruins explained that, annually, there were around 5 to 10 cases of arbitration. Mr. Bert Scholte (European Seed Association) sought information on the use of the Procedure Rules for Dispute Settlement of ISF for cases of essential derivation. Mr. Bruins replied that in lettuce there had been no reported cases for essential derivation, but noted that there could be discussions between ISF members of which the secretariat of ISF would not be informed. He reported on discussions which had indicated that the ISF guidelines on essential derivation developed by ISF had played a role in guiding the breeding activity of ISF members. In reply to a question on the techniques used for the assessment of essential derivation, Mr. Bruins explained that AFLP markers were not likely to be used any more because of the authorizations required for the use of that proprietary technology.

The use of molecular techniques in variety identification

Project of Preserving Specimens and DNA of Protected Varieties in Japan

13. The BMT received a presentation by Mr. Tetsuya Kimura (Japan), based on document BMT/12/6, a copy of which is provided in document BMT/12/6 Add..

14. In reply to a question from Mrs. Anne Weitz (Community Plant Variety Office of the European Union (CPVO)), Mr. Kimura explained that approval of the breeder was sought before sampling the variety and reported that there was no charge to the breeder.

The Use of Temperature Switch PCR for SNP Genotyping in Barley

15. The BMT received a presentation by Mr. Alex Reid (United Kingdom) based on document BMT/12/7, a copy of which is provided in document BMT/12/7 Add..

16. Mr. Reid explained that SNP markers might be interesting in relation to the examination of DUS, in particular within an Option 1 approach. Mr. Joël Guiard (France) considered that, given that most characteristics in barley were quantitative characteristics, an Option 1 approach might not be the best approach and wondered if SNP markers might have the possibility of being applied in an Option 2 approach.

An Overview of DNA-Based Variety Identification at the Canadian Grain Commission

17. The BMT received a presentation by Mr. Daniel Perry (Canadian Grain Commission) based on document BMT/12/8, a copy of which is provided in document BMT/12/8 Add..

Application of SSR and SNP in Maize Variety Identification and Database Construction

18. The BMT received a presentation by Ms. Wei Song (China), based on document BMT/12/9.

19. Mr. Jörg Schondelmaier (Saaten-Union Biotec GmbH) requested information on the number of markers required. Mrs. Song explained that, for the purposes of distinctness, 42 SNP markers would be enough, whereas for the assessment of essential derivation, more markers would be required.

Evaluation of Simple Sequence Repeat (SSR) Markers for Identification of Peas Varieties Registered in Canada

20. The BMT received a presentation by Ms. Marie-José Côté (Canada), based on document BMT/12/11, a copy of which is provided in document BMT/12/11 Add..

21. Mr. Marcel Bruins (ISF) sought further information with respect to the variation within varieties presented in the document and suggested that the breeders might be able to provide some clarification. Mrs. Cindy Pearson (Plant Pre-market Assessment Office, Canada) explained the requirements for the registration of varieties for the purposes of commercialization in Canada, in contrast to the DUS requirements for plant breeders' rights. Mr. Alex Reid (United Kingdom) noted that similar levels of heterogeneity had been observed in some varieties of peas in the United Kingdom. Mr. Jörg Schondelmaier (Saaten-Union Biotec GmbH) suggested the use of bulk seed samples as a means of addressing the heterogeneity.

Application of Amplified Fragment Length Polymorphism (AFLP) Based Genotyping for Variety Identification of Berberis thunbergii (DC) (Japanese Barberry) in a Regulatory Diagnostic Laboratory

22. The BMT received a presentation by Ms. Cheryl Dollard (Canada), based on document BMT/12/12, a copy of which is provided in document BMT/12/12 Add..

Varietal Identification in Maize: Are Sixteen SNP Markers Sufficient?

23. The BMT received a presentation by Ms. Elizabeth Jones (Pioneer Hi-Bred International Inc), based on document BMT/12/15, a copy of which is provided in document BMT/12/15 Add..

Use of a molecular marker-based system for identification of varieties in Brazil: Soybean and Rice

24. The BMT received a presentation by Mr. Luís Pacheco (Brazil), based on document BMT/12/21.

Variety Tracer Program

25. The BMT considered document BMT/12/23, which was introduced by Mr. Henk Bonthuis (Netherlands).

26. Mr. Bonthuis clarified that the title holder had decided to terminate the plant breeder's right for 'Jolly Bee' in Europe and, in particular, the plant breeder's right had not been nullified. It was agreed that this clarification should be recorded in relation to paragraph 3 of document BMT/12/23.

Reports on the work of the Ad Hoc Crop Subgroups on Molecular Techniques (Crop Subgroups)

27. The BMT noted the report on planned meetings of the Crop Subgroups as set out in document BMT/12/2, paragraph 48. It was noted that developments for the crops concerned would be presented at the BMT sessions unless there was a particular need for a meeting of the crop subgroup.

28. The BMT noted that Mr. Joost Barendrecht, Chairman of the Crop Subgroup for Rose, had retired. It was agreed that it would not be necessary to appoint a new chairman unless meetings of the Crop Subgroup for Rose were planned.

Short presentations on new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations*The Use of Molecular Methods for Determining Distinctness Within U.S. PVP*

29. The BMT received a presentation by Mr. Paul Zankowski (United States of America), based on document BMT/12/17, a copy of which is provided in document BMT/12/17 Add..

30. An expert from the United Kingdom noted that most of the new developments were reported under the relevant individual agenda items. With regard to future developments, he anticipated that work on ryegrass might be reported at the thirteenth session of the BMT. On general developments, he reported on the achievement of ISO 9001 accreditation, which was considered as being important for entrustment by the Community Plant Variety Office of the European Union (CPVO).

31. An expert from Japan reported on developments concerning the enforcement of plant breeder's rights in the Ministry of Agriculture, Forestry and Fisheries and the National Center for Seed and Seedlings (NCSS). He explained that DNA analysis techniques of plants were mainly used for the development of new varieties and measures against infringements of the rights. In Japan, it was also used in the custom inspection of infringement of the plant breeder's rights. There were three ways in which DNA analysis for the protection of plant breeder's rights were used in Japan: Firstly, in the development of techniques of the new plant DNA analysis. Those were developed by national research institutes and private companies. For example, in national institutes, DNA analysis techniques of wheat, chestnut, citrus etc. had been developed. In private companies, DNA techniques had been developed for chrysanthemum, cymbidium, carnation etc. Around 40 kinds of plant DNA analysis

techniques had been developed or were being developed. Secondly, in the validation of DNA analysis techniques. It was important to secure reliability of the techniques for their use as evidence of infringement. For that reason, the techniques were validated by inspection organizations other than the organizations which had developed the technique, with the aim that the results of validation would open to the public. Ten kinds of techniques were open to the public on their website. Thirdly, in the preservation of specimens and DNA samples of registered varieties. When the results of the DNA analysis were used as evidence of infringement, it was necessary for the techniques to be reliable and for the identification of the analysis samples. For that reason, the specimens and DNA samples of registered varieties had been preserved since 2008. The activity of the PVP advisers had been presented at the eleventh session of the BMT, in Madrid. In Japan, PVP Advisers of NCSS had been active for protection of PVP. One of the activities of PVP Advisers was to perform similarity tests at the request of the holders of PBR. In similarity tests, there were three methods to compare the registered variety with a variety suspected of infringement. One of the methods was DNA analysis. The DNA analysis was very much requested by the holders of PBR, because DNA analysis could obtain results quickly, and could be performed even if the samples could not reproduce the plants or seedlings. In NCSS, DNA analysis was conducted for strawberry, rush, cherry, navy bean, tea, pear and adzuki bean. Validation of all those DNA analysis techniques had been completed. Over the preceding year, DNA analysis had been carried out for around 84 rush in NCSS. However, number of plants for which DNA analysis was possible needed to be increased. NCSS was consulted for around 30 cases a year regarding infringement of PBR. In their infringement consultations, NCSS was asked whether DNA analysis could be conducted for citrus, soybean, mushroom, carnation, chrysanthemum, and rose. DNA analysis methods were being developed in Japan. In addition, NCSS had been asked about DNA analysis of orchid, yam and tulip. Those analysis methods were not yet developed. Those consultations indicated that holders of PBR were eager to use their analysis methods. In NCSS, it was planned to continuously increase the types of plant for which it could provide analysis. New DNA analysis techniques were added as soon as validation of the techniques was completed, and NCSS had prepared a system that could receive the requests quickly. NCSS had sought to find means of solving the infringement of PBRs right quickly. As a part of that approach, it had begun to collect original samples of the registered varieties, as presented by Mr. Kimura in document BMT/12/6. Japan was very interested in the use of DNA analysis in other members of the Union and hoped that such an information would be provided at the BMT session.

32. An expert from France recalled that GEVES had relocated its headquarters to Angers and reported that it had achieved ISO 9001 and ISO17025 accreditation for seed quality testing and GM detection, as well as ISTA accreditation for seed testing. Its BIOGEVES service was offering a new platform for genotyping varieties with different techniques, the detection of adventitious presence of genetically modified organisms and pathogens and biochemical analysis, including NIRS. With regard to the use of molecular techniques in DUS testing, he reported that the method of “Combining phenotypic and molecular distances in the management of variety collections” would be implemented for maize and barley in 2011. He explained that molecular markers were used for checking the parent formula in hybrid sunflowers and that consideration was being given to using such methods for hybrid maize in place of the isozyme method. GEVES was working on a project to describe the molecular diversity in lettuce and was developing an approach for “Combining phenotypic and molecular distances in the management of variety collections” for lettuce, which it planned to present at the thirteenth session of the BMT. It was also decided to keep in cold chambers a small part of the original seed samples, submitted for national listing and for PBR DUS examination, as a reference of the variety at the time of application.

33. The expert from the Netherlands reported that the SSR database of potatoes, which had been developed in cooperation with the Science and Advice for Scottish Agriculture (SASA), as reported at the eleventh session of the BMT (documents BMT/11/9 and BMT/11/10) was being extensively used for variety identification. The database was regularly updated with new applications and was used in support of the morphological DUS testing of potatoes. In 2009, some new applications had been found to have an SSR profile similar to the SSR profile of existing varieties. Those varieties were not available in the living reference collection at that time and would be included in 2010 for morphological confirmation. A preliminary study had been started in 2009 on an Option 2 approach for the management of the reference collection of potatoes, combining distances based on SSR profiles and distances based on existing variety descriptions of all possible combinations of 157 potato varieties. Several marker sets and similarity coefficients had been explored, such as Jaccard, Dice and Rogers for molecular distances as well as Euclidian, Minkowski, Mahalanobis and Cityblock coefficients for morphological distances. None of those had resulted in a threshold for molecular distance where varieties could safely be excluded from the reference collection of varieties to be grown in the field. That was probably due to the diverse origin of the variety descriptions, creating unreliable morphological distances. The data would be validated in 2010 and definitions of variety distances (either molecular or morphological) would be explored in order to make DUS testing of potatoes more efficient. It was hoped that new results on the Option 2 approach in potatoes could be presented at the thirteenth session of the BMT.

34. The expert from the European Union reported that three CPVO R&D projects had been finalized. The Rose database project had been discussed with breeders and the retention of a DNA sample from the material submitted for DUS examination, on a voluntary basis for possible use in cases of infringement, was continuing to be discussed. The project for a database of morphological, molecular and photographic data in potatoes, conducted by the United Kingdom, the Netherlands, Germany and Poland, was being discussed with the project partners and would be discussed with the European Seed Association (ESA), with regard to its possible implementation in DUS testing and with a view to retaining a DNA sample for use in enforcement of plant breeders' rights. The database would also be useful for variety identification purposes. The project for molecular markers linked to disease resistance in tomato had produced good results and had resulted in the use of molecular markers for disease resistance in DUS testing, but it had been concluded that it was not appropriate to seek to incorporate the method in the CPVO protocols and UPOV Test Guidelines because breeding developments had led to the use of new disease resistance genes. A project on the management of reference collections in peach, being undertaken by France, Hungary, Italy and Spain would be the subject of a final meeting in August.

35. An expert from China reported that the State Forestry Administration had prepared guidelines for the use of molecular techniques for plant variety protection purposes, based upon the UPOV BMT Guidelines. She explained that those guidelines would be the framework for the development of DNA-profiles for variety identification. She added that a case study had been conducted in which DNA-profiles had been developed for 13 poplar varieties using SSR markers with capillary electrophoresis. Of the 13 poplar varieties, 4 were protected varieties, for which there was suspected to have been an infringement of the breeder's rights. She explained that it was planned to improve the national BMT guidelines, to develop DNA-profiles using SSR markers for more crops following the model used in poplar and to develop a database of DNA-profiles for varieties of common knowledge. An expert from the Ministry of Agriculture reported on the setting up of a DNA database for maize in 2002, which had been the subject of a presentation at the BMT session (see

document BMT/12/9). She reported that the database had been used in variety identification prior to VCU testing and for infringement cases since 2005. Work had also been done on rice since 2008. The Ministry of Agriculture would start new projects for DNA databases for 8 other genera and species within 5 years, including for wheat, soybean and Chinese cabbage. Those databases would be used in future for the management of variety collections at the PVP testing station.

36. The expert from Brazil reported that molecular techniques were not used for DUS purposes in Brazil, although they were used for variety identification purposes and for the checking of the hybrid formula in crops such as maize and cotton.

37. An expert from the Republic of Korea reported that the Korea Seed and Variety Service (KSVS) was developing molecular marker analysis for vegetable crops, such as melon, oriental melon, watermelon, cucumber, Chinese cabbage, hot pepper, and tomato. He explained that microsatellites were mainly used for variety identification and that a database of DNA profiles for those crops was under construction. He added that the markers had proved to be very useful to solve disputes between farmers and seed companies with respect to varieties of tomato, hot pepper, melon and oriental melon. Recently, the Republic of Korea was using DNA analysis in the control of the seed market of vegetable crops. In addition, molecular markers were used to verify genetic purity of varieties of rice, barley and soybean included in the national list.

38. An expert from Spain recalled the work on the use of molecular markers in the management of reference collections in grapevine, which had been reported at previous BMT sessions. He explained that projects on molecular markers were being conducted in relation to olive and peach. In the case of peach, the work was within the CPVO project. For pepper and tomato, there were projects on molecular markers for disease resistance.

39. An expert from Canada explained that the Canadian plant breeder's right office was not directly involved in the development of molecular techniques, but explained that there was great interest from breeders in both the private and public sectors, particularly in relation to field crops and fruit where it was difficult to distinguish varieties on the basis of morphology. It was clarified that the Plant Breeders' Rights Office only accepted molecular markers as supporting evidence for DUS purposes.

40. The representative of the European Seed Association (ESA) reported that ESA was revising its position paper on intellectual property rights and, as a part of that process, had held a seminar attended by around 110 participants, to consider the evaluation of the Community Plant Variety Rights system of the European Union and the interface between plant breeders' rights and patents. It was intended to produce the revised position paper by September 2010. With regard to BMT issues, ESA was conducting a study on EDV in potato, building on the work of the CPVO project, in which crossings of varieties would be made to investigate genetic variability. It was anticipated that data would be available in 2011. In relation to variety identification, ESA was developing a code of conduct for grasses in order to reduce the incidence of infringement. Techniques were being developed for variety identification in mustard in order to address cases of infringement where material was being used for propagation without authorization. It was anticipated that information on that work would be available for reporting at the thirteenth session of the BMT.

41. A representative of the International Seed Federation (ISF) reported on the forthcoming Annual Congress that was to be held in Calgary, Canada. He reported that ISF had 26 new

candidate members, including seed associations from Sudan, the Gambia, Venezuela and Paraguay. With regard to BMT matters, he reported that ISF had adopted a new position paper on the use of DNA markers for DUS testing, which was available on its website, and that the ISF working group on molecular markers would meet after the BMT session.

42. The representative of COPF reported on the inventory reports that COPF were providing to its members in order to verify propagation quantities. COPF was also pressing for amendments to the Canadian legislation in order to achieve conformity with the 1991 Act of the UPOV Convention. As a member of the International Community of Breeders of Asexually Reproduced Ornamental and Fruit-Tree Varieties (CIOPORA), COPF followed its view on the determination of essentially derived varieties.

43. A representative of the Canadian Seed Growers' Association explained the role of molecular markers in seed production and particularly the use for auditing and to provide additional information for certification requirements which could not be visibly verified, for example with regard to blends containing two varieties of wheat where one of the components was a refuge.

Report of work on molecular techniques on a crop-by-crop basis

(a) Vegetatively Propagated Crops

Evaluation of Simple Sequence Repeat (SSR) Markers on the Canadian Reference Potato DNA Collection

44. The BMT received a presentation by Ms. Marie-José Côté (Canada), based on document BMT/12/10, a copy of which is provided in document BMT/12/10 Add..

45. Mr. Henk Bonthuis (Netherlands) welcomed the cooperation between Canada and the four countries (Germany, the Netherlands, Poland and the United Kingdom) participating in the CPVO project.

46. In reply to a question by Mrs. Anne Weitz (European Union), Ms. Côté explained that the Canadian database currently contained only molecular data and that it had not anticipated the supply of morphological data.

(b) Self-pollinated Crops

Functional SNP Markers for the Vernalization Requirement in Barley: An Option 1 Approach

47. The BMT received a presentation by Ms. Carol Norris (United Kingdom), based on document BMT/12/5, a copy of which is provided in document BMT/12/5 Add..

48. Mr. Jörg Schondelmaier (Saaten-Union Biotec GmbH) observed that the proposed approach might not be sufficiently comprehensive if exotic germplasm was used by breeders. Ms. Norris noted that information on characteristics of the variety could be provided by the breeder in the Technical Questionnaire.

49. Mr. Joël Guiard (France) observed that, although in the UPOV Test Guidelines for Barley (document TG/19/10), seasonal type was indicated as a qualitative characteristic, it was in practice a quantitative characteristic. “Winter” varieties included a range of degrees of winter type, because there were probably other genes involved in the control of winter type. Mr. Guiard suggested that the proposed approach might be used as a step to separate winter and spring types, but concluded that a field test would be needed to test for alternative types. In that respect, it could be considered to be a method for the management of reference collections, rather than for making a final decision on distinctness .

Demonstration of Significant Process Towards an Option 1 Approach in Barley

50. The BMT received a presentation by Ms. Carol Norris (United Kingdom), based on document BMT/12/13, a copy of which is provided in document BMT/12/13 Add..

51. The Chairman observed that the project offered potential for an Option 2 approach for barley.

The Use of Molecular Techniques for the Management of Soybean Reference Collections

52. The Chairman, informed the BMT that the Mrs. Ana Vicario (Argentina), author of BMT/12/18, was not able to participate in the BMT session. No comments were made on the document.

Combining Phenotypic and Molecular Distances in the Management of Reference Collections: Application to Spring Barley

53. The BMT received a presentation by Mr. Joël Guiard (France), based on document BMT/12/19, a copy of which is provided in document BMT/12/19 Add..

54. Mr. Henk Bonthuis (Netherlands) observed that, for the global expert notes, the number of variety pairs used for the determination of the molecular threshold for spring barley was only 215 out of a possible 100,000 pairs (approximately) and wondered how the pairs had been selected. Mr. Guiard explained that the pairs had been selected to provide pairs with a range of similarities, from very similar pairs to very different pairs of varieties, based on the GAIA scale. He agreed that it might be useful to do more comparisons.

55. Mr. Bonthuis explained that he was interested to consider the pairs in Quadrant 3 of the graph (equivalent to Type 3 quadrant in document BMT/DUS Draft 3, Annex 2, Figure 2) because, although they did not represent a problem for decisions on distinctness, they represented a “false prediction”.

56. Mrs. Beate Rücker (Germany) observed that there had been a very good selection of pairs, which had successfully covered a range of similarities. She requested information on the reduction in the number of varieties to be included in the field trial rather than in terms of the reduction in the number of variety pairs that needed to be compared, because in Germany all varieties in the field trial would be recorded. Mr. Guiard explained that the procedure in France was different and that pairs were compared, which meant that some reference varieties would be included more than once in the trial. Therefore, the number of pairwise comparisons was a direct measure of the efficiency of the approach for France.

57. In reply to a question by Mrs. Anne Weitz (European Union), Mr. Guiard explained that the scores for expert notes were based on a global assessment and, therefore, would not necessarily correspond to a particular GAIA value, which was calculated on the basis of a sum of weighted values for differences for individual characteristics. Mrs. Rücker (Germany) suggested to provide a graph to show the relationship between the expert notes and GAIA values.

(c) Cross-pollinated Crops

58. The Chairman informed the BMT that no paper had been provided on this subject.

International Guidelines on Molecular Methodologies

59. The BMT noted the information provided in document BMT/12/3.

Development of an ISTA DNA-based Approach for Testing Variety

60. The BMT received a presentation by Ms. Cheryl Dollard (International Seed Testing Association (ISTA)), based on document BMT/12/16, a copy of which is provided in document BMT/12/16 Add..

61. In reply to a question by Ms. Wilhelmina Drost (CFIA), Ms. Dollard clarified that the laboratories participating in the project included governmental, university and private company laboratories and were not restricted to ISTA laboratories. Non-ISTA laboratories were welcome to participate in the project.

62. Mr. Randy Preater (Canadian Seed Growers Association), welcomed the use of the term “variety verification” instead of “variety identification” and wondered whether that term had particular significance for ISTA. Mr. Stephen Smith (Pioneer Hi-Bred International Inc. and ISF) suggested that the term “variety verification” was used in relation to confirming the presumed identity of a variety, while the term “variety identification” was a generic term that covered situations where there was no existing information or presumption on the identity of the variety. The BMT agreed that the term “variety verification” was particularly suited to situations, such as in seed certification, where the need was to confirm the expected identity of a variety, whereas the term “variety identification” covered a wider range of circumstances where there might be no existing information or expectation as to the variety.

Horizontal Biomarker Analysis: ISO/TC 34/SC 16

63. The BMT received a presentation by Mr. Michael Sussman (Chairman of the Subcommittee ISO/TC 34/SC 16 (molecular biomarker analysis)), based on document BMT/12/20, a copy of which is provided in document BMT/12/20 Add..

64. In reply to a question by Mr. Henk Bonthuis (Netherlands), concerning the coordination of work on standards in different fora, Mr. Sussman explained that ISO collaborated with other standard setting organizations; for example, ISO had provided methods to the Codex and had sought to avoid overlap with ISTA work on seed.

Variety description databases

65. The BMT noted the information provided in document BMT/12/4, as presented by the Office of the Union.

Methods for analysis of molecular data

66. The Chairman noted that no papers had been presented for this agenda item.

Recommendations on the establishment of new crop specific subgroups

67. The BMT did not make any recommendation on the establishment of new crop specific subgroups.

Date and place of next session

68. In response to the invitation received from Brazil, the BMT agreed to hold its thirteenth session in Brasilia, Brazil, from November 22 to 24, 2011, with the preparatory workshop to be held on November 21, 2011.

Future program

69. During its thirteenth session, the BMT planned to discuss the following items:

1. Opening of the session
2. Adoption of the agenda
3. Reports on developments in UPOV concerning biochemical and molecular techniques
4. Reports on the work of the *Ad Hoc* Crop Subgroups on molecular techniques (Crop Subgroups)
5. Short presentations on new developments in biochemical and molecular techniques by DUS experts, biochemical and molecular specialists, plant breeders and relevant international organizations
6. Report of work on molecular techniques on a crop-by-crop basis:
 - (a) vegetatively propagated crops
 - (b) self-pollinated crops
 - (c) cross-pollinated crops
7. International guidelines on molecular methodologies
8. Variety Description databases
9. Methods for analysis of molecular data
10. The use of molecular techniques in examining essential derivation

11. The use of molecular techniques in variety identification
12. Recommendations on the establishment of new crop specific subgroups
13. Date and place of next session
14. Future program
15. Report of the session (if time permits)
16. Closing of the session

70. The BMT agreed that, in order to encourage the presentation of information in relation to the use of molecular techniques in examining essential derivation and in variety identification, it would be appropriate to dedicate a specific day to items 10 and 11 at the thirteenth session of the BMT. In particular, breeders and other experts would be offered the possibility to attend for that specific day, which would be November 22, 2011.

71. The BMT adopted this report at the close of the session

[Annexes follow]

ANNEX I

LIST OF PARTICIPANTS

I. PARTICIPANTS

BRAZIL

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[Annex II follows]

ANNEX II

OPENING REMARK

by Mr. Paul Mayers
Associate Vice-President responsible for Program
Policy and Programs Branch
Canadian Food Inspection Agency (CFIA)
Ottawa, May 11, 2010

On behalf of the Plant Breeders' Rights Office, I am very pleased to welcome you to Canada. We are honored to be hosting UPOV's twelfth session of the Working Group on Biochemical and Molecular Techniques and DNA Profiling in Particular.

Canada's Plant Breeders' Rights Office is part of the Canadian Food Inspection Agency. The agency was formed in 1997 and integrates the delivery of inspection and quarantine services. The Canadian Food Inspection Agency is a science-based organization dedicated to safeguarding food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy.

The President of the Canadian Food Inspection Agency reports to the Minister of Agriculture and Agri-Food. The Canadian Food Inspection Agency administers 13 pieces of legislation, one of them being the Plant Breeders' Rights Act which came into effect on August 1, 1990, and is administered by the Plant Breeders' Rights Office. Our Act is based on UPOV's 1978 Convention.

In 1991, Canada became UPOV's twentieth member; and, as a member, Canada has benefited from the support of the Office of the Union as well as the many years of experience of other member countries. It is through cooperation with our UPOV colleagues that we are able to implement fair and consistent policies relating to the protection of the intellectual property of plant breeders around the world.

Participation in this meeting provides a valuable exchange of information with authorities who have experience in biochemical and molecular testing.

It is a pleasure to see that there are representatives in attendance from sixteen countries. For many of you, it may be your first time in Ottawa and during the coming week I hope you will have the opportunity to take in some of the interesting local sights. I wish you all a very productive meeting and an enjoyable visit.

If you require any assistance during your stay, please do not hesitate to contact our Plant Breeders' Rights Office.

[Annex III follows]

BMT/12/24

ANNEX III

OPENING REMARKS for DINNER

by Ms. Barbara Jordan
Associate Vice-President responsible for Policy
Policy and Programs Branch
Canadian Food Inspection Agency (CFIA)
Ottawa, May 11, 2010

Good evening. On behalf of the Canadian Food Inspection Agency, I am very pleased to welcome you all to Canada.

I would like to introduce myself. I am Barbara Jordan, Associate Vice-President responsible for Policy at the Canadian Food Inspection Agency. I have been asked to attend the event this evening on behalf of Sandra Wing. Due to unforeseen circumstances, she was unable to make it tonight. She asked me to send her regrets and wishes you all the very best for a successful meeting this week.

I have to say, when I was asked to speak to you this evening; I noted that there are sixteen countries represented at the session this week. I was very impressed with the broad participation from so many different countries.

While you are in town, I hope many of you have the opportunity to get out and look around the city. Ottawa has so many beautiful and diverse sights to see. In fact, several of you may have already had the chance to experience some of the diversity Canada has to offer in our weather. From snow flurries at the beginning of the week to beautiful and sunny skies, to end things off. I expect the weather to continue to cooperate and allow you to take in some of our city's attractions.

I know you have had a busy first day. I hope that the twelfth session of UPOV's Working Group on Biochemical and Molecular Techniques and DNA Profiling in Particular was successful and a good starting point for further dialogue.

There is a great deal of interest in Canada on the applications of molecular techniques, in both the public and private sectors. The Canadian Food Inspection Agency is happy to host UPOV's BMT meeting which presents a wonderful opportunity for Canadian breeders to participate and benefit from the sharing of information among experts in this field.

I would like to take this opportunity to acknowledge the Canadian Ornamental Plant Foundation, the Canadian Seed Growers Association, and the Canadian Seed Trade Association's contribution towards the hospitality.

Have a good dinner and I look forward to meeting some of you personally after dinner.

[End of Annex III and of document]