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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
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WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES AND DNA PROFILING IN PARTICULAR

Thirteenth Session
Brasilia, November 22 to 24, 2011

VARIETY DESCRIPTION DATABASES

Document prepared by the Office of the Union

1. This document reports on developments concerning a practical exercise in the development of an exchangeable database in the context of Section 6 "Databases" of the UPOV Guidelines for DNA-profiling: molecular marker selection and database construction (BMT Guidelines).

2. At the twenty-third session of the Technical Working Party on Automation and Computer Programs (TWC), held in Ottawa, Canada, from June 13 to 16, 2005, and at the ninth session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT), held in Washington D.C., United States of America, from June 21 to 23, 2005, Mr. Sylvain Grégoire (France), drafter of Section 6 "Databases" of the BMT Guidelines, 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.

3. At its forty-second session, held in Geneva from April 3 to 5, 2006, the Technical Committee (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.

4. At its tenth session, held in Seoul, Republic of Korea, from November 21 to 23, 2006, 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 *Ad Hoc* Crop Subgroups on Molecular Techniques (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.

5. The Crop Subgroup for Potato held its second session in Quimper, France, on April 17, 2007. It agreed that it would be useful for the experts working on the Community Plant Variety Office of the European Community (CPVO) project and at the French Federation of Potato Seed Growers (FNPPPT) to cooperate in order to investigate the compatibility of data obtained using different technologies (see documents BMT-TWA/potato/2/2, BMT-TWA/potato/2/2 Add., BMT-TWA/potato/2/4 and BMT-TWA/potato/2/4 Add. at *http://www.upov.int/restrict/en/bmt_cropsubgroups/potato_2.htm*).

6. At the thirty-sixth session of the Technical Working Party for Agricultural Crops (TWA), held in Budapest, Hungary, from May 28 to June 1, 2007, an expert from the United Kingdom reported that NIAB was working on the use of molecular techniques for variety identification in potato. The TWA agreed that it would be useful for that expert to contact the coordinator of the CPVO project who was discussing with the *Institut national de la recherche agronomique* (INRA, France) the possibility to cooperate in order to investigate the compatibility of data obtained using different technologies.

7. At its second session, held in Angers, France, on April 18, 2007, the Crop Subgroup for Rose was informed that the TC had invited BMT Crop Subgroup for Rose to consider how to proceed with a practical exercise in the development of an exchangeable database. The Crop Subgroup for Rose did not have any proposals with regard to such an exercise.

8. At its eleventh session, held in Madrid, from September 16 to 18, 2008, the BMT agreed that it would be more appropriate to change the title of the agenda item “Practical exercise in the development of an exchangeable database of molecular data of plant varieties” to “Development of common database structure for molecular data” (see document BMT/11/29 “Report”, paragraph 112).

9. At its forty-fifth session, held in Geneva from March 30 to April 1, 2009, the TC noted from the developments reported in document TC/46/7 “Molecular Techniques” and those reported in document TC/45/9 “Publication of Variety Descriptions”, that members of the Union were developing databases containing morphological and/or molecular data and, where

considered appropriate, were collaborating in the development of databases for the management of variety collections, particularly on a regional basis. The TC agreed that it could be beneficial to offer the possibility for members of the Union to report on that work in a coherent way to the TC, the Technical Working Parties (TWPs) and the BMT. On that basis, the TC agreed to replace the various agenda items concerning such databases with an item for "Variety description databases" on the agendas of the forthcoming sessions of the TC, TWPs and the BMT. In that respect, it recalled the importance of the list of criteria for consideration for the use of descriptions obtained from different locations and sources as set out in document TC/45/9, paragraph 3. The TC also agreed that the information presented would not need to be related to the publication of descriptions (see document TC/45/16 "Report", paragraph 173).

10. At its forty-sixth session, held in Geneva from March 22 to 24, 2010, the TC noted the information on variety description databases provided to the Technical Working Party for Vegetables (TWV) and the Technical Working Party for Fruit Crops (TWF) at their sessions in 2009, and the report from the Delegation of the European Union that a new functionality would be added to the Community Plant Variety Office of the European Union (CPVO) database on applications and titles granted, which was available to the public through its official webpage (see document TC/46/16 "Report", paragraphs 158 to 162). 10. At its forty-fourth session, held in Veliko Tarnovo, Bulgaria, from July 5 to 9, 2010, the Technical Working Party for Vegetables (TWV) discussed the review of grouping characteristics in the Test Guidelines for Pea (document TG/7/10), on the basis of documents TWV/44/33 and TWV/44/33 Add., which contained the replies to the questionnaire survey on grouping characteristics in the Test Guidelines for Pea, prepared by Mr. François Boulineau (France).

11. In response to the observation of Mr. Boulineau that the results of the questionnaire indicated substantial potential benefits in developing a database containing pea variety descriptions from members of the Union, at least for grouping characteristics as a first step, the TWV agreed that Mr. Boulineau should make a presentation on his concept at the forty-fifth session of the TWV. The TWV agreed that Mr. Boulineau should organize an exchange of a common set of variety descriptions for grouping characteristics, and possibly a ring test, to examine if grouping characteristics were sufficiently reliable for such an approach. It noted that it would be important to involve the TWA experts in that work (see document TWV/44/34 "Report", paragraphs 80 and 81).

12. At the forty-third session of the Technical Working Party for Ornamental Plants and Forest Trees (TWO), held in Cuernavaca, Morelos State, Mexico, from September 20 to 24, 2010, the expert from the European Union reported that, as a part of its process of moving to a paperless office, it was creating a database with variety descriptions that would enable variety descriptions to be published in an efficient way. Before starting to publish variety descriptions and also to publish information on applications, it had needed to consider a number of issues, such as confidentiality with regard to parentage and descriptions of parent lines, but those matters were being addressed and variety descriptions would be published (in English). The expert from Brazil reported on the work that had been done on developing and publishing a database of some 600 soybean variety descriptions for 15 characteristics, based on information provided from different sources. The feedback had been very positive and a similar initiative was being developed for other crops, such as rice, cotton and sugarcane. An expert from the Netherlands reported that there had been a delay in publishing variety descriptions as a result of the need to resolve certain IT matters and also because some of the descriptions were only available in Dutch and were based on botanical descriptors rather than

UPOV characteristics (see document TWO/43/29 Rev. “Revised Report”, paragraphs 80, 83 and 84).

13. The TWO noted the interest in developing a UPOV database of variety descriptions, but recalled the concerns that had been raised with regard to the use of descriptions obtained from different locations and sources, as set out in document TC/45/9. However, it noted that the TWV, at its forty-fourth session, held in Veliko Tarnovo, Bulgaria, from July 5 to 9, 2010, had discussed the substantial potential benefits in developing a database containing pea variety descriptions from members of the Union, at least for grouping characteristics as a first step, and had agreed that Mr. Boulineau (France) should make a presentation on his concept at the forty-fifth session of the TWV. The TWO agreed that it would be useful to receive a report on that initiative at its forty-fourth session (see document TWO/43/29 Rev. “Revised Report”, paragraphs 82).

14. At its forty-first session, held in Cuernavaca, Morelos State, Mexico, from September 27 to October 1, 2010, the Technical Working Party for Fruit Crops (TWF), noted the developments reported in document TWF/41/6 and heard that the TWV, at its forty-fourth session, held in Veliko Tarnovo, Bulgaria, from July 5 to 9, 2010, had discussed the substantial potential benefits in developing a database containing pea variety descriptions from members of the Union, at least for grouping characteristics as a first step, and had agreed that Mr. Boulineau (France) should make a presentation on his concept at the forty-fifth session of the TWV. The TWF agreed that it would be useful to receive a report on that initiative at its forty-second session. With regard to the information provided in document TWF/41/6, paragraph 5, on the project on the “Management of peach tree reference collections”, the TWF noted that the database would not be restricted to protected varieties because it was intended to include varieties of common knowledge (see document TWF/41/30 Rev. “Revised Report”, paragraph 78).

15. The TWF noted that the development of standard references provided in document TWF/41/8, would be a good basis for exchanging variety description information in an efficient way for different languages. It also noted that it would be important for the date and place where the variety description was produced to be included. The TWF also confirmed the importance of publishing a disclaimer concerning the information on the status of such documents, as well as its appropriate use (see document TWF/41/30 Rev. “Revised Report”, paragraph 79).

16. The representative of the International Community of Breeders of Asexually Reproduced Ornamental and Fruit Plants (CIOPORA) at the TWF reported that CIOPORA and the International Seed Federation (ISF) were not in favor of the publication of variety descriptions before the grant of the breeder’s right. The expert from the European Union explained that, with regard to the CPVO database reported in document TWF/41/6, paragraphs 6 and 7, descriptions of varieties protected since December 2008 would be published, but the descriptions of parent lines would not be published (see document TWF/41/30 Rev. “Revised Report”, paragraph 80).

17. At its forty-seventh session, held in Geneva from April 4 to 6, 2011 the TC noted the information provided on variety description databases at the sessions of the TWV, TWF and TWO, as set out in document TC/47/9. The TC agreed to request the experts from France to present the concept of a database containing pea variety descriptions of member of the Union to the Technical Working Parties at their sessions in 2011 and to the Technical Committee at its forty-eighth session.

18. At its fortieth session, held in Brasilia, from May 16 to 20, 2011, the TWA noted the information provided in documents TWA/40/6 “Variety Descriptions Databases” and TWA/40/13 “Concept of a Database Containing Pea Variety Descriptions”. The expert from France presented a concept of a database containing pea variety descriptions as the first step for the setting up of the variety description database. The TWA agreed that the project for pea was a good example for the development of a variety description database and encouraged the French expert to continue its development. However, the TWA stressed that a good knowledge needed to be acquired with regard to the reliability of at least the grouping characteristics, before the presented concept could be applied for other species (see document TWA/40/23 “Report”, paragraph 57).

19.At its forty-fifth session, held Monterey, United States of America, from July 25 to 29, 2011, the TWV considered document TWV/45/24 “Partial Revision of the Test Guidelines for Pea (document TG/7/10)”, presented by Mr. François Boulineau (France), in conjunction with documents TWV/45/6 “Variety Descriptions Databases” and TWV/45/13 “Concept of a Database Containing Pea Variety Descriptions”. It agreed that Mr. Boulineau should seek variety descriptions from members of the Union for the 2,400 (approximate) varieties of common knowledge that he had identified, to examine if the following characteristics were sufficiently reliable for use as grouping characteristics:

Current grouping characteristics:

Plant: anthocyanin coloration (characteristic 1)
Stem: number of nodes up to and including first fertile node (characteristic 5)
Stipule: flecking (characteristic 20)
Pod: parchment (characteristic 39)
Excluding varieties with pod parchment: entire: Pod: thickened wall (characteristic 40)
Pod: color (characteristic 43)
Immature seed: intensity of green color (characteristic 47)
Seed: type of starch grains (characteristic 49)
Seed: color of cotyledon (characteristic 52)
Only varieties with plant anthocyanin coloration present: Seed: marbling of testa (characteristic 53)
Only varieties with plant anthocyanin coloration present: Seed: violet or pink spots on testa (characteristic 54)
Seed: hilum color (characteristic 55)
Resistance to *Fusarium oxysporum* f. sp. *pisi* (characteristic 58.1)

Potential grouping characteristic:

Stem: fasciation (characteristic 3)
Stem: length (characteristic 4)
Foliage: color (characteristic 6)
Leaf: leaflets (characteristic 8)
Time of flowering (characteristic 24
Only varieties with stem fasciation absent: Plant: maximum number of flowers per node (characteristic 25)
Only varieties with plant anthocyanin coloration present: Flower: color of wing (characteristic 26)
Pod: length (characteristic 37)
Pod: width (characteristic 38)
Only varieties with Pod: thickened wall absent: Pod: shape of distal part (characteristic 41)
Pod: curvature (characteristic 42)
Only varieties with pod color green (Char. 43: state 2): intensity of green color (characteristic 44)
Excluding varieties with pod parchment: entire: Pod: suture strings (characteristic 45)
Seed: shape (characteristic 48)
Seed: weight (characteristic 57)
Resistance to *Erysiphe pisi* Syd. (characteristic 59)
Resistance to *Ascochyta pisi*, Race C (characteristic 60)

20. The TWV agreed that a circular should be prepared by Mr. Boulineau and issued by the Office of the Union to the Technical Committee representative for the following members of the Union, on the basis that they had indicated practical experience in the DUS examination of Pea:

Argentina; Austria; Bulgaria; Canada; China; Czech Republic; Denmark; Estonia; European Union (Community Plant Variety Office (CPVO)); France; Germany; Hungary; Japan; Kenya; Netherlands; New Zealand; Poland; Portugal; Republic of Korea; Republic of Moldova; Romania; Russian Federation; Slovakia; South Africa; Spain; Ukraine; United Kingdom; United States of America;

21. The TWV agreed that the contributors of variety descriptions should be invited to indicate the status of the variety descriptions provided and, in particular, if they constituted the “official” description of the variety concerned (see document TWV/45/26 “Report”, paragraphs 49 to 51).

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