E

BMT-TWA/Potato/2/7
ORIGINAL: English
DATE: July 2, 2007

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

AD HOC CROP SUBGROUP ON MOLECULAR TECHNIQUES FOR POTATO

Second Session
Quimper, France, April 17, 2007

REPORT

adopted by the Ad hoc Crop Subgroup on Molecular Techniques for Potato

Opening of the Session

1. The *Ad hoc* Crop Subgroup on Molecular Techniques for Potato (hereinafter referred to as the "Crop Subgroup for Potato") held its second session in Quimper, France, on April 17, 2007. The list of participants is reproduced in the Annex to this report.

2. The session was opened by Mrs. Beate Rücker (Germany), Chairperson of the Crop Subgroup for Potato.

Adoption of the Agenda

3. The Crop Subgroup for Potato adopted the agenda as reproduced in document BMT-TWA/Potato/2/1 Rev.

Developments in UPOV concerning biochemical and molecular techniques

4. The Crop Subgroup for Potato received a report from the Office of the Union on developments in UPOV concerning biochemical and molecular techniques based on document BMT-TWA /Potato/2/3. A copy of the presentation is reproduced as document BMT-TWA/Potato/2/3 Add.

5. An expert from the Netherlands requested clarification on the Option 1(a) approach with regard to whether two varieties, having the same state of expression for a given characteristic but for which the expression was regulated by different genes, would be considered distinct. He noted that, with developments in genetic engineering, such cases could soon appear, for example in relation to amylose content in potato. The Chairperson and the Technical Director clarified that, under Option 1(a), without a clear difference in the states of expression for the characteristic the variety would not be considered to be distinct. The expert from Canada noted that similar cases could also exist for disease resistance, but in that situation the difference in the resistance mechanism might result in different expression. Some breeders noted that identical phenotypes produced from different genotypes was not a new situation and they questioned the value of a new variety which had no phenotypic differences compared to an existing variety. They agreed that only varieties with clear phenotypic differences should be considered to be distinct. The expert from the Netherlands noted that, in potato breeding, new characteristics of agricultural value were being introduced and they should be considered in DUS examination. It was noted that traits developed by marker-assisted selection could be of particular interest for an Option 1(a) approach. The Technical Director explained that it was always possible to revise the UPOV Test Guidelines to include new characteristics where those characteristics were useful for DUS testing. It was agreed that the revision of Test Guidelines, when necessary, was an important possibility.

Molecular techniques in the examination of distinctness, uniformity and stability

6. The Crop Subgroup for Potato considered document BMT-TWA/Potato/2/2, presented by Mr. Alex Reid (United Kingdom). A copy of the presentation is reproduced as document BMT-TWA/Potato/2/2 Add.

7. In reply to a number of questions, Mr. Reid explained that the results in both laboratories taking part in the project were almost identical, with the exception of a small difference in one allele, and he agreed that it might be appropriate to exclude that allele. An expert from the Netherlands asked whether molecular data from different sources could be incorporated into the database in the same way as for morphological data from different sources. Mr. Reid replied that, provided the sources used the same markers and system of recording, molecular data from different sources could be included in the database. With regard to the increase in the number of varieties in the database, the Chairperson explained that plant material had been requested from the breeders but with little response. The representative of the European Seed Association (ESA) offered to contact its members for that purpose. In reply to a question from ESA, Mr. Reid reported that the final results were expected by April 2008. In reply to questions on the cost of molecular analysis, Mr. Reid reported that 24 varieties could be tested per day in three multiplex reactions, and that the estimated cost of consumables was 20 Euros per variety.

8. The Crop Subgroup for Potato considered document BMT-TWA/Potato/2/5, presented by Mr. Eric Bonnel (France). A copy of the presentation is reproduced as document BMT-TWA/Potato/2/5 Add.

9. The Chairperson noted the different levels of distance between varieties obtained from different crossings and those which arose from mutations or genetic engineering. The Crop Subgroup for Potato noted that the actual values of similarity depended on the type and number of markers used in the analysis. A number of breeders considered that the assessment

of essential derivation should take into account the genetic distance but should also take into account the breeding method and morphological characteristics. Information was requested on whether UPOV was planning to develop guidelines for EDV. With regard to establishing guidance on whether a variety was an essentially derived variety, the Technical Director explained that a common view expressed by members of UPOV was that the existence of a relationship of essential derivation between protected varieties was a matter for the holders of plant breeders' rights in the varieties concerned. He further noted that the international breeders' organizations were developing guidance on this matter. The representative of ESA supported the approach of UPOV and confirmed that the breeders' organizations were very active in this matter.

10. The representative of Plantum considered that molecular markers could be useful in the DUS examination in order to reduce the number of growing cycles and to reduce the size of the reference collection. Experts from France and the Netherlands considered that molecular markers could be useful to increase the number of varieties which could be included in variety collections used for the purposes of examining distinctness. In reply to a question from the Chairperson, Mr. Bonnel explained that recently, researchers from SASA had reported on DNA identification from different gene pools corresponding to different breeding regions which, over time, had become more overlapped. The expert from Poland observed that, with the expansion of the European Community, the gene pool had been increased; however, she had noticed a reduction in the exchange of material with Eastern European countries, e.g. the Russian Federation, in the recent past. The Chairperson noted that the more the different gene pools overlapped the greater would be the need to increase the number of varieties in the variety collections for DUS purposes.

11. The Crop Subgroup for Potato considered document BMT/10/14 presented by Mrs. Françoise Blouet (France). A copy of the presentation is available as document BMT-TWA/Potato/2/6.

12. A number of breeders considered that a similar approach to that presented for maize, by combining morphological characteristics and molecular markers, could be applicable for potato. They stressed the need for decisions to involve both crop experts and experts in molecular markers. Mrs. Blouet explained that candidate varieties, even when declared "distinct plus" from all varieties, would still be included in a growing trial for the assessment of uniformity and stability. An expert from the Netherlands considered that the situations for maize and potato were different. He explained that, for maize, there was a large variety collection and the aim of using molecular markers would be to reduce the workload by reducing the number of varieties to be included in the growing trial, whilst in potato the use of molecular markers could allow consideration of a larger number of varieties in the DUS examination, hence strengthening the system of protection. The expert from the Community Plant Variety Office (CPVO) of the European Community reported on a project on variety descriptions for maize which had the aim of harmonizing the assessment of morphological characteristics. She explained that the project involved the development of a database for descriptions and explained that ring tests were carried out within that project. With respect to the project for potato, she explained that at that time sampling of material from different origins was taking place. An expert from the Netherlands wondered whether the Crop Subgroup for Potato should, on the basis of the discussions, develop a recommendation on the use of molecular markers in relation to the DUS examination. The Technical Director noted the strong interest and the potential in potato for an approach similar to that presented for maize in document BMT/10/14. However, he noted that a clear proposal for maize had been developed by a UPOV member but that was not the case at the moment for potato. The Crop

Subgroup for Potato noted that an important use of molecular markers in potato was the identification of plant material, both for checking the labelling of collections and for the enforcement of plant breeders' rights. The representative of ESA considered that the possibility of increasing the number of varieties which would be considered for distinctness was an important potential use of molecular markers.

Molecular techniques in variety identification

13. The Crop Subgroup for Potato considered document BMT-TWA/Potato/2/4 presented by Mrs. Sylvie Marhadour (France). A copy of the presentation is reproduced as document BMT-TWA/Potato/2/3 Add.

14. Mrs. Marhadour explained that the objective of her work was to identify potato varieties in the framework of quality control in seed potato production and noted that, in that respect, it had not been possible to recognize mutants using only molecular markers. A field test trial was carried out each year to check varietal identity and trueness-to-type of all first generation lots. An expert from the Netherlands wondered whether it would be possible to combine the data from France, obtained from gels, with data obtained from a capillary technique, as used by the United Kingdom. The expert from the United Kingdom considered that it would be possible, and noted that the researchers had used some markers in common. The expert from the United Kingdom highlighted the value of having a DNA library which, in the future, could be used to run a DNA analysis using new techniques with standard DNA samples of varieties. The expert from the CPVO wondered whether breeders would consider it helpful to have a DNA-profile of their varieties if molecular markers were used to produce a DNA-profile in relation to the process of DUS examination. The representative of ESA commented that breeders would be interested to have the DNA-profiles included in a database and to have the DNA-profiles of their own varieties, but would have some concerns about those DNA-profiles being made publicly available.

Molecular techniques in the assessment of essential derivation

15. No documents were presented under this agenda item.

Proposals to the Technical Working Party for Agricultural Crops (TWA) and the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT)

Molecular techniques in the examination of distinctness, uniformity and stability

16. At the proposal of the Chairperson, the Crop Subgroup for Potato agreed the following conclusions in relation to the possible use of molecular information in relation to the DUS examination;

(a) molecular information alone should not be used for the assessment of distinctness, but might be considered in combination with morphological information in relation to the management of reference collections;

(b) the use of molecular markers could improve the management of reference collections used for DUS examination, in particular in relation to improving the coverage of reference collections; and

(c) the creation of a database containing both molecular and phenotypic data would be a necessary step for the use of molecular data in the management of reference collections. In that respect, it was also noted that there was still a need for work to be done on the harmonization of descriptions of morphological characteristics in order to be able to use such data from different sources. The next steps should include an assessment of the way in which the molecular and phenotypic data might be used, in particular in relation to the thresholds which might be applied. In that respect, there was recognition of the need for expertise in both morphological and molecular aspects. In considering such an approach, the Crop Subgroup for Potato expressed a favorable response to the approach developed by the experts from France for maize in document BMT/10/14, whilst noting that the issues facing reference collections of potato were somewhat different to those in Maize.

Molecular techniques in variety identification

17. The Chairperson noted that consideration of the purpose of the variety identification was an important aspect and the levels of molecular information required for variety identification could be different. She noted that molecular tools were already being successfully used for variety identification and had been very effective. In relation to variety identification, uniformity and stability was not a problem.

Essentially derived varieties

18. It was noted that there was no work by the international breeders' organizations in developing EDV thresholds for potato.

Exchangeable database of molecular markers

19. The Crop Subgroup for Potato agreed that it would be useful for the experts working on the 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.

Special presentation:

20. The Crop Subgroup for Potato received a presentation from Mr. Philippe Dekaestke, Managing Director of Technopol Quimper-Cornouailles.

[Annex follows]

ANNEX

PARTICIPANT LIST

BULGARIA

Diliyan Russev DIMITROV, DUS Department, Executive Agency for Variety Testing, Field Inspection and Seed Control (IASAS), 125 Tsarigradsko Shosse Bldv. Block 1, BG-1113 Sofia (tel.: +359 2 870 5120 fax: +359 2 870 6517 e-mail: ddimitrov@iasas.government.bg)

Darina DIMITROVA (Mrs.), Head, Post Control Station (Plovdiv), Executive Agency of Variety Testing, Field Inspection and Seed Control, 125, Tsarigradsko Shosse Blvd., Bl. 1, BG-1113 Sofia (tel.: 359 2 870 03 75 fax: 359 2 870 65 17)

CANADA

Anissa LYBAERT (Ms.), Examiner, Plant Breeders' Rights Office, 2 Constellation Crescent, Ottawa Ontario K1A 0Y9 (tel.: 613 221 7523 fax: 613 228 4552 e-mail: lybaertam@inspection.gc.ca)

CZECH REPUBLIC

Petr LASTOVICKA, Selekta Pacov, a.s., Starodvorská 352, 395 01 Pacov (tel.: 420 777 175 167 fax: 420 565 44 2666 e-mail: p.lastovicka@quick.cz)

Jiri MOHL, Selekta Pacov, a.s., Starodvorská 352, 395 01 Pacov (tel.: 420 777 175 259 fax: 420 565 44 2666)

EUROPEAN COMMUNITY

Anne WEITZ (Mrs.), Expert for Agricultural Crops, Community Plant Variety Office (CPVO), 3, boulevard Maréchal Foch, B.P. 10121, 49101 Angers Cedex 02 (tel.: +33 241 256 437 fax: +33 241 256 410 e-mail: weitz@cpvo.europa.eu)

FINLAND

Eero PÌSÌLÂ, Chairman of Finnish Seed Trade Association (tel.: +358 40 504 64 33 e-mail: eero.posila@kantaperuna.com)

FRANCE

Françoise BLOUET (Mme), Directrice de la coordination nationale, Groupe d'étude et de contrôle des variétés et des semences (GEVES), La Minière, F-78285 Guyancourt (tel.: +33 1 3083 3582 fax: +33 1 3083 3539 e-mail: francoise.blouet@geves.fr)

Eric BONNEL, GERMICOPA SAS, 1 allée Loeiz Herrieu, 29334 Quimper Cedex (tel.: +33 2 98 10 01 00 fax: +33 2 98 10 01 20 e-mail: eric.bonnel@germicopa.fr)

Philippe DEKAESTKE, Managing Director, Technopole Quimper-Cornouaille

Marie-Claire KERLAN (Ms.), UMR INRA-AgroCampus Rennes, Keraiber, F-29260 Ploudaniel (tel.: 33 2 29 62 63 13 fax: 33 2 29 62 63 10 e-mail: Marie-Claire.Kerlan@rennes.inra.fr)

Gisèle LAIRY (Ms.), GERMICOPA sar, Kerguivar'ch, F-29520 Châteauneuf-du-faou (tel.: 33 298 81 72 58 fax: 33 298 81 81 51 e-mail: gisele.joly@germicopa.fr)

Yves LE HINGRAT, French Federation of Seed Potato Growers (FNPPPT) Fédération Nationale des Producteurs de Plants de Pomme de Terre, Roudouhir, F-29460 Hanvec (tel.: +33 2 98 21 97 02 fax: +33 2 98 21 97 08 e-mail: ylehingrat@wanadoo.fr)

Sylvie MARHADOUR, FNPPPT- INRA Keraiber 29260 PLOUDANIEL, France (tel.: +33 2 29 62 63 14 fax: +33 2 29 62 63 30 e-mail: sylvie.marhadour@rennes.inra.fr)

GERMANY

Heinrich BÖHM, Böhm-Nordkartoffel Agrarproduktion OHG, Wulf-Werum-Str.1., Lüneberg 21337 (tel.: 49 4131 7480601 fax: 49 4131 748 0682 e-mail: hboehm@boehm-kartoffel.de)

Alexander BRAUN, Boehm-Nordkartoffel Agrarproduktion OHG, Kaltenberg 1 (Zuchtstation), 84085 Langquaid (tel.: +49 9452 347 fax: +49 9452 2136 e-mail: abraun@bna-kartoffel.de)

Beate RÜCKER (Frau), Abteilungsleiterin Registerprüfung, Bundessortenamt, Postfach 61 04 40, 30604 Hannover (tel.: +49 511 956 6639 fax: +49 511 5633 62 e-mail: beate.ruecker@bundessortenamt.de)

NETHERLANDS

G.F.J. BACKX, HZPC Holland B.V., P.O. Box 88, NL-8500 AB Joure (tel.: 31 513 489 884 fax: 31 513 489 801 e-mail: gerard.backx@hzpc.nl)

Henk BONTHUIS, Technical Expert, Dutch Plant Variety Board, (Raad voor Plantenrassen), Postbox 27, NL-6710 BA Ede (tel.: +31 318-822580 fax: +31 318-822589 e-mail: h.bonthuis@minlnv.nl)

M.F.W. JANSEN KLOMP, P.O. Box 2, NL-9123 2R Metslawier (tel.: 31 519 2443 00 fax: 31 519 244333 e-mail: martin.jensenklomp@hzpc.nl)

C. STOLK, Plantum NL, P.O. Box 462, 2800 AL Gouda (tel.: 31 182 688668 fax: 31 182 688667 e-mail: c.stolk@plantum.nl)

POLAND

Ewa ZIMNOCH-GUZOWSKA (Ms.), Professor, Head of the Center, Mlochow Research Center, IHAR, Plant Breeding and Acclimatization Institute, 19 Platanowa Str., PL-05-831 Mlochow (tel.: 48 22 729 99248 fax: 48 22 7299247 e-mail: e.zimnoch-guzowska@ihar.edu.pl)

SPAIN

Fernando ALONSO ARCE, Centro de Control de la Patata, E-09239 Albillos (Burgos) (tel.: 34 947 405292 fax: 34 947 405292 e-mail: aloarcfe@jcyl.es)

Luis SALAICES, Jefe de Área del Registro de Variedades, Oficina Española de Variedades Vegetales (OEVV), Ministerio de Agricultura, Pesca y Alimentación (MAPA), Calle Alfonso XII, No. 62, E-28014 Madrid (tel.: +34 91 3476712 fax: +34 91 3476703 e-mail: luis.salaices@mapa.es)

UNITED KINGDOM

Alex REID, Senior Molecular Biologist, Scottish Agricultural Science Agency, 1, Roddington Road, Edinburgh EH12 9FJ (tel.: +44 131 244 8910 fax: +44 131 244 8926 e-mail: alex.reid@sasa.gsi.gov.uk)

III. ORGANIZATIONS

INTERNATIONAL SEED FEDERATION (ISF)

Pierre ROGER, Directeur de la propriété intellectuelle, Germplasm Preservation, c/o Vilmorin
& Cie, Boîte postale 1, 63720 Chappes, France (tel.: +33 4 7363 4069 fax: +33 4 7364 6737 e-mail: pierre.roger@limagrain.com)

EUROPEAN SEED ASSOCIATION (ESA)

Bert SCHOLTE, Technical Director, European Seed Association (ESA), 23, rue Luxembourg, 1000 Brussels, Belgium (tel.: +32 2 743 2860 fax: +32 2 743 2869 e-mail: bertscholte@euroseeds.org)

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV)

Peter BUTTON, Technical Director, International Union for the Protection of New Varieties of Plants (UPOV), 34, chemin des Colombettes, 1211 Genève, Suisse (tel.: +41 22 8672 fax: +41 22 733 0336 e-mail: peter.button@upov.int)

Raimundo LAVIGNOLLE, Senior Counsellor, International Union for the Protection of New Varieties of Plants (UPOV), 34, chemin des Colombettes, 1211 Genève, Suisse (tel.: +41 22 338 9565 fax: +41 22 733 0336 e-mail: raimundo.lavignolle@upov.int)

Makoto TABATA, Senior Counsellor, International Union for the Protection of New Varieties of Plants (UPOV), Genève, Suisse ((tel.: +41 22 338 8739 fax: +41 22 733 0336 e-mail: makoto.tabata@upov.int)

[End of Annex and of document]