

Technical Committee

TC/53/9

**Fifty-Third Session
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VARIETY DESCRIPTION DATABASES

Document prepared by the Office of the Union

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EXECUTIVE SUMMARY

1. The purpose of this document is to report on developments since the fifty-second session of the Technical Committee (TC), concerning variety description databases.

2. The TC is invited to:

(a) note the presentations on databases made at the BMT, TWC and TWV at their sessions in 2016, as set out in paragraphs 9 to 35 of this document;

(b) note that the TWC invited members to present their experiences in the development of databases, at its thirty-fifth session;

(c) note that the BMT agreed that facilitating cooperation for the establishment of common databases containing molecular information was an important consideration for UPOV but would need to be initiated between UPOV members in the first instance, as set out in paragraph 10 of this document; and

(d) consider whether the guidance on plant material provided in document UPOV/TGP/5, Section 1 might be a suitable basis also for molecular data, as set out in paragraph 12 of this document.

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4. The following abbreviations are used in this document:

TC:	Technical Committee
TC-EDC:	Enlarged Editorial Committee
TWA:	Technical Working Party for Agricultural Crops
TWC:	Technical Working Party on Automation and Computer Programs
TWF:	Technical Working Party for Fruit Crops
TWO:	Technical Working Party for Ornamental Plants and Forest Trees
TWPs:	Technical Working Parties
TWV:	Technical Working Party for Vegetables

BACKGROUND

5. 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/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 TWPs and the BMT. On that basis, the TC agreed to replace the agenda item "Publication of variety descriptions" 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).

6. Developments prior to 2016 are presented in document TC/52/9 "Variety description databases".

DEVELOPMENTS IN 2016

Technical Committee

Discussion session

7. The TC, at its fifty-second session, held in Geneva from March 14 to 16, 2016, received the following presentations on facilitating development of databases (in order of presentation) (see document TC/52/29 Rev. "Revised Report", paragraph 136):

Facilitating development of databases for DUS examination	France (Mr. Richard Brand)
Facilitating development of databases	Netherlands (Mr. Kees van Ettekoven)

8. The TC considered discussions on facilitating the development of databases and agreed to invite members of the Union to make presentations at the next session of the BMT on how databases containing molecular data might be developed in UPOV. It noted that the outcome of those discussions would be reported to the TC at its fifty-third session under the agenda item "Variety description databases" (see document TC/52/29 Rev. "Revised Report", paragraph 206).

Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular

9. At its fifteenth session, held in Moscow, Russian Federation, from May 24 to 27, 2016, the BMT received a report by the Office of the Union on developments in UPOV concerning Variety Description Databases, on the basis of document BMT/15/4 (see document BMT/15/28 Rev. "Revised Report", paragraphs 16 and 17).

10. The BMT agreed that it would be important within UPOV to consider how to facilitate cooperation for the establishment of common databases with molecular information. However, it noted that the cooperation would need to be initiated between UPOV members in the first instance.

Towards durable DNA databases to support DUS testing

11. The BMT received a presentation by Ms. Hedwich Teunissen (Netherlands), based on document BMT/15/16 (see document BMT/15/28 Rev. "Revised Report", paragraphs 44 and 45).

12. With regard to confidentiality of molecular data, the BMT noted the guidance on plant material provided in document UPOV/TGP/5, Section 1. It noted that the guidance in TGP/5 might be a suitable basis also for molecular data. The relevant extract from document TGP/5: Section 1/2 "Experience and cooperation in DUS testing: Model administrative agreement for international cooperation in the testing of varieties" is reproduced below:

"Article 4

"(1) The Authorities shall take all necessary steps to safeguard the rights of the applicant.

"(2) Except with the specific authorization of the Receiving Authority and the applicant, the Executing Authority shall refrain from passing on to a third person any material of the varieties for which testing has been requested.

"Article 6

"Practical details arising out of this Agreement –regarding in particular the provisions relating to the considerations, application forms, technical questionnaires and requirements as to propagating material, testing methods, exchange of reference samples, maintenance of reference collections and the presentation of the results– shall be specified in this Agreement or settled between the Authorities by correspondence."

Advances in the Construction and Application of DNA Fingerprint Databases in Maize

13. The BMT received a presentation by Ms. Zi Shi (China), based on document BMT/15/20 (see document BMT/15/28 Rev. "Revised Report", paragraph 46).

Technical Working Party on Automation and Computer Programs

14. The TWC, at its thirty-fourth session, held in Shanghai, China, from June 7 to 10, 2016, considered document TWC/34/6 (see document TWC/34/32 "Report", paragraphs 60 to 64).

15. The TWC received a presentation by an expert from the Netherlands on "Naktuinbouw application and information database: Integrated IT-tool to manage applications, requests, trials, reports and variety collections", a copy of which is reproduced in the Annex to document TWC/34/22.

16. The TWC noted that it was important to take the cost of maintenance into account when creating a database.

Management of databases

17. The TWC noted the experience of France on the construction and management of a platform for DUS data (GEMMA Platform). The TWC also noted the experience of Germany in sharing a database with France and Spain of morphological characteristic data of maize varieties using unique identifiers and the use of an interface to exchange data.

18. The TWC suggested that guidance on the development and management of databases may be of benefit.

19. The TWC agreed to invite presentations from members on experiences with using databases, and proposals for guidance on the management of databases to be presented to the TWC at its thirty-fifth session.

20. The TWC welcomed the "Database to search for TWC working documents" that was developed by the experts from Germany and distributed to participants to the TWC session as a CD-ROM. The TWC noted that the database was updated every year with TWC documents tagged with indexed keywords. The TWC agreed that the database provided a useful search mechanism for scanned TWC documents.

Bio-informatics

21. The TWC received a presentation by an expert from the Netherlands on “Bioinformatics”, a copy of which is reproduced in the Annex to document TWC/34/24. The TWC agreed that bioinformatics was a field of work closely related to the mandate of the TWC (see document TWC/34/32 “Report”, paragraph 79).

Experiences in the development of databases

22. The TWC invited members to present their experiences in the development of databases, including the main elements to be taken into consideration, to be considered during the thirty-fifth session of the TWC (see document TWC/34/32 “Report”, paragraph 80).

Search in multiple databases using a portal

23. The TWC received a presentation by an expert from the Netherlands on “Search Plant: A search portal to facilitate tracking and tracing of ornamental varieties”, a copy of which is reproduced in the Annex to document TWC/34/20 (see document TWC/34/32 “Report”, paragraphs 81 and 82).

24. The TWC noted that the Search Plant portal (www.searchplant.eu) could search three independent databases with a single search function. The TWC noted the data structure and information technology requirements for other databases to join the portal and noted the plans for identification of similar varieties in the future by recognition of images.

Statistical methods used in the DUSTC software package

25. The TWC received a presentation by an expert from China on “Statistical methods used in the DUSTC software package”, including a demonstration of the software package that incorporates statistical analysis procedures, including the methods for calculating COYU and COYD (see document TWC/34/32 “Report”, paragraph 89).

A tool to define reference collection

26. The TWC received a presentation by an expert from France on “A tool to define reference collection”, a copy of which is reproduced in the Annex to document TWC/34/28, including a demonstration of the prototype software (see document TWC/34/32 “Report”, paragraphs 90 and 91).

27. The TWC noted the series of functions performed by the software automating searches from a theoretical collection of all varieties of common knowledge to the identification of most similar varieties for comparison in growing trials. The TWC noted that development of the software was expected to be completed in 2017.

A single tool for DUS computation process

28. The TWC received a presentation by an expert from France on “A single tool for DUS computation process”, a copy of which is reproduced in the Annex to document TWC/34/29. The TWC noted the integration of new functions in the GAIA software and use of the same interface for different processes, such as COYD and COYU, using the same data set (see document TWC/34/32 “Report”, paragraphs 92 to 94).

29. The TWC noted the changes to the data structure in the Excel file used to upload data to GAIA with the introduction of information on replicates and number of plants per replicate. The TWC noted that the improvements made would still allow GAIA to be available free of charge.

30. The TWC agreed to invite France to report on progress in the development of a single tool for DUS computation process at the thirty-fifth session of the TWC.

A ring-test comparing three different software packages for COYD

31. The TWC received a presentation by an expert from China on “A ring-test comparing three different software packages for COYD”, a copy of which is reproduced in the Annex to document TWC/34/30. The TWC noted that the same data set was used to compare results generated for the COYD procedure using the statistical packages developed in China (DUSTC), Germany (SAS) and the United Kingdom (DUST). The TWC noted that the three different software packages produced the same result (see document TWC/34/32 “Report”, paragraph 95).

Demonstration of Chinese software on image analysis

32. The TWC received a demonstration of the Chinese software on image analysis and noted the series of functions, including the management of a photo database, photo editing, automatic analysis of shape and color, direct comparison between objects and analysis of similarity rate of shape and color (see document TWC/34/32 "Report", paragraphs 96 and 97).

33. The TWC noted that China planned to improve the conditions to acquire images (e.g. light source and exposure, shape and color scales) allowing accurate direct comparison of images and automatic selection of similar varieties from a photo database. The TWC welcomed the invitation by China for other experts to join the project for improvement of the software.

Technical Working Party for Vegetables

34. The TWV, at its fiftieth session, held in Brno, Czech Republic, from June 27 to July 1, 2016, received a presentation on "Facilitating development of databases for DUS examination" by an expert from France. A copy of the presentation is provided in document TWV/50/6 Add. Rev. (see document TWV/50/25 "Report", paragraphs 114 to 116).

35. The TWV considered the idea on how to develop databases and expressed interest in sharing data between UPOV members within the same geographical region, however expressed some concerns about the efforts needed (e.g. time and cost) for the result expected. Therefore the TWV requested to have more experiences reported at its fifty-first session. The expert from Germany offered to report on the potato database currently under development within European Union, as a CPVO project by 9 Examination Offices.

36. *The TC is invited to:*

(a) note the presentations on databases made at the BMT, TWC and TWV at their sessions in 2016, as set out in paragraphs 9 to 35 of this document;

(b) note that the TWC invited members to present their experiences in the development of databases, at its thirty-fifth session;

(c) note that the BMT agreed that facilitating cooperation for the establishment of common databases containing molecular information was an important consideration for UPOV but would need to be initiated between UPOV members in the first instance, as set out in paragraph 10 of this document; and

(d) consider whether the guidance on plant material provided in document UPOV/TGP/5, Section 1 might be a suitable basis also for molecular data, as set out in paragraph 12 of this document.

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