

Technical Committee

TC/56/INF/5

Fifty-Sixth Session
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VARIETY DESCRIPTION DATABASES

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EXECUTIVE SUMMARY

1. The purpose of this document is to report on developments concerning variety description databases and to invite members of the Union to report on work concerning the development of databases containing morphological and/or molecular data.

2. The following abbreviations are used in this document:

BMT: Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular
 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
 TWV: Technical Working Party for Vegetables
 TWPs: Technical Working Parties

3. The structure of this document is as follows:

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BACKGROUND

4. 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).

5. Following the decision by the TC, at its forty-fifth session, it is recalled that members of the Union are invited to report to TC, TWPs and BMT on work concerning the development of databases containing morphological and/or molecular data.

DEVELOPMENTS AT THE TECHNICAL WORKING PARTIES AT THEIR SESSIONS IN 2020

6. At their sessions in 2020, the TWV¹, TWO², TWA³, TWF⁴ and TWC⁵ considered document TWP/4/2 "Variety description databases" (see documents TWV/54/9 "Report", paragraphs 49 to 53; TWO/52/11 "Report", paragraphs 56 to 58; TWA/49/7 "Report", paragraphs 39 to 42; TWF/51/10 "Report", paragraphs 58 to 60 and TWC/38/11 "Report", paragraphs 34 to 37).
7. The TWV, TWO, TWA, TWF and TWC noted the reports on databases containing morphological and/or molecular data made at the eighteenth session of the BMT, held Hangzhou, China, from October 16 to 18, 2019.
8. The TWV, TWO, TWA, TWF and TWC noted that members of the Union had been invited to report to the TWPs on work concerning the development of databases containing morphological and/or molecular data.
9. The TWV noted the report made by the expert of the Netherlands, that new databases with morphological information of melon and set of validated molecular markers (SNPs) for tomato varieties were being developed with partial funding provided by the Community Plant Variety Office of the European Union (CPVO).
10. The TWV agreed to invite France and the Netherlands to make presentations on the development of the databases for melon and tomato, respectively, at its fifty-fifth session.
11. The TWA noted the report from the Netherlands on the development of SNP markers for fiber and non-fiber hemp, with the aim of setting up a database for managing the variety collection.
12. The TWC noted that a report from the Netherlands on the development of databases for different crops had been made available in document TWC/38/3 "Reports on developments in plant variety protection from members and observers", Annex II, as follows:

"Development of DNA databases"

- Database Lettuce and marker for LMV resistance

All new applications in lettuce are being tested, besides the bio-tests, with a DNA marker for LMV resistance. We now have sufficient experience with this marker and propose to use it as an additional method in the near future (TGP/15). IBEB (a group of Dutch and French lettuce breeders) supports the use of the DNA marker. With the collected DNA also the development of a new DNA-database for lettuce is started. The DNA of varieties of common knowledge (included in the DUS-trials) will also be included in this database. First, a useful set of SNP markers has to be developed. We are looking for cooperation partners.

- SNP database Onion

In 2014, a project started in which a number of onion and shallot varieties were analyzed using 93 SNP markers in order to confirm the morphological types used to group the variety collection. The markers confirmed the distinct morphological types. However, this analysis was quite general and the wish was to be able to analyze within the groups the distinctness between varieties. This will be subject in a follow up, while the search for the best distinctive SNP's continues.

- DNA database Tomato

In 2019, this IMODDUS-project has been started in by a kick-off meeting. The main goal is to find and select and international accepted SNP. The project will be followed by testing varieties in common knowledge with this set of DNA markers and storing the data in a database. After that it can be used for management of the reference collection.

- DNA database Cannabis

In 2019, a project started to develop a SNP marker set and a suitable genotyping method. It will give the possibility to manage the reference collection efficiently and minimizes the risk of wrong Distinctness

¹ at its fifty-fourth session, held from May 11 to 15, 2020.

² at its fifty-second session, held from June 8 to 12, 2020.

³ at its forty-ninth session, held from June 22 to 26, 2020.

⁴ at its fifty-first session, held from July 6 to 10, 2020.

⁵ at its thirty-eighth session, held from September 21 to 23, 2020.

decisions. The number of Cannabis applications for medical use is high and transport of seeds or plants of applications and reference varieties is a burden due to phytosanitary and opium regulations.

- SNP-markers in Perennial Ryegrass (PRG)

Naktuinbouw started a special project on the use of SNP markers in PRG based on a previous pilot project. PRG is a cross pollinating crop causing additional complexity. The results of the project are promising. SNP markers could be used to replace electrophoresis as additional characteristic in DUS testing. A presentation is foreseen this year in the framework of the CPVO Agricultural Expert Meeting

- Disease resistance testing Projects are carried out in biotesting of nematodes in pepper, *Fulvia fulva* in tomato (biotests & DNA markers), biotest of *Fusarium* Lettuce, virus tests in vegetative propagated pepper.

- Other projects: Resistance tests under LED light, Phenotyping, Hydroponics in lettuce

A project to test the preferred type of LED light and to validate each resistance test which is performed in climate chambers. In order to obtain an idea about the possibilities of phenotyping in DUS testing Naktuinbouw performs a pilot this year in *Phalaenopsis*. In Lettuce a student is testing at Naktuinbouw how to test for DUS with a hydroponic growing system."

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