UPOV

International Union for the Protection of New Varieties of Plants

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Enlarged Editorial Committee **TC-EDC/Oct18/8**

Original: English
Geneva, October 28 and 29, 2018 **Date:** October 23, 2018

GENETIC SELECTION OF SIMILAR VARIETIES FOR THE FIRST GROWING CYCLE

Document prepared by an expert from the Netherlands

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1. The purpose of this document is to present a proposal for a revised text for the new model "Genetic selection of similar varieties for the first growing cycle" and the example of French Bean in document TGP/15 "Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)".

BACKGROUND

At the BMT in 2017

2. The BMT, at its sixteenth session, held in La Rochelle, France, from November 7 to 10, 2017, considered documents BMT/16/19 "Genetic selection of similar varieties for the first growing cycle: example French Bean" and BMT/16/19 Add. and received a presentation by an expert from the Netherlands (see document BMT/16/29 "Report", paragraphs 18 to 20).

3. The BMT agreed that the approach presented in document BMT/16/19 "Genetic selection of similar varieties for the first growing cycle: example French Bean" and BMT/16/19 Add. "Addendum to Genetic selection of similar varieties for the first growing cycle: example French Bean" was a suitable use of molecular techniques in the examination of DUS and should be proposed for inclusion in document TGP/15. Therefore, it was agreed that the Netherlands should prepare an explanation of the method as a basis for a revision of document TGP/15 to be considered by the Technical Committee at its fifty-fourth session.

4. The BMT agreed that it would be advantageous if the draft revision of document TGP/15, to be considered by the TC at its fifty-fourth session, could be published sufficiently before the fifty-second session of the Technical Working Party for Vegetables (TWV), to be held in Beijing, China, from September 17 to 21, 2018, and before the seventeenth session of the BMT, in order that any comments of the TWV and BMT on the draft revision could be reported to the TC at its fifty-fourth session.

5. Document TGP/15/2 Draft 1 incorporates the proposal from the Netherlands on a revision to document TGP/15.

Comments by the BMT in 2018

6. The BMT, at its seventeenth session, considered documents BMT/17/7 "Revision of document TGP/15 'Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)'" and TGP/15/2 Draft 1.

7. The BMT considered the new application model "Genetic Selection of Similar Varieties for the First Growing Cycle" and agreed that it should be proposed for inclusion in document TGP/15 on the basis of a simplified version of draft text presented in document TGP/15/2 draft 1. The BMT agreed that the proposal to be put forward for approval by the TC should contain the description of the method without comparison to other approaches. The BMT also agreed to invite the Netherlands to review whether the schematic explaining the process was necessary and/or might be simplified (see document BMT/17/25 "Report", paragraph 59).

Comments by the TWV in 2018

8. The TWV, at its fifty-second session, held in Beijing, China, from September 17 to 21, 2018, considered documents TWP/2/7 Rev. “Molecular Techniques” and TGP/15/2 Draft 1 and noted the report on developments in the TWPs and BMT, as set out in paragraphs 6 to 37 of document TWP/2/7 Rev. and in document TWV/52/18.

9. The TWV agreed with the proposal of the BMT, at its seventeenth session, that the new application model “Genetic Selection of Similar Varieties for the First Growing Cycle” should be proposed for inclusion in document TGP/15 on the basis of a simplified version of draft text presented in document TGP/15/2 Draft 1. The TWV agreed to propose that the Netherlands review the schematic explaining the process and to simplify it, and recommended to clarify in the guidance the basis on which the comparing varieties are selected on the basis of genetic selection. The TWV agreed with the BMT that the new application model to be put forward for approval by the TC should contain the description of the method without comparison to other approaches.

10. The Netherlands offered to provide a revised draft text of the new model “Genetic selection of similar varieties for the first growing cycle” and the example of French Bean in document TGP/15 for consideration by the Enlarged Editorial Committee (TC-EDC) prior to presentation to the Technical Committee at its fifty-fourth session.

11. The proposed text is presented below.

PROPOSED TEXT FOR NEW SECTION 2.3 “GENETIC SELECTION OF SIMILAR VARIETIES FOR THE FIRST GROWING CYCLE”

2.3 Genetic Selection of Similar Varieties for the First Growing Cycle (see Annex III)

2.3.1 This approach involves a step to check for genetic similarity before the first growing cycle whilst ensuring that similarity of candidate varieties to varieties in the variety collection, according to DUS characteristics, is assessed on the basis of a description produced in a single location.

2.3.2 In cases where the minimum duration of tests is normally two growing cycles, a selection of similar varieties in the variety collection for comparison with candidate varieties in the first growing cycle is made according to genetic similarity. As a next step, the information provided by the applicant in the Technical Questionnaire (TQ) is used to see if some of the genetically similar varieties are sufficiently different that they do not need to be compared in a growing trial.

2.3.3 On the basis of the variety description of DUS characteristics produced in the first growing cycle, a further search is made of varieties in the variety collection to identify any similar varieties that were not compared in the first growing cycle and which should be compared with the candidate variety in the second growing cycle.

2.3.4 Annex III to this document “Genetic Selection of Similar Varieties for the First Growing Cycle” provides an example of the genetic selection of similar varieties for the first growing cycle.

PROPOSED TEXT FOR NEW ANNEX III "MODEL: GENETIC SELECTION OF SIMILAR VARIETIES FOR THE FIRST GROWING CYCLE"

MODEL: GENETIC SELECTION OF SIMILAR VARIETIES FOR THE FIRST GROWING CYCLE

EXAMPLE: FRENCH BEAN

prepared by an expert from the Netherlands

1. Introduction

1.1 This approach involves a step to check for genetic similarity before the first growing cycle whilst ensuring that similarity of candidate varieties to varieties in the variety collection, according to DUS characteristics, is assessed on the basis of a description produced in a single location.

1.2 In cases where the minimum duration of tests is normally two growing cycles, a selection of similar varieties in the variety collection for comparison with candidate varieties in the first growing cycle is made according to genetic similarity. As a next step, the information provided by the applicant in the Technical Questionnaire (TQ) is used to see if some of the genetically similar varieties are sufficiently different that they do not need to be compared in a growing trial.

1.3 On the basis of the variety description of DUS characteristics produced in the first growing cycle, a further search is made of varieties in the variety collection to identify any similar varieties that were not compared in the first growing cycle and which should be compared with the candidate variety in the second growing cycle.

2. Procedure

Determine genetic similarity

2.1 The DNA-profile of the candidate variety is produced as soon as plant material is received.

2.2 The DNA-profile is compared with the profiles of all varieties in the variety collection and similar varieties are identified.

Technical Questionnaire information

2.3 The information provided by the applicant in the Technical Questionnaire (TQ) is then used to see if there is a clear difference in qualitative (QL) and/or grouping characteristics from some of the genetically similar varieties so that they do not need to be compared with candidate varieties in a growing trial.

Field trial

First growing cycle:

2.4 The candidate and the similar varieties selected by the procedure above are grown in the same field trial. A complete description of the DUS characteristics of the candidate variety is produced and is compared to the descriptions of all varieties in the variety collection using a database containing description produced at the same location.

2.5 Possible outcomes:

Outcome 1: If the candidate variety is not distinct from the similar varieties on the basis of DUS characteristics, the applicant will have the possibility to withdraw the candidate variety before starting the second growing cycle.

Outcome 2: If the candidate variety is distinct from the similar varieties on the basis of DUS characteristics, the description of the candidate variety produced in the first growing cycle is compared to the descriptions of the varieties in the variety collection using a database containing description produced at the same location.

(a) If the candidate variety is found to be distinct from all varieties grown in the first growing cycle and to all other varieties in the variety collection at the end of the first growing cycle and it fulfills the uniformity and stability requirements the DUS test may be concluded after the first growing cycle.

(b) In all other cases a second growing cycle is performed.

Second growing cycle

2.6 In the second growing cycle field trial, the candidate variety is grown with the most similar variety from the first growing cycle and with all varieties in the variety collection from which it was not found to be distinct at the end of the first growing cycle.

2.7 At the end of the second growing cycle, an assessment of DUS is made. If it is not possible to reach a decision on DUS at the end of the second growing cycle, a further growing cycle may be conducted.

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