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TECHNICAL WORKING PARTY ON AUTOMATION AND COMPUTER PROGRAMS

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REVISION OF DOCUMENT TGP/8:
PART II: TECHNIQUES USED IN DUS EXAMINATION
Section 3, Subsection 3.6 – Adapting COYD to Special Circumstances

Document prepared by experts from United Kingdom

BACKGROUND

1.   The Technical Working Party on Automation and Computer Programs (TWC), at its twenty-ninth session held in Geneva, Switzerland, from June 7 to June 10, 2011, received the presentation by Mr. Adrian Roberts (United Kingdom) on "An Adjustment to the COYD Method When Varieties are Grouped Within the DUS Trial" (see documents TWC/29/25 and TWC/29/25 Add.). The TWC agreed that the text should be included in TGP/8 Part II Section 3 (see document TWC/29/31 "Report" paragraph 64).

2.   The Technical Committee (TC), at its forty-eighth session, held in Geneva from March 26 to 28, 2012, considered the revision of document TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability" on the basis of document TC/48/19 Rev. The TC noted that new drafts of relevant sections would need to be prepared by April 26, 2012, in order that the sections could be included in the draft to be considered by the Technical Working Parties (TWPs) at their sessions in 2012 (see document TC/48/22 "Report on conclusions" paragraph 49).

3.   The Annex to this document contains a proposed text to be added to Section 3, Subsection 3.6 of document TGP/8 – "Adapting COYD to Special Circumstances".

[Annex follows]

ANNEX

PROPOSED NEW TEXT FOR: TGP/8/1: PART II: SECTION 3, SUBSECTION 3.6 ADAPTING COYD TO SPECIAL CIRCUMSTANCES

AN ADJUSTMENT TO THE COYD METHOD WHEN VARIETIES ARE GROUPED WITHIN THE TRIAL;

3.6.4 Crops with grouping characteristics

3.6.4.1   In some crops, it is possible to use grouping characteristics to define groups of varieties such that all the varieties within a group will be distinct from all the varieties of any other group ("distinct groups"). This grouping may be preserved in trial layouts so that, within a replicate, varieties in the same group are in the same vicinity. (See TG/1/3, section 4.8 "Functional Categorization of Characteristics).

3.6.4.2   When grouping is possible, such that all the varieties within a group will be distinct from all varieties of any other group, comparisons are only necessary between varieties in the same group. Since varieties within groups tend to be more similar to each other, it is possible to tailor the COYD method by accounting for the groups. If there are sufficient varieties in each group, COYD can be applied separately for each group. However, in practice some groups will generally have too few varieties. In such cases, the over-years analysis of variance (COYD) can be adjusted to take into account the grouping. This method is known as COYD for grouping (COYDG).

3.6.4.3   Whereas the standard COYD analysis of variance has terms for 'year' and 'variety', COYDG has terms for 'year', 'group', 'variety-within-group' and 'group-by-year'. The LSD is then calculated for comparisons between pairs of varieties within the same group. It is assumed that the same standard error is applicable within all groups. Note that a larger LSD will apply for comparisons between pairs of varieties from different groups.

3.6.4.4   So the LSD for COYDG is given by $\text{LSD}_p = t_p \times \text{SED}_G$

where SED_G is the standard error for the difference between two varieties within the same group and calculated as:

$$\text{SED}_G = \frac{\sqrt{2 \times \text{varieties} - \text{within} - \text{group - by- years mean square}}}{\text{number of test years}}$$

Note that the varieties-within group-by-years mean square is the same as the residual mean square from the COYDG analysis of variance.

3.6.4.5   The COYDG LSD is used in place of the COYD LSD as a distinctness criterion. Usually it should be smaller. However it is sensible to verify whether this is true on historical data sets.

3.6.4.6   The COYDG method can be applied using GTVRP module of the DUST package for the statistical analysis of DUS data, which is available from Dr. Sally Watson (Email: *info@afbini.gov.uk*) or from *http://www.afbini.gov.uk/dustnt.htm.*

[End of Annex and of document]