

Technical Working Party for Fruit Crops**TWF/55/8****Fifty-Fifth Session****Original:** English**Virtual meeting, June 3 to 6, 2024****Date:** June 5, 2024

PROCEDURES FOR ASSESSMENT OF CHARACTERISTICS WITH SINGLE RECORD (MG) AND A NUMBER OF INDIVIDUAL RECORDS (MS) FOR A GROUP OF PLANTS OR PARTS OF PLANTS*Document prepared by the Office of the Union**Disclaimer: this document does not represent UPOV policies or guidance*

The annex to this document contains an extract from document TGP/9 “Examining Distinctness”, presented by the Office of the Union, at the fifty-fifth session of the Technical Working Party for Fruit Crops (TWF).

[Annex follows]

EXTRACT FROM DOCUMENT TGP/9 "EXAMINING DISTINCTNESS"

4.3 Type of record(s)**4.3.1 Introduction**

4.3.1.1 For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

4.3.1.2 The following sections consider the type of records which may be obtained and the way in which they may be used for the assessment of distinctness.

4.3.2 Single record for a group of plants or parts of plants (G)

4.3.2.1 If there is relatively little variation within varieties (excluding off-types), compared to the variation between varieties, the state of expression of a characteristic can be recorded as a single record for a group of plants or parts of plants (G), for the assessment of distinctness. These conditions are fulfilled in most characteristics in self-pollinated and vegetatively propagated varieties and are often fulfilled for qualitative and pseudo-qualitative characteristics in cross-pollinated varieties. In the case of some quantitative characteristics in self-pollinated and vegetatively propagated varieties, it may be appropriate to obtain records for single, individual plants or parts of plants (S) (see Section 4.3.3).

4.3.2.2 The record (G) may, for example, be in the form of: a Note (e.g. 1, 2, 3 etc.) corresponding to a state of expression in the UPOV Test Guidelines; a value (e.g. RHS Colour Chart reference number); a measurement (e.g. length (cm), weight (g), date (18-12-2005), count (3) etc.); an image etc.

4.3.2.3 The record (G) may result from an overall observation of a plot (e.g. leaf color, time of beginning of flowering) or it may result from an overall observation of parts of plants taken from a group of plants (e.g. color of lower side of leaf, hairiness of sheath of lowest leaf). The sample size of the group should be representative for the variety. Recommendations on an appropriate sample size are provided in the UPOV Test Guidelines.

Example (VG)

Visual observation (VG): "Flower: type" in tulip (vegetatively propagated): the flowers are observed and the appropriate state of expression recorded for the variety: Note 1 (single), or Note 2 (double);

Example (VG)

Visual observation (VG): "Lowest leaf: hairiness of leaf sheaths" in barley (self-pollinated): leaves of several plants are observed and the appropriate state of expression recorded for the variety: Note 1 (absent), or Note 9 (present);

Example (MG)

Measurement (MG): "Leaf blade: width" in Hosta (vegetatively propagated): a representative measurement in the plot.

4.3.2.4 In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness. However, in some cases of "G", e.g. where there are several repetitions or plots, or more than one growing trial, more than one record per variety may be obtained, in which case statistical methods may be applied.

4.3.3 Records for a number of single, individual plants or parts of plants (S)

In cases where records for a number of single, individual plants are made (S), statistical analysis of those individual records may be used as the basis for the assessment of distinctness, or the records may be used solely to calculate a mean value for a variety or for a plot, which would be the basis for the assessment of distinctness.

4.3.3.1 *Use of individual plant records solely to calculate variety mean value*

Records for individual plants may be appropriate for some quantitative characteristics in self-pollinated and vegetatively propagated varieties. In particular, in the case of observations on certain parts of plants it might be necessary to measure a number of individual plants in order to determine the precise expression of the variety by calculating the mean value from individual measurements:

Example (MS)

“Leaflet: length” in pea (self-pollinated): a leaf from each of 20 plants is measured (MS). The value of each plant is used for calculation of the mean value, which can be considered in the same way as described in Section 4.3.2.

4.3.3.2 *Statistical analysis of individual plant record*

If there is considerable variation within varieties, which is the normal situation for quantitative characteristics in cross-pollinated varieties, it is necessary to obtain records for individual plants in order to determine the mean expression and the variation within a variety. Distinctness is then assessed by comparing variety means calculated on the basis of the individual plant data, taking into account the random variation inherent in the variety means.

Example (MS)

“Plant: natural height” in ryegrass (cross-pollinated): 60 plants are measured (MS). The value of each plant is used for calculation of the mean and to estimate random variation in order to assess distinctness.

Example (VS)

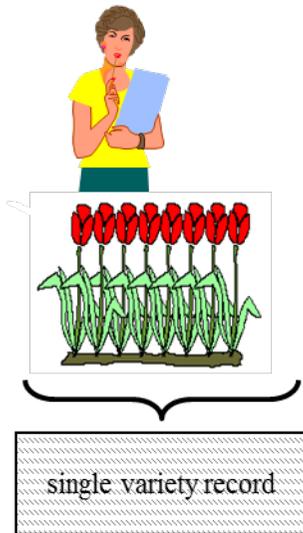
“Plant: growth habit” in ryegrass (cross pollinated): 60 plants are observed visually (VS). The value of each plant is used for calculation of the mean and to estimate random variation in order to assess distinctness.

4.3.4 Schematic summary

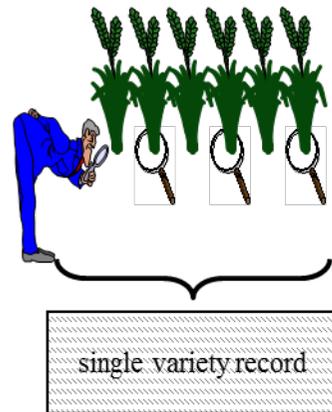
The following diagram provides a schematic overview of a single record for a group of plants or parts of plants (G) and records for a number of single, individual plants or parts of plants (S):

Single record for a group of plants or parts of plants (G)

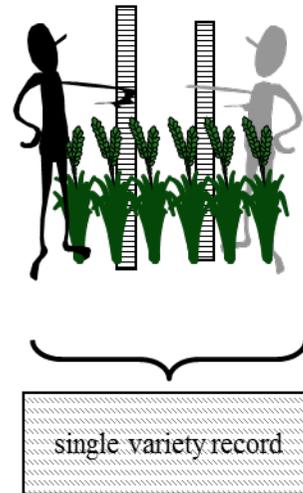
Section 4.3.2.3
Example (VG):
Flower: type
(tulip: vegetatively propagated)



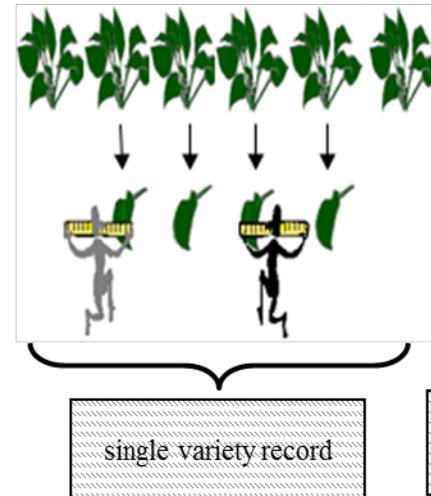
Section 4.3.2.3
Example (VG):
Lowest leaf: hairiness of
leaf sheaths
(barley: self-pollinated)



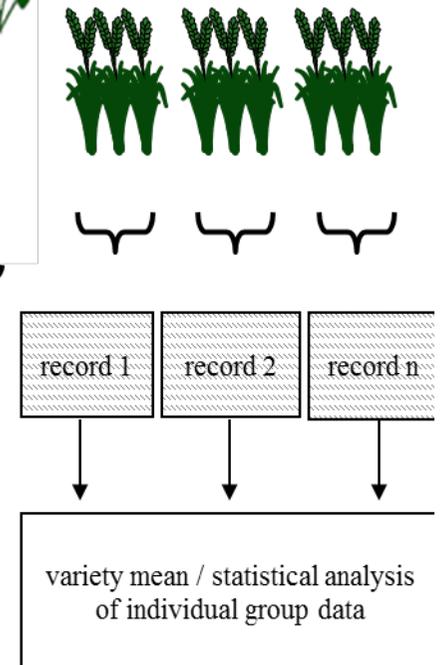
Section 4.3.2.3
Example (MG):
Plant: height
(wheat: self-pollinated)



Section 4.3.2.3
Example (MG):
Leaf blade: width
(hosta: vegetatively propagated)

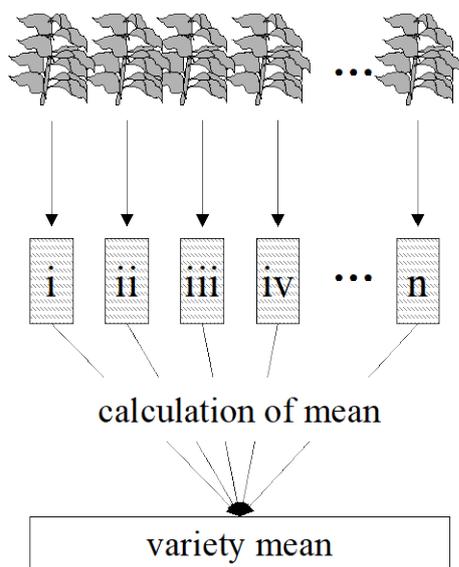


Section 4.3.2.4
Example:
(statistical analysis)

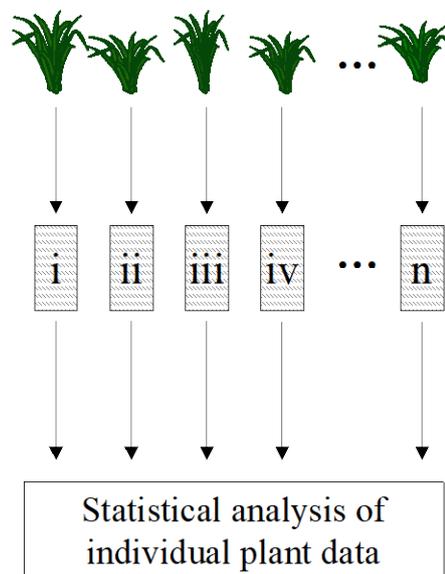


Records for a number of single, individual plants or parts of plants (S)

Section 4.3.3.1
Example (MS): Leaflet: length
(pea: self-pollinated)



Section 4.3.3.2
Example (MS): Plant: natural height
Example (VS): Plant: growth habit
(ryegrass: cross-pollinated)



4.4 Recommendations in the UPOV Test Guidelines

The indications used in UPOV Test Guidelines for the method of observation and the type of record for the examination of distinctness, are as follows:

Method of observation

- M: to be measured (an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.);
- V: to be observed visually (includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). "Visual" observation refers to the sensory observations of the expert and, therefore, also includes smell, taste and touch.

Type of record(s)

- G: single record for a variety, or a group of plants or parts of plants;
- S: records for a number of single, individual plants or parts of plants

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

4.5 Summary

The following table summarizes the common method of observation and type of record for the assessment of distinctness, although there may be exceptions:

Method of propagation of the variety	Type of expression of characteristic		
	QL	PQ	QN
Vegetatively propagated	VG	VG	VG/MG/MS
Self-pollinated	VG	VG	VG/MG/MS
Cross-pollinated	VG/(VS*)	VG/(VS*)	VS/VG/MS/MG
Hybrids	VG/(VS*)	VG/(VS*)	**

* Records of individual plants only necessary if segregation is to be recorded.

** To be considered according to the type of hybrid.

[End of Annex and of document]