Experiences of Members of the Union in Measures to Improve the Efficiency and Effectiveness of DUS Testing

Number of Plants to be Examined

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Number of plants specified in the Test Guidelines

(see TGP/7/3)

(a) Number of plants in the trial (Annex 1, Section 3.4)

(b) Number of plants/parts of plants to be examined for the assessment of distinctness (Annex 1, Section 4.1.4)

(c) Number of plants/parts of plants to be examined for the assessment of uniformity (Annex 1, Section 4.2)

TC agreed that guidance should be drafted for these numbers of plants for inclusion in a future revision of TGP/7.

(a) Number of plants in the trial

- plot size in order to ensure a typical expression of the characteristics in the varieties – biological and agronomic elements
- number of plants to be observed for the identification of the typical expression taking into account variation between plants (within the limits of a uniform variety) – **distinctness**, **variety description**, **stability**
- number of plants to be observed for the assessment of **uniformity** under consideration of the genetic structure of the variety

Limiting element depends on the crop, in general the following number of plants apply:

Trial ≥ Uniformity ≥ Distinctness

(b) Number of plants/parts of plants to be examined for the assessment of distinctness

- Aim is the observation of the “typical” expression of characteristics in the given environment
- Critical element is the precision of the observed (mean) expression of the varieties to be compared – important for the consideration what difference is a clear difference

QL: Low number of plants sufficient – not limiting for the number of plants in the trial, definition in TG not crucial for harmonisation

QN: Precision of records influenced by sample size - important for candidate and similar variety – *guidance necessary for harmonisation*

Considerations for the number of plants to be observed for distinctness in case of QN (PQ)

Sample size important because of the relation between SD and LSD. Variation within the variety has to be taken into account for defining a clear difference (by experts judgment or exact statistics).

Observation on the plot as a whole (VG/MG)
– indicated number to be considered as minimum number

Observation on subsample from plot (VG/MG)
– indicated number to be considered as minimum number

Observations on individual plants (VS/MS)
– number of plants important for precision of record
– specific number to be indicated

Considerations for the number of plants for candidate varieties and varieties to be compared with

If uniformity has not to be observed for similar varieties of common knowledge (reference varieties), it can be considered to include in the trial a lower number of plants for the reference varieties.

***Example*: Grapevine** *(German Protocol)*

Number of plants/parts of plants for distinctness: 4 plants
Number of plants/parts of plants for uniformity: 8 plants

Number of plants in the trial:
8 plants for candidate varieties
4 plants for varieties in the variety collection

Remark: Some reference varieties are maintained with less than 4 plants in the permanent collection (sufficient as long as there are very big differences to all candidates). If a candidate is very similar to one of those reference varieties, the latter will be re-planted with 4 plants in the same age as the candidate for direct comparison.

(c) Number of plants/parts of plants to be examined for the assessment of uniformity

- Genetic structure of variety, features of propagation
- Uniformity Method (off-types, variance)

Off-types: Population standard (consideration error alpha and beta)
Not relevant for number of plants for reference varieties

Variance: Variance influenced by sample size (specific number to be defined for harmonisation)
Relative variance methods, incl. COYU (number of plants relevant for candidates and reference varieties)

Thank you!