

TWV/48/26 Add. ORIGINAL: English DATE: September 16, 2014

### INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

#### **TECHNICAL WORKING PARTY FOR VEGETABLES**

#### Forty-Eighth Session Paestum, Italy, from June 23 to 27, 2014

#### ADDENDUM TO DOCUMENT TWV/48/26

USE OF STATISTICAL APPROACHES IN DUS EXAMINATION

#### Document prepared by the Netherlands

Disclaimer: this document does not represent UPOV policies or guidance

The annex to this document contains the presentation made by an expert from The Netherlands, at the forty-eighth session of the Technical Working Party for Vegetables (TWV), on "Use of statistical approaches in DUS examination".

[Annex follows]

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ANNEX

# nak tuinbouw

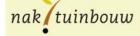
Use of statistical analysis in DUS-testing of onion and shallot

> The Netherlands UPOV TWV 48 2014

naktuinbouw

## Use of statistical analysis in DUS-testing of onion and shallot

	• TP	TP/46/2 Use of statistical analysis for:				
	• Us					
	10	VG	Seed propagated varieties only: Bulb: Tendency to split into bulblets (with dry skin around each bulblet)			
	11	VG	Bulb: degree of splitting into bulblets (with dry skin around each bulblet)			
Contraction of the local division of the loc	27	MS	Bulb/Bulblet: number of growing points per kg			
	28	MG	Bulb/Bulblet: dry matter content			
	29	VG	Onion varieties only: Tendency to bolting in spring sown trials			
	31	VG	Onion varieties only: Tendency to bolting in autumn sown trials			
	33	MS	Onion varieties only: Time of harvest maturity for autumn sown trials (foliage fall-over in 80% of plants)			
	34.1	MS	Onion varieties only: Time of harvest maturity for spring sown trials (as for 33)			
法议 医水石	34.2	MS	Shallot varieties only: Time of harvest maturity (as for 33)			
	35	MS	Time of sprouting during storage			



# Method: counts, measurements



- Visual characteristics are 'translated' into measurements: by counting, to be fit for the use of statistics (10, 11, 29 and 31)
- MG characteristic 28: dry matter content, is a measurement of a bulk characteristic



- Candidate and comparison varieties in two replicates
- Counts or measurements
- Pairwise testing, using GenStat

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# Method: Image analysis



An image analysis system is developed for a number of characteristics which at the moment are observed only visually, but then also can be analysed statistically:

- 13: Bulb: height
- 14: Bulb: diameter
- 15: Bulb: ratio height/diameter
- 16: Bulb: position of maximum diameter
- 17: Bulb: width of neck
- 18: Bulb: shape (in longitudinal section)
- 19: Bulb: shape of stem end
- 20: Bulb: shape of root end

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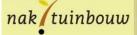
See presentation NL on image analysis

# Output

Pairwise testing: non-significant items in tprob, P=0.05



Makalu	5.186	A	AB
Rocio	5.201	В	AB
E 72.R5923	7.951	С	CDE
Alison	8.801	D	CDEFGH
Tropea rossa tonda	9.201	Е	CDEFGHI
Fabula	9.601	F	DEFGHI
Croque	9.751	G	DEFGHI
BGS 285	9.851	Η	DEFGHI
ISI 31001	10.251	I	EFGHI
ISI 30100	11.751	J	J
Red Creole	14.486	K	K.
BGS 286	16.201	L	L



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same note as the reference variety



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# Quality in Horticulture

[End of Annex and of document]