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**TECHNICAL WORKING PARTY FOR ORNAMENTAL PLANTS AND FOREST TREES**

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ADDENDUM TO

NUMBER OF GROWING CYCLES IN DUS EXAMINATION

*Document prepared by the Office of the Union*

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The Annex to this document contains a copy of the presentation “The Impact of Using Different Numbers of Growing Cycles on DUS Decisions of Vegetatively Propagated Ornamental Varieties” to be made by an expert from Germany at the forty-ninth session of the Technical Working Party for Ornamental Plants and Forest Trees (TWO).

[Annex follows]

THE IMPACT OF USING DIFFERENT NUMBERS OF GROWING CYCLES ON DUS DECISIONS  
OF VEGETATIVELY PROPAGATED ORNAMENTAL VARIETIES

Presentation by Ms. Andrea Menne, Germany.



**TWO/49/15**

**NUMBER OF GROWING CYCLES IN DUS EXAMINATION**

The Impact Of Using Different Numbers Of Growing Cycles On DUS Decisions  
Of Vegetatively Propagated Ornamental Varieties



Presentation by Andrea Menne, Germany

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In most of the TGs for ornamental varieties **one year of testing** is recommended.

For the DUS test one year of testing is in most cases sufficient for **vegetatively propagated ornamental** varieties, because

- The **differences** between the varieties **are big** compared to environmental effects and the variation within varieties.
- The decision on **distinctness** is based on a side-by-side visual comparison in the growing trial.
- The detection of **off-types** is normally not influenced by the environment.

**But:** The growing cycle may have an impact on the **variety description** due to differences in the expression of characteristics between growing cycles.

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**Example: Pelargonium variety, description of 2013 and 2014**

		One note difference compared to 2013			2 notes difference compared to 2013
Characteristic	State of Expression	2013		2014	
1 Plant: growth type	upright	1			1
2 Plant: height of foliage	medium to tall	6	tall to very tall		8
4 Plant: width	medium to broad	6			6
5 Stem: color	green	2			2
6 Stem: anthocyanin coloration	medium to strong	4	medium		3
7 Leaf blade: length	long	7	medium to long		6
8 Leaf blade: width	medium to broad	6			6
9 Leaf blade: depth of sinus	shallow to medium	4	medium		5
10 Leaf blade: undulation of margin	medium	5	weak to medium		4
11 Leaf blade: base	slightly open	3	slightly open to closed		4
12 Leaf blade: variegation	absent	1			1
13 Leaf blade: main color	dark green	6			6
16 Leaf blade: conspicuous. of zone	medium to strong	6			6
17 Leaf blade: position of zone	in middle	2			2
18 Leaf blade: relative size of zone	small	1			1
19 Peduncle: length	medium to long	6			6

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Characteristic	State of Expression	2013		2014	
20 Peduncle: anthocyanin coloration	strong to very strong	8			8
21 Inflorescence: height	tall to very tall	8	medium to tall		6
22 Inflorescence: width	broad	7	medium		5
23 Inflorescence: no of open flowers	medium to many	6			6
24 Inflorescence: length of largest fl.	short to medium	4	medium		5
25 Inflorescence: width of largest flower	medium to broad	6			6
26 Inflorescence: length of pedicel	long	7	medium to long		6
27 Pedicel: anthocyanin coloration	strong	7	strong to very strong		8
28 Pedicel: swelling	absent	1			1
29 Flower: type	double	2			2
31 Flower: number of petals	medium	5			5
32 Flower: cross section in lateral view	flat	2			2
33 Flower: presence of stripes	absent	1			1
36 Sepal: reflexing	absent or weak	1			1
37 Sepal: anthocyanin coloration	medium	5	medium to strong		6
38 Upper petal: width	medium	5	medium to broad		6
39 Upper petal: shape	spatulate	4			4
40 Upper petal: margin at apex	entire	1			1
41 Upper petal: color of margin	red	50A	red		46C
42 Upper petal: color of middle	red	50A	red		46C

Characteristic	State of Expression	2013		2014
43 Upper petal: color of lower side	red	43B	red	43A
44 Upper petal: conspicuou. of marking	absent or very weak	1		1
45 Upper petal: type of marking	stripes only	1		1
48 Upper petal: zone at base	absent	1		1
51 Lower petal: color of margin	red	46C	red	50A
52 Lower petal: color of middle	red	50A	red	50A
53 Lower petal: color of lower side	red	46C	red	43B
54 Lower petal: conspicuou. of marking	absent or very weak	1		1
57 Lower petal: zone at base	absent	1		1
60 Inner petal: colour of upper side	red	46C	red	46C

- Out of 46 characteristics only 3 deviate from one year to the next by two notes.
- 10 characteristics deviate by one note.

### Consequences

- When taking a decision on distinctness the expert needs to be aware which characteristics are sensitive to the environment.

Environmental effects have to be considered for:

- (a) The comparison of similar varieties in the same growing trial (side-by-side comparison).
- (b) The exclusion of clearly distinct varieties from the growing trial (comparison with descriptions in the variety collection).
- (c) The test for stability/identity (comparison side-by-side with previous sample or with description).

It is very important to emphasize that the variety description is linked to the year of testing.

**Question: Are all varieties in the same trial reacting in the same way on the environmental conditions?**

**Example: Two varieties of Impatiens New Guinea Group**

One note difference compared to 2010	2 notes difference compared to 2010
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Characteristic	Variety One			Variety Two		
	2010	2012	2013	2010	2012	2013
1 QN Plant: height of foliage	5	5	5	6	7	5
2 QN Plant: width	3	5	5	6	6	6
3 QN Shoot: anthocyanin coloration	6	6	6	8	8	8
4 QN Petiole: length	3	5	4	4	5	4
5 QN Petiole: anthocyanin coloration	3	3	3	6	6	6
6 QN Leaf blade: length	5	5	5	6	5	6
7 QN Leaf blade: width	4	5	5	4	5	5
8 QN Leaf blade: length/width ratio	6	5	6	6	6	7
11 QN Leaf blade: anthocyanin coloration	3	2	2	2	2	2
15 QN Pedicel: length	4	4	4	6	6	6
16 QN Pedicel: anthocyanin coloration	5	5	5	8	8	8
18 QN Flower: width	6	6	6	7	7	6
26 QN Upper petal: width	6	7	7	7	7	7
27 QN Lateral petal: width	5	5	5	5	4	4
28 QN Lower petal: length	5	6	6	6	6	6
24 QN Flower: size of eye zone	4	4	4	4	4	4

Characteristic	Variety One			Variety Two		
	2010	2012	2013	2010	2012	2013
12 QL Leaf blade: color of lower side between veins	1	1	1	1	1	1
14 QL Leaf blade: color of veins on lower side	2	2	2	2	2	2
17 QL Flower: type	1	1	1	1	1	1
19 QL Flower: number of colors	1	1	1	1	1	1
23 QL Flower: eye zone	9	9	9	9	9	9
20 PQ Flower: main color of upper side	N30A	N30A	N30A	N30A	N30A	N30A
25 PQ Flower: main color of eye zone	46B	46B	45A	46B	46B	45A

### General Observations

- In particular, the state of expression of **quantitative characteristics** can be more variable over the years.
- Some quantitative characteristics react more sensitive to the environment than others.
- Not all varieties react in the same way to changes of the environment.
- If a variety is observed in one growing period only, the possible variation in the state of expression is unknown.

Besides the growing conditions during the testing period **also other factors can influence the expression of the plant characteristics**, e.g. the conditions under which the mother plants were kept, or the position on the mother plant where the cutting was taken.

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