

**Technical Working Party for Vegetables****TWV/51/5****Fifty-First Session****Roelofarendsveen, Netherlands, July 3 to 7, 2017****Original:** English**Date:** June 29, 2017


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**ASSESSING UNIFORMITY BY OFF-TYPES ON THE BASIS OF MORE THAN ONE GROWING CYCLE  
OR ON THE BASIS OF SUB-SAMPLES***Document prepared by the Office of the Union**Disclaimer: this document does not represent UPOV policies or guidance*

The Annex to this document contains a copy of a presentation “Assessing Uniformity by Off-types on the Basis of More than One Growing Cycle: examples from NL” to be made by an expert from the Netherlands at the fifty-first session of the Technical Working Party for Vegetables.

[Annex follows]






## Overview approaches

**Summary of the three approaches:**

- Approach 1: Third growing cycle in case of inconsistent results
- Approach 2: Combining the results of two growing cycles in the case of inconsistent results
- Approach 3: Combining the results of two growing cycles
  - *A variety may be rejected after a single growing cycle if the number of off-types exceeds the number of allowed offtypes for the combined sample (over two cycles)*

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## Case 1: Tomato Variety A

Crop: Tomato Variety A  
 Population standard 1%, Acceptance Prob.  $\geq 95\%$   
 Sample size per growing cycle = 20  
 Maximum number of off-types per growing cycle = 1  
 Maximum number of off-types growing cycle 1 and 2 combined (n=40) = 2

Number of off-types per growing cycle			Decision		
First	Second	Third	Approach 1	Approach 2	Approach 3
3	0	0	third cycle: => uniform	non-uniform	non-uniform*

\*With the current wording of document TWP/1/17 (particularly approach 3) the variety could/would have been rejected after 1st growing cycle!

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## Case 2: Tomato Variety B

Crop: Tomato Variety B  
 Population standard 1%, Acceptance Prob.  $\geq 95\%$   
 Sample size per growing cycle = 20  
 Maximum number of off-types per growing cycle = 1  
 Maximum number of off-types growing cycle 1 and 2 combined (n=40) = 2

Number of off-types per growing cycle			Decision		
First	Second	Third	Approach 1	Approach 2	Approach 3
3	1	4	third cycle: => non-uniform	non-uniform	non-uniform


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## Comparing Variety A and Variety B

- Both in Variety A and in Variety B the number of off-types in the first growing cycle was 3 (non-uniform)
- In Variety A, approach 1 eventually lead to decision 'uniform' after 3 growing cycles, and in Variety B the final decision after 3 growing cycles was non-uniform
- In Variety A, the current wording of the document (TWP/1/17) could/would have resulted in a rejection after the first growing cycle. In retrospect a 'wrong' decision?
- Early decisions, based on small deviations from the allowable number of off-types, can be premature and are risky

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## Example from UPOV document TWP/1/17

Population standard 1%, Acceptance Prob.  $\geq 95\%$   
 Sample size per growing cycle = 50  
 Maximum number of offtypes per growing cycle = 2  
 Maximum number of offtypes growing cycle 1 and 2 combined (n=100) = 3

Number of offtypes per growing cycle			Decision		
First	Second	Third	Approach 1	Approach 2	Approach 3
2	2	-	uniform	uniform	non-uniform

This example illustrates the pitfall of approach 3. It considers the variety non-uniform, while it is considered uniform in both separate cycles!

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## Conclusions

- The number of allowed off-types in a sample is sometimes small. This increases the risk of a 'wrong' decision: one off-type more or less could lead to a different decision
- In approach 3, the allowed number of off-types of the combined cycles can be smaller than the sum of allowed off-types of both cycles (see example previous slide). This may lead to a 'questionable' decision
- Decisions on non-uniformity should only be made when cases are clear. In case of doubt: the benefit should be for the applicant.
- Naktuinbouw has decided to use approach 1, as with this approach the chance of a 'wrong' decision seems smallest

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