

The organisation of the Plant Breeders' Rights DUS testing system in the Netherlands

Seoul September 2015

Raoul Haegens Variety Registration Department, Naktuinbouw

Challenge!!



Agenda

- 1. Naktuinbouw
- 2. CPVO EU PBR overview
- 3. Technical Protocol
- 4. Submission of samples
- 5. Growing trials
- 6. Assessment of the DUS
- 7. Reporting
- 8. Plant Material Policy
- 9. Law cases

Plantbreeding in the Netherlands





- The Netherlands Breeding sector is world market leader for:
 - \circ Vegetables
 - \circ Ornamentals
 - Potatoes
- 24% of value of world export of seeds and propagating material from the Netherlands
- 47% of European use of Seeds and propagating material is from the Netherlands
- Approx. 1600 applications for new varieties per year
 - \circ 1000 applications for Community PBR
 - \circ 600 applications for National PBR

Plantbreeding in the Netherlands

The Netherlands:

• Approximately 350 breeding companies – turnover approx. 2.5 billion

Euro (prox 3 Billion \$)

- Many of them Small and Medium Sized Enterprises
- 15 20% of their annual turnover is spent on R&D
- Annual private investment is € 250 350 million (\$ 350 475) million

Naktuinbouw: Netherlands Inspection Service for Horticulture

- Certification and Inspection based on
 - The Dutch Seed and Plant Act 2005 and the Plant Disease Act
 - European Community Legislation
- DUS tests for National listing and protection for
 - Agricultural species
 - Ornamental species
 - Vegetable species

	Listing	NL PBR	EU PBR
Ornamental crops		- 224	4 766
Agricultural crops	267	7	9 5
Vegetable crops	663	3 440	0 116
Total	930	74:	3 887



Applications in the Netherlands

Total 62.172 since 1960 in 663 different species



□ Agriculture 7.663

- Ornamental 25.627
- Vegetable 28.126
- Arboriculture 739
- Others 17



Naktuinbouw



Naktuinbouw: department of Variety Testing

- Five teams
 - $_{\odot}$ Administrative Bureau for Plant Varieties
 - DUS Agricultural Crops
 - o DUS Ornamental and Fruit crops
 - DUS Vegetable Crops
 - o Trial Management
- Number of staff: 60





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CPVO: EU PBR overview



CPVO: EU PBR overview

- In order to be granted Plant Breeder's Rights, a variety must comply to criteria for
 - Distinctness
 - Uniformity
 - Stability

'DUS'

- Novelty
- Denomination

If these requirements are met then the variety will be described. This description will be the ID-card of the variety.

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CPVO Technical Protocol

- Describes:
 - the technical procedures
- Based on UPOV documents:
 - General introduction to DUS
 - Test Guidelines
 - Discussed by technical experts from the Member States





Technical Examination CPVO technical Protocol

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160 Protocols

303 Guidelines



Technical Examination CPVO technical Protocol

to promote uniform testing within EU and enable Community PBR

25 ENTRUSTED Examination Offices

Technical Examination CPVO technical Protocol

Lay-out of the CPVO Technical Protocols

- 1. Subject of the Protocol and reporting
- 2. Material required
- 3. Method of examination
- 4. Assessment of Distinctness, Uniformity and Stability
- 5. Grouping of varieties and organization of the trial
- 6. Introduction to the table of Characteristics
- 7. Table of characteristics
- 8. Explanations on the table of characteristic
- 9. Literature
- 10. Technical Questionnaire (TQ)

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Submission of the samples



- Closing dates
- Amount and Quality
- Examination Office







- 1. Appropriately packaged
- 2. Clearly labelled

3. Must be submitted in the specified period, number and conditions.S2 Gazette

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Submission of the samples



- Closing dates
- Amount and Quality
- Examination Office







- 1. Appropriately packaged
- 2. Clearly labelled
- Must be submitted in the specified period, number and conditions.
 S2 Gazette
- 4. Free of pest and diseases.

Quarantaine requirements as for trade.

5. Untreated with insecticides, fungicides or any others treatment (primed).





Failure of comply with all the mentioned instructions may result in rejection of the application.



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Preparation of the trials

- Number of growing cycles
 - vegetative crops: usually 1 growing cycle
 - seed: often 2 independent growing cycles
- Testing Place
 - glasshouse
 - field
- Conditions for Conducting the Examination
 - optimal expression of characteristics





- To facilitate appropriate comparison of varieties, similar varieties are put close together in the trial:
 - use grouping characteristics in trial design
 - only varieties <u>within groups</u> need to be compared!





Example Cucurbita pepo L.

Plant Material



Method of Examination trial: 2 growing cycles Field 42 plants 2 replications (21 plants per replication) Candidates varieties, similar varieties, reference varieties...







The real work can start!









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Assessment of Distinctness, Uniformity and Stability

Distinctness

- consistent differences
- clear differences

Uniformity

• appropriate standards according to method of propagation

Stability

- in practice usually not tested but considered OK when sufficiently uniform
- test can be performed in case of doubt

If the variety meet the D, U en S then a description of it will be made.

Assessment of Distinctness

- Approaches for assessing Distinctness
 - <u>'side-by-side'</u> visual comparison in the growing trial
 - varieties must be grown closely together, impracticle with large number of varieties

<u>'notes'</u>/single variety records

- one record for state of expression of the characteristic
- several records for state of expression (plants/plant parts/plots), but variety representation by one record (mean/mode)

- statistical analyses of the data

- QN characteristics only
- requires sufficient number of records per variety







Assessment of Uniformity

Toleration levels for uniformity are set according to

- method of propagation.
 - Vegetatively propagated varieties
 - Self-pollinated varieties
 - Cross-pollinated varieties
- level of breeding in the crop/species
 - Hybrids (single cross, double cross...)





Assessment of Uniformity

Approaches for assessing Uniformity

- Off-types approach
 - counting the number of obviously different plants
- 'Standard deviations' approach
 - variation continuous, no 'obviously different' plants
 - · level of variation relative to comparable varieties
- COY-U test



 Statistical approach for quantative characteristics (QN) in most agricultural species

> In pepper: Number of plants 6-35 only 1 off-type allowed





- In practice no test for Stability is performed, as experience has demonstrated that when a variety has shown to be uniform it can also be considered stable
 - if variety not stable, then material produced will not be conform description/features of the variety
 - if breeder cannot supply material conform variety description, Breeder's Rights may be cancelled

Assessment of Stability

 Stability is subject of control by inspection/ certification services (preand postcontrol)

- In the Netherlands e.g. Naktuinbouw, NAK





Description of the variety

• Using the table of characteristics of the protocol.







Table of characteristics





Table of characteristics

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
27.	28.	PQ	Fruit: shape in longitudinal section		
(+)	(+)	VG	oblate	Liebesapfel, PAZ szentesi, Topepo rosso	1
	(*)		circular	Cherry Sweet	2
(b)	(b)		cordate	Daniel	3
			square	Delphin, Yolo Wonder	4
			rectangular	Clovis, Nocera rosso	5
			trapezoidal	Delta, Piperade	6
			moderately triangular	Fehér, Marconi	7
			narrowly triangular	De Cayenne, Demon	8
G			horn shaped	Tauro	9

















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Reporting

Interim report:

<u>interim report</u>: mid-term on D, U and S.

In case of a crop which generally requires 1 year testing but results demand a second year's testing, also an interim report is issued In case of a crop which generally requires 2 years testing but results demand a third year's testing, also an interim report is issued TUSSENRAPPORT OVER HET TECHNISCH ONDERZOEK IN HET KADER VAN TOELATING EN KWEKERSRECHT INTERNINEPORT ON THE TECHNICAL EXAMINATION IN THE PRANEWORK OF LISTING AND PLANT BREEDERD RIGHTS

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0.	Rasbenaming Yarety descendator	
1.	Kanaker Breeder	Bejo Zaden B.V., WARMENHUIZEN, NL
2	Onderzoeksautoriteit Teeling automy	Nakturbouw, NL
3.	Onderzoeksstation en -plaats Teeling station and place	Naturbouw, RDELOFARENDSVEEN, NL
4.	Periode van onderzoek Periode van onderzoek	2012
5.	Datum en plaats uitgifte rapport Gas ant pase of issue of document	15-08-2013, ROELOFARENDSVEEN, NL
6,	Algemene informatie General Information	
	a. Geen plantmateriaal ontvangen No part natural reserved	•
	D. Voldoet niet aan de inlevensisen Pagarements to part materia not met	
	c. Onderzoek mislukt, waarnemingen Test telet, diservatione	•

Reporting

15. H	enmerken uit het protocol of richtlijn haracteristics included in the protocol or guideline			•
CPVO CPVO	Kenmerken Charauteristics	Expressie States of expression	Hlanne Note	Opmerkingen Remarks
NO.			20022	12053300
1	Kiemplant: anthocyaankleuring hypocotyl	aanwezig	9	
<u>.</u>	Seedling: anthocyanin coloration of hypocolyl	preaent		
2	Plant: hoogte (bij oogstrijpheid)	midden	9	
	Plant: neight (at time of harvest)	medium		
a	Stronk: lengte (tot de eerste bladaarzet)	B. Cort		
	alert, length jup to the maemon or that lead	h alfonson in his		
•	brad, houding	nanopgerient		
	Disci lagata	mainten fot lang		
	Last locat	midden to tang		
	Elan Aright	middlen		
	Last with	medium		
7	Blad: verbouding breedte/lengte	middan	5	
5 U U	Last tala with headb	medium		
	Blad: asightheid	onthrekend	1.1	
	Last lobing	absent		
	Blad klow (met was, indian assuratio)	ortinorpen	2	
	Last odor with way if grasent)	aney anen		
10	Blad klevrintensiteit (als bil 8)	dooker	7	
	Leaf intensity of color (as for 9)	dath		
	Blad: draallog van de top	mak		
	Leaf twisting of the	wash.		
12	Blad: yorm in dwarsdoorsoede	viak	2	
12	Leaf shape in cross-section	Bat	- C.	
13	Blad: bobbeling	ewah	3	
	Leaf blabering	waat		
14	Blad: plooling bij de hoofdnerf	zwak tot midden	4	
	Leaf orimping near main yein	weak to medium		
15	Blad: golving rand	zwak	3	
	Leaf: undulation of margin	weak		
16	Kool: afdekking door het binnenblad	gedeeltelijk gedekt	2	
	Curd: covering by innner leaves	partly covered		
17	Kool: hoogte	midden	5	
	Gurd height	resolution		
10	Kool: diameter	midden		
	Curd: diameter	Proved Guarry		
19	Kool: vorm in lengtedoorsnede	rond	1	
	Curd: shape in longitudinal section	amudar		
20	Uitgezonderd rassen met een driehoekige koolvorm: Kool: welving	midden	5	
	Excluding varieties with ourd shape triangular: Curd: doming	medium		
21	Kool: kleur	witachtig	1	
	Curd exteur	whiliah		
22	Kool: bonkigheid	fijn tot midden	4	
	CARACTERICAL (1997) 101 (1997)	10/57 51004311043103001		

Final report:

situation at the end of the DUS test, decision on D,U and S

	THE REPORT OF THE THE TECHNIC & PARKING THE	IN THE PROPERTY OF CONTINUES OF A LAST BREEZE MALLINE
	Teragonanna caperhonds adated Adament in morthy caloris	546.200
	Optimized and the second secon	
	Newjanganan spitislings-sock administ Reference on reporting admits	
	frankrige anderling (Benitr's reference	Braue, 2001 Production, 1994mill
	Autor augstation Date of application	34-02-00-0
	Automation Contraction	Reg Julies & P., Buttleborg, 2014, No.
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4	Datase on plants angles regent	SHARANA, ROBLOF AND DESIGN. N.

Agenda

- 1. Naktuinbouw
- 2. CPVO EU PBR overview
- 3. Technical Protocol
- 4. Submission of the samples
- 5. Method of Examination
- 6. Assesment of the DUS
- 7. Reporting
- 8. Plant Material Policy
- 9. Law cases



CPVO Policy on Plant Material

 What may the EU Examination office do with the material after the variety has been granted?



- No living reference collection, material should be destroy or send it back to the applicant.
- Living reference collection, material should be kept by the EU EO until the title expiry.

Seed propagated material

- Trial is destroy
- Sample is stored





CPVO Policy on Plant Material

- Application withdraw or rejected?
 - Sample has to be destroy or has to be send it back to the applicant.
- Transfer of material between two entrusted EO:
 - No permision from the entitle need it.
 - If the sample consist of a parent line then entrusted EO should inform the applicant/ entittled.
 - The transfered material can be used for DUS examination purposes only.



CPVO Policy on Plant Material

- Transfer of material between an entrusted EO an other EO:
 - Only if the person entiteld consent.
 - If the variety is sold on the market, consentment is no needed it.





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After granting: private

Help for technical research: yes

Assistance yes when required by a judge



Law cases

- Doubts about the identity of plant material
- Suspected second cropping
- Suspicion of infringement of Plant Breeders'
- Rights and patents 'Essential Derived Varieties' (EDVs)





CPVO database on PVR case law: 253 court decisions in the EU



In The Netherlands: Mainly infringement in ornamentels and parent lines in vegetales

Thank you for your attention. Questions?



