Plant Variety Protection Seminar Hangzhou City 8-10 January 2018 Recent developments in PVP in the Netherlands and the European Union

Kees van Ettekoven

Naktuinbouw, the Netherlands

Introduction

20 years of PVP in China, 75 years PVP in the Netherlands. For both countries in the coming years important developments can be expected.

Plant breeding in the Netherlands

- **The Dutch Breeding sector - world market leader**
  - **Vegetables**
  - **Ornamentals**
  - **Potatoes**

- **24% of value of world export of seeds and propagating material from the Netherlands**

Plant breeding in the Netherlands

The Netherlands:

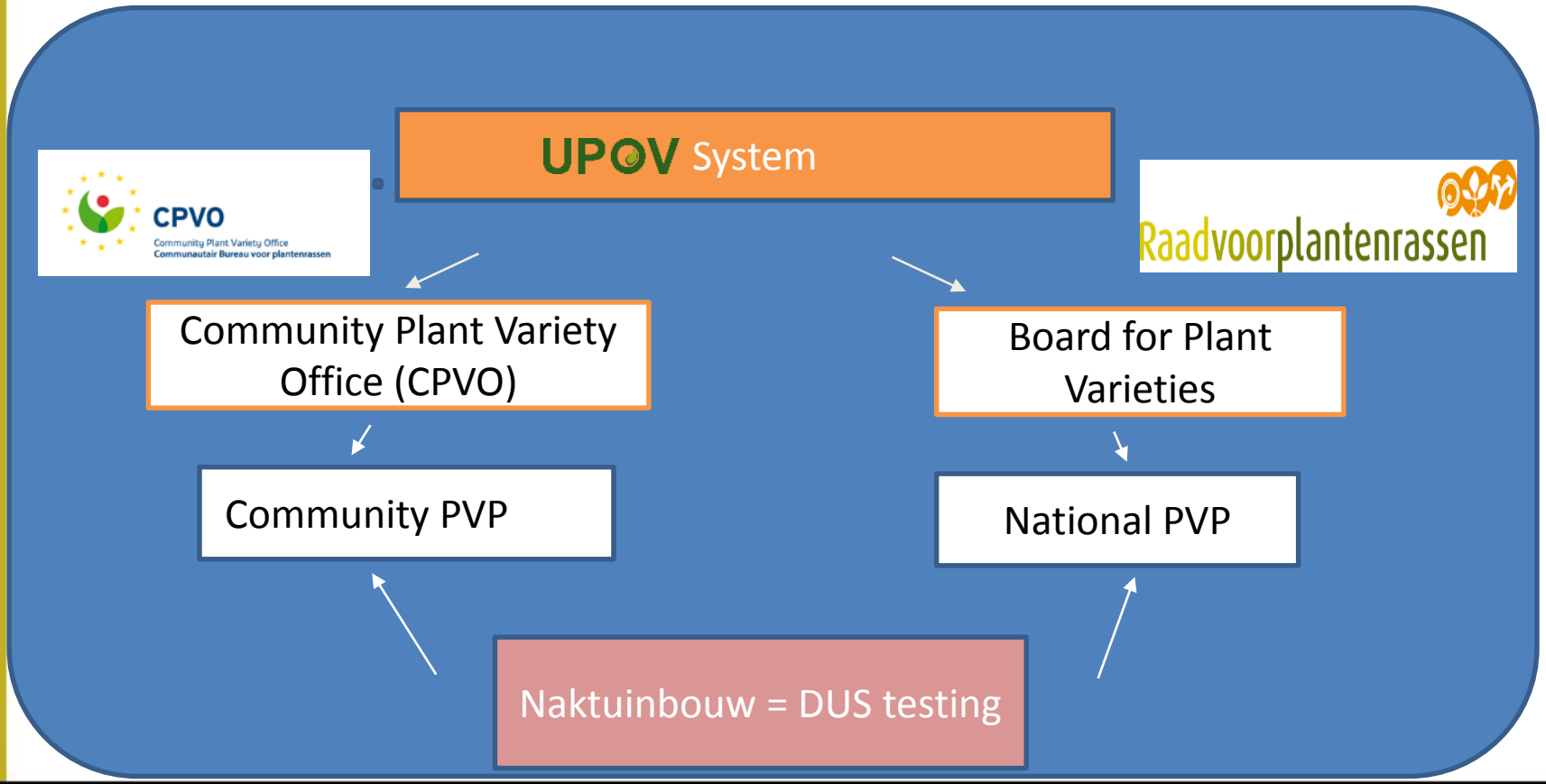
- **+/- 350 breeding companies**
- **Small and Medium Sized Enterprises**
- **20-30% of annual turnover - R&D**
- **Return on investment needed!**

Plantbreeding in the Netherlands

- Why is plant breeding in the Netherlands so succesful?
  - Climate
  - School system, training
  - Size of the country (too small to be a threat, export to survive, languages to export)
  - Trading Nation

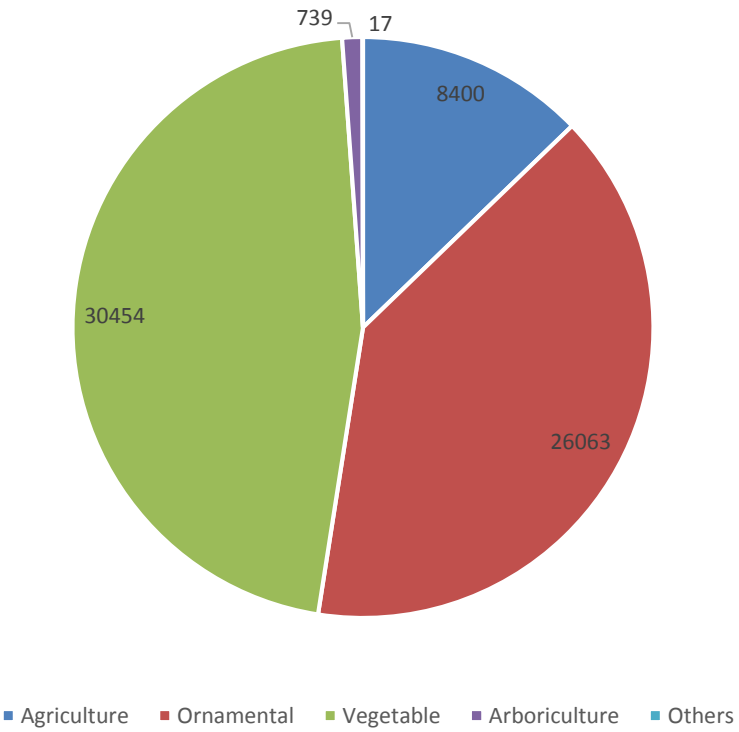
The PVP system in The Netherlands today

Two kinds of PVP: (1) Regional European Union PVP or (2) National PVP



Plant Variety Protection - the Netherlands

Total 65.673 applications since 1960 665 different species (PVP and Listing):



Number of applications

Crops	2016			Total
	List	PVP		
		Nat	CPVO	
Ornamentals	-	232	562	794
Agriculture	251	82	8	341
Vegetables	676	486	111	1273
Trees			19	19
Total	927	800	700	2427

Benefits of Plant Breeding

Socio–economic impact of Plant Breeding in the EU (Noleppa report)

http://www.plantetp.org/hffa-research-paper-plant-breeding-eu

- 1.24% yield increase / year
  - 74% yield increase = Plant breeding
- Reduction of CO2 emissions
- Prevention of loss of biodiversity

PVP and Small holder farmers

- **Where do smallholder farmers get**
- **there seeds from?**
- 9660 observations across six countries, covering 40 crops
- • 51% from local markets
- • 31% farmers own stock
- • 8.6% from neighbours
- • 7.3% from government / NGOs / UN
- • 2.4% from agro-dealers
- Observations from Kenya (UPOV member since 1999)
- • 40% from local markets
- • 36% farmers own stock
- • 11.6% from agro-dealers
- • 6% from government / NGOs / UN
- • 5.7% from neighbours

Source: McGuire & Sperling, 2016
www.seedsystem.org

OXFAM

Focus Group on potatoes in Njabini, Kenya, April 2013

	Benefits	Drawbacks	Prefer.
Farm-saved seed	Low cost	Could be diseased	3
	Known quality	Yield decreases over time	
	Availability		
	Adaptability to land		
Neighbours' seed	Availability	Diseases	4
	Known quality	Mixed varieties	
	Low cost		
	Small quantity available		
Local market seed	Cheap ($12 for 50kg)	Unknown source	5
	Readily available	Mixed varieties	
		Diseased	
Quality Declared Seed	Disease-free	Leads to indebtness if crop	2
	High yielding		
	Credit Facility	Expensive (12% interest)	
Certified Seed	Disease free	Not available (40km)	1
	High Yielding	Expensive ($29-50 kg +	
		transport cost)	

Plant Variety Protection - the Netherlands

Farmers Rights

Subsistence farmers (private and non-commercial use)

- not present in the Netherlands

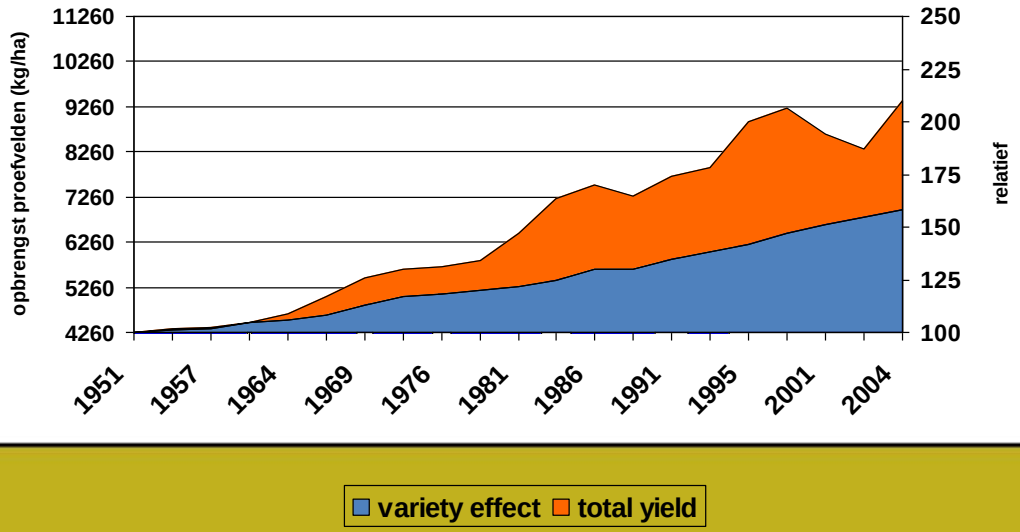
Farm Saved Seed (Farmers Privilege)

- Cereals - Potatoes
- Small farms
  - Information
  - exempted from payment
- Online system

https://www.eigenzaaizaad.nl/eigen-zaaizaad-fss/

Effect of PVP

- Incentive to invest in Research and Development?
- Does mankind gain?
- Contribution to agricultural and horticultural development?

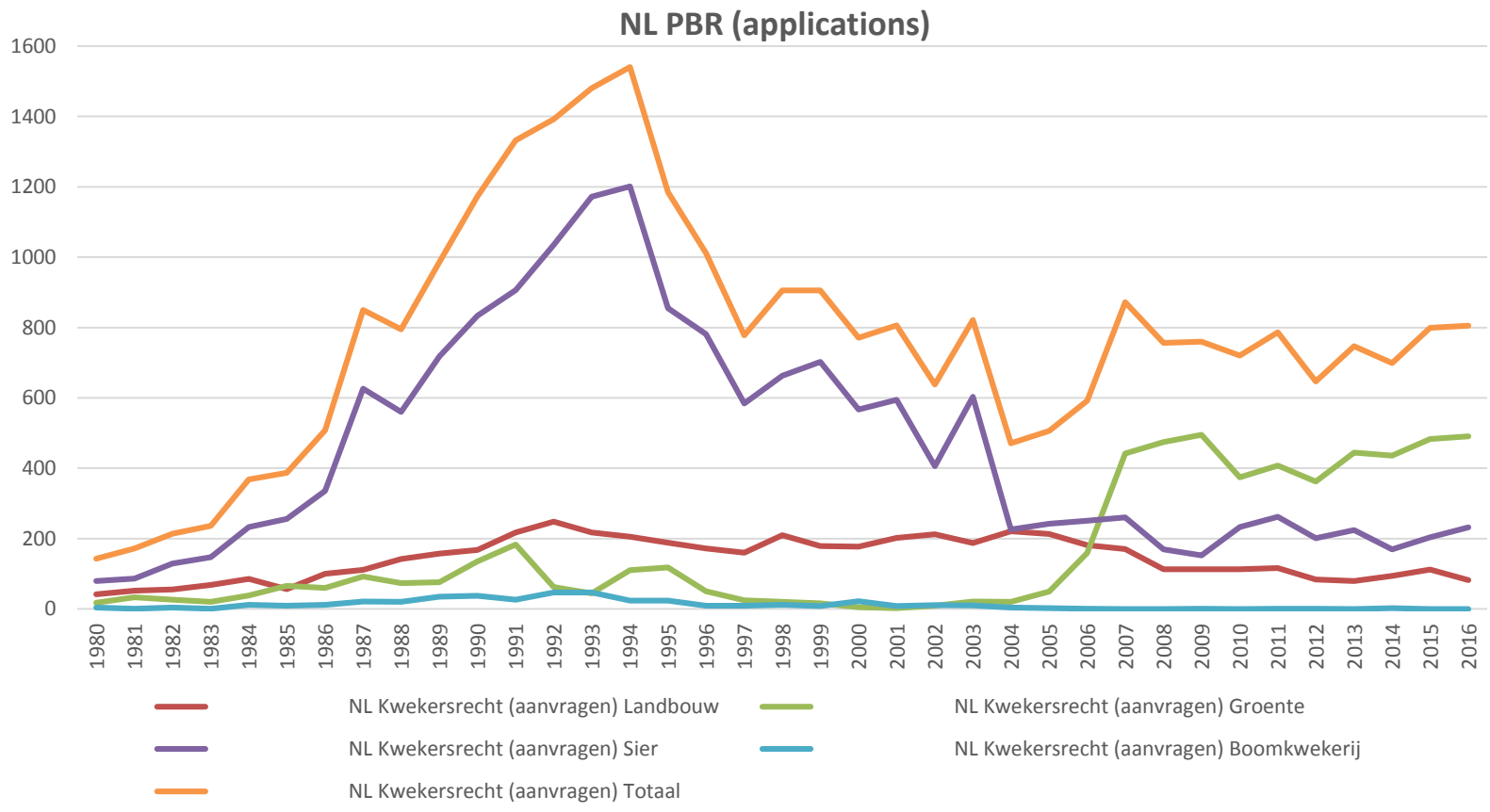


Added value of tomato seed

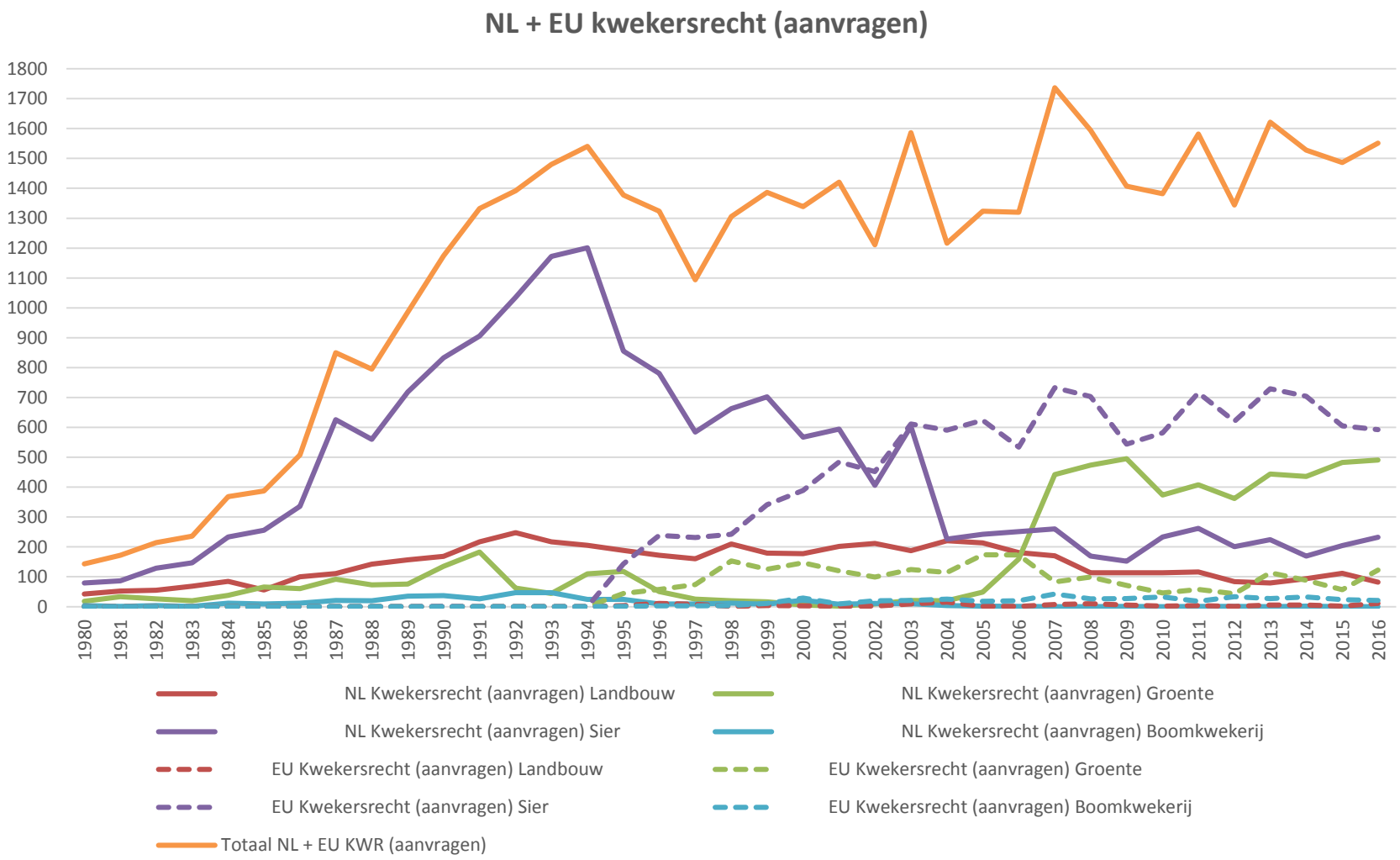
- 1 for kilo tomato seed, a grower has to pay Euro **50.000** (more expensive than 1 kilo gold)
- From 1 kilo tomato seed the grower can grow 8 hectares of glasshouse tomatoes
- Per hectare he harvests 600.000 kilo that is worth prox 450.000 Euro (the one kilo seed represents 8x450.000 = **3.500.000** Euro)
- The consumer value of the harvested tomatoes is 3x 3,5 milj = **10.000.000** Euro.
- So in the end the value of the seed is **200** times higher.

Source: Plantum

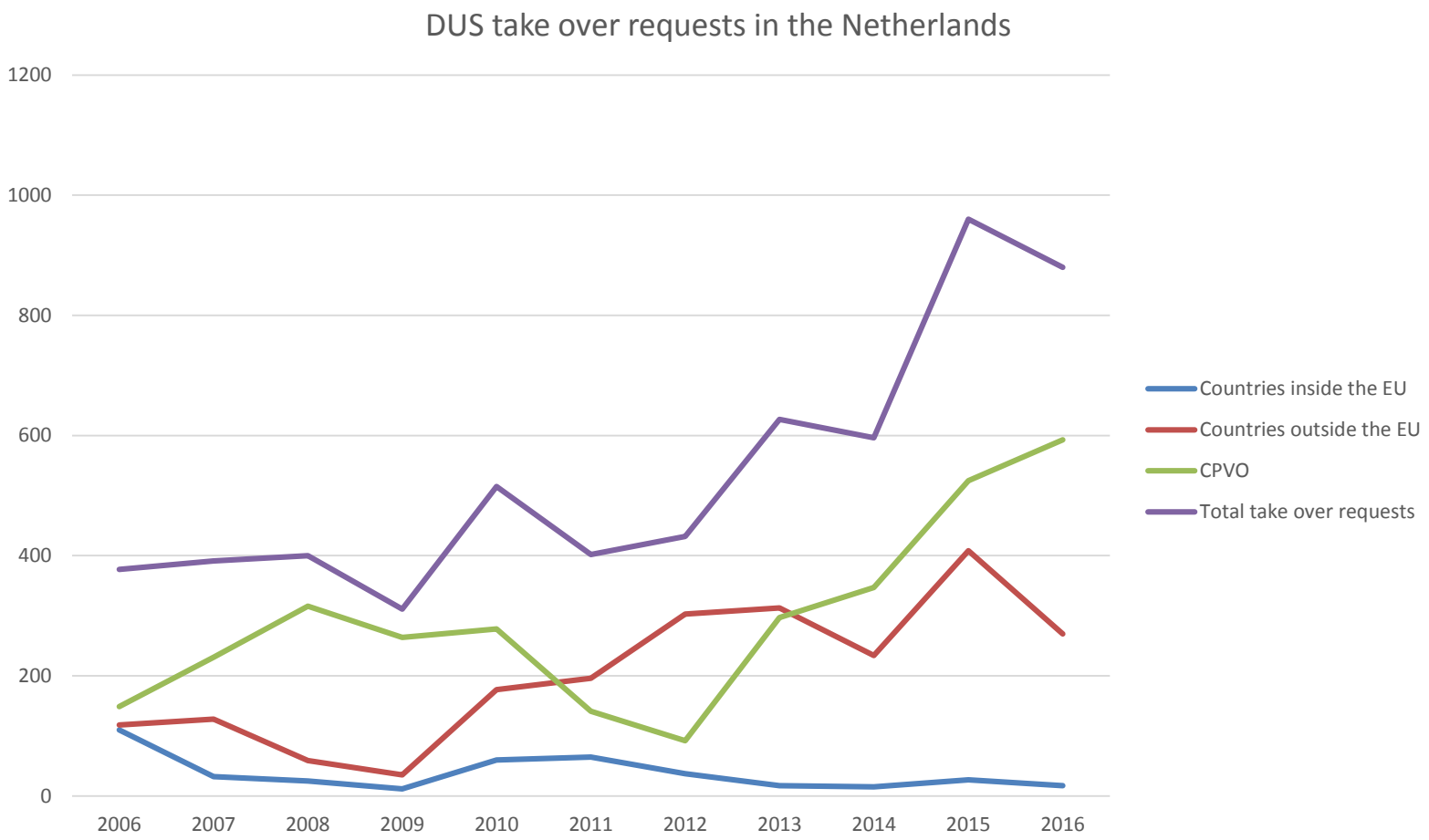
The effect of PBR in the Netherlands



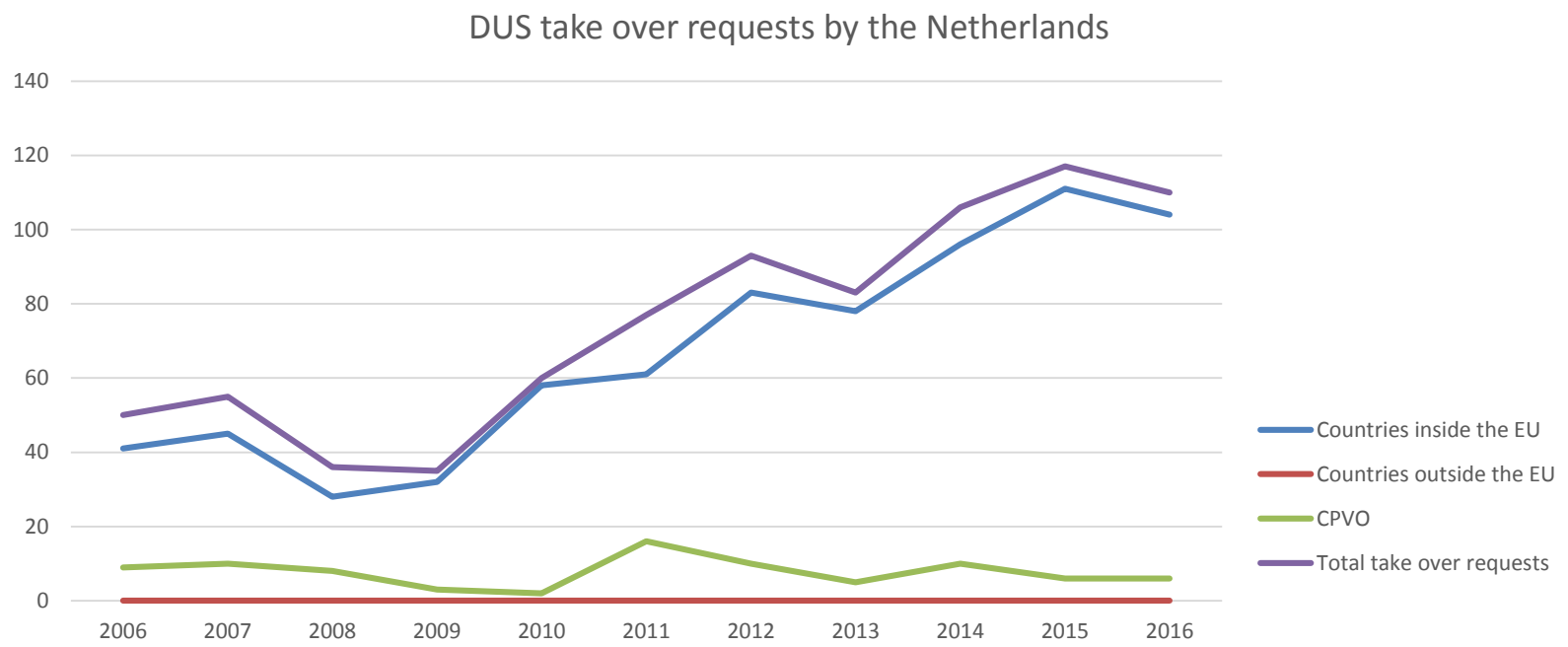
The “CPVO effect”



Reports taken over from the Netherlands



Reports taken over by the Netherlands



The EU Plant Variety System

- A system for the intellectual protection of plant varieties was established by a Regulation of the European Community in 1994.

- The intellectual property rights granted under this system are valid throughout the territory of the 28 Member States of the European Union (EU) encompassing over 450 million consumers.

Application procedure:

- One application
- One procedure
- One technical examination
- One decision
- One valid right covering the territory of the 28 Member States of the European Union

THE EXAMINATION OFFICES

The CPVO has not created its own technical infrastructure.

Technical examination to confirm DUS is carried out by the Examination Offices such as Naktuinbouw entrusted by the Administrative Council.

CPVO network of Examination offices in the EU

Technical examination

- Once the technical examination is concluded, a technical report (positive or negative) for the CPVO, with accompanying variety description in case of positive report.

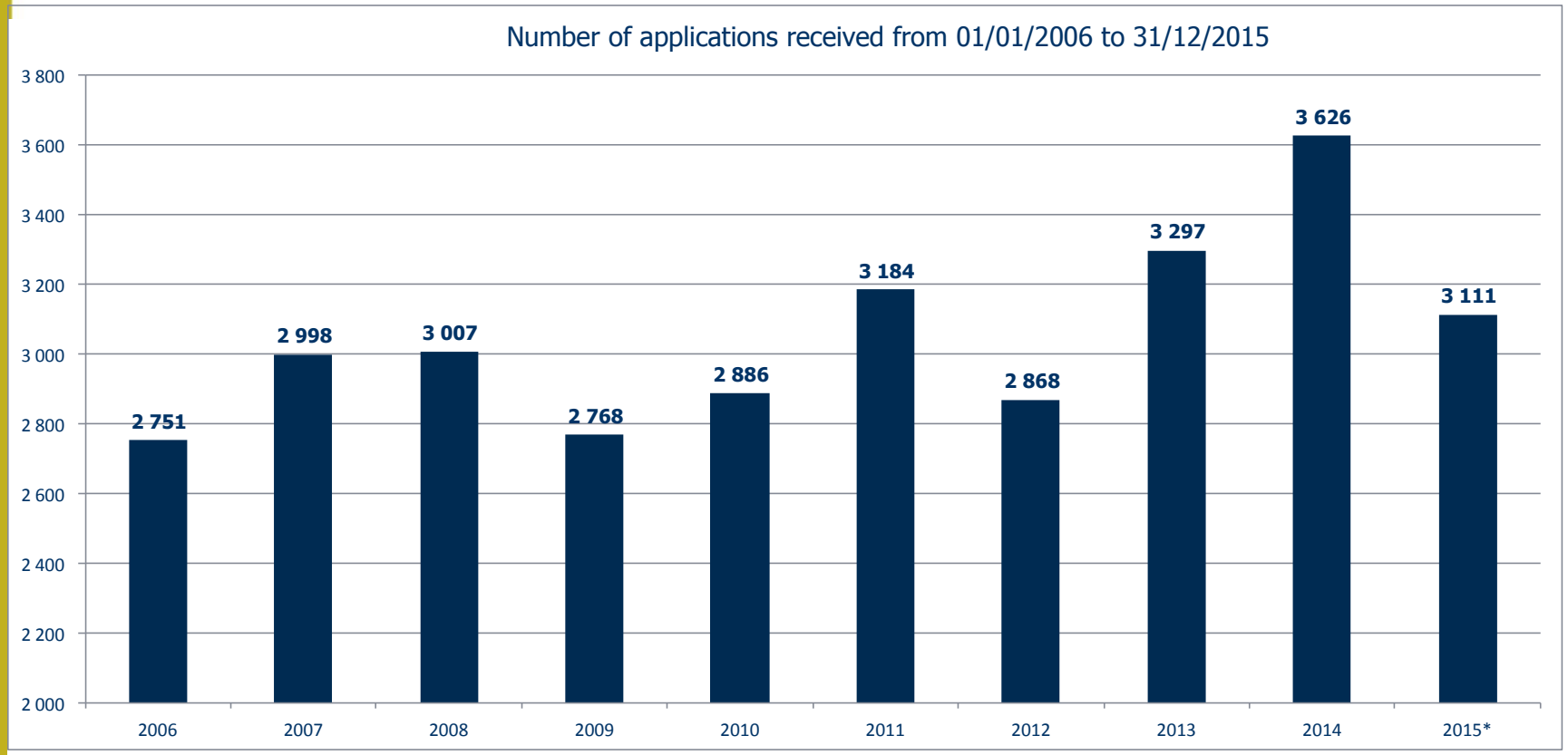
- Applicant is given an opportunity to comment on the draft report and description before the Committee takes a decision on the application for Community rights.

Cooperation with other UPOV members

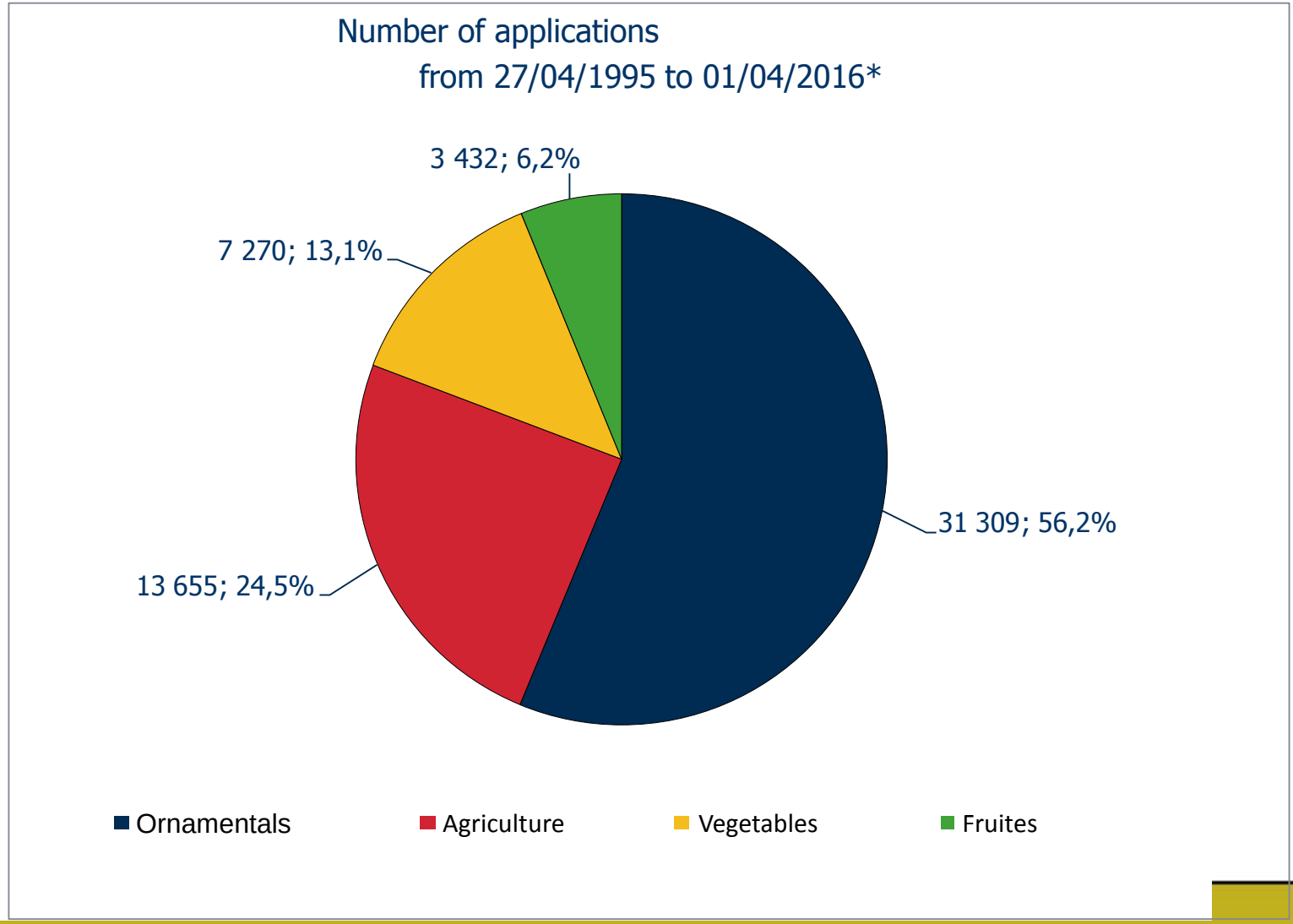
Selling of technical reports

If a technical examination of a variety has been or is being carried out in view of a Community plant variety right, national authorities having received an application for the same variety may consider the examination report of the CPVO to be sufficient basis for their decision.

Applications per year in CPVR System

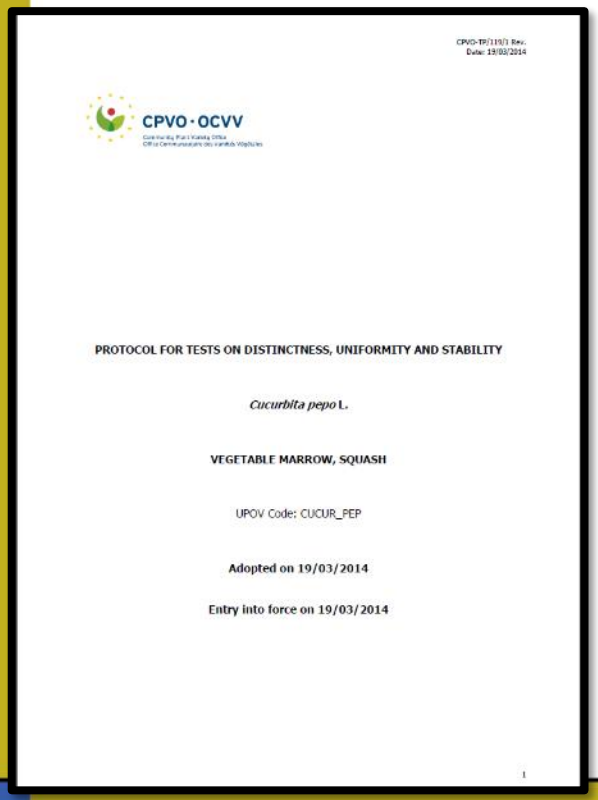


Applications per Sector



Guidance for DUS Examination

CPVO Technical Protocols



CPVO-TP/119/1 Rev.
Date: 19/03/2014

CPVO · OCVV

PROTOCOL FOR TESTS ON DISTINCTNESS, UNIFORMITY AND STABILITY

Cucurbita pepo L.

VEGETABLE MARROW, SQUASH

UPOV Code: CUCUR_PEP

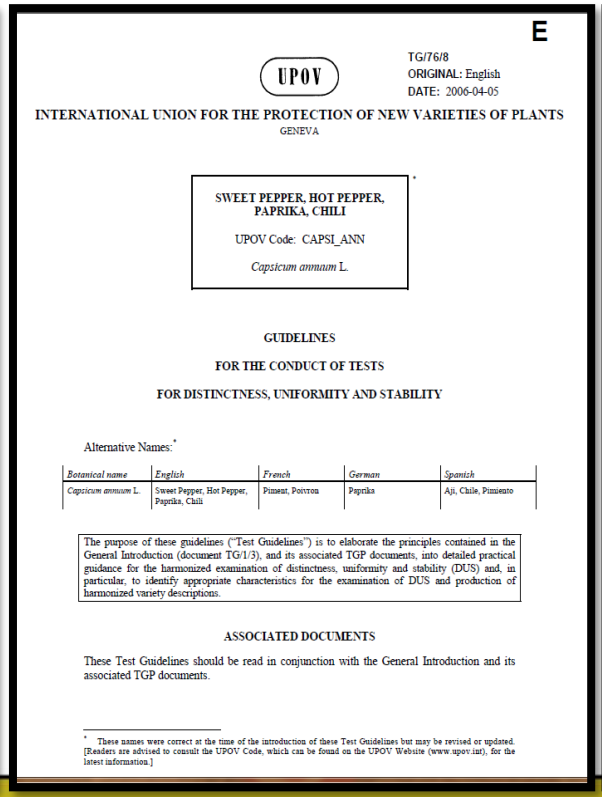
Adopted on 19/03/2014

Entry into force on 19/03/2014

1

160 Protocols

UPOV Technical Guidelines



E

UPOV

TG/76/8
ORIGINAL: English
DATE: 2006-04-05

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

SWEET PEPPER, HOT PEPPER, PAPRIKA, CHILI

UPOV Code: CAPSI_ANN

Capsicum annuum L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Capsicum annuum L.	Sweet Pepper, Hot Pepper, Paprika, Chili	Piment, Poivron	Paprika	Ají, Chile, Pimiento

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

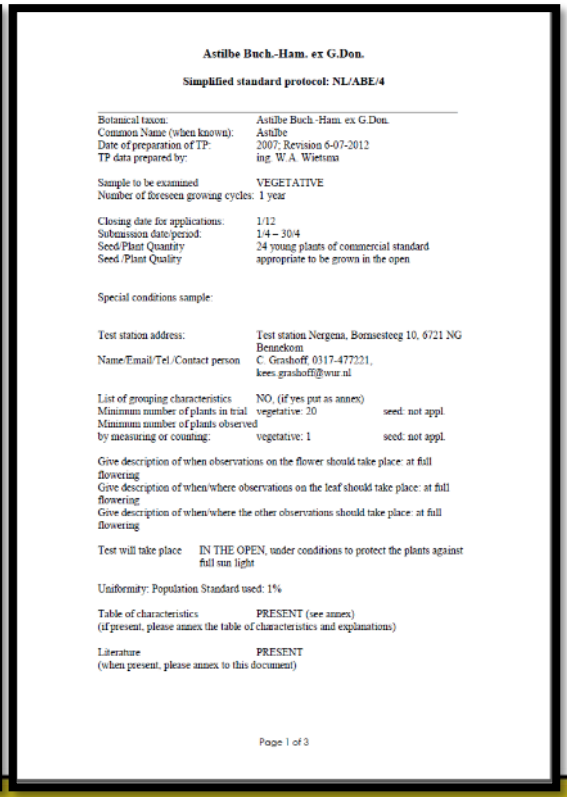
ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

303 Guidelines

National Protocols



Astilbe Buch.-Ham. ex G.Don.

Simplified standard protocol: NL/ABE/4

Botanical taxon:	Astilbe Buch.-Ham. ex G.Don.
Common Name (when known):	Astilbe
Date of preparation of TP:	2007; Revision 6-07-2012
TP data prepared by:	ing. W.A. Wietsma
Sample to be examined	VEGETATIVE
Number of foreseen growing cycles:	1 year
Closing date for applications:	1/12
Submission date/period:	1/4 – 30/4
Seed/Plant Quantity	24 young plants of commercial standard
Seed /Plant Quality	appropriate to be grown in the open

Special conditions sample:

Test station address:	Test station Nergena, Bornsesteeg 10, 6721 NG Bennekom
Name/Email/Tel./Contact person	C. Grashoff, 0317-477221, kees.grashoff@wur.nl
List of grouping characteristics	NO, (if yes put as annex)
Minimum number of plants in trial	vegetative: 20 seed: not appl.
Minimum number of plants observed by measuring or counting:	vegetative: 1 seed: not appl.

Give description of when observations on the flower should take place: at full flowering
Give description of when/where observations on the leaf should take place: at full flowering
Give description of when/where the other observations should take place: at full flowering

Test will take place IN THE OPEN, under conditions to protect the plants against full sun light

Uniformity: Population Standard used: 1%

Table of characteristics PRESENT (see annex)
(if present, please annex the table of characteristics and explanations)

Literature PRESENT
(when present, please annex to this document)

Page 1 of 3

ca. 170 National protocols

Cooperation between authorities:

The Netherlands offers reports to all countries.

The Netherlands has:

- **Bilateral agreements:**
  - Rose: for Colombia
- **Multilateral agreements:**
  - Alstroemeria: centralised for EU / CPVO

Other Examination Offices:

- Flax: France
- Maize: France, Germany, Czech Republic
- Wheat: Czech Republic, Germany
- Fruit: Germany

Conclusion

- Plant Variety Protection in the Netherlands
  - Crucial for investment in plant breeding
  - Adapted varieties for other countries and climates

Future of PVP in the Netherlands

- The Netherlands considers a strong PVP system in the world as important both for the world food situation as for the development of our seed industry.

- As long as there are strong breeding activities in the Netherlands, there also should be a strong PVP system in place with local state of the art test facilities.

Future of PVP in the Netherlands

- If new developments in breeding make it necessary to adjust the PVP testing, the Dutch testing authorities should take the lead.

- The Netherlands is a strong supporter for international cooperation.

- Other countries are actively supported to develop their PVP systems.

Future of PVP in the Netherlands

- Ideally one single test in the UPOV area should be enough to establish if a variety is DUS.

- To reach this situation the management of common knowledge has to be centralized through international cooperation.

- Molecular data should be the basis for the management of reference collections.

Use of molecular techniques

- (Joint) Databases with molecular data should be established.

1. Based on sequence data a global SNP set should bedeveloped.
2. Varieties of Common Knowledge should be tested on this marker set and included in a database

Use of molecular techniques

- (Joint) Databases with molecular data should be established.

3. The database should be used to look for genetically indentical and closest varieties for inclusion in a growing trial with the candidate variety.
4. The morfological results from the growing trial will be used to recheck possible closest varieties.

Use of molecular techniques

- The database should be maintained by a small number of Examination Offices.
- The use of the databases should be free for all DUS authorities at a cost.
- Examples; potato database NL/UK

  Tomato database project France/Netherlands and China.

Challenges

- UPOV was created in the 1960's, based on the state of breeding and by countries that already had a national variety protection and usually well established seed infrastructure.
- Now we are in the phase that new Member States often have no National system and sometimes no seed infrastructure either. An additional issue is that many new Member States have many small holder farmers.
- **Challenge** for UPOV to accomodate these different levels of development.

Challenges

- When UPOV was created varieties were bred using classic techniques. Breeding was a long process. The vision of UPOV is based on that situation (e.g. breeders' exemption).
- Today varieties are created using Molecular techniques. This makes the breeding process much faster. More varieties come out of the programs, distinction could become a problem. Patent plays a bigger role.
- **Challenge** for UPOV to see how the DUS definitions can be handled in this Molecular world.

Challenges

- The UPOV system is based on morphological establishment of DUS. Resulting in a variety description.
- In a small regional based UPOV this works well. Today with many Member States in very different climates, the value of variety descriptions is limited. This leads to many repeating trials.
- **Challenge** for UPOV; ongoing discussions on the use of variety descriptions.

Challenges

- The UPOV system is growing and the number of varieties is growing.
  The management of Common Knowledge per MS is a growing burden. Cooperation between MS's in different climate zones difficult due to the morphological approach of UPOV.
- Modern molecular techniques could be a good tool to cooperate. Joint databases with DNA of varieties of common knowledge are the solution.
- **Challenge** for UPOV; to combine molecular data with the morphological approach.

Challenges

- Modern breeding techniques such as Crips-Cas will speed up the creation of new varieties leading to more applications. But the differences between the varieties will be harder to detect and lead to more Essential Derived Varieties.
- **Challenge** for UPOV members; to deal with high numbers of applications and to further clarify the EDV concept.

Conclusion

- There is an important role for countries as China to help UPOV to understand the needs of many new and potential new Member States.
- Joining UPOV ‘91 with a law that is both in conformity with the UPOV convention, but at the same time pays attention to the situation in a non-western country, could be a huge contribution for other countries who are in doubt if they were to join UPOV or join UPOV ‘91

Questions?

Quality in Horticulture