



*nak*  *tuinbouw*

The logo features a stylized exclamation mark with a red curved line above it and a black dot below it. A small green leaf is positioned above the red line. The text 'nak' and 'tuinbouw' is written in a black, italicized serif font. A small 'knf.' is visible as a watermark between the 'n' and 't' of 'tuinbouw'.



# **PVP – Impact and implementation in the Netherlands**

**Bert Scholte**

**Naktuinbouw**



# Contents

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- Plant Breeding



- Plant Variety Protection



- Benefits of Plant Variety Protection

# Plant breeding in the Netherlands

## Global Seed Market :

- Arable crops: 40 bn \$
- Vegetables: 4.5 bn \$
- Ornamentals: 2.5 bn \$



## Seed production in the Netherlands:

- Arable crops: 0.8 bn €
- Vegetables / Ornamentals: 2.5 bn €



# Plant breeding in the Netherlands

## The Dutch Breeding sector - world market leader

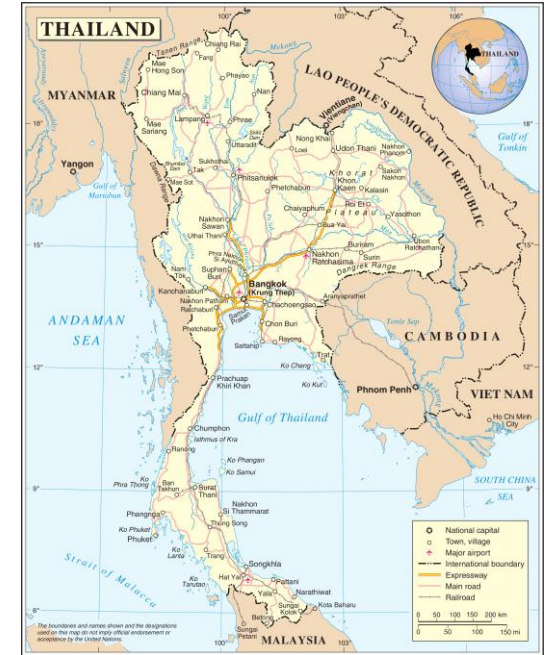
- Vegetables
- Ornamentals
- Potatoes

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



# Plant breeding in the Netherlands

- Thailand: 510890 sq km
- The Netherlands: 33670 sq km



# Plant breeding in the Netherlands

## The Netherlands:

- +/- 350 breeding companies
- Small and medium sized enterprises
- < 30% of annual turnover - R&D
- Return on investment!



# Plant breeding in the Netherlands

syngenta



RIJK ZWAAN



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MONSANTO

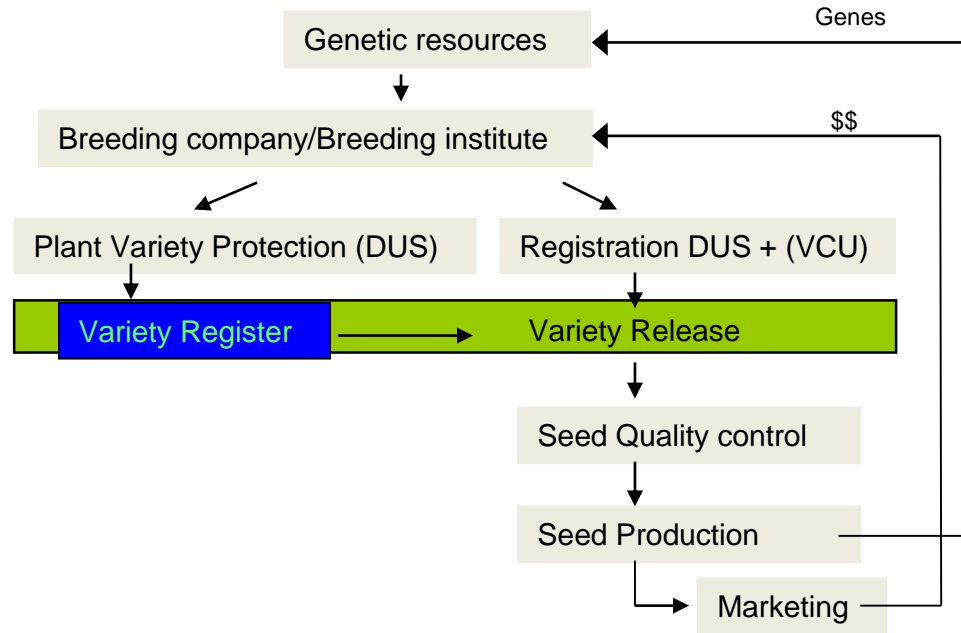


ENZA ZADEN

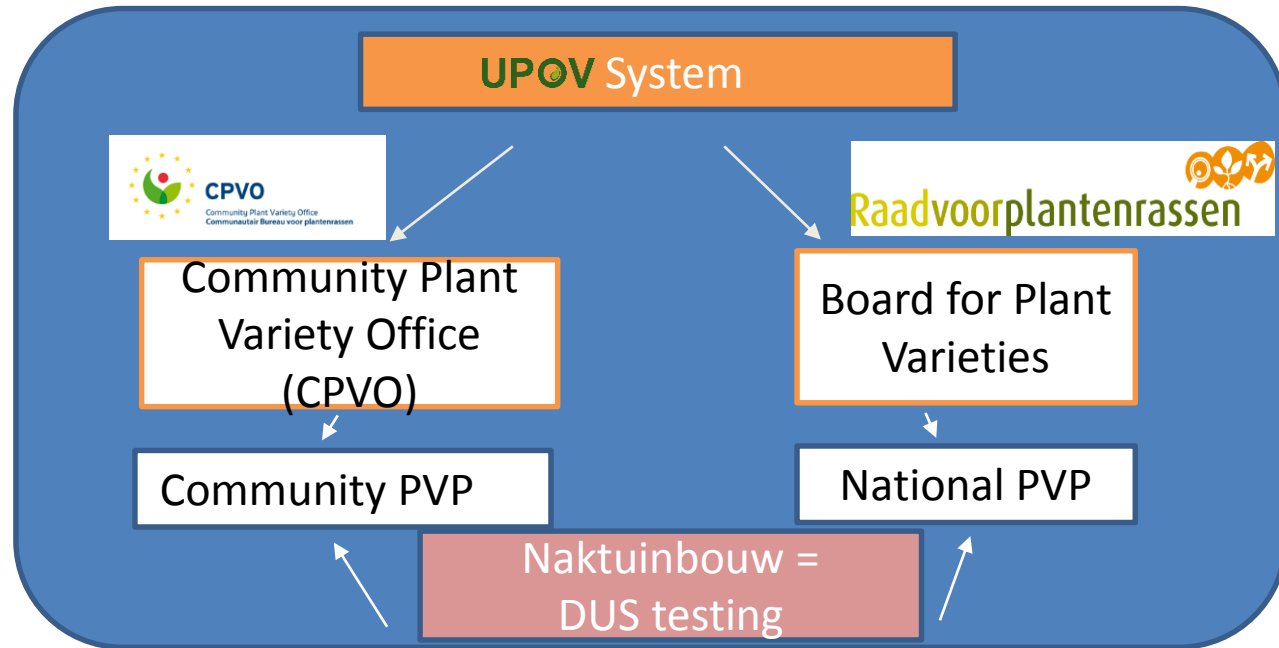




# Plant Variety Protection in the Netherlands



# The PVP system in the Netherlands today



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

# Plant Variety Protection in the Netherlands

## Farmers Rights

Sub-sistence farmers (private and non-commercial use)

- not present in the Netherlands

Farm Saved Seed (Farmers Privilege)

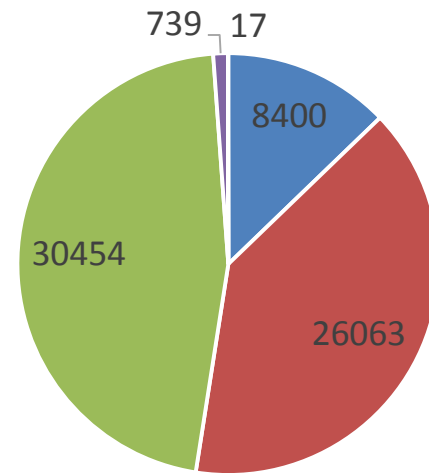
- Cereals - Potatoes
- Small farms
  - Information
  - exempted from payment
- Online system

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



# Plant Variety Protection in the Netherlands

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



■ Agriculture    ■ Ornamental    ■ Vegetable  
■ Arboriculture    ■ Others



# Number of applications

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



# Naktuinbouw: Netherlands Inspection Service for Horticulture

## Basic inspection according to

- Dutch Seed and Plant Material Act and Plant Disease Act
- European legislation

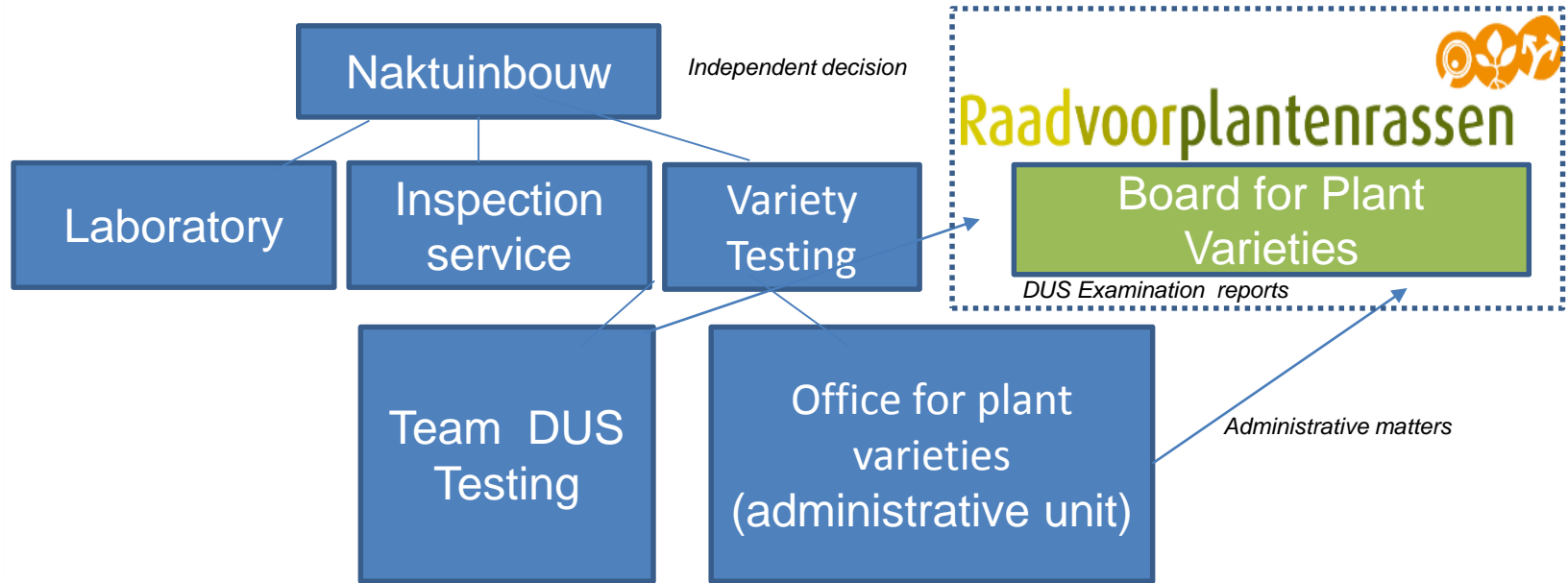
## DUS testing for National Listing, and European Plant Variety Protection

- Ornamental crops
- Agricultural crops
- Vegetable crops



# Board for Plant Varieties and Naktuinbouw


Organisational aspects cooperation Naktuinbouw and Board for Plant Varieties:



# Guidance for DUS Examination

## CPVO Technical Protocols: 160

CPVO-TP1103 Rev.  
Date: 19/03/2014



**CPVO - OCVV**  
Cooperation for Plant Variety Protection  
Office of Harmonization and Support (OHS)

**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

## UPOV Technical Guidelines: 303

**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: CAPSL\_ANN

*Capsicum annuum* L.

**GUIDELINES  
FOR THE CONDUCT OF TESTS  
FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

Alternative Names:<sup>1</sup>

Botanical name	English	French	German	Spanish
<i>Capsicum annuum</i> 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.

<sup>1</sup> These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Candidates are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

## National Protocols: ca. 170

**Astilbe Buch.-Ham. ex G.Don.**  
**Simplified standard protocol: NL/ABE/4**

Botanical taxon: Astilbe Buch.-Ham. ex G.Don.  
Common Name (where known): Astilbe  
Date of preparation of TP: 2007; Revision 6-07-2012  
TP data prepared by: ing. W.A. Wietema

Sample to be examined: VEGETATIVE  
Number of floccoon 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 Norgema, Bornesteeg 10, 6721 NG  
Beuningen  
Name/Email/Tei./Contact person: C. Graafland 0317-477221,  
kees.graafland@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



# 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
4. Clean of pests and diseases
5. Untreated with insecticides, fungicides or any other treatment



# Preparation of the trials

- Test design
  - Layout, number of plants in test
  - Replications
  - Allowing removal of plants or parts of plant
  - Number of plants/parts of plants to be examined
- Additional tests
- Number of growing cycles



# Material to be included in the trial

- Candidate varieties
- Candidate varieties from countries with bilateral agreement for DUS testing
- Reference varieties
  - example varieties
  - varieties for comparison (similar varieties)



# DUS Test: a challenge



# DUS Test: The real work can start



# Description of the variety

Using the table of characteristics of the CPVO protocol/UPOV guideline/National guideline.

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
30. (+)	30.		<b>Fruit: general shape</b>		
			disc shaped		1
			transverse elliptical		2
			transverse broad elliptical		3
			globular		4
			top shaped		5
			broad elliptical		6
			ovate		7
			elliptical		8
			cylindrical		9
			pear shaped		10
			bottle shaped		11
G			club shaped		12
31.1	31.1		<b>Only Scallop type varieties: Fruit: length</b>		
			short	Bennings Green Tint	3
			medium	Sunburst	5
			long	Yellow Bush Scallop	7
31.2	31.2		<b>Only Acorn type varieties: Fruit: length</b>		
			short	Table Gold	3



# Applicants visiting the trial



# Reporting

## Interim report: mid-term on D, U and S

TUSSENRAPPORT OVER HET TECHNISCH ONDERZOEK IN HET KADER VAN TOELATING EN KWEKERSRECHT	
INTERIM REPORT ON THE TECHNICAL EXAMINATION IN THE FRAMEWORK OF LISTING AND PLANT BREEDERS' RIGHTS	
1. Verwijznummer rapporterende autoriteit <small>Reference no. reporting authority</small>	KEL00895
2. Opdrachtgevende autoriteit <small>Requesting authority</small>	
3. Verwijznummer opdrachtgevende autoriteit <small>Reference no. requesting authority</small>	
4. Voorlopige aanduiding <small>Breeder's reference</small>	Bejo 2861 Hybride / Hybrid
5. Aanvraagdatum <small>Date of application</small>	24-02-2012
6. Aanvrager <small>Applicant</small>	Bejo Zaden B.V., WARMENHUIZEN, NL
7. Gemachtigde <small>Agent</small>	
8. Botanische gewasnaam <small>Botanical name of taxon</small>	Brassica oleracea L. convar. botrytis (L.) Ainf. var. botrytis L.
9. Nederlandse gewasnaam <small>Common name of taxon</small>	Bloemkool / Cauliflower
10. Rasbenaming <small>Variety denomination</small>	
11. Kweker <small>Breeder</small>	Bejo Zaden B.V., WARMENHUIZEN, NL
12. Onderzoeksautoriteit <small>Testing authority</small>	Naktuurbouw, NL
13. Onderzoeksstation en plaats <small>Testing station and place</small>	Naktuurbouw, ROELOFARENDSVEEN, NL
14. Periode van onderzoek <small>Period of testing</small>	2012
15. Datum en plaats uitgifte rapport <small>Date and place of issue of document</small>	15-08-2013, ROELOFARENDSVEEN, NL
16. Algemene informatie <small>General information</small>	
a. Geen plantmateriaal ontvangen <small>No plant material received</small>	<input type="checkbox"/>
b. Voldoet niet aan de inleververeisen <small>Requirements for plant material not met</small>	<input type="checkbox"/>
c. Onderzoek mislukt, waarnemingen <small>Test failed, observations</small>	<input type="checkbox"/>



# Reporting

**Final report:**  
situation at the end of the DUS  
test, decision on D,U and S

EINDRAPPORT OVER HET TECHNISCHE ONDERZOEK IN HET KADER VAN TOELATING EN KWEEKERSRECHT FINAL REPORT ON THE TECHNICAL EXAMINATION IN THE FRAMEWORK OF LISTING AND PLANT BREEDERS' RIGHTS		nak tuinbouw
1. Verwijnummer rapporterende autoriteit	KBL895	
2. Opdrachtgevende autoriteit		
3. Verwijnummer opdrachtgevende autoriteit		
4. Voorlopige aanduiding	Bejo 2961	
	Hybride / Hybrid	
5. Aanvraagdatum	24-02-2012	
6. Aanvrager	Bejo Zaden B.V., WARMEHUIZEN, NL	
7. Gemachtigde		
8. Botanische gewasnaam	Brassica oleracea L. convar. botrytis (L.) Alef. var. botrytis L.	
9. Nederlandse gewasnaam	Bloemkool / Cauliflower	
10. Rasbenaming	Cartagna	
11. Kweker	Bejo Zaden B.V., WARMEHUIZEN, NL	
12. Onderzoeksauteur	Naktuinbouw, NL	
13. Onderzoekstation en -plaats	Naktuinbouw, ROELOFARENDSEVEEN, NL	
14. Periode van onderzoek	2012-2013	
15. Datum en plaats uitgifte rapport	25-09-2014, ROELOFARENDSEVEEN, NL	

1/2

Verwijnummer rapporterende autoriteit: KBL895					nak tuinbouw
15. Kenmerken uit het protocol of richtlijn					
Characteristics included in the protocol or guideline					
CPVO CPVO No.	Kenmerken Characteristics	Expressie States of expression	Klasse Note	Opmerkingen Remarks	
1	Kiemplant: anthocyaankleuring hypocotyl Seedling: anthocyanin coloration of hypocotyl	aanwezig	9		
2	Plant: hoogte (bij oogstrijpheid) Plant: height (at time of harvest)	midden	5		
3	Stronk: lengte (tot de eerste bladaanzet) Stem: length (up to the insertion of first leaf)	kort	3		
4	Blad: houding Leaf: attitude	halfopgericht	3		
5	Blad: lengte Leaf: length	midden tot lang	6		
6	Blad: breedte Leaf: width	midden	5		
7	Blad: verhouding breedte/lengte Leaf: ratio width/length	midden	5		
8	Blad: gelobdheid Leaf: lobing	ontbrekend	1		
9	Blad: kleur (met was, indien aanwezig) Leaf: color (with wax if present)	grijsgroen	2		
10	Blad: kleurintensiteit (als bij 9) Leaf: intensity of color (as for 9)	donker	7		
11	Blad: draaiing van de top Leaf: twisting of tip	zwak	3		
12	Blad: vorm in dwarsdoorsnede Leaf: shape in cross-section	vlak	2		
13	Blad: bobbeling Leaf: blistering	zwak	3		
14	Blad: plooiing bij de hoofdnerf Leaf: curling near main vein	zwak tot midden	4		
15	Blad: golving rand Leaf: undulation of margin	zwak	3		
16	Kool: afdekking door het binnenblad Curd: covering by inner leaves	gedeeltelijk gedekt	2		
17	Kool: hoogte Curd: height	midden	5		
18	Kool: diameter Curd: diameter	midden	5		
19	Kool: vorm in lengtedoorsnede Curd: shape in longitudinal section	rond	1		
20	Uitgezonderd rassen met een driehoekige koolvorm: Kool: welving Excluding varieties with curd shape triangular: Curd: doming	midden	5		
21	Kool: kleur Curd: colour	witachtig	1		
22	Kool: bonkigheid	witlich	4		

2/4

# Policy on Plant Material

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

## Vegetative propagated material

- If no living reference collection kept, material should be destroyed or sent back to the applicant
- Living reference collection, material should be kept by the EU EU until the title expiry



## Seed propagated material

- Trial is destroyed
- Sample is stored



# What is left after the trial is finished.....





# Cooperation between authorities

## **Naktuinbouw has:**

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

## **Other Examination Offices:**

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

# Benefits of PVP system

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





# Relevance of PVP

- Important factor to establish presence in a country
- Crop dependent, important for
  - Open pollinated crops (Cereals)
  - Vegetatively propagated crops (Potato)
  - Parental Lines
  - Hybrids (especially Vegetables)



# Relevance of PVP

## **(a) Breeders**

- Diversity of breeders
- Number of breeders
- Investment in breeding

## **(b) Improved varieties**

## **(c) Farmers, Growers, Consumers**

- Delivering improved varieties to farmers/growers
- Delivering added value to consumers
- Income and Knowledge

## **(d) International dimension**

- Development of new industry on foreign markets
- Access to foreign varieties and enhanced domestic programs

# Conclusion

## Plant Variety Protection

- Crucial for investment in plant breeding
- Adapted varieties for local farmers





# Questions?



# *Quality in Horticulture*