

WIPO Regional Forum: Innovation and intellectual property as engine for competitive agribusiness:
“Empowering women researchers and entrepreneurs
Promoting new varieties of plants
to enhance agricultural productivity and food security

Plant Variety Protection System and UPOV membership on the development of agriculture

Ben Rivoire

Technical/Regional Officer, UPOV

November 16, 2017 (Casablanca, Morocco)



Overview

- Why was UPOV created?
- Impact of PVP and UPOV membership
- Benefit of UPOV membership for implementing PVP

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UPOV: INDEPENDENT INTERGOVERNMENTAL ORGANIZATION

The International **Convention** for the Protection of New Varieties of Plants

established in **1961**

The International **Union** for the Protection of New Varieties of Plants

Union internationale pour la protection des **ob**tentions **v**égétales



MISSION STATEMENT

“To provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society”

Benefit of Society

Food security

Climate change

Economy

Environment

Technology transfer

Better, cheaper food

Adapted crops

Export
International competitiveness

Sustainable production

Usable technology (varieties)

Farmer benefits

Reduce high cost imports

Less inputs

Public Private Partnerships

Rural employment

Farmers: increased, sustainable income; high quality seed; incentive to innovate

encouraging the development of breeding new, improved varieties

new varieties of plants

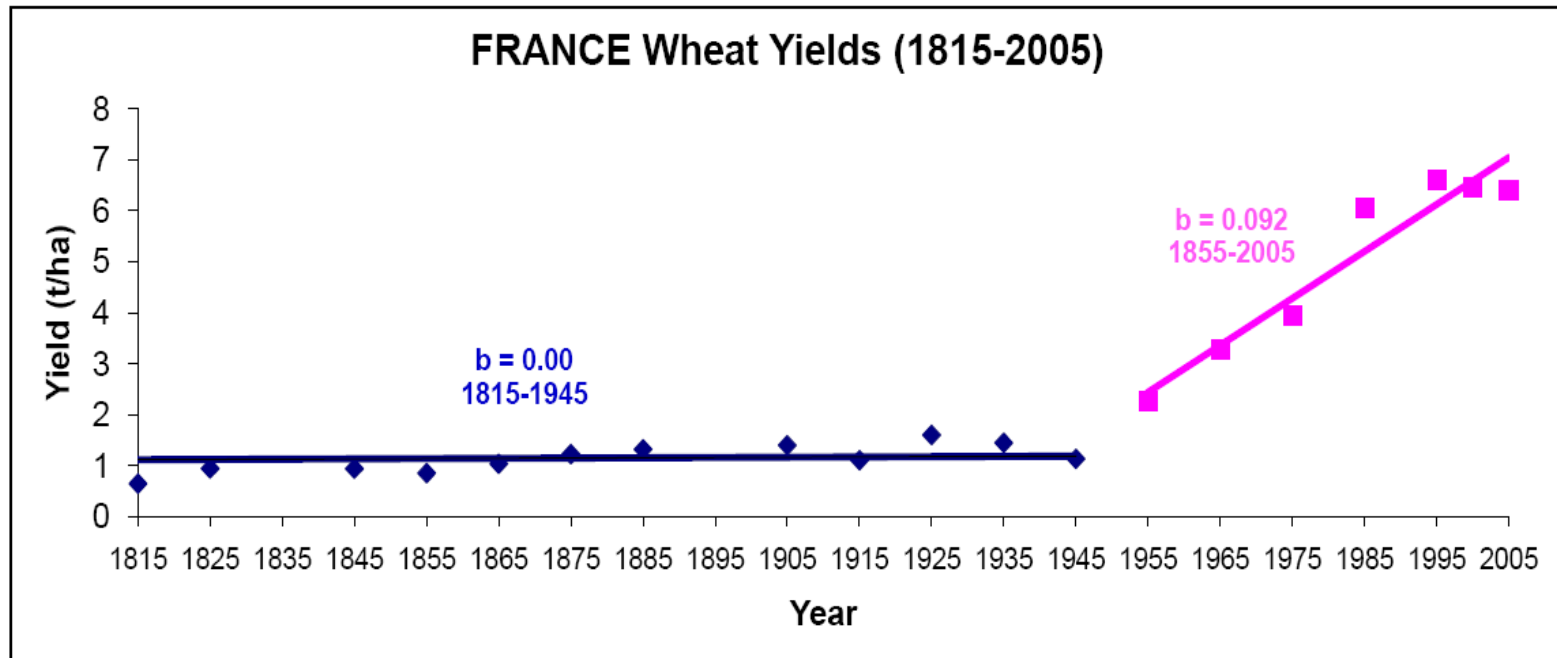
Capture value of native plant genetic resources

Overview

- Why was UPOV created?
- Impact of PVP and UPOV membership
- Benefit of UPOV membership for implementing PVP

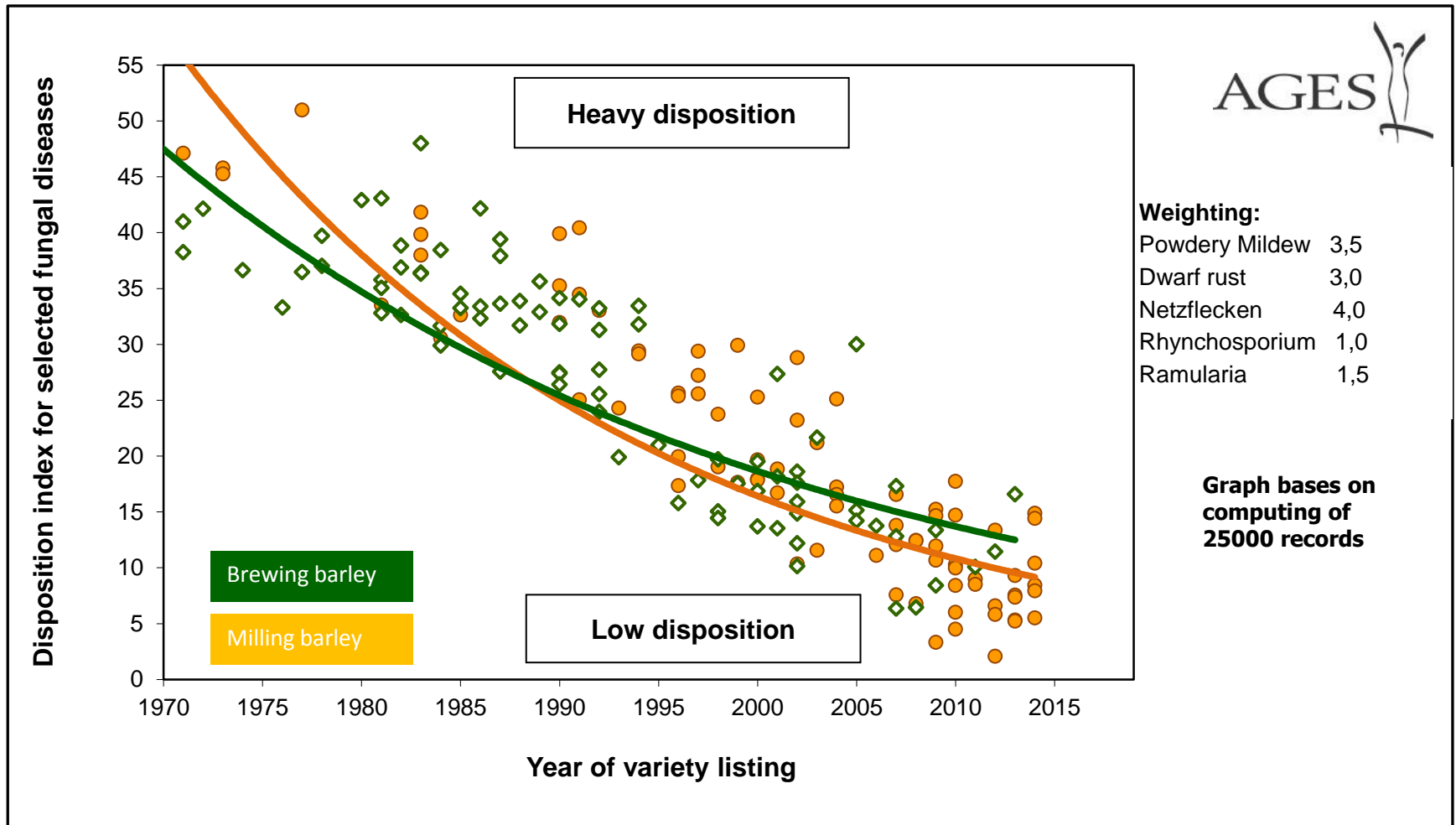
Has it worked?

Evolution of Wheat yield in France



Bernard Le Buanec,
Second World Seed Conference (Rome, September 2009)

Disposition for selected diseases on varieties on summer barley Pannonic (dry) climate zone of eastern Austria

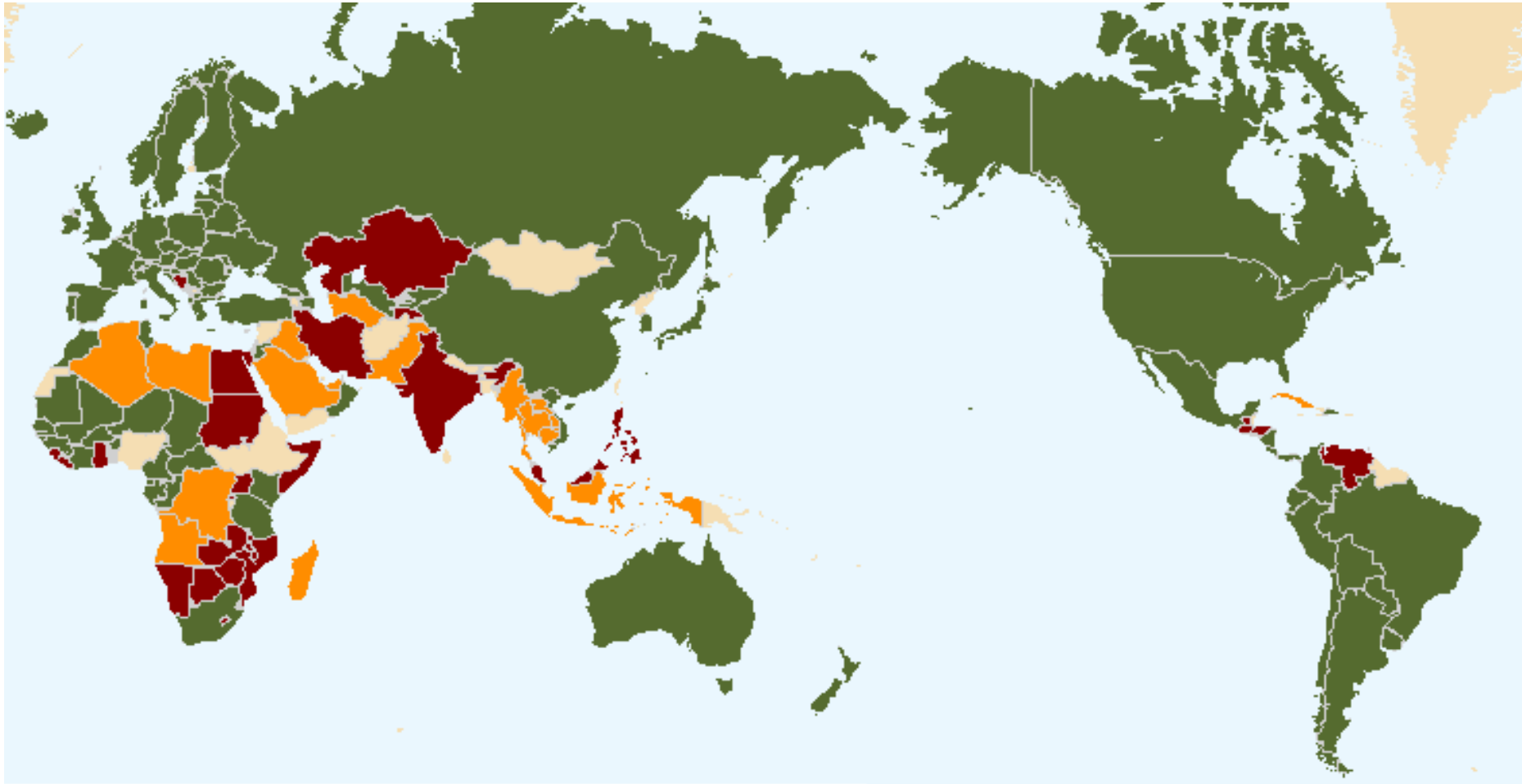


Source: Austrian Agency for Health and Food Safety, 2015: Austrian descriptive list of varieties of agricultural crop species, Issue 21/2015, ISSN 1560-635X.

Mr. Clemens Flamm

Where is it working
now?

UPOV status



Members of UPOV (74) covering 93 States

Initiating States (16) and Organization (1)

States (24) and Organization (1) in contact with the UPOV Office

The economic, social and environmental value of plant breeding in the European Union

2000-2013

– Results achieved so far* –

Steffen Noleppa
HFFA Research GmbH



** This research has been initiated and financially supported by ETP. The results of the study are the sole responsibility of the author and have never been influenced by the initiator and supporter of the study.*

October 13th, 2015, Vienna

EU: 2000-2013

Additional agricultural GDP amounts to EUR 8.2 billion:

- Wheat: EUR 3.1 billion
- Corn (Maize) EUR 0.9 billion
- Pulses EUR 0.2 billion

Without plant breeding:



EU would have moved from being net **EXPORTER** to net **IMPORTER** in all major agricultural crops (including wheat and barley)

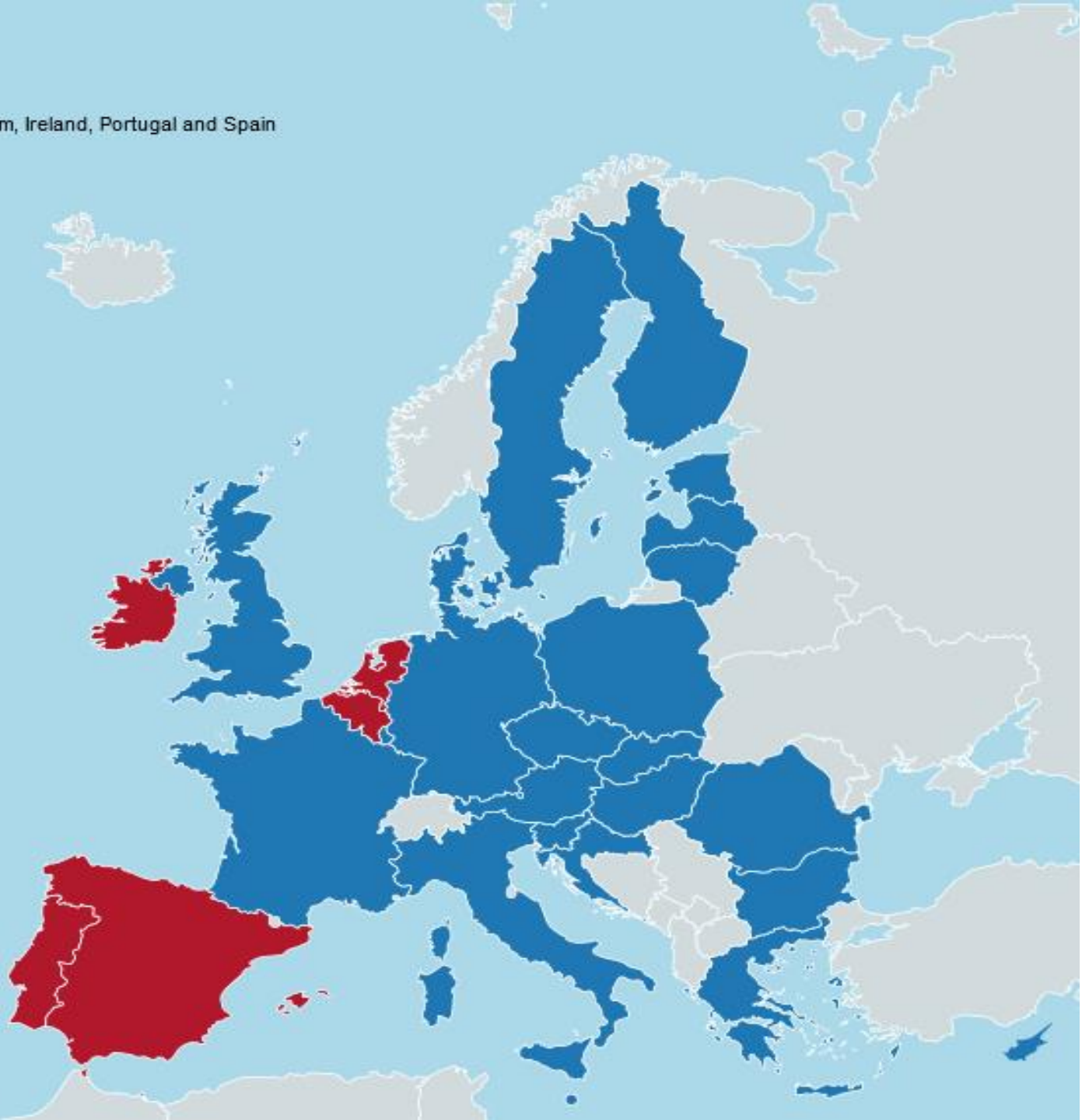
EU: 2000-2013

Without plant breeding:

An additional 18 million ha of arable land outside the EU would be needed: equivalent to the arable land of...

European Union

-  EU Members
-  Netherlands, Belgium, Ireland, Portugal and Spain





UPOV

High Level Study Tour (Japan, July 2016)



Koshihikari

Tsuyahime

Rice variety “Tsuyahime”



- High quality variety (good taste)
- Yamagata prefectural government holds the plant breeder's right
- Royalty free for Yamagata farmers, royalty paid by other farmers
- Location and agronomy (less fertilizer and pesticide) controlled to maintain quality (= high market price)
- Increased farmers' income



UPOV

STUDY in VIET NAM*

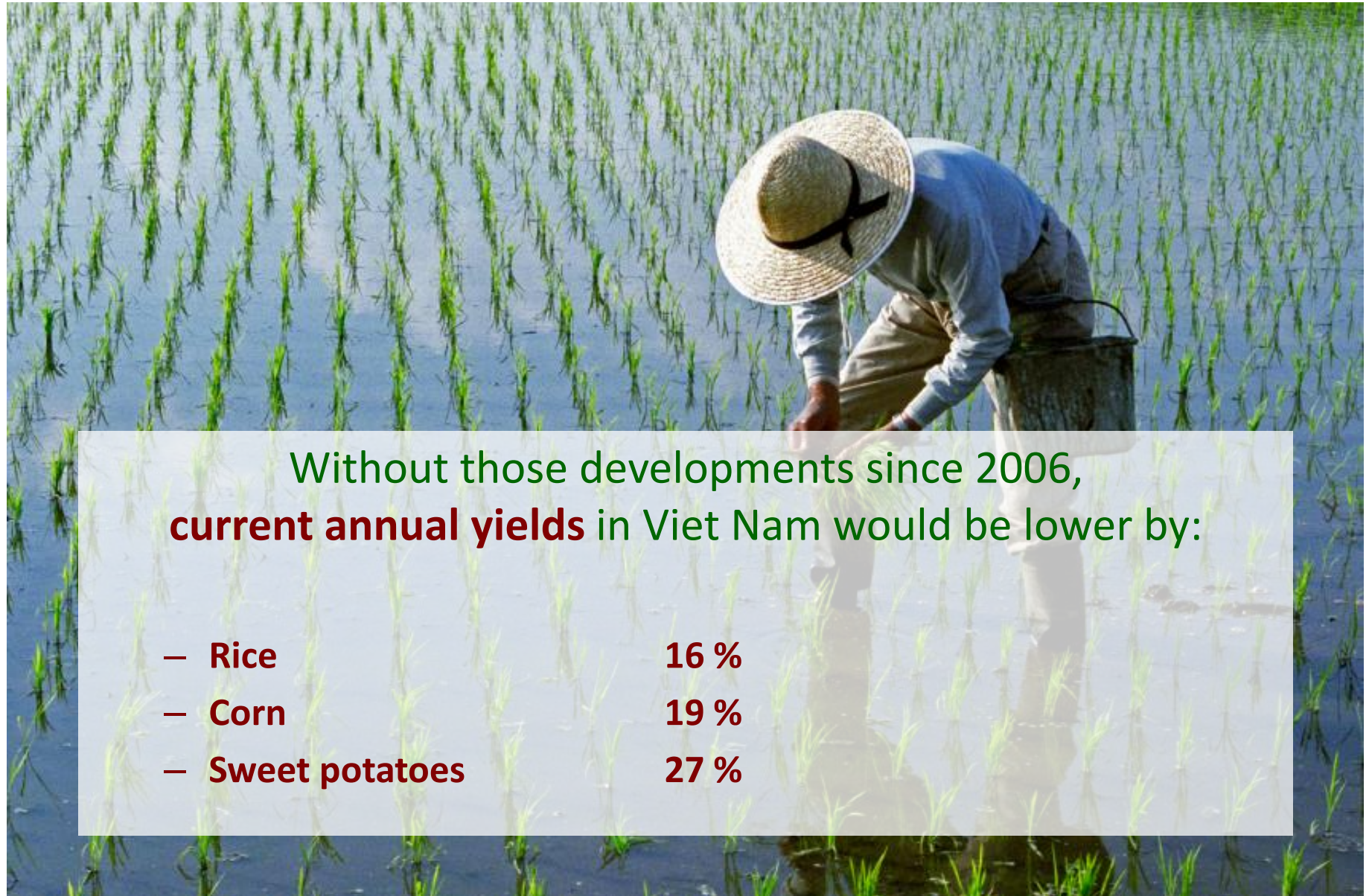
Annual land productivity developments since Viet Nam joined
UPOV in 2006 in

Rice, Corn (maize) and Sweet Potatoes

- **1995-2005:** increase in yield mainly through increased level of inputs – no detectable increase due to plant breeding
- **2006-2016:** annual land productivity increase due to plant breeding
 - Rice 1.7 %
 - Corn 2.1 %
 - Sweet potatoes 3.1 %

* “The socio-economic benefits of UPOV membership in Viet Nam; An ex post assessment on plant breeding and agricultural productivity after 10 years” (Corresponding author: Steffen Noleppa) by HFFA Research GmbH

STUDY in VIET NAM



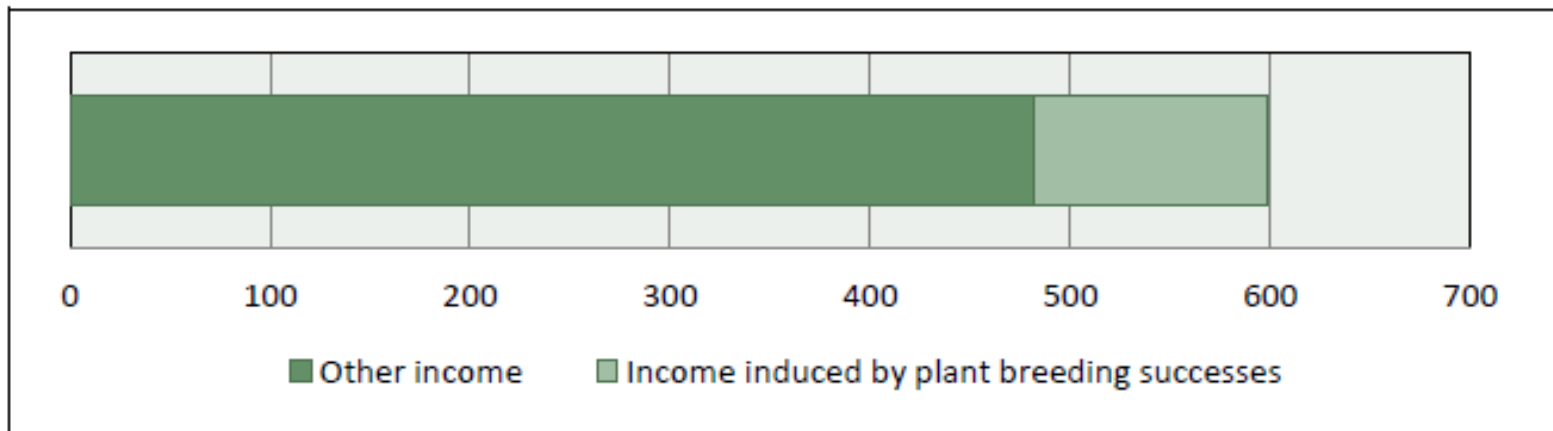
Without those developments since 2006,
current annual yields in Viet Nam would be lower by:

- **Rice** **16 %**
- **Corn** **19 %**
- **Sweet potatoes** **27 %**

STUDY in VIET NAM

INCOME of Vietnamese farmers has increased by 24% since 2006

Figure 4.6: Income of a Vietnamese farmer induced by plant breeding successes for major arable crops since UPOV membership vs. other income in arable farming (in USD)



Source: Own figure and calculations.



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STUDY in VIET NAM

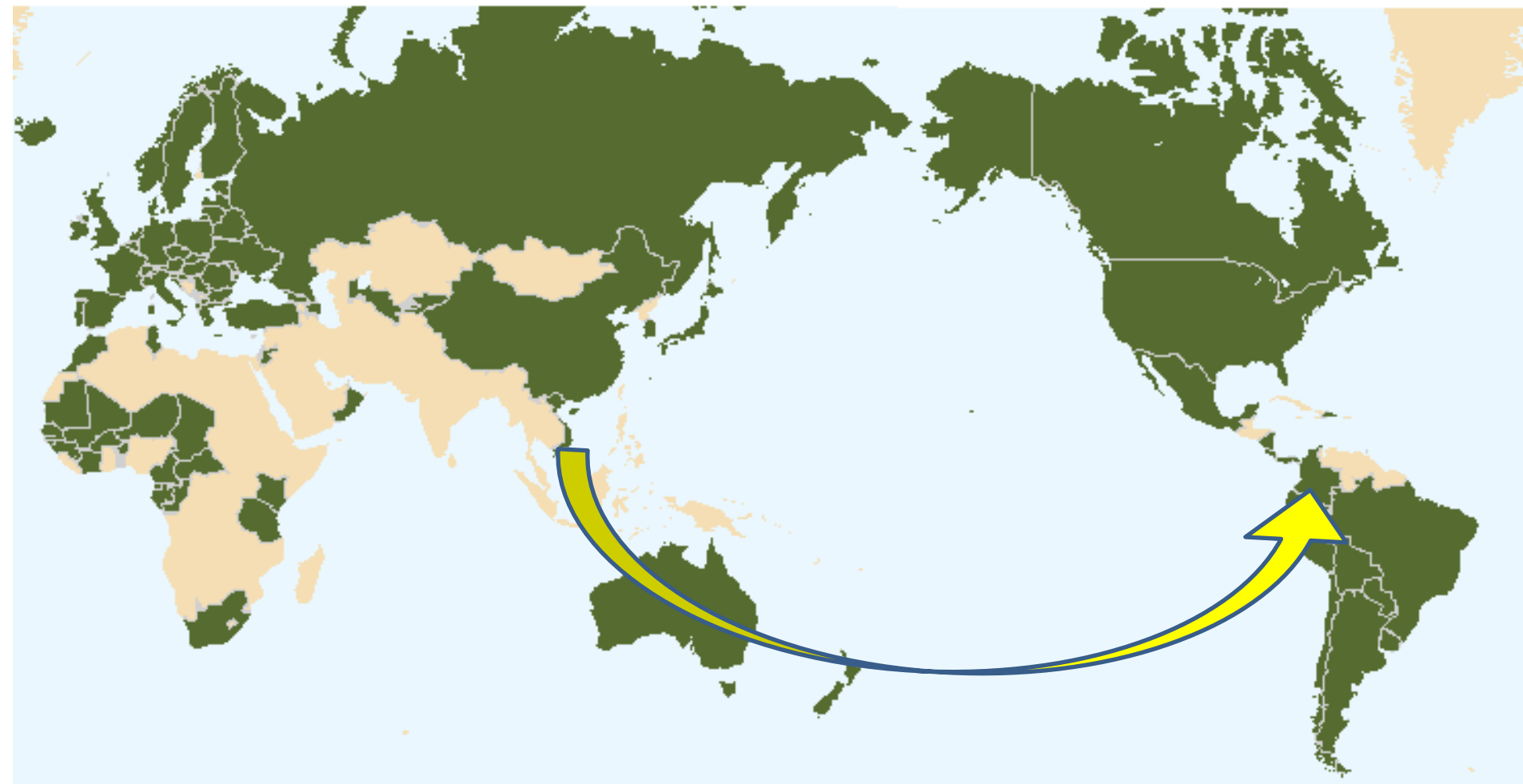
Annual value added:

- Arable farming \$2.3 billion
- Horticulture \$1.0 billion
- Floriculture \$ 0.2 billion

- GDP added upstream/downstream (value chains)
\$1.5 billion

TOTAL ADDED: \$5 billion

(> 2.5% GDP)



UPOV

Floriculture sector in COLOMBIA

Creates/provides **205,000 jobs**

- 111,000 direct and
- 94,000 indirect

*In the last 10 years, the floriculture sector has accounted for **4.8% of the total of Colombian exports**, becoming the fourth most important sector generating foreign exchange for the country after oil, coffee and coal industries.*

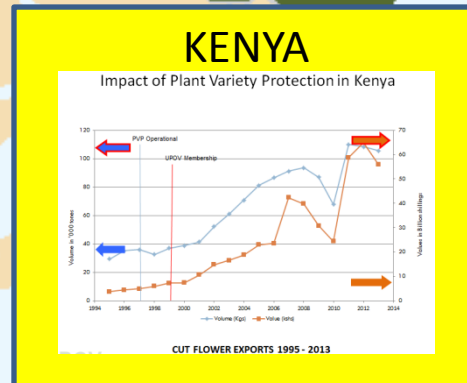
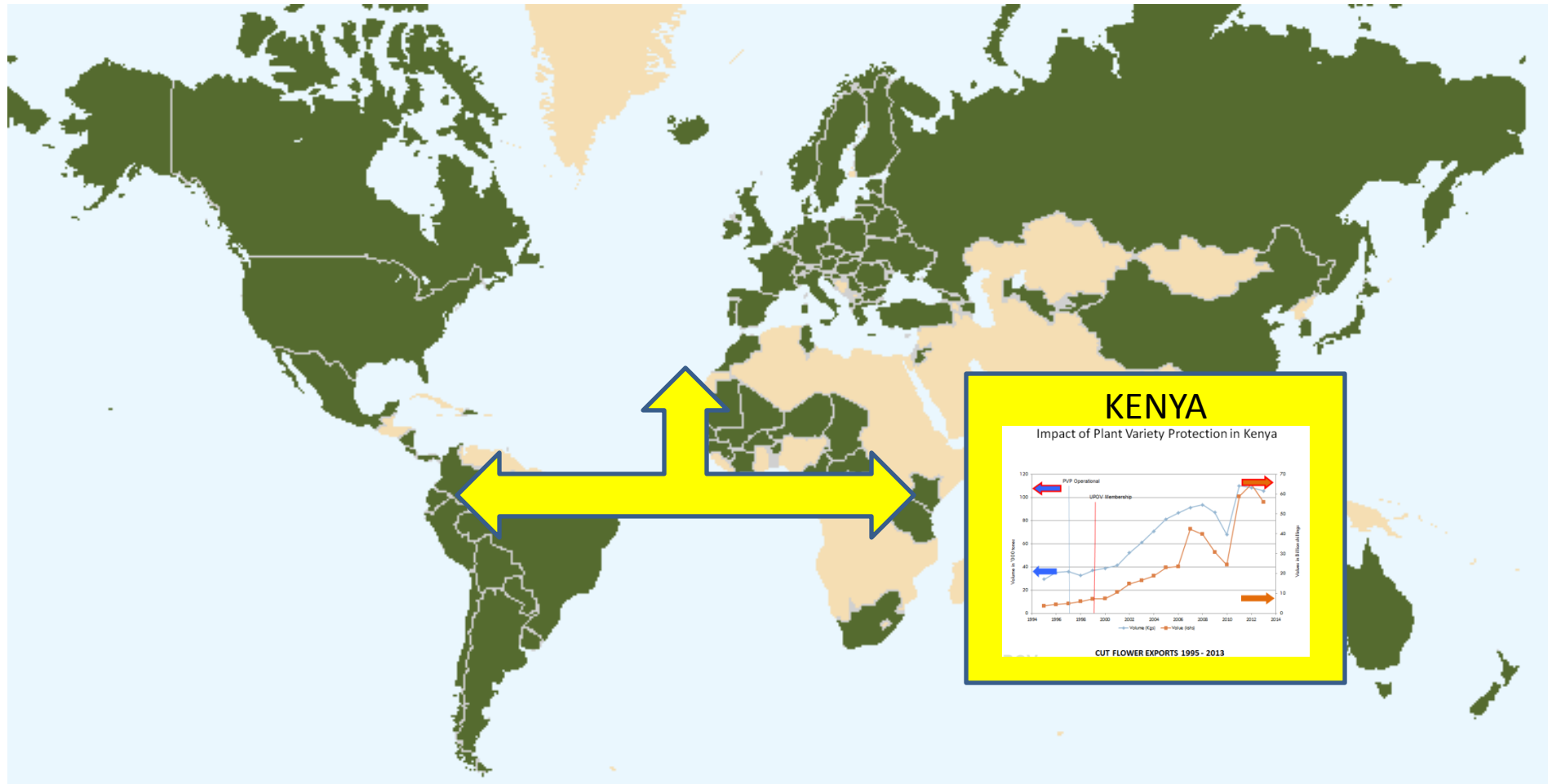


Picture: Asocolflores

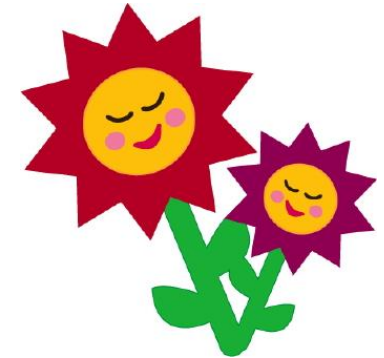
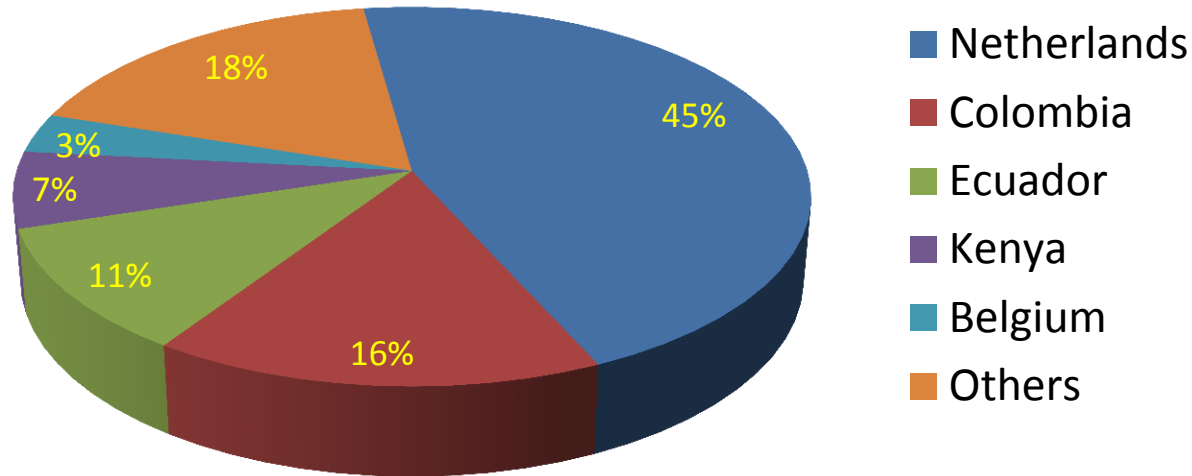


*In 2006, the Association of Colombian Flower Producers, Asocolflores and the Colombian Government created the country trademark named **“Colombia Tierra de flores”** (Colombia, Land of Flowers)*

Ornamental industry



Cut-flower exports (2014) (\$8.5 billion)

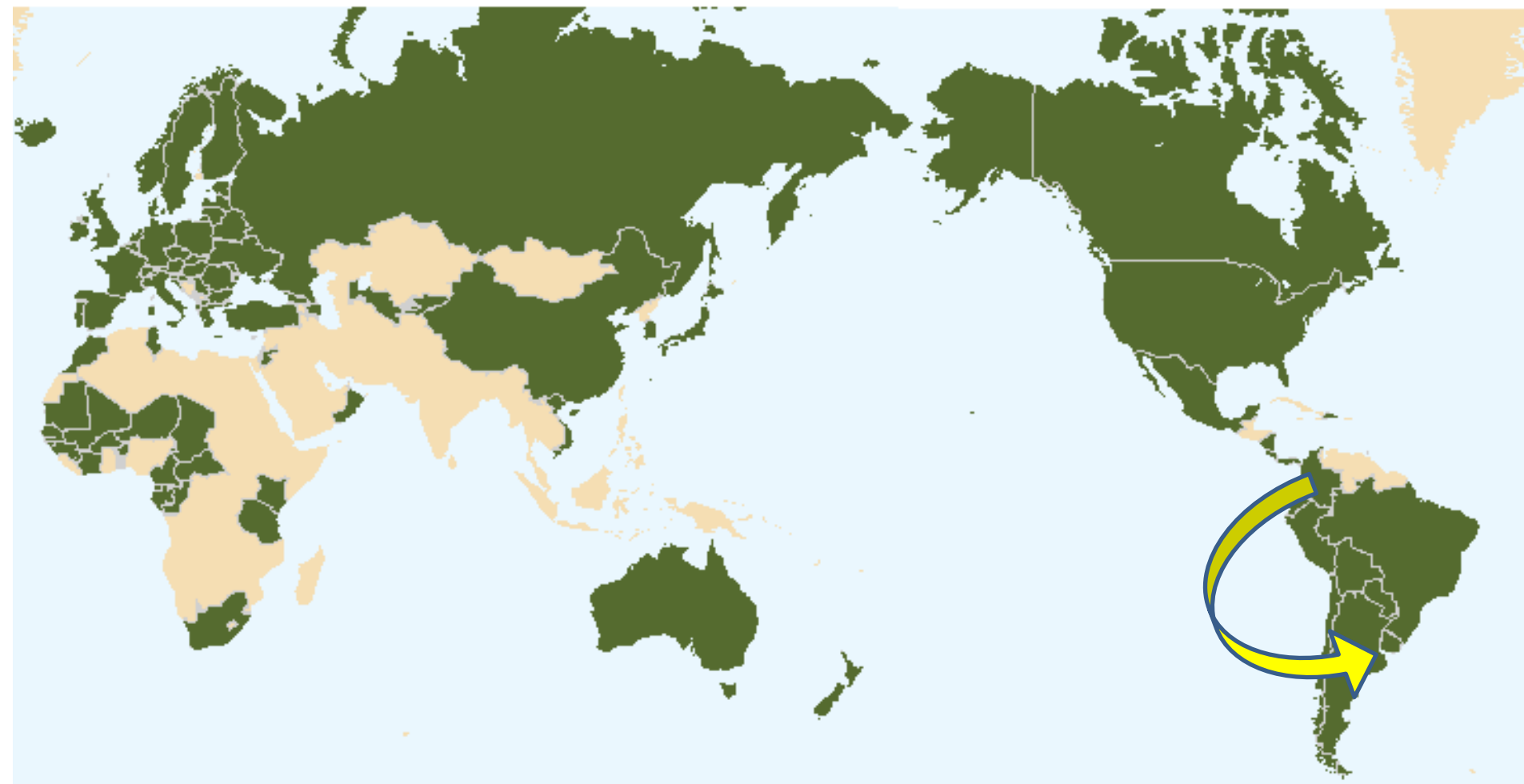


93% of exports of cut-flowers are from
UPOV members

List of exporters for the selected product

Product: 0603 Cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared

Source: ITC calculations based on UN COMTRADE and ITC statistics (see http://www.trademap.org/tradestat/Country_SelProduct_TS.aspx)



UPOV

Using the UPOV System to benefit custodians of native wild germplasm in Argentina



Coming soon
on UPOV website!

Raimundo Lavignolle
President, National Seed Institute (INASE)

This is a clear example of how access to plant genetic resources
and benefit sharing can be made compatible.

“The royalties derived from commercialization of the variety are shared between the breeder and **the provinces that contributed the native plant genetic resource.**”

Using the UPOV System to benefit custodians of native wild germplasm in Argentina

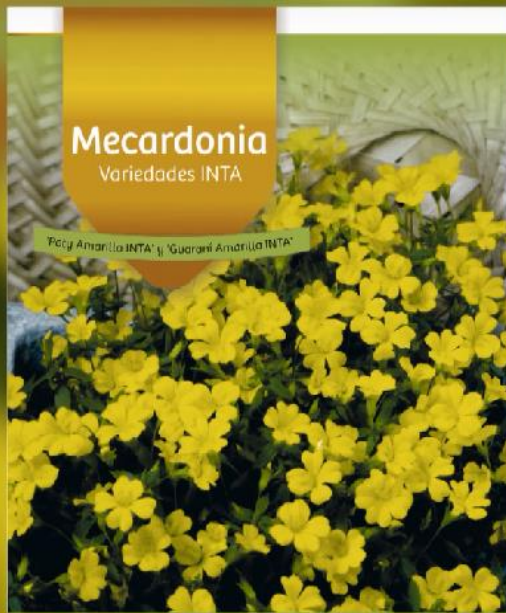


“A large part of the profits, basically, **50 per cent**, that are generated from the commercialization **return to those provinces.**”

Using the UPOV System to benefit custodians of native wild germplasm in Argentina

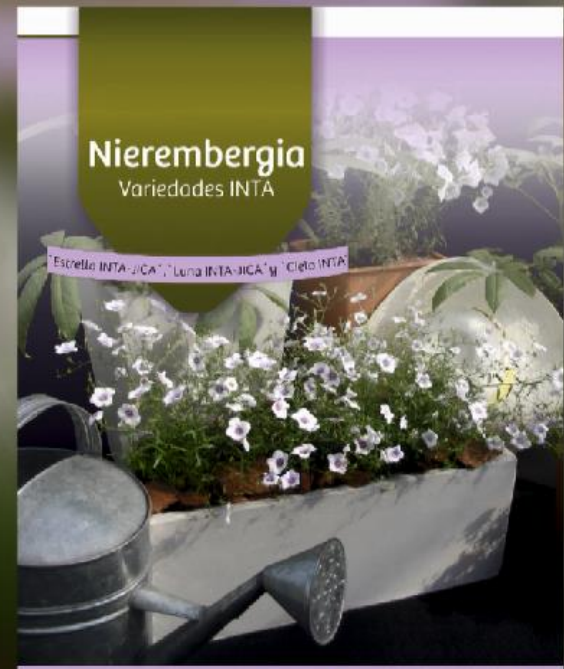


“the erosion/loss from their natural habitat is reduced and this is therefore our own contribution, working together with INTA, for the conservation of our native natural resources.””



the plant variety protection system, using property titles, under the seed law, which conforms to the UPOV Convention,

UPOV



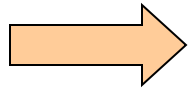
and systems for access to plant genetic resources





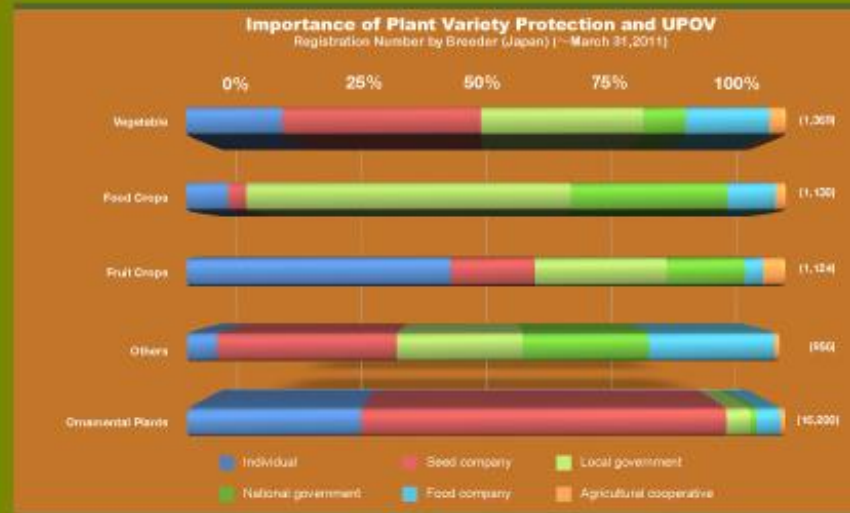
UPOV MISSION STATEMENT

“To provide and promote an **effective system of plant variety protection (PVP), [...]**”



Who can protect a plant variety?

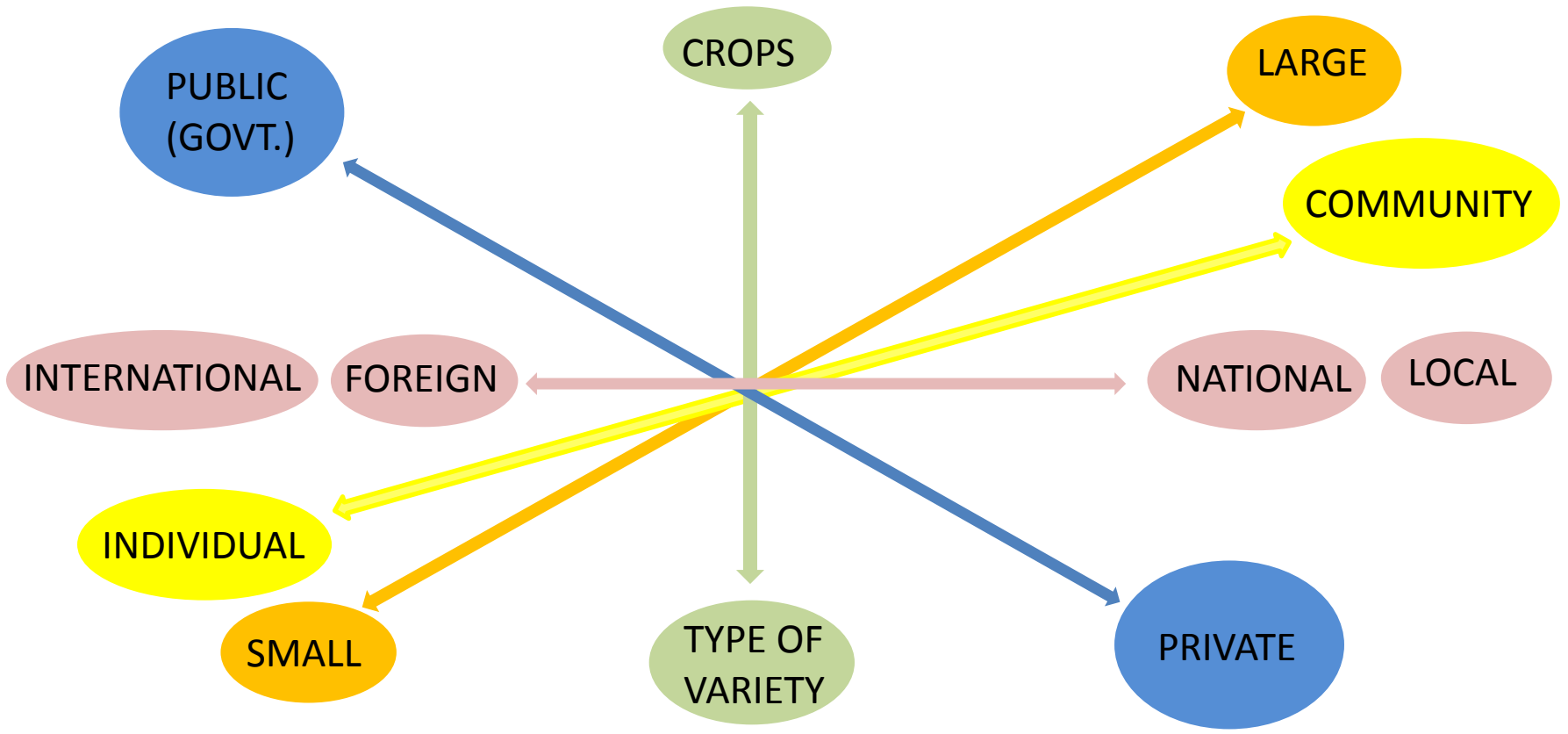
There are no restrictions on who can be considered to be a breeder under the UPOV system: a breeder might be an individual, a farmer, a researcher, a public institute, a private company etc.



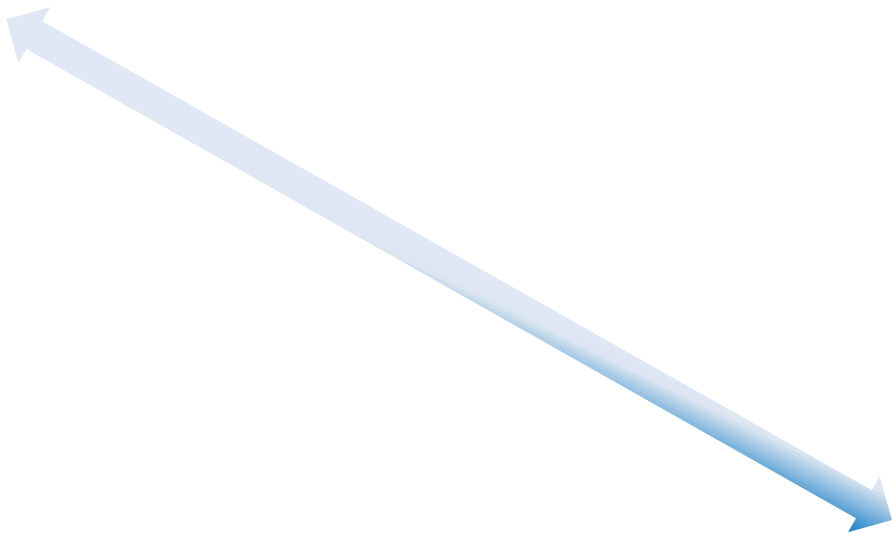
Japan Registration Case Study

(click to see full view)





PUBLIC
(GOVT.)



PRIVATE



UPOV
(Photo: iStockphoto.com/VladTeodor)



(Photo: iStockphoto.com/luoman)

What are the practical challenges for technology transfer and commercialization?

or...

How to:

- identify important variety performance characteristics for farmers
- breed varieties with those characteristics
- deliver good quality seed/propagating material in a timely way

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or...

How to:

- identify important variety performance characteristics for farmers,
- **breed varieties with those characteristics**
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What are the practical challenges for technology transfer and commercialization?

or...

How to:

- identify important variety performance characteristics for farmers,
- breed varieties with those characteristics
- deliver good quality seed/propagating material in a timely way

PUBLIC SECTOR

PRIVATE SECTOR

BREEDERS

International Breeding (Institute)

National Breeding Institute

Large enterprises (e.g. companies, cooperatives)

SME's

Individuals (e.g. farmers)



PRODUCTION & DISTRIBUTION

PBR LICENCES

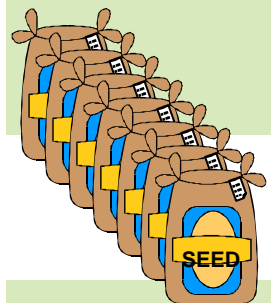
SEED PRODUCERS / PLANT PROPAGATORS



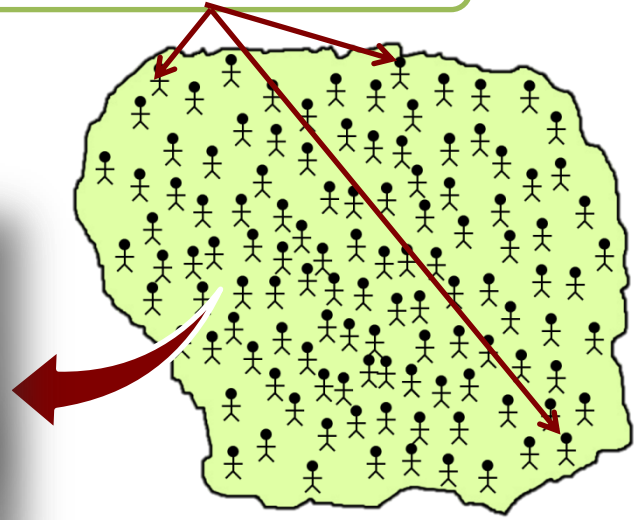
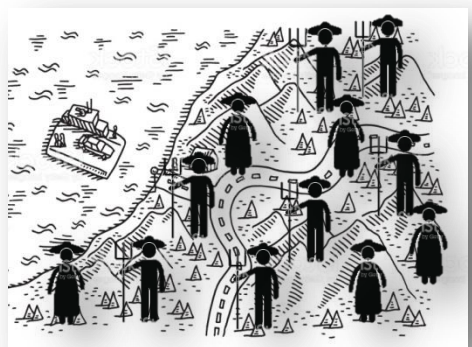
DISTRIBUTORS

SEED

INFORMATION



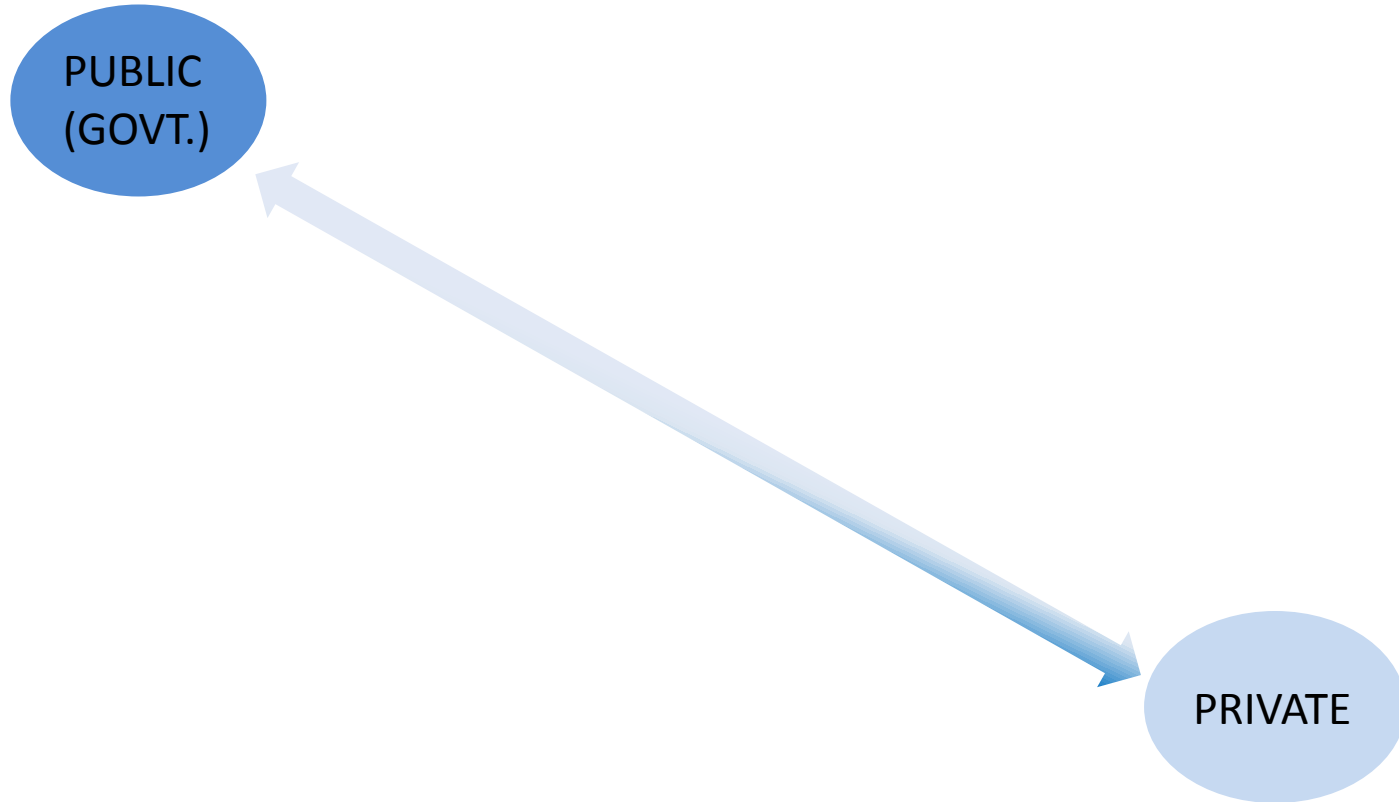
FARMERS



Breeder Performance Test Trials



How can PVP be used to achieve maximum “public good”?



Changing Licensing Models of Public Breeding Institutes: panel discussion

CIOPORA AGM Week – Toronto – April 27, 2017

Plant Variety Licensing at UC Davis

Michael D. Carriere, Ph.D.
UC Davis InnovationAccess



Plant variety licensing at UC Davis

- » **Fair value for public asset**
- » **California advantage**
 - 1st access to new varieties
 - Preferential royalty rates
 - Preferential (broader) sales territories
- » **Transfer of know-how**
- » **Licensing - reactive to breeding outcomes**

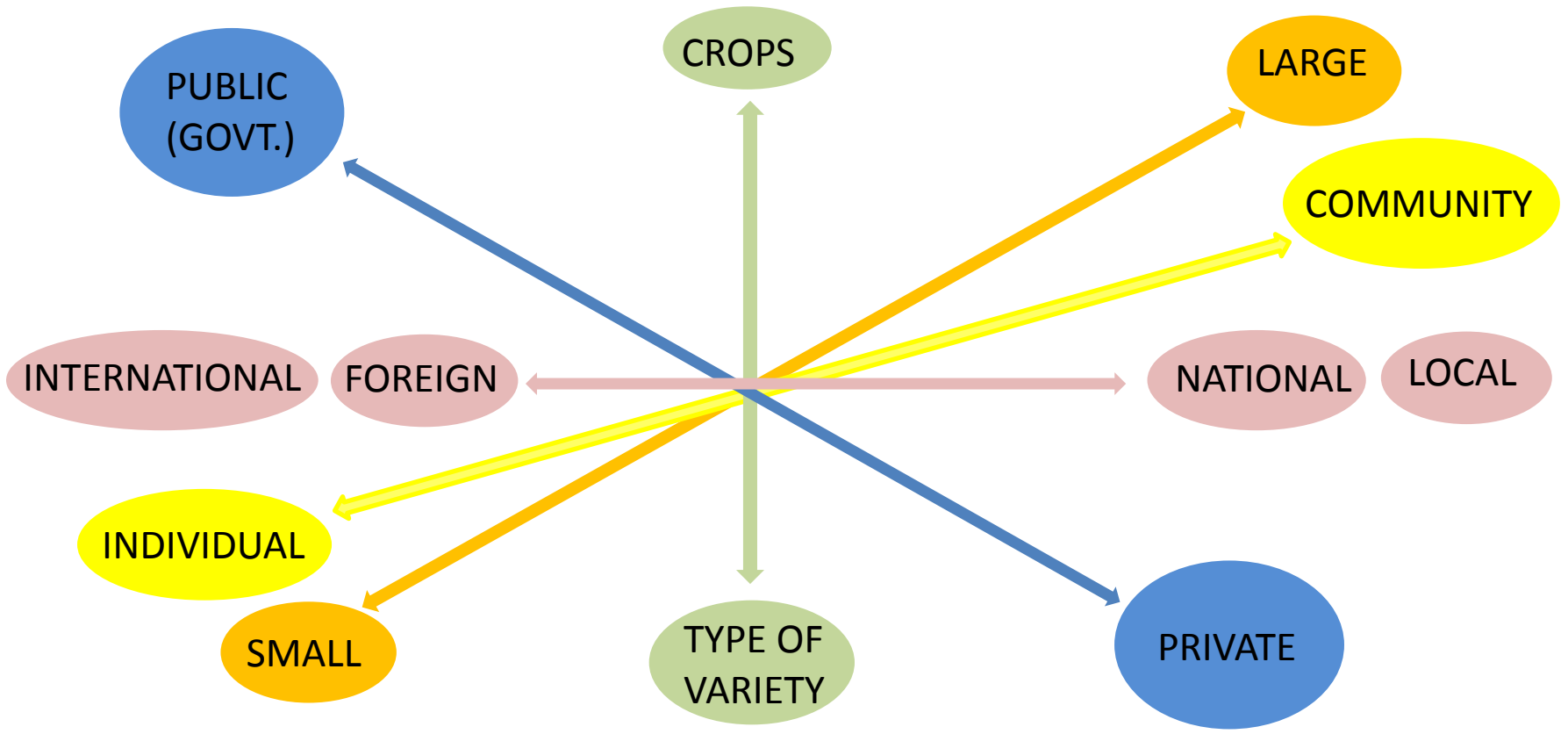


The role of the Agricultural Research Council in delivering high performance varieties to subsistence or smallholder farmers

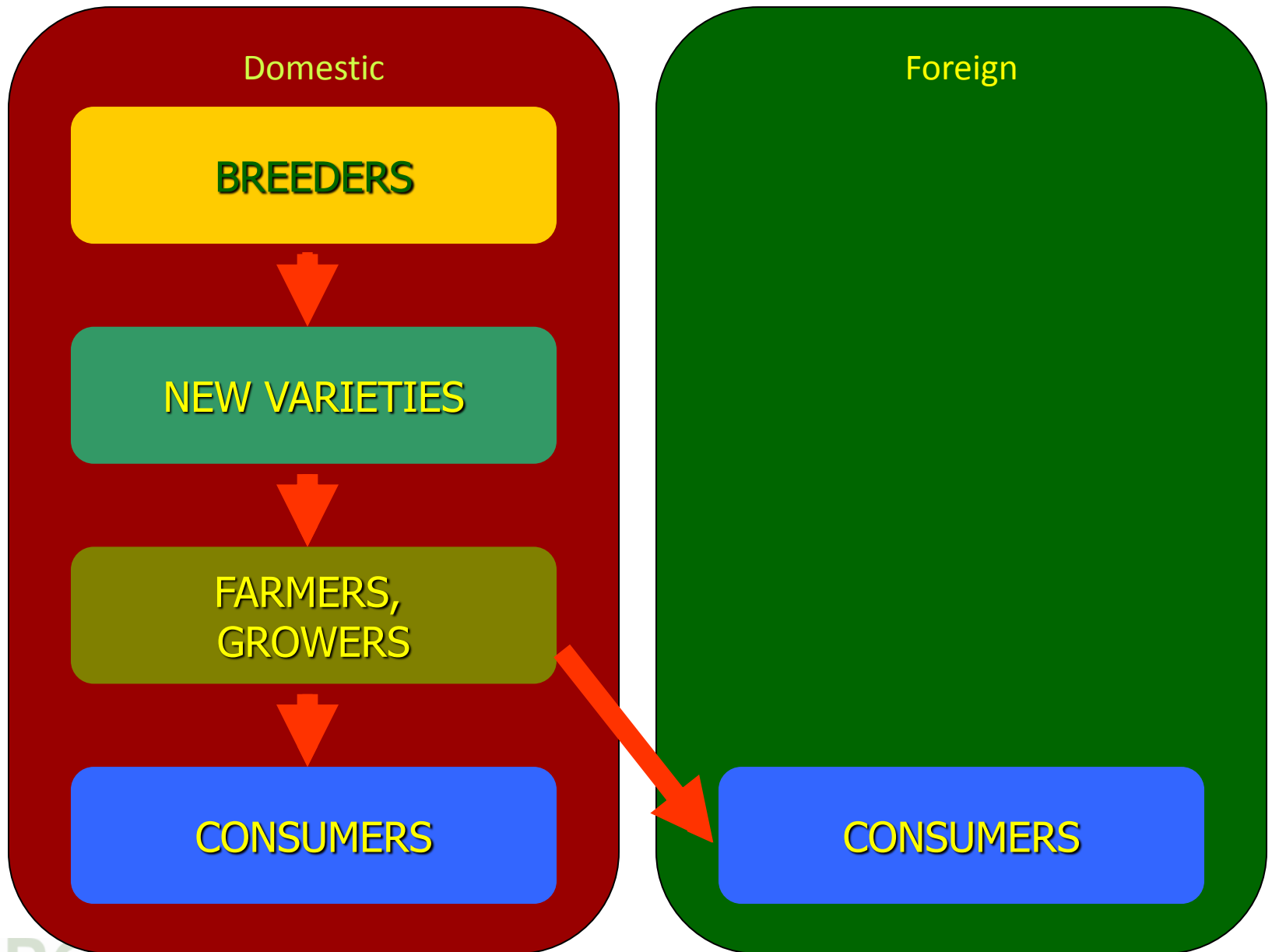
Vuyisile Phehane



- Local licensing agreement with a South African company
 - for the commercialization of some of the ARC's citrus varieties.
 - A condition of the license: ensure the participation of smallholder citrus producers in the commercialization value-chain.
- Facilitated partnership with the Citrus Growers' Association to access ARC







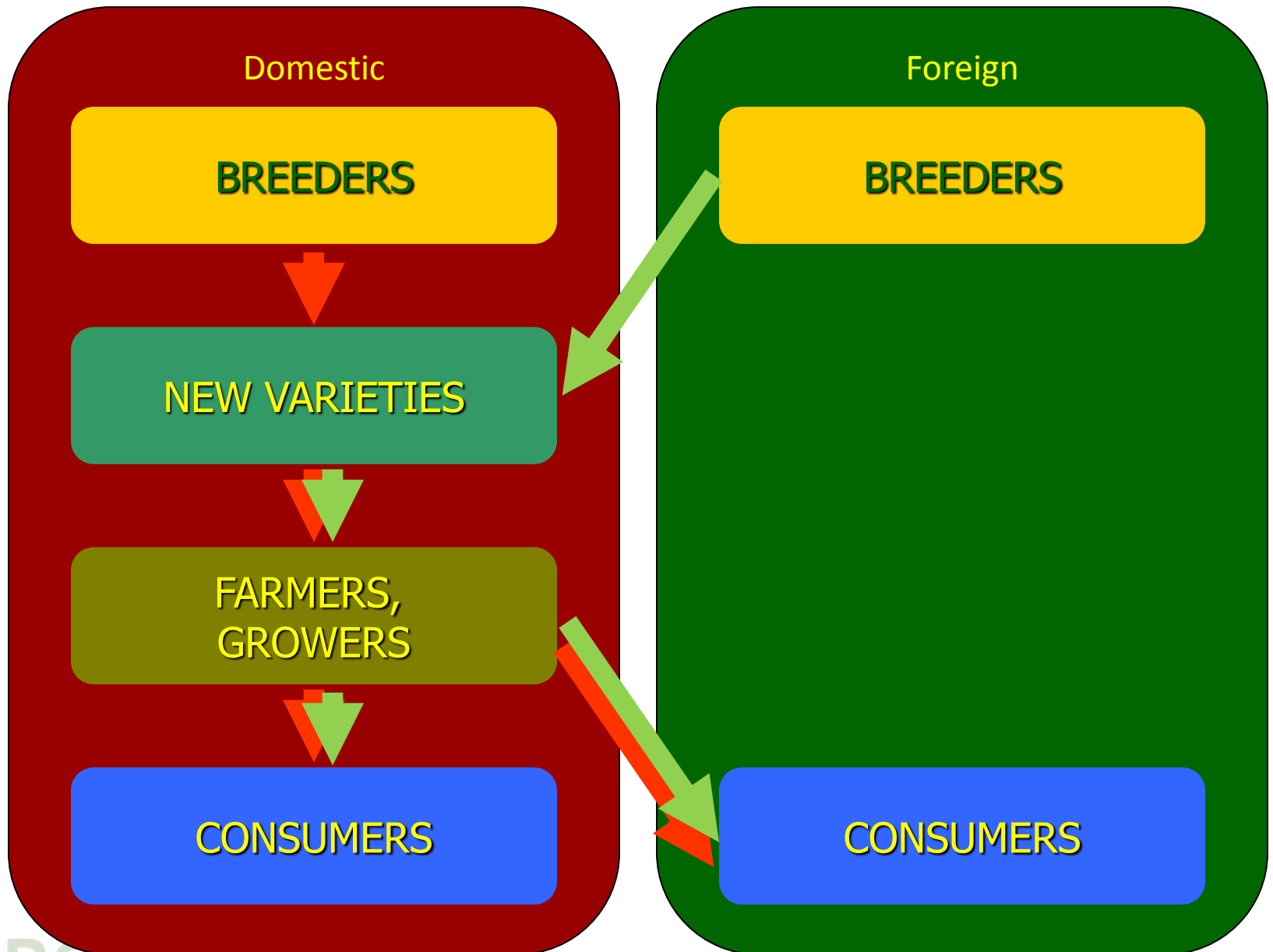


UPOV

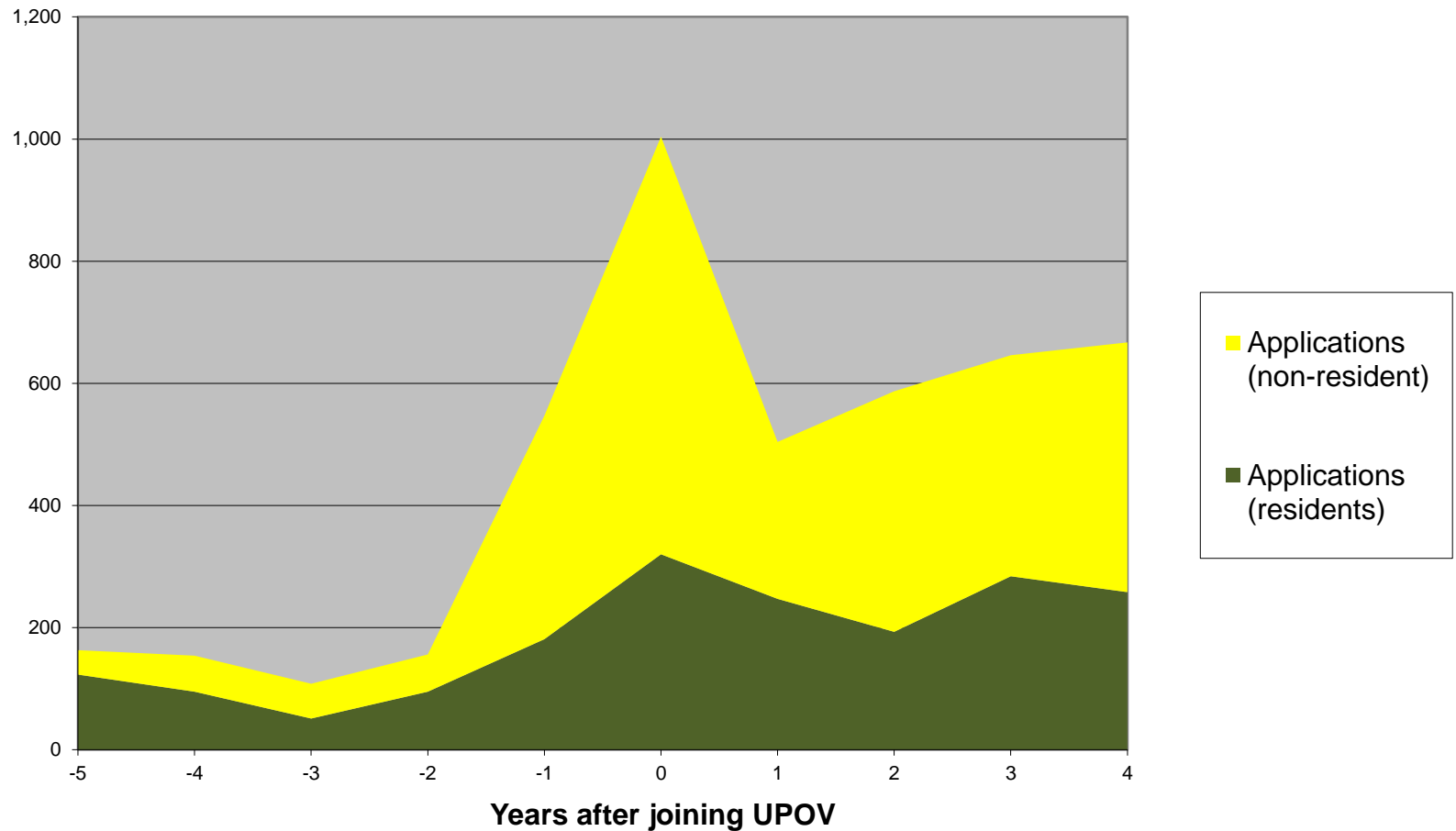
HOW TO BECOME A MEMBER OF UPOV

State/Intergovernmental Organization must:

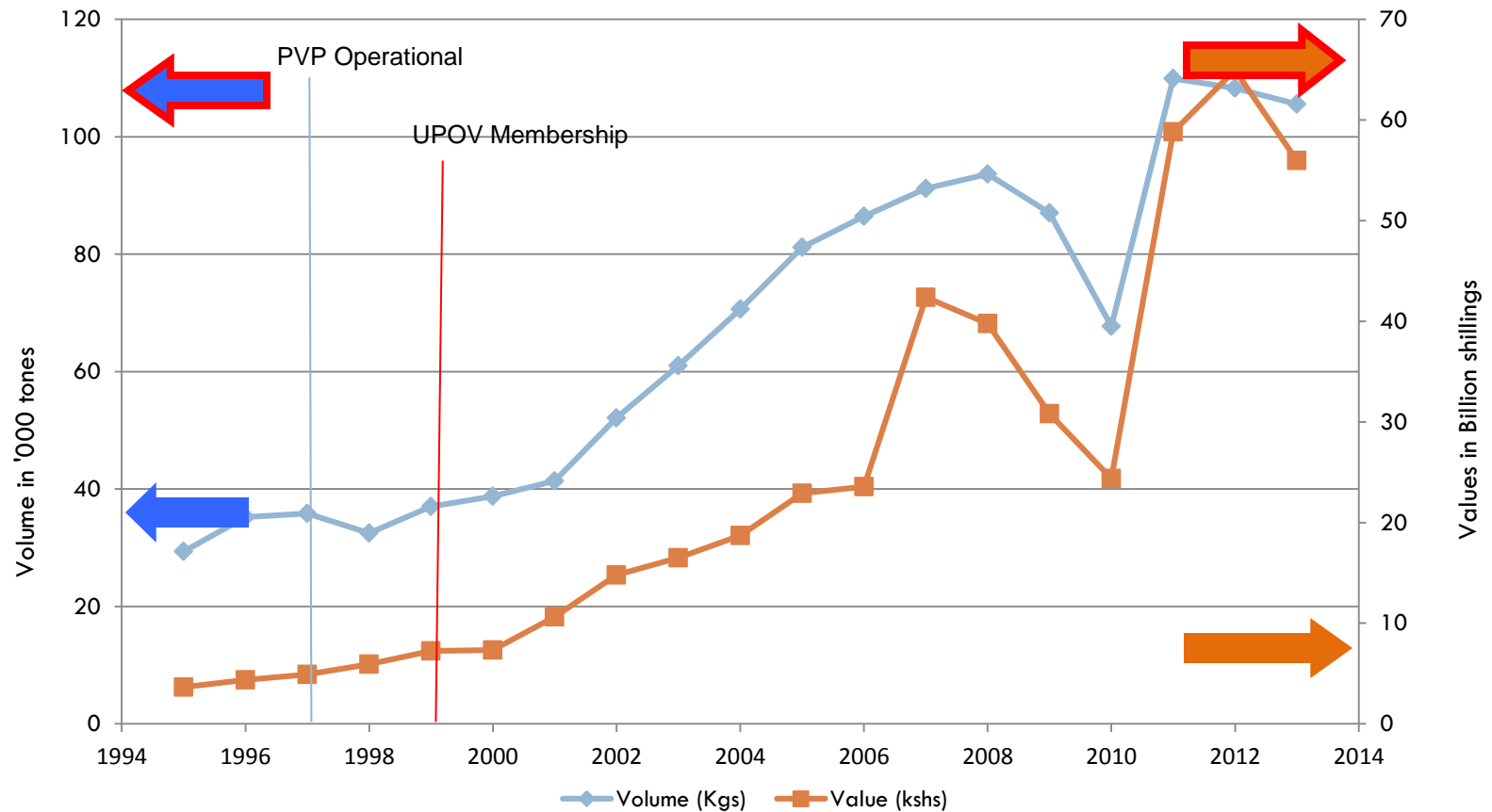
- **Have a law which conforms to the UPOV Convention**
- **Ask advice of the Council of UPOV**
- **If advice positive: deposit instrument of accession**



Latin America Countries acceding to UPOV between 1994 & 2000



Impact of Plant Variety Protection in Kenya



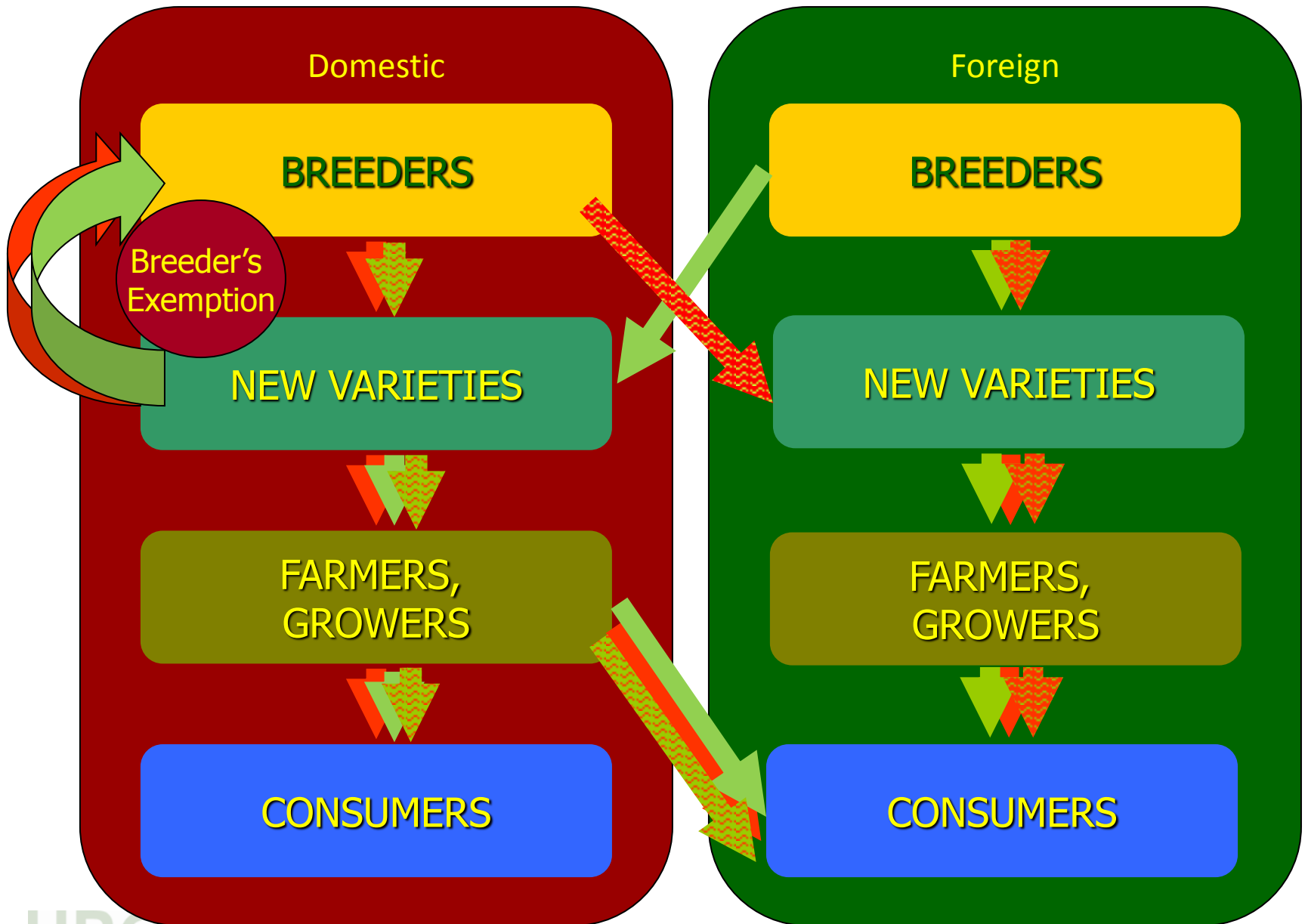
CUT FLOWER EXPORTS 1995 - 2013

Successes/Impact Resulting from PVP cont'

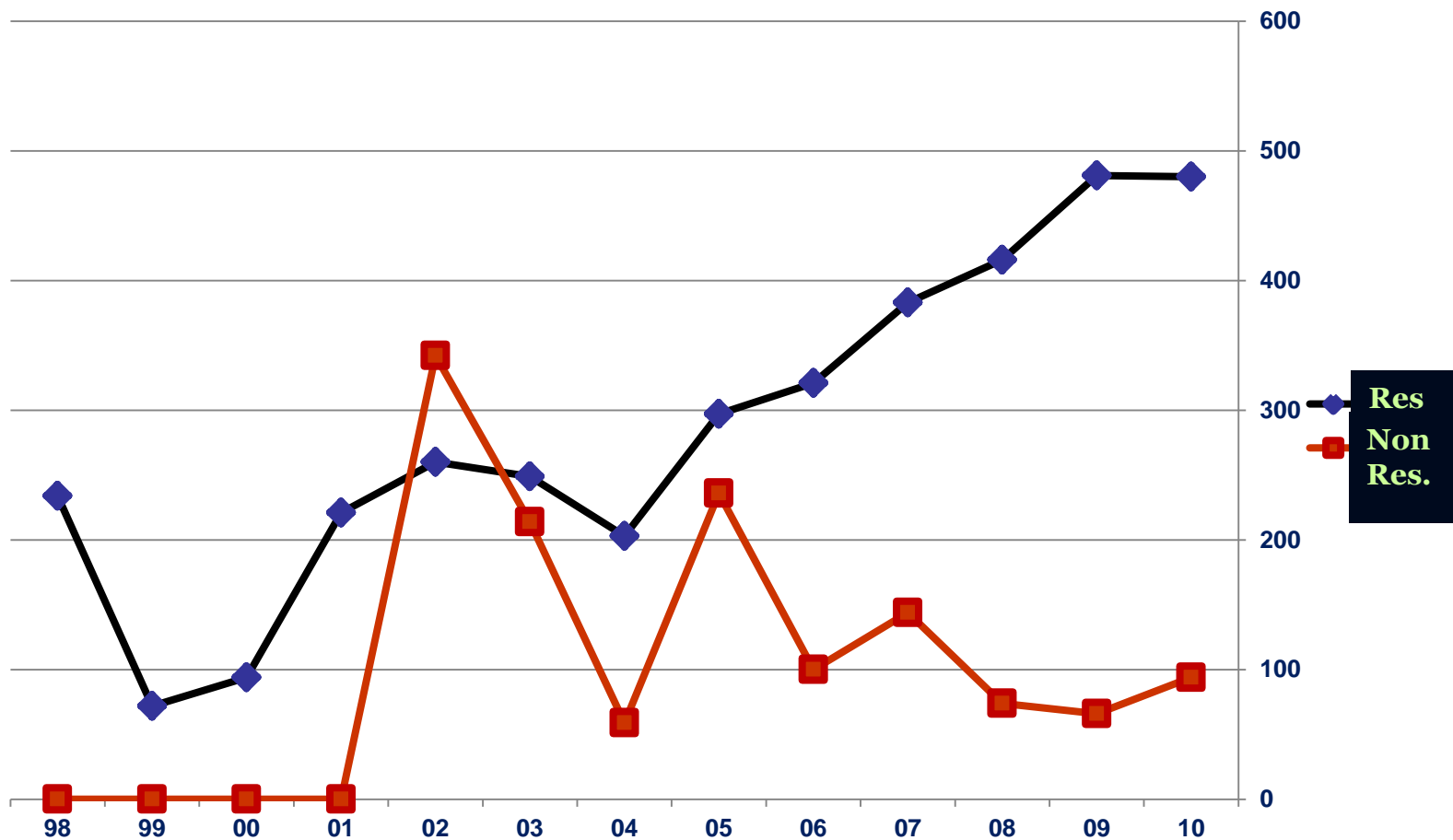
Employment creation

- It is estimated that over 500,000 people (including over 90,000 flower farm employees) depend on the floriculture industry.





Application Ratio of Residents/Non Res.



Dr. CHO, Il Ho (Symposium on Plant Variety Protection - Future Strategy for Enhancing the Effectiveness of the PVP System, Seoul July 13, 2011)

KSVS Symposium on Plant Variety Protection Seoul, Republic of Korea (September 3, 2015)

Korean Rose Breeding Converts a Royalty Payer into a Receiver

Charlie Jeong/wonwoo trading

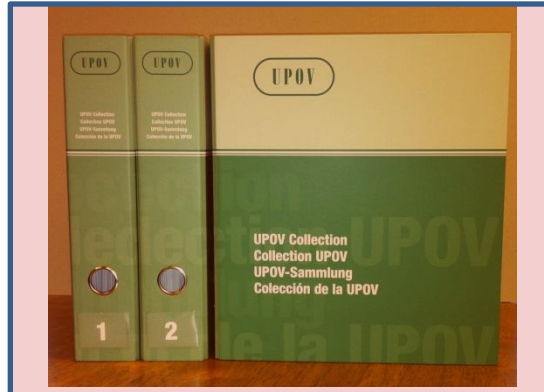
Becoming Royalty Receiver

1. Korean pay rose royalty abroad about 1,040,000 plants in year 2014
2. GARES rose varieties are sold about million in year 2014
3. Korea change from royalty payer to royalty receiver

Overview

- Why was UPOV created?
- Impact of PVP and UPOV membership
- Benefit of UPOV membership for implementing PVP

Harmonization and Cooperation



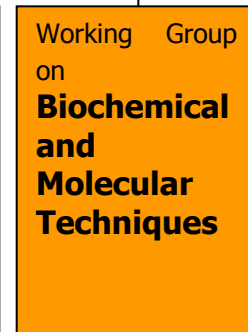
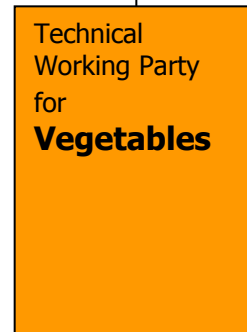
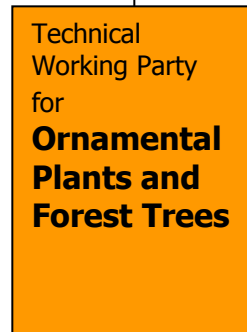
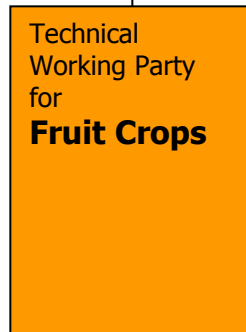
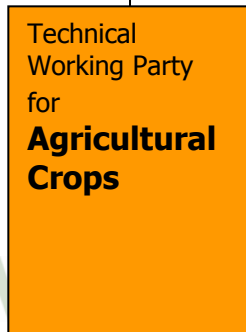
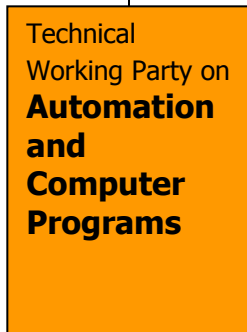
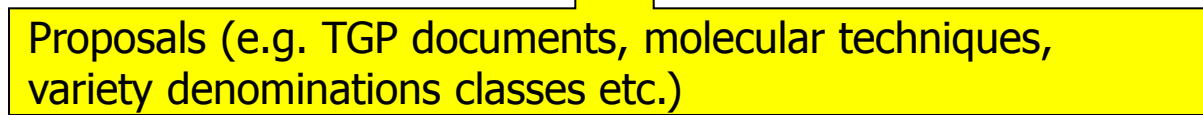
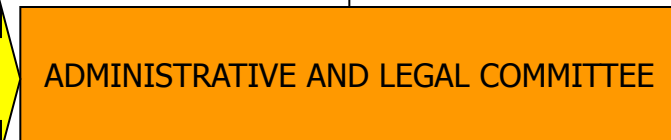
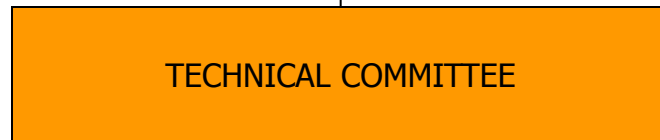
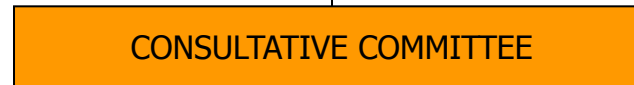
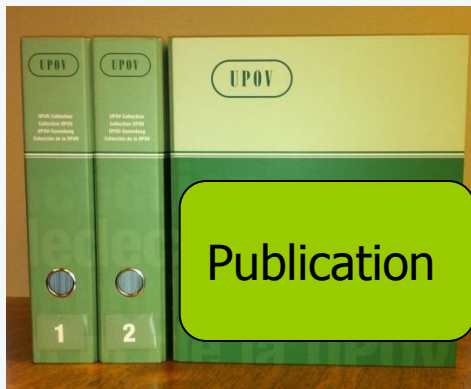
		Harmonization	Cooperation	
PVP Law		<ul style="list-style-type: none"> • UPOV Convention • Explanatory Notes 	<ul style="list-style-type: none"> • UPOV Lex 	<ul style="list-style-type: none"> • Distance Learning course • UPOV events & activities • Assistance by individual UPOV members
IMPLEMENTATION	➤ Application	<ul style="list-style-type: none"> • Model Application Form 	<ul style="list-style-type: none"> • PBR Application tool (EAF) 	
	➤ Variety Denomination	<ul style="list-style-type: none"> • INF/12: “Explanatory Notes on Variety Denominations” • UPOV Code 	<ul style="list-style-type: none"> • PLUTO database 	
	➤ DUS Testing	<ul style="list-style-type: none"> • General Introduction • TGP Documents • Test Guidelines 	<ul style="list-style-type: none"> • GENIE Database • Exchangeable software 	

**DEVELOPING GUIDANCE
TO FACILITATE
HARMONIZATION AND COOPERATION**

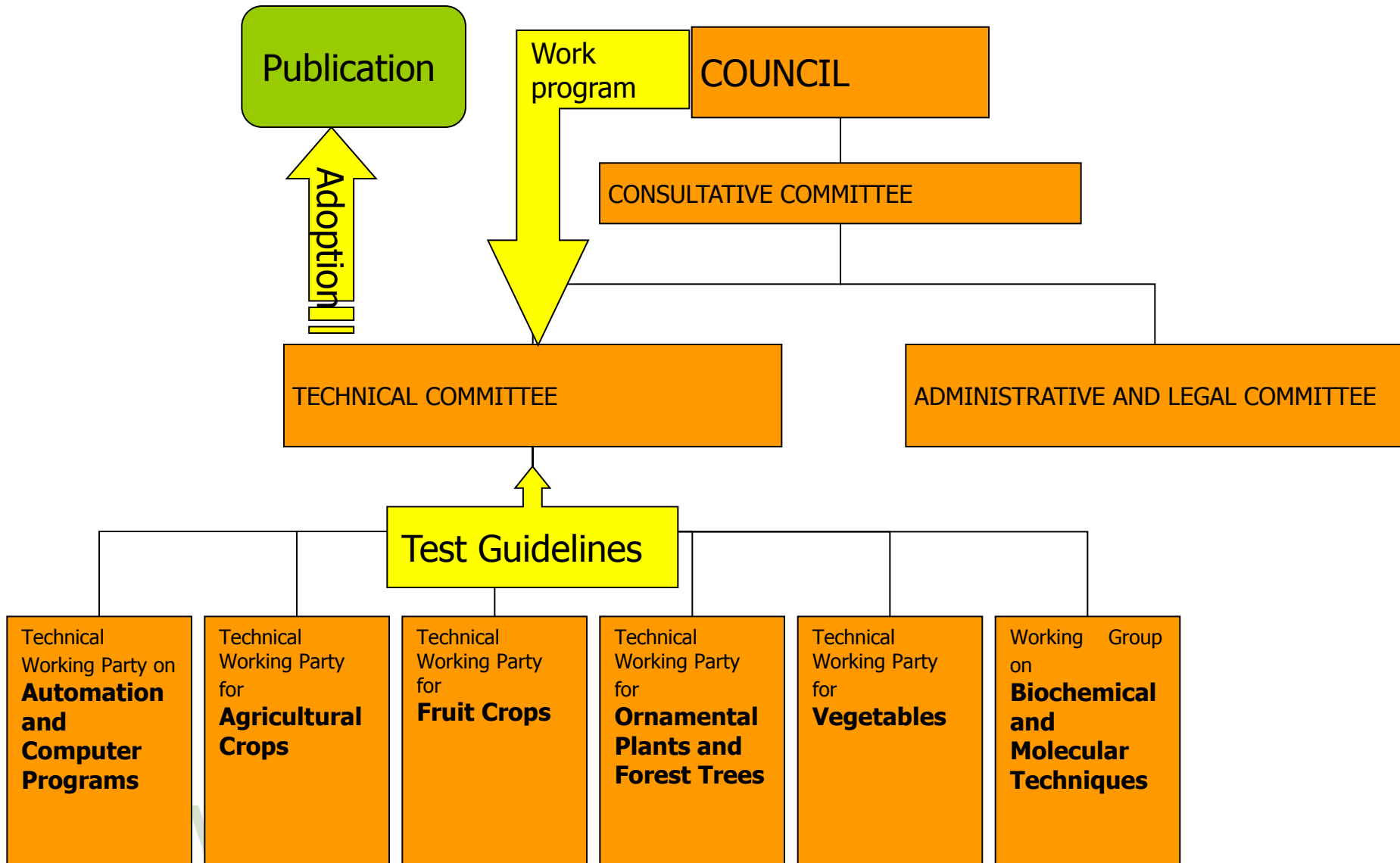


International Union for the Protection of New Varieties of Plants

UPOV Structure



Test Guidelines



COOPERATION

**Cooperation between members of the Union
is a key benefit of UPOV membership**



*Practical DUS
experience
offered for >3,320
genera and
species*

*Number of
genera/species for
which varieties
protected by members
of the Union: > 3,500
(>15,000 titles granted
/annum)*

*Agreements for
cooperation between
members of the
Union: > 1,950*

UPOV

Genera and Species

- **>3,500 genera and species** with varieties examined for PBR
- **>3,320 genera and species** for which UPOV members have practical DUS experience
- **321 Test Guidelines** adopted

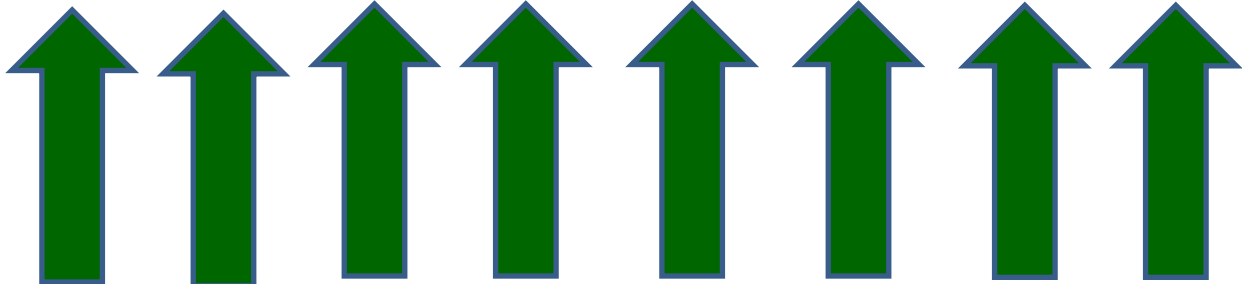
321 Test Guidelines estimated to cover 91% of PBR-related varieties in UPOV Plant Variety Database



COOPERATION



HARMONIZATION



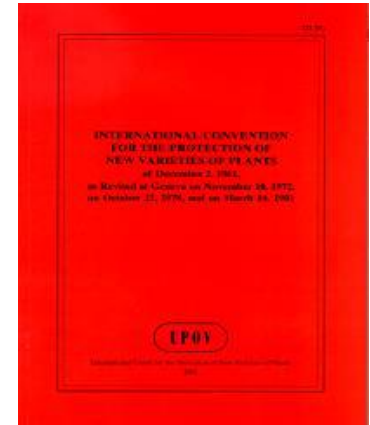
UPOV Members

UPOV



Role of UPOV in Harmonization

The only binding obligations on members of the Union are those contained in the text of the UPOV Convention itself



UPOV provides guidance

- Explanatory Notes, Information documents
- Guidance on DUS examination
- Associated “TGP” Documents
- “Test Guidelines”
- Species/Crop - specific recommendations developed by crop experts

UPOV promotes, encourages and facilitates Cooperation between users/members

- Exchange of data under same format (UPOV Code, EAF...)
- Common platform/database (PLUTO..)

 International recognized variety descriptions (effective protection)

INFORMATION TO FACILITATE COOPERATION

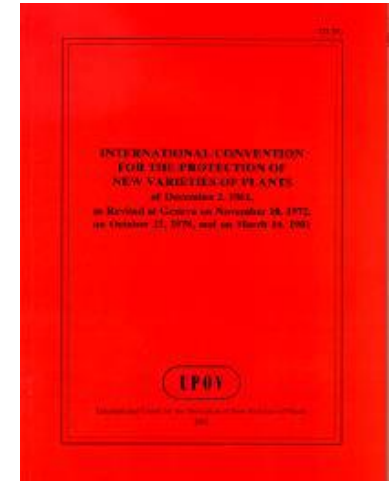
- DUS Examination (GENIE database)
- Variety Denominations (PLUTO database)
- Exchangeable Software
- Plant Variety Protection Statistics

See UPOV/INF/15/2_Part IV

Arrangements & Cooperation in DUS testing

Article 12 of the 1991 Act requires that a variety be examined for compliance with the distinctness, uniformity and stability criteria.

“In the course of the examination, the authority may grow the variety or carry out other necessary tests, cause the growing of the variety or the carrying out of other necessary tests, or take into account the results of growing tests or other trials which have already been carried out.”



The examination, or “DUS Test,” is based mainly on growing tests, carried out by the authority competent for granting plant breeders’ rights or by separate institutions, such as public research institutes, acting on behalf of that authority or, in some cases, on the basis of growing tests carried out by the breeder(TG1/3)

GENIE Database



Information on GENera and specIEs
(hence GENIE) in relation to protection
offered by UPOV members

DUS information

- UPOV Test Guidelines
- practical experience (UPOV members)
- cooperation in DUS examination

PLUTO Database

(PLUTO = PLant varieties in the UPOV system:
The Omnibus)



HOME » PVP DATA & STATISTICS

searches

PLUTO: Plant Variety Database

New: Video Tutorial

The data currently in PLUTO is the data in version 201303 of the UPOV-ROM Plant Variety Database. A subscription service will also shortly be introduced for PLUTO, which will allow us to inform users of future updates of the data.

Term Search Denomination Search

SEARCH BY

+ UPOV Code ▼ = [input] [lookup]

+ Denomination ▼ = [input]

+ Record type ▼ = [input]

+ Application Date ▼ = [input]

+ Botanical name ▼ = [input]

? search

FILTER BY

Source Type Status End Type Grant Date End Date

List	Count - desc
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ES	131,334
CZ	121,597
HR	116,016
SI	112,848
EE	111,363
MT	109,506
O7	109,506
NL	157,074
PL	130,890
SK	120,526
SE	114,289
PT	112,799
LV	110,638
LU	109,506
OM	55,525
GB	142,725
IT	126,298
HU	118,922
BE	113,602
RO	112,685
IE	110,445
GR	109,506
IIS	36,930
DE	139,750
DK	122,713
AT	116,582
BG	113,505
LT	111,618
FI	110,367
CY	109,506
JP	26,971



UPOV

World-wide support systems for breeders

UPOV



Expansion of UPOV's PBR Application Tool (EAF)

Stakeholder features
Breeders


Welcome

The International Union for the Protection of New Varieties of Plants is an intergovernmental organization with headquarters in Geneva (Switzerland).


UPOV was established by the International Convention for the Protection of New Varieties of Plants. The Convention was adopted in Paris in 1961 and it was revised in 1991.

UPOV's mission is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society.

NEW PBR Application Tool (EAF)

GENIE Database 

UPOV Lex

 Plant Variety Database (PLUTO)

- Distance Learning Courses
- Seminars & Symposia
- FAQs

UPOV's PBR Application Tool

Quick and easy transmission
of application data
for Plant Breeders' Rights

www.upov.int

UPOV

UPOV- PBR Application Tool (Electronic Application Form (EAF))

- Easy way to transfer and re-use your PBR application data, using an efficient multi-lingual e-system available online for all participating countries worldwide



UPOV EAF

- Home
- Go to EAF
- How to Access EAF
- Terms of Use
- Testimonials
- Tutorials
- User Guides
- PVP-XML
- Payment of fees
- Web Services
- Contact Us

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PBR Application Tool (EAF)

What are the features of the EAF? [\[more details\]](#)

- An **online PBR application tool** that can be used to provide application data to all p system to system communication)
- Application forms can be displayed in a **range of languages** (note: answers must be
- **Information can be automatically re-used in subsequent application data**
- Different **user roles can be specified** (e.g. drafter, signatory, translator, agent, proc
- **Controlled access to all PBR application data**
- Secure and confidential

UPOV members and crops currently covered by EAF

AUTHORITY	APPLE FRUIT VARIETIES				
Argentina	✓				
Australia	✓				
Chile	✓				
China		✓		✓	
Colombia				✓	
France	✓	✓	✓	✓	✓
Kenya	✓	✓	✓	✓	✓
Netherlands	✓	✓	✓	✓	✓
New Zealand	✓	✓	✓	✓	
...					

English
French
German
Spanish
Chinese
...?

UPOV members (16) and crops (5) currently covered by PBR Application Tool (EAF)

AUTHORITY	APPLE FRUIT VARIETIES	LETTUCE	POTATO	ROSE	SOYBEAN
Argentina	√		√	√	√
Australia	√	√	√	√	√
Chile	√	√	√	√	√
China		√		√	
Colombia				√	
France	√	√	√	√	√
Kenya	√	√	√	√	√
Netherlands	√	√	√	√	√
New Zealand	√	√	√	√	
Norway	√	√	√	√	√
Republic of Moldova	√	√	√	√	√
Switzerland	√	√	√	√	√
Tunisia	√	√	√	√	√
Turkey	√	√	√	√	√
United States of America		√	√		√
Uruguay	√		√		√

UPOV - PBR Application Tool

Key benefits

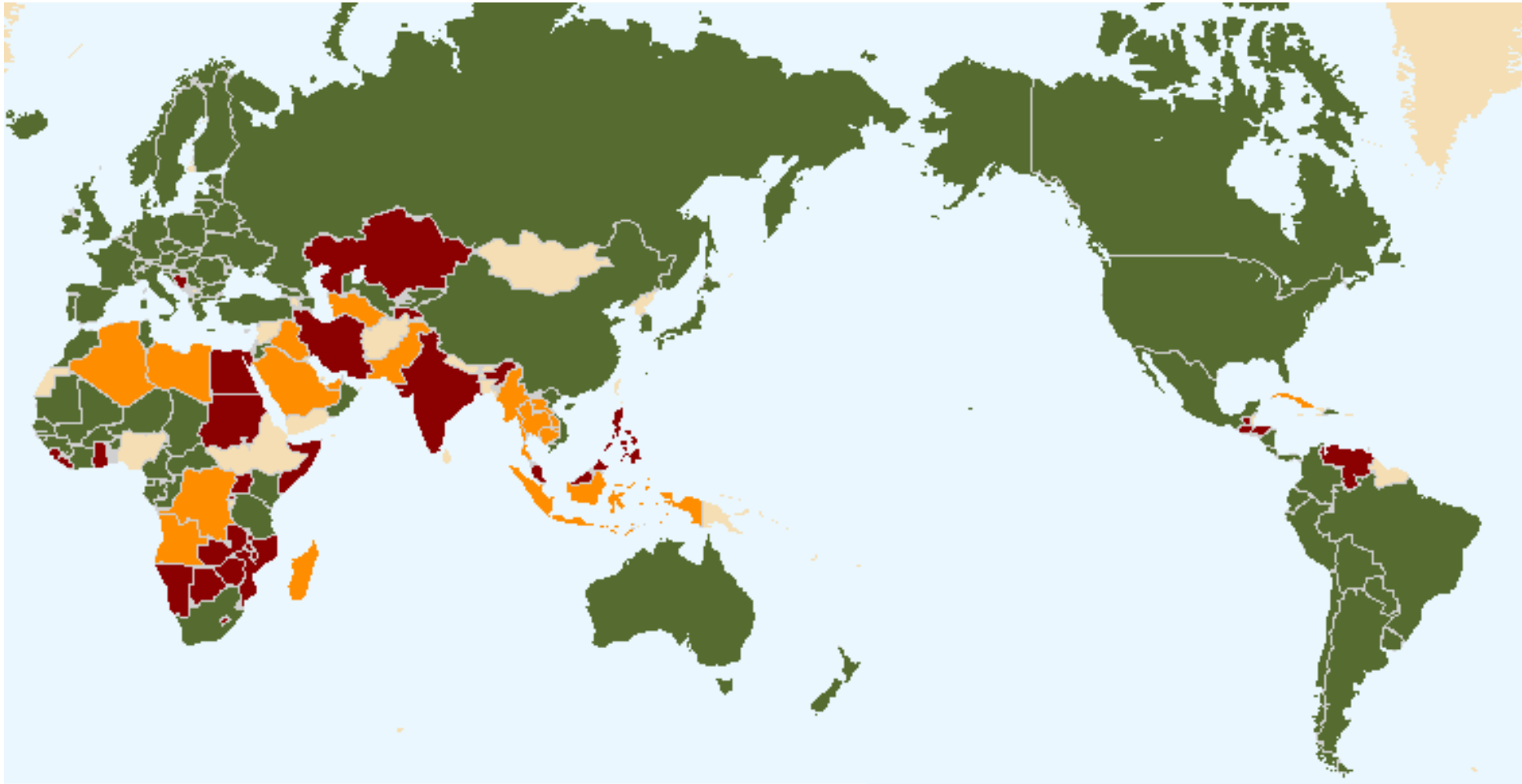
- **Online PBR application tool** to provide application data to participating PVP Offices in required format (hard copy, e-mail notification, system-to-system)
- Application forms can be displayed in **range of languages** (answers must be provided in an acceptable language for the PVP Office)
- Variety data can be **re-used** in subsequent applications
- Different **user roles** can be specified (e.g. drafter, signatory, translator, agent, procedural representative)
- **Controlled access** to all PBR application data
- **Secure** and confidential
- **Easy access** to PVP application forms
- **Track** your applications...

Next developments

PBR Tool- EAF Version 2.0 (January 2018)

- Expansion
 - **members**
 - **languages**
 - **crops/species**

UPOV status



Members of UPOV (74) covering 93 States

Initiating States (16) and Organization (1)

States (24) and Organization (1) in contact with the UPOV Office

HOW TO BECOME A MEMBER OF UPOV

State/Intergovernmental Organization must:

- **Have a law which conforms to the UPOV Convention**
- **Ask advice of the Council of UPOV**
- **If advice positive: deposit instrument of accession**