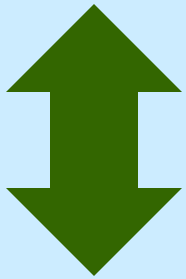
Seminar on
"The benefits of the UPOV System of Plant Variety Protection for farmers and growers"

Session1: Benefits of the UPOV System of Plant Variety Protection for Farmers and Growers

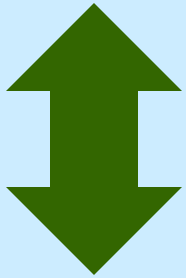
Peter Button
Vice Secretary-General, UPOV

Bangkok, Thailand
February 23, 2017

BREEDERS' RIGHTS



FARMERS' BENEFITS



NEEDS OF SOCIETY

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

MINISTRY OF FOOD—Rationing Year 1953-54

4 Week Period	Week No.	RATION WEEK Sunday—Saturday
		1953
1	1	17 May – 23 May
	2	24 May – 30 May
	3	31 May – 6 June
	4	7 June – 13 June
2	5	14 June – 20 June
	6	21 June – 27 June
	7	28 June – 4 July
	8	5 July – 11 July
3	9	12 July – 18 July
	10	19 July – 25 July
	11	26 July – 1 Aug.
	12	2 Aug. – 8 Aug.
4	13	9 Aug. – 15 Aug.
	14	16 Aug. – 22 Aug.
	15	23 Aug. – 29 Aug.
	16	30 Aug. – 5 Sept.
5	17	6 Sept. – 12 Sept.
	18	13 Sept. – 19 Sept.
	19	20 Sept. – 26 Sept.
	20	27 Sept. – 3 Oct.
6	21	4 Oct. – 10 Oct.
	22	11 Oct. – 17 Oct.
	23	18 Oct. – 24 Oct.
	24	25 Oct. – 31 Oct.
7	25	1 Nov. – 7 Nov.
	26	8 Nov. – 14 Nov.
	27	15 Nov. – 21 Nov.
	28	22 Nov. – 28 Nov.
8	29	29 Nov. – 5 Dec.
	30	6 Dec. – 12 Dec.
	31	13 Dec. – 19 Dec.
	32	20 Dec. – 26 Dec.
		1954
9	33	27 Dec. – 2 Jan.
	34	3 Jan. – 9 Jan.
	35	10 Jan. – 16 Jan.
	36	17 Jan. – 23 Jan.
10	37	24 Jan. – 30 Jan.
	38	31 Jan. – 6 Feb.
	39	7 Feb. – 13 Feb.
	40	14 Feb. – 20 Feb.
11	41	21 Feb. – 27 Feb.
	42	28 Feb. – 6 Mar.
	43	7 Mar. – 13 Mar.
	44	14 Mar. – 20 Mar.
12	45	21 Mar. – 27 Mar.
	46	28 Mar. – 3 Apl.
	47	4 Apl. – 10 Apl.
	48	11 Apl. – 17 Apl.
13	49	18 Apl. – 24 Apl.
	50	25 Apl. – 1 May
	51	2 May – 8 May
	52	9 May – 15 May

For F.O. use

PLEASE USE BLOCK LETTERS

A R.B.1/16 R.B. Serial No.

5

FORM R.G.12A

SURNAME.....

OTHER NAMES (IN FULL).....

ADDRESS.....

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D FOR FOOD OFFICE USE

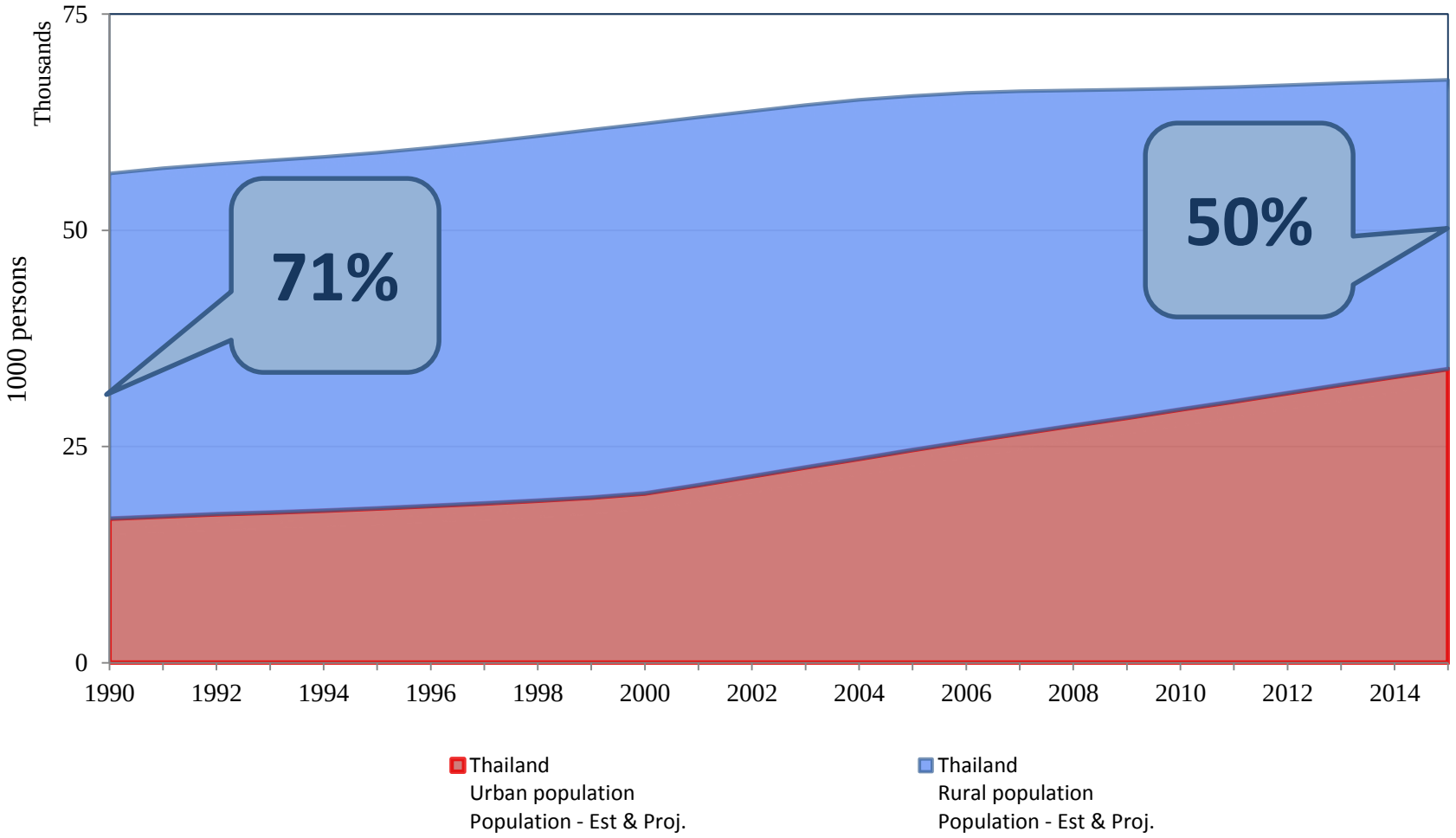
From F.O.

Date.....

To (F.O. Code) NM--C 3

Photo: istockphoto/belterz

Rural and urban population: Thailand
1990 - 2015

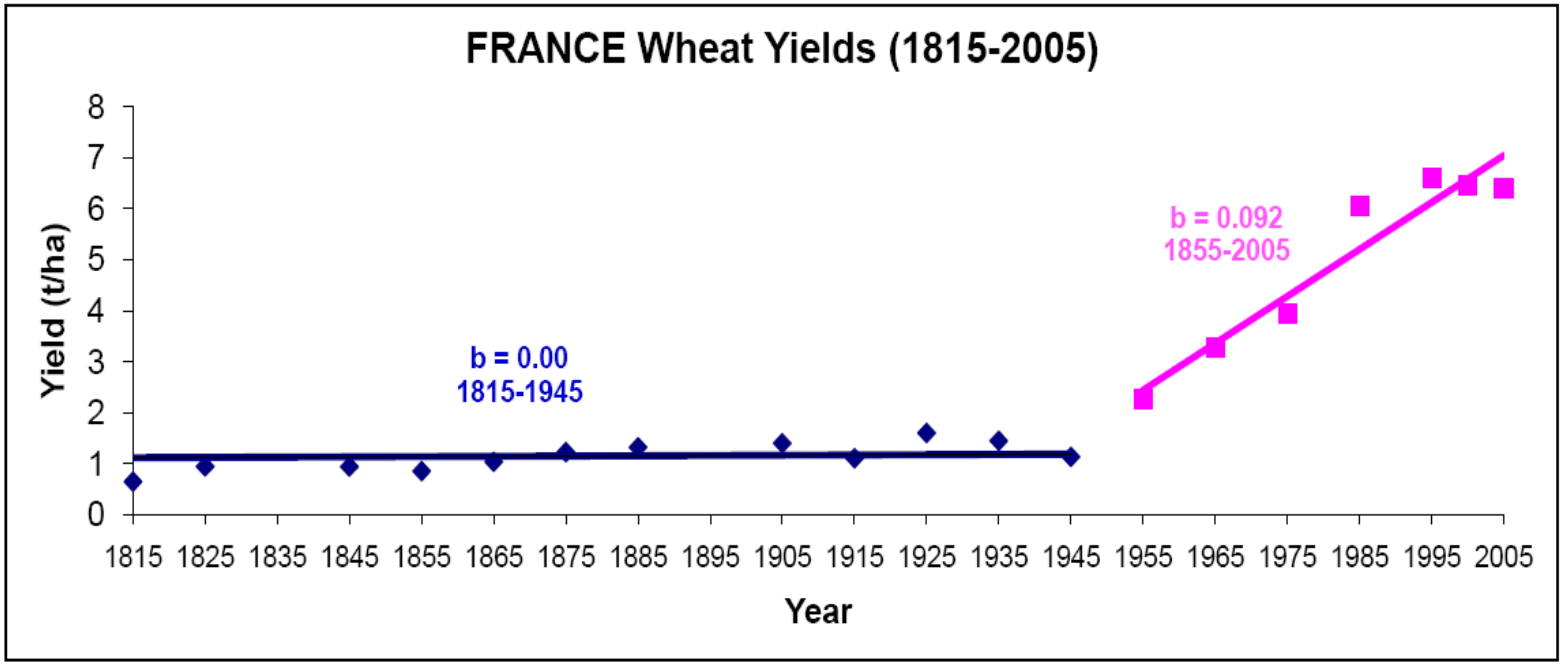


UPOV

UPOV 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"

Evolution of Wheat yield in France



Lodging
Height
Earliness
Resistance to sprouting

Mildew
Yellow rust
Brown rust
Septoria nodorum
Septoria tritici
Eyespot
Fusarium ear blight
Orange wheat blossom midge

Yield: treated/untreated
Yield: early sown/late sown
Yield: light soil/heavy soil

Breadmaking quality
Biscuit making quality
Feed quality

(Photo: istockphoto/Ziva_K)

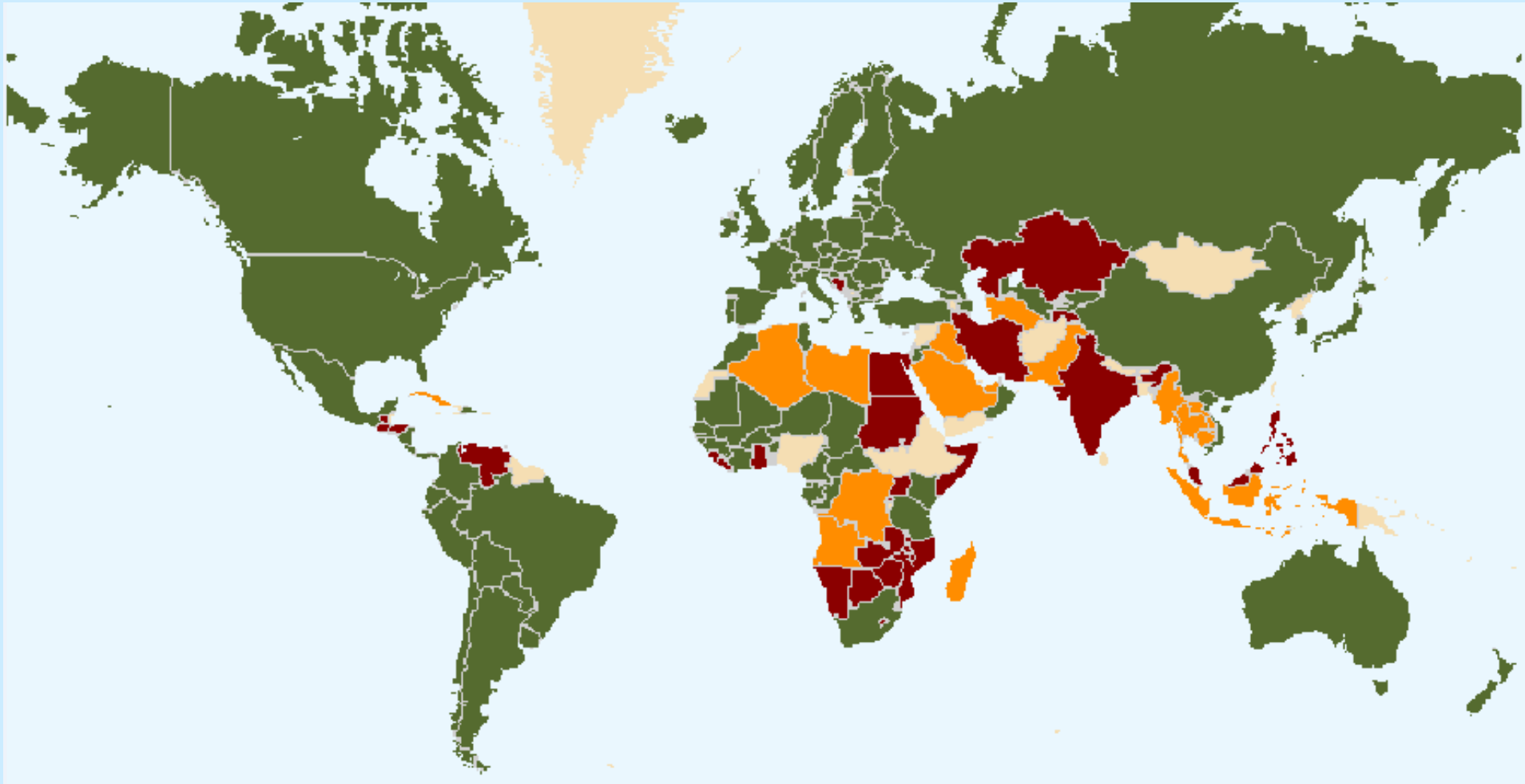
(Video: iStockphoto.com/SaddamStock)

UPOV

UPOV MISSION STATEMENT

"To provide and promote an **effective system of plant variety protection (PVP)**, […]"

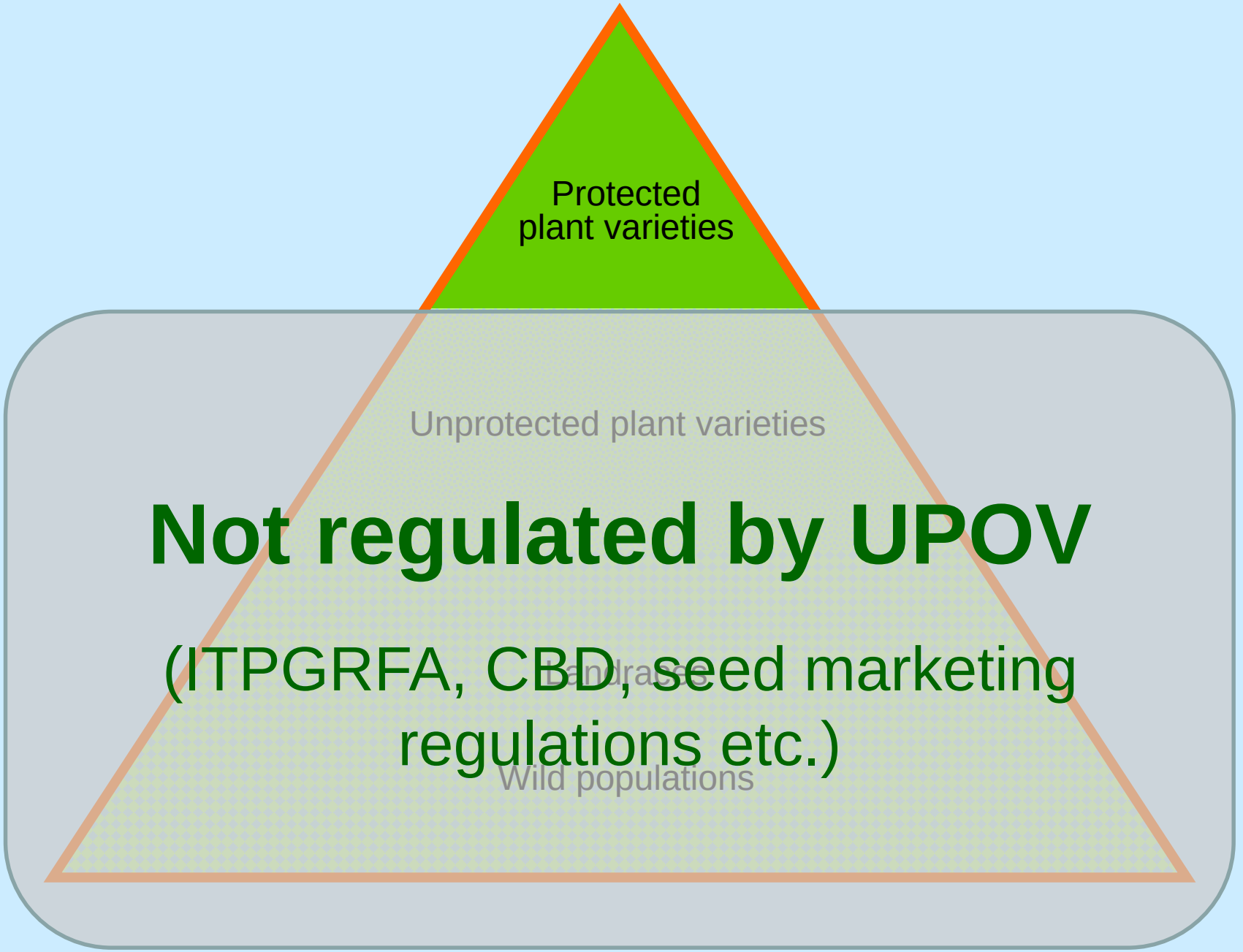
UPOV status



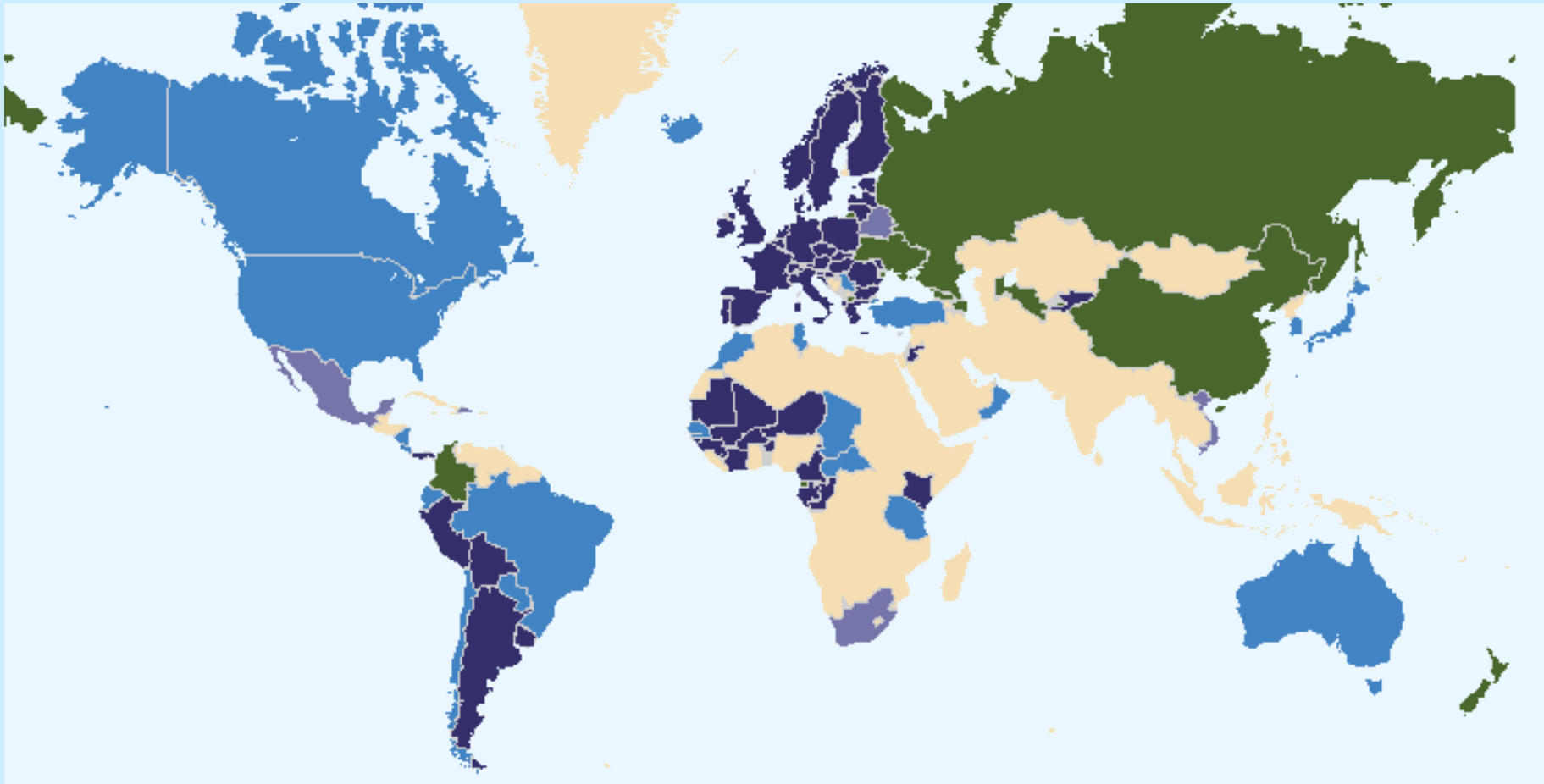
Members of UPOV (74) covering 93 States

Initiating States (15) and Organization (1)

States (25) and Organization (1) in contact with the UPOV Office


Protected
plant varieties
Unprotected plant varieties
Not regulated by UPOV
(ITPGRFA, CBD, seed marketing
regulations etc.)
Landraces
Wild populations

States and organizations bound by the UPOV Convention indicating those that are also bound by the ITPGRFA and/or the Nagoya Protocol



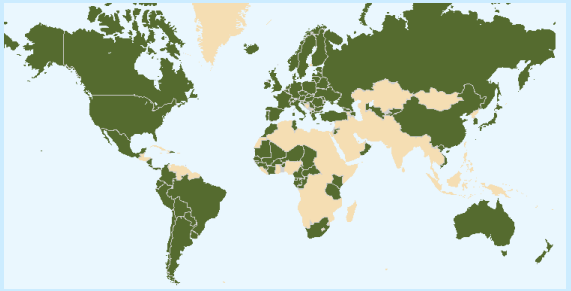
The boundaries shown on this map do not imply the expression of any opinion whatsoever on the part of UPOV concerning the legal status of any country or territory

- UPOV/ITPGRFA/Nagoya Protocol
- UPOV/ITPGRFA
- UPOV/Nagoya Protocol
- UPOV only

as of March 14, 2017

Some other things NOT regulated by UPOV

- Genetically modified organisms
- Market regulation
(e.g. seed certification, official register of varieties admitted to trade)



Biotech Crop Countries and Mega-Countries*, 2012

#1 *USA** 69.5 Million Has. Maize, Soybean, Cotton, Canola, Sugarbeet, Alfalfa, Papaya, Squash

#4 *Canada** 11.6 Million Has. Canola, Maize, Soybean, Sugarbeet

#22 *Portugal* <0.05 Million Has. Maize

#17 *Spain** 0.1 Million Has. Maize

#23 *Czech Republic* <0.05 Million Has. Maize

#28 *Slovakia* <0.05 Million Has. Maize

#27 *Romania* <0.05 Million Has. Maize

#6 *China** 4.0 Million Has. Cotton, Papaya, Poplar, Tomato, Sweet Pepper

#24 *Cuba* <0.05 Million Has. Maize

#5 *India** 10.8 Million Has. Cotton

#16 *Mexico** 0.2 Million Has. Cotton, Soybean

#15 *Myanmar** 0.3 Million Has. Cotton

#20 *Honduras* <0.05 Million Has. Maize

#12 *Philippines** 0.8 Million Has. Maize

#26 *Costa Rica* <0.05 Million Has. Cotton, Soybean

#13 *Australia** 0.7 Million Has. Cotton, Canola

#19 *Colombia* <0.05 Million Has. Cotton

#9 *Pakistan** 2.8 Million Has. Cotton

#11 *Bolivia** 1.0 Million Has. Soybean

#25 *Egypt* <0.05 Million Has. Maize

#18 *Chile** <0.1 Million Has. Maize, Soybean, Canola

#3 *Argentina** 23.9 Million Has. Soybean, Maize, Cotton

#7 *Paraguay** 3.4 Million Has. Soybean, maize, cotton

#10 *Uruguay** 1.4 Million Has. Soybean, Maize

#2 *Brazil** 36.6 Million Has. Soybean, Maize, Coton

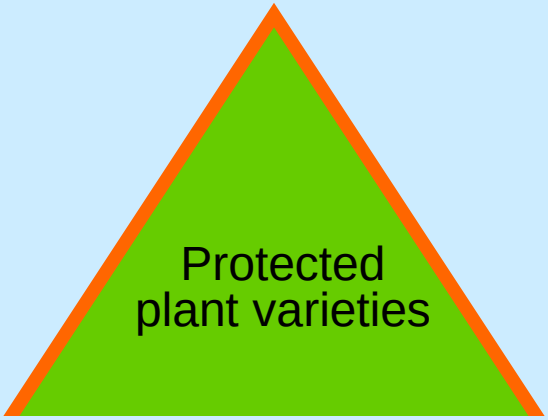
#14 *Burkina Faso** 0.3 Million Has. Cotton

#8 *South Africa** 2.9 Million Has. Maize, Soybean, Cotton

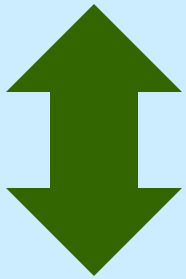
#21 *Sudan* <0.05 Million Has. Cotton

* 18 biotech mega-countries growing 50,000 hectares, or more, of biotech crops.

Source: Clive James, 2012.


Protected
plant varieties

BREEDERS' RIGHTS



FARMERS' BENEFITS

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

– 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.*

PLANT BREEDING THE ECONOMIC IMPACT

1.2 million European farmers and farm workers would be

30% worse off without plant breeding, earning €7,000 less annually (on average), and putting rural jobs at risk.

By 2030, this figure could be up to €14,000.

Research source: http://bit.do/plantetp-HFFAResearch
More info: www.plantetp.org

STUDY in VIET NAM
(Noleppa, S. (2017) (interim report))

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 %**

STUDY in VIET NAM
(Noleppa, S. (2017) (interim report))

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
(Noleppa, S. (2017) (interim report))

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

(more than the annual GDP of 40 countries)

UPOV

UPOV MISSION STATEMENT

"To provide and promote an **effective system of plant variety protection (PVP)**, […]"

Scope of the PBR

1. **Duration**
2. **Acts covered**
3. **Material covered**
4. **Varieties covered**
5. **Exceptions**

MINIMUM DURATION OF PROTECTION

TREES and VINES **25 years**

OTHER PLANTS **20 years**

to be counted from the date of grant

- Sustained and long-term breeding efforts are only worthwhile if there is a chance to be rewarded for the investment made
- It takes a long time to develop a successful plant variety
  (10 to 15 years in the case of many plant species)
- Not all new plant varieties are successful and, even where the varieties show significant improvements, changes in market requirements may eliminate the possibility of a return on investment

Scope of the PBR

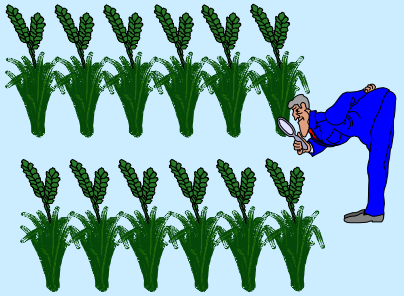
1. Duration
2. Acts covered
3. Material covered
4. **Varieties covered**
5. Exceptions

VARIETIES COVERED

In addition to the protected variety itself…

VARIETIES:

- **not** clearly **distinguishable** from the protected variety



- whose production **requires the repeated use** of the protected variety
  e.g. hybrids requiring repeated use of parent lines

- which are **essentially derived** from the protected variety …

ESSENTIALLY DERIVED VARIETIES

PURPOSE:

to ensure sustainable plant breeding development by:

- providing effective protection for the breeder and
- encouraging cooperation between breeders and developers of new technologies such as genetic modification

ESSENTIALLY DERIVED VARIETIES

Protected plant variety

Patented genetic element

>===<

Protected by Patent?

Protected by PBR?

- **if EDV (1991 Act only)**

Distinct

(Photo: istockphoto/valentinarr)

ESSENTIALLY DERIVED VARIETIES

...a variety shall be deemed to be **essentially derived from** another variety ("the **initial variety**") **when**

(i) it is **predominantly derived from the initial variety**, or from a variety that is itself predominantly derived from the initial variety, **while retaining the expression of the essential characteristics** that result from the genotype or combination of genotypes of the initial variety,

(ii) it is **clearly distinguishable** from the initial variety and

(iii) except for the differences which result from the act of derivation, it **conforms to the initial variety in the expression of the essential characteristics** that result from the genotype or combination of genotypes of the initial variety.

ESSENTIALLY DERIVED VARIETY?

(Photo: istockphoto/valentinarr)

UPOV/EXN/EDV/2 **Draft 7**

Predominantly derived from the initial variety

(Article 14(5)(b)(i))

- A derived variety could not, in practice, retain the expression of the essential characteristics of the variety from which it is derived unless it is almost entirely derived from that initial variety

(Photo: istockphoto/valentinarr)

UPOV/EXN/EDV/2 **Draft 7**

Predominantly derived from the initial variety

The following might be considered in relation to the notion of

“essential characteristics”:

(i) essential characteristics […] means **heritable traits […] that contribute to the principal features, performance or value of the variety**;

(ii) characteristics that are **important from the perspective of the producer, seller, supplier, buyer, recipient, or user**;

(Photo: istockphoto/valentinarr)

UPOV/EXN/EDV/2 **Draft 7**

(iii) characteristics that are **essential for the variety as a whole, including, for example, morphological, physiological, agronomic, industrial and biochemical characteristics**

(Photo: istockphoto/valentinarr)

UPOV/EXN/EDV/2 **Draft 7**

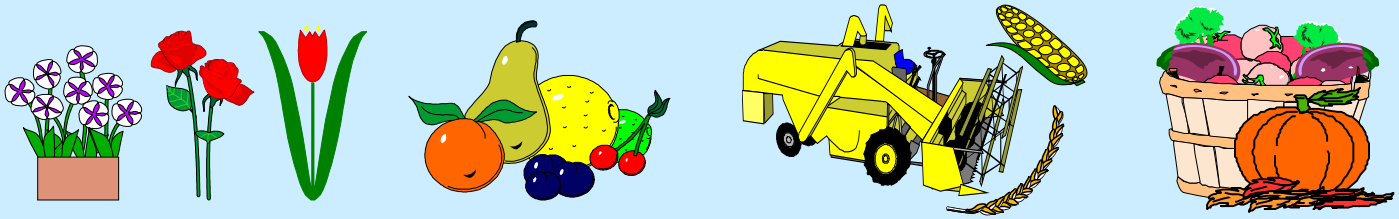
(iv) essential characteristics **may or may not be phenotypic characteristics used for the examination of distinctness, uniformity and stability (DUS)**;

(Photo: istockphoto/valentinarr)

UPOV/EXN/EDV/2 **Draft 7**

(v) essential characteristics are **not restricted to those characteristics that relate only to high performance or value** (for instance, disease resistance may be considered as an essential characteristic when the variety has susceptibility to disease);

(vi) essential characteristics **may be different in different crops/species**.



(Photo: istockphoto/valentinarr)

ESSENTIALLY DERIVED VARIETIES

- **Implementation**
  - **With regard to establishing whether a variety is an essentially derived variety, a common view expressed by members of the UPOV is that the existence of a relationship of essential derivation between protected varieties is a matter for the holders of plant breeders' rights in the varieties concerned.**

ESSENTIALLY DERIVED VARIETIES

Can EDVs be protected ?

Can EDVs be commercially exploited?

It requires the authorization of the

PBR holder of the initial variety

and of the PBR holder of the EDV

Scope of the PBR

1. Duration
2. Acts covered
3. Material covered
4. Varieties covered
5. **Exceptions**

EXCEPTIONS TO THE BREEDER'S RIGHT (1991 Act)

Compulsory

Acts done:

- **privately and for non-commercial purposes**
- for experimental purposes
- breeding other varieties (breeder's exemption")

Optional

Farm-saved seed

EXCEPTIONS TO THE BREEDER'S RIGHT

- Compulsory

  (i) Acts done privately and for non-commercial purposes

- propagation of a variety by a **farmer exclusively** for the production of a **food crop to be consumed entirely by that farmer and the dependents of the farmer** living on that holding

therefore

"subsistence farming" where these constitute acts done privately and for non-commercial purposes, may be considered by a UPOV member to be excluded from the scope of the breeder's right

Acts <u>Possibly falling</u> within the scope of the exception

EXCEPTIONS TO THE BREEDER'S RIGHT (1991 Act)

Compulsory

Acts done:

- privately and for non-commercial purposes
- for experimental purposes
- breeding other varieties (breeder's exemption")

Optional

Farm-saved seed

OPTIONAL EXCEPTION TO THE BREEDER'S RIGHT

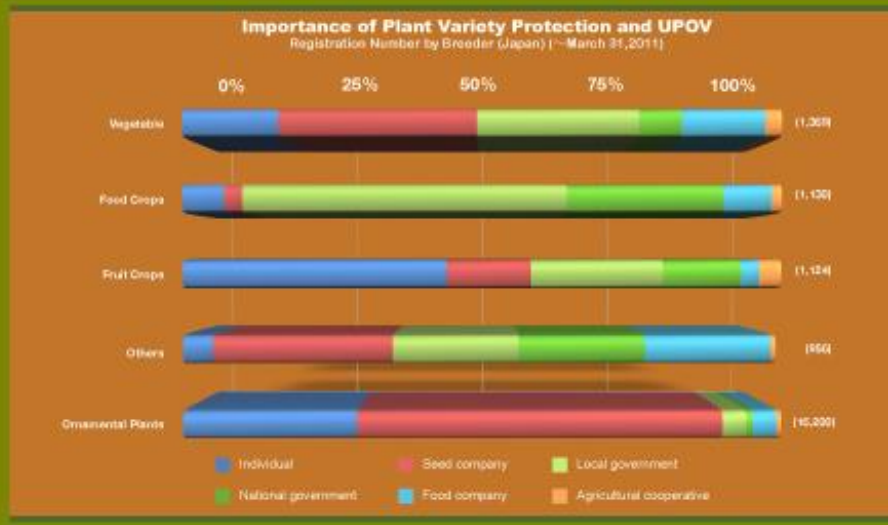
A Contracting Party may restrict the breeder's rights in order to permit farmers to use*:*

for propagating purposes on their own holdings

the product of the harvest obtained on their own holdings from the protected variety within reasonable limits subject to safeguarding legitimate interests of the breeder

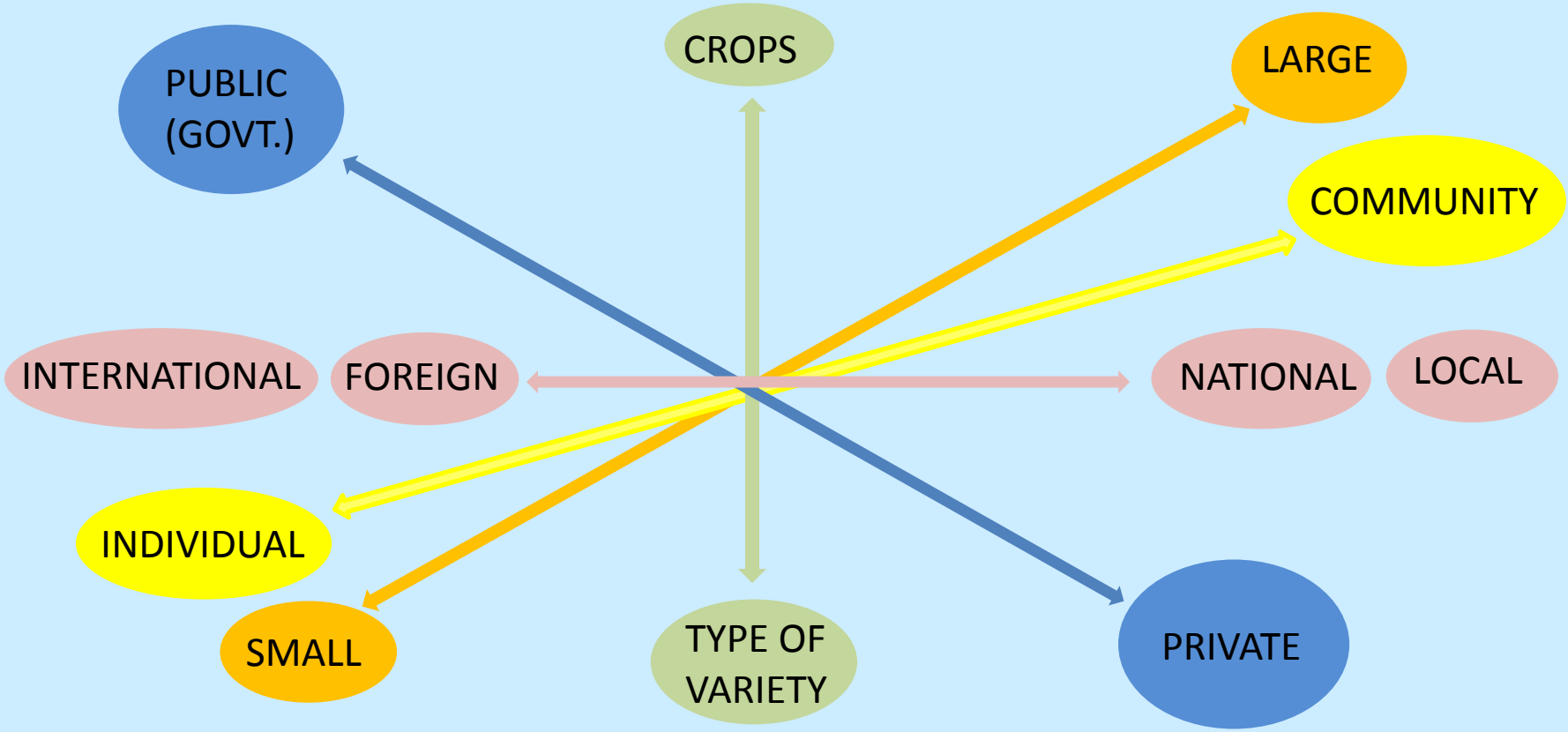
Who can protect a plant variety?

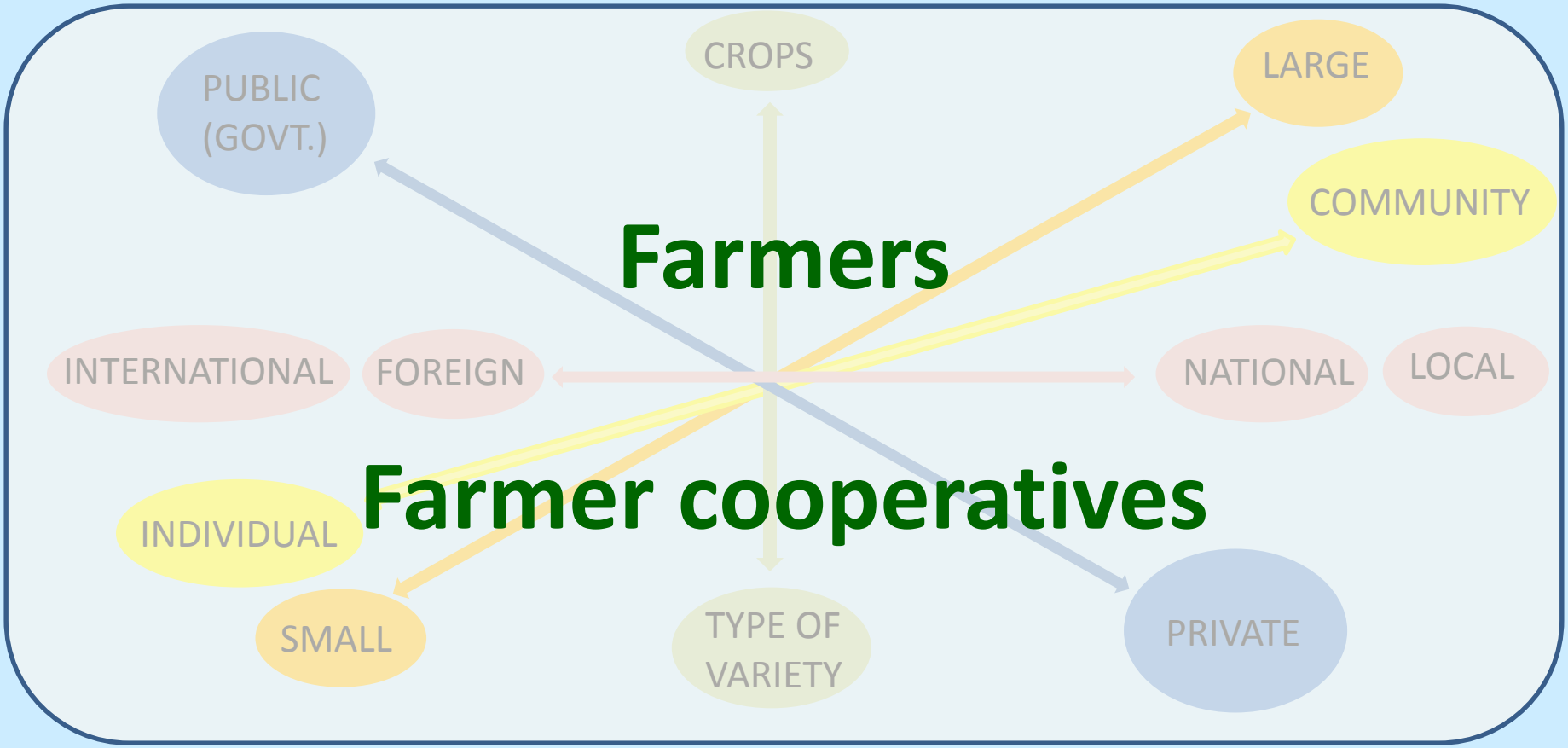
There are no restrictions on who can be considered to be a breeder under the UPOV system: a breeder might be an individual, a farmer, a researcher, a public institute, a private company etc.



Japan Registration Case Study

(click to see full view)


CROPS
PUBLIC (GOVT.)
LARGE
COMMUNITY
INTERNATIONAL
FOREIGN
NATIONAL
LOCAL
INDIVIDUAL
SMALL
TYPE OF VARIETY
PRIVATE


CROPS
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COMMUNITY
Farmers
INTERNATIONAL
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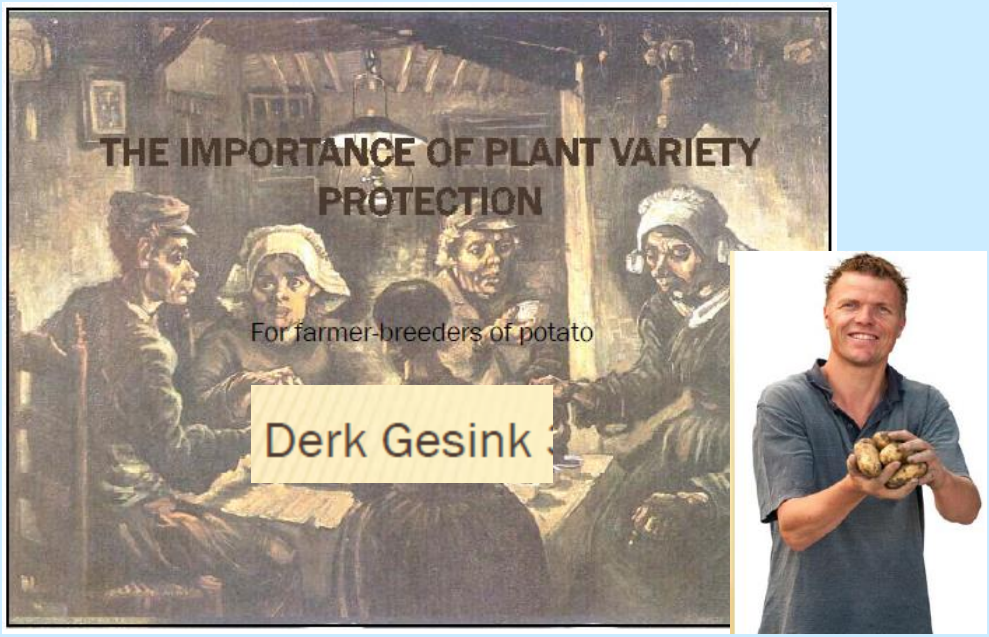
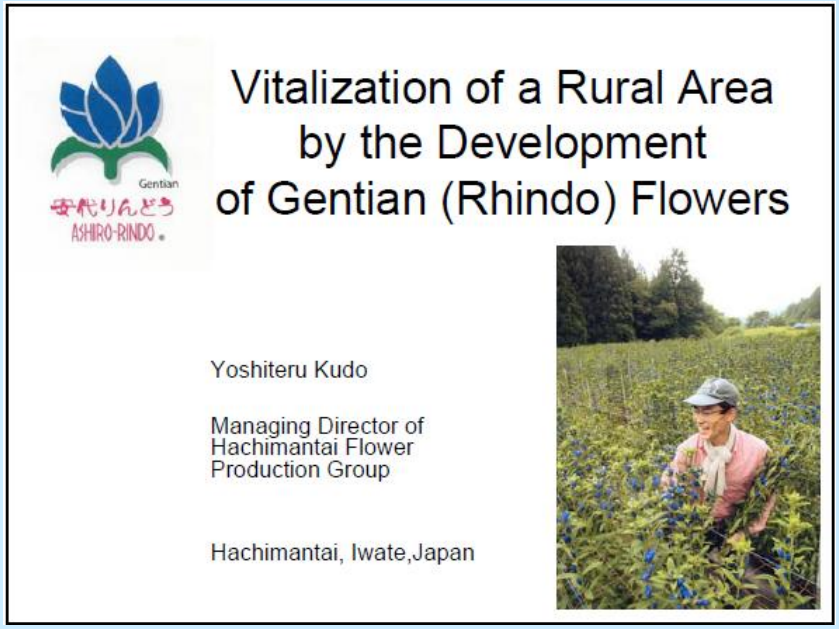
LOCAL
Farmer cooperatives
INDIVIDUAL
SMALL
TYPE OF VARIETY
PRIVATE

Farmer breeders

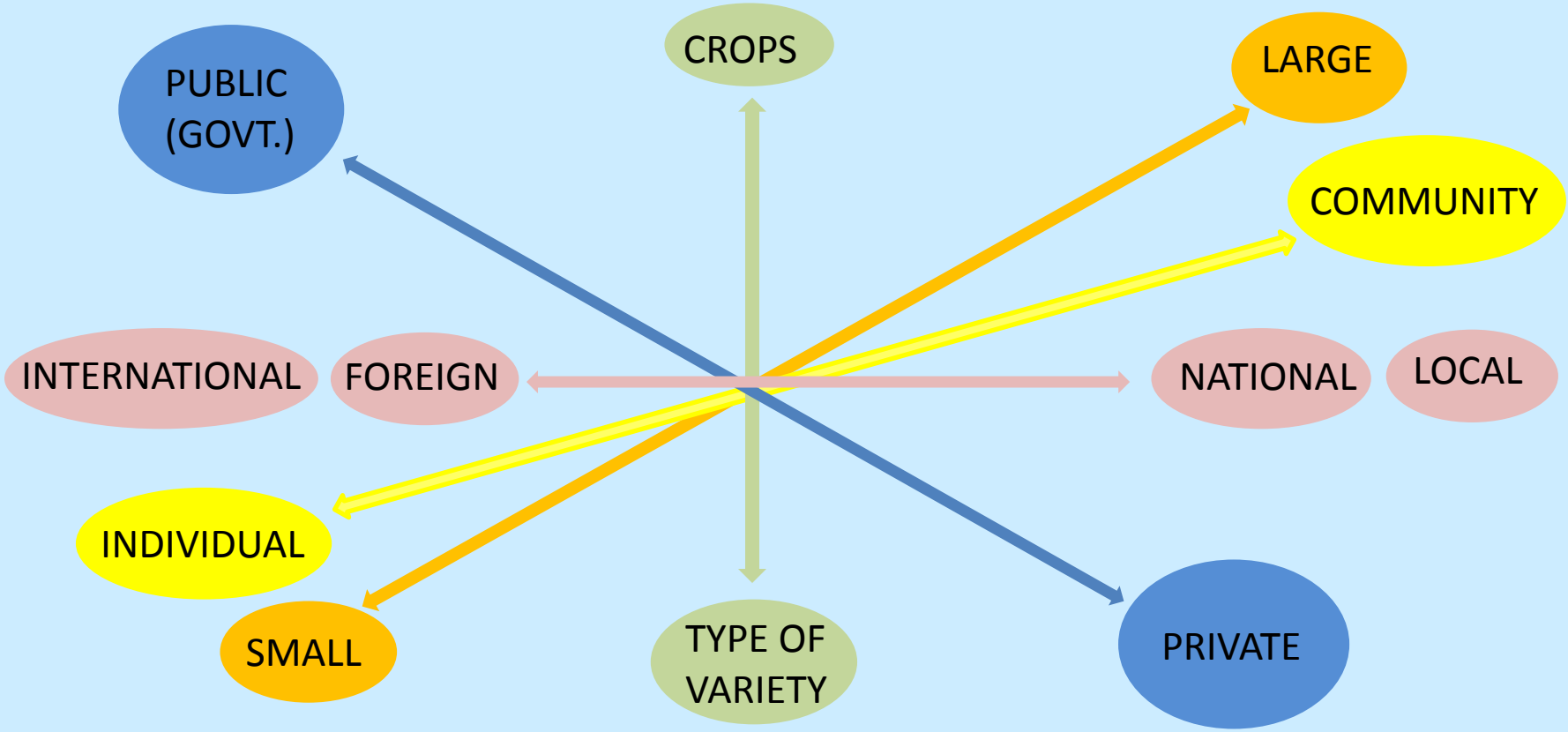




VIET NAM

PBR Applications in 2015

- **Total** **148** **applications**
- **Farmer breeders** **8** **applications**
  - **Rice** **7**
  - **Orange** **1**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(Photo: iStockphoto.com/VladTeodor)

(Photo: iStockphoto.com/luoman)

(Photo: istockphoto/saiyood)

Breeder Performance Test Trials

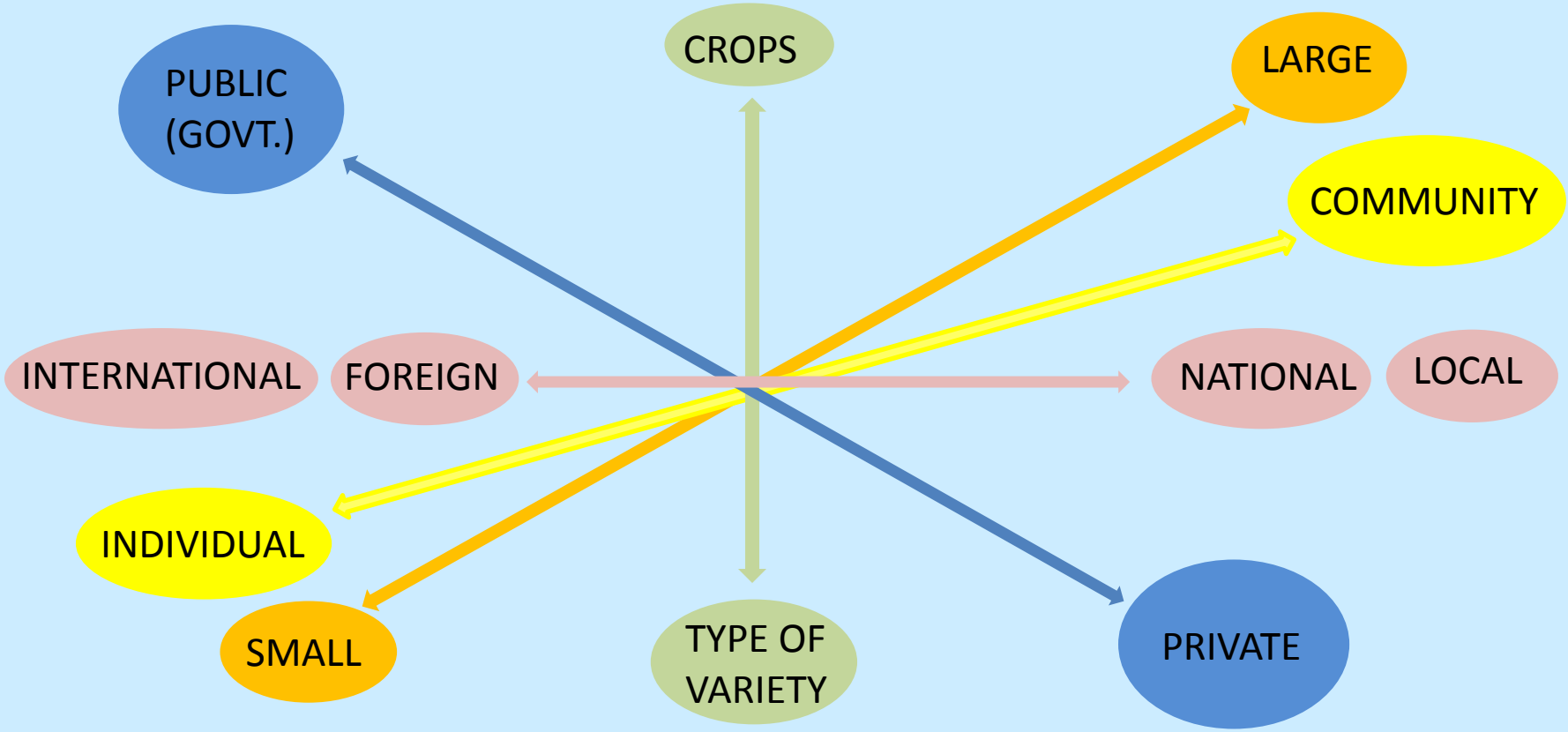
(Photo: Dupont/Pioneer)

ARC • LNR
Excellence in Research and Development

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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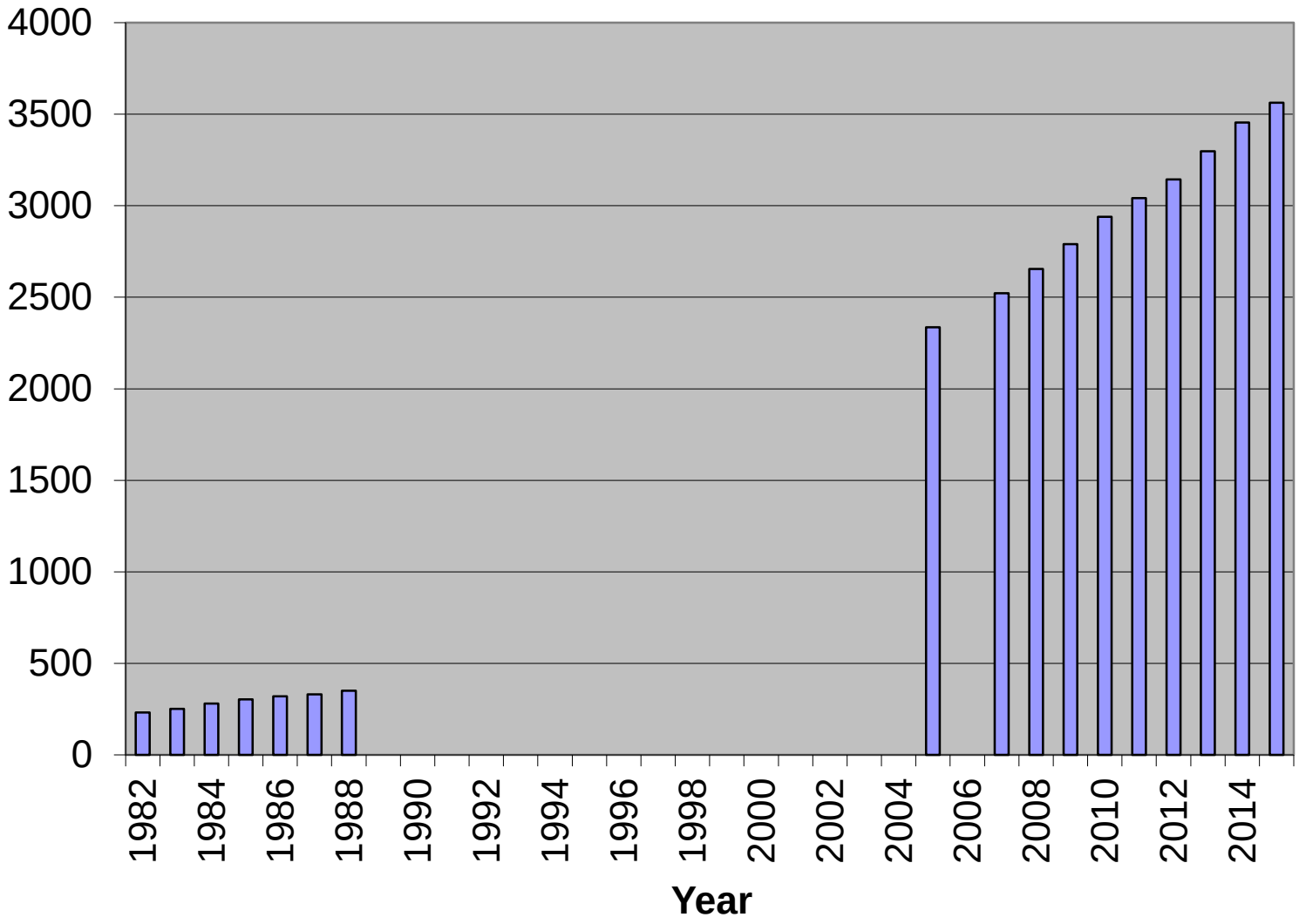
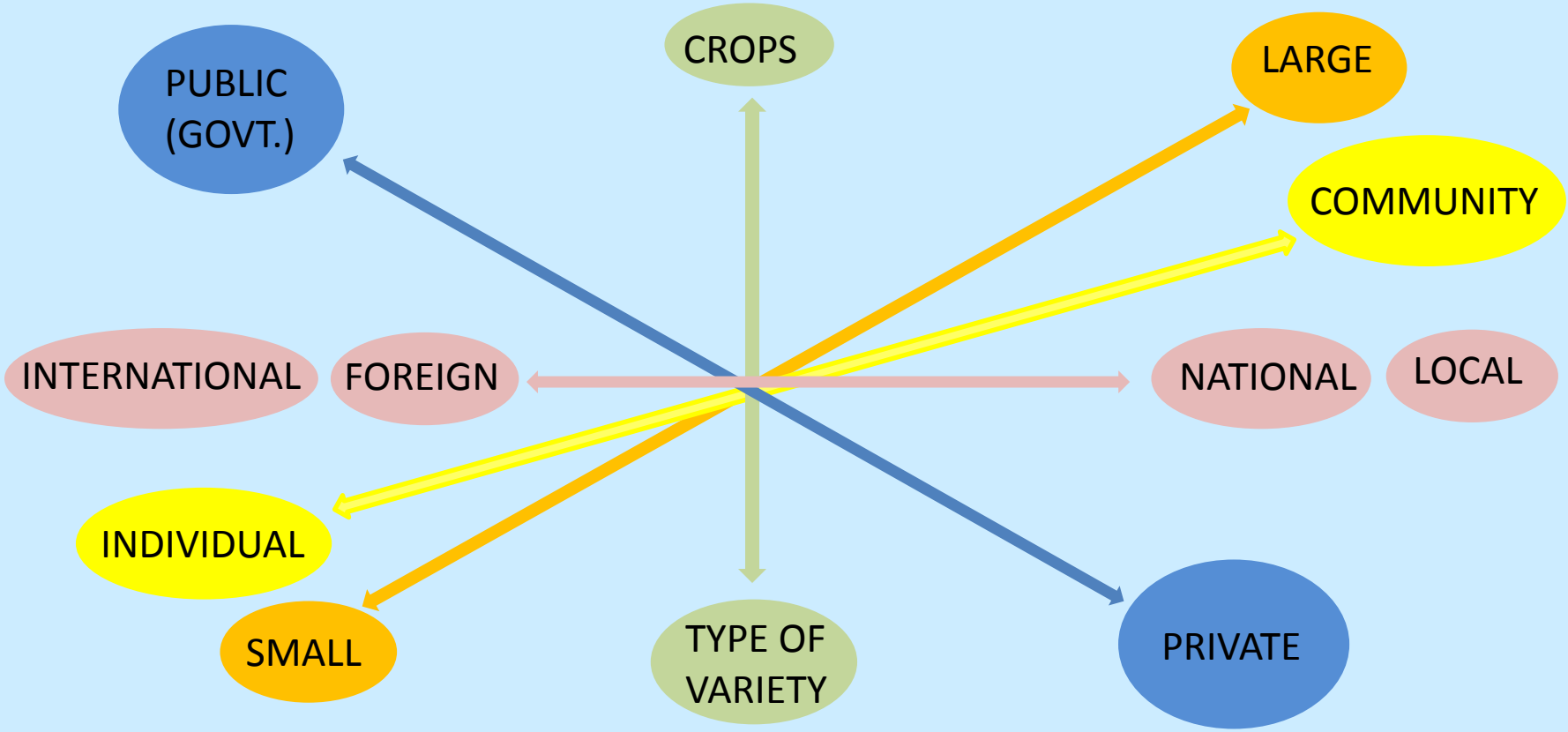
Number of plant genera and species for which protection sought (UPOV Members)

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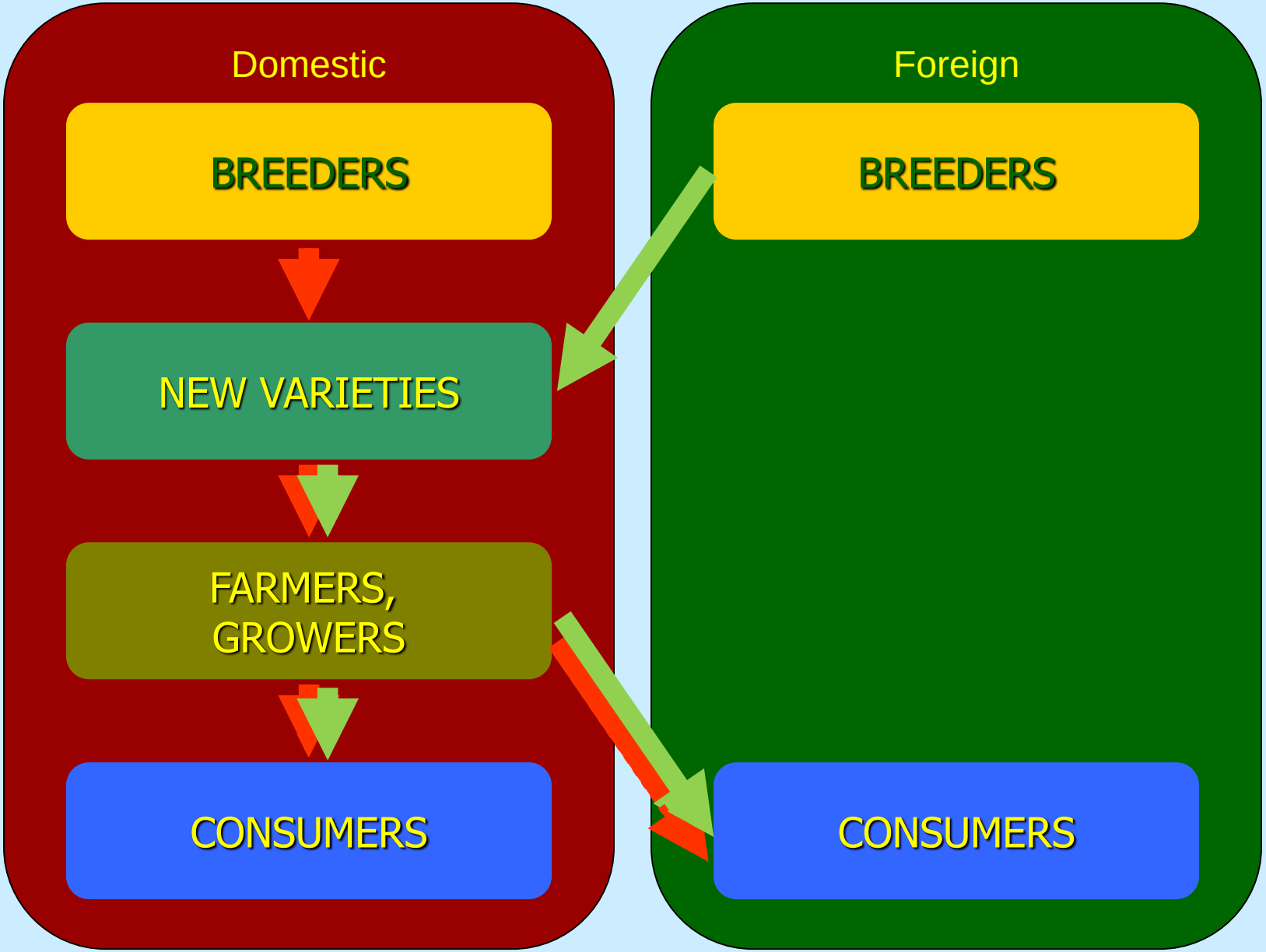
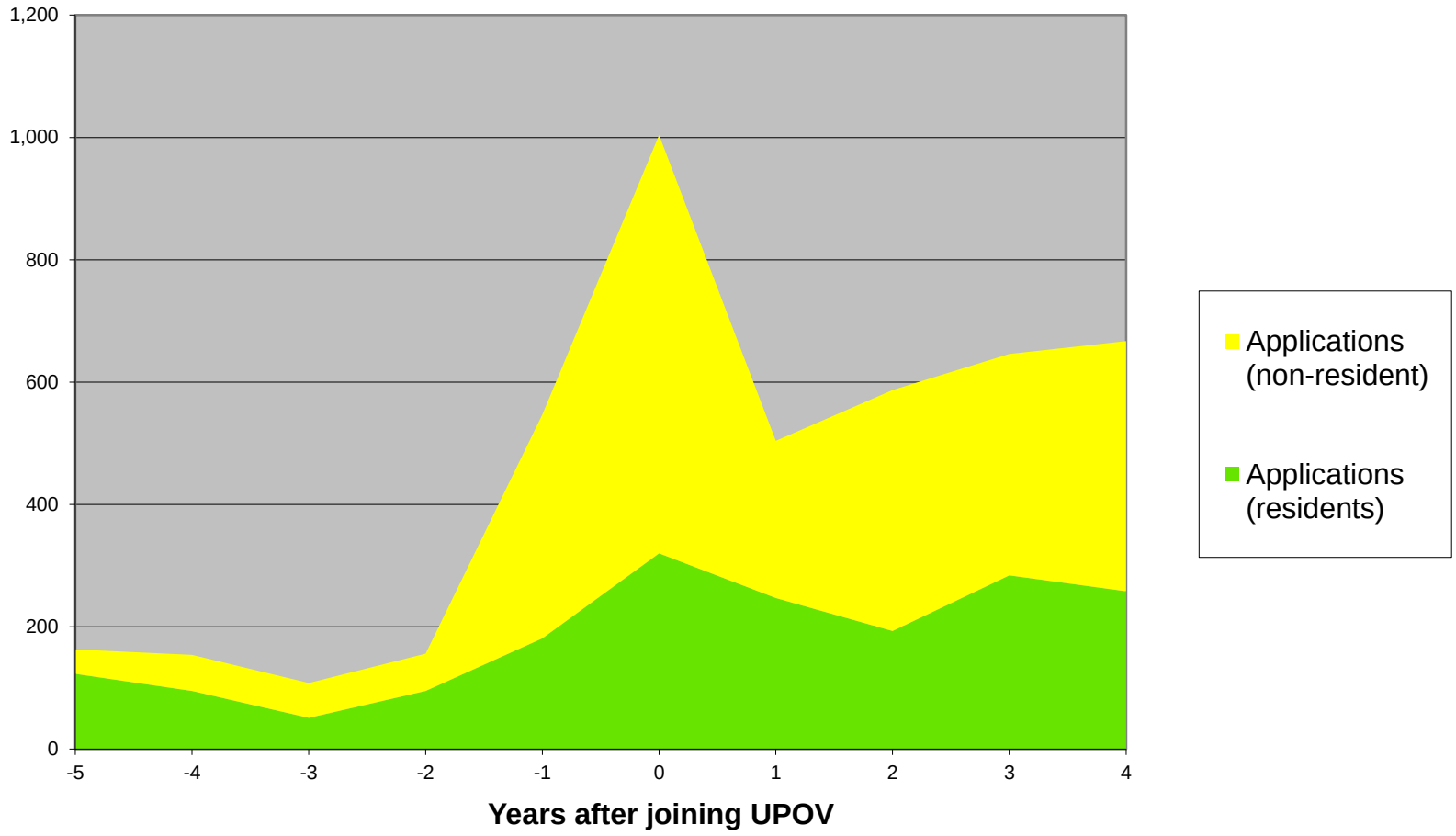
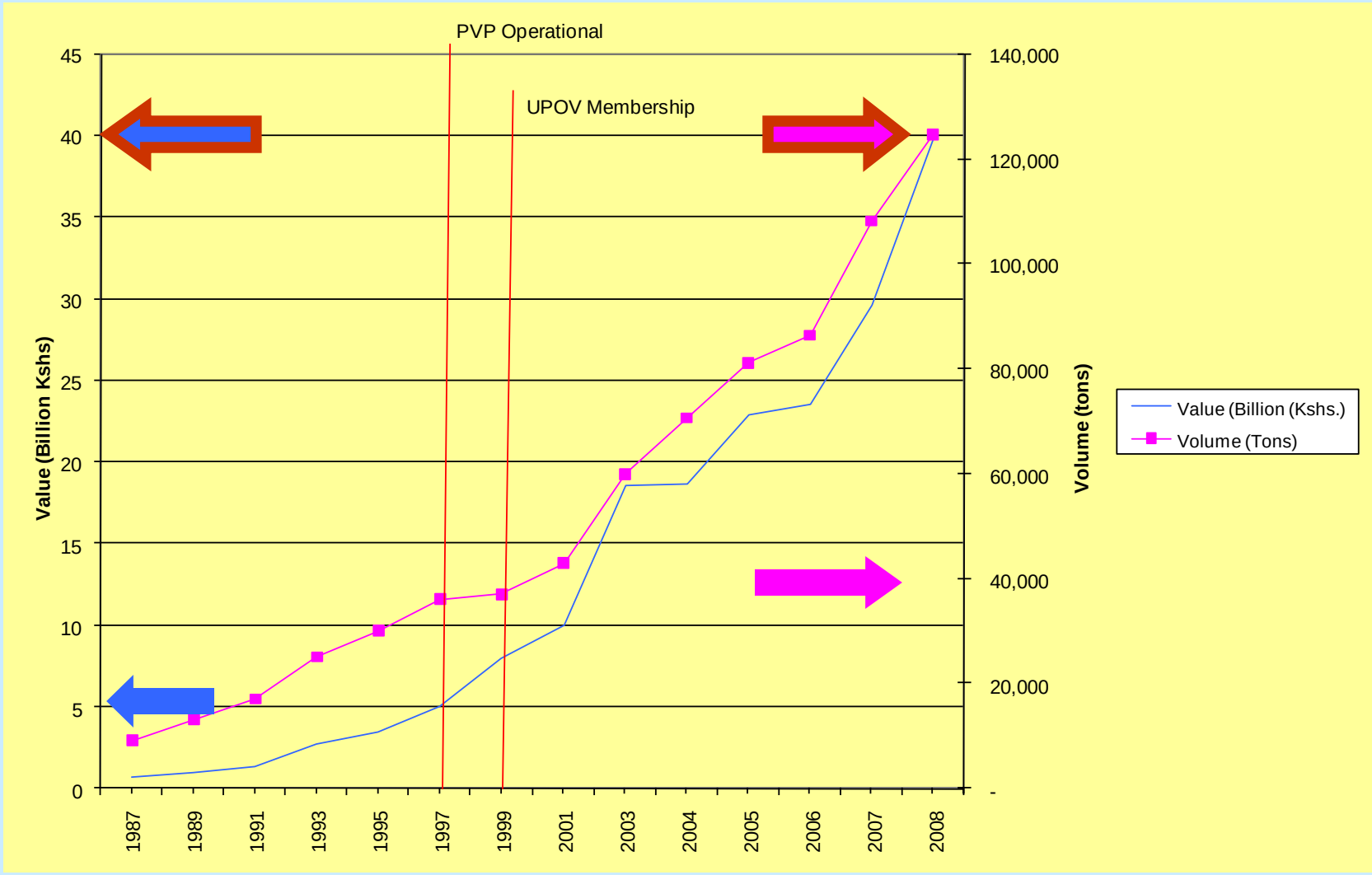

Domestic
BREEDERS
NEW VARIETIES
FARMERS,
GROWERS
CONSUMERS
Foreign
BREEDERS
CONSUMERS

Latin America Countries acceding to UPOV between 1994 & 2000

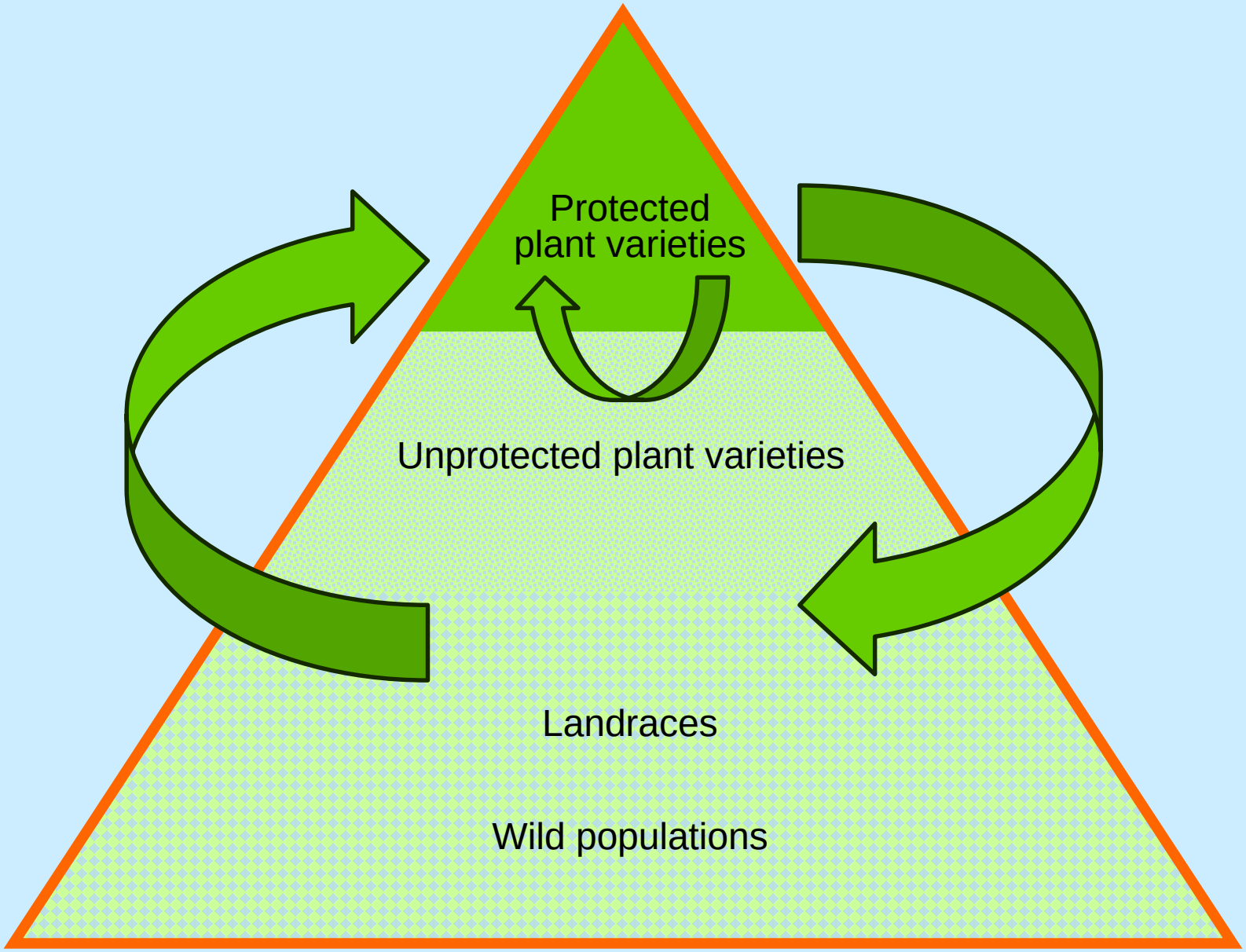


International Market Development

Export of Kenyan Cut Flowers



Breeding with protected varieties: no restrictions under UPOV Convention



BREEDERS' RIGHTS

FARMERS' BENEFITS

NEEDS OF SOCIETY