SAA

Seed Association of the Americas

The importance of PVP for the Ag. value chain

APEC 2017 – Vietnam – Diego Risso

SAA Vision

"The Seed Association of the Americas is the globally recognized leading authority, representing with a unified voice, all common interests for the seed industry in the Americas".

SAA Seed Association of the Americas

A regional approach with a...

...global vision

Current & Future challenges

Less land

Less water

Less resources from gov. R&D

Climate change

Increasing regulations

From R&D+i ➡ to ➡ adoption and welfare

Roles of Seed industry:

- Investing in R&D+i
- Generating new technologies associated to seeds
- Facilitating access to new technologies – *regulatory issues*
- Permanent dialogue with government *(Regulators & Policy makers)*
- Being a strategic partner of Farmers
- Contributing to development and contributing to social welfare

What is the pillar to support this? ➡ IP = UPOV´91

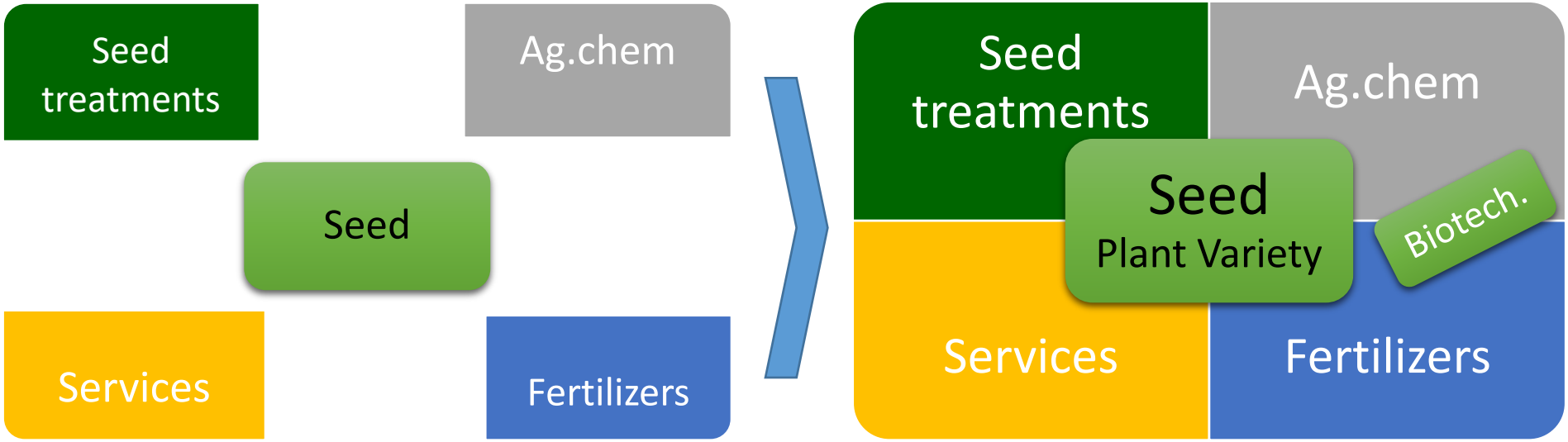
Core business decisson: "The seed" = technology driver

Before:

Decisions on inputs where taken isolated

Today:

Decisions are integrated but the plant variety is the core while others are taken depending on the variety!



Source:

Platform for development and access to new technologies:

¡ INTERACTION !
Government & Seed Industry

UPOV

National

Regional

International

R + D

Stakeholders Chain

Farmers

Facilitating: Access to new technologies

Consumers

- Universities
- Research Institutes
- Seed Co.:
  - Family own
  - National
  - Multinational

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Now we know the framework,

we need to know how to

implement & benefit from it!

Let´s discuss & analyze a real case!

GENERATING VALUE IN THE SOYBEAN CHAIN THROUGH ROYALTY COLLECTION: AN INTERNATIONAL STUDY

The need for IP protection & Royalty Collection

The South America´s Case

SEED IS LIFE
ISF
International Seed Federation

SAA Seed Association of the Americas

6. Value-Capture Systems as they Affect Soybeans[6]

In the field of new plant varieties and biotechnology, the value-capture system pursue three goals:

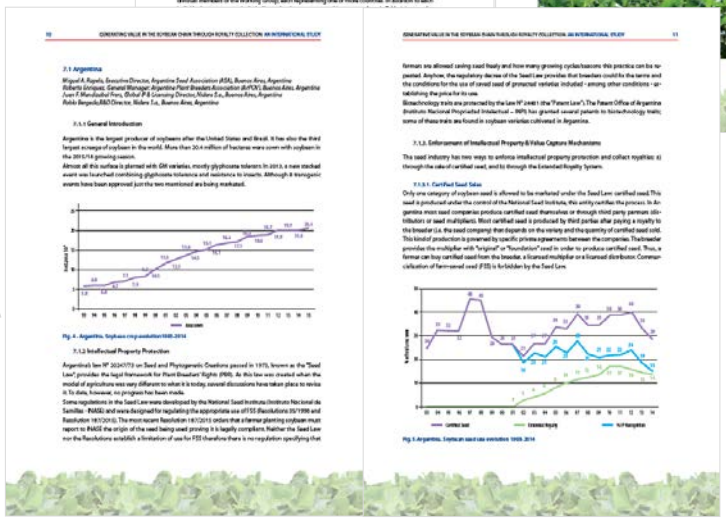
1. To create value through the germplasm and the trait or technology (both components have a value)
2. To capture all or part of such value through legal mechanisms (What mechanisms are available to capture of such value?); and
3. To sustain such value over time (How do we sustain the value creation and capture model?)

Up to 1990, existing commercial soybean plant varieties were derived exclusively from traditional plant breeding methods and, therefore, the only right available for their protection was the Plant Breeder's Rights provided in the UPOV Convention. From 1990 onwards, transgenic varieties were introduced and in many cases these varieties contained powered traits and technologies (PTT). In fact, as previously described, the complex situation of "coexistence of rights" originated. This scenario potentially becomes even more complex, since patent owners may be individuals, corporations, or consortiums of public and private institutions. The situation is yet further complicated by the fact that a biotechnological event may be protected by multiple patents and these may be owned by different entities. For example, when Ingo Potrykus completed the development of the "golden rice" at his university institute, he obtained a licensing agreement for 40 patents owned by 32 different public and private institutions.[7] Finally, the accumulation of events ("stacking") seems to be the trend followed by the biotechnological revolution. A clear example is seen in the development of maize hybrids with stacked genes that took place in the US. In this case, hybrids with one or more events have decreased in frequency, whereas hybrids with three or more events are exponentially increasing.

Simultaneously, in other territories, e.g. the European Union and China, the only soybean varieties approved for sowing are of conventional type. In these cases, systems for Royalty Collection are quite similar to those for the wheat crop.

7. Results of the International Study

Data collected on wheat from the 12 seed markets investigated during the study were presented by individual members of the Working Group, each representing one or more countries. In addition to each



7.1 Argentina

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7.1.1 General Introduction

Argentina is the largest producer of soybeans after the United States and Brazil. It has also the third largest acreage of soybean in the world. More than 20.4 million of hectares were sown with soybean in the 2013/14 growing season.

Almost all this surface is planted with GM varieties, mostly glyphosate tolerant. In 2013, a new stacked event was launched combining glyphosate tolerance and resistance to insects. Although 8 transgenic events have been approved just the two mentioned are being marketed.

Fig. 6. Argentina. Soybean crop evolution 1969-2014

7.1.2 Intellectual Property Protection

Argentina's law N° 20247/73 on Seed and Phytogenetic Creations passed in 1973, known as the "Seed Law", provides the legal framework for Plant Breeders' Rights (PBR). At this law was created when the model of agriculture was very different to what it is today, several discussions have taken place to revise it. To date, however, no progress has been made.

Some regulations in the Seed Law were developed by the National Seed Institute (Instituto Nacional de Semillas - INASE) and were designed for regulating the appropriate use of FSS (Resolutions 35/1998 and Resolution 187/2010). The most recent Resolution (187/2010) orders that a farmer planting soybean must report to INASE the origin of the seed being used proving it is legally compliant. Neither the Seed Law nor the Resolutions establish a limitation of use for FSS therefore there is no regulation specifying that

farmers are allowed saving seed freely and how many growing cycles/seasons this practice can be repeated. Anyhow, the regulatory decree of the Seed Law provides that breeders could fix the terms and the conditions for the use of saved seed of protected varieties included - among other conditions - establishing the price for its use.

Biotechnology traits are protected by the law N° 24481 (the "Patent Law"), The Patent Office of Argentina (Instituto Nacional Propiedad Intelectual – INPI) has granted several patents to biotechnology traits; some of these traits are found in soybean varieties cultivated in Argentina.

7.1.3. Enforcement of Intellectual Property & Value Capture Mechanisms

This seed industry has two ways to enforce intellectual property protection and collect royalties: a) through the sale of certified seed, and b) through the Extended Royalty System.

7.1.3.1. Certified Seed Sales

Only one category of soybean seed is allowed to be marketed under the Seed Law: certified seed. This seed is produced under the control of the National Seed Institute, the entity certifies the process. In Argentina most seed companies produce certified seed themselves or through third party partners (distributors or seed multipliers). Most certified seed is produced by third parties after paying a royalty to the breeder (i.e. the seed company) that depends on the variety and the quantity of certified seed sold. This kind of production is governed by specific private agreements between the companies. The breeder provides the multiplier with "original" or "foundation" seed in order to produce certified seed. Thus, a farmer can buy certified seed from the breeder, a licensed multiplier or a licensed distributor. Commercialization of farm-saved seed (FSS) is forbidden by the Seed Law.

Fig. 7. Argentina. Soybean seed use evolution 1969-2014

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Participants

RANK	COUNTRY	HECTARES	
1	United States	33,613,960	
2	Brazil	30,273,763	
3	Argentina	19,252,552	
4	India	10,908,000	
5	China	6,730,668	
6	Paraguay	3,500,000	
7	Canada	2,235,100	
8	Russian Federation	1,915,895	
9	Ukraine	1,792,900	
10	Bolivia	1,358,683	
11	Uruguay	1,321,400	
14	South Africa	503,000	
16	Italy	232,867	
18	Serbia	154,249	
29	France	75,800	
36	Hungary	42,980	
54	Germany	9,000	
Total world surface year 2014		**117,719,293**	
Surface represented by the 12 countries participating in this study		**91,214,671**	**77.4%**

SOURCE: FAOSTAT | © FAO 2015 Statistics Division

Information gathered

- IP Protection Mechanisms - Legal framework
- IP Protection Mechanisms - Tools for enforcement
- Political will in territory
- Who enforces / supports IPR in the territory?
- Who collects royalties?
- Economic factors
- Variety indicator
- VALUE CAPTURE MODEL
- RESULTS

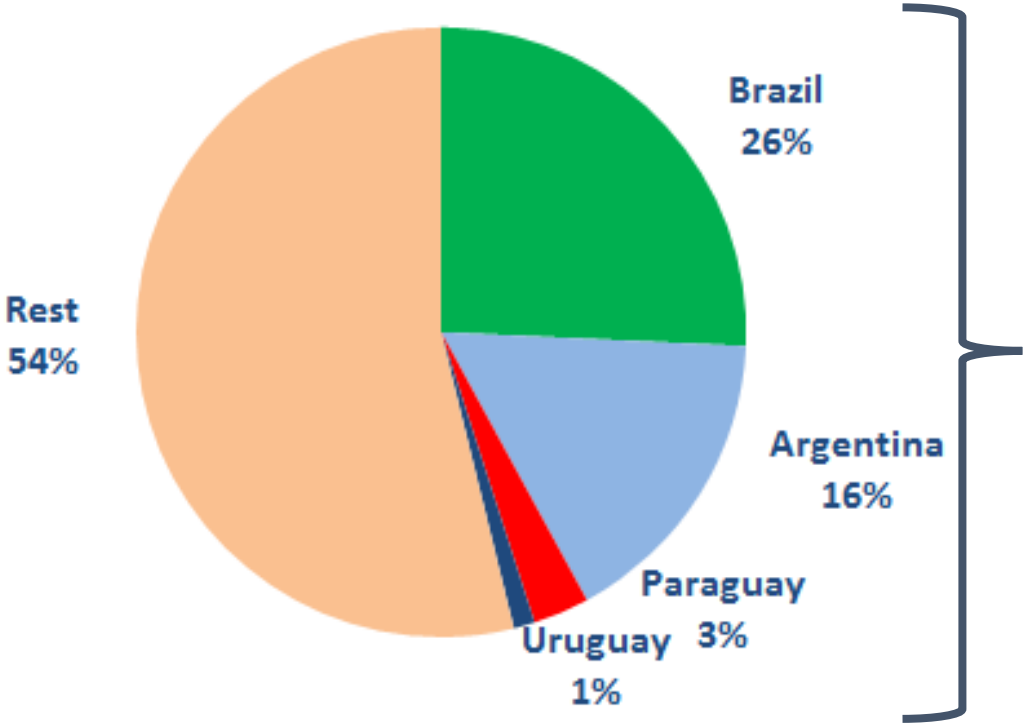
Information chart to fill

1	Crop type	Conventional & GMO
2	IP Protection Mechanisms (Legal framework)	PVP
		Seed law
		Seed law
		Other law(s)
		PVP extended to FSS
		PVP extended to harvested material
		Patent
		Patent Law
		Coexistence (PVP + Patent)
		Trade Secret
		Trademark
3	IP protection mechanisms Tools for enforcement	Certification system
		Royalty collection system
		Royalty collection system
		Contract Penalties for evasion
4	Political will in territory	Level of support for IP
		Farmers Unions' support
		Small farmers exception
5	Who enforces / supports IPR in the territory?	Government enforcement
		Government support
		Private sector

6	Who collects royalties?	For certified seed
		For FSS
		For biotech traits
7	Economic factors	Financial incentives
		Tax benefit
		Other factors?
8	Variety indicator	Perception (by the farmers) of the genetic gain
		Number of varieties protected/year
		Average lifetime variety cycle
9	VALUE CAPTURE MODEL	Is the value capture model implemented only for germplasm (no biotechnology capture)?
		Is the value capture model implemented for germplasm plus traits (joint genetics & biotecnology capture)?
		Is the value capture model implemented considering separately germplasm and traits?
10	RESULTS	'Certified' Seed Use
		FSS (royalty bearing)
		FSS use (royalty free)
		Illegal Seed (brown bagging)
		Royalty collection %
		Cost of collection %
		REMUNERATION INDICATOR

Soybean Production in Mercosur:

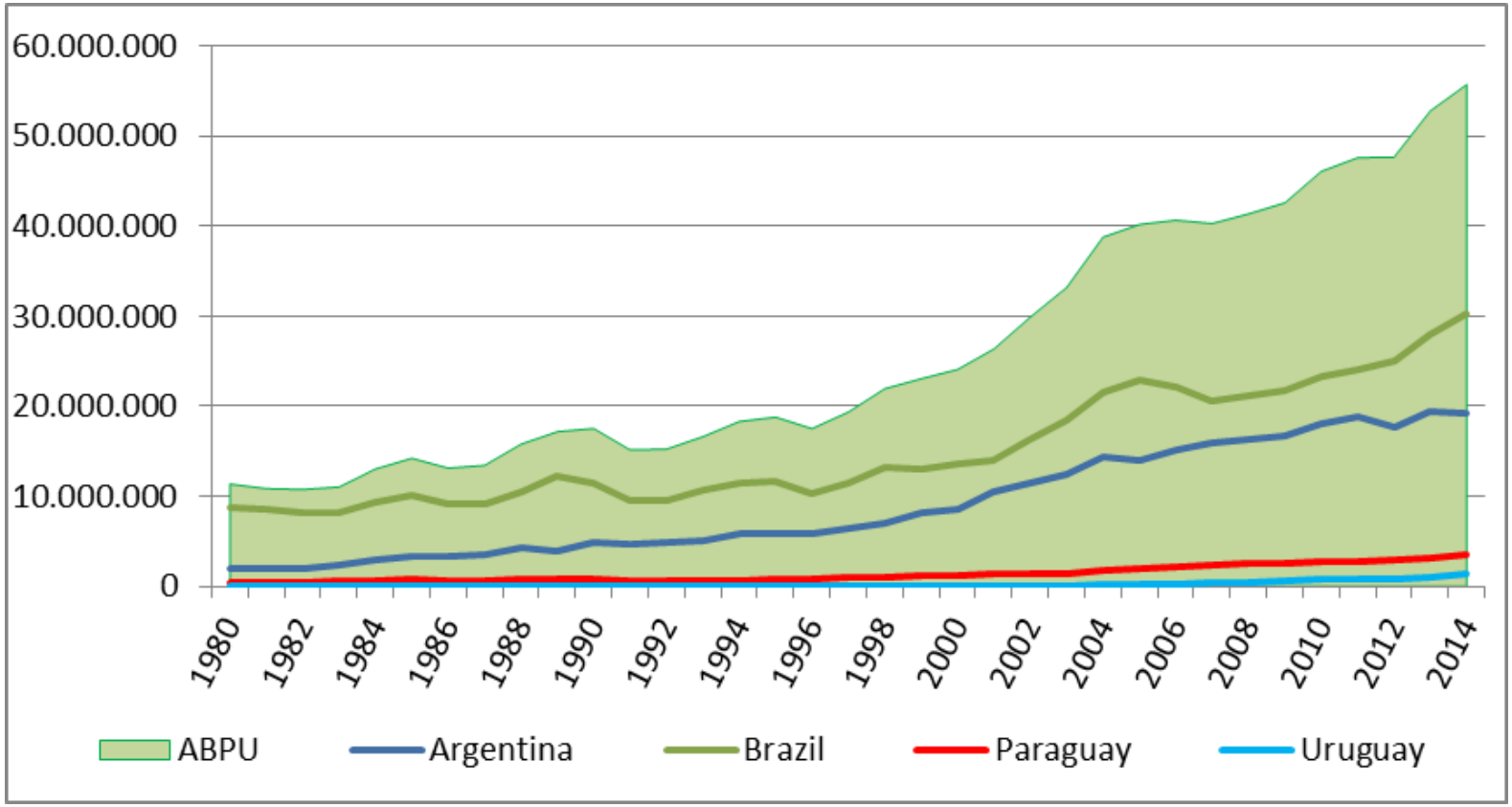
Argentina + Brazil + Paraguay + Uruguay



46 % of total worldwide area planted

54 millons has

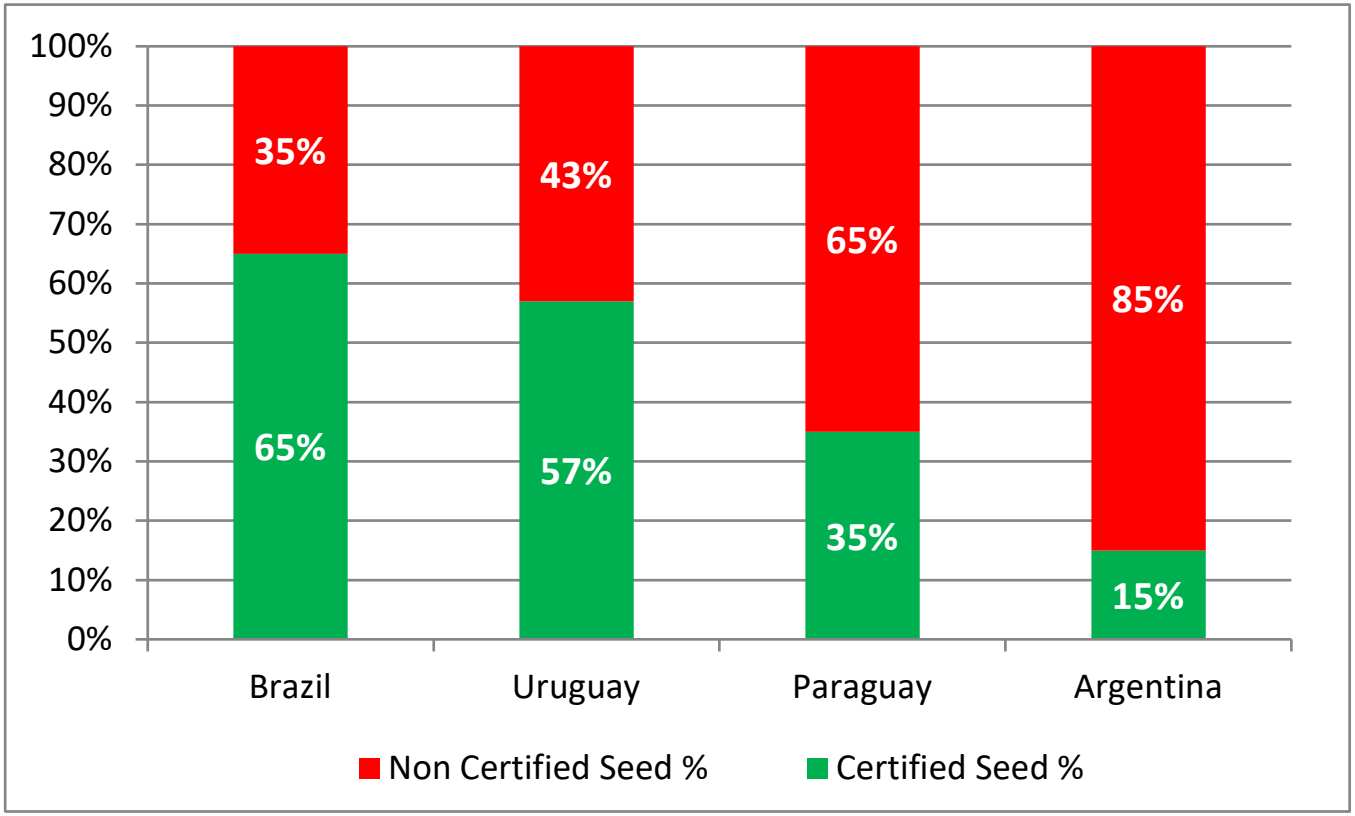
Production Evolution: ARG-BRA-PAR-URU



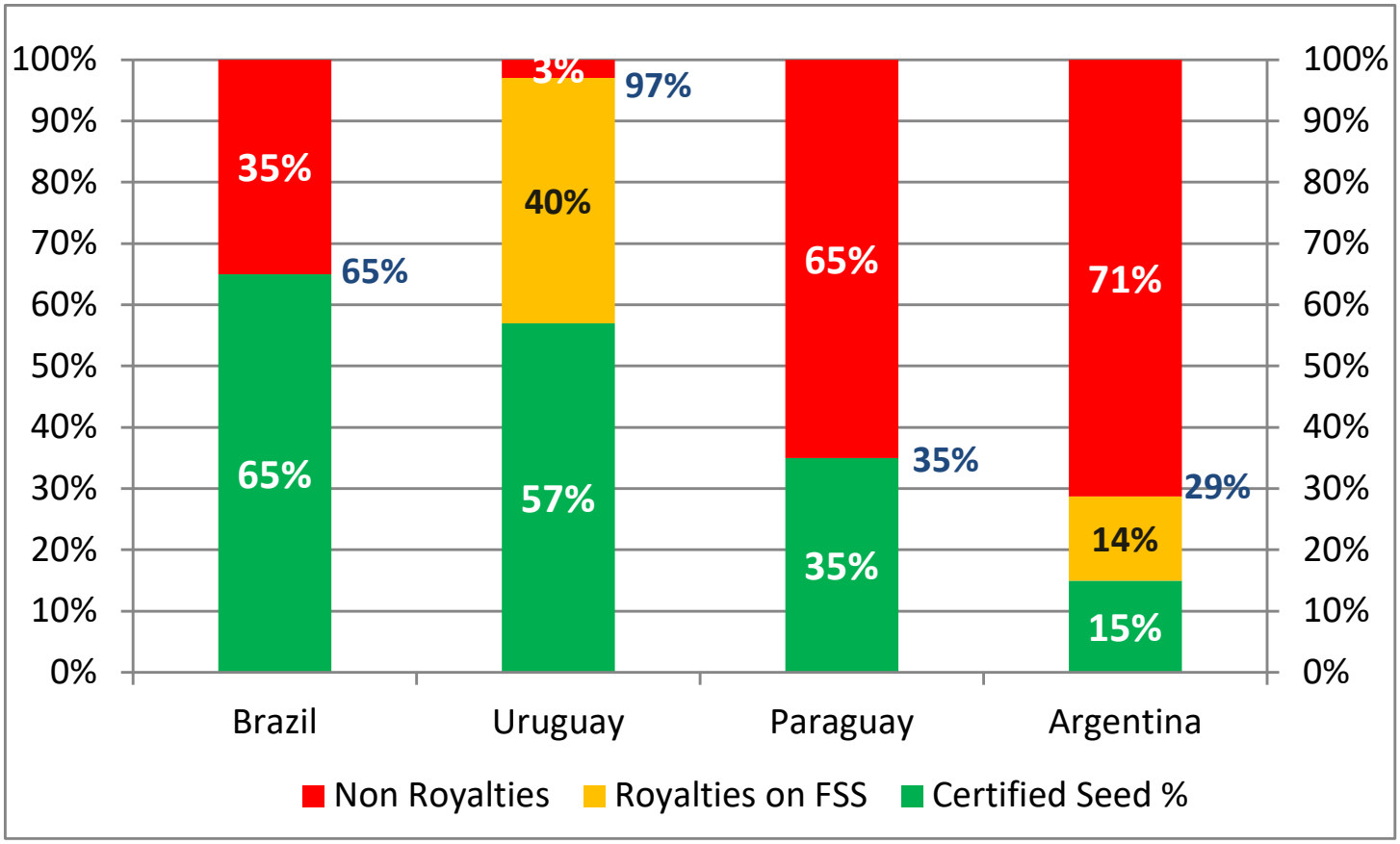
Results:

		Brazil	Argentina	Paraguay	Uruguay
	Area Planted (Mill has)	33,2	20,4	3,7	1,3
	Production (Mill Tons)	102,5	55	10	3,2
	UPOV 1978	1999	1994	1997	1994
Germplasm	Legislation	Law nº 10.711/2003 (SEEDS); Decree 5.153/2004	Act 20.247/1973 Seed and Phytogenetic Creations + Regulatory Decree + Regulations from INASE + Civil and Commercial Code	Act N° 385 (1994), decree 7797(2000); act N°988 (1996) (adhesion to UPOV)	Seed Act #16.811 (1997) based on UPOV ´78 but "updated" through the Regulatory Decree #438/04 & Law #18.469 (2009)
Germplasm	Incentives	Slim and none	Slim and none	Slim and none	Tax Incentives / Fines
Germplasm	Points of Capture	1	2	1	2
Germplasm	Moments of Capture	Purchase (CS)	Purchase (CS) Extended Royalty System (FSS) by ArPOV	Purchase (CS)	Purchase (CS) Farm Saved Seed, by UruPOV + INASE
Biotech	% Transgenic Varieties	94%	near 100%	near 100%	100%
Biotech	System	Law 9.279/1996 Industrial Propery Law + Licence Agreement with Farmer + Seed Law 10.711/2003	Law 24.481: Patent Law + Licence Agreement with Farmers	Law 1630/2000 + Licence Agreement with Farmers	Patent Law: 17.164
Biotech	Points of Capture	3	2 / 3	3	2
Biotech	Moments of Capture	Purchase (CS) Declaration (FSS) Elevator (CS or FSS)	Purchase (CS) Declaration (CS / FSS) Elevator (CS or FSS)	Purchase (CS) Declaration (FSS) Elevator (CS or FSS)	Purchase (CS) Farm Saved Seed, by UruPOV + INASE

Results: Certified seed vs. Farm saved seed (+ BB)



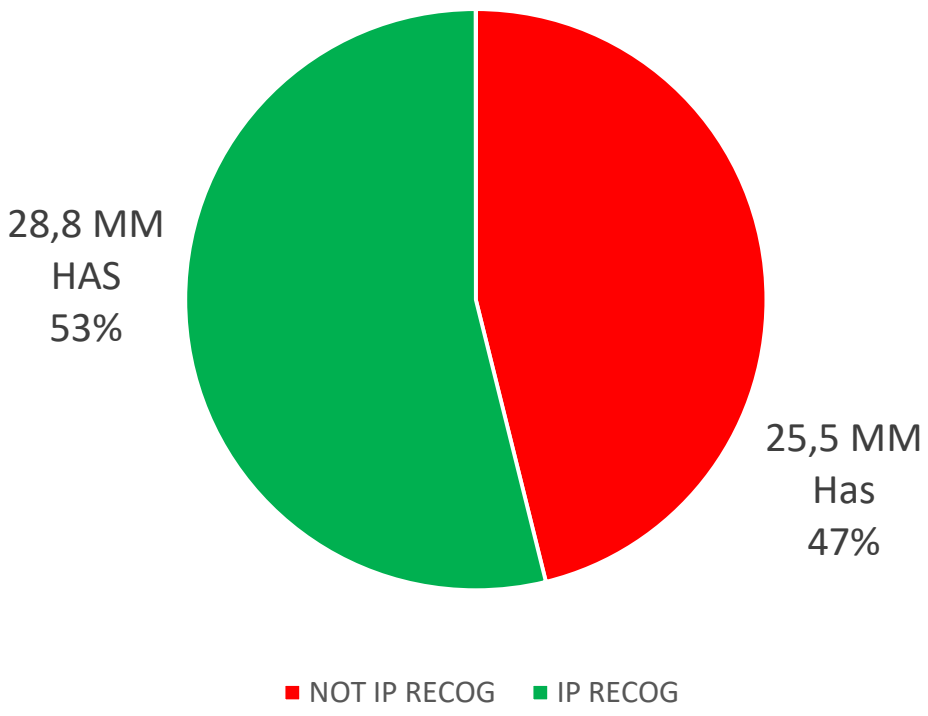
Results: Royalties paid + illegal seed practices (BB)



Results: «Remuneration indicator»

		 Brazil	 Argentina	 Paraguay	 Uruguay
	Area Planted (Mill has)	33,2	20,4	3,7	1,3
	Production (Mill Tons)	102,5	55	10	3,2
	UPOV 1978	1999	1994	1997	1994
Germplasm	Legislation	Law nº 10.711/2003 (SEEDS); Decree 5.153/2004	Act 20.247/1973 Seed and Phytogenetic Creations + Regulatory Decree + Regulations from INASE + Civil and Commercial Code	Act N° 385 (1994), decree 7797(2000); act N°988 (1996) (adhesion to UPOV)	Seed Act #16.811 (1997) based on UPOV ´78 but "updated" through the Regulatory Decree #438/04 & Law #18.469 (2009)
Germplasm	Incentives	Slim and none	Slim and none	Slim and none	Tax Incentives / Fines
Germplasm	Points of Capture	1	2	1	2
Germplasm	Moments of Capture	Purchase (CS)	Purchase (CS) Extended Royalty System (FSS) by ArPOV	Purchase (CS)	Purchase (CS) Farm Saved Seed, by UruPOV + INASE
Germplasm	Remuneration Indicator	70%	27%	35%	92%
Biotech	% Transgenic Varieties	94%	near 100%	near 100%	100%
Biotech	System	Law 9.279/1996 Industrial Propery Law + Licence Agreement with Farmer + Seed Law 10.711/2003	Law 24.481: Patent Law + Licence Agreement with Farmers	Law 1630/2000 + Licence Agreement with Farmers	Patent Law: 17.164
Biotech	Points of Capture	3	2 / 3	3	2
Biotech	Moments of Capture	Purchase (CS) Declaration (FSS) Elevator (CS or FSS)	Purchase (CS) Declaration (CS / FSS) Elevator (CS or FSS)	Purchase (CS) Declaration (FSS) Elevator (CS or FSS)	Purchase (CS) Farm Saved Seed, by UruPOV + INASE
Biotech	Remuneration Indicator	50%	No data available	90%	94%

Results: Overall PBR recognition



Main outcomes…

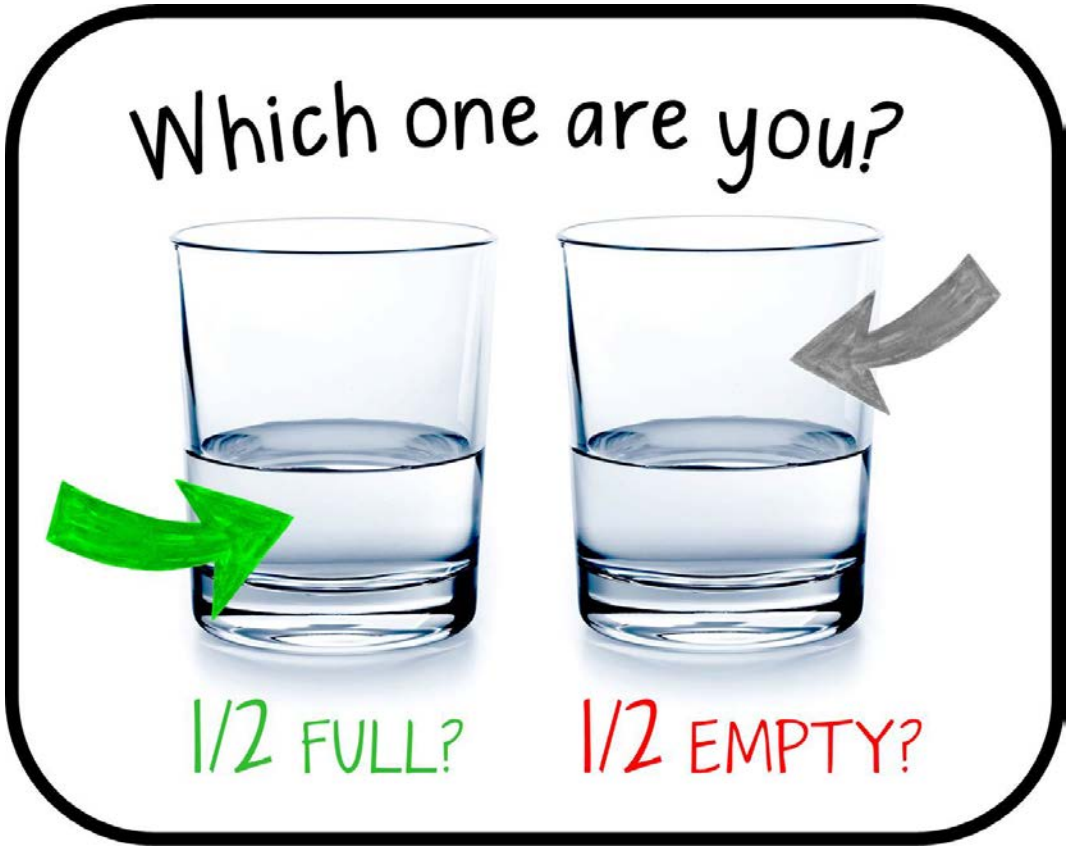
- There are multiple and diverse systems for value capture in soybean
- Results on value capture efficiency differ from one country to another depending on several factors: there is not an industry model that ensures the success of each system.
- More complexity is found in the systems due to the introduction of patent traits in the seed; there is more than one element to be protected: germplasm and biotech. events.
- Many ideas can be taken from the report to build a “tailor-made” system for a country as “one-size” does not fit all!
- Government, farmers & industry needs to work closely to find fair systems (case of Canada)

Pareto's Principle… The 80/20 Rule

"vital few and trivial many"

What we see, is where we are!

opportunities vs. threats



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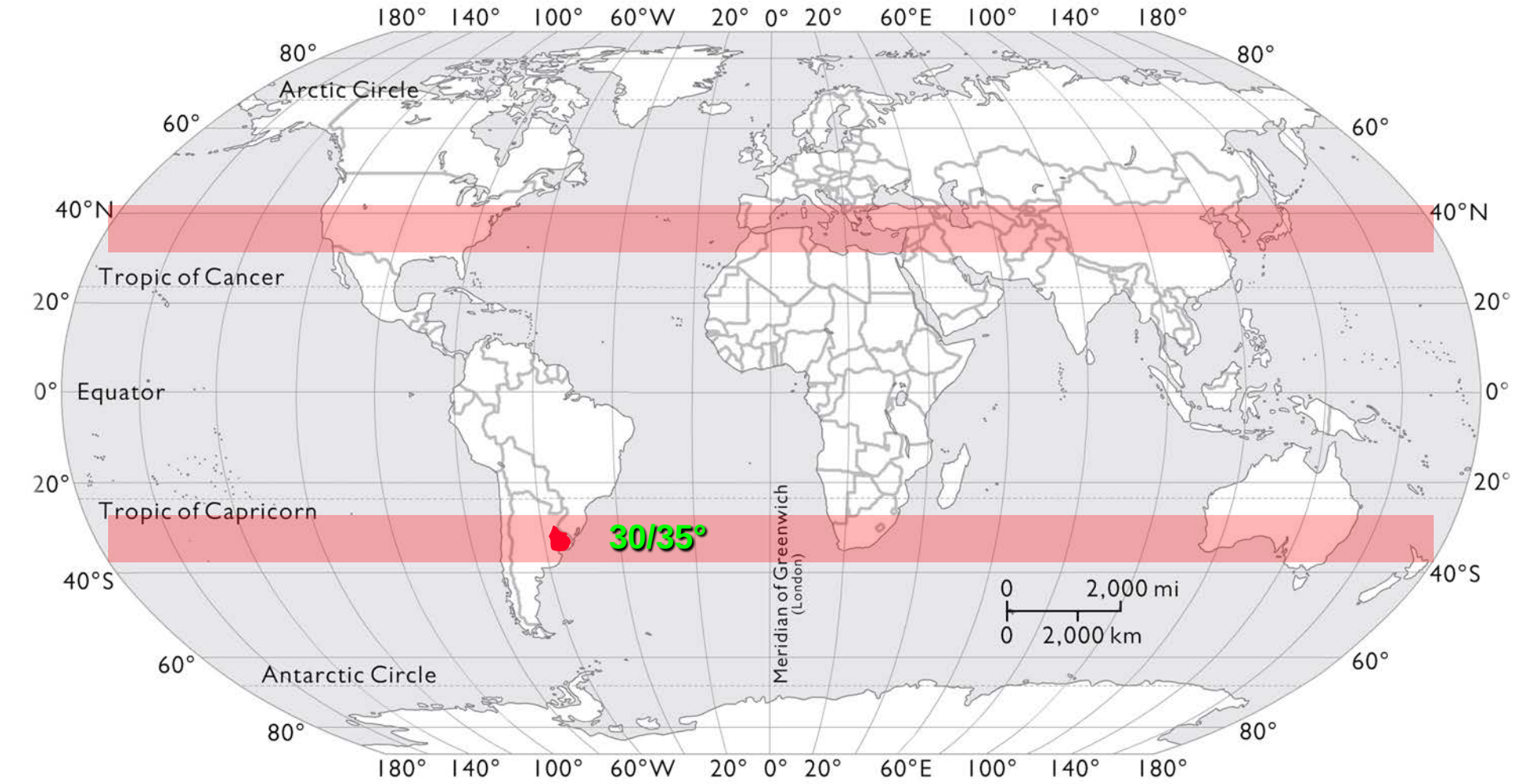
Location in the world



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UPOV 1978 Act

✓. Some definitions

✓. Provisional protection

X. Extension of PBR to harvested material

\+

✓. All genera and species

✓. Farmers privilege definition

✓. 20-25 years of protection

X. E.D.V

UPOV 1991

UPOV 1978 Act^{++}

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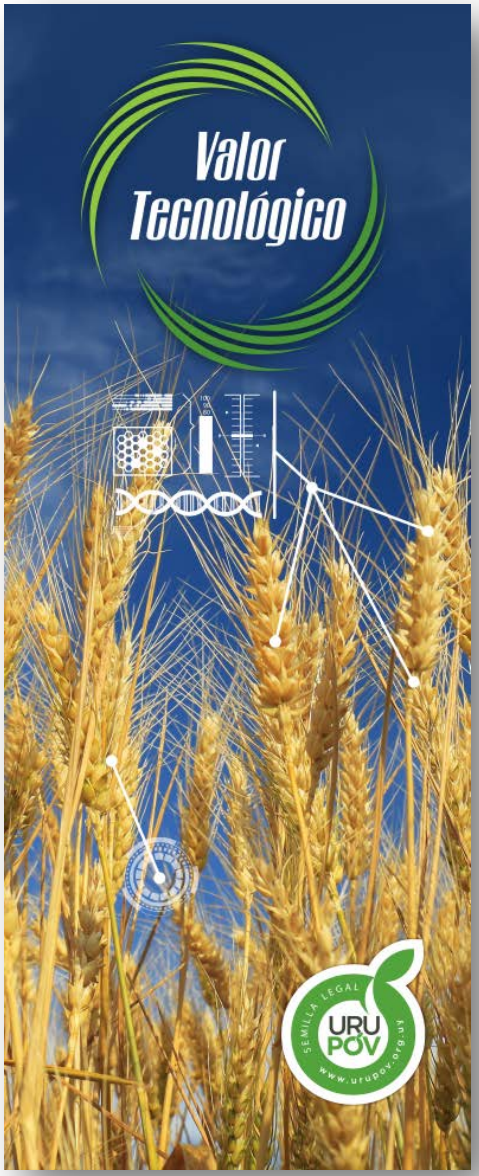
Royalty Collection



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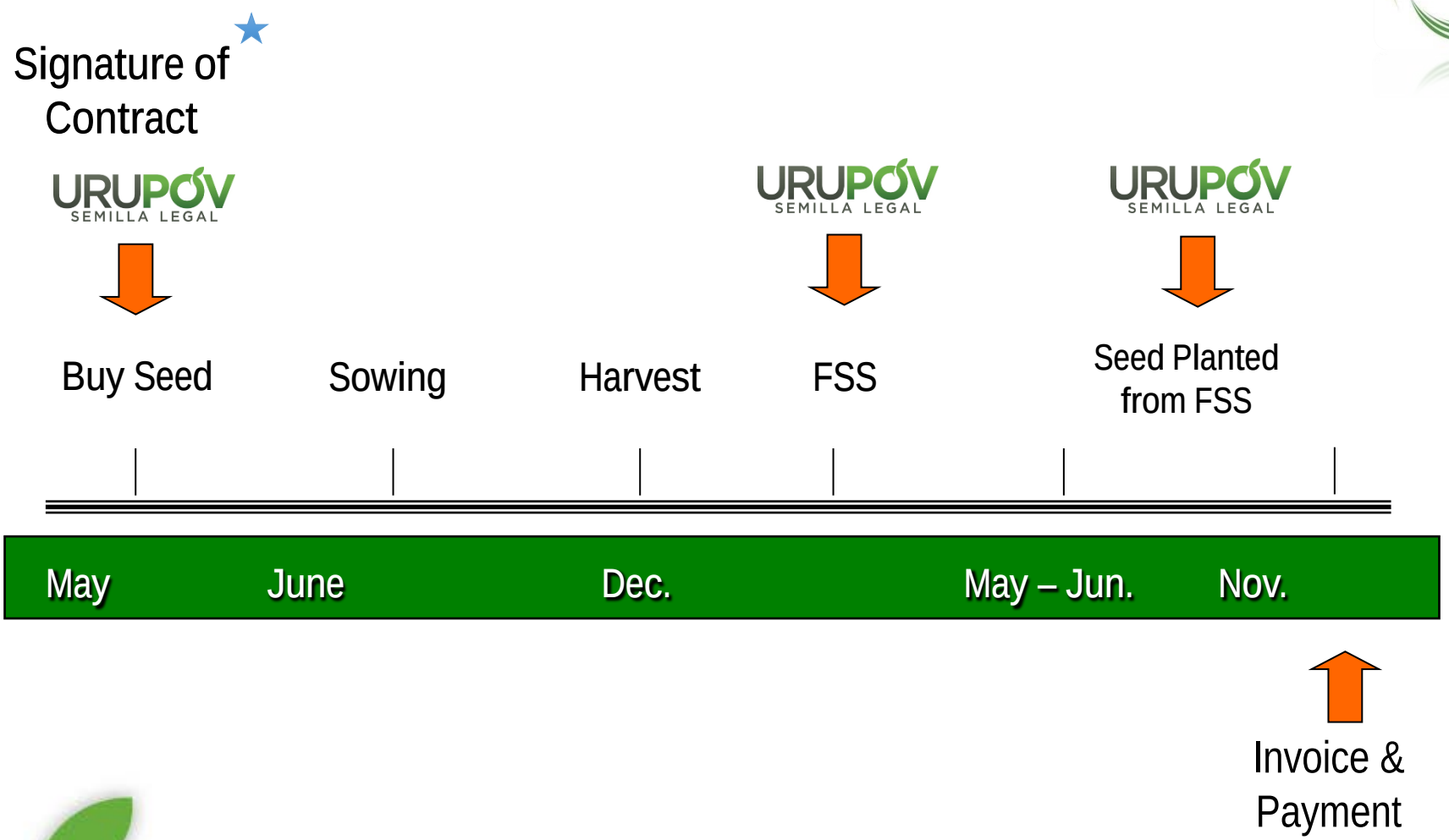
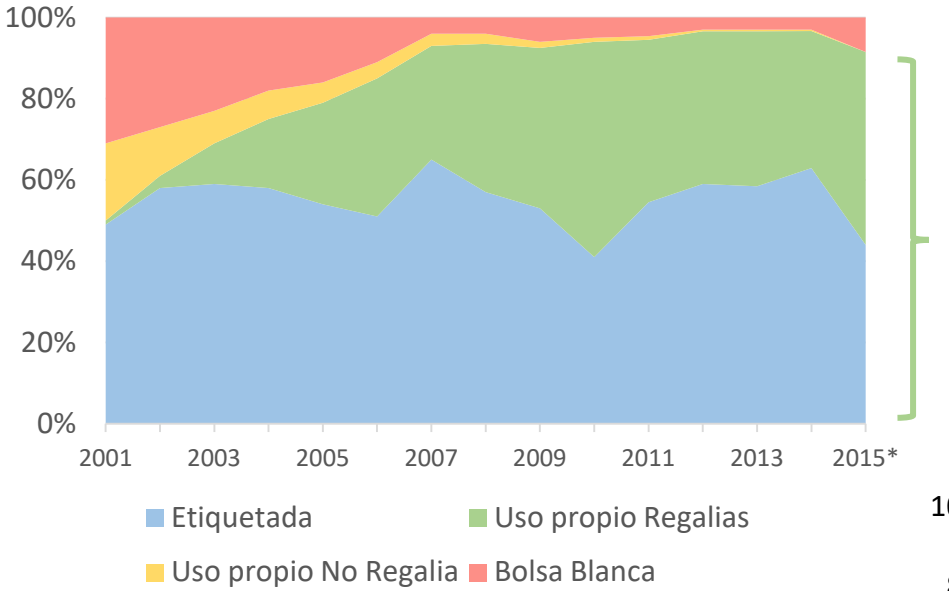
The "Technology Value System" (ERS)



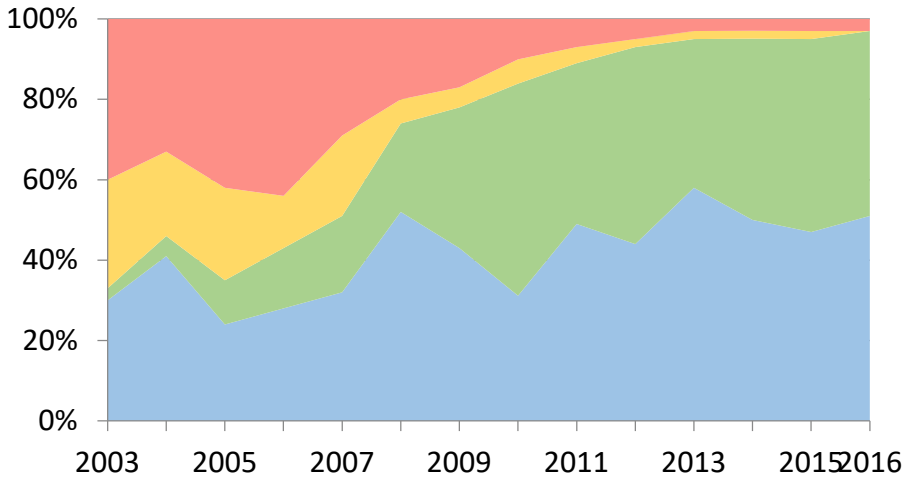
Seed planted by origin in Uruguay



SOYBEAN

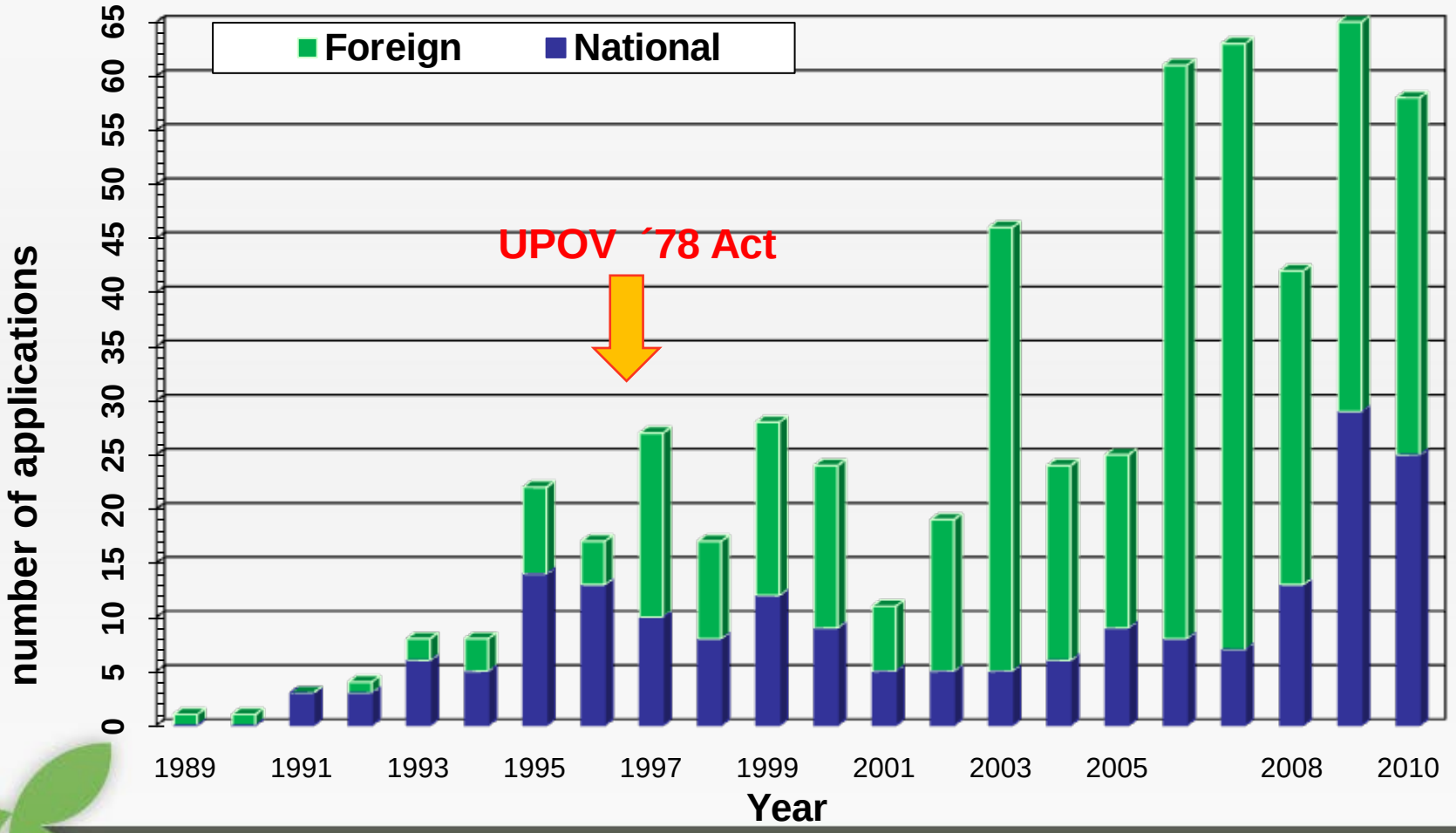
Value capture

WHEAT



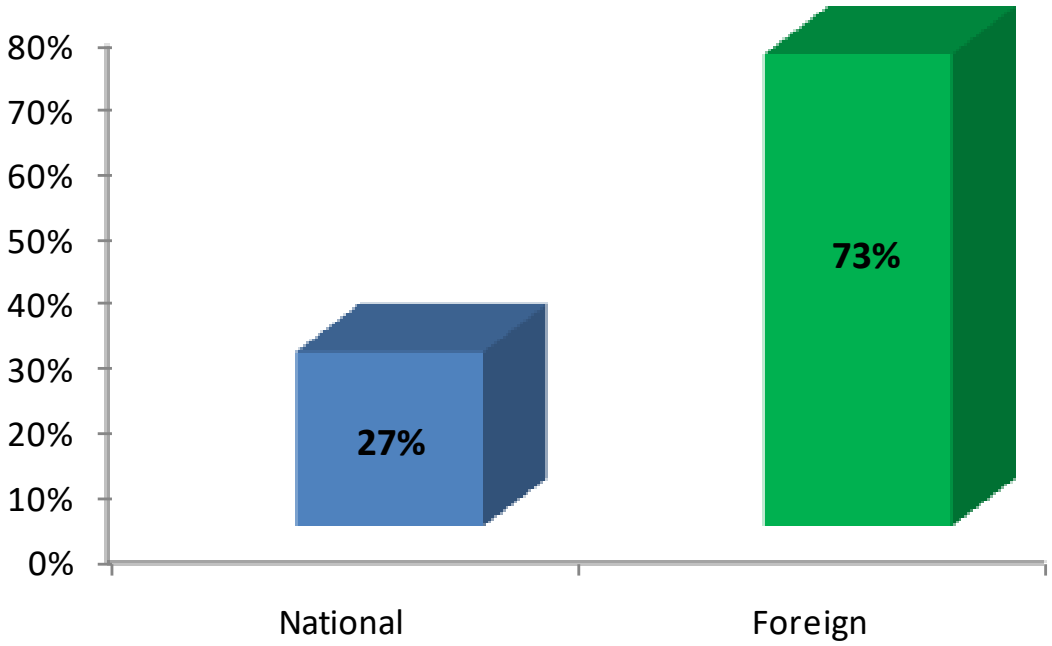
of applications for PBR

National and Foreign varieties



Source: INASE 2010

Protected varieties by origin



Source: INASE

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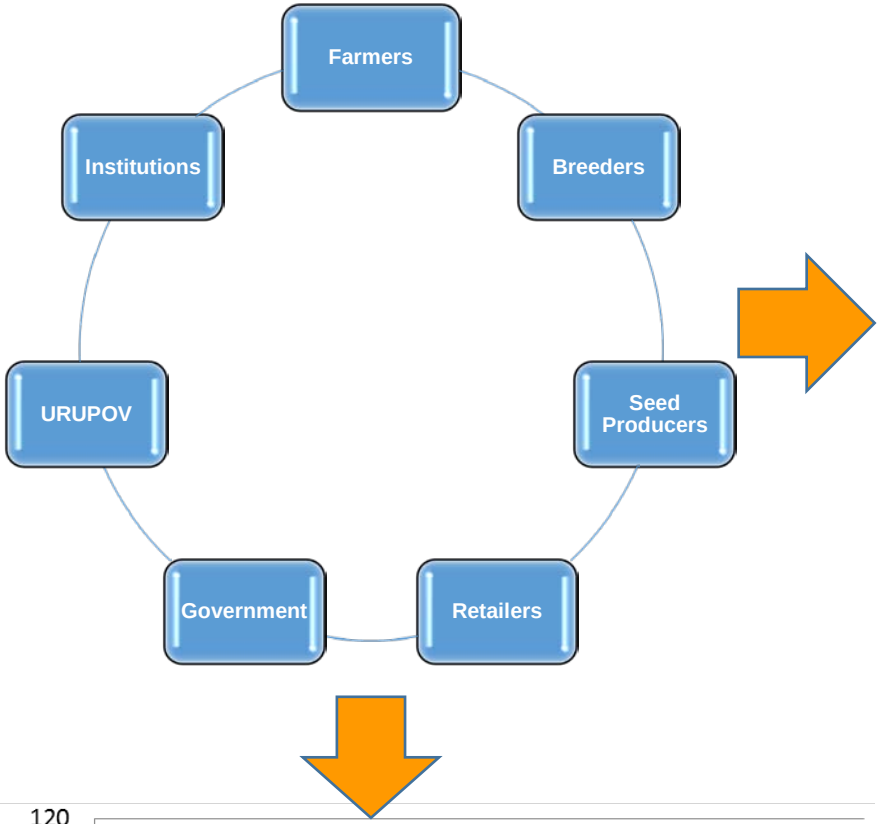
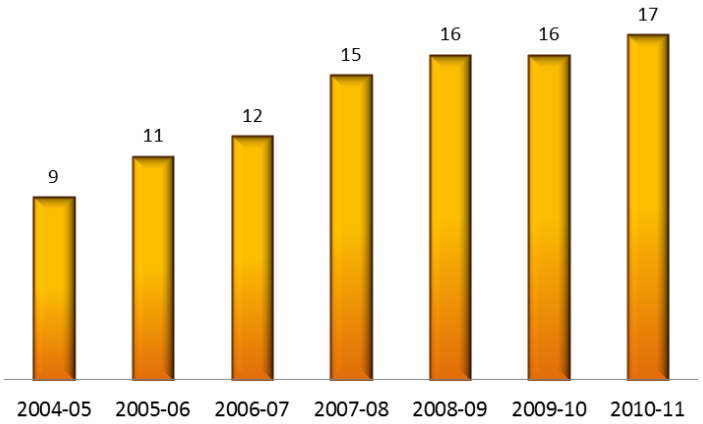
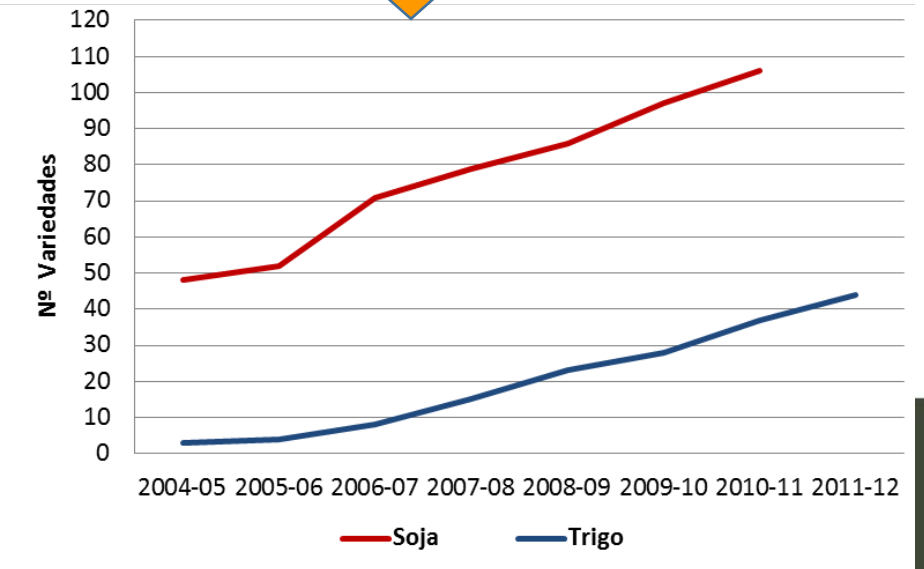


Breeders





# of Varieties (w/PBR)

Valor Tecnológico

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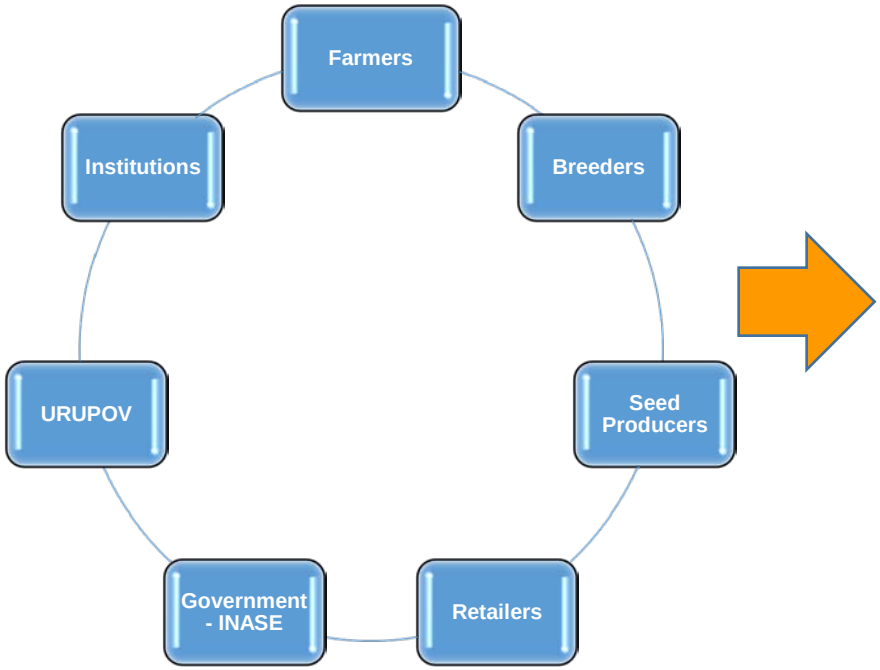
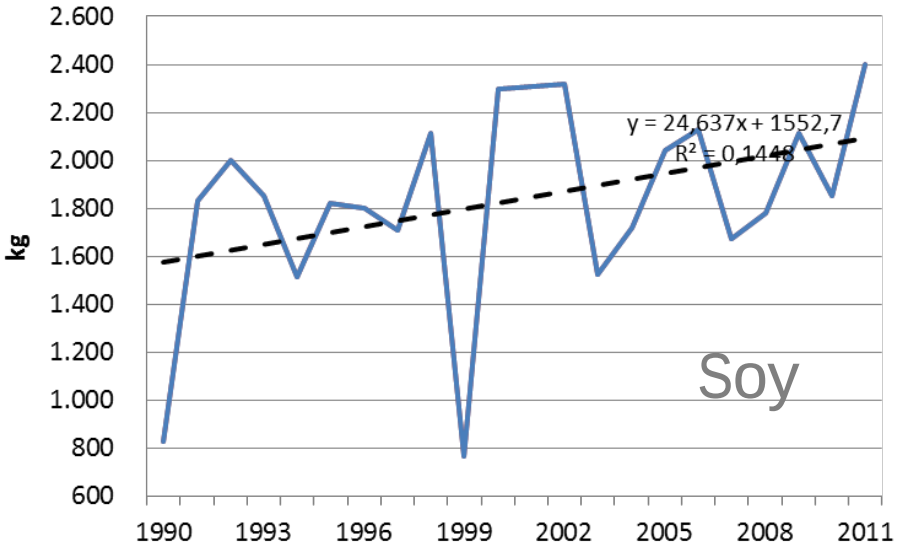
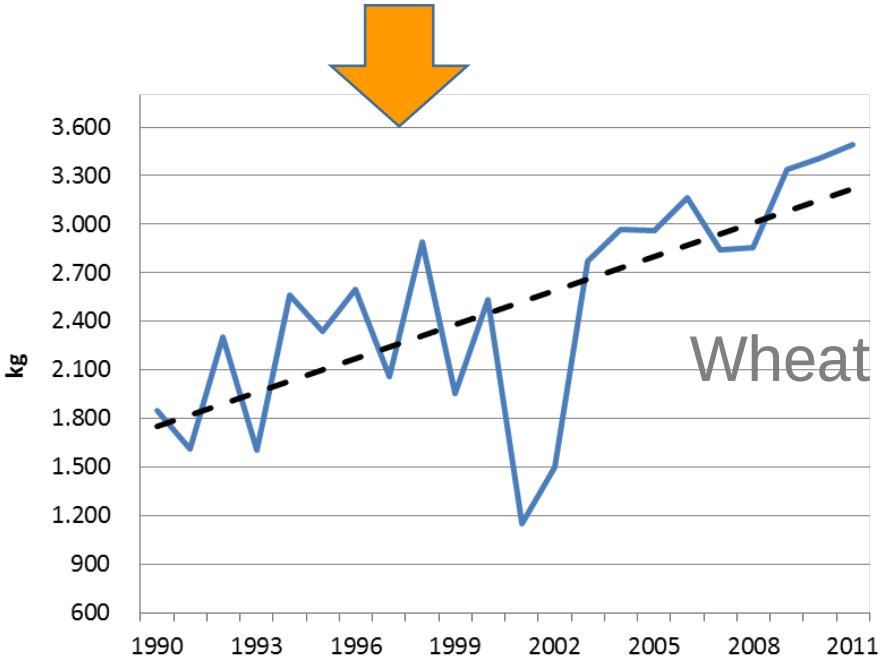






Yield evolution (Kg/ha)

Valor Tecnológico

Key factors for SUCCESS

- Government role
- Comunication

- Enforcement (effective tools)
- New varieties released every year
- Royalty level & Value
- Software: robust and «customized»

Key factors for SUCCESS !!!

- Commitment among «seed stakeholders»
- Farmers receptiveness
- Specific tax benefit: Growers can deduct 1.5 times the cost of the seed in their balance sheet
- Updated legal framework and Contracts
- Scale and «face to face» visits
- Signed declarations

ENFORCEMENT

- Key role INASE – oficial body
- Task Force – interaction w/government
- Information: Licence; Contracts & Audits
- DNA Techniques
- Setellite images
- Communication
- Interaction & cooperation with neighbour countries (same associations)

Possible Threats to the System…

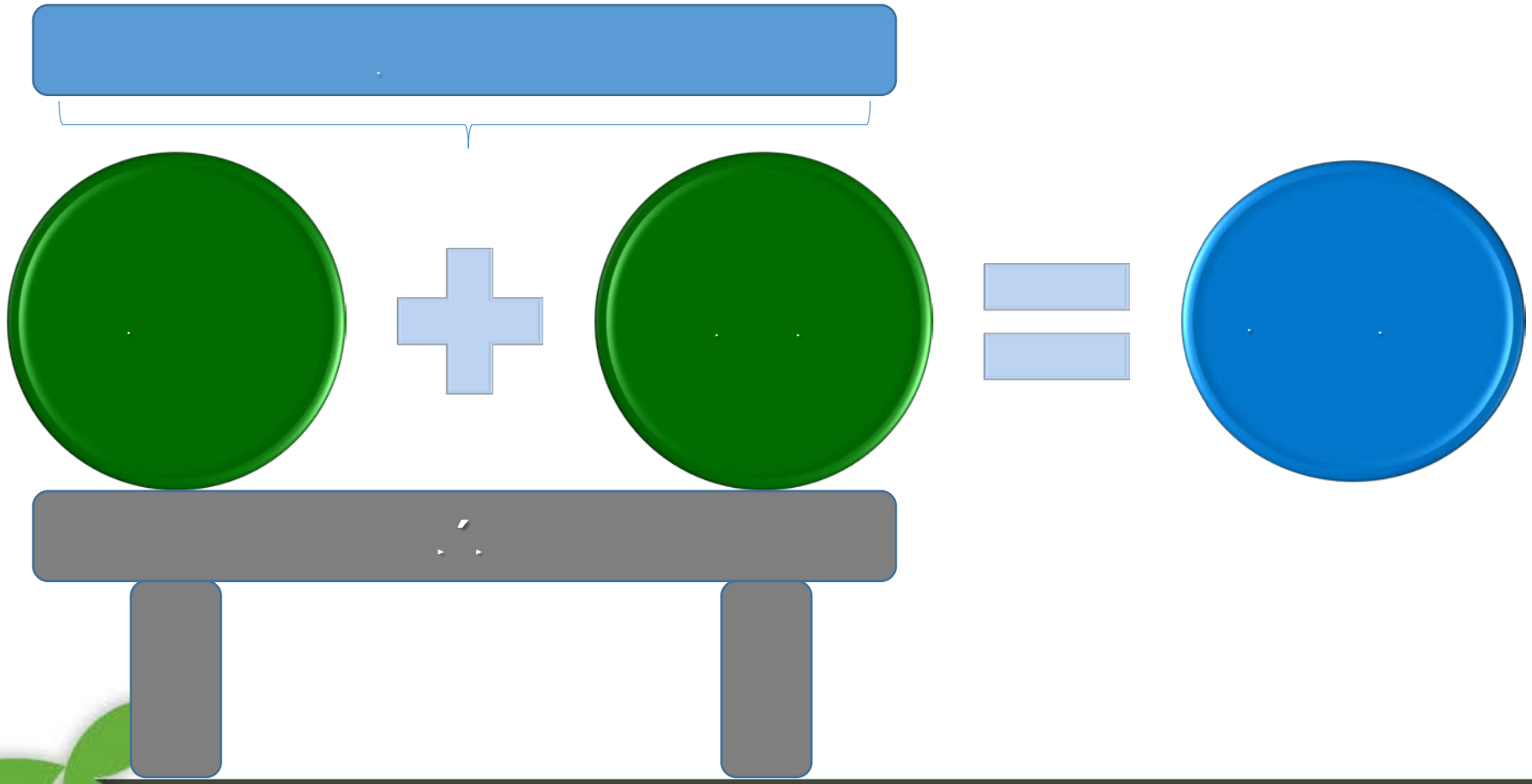
- Lack of support from farmers
- Lack of union among Breeders
- Government interference: system that is “an agreement“ between private parties
- Weak IP regulatory framework – Need for an update to UPOV´91
- Lack of enforcement (Breeders and Government)
- Lack support of URUPOV members with the association (financial & information)
- Royalty pricing (Cost/Benefit of the technology)

Real cases in UY: PVP as pillar for success

- Farmer as breeder = Discover, developed and give licences
- Family breeding program = “PVP is the core of my business with 6 varities”
- Farmer Cooperatives = Getting licences from local & foreign breeders
- Local seed Co. = Getting varieties to test & sell
- Coops. + National Research Institute for Ag. = Joint breeding & release
- Hybrids breeding = Local vs. Multinational (getting germplasm & parental lines for breeding)

A successful story

Complementary vision y mission:



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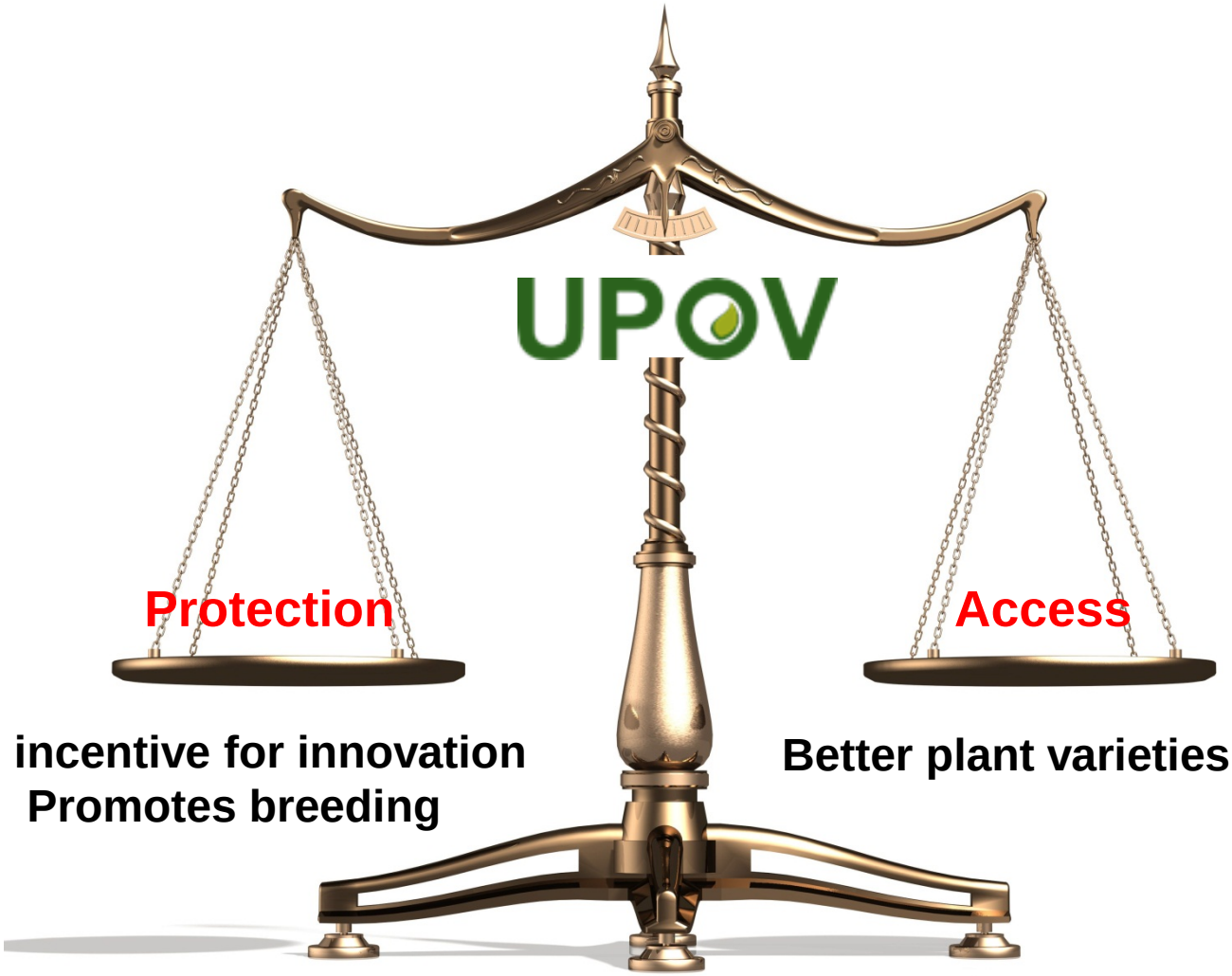
Balance and effectiveness on PBR



An incentive for innovation
Promotes breeding

Better plant varieties for Farmers

6th Seed Congress of the Americas

Promoting Seed Business in the Americas

September 5-7 2017 - Colombia Cartagena de Indias

Thank you for your attention!

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