CPVO

Community Plant Variety Office

The Community Plant Variety Rights system: fostering plant innovation & greater sustainability in the EU

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European agri-food sustainability & innovation conference – Prague, 29 November 2022

Outline

1. **Plant Variety Protection in the European Union & role of CPVO**
2. **Description of the study on impact of the CPVR system**
3. **Impact of CPVR system on EU Economy**
4. **Impact of CPVR system on Environment and Society**
5. **Final Considerations**

1. Plant Variety Protection in the EU and role of CPVO

Plant Variety Protection in the EU

- The **CPVO** is an Agency of the EU operational since 1995 and currently based in Angers, France.
- The EU implemented a **sui generis system of PVP** in line with the TRIPS Agreement requirements (Art. 27(3)b);
- The EU PVP system is based on the **International Convention for the Protection of New Varieties of Plants** of the Union For The Protection of New Varieties Of Plants (UPOV) (1991 Act);
- The protection under the EU system has a **uniform effect** throughout all Member States (Art. 2 BR).

Plant Variety Protection in the EU

- Varieties of **all botanical genera and species** may be protected
- The CPVO has received applications for more than **2000** different **plant species**
- Duration of the right:
  - **25** years
  - **30** years for vines, trees and potato varieties

- **Latest updates**: Regulation (EU) 2021/1873 on the extension of protection for some species groups has been published and has entered into force on 15 November 2021

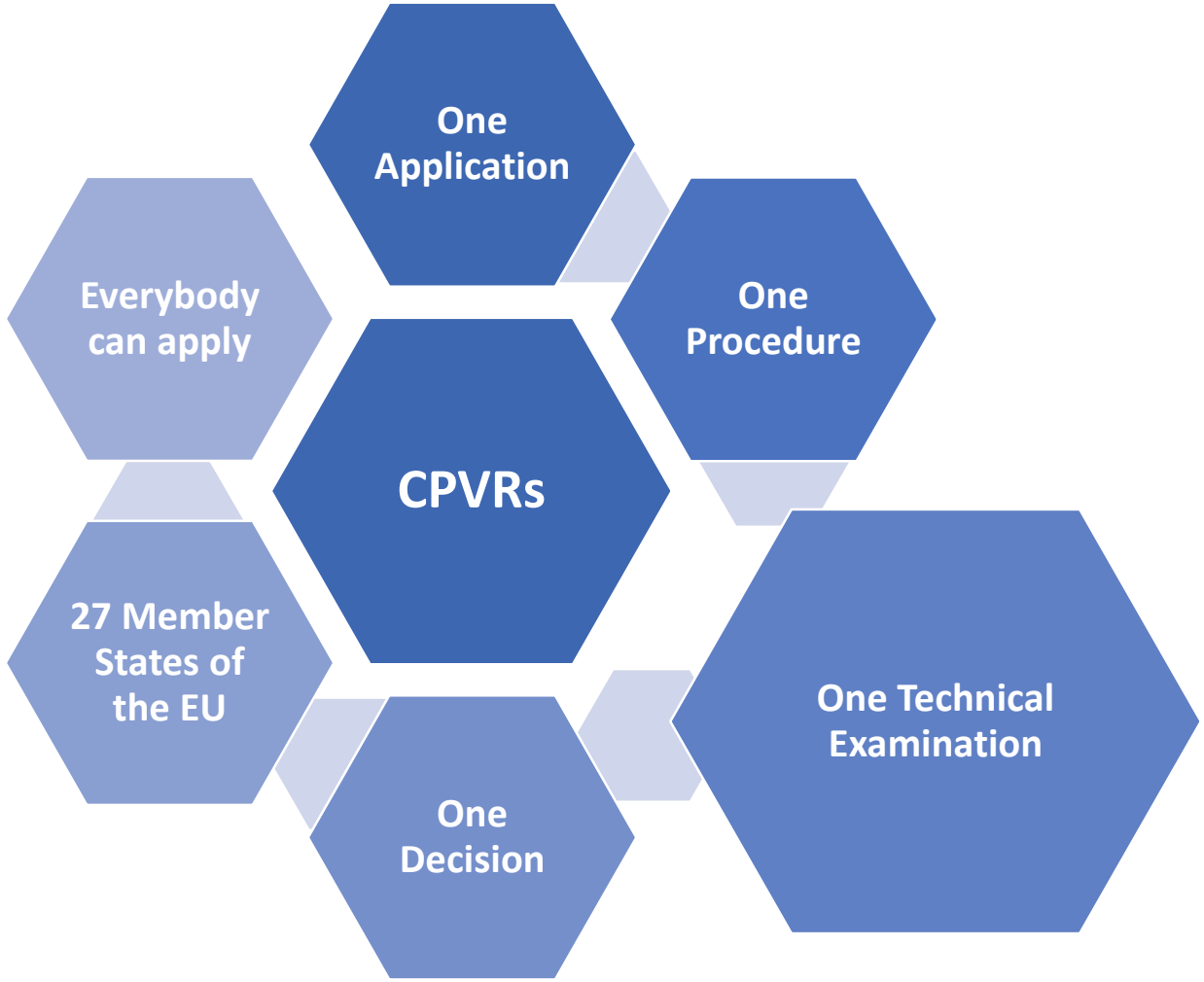
One
or
several national titles

One title
valid in all
27 Member States

No possibility of
double protection
(Art. 92 BR)

Existing national rights
cannot be enforced
during EU protection

The Application procedure



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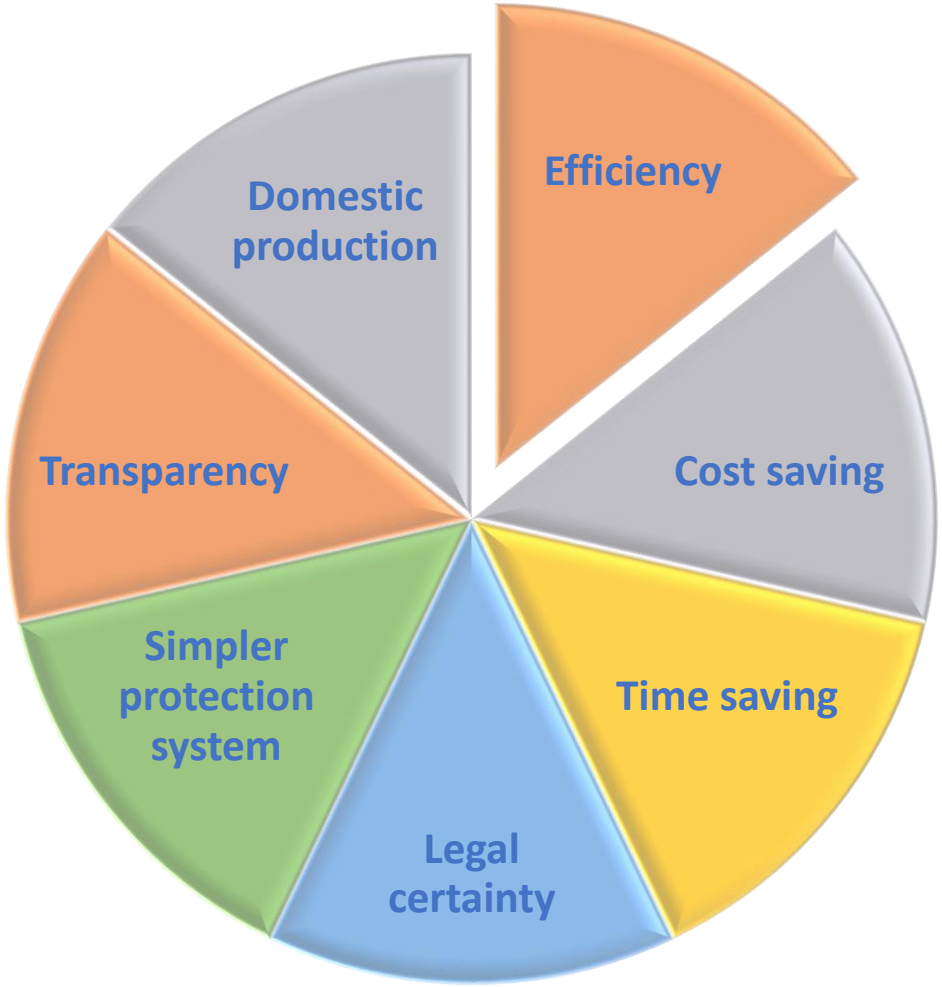
23

DUS Examination Offices in the EU

The red dots represent entrusted Examination Offices carrying out DUS technical examinations on behalf of the CPVO

Operational advantages



The CPVR system is designed to foster R&I and to encourage the creation of new plant varieties

77,000+ Applications
60,000+ CPVRs
30,000+ are valid today

Main species represented per crop sector and number of applications received for said species since 1995

Top 5 Ornamental species:

Rosa L.	4 970
Chrysanthemum L.	3 906
Calibrachoa and *Petunia*	1 715
Phalaenopsis and Doritaenopsis	1 614
Lilium L.	1 371

Top 5 Agricultural species:

Zea mays L.	5 508
Triticum aestivum L. emend. Fiori et Paol.	2 431
Brassica napus L. emend Metzg.	1 921
Solanum tuberosum L.	1 877
Hordeum vulgare L.	1 597

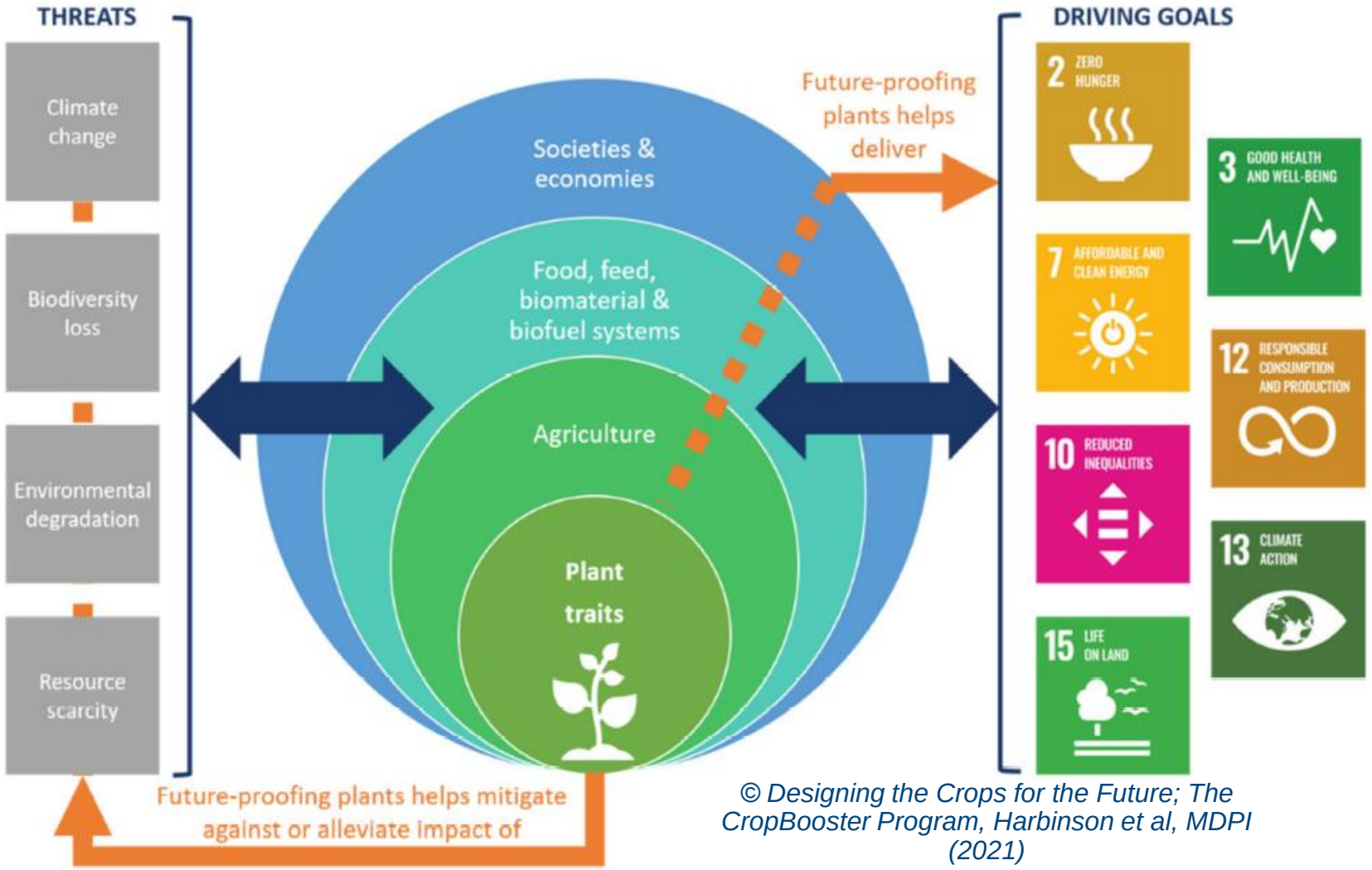
Top 5 Vegetable species:

Lactuca sativa L.	3090
Solanum lycopersicum L.	1692
Capsicum annuum L.	738
Cucumis melo L.	622
Phaseolus vulgaris L.	567

Top 5 Fruit species:

Prunus persica (L.) Batsch	1 080
Fragaria x *ananassa* Duchesne ex Rozier	791
Malus domestica Borkh.	623
Vitis L.	368
Prunus armeniaca L.	327

Plant variety innovation is part of the solution!



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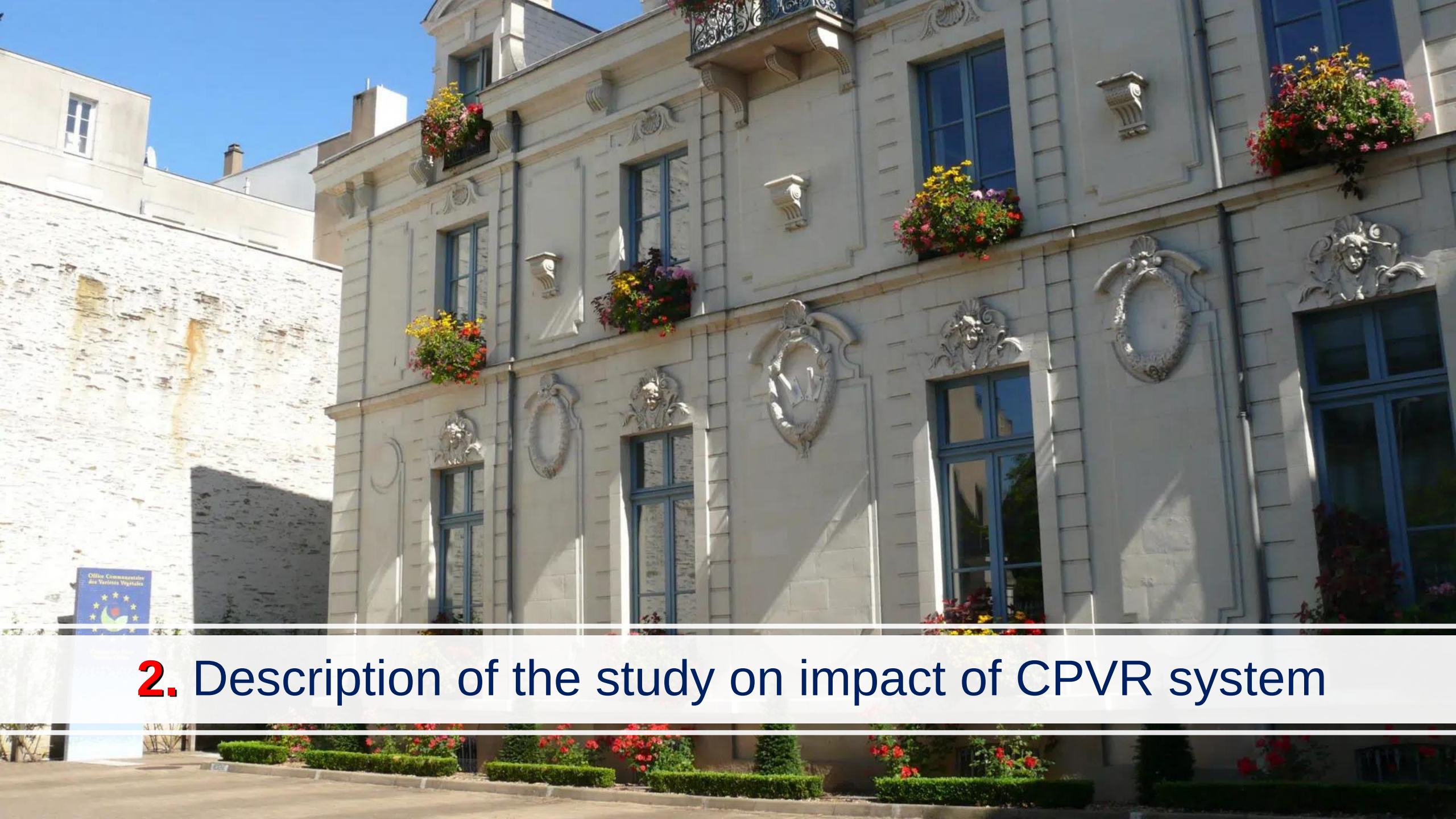


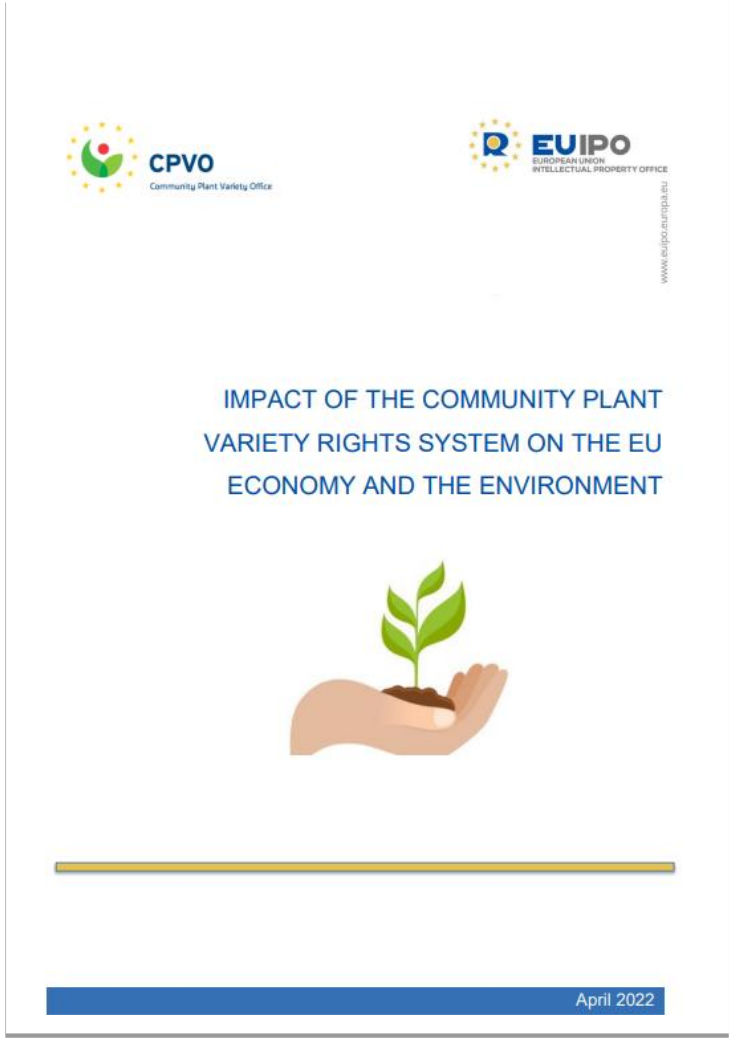
2. Description of the study on impact of CPVR system

General remarks on the study

Published by European Observatory on Infringements of Intellectual Property Rights in cooperation with the CPVO

Released on 28 April in CPVO Policy seminar, under the French Presidency of the Council of the European Union

The study Quantifies the economic contribution in the European Union of the CPVR system



Scope of study: crops accounting for >80% of CPVRs

Agricultural	Fruit	Vegetables	Ornamentals
• Wheat • Corn • Barley • Other cereals • OSR • Sunflower • Other oilseeds • Sugar beet • Potato • Pulses • Ryegrass	• Peach • Strawberry • Apple • Wine/grape • Apricot • Blueberry • Raspberry • Plum • Cherry	• Lettuce • Tomato • Pepper • Melon • Bean • Pea • Cucumber • Cabbage • Onion • Spinach • Endive • Leek	Treated as one combined crop due to the large number of varieties

3. CPVR Impact on Economy

Pic: © Wageningen

Impact if plant breeding progress had not occurred

Impact if plant breeding progress (1995-2019) had not occurred:

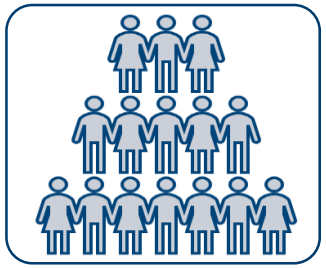
- **the quantity of crops that would not have been produced**
- **the hypothetical missing volume attributable to protected varieties**

Advantages of a PVP system are made visible by disadvantages of the absence of a PVP system!

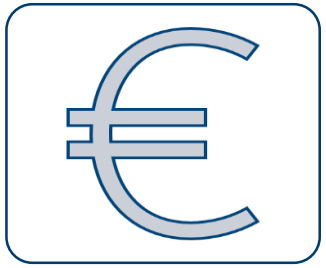
In the absence of the CPVR system, in 2020 the production in the EU would be:

- **6.4% lower for agricultural crops;**
- **2.6% lower for fruits;**
- **4.7% lower for vegetables;**
- **15.1% lower for ornamentals.**

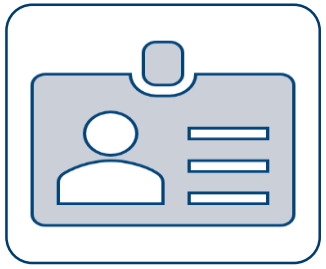
Key findings: economic contribution



The additional production brought about by EU-protected plant variety innovations is sufficient to feed (worldwide): an additional **57 million** people with arable crops, **38 million** with fruit crops, and **28 million** for vegetable crops

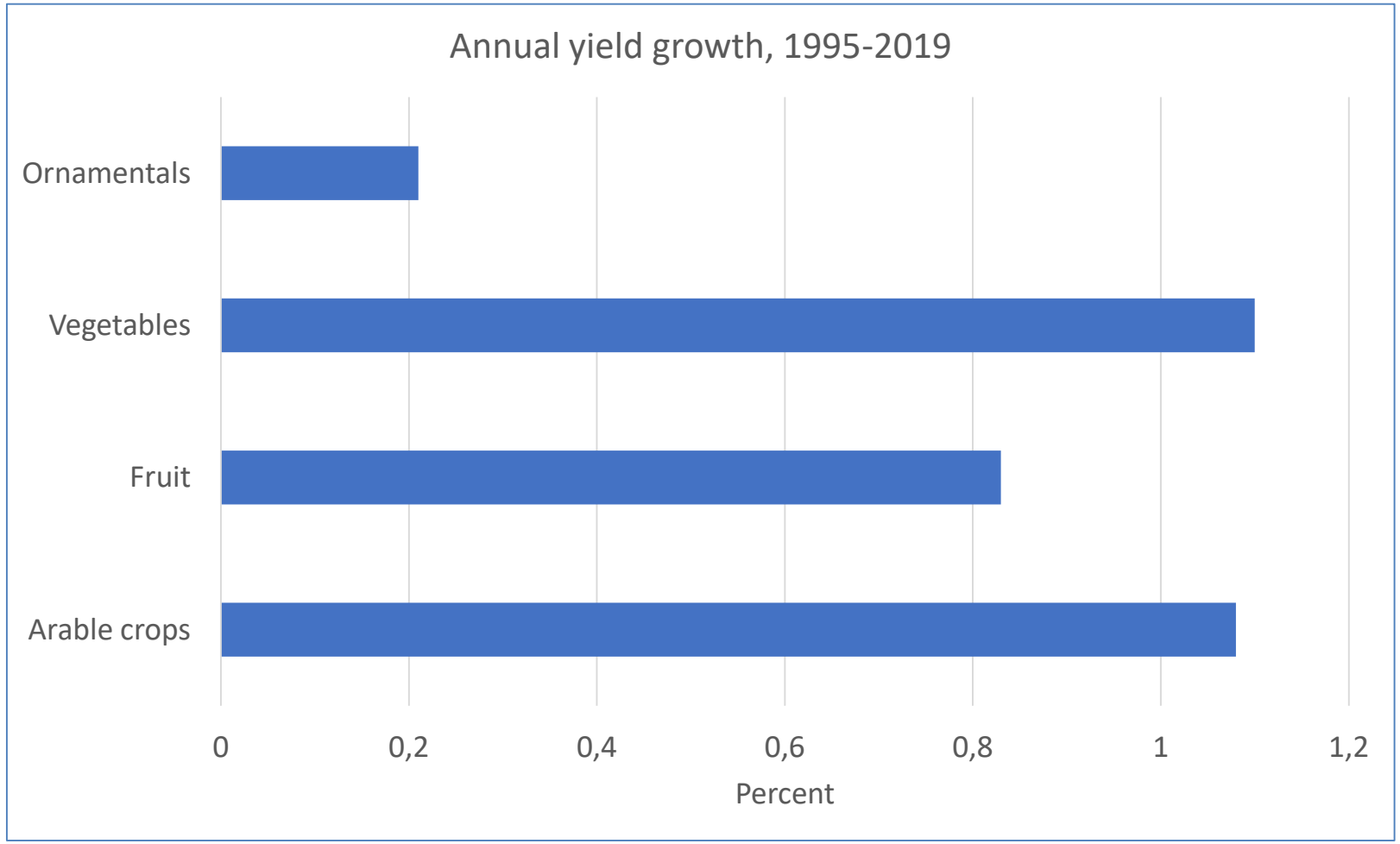


The additional added value (GDP contribution) generated by EU PVR-protected crops amounts to **13 billion EUR**



Additional production resulted in **higher employment rates** in the EU agriculture, and **better remunerated**

Annual yield growth for crops in the EU (1995-2019) (% per year)



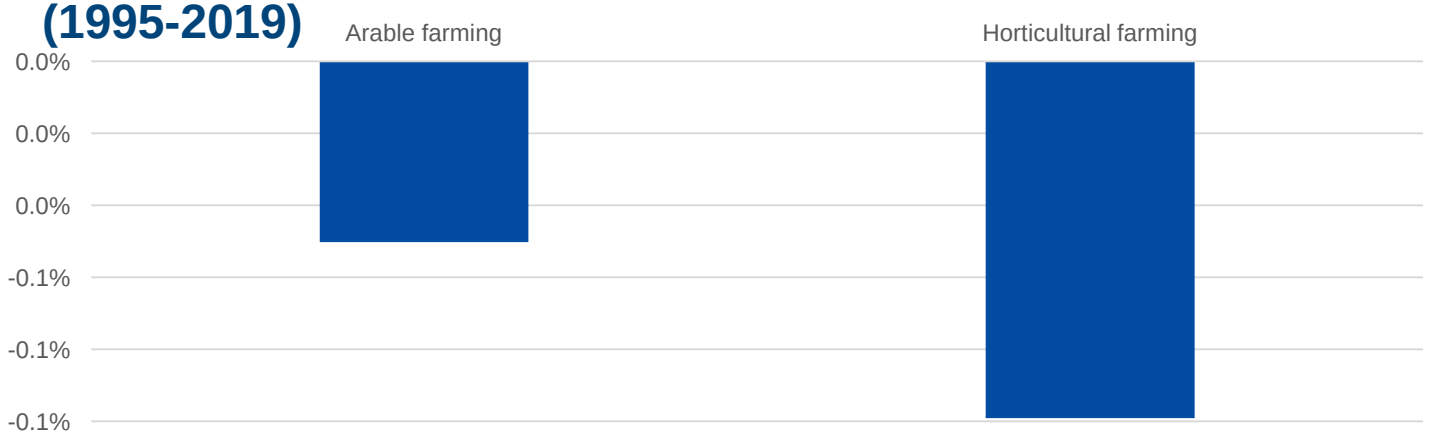
INPUT USE: DECLINING

Growth rates of input use (per hectare) for EU agricultural and horticultural farming (1995-2019) (% per year)

- **“Agricultural Intensification” is factored out (= increased input, e.g.: denser planting schemes, capital, labor etc.)**

FARMING	SEEDS	FERTILISERS	PPP	LABOUR	CAPITAL
Arable	-0.20	-0.07	-0.60	-0.60	-0.44
Horticultural	-0.60	-2.30	-1.40	-1.00	-0.92

Annual growth rates of the overall input use (excluding land) in agricultural and horticultural farming of the EU (1995-2019)



The contribution of plant breeding innovation protected by CPVRs

- Subtracting the overall input use growth rate from statistically observable yield growth leads to crop-specific annual innovation-induced growth rate
- Merging innovation-induced yield growth rates and plant breeding's shares in innovation-induced change yields the innovation-induced growth rate due to plant breeding
- Factoring in the shares of plant varieties protected by CPVRs:
  - 25% for arable crops
  - 12% for fruit
  - 19% for vegetables
  - 97% for ornamentals
- Yields the the innovation gain protected by EU-level PVRs

YIELD: INCREASING
Innovation-induced yield growth rates for crops in the EU (1995-2019) (% per year)

- **Subtracting the overall input use growth rate from statistically observable yield growth leads to crop-specific annual innovation-induced growth rate**

CROP	GROWTH RATE	CROP	GROWTH RATE	CROP	GROWTH RATE
Wheat	1.43	OSR	1.20	Potato	2.40
Corn	1.72	Sunflower	2.74	Pulses	0.94
Barley	1.57	Other oilseeds	0.79	Green maize	2.30
Other cereals	1.41	Sugar beet	2.63	Ryegrass	1.29
CROP	**GROWTH RATE**	**CROP**	**GROWTH RATE**	**CROP**	**GROWTH RATE**
Peach	2.20	Wine/Grape	1.59	Raspberry	1.57
Strawberry	2.22	Apricot	3.79	Plum	3.49
Apple	2.28	Blueberry	2.42	Cherry	1.48
CROP	**GROWTH RATE**	**CROP**	**GROWTH RATE**	**CROP**	**GROWTH RATE**
Lettuce	1.47	Bean	1.84	Onion	4.09
Tomato	3.16	Pea	0.91	Spinach	1.27
Pepper	3.90	Cucumber	4.71	Endive	2.31
Melon	2.14	Cabbage	1.51	Leek	1.71

Ornamental crop (as a whole): 1.20

Breeders' geographical origin in CPVRs

- 29.000+ CPVRs in force (beginning 2022)
- Largest share: EU countries (almost 77%)

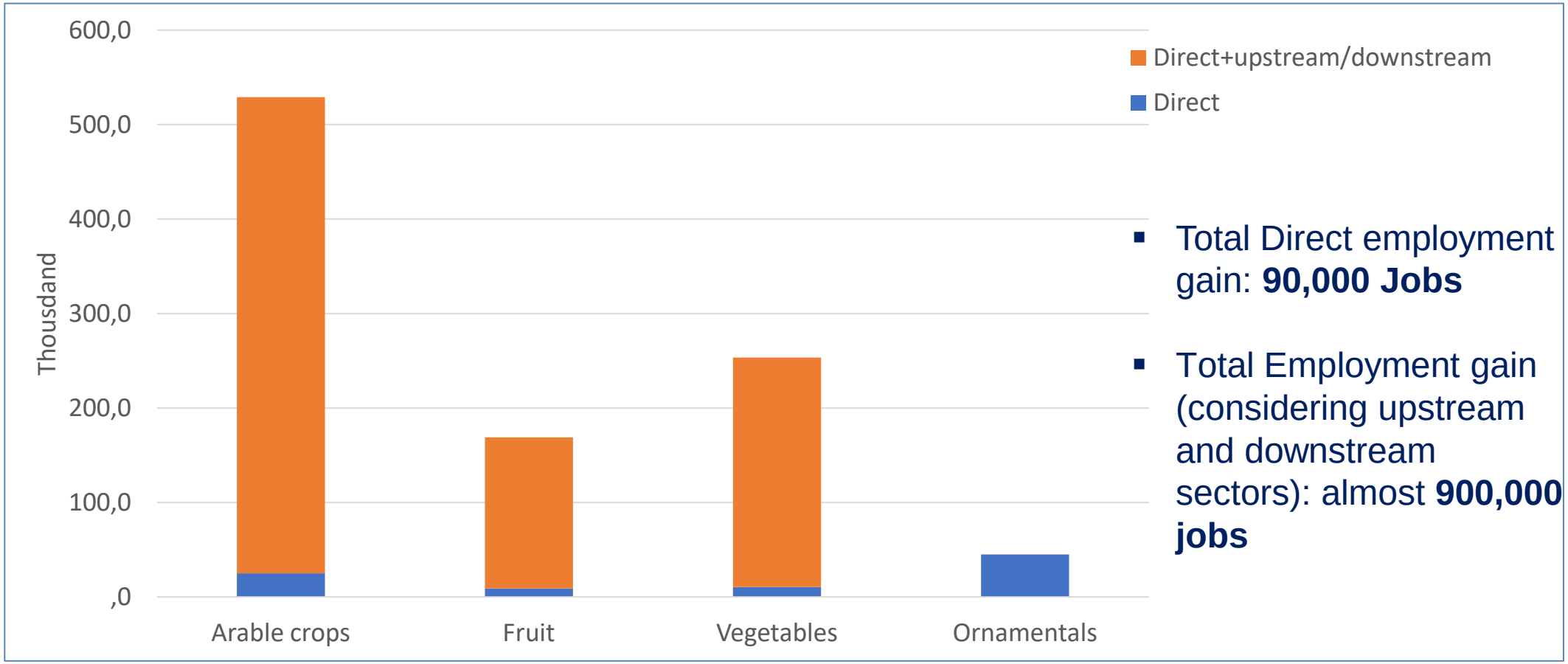
	Country	% CPVR	number CPVR
NL	Netherlands	34.8	9,919
FR	France	17.0	4,837
DE	Germany	14.0	3,985
US	United States	6.7	1,911
CH	Switzerland	5.3	1,523
DK	Denmark	3.2	906
UK	United Kingdom	3.1	872
IT	Italy	2.7	783
ES	Spain	2.4	681
BE	Belgium	2.2	615
EU27	**European Union**	**76.9**	**22,669**
	Third countries	**23.1**	5,845

Size of CPVR holders

- **93.5% of registrants of CPVRs are SMEs**
- **60% of CPVRs are owned by SMEs**
- **SMES own each around 10 CPVRs**

Size	% CPVR	% firms	Number of firms	CPVRs per firm
Physical persons	8.0	36.8	451	3.3
Micro firms	21.7	32.8	402	10.2
Small firms	11.5	15.5	190	11.4
Medium firms	18.8	8.5	104	34.2
Large firms	**40.0**	**6.5**	**80**	**94.8**
SME + Physical	**60.0**	**93.5**	**1 147**	**9.9**

Contribution to Employment of CPVR-protected varieties



- Total Direct employment gain: **90,000 Jobs**
- Total Employment gain (considering upstream and downstream sectors): almost **900,000 jobs**

Employment and Turnover rates of CPVR holders

- **951 CPVR holders have plant breeding as primary activity**
- **CPVR holders employ more than 70.000 workers and have an annual turnover of EU**

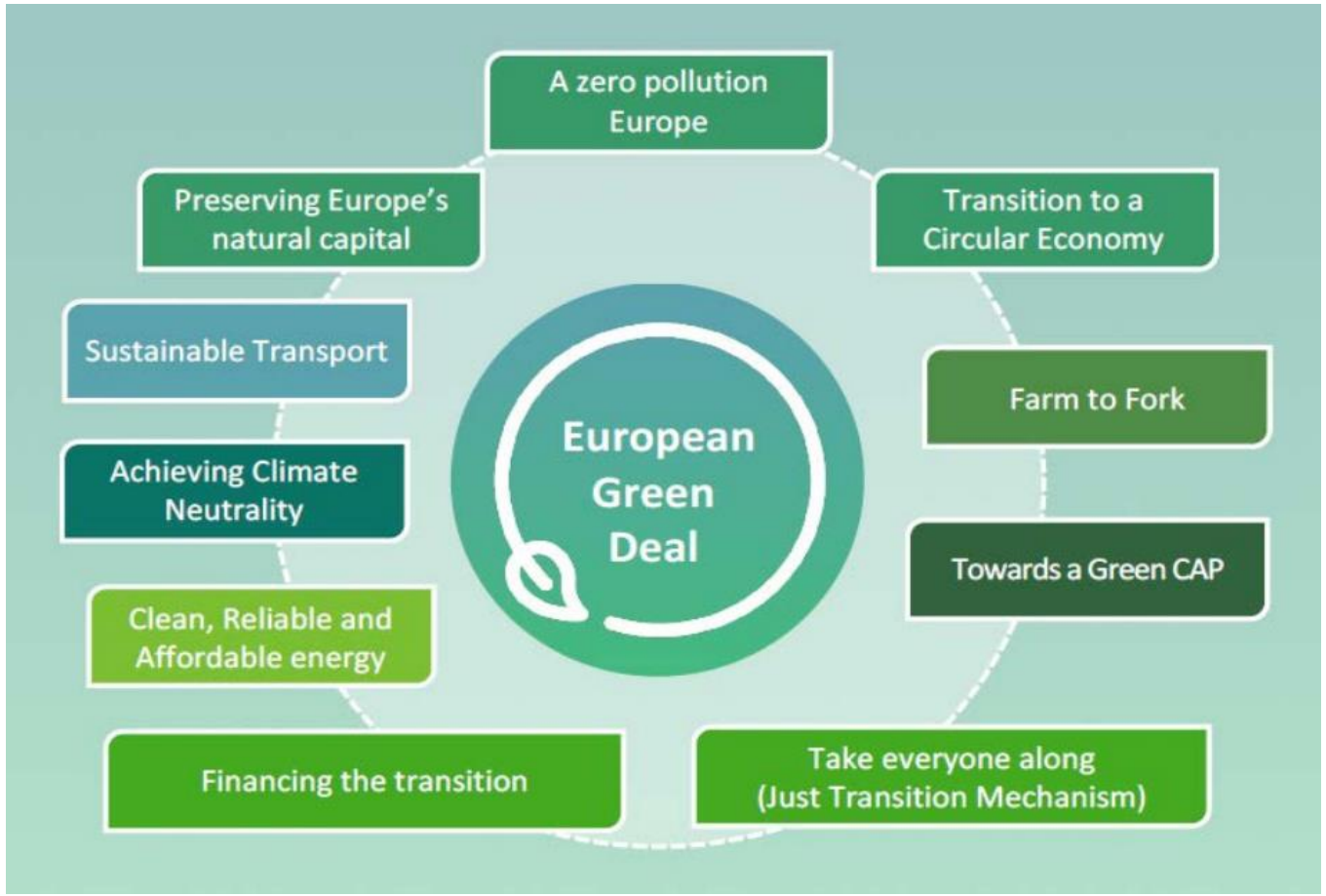
sector	firms	employees	turnover (million €)
Agriculture (seed growing)	603	35,045	17,780
R&D (agricultural & biotechnology)	128	7,970	2,364
Royalties (PVR)	47	119	722
Wholesale (seeds)	173	27,590	14,552
Total	**951**	**70,725**	**35,418**

- **Positive impact on wages:**
  - **Agricultural crop sector: +12.6%**
  - **Horticultural sector: +11%**
- **Positive impact on EU's trade balance**
  - **Without CPVR-protected innovation, the EU would become a net importer of some crops for which it is an exporter today**

4. Impact of the CPVR system on Environment and Society

Commission's EU Green Deal

EU to become climate-neutral by 2050



Biodiversity Strategy & Farm to Fork Strategy

Contribution of the EU PVR system to SDGs

SDG 1

POVERTY REDUCTION

- Increased farm incomes
- More affordable food

SDG 2

ZERO HUNGER

- Increased food production

SDG 8

JOBS & GROWTH

- More jobs in agriculture & horticulture + in upstream & downstream industries

SDG 12

SUSTAINABLE PRODUCTION AND CONSUMPTION

- Growth in yields with less resource input

SDG 13

CLIMATE ACTION

- Reduced resource use and GHG emissions

SDG 15

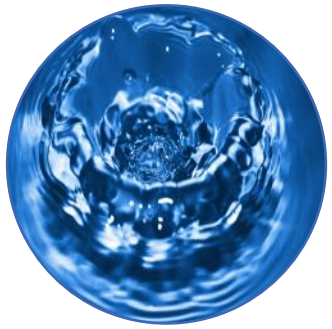
LIFE ON LAND

- Release of new adapted varieties
- Preservation of land thanks to yield growth

Key findings: environmental objectives

Annual Greenhouse Gas (GHG) emissions from agriculture and horticulture: reduced by **62 million tons** per year

= total **Portugal**'s GHG footprint



Water use in agriculture and horticulture: reduced by more than **14 billion m3**

= 1/3 of **Lake Constance's** volume

Land use and biodiversity: prevention of conversion of **6.5 million hectares of grassland** and natural habitats in the world

= size of **Ireland's** territory

5. Final Considerations

Key findings: farmers, breeders, SMEs

Farmers/growers across the EU benefit from the innovations protected by the CPVR system

R&D by Breeders leads to innovations, employment and economic growth

SMEs and physical persons account hold 60% of CPVRs currently in force

Final Considerations

Plant variety innovation must support low-input agriculture and better environmental protection

Varieties should not only produce higher yields but also be adapted to biotic and abiotic stresses

In the context of Climate Change: draught-resistance and less-water-input traits

Legislation must drive innovation to accelerate transition to sustainable inclusive food systems from primary production to consumption

EU legislative reforms foreseen:

- **CPVR system**
- **Plant Reproductive Material marketing**
- **Gene-Editing Regulatory framework**

CPVO

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