



LIVESEED

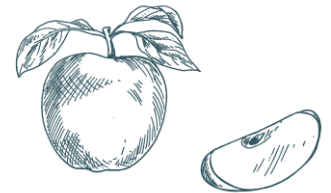
WORKSHOP

Organic varieties

Organic Innovation Days the 24th of November 2020

LIVESEED final conference for stakeholders and policymakers

Tove Mariegaard Pedersen, SEGES, Denmark



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Workshop

- Plant reproductive material in the new organic regulation
- Existing definitions of Organic Varieties
- Registration process and breeding strategies for organic farming
- Challenges in the registration of Organic Varieties
- Temporary Experiment on Organic Varieties
- Questions and discussion



Plant Reproductive Material in the New Organic Regulation



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(EU) 2018/848

Two types of plant reproductive material included in the new organic regulation:

- Organic Varieties
- Organic Heterogeneous Material (OHM)



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Organic Varieties in (EU) 2018/848

Art. 3:

(19) 'organic variety suitable for organic production' means a variety as defined in Article 5(2) of Regulation (EC) No 2100/94 which:

(a) is characterised by a **high level of genetic and phenotypical diversity** between individual reproductive units; and

(b) **results from organic breeding activities** referred to in point 1.8.4 of Part I of Annex II to this Regulation



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Variety definition

Definition of a variety according to Art. 5(2) of Reg. (EC) No 2100/94:

“For the purpose of this Regulation, 'variety' shall be taken to mean a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a plant variety right are fully met, can be:

- defined by the **expression of the characteristics that results from a given genotype or combination of genotypes,**
- **distinguished** from any other plant grouping by the expression of at least one of the said characteristics, And
- considered as a unit with regard to its **suitability for being propagated unchanged.**”



Organic Varieties in (EU) 2018/848

(EU) 2018/848 Annex II: 1.8.4:

For the production of organic varieties suitable for organic production, the organic breeding activities shall be **conducted under organic conditions and shall focus on enhancement of genetic diversity, reliance on natural reproductive ability, as well as agronomic performance, disease resistance and adaptation to diverse local soil and climate conditions.**

All multiplication practices except meristem culture shall be carried out under certified organic management



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Organic Heterogeneous Material in (EU) 2018/848

Article 3:

(18) 'organic heterogeneous material' means a plant grouping within a single botanical taxon of the lowest known rank which:

(a) presents common phenotypic characteristics;

(b) is characterised by a **high level of genetic and phenotypic diversity** between individual reproductive units, so that that plant grouping is represented by the material as a whole, and not by a small number of units;

(c) **is not a variety** within the meaning of Article 5(2) of Council Regulation (EC) No 2100/94 (1);

(d) **is not a mixture of varieties**; and

(e) has been produced in accordance with this Regulation;



Distinction between Organic Varieties and Organic Heterogeneous Material

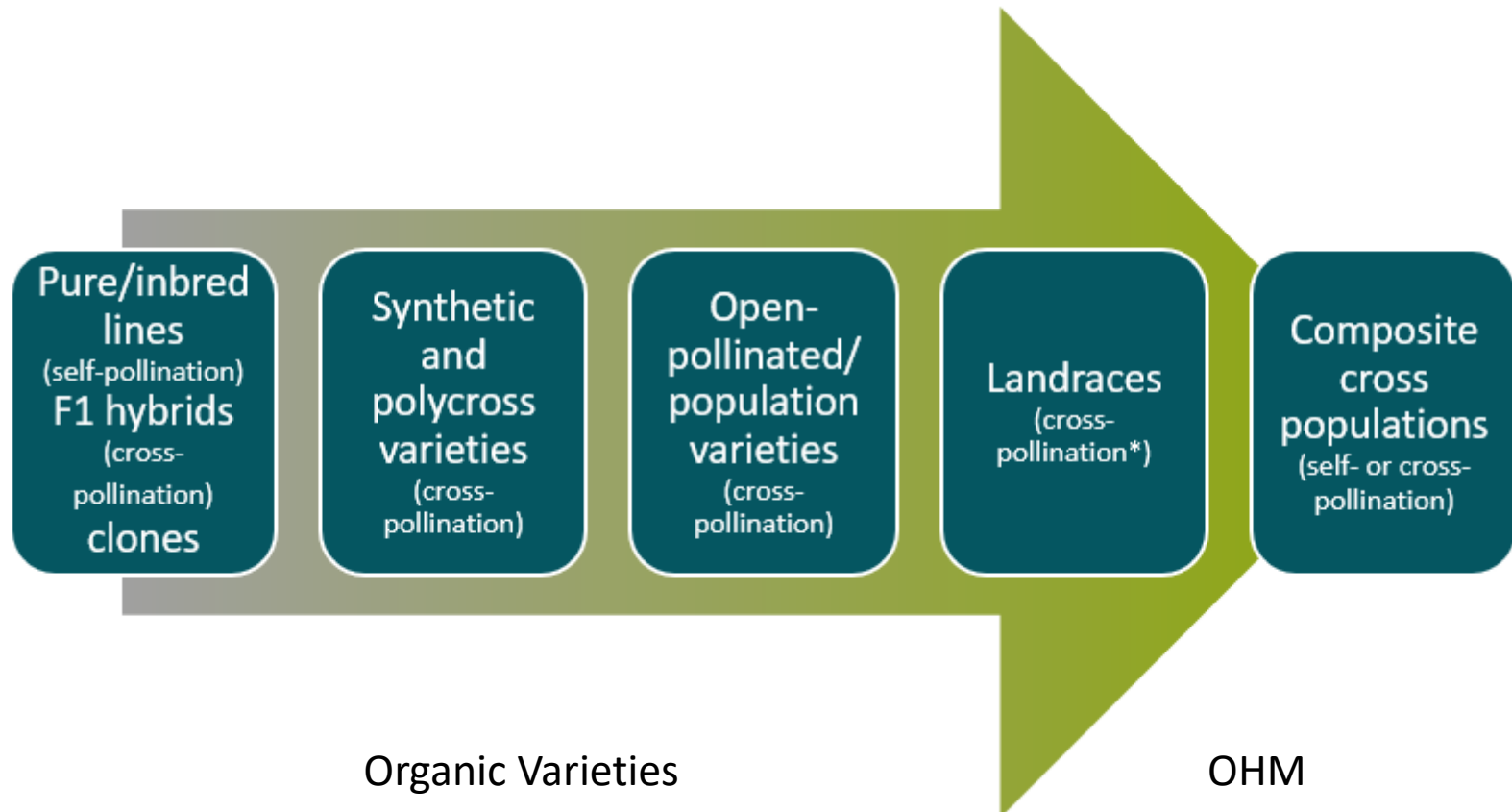


Organic variety: stable and can be propagated relatively unchanged as compared to OHM and results from organic breeding activities



OHM is not a variety or mixture of varieties and is dynamic by nature, can adapt to local growing conditions by repeated natural or human selection

Cultivar types and levels of genetic diversity - examples



Existing Definitions of Organic Varieties



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IFOAM Norms 2014

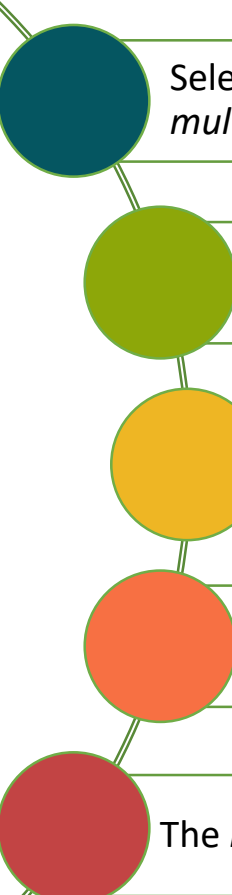
IFOAM Norms, 2014

General principles for organic plant breeding:

- Sustainable, enhances genetic diversity and relies on natural reproductive ability.
- Creative, cooperative and open for science, intuition, and new findings.
- A holistic approach that respects natural crossing barriers.
- Based on fertile plants that can establish a viable relationship with the living soil.
- Organic varieties are obtained by an organic plant breeding program.



IFOAM Norms 2014



Selection of varieties under organic conditions that comply with the requirements of this standard. *All multiplication practices except meristem culture shall be under certified organic management.*

Only genetic material that *has not been contaminated by products of genetic engineering.*

Disclosure of the applied breeding techniques latest from the beginning of marketing of the seeds.

The *genome and the cell are respected as impartible entities.* Technical interventions into the genome of plants or isolated cells are not allowed.

The *natural reproductive ability of a plant variety is respected and maintained.*

ECO-PB Position Paper 2012

Dignity of living organisms

- promotes genetic diversity and takes into account the ability to natural reproduction
- respects the integrity of a plant, its crossing barriers and regulatory principles

Aims of organic plant breeding

- match the needs of the complete value chain
- sustainable use of natural resources and account for dynamic equilibrium of the entire agro-ecosystem
- sustain food security etc. by satisfying nutritional and quality needs of animal and human beings
- sustain/improve genetic diversity and agrobiodiversity, adaptation to future growing conditions



ECO-PB Position Paper 2012

Ethical criteria

- genome and cell integrity to be respected
- reproductive capacity must be maintained
- possibility for further breeding to be kept open
- respect for crossing barriers
- reproducibility by production of non-hybrid varieties



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ECO-PB Position Paper 2012

Strategic breeding criteria

- phenotypic selection under organic conditions
- field selection can be supplemented with additional selection methods (e.g. molecular markers)
- no contamination with genetically engineered products

Socioeconomic criteria

- no patenting
- transparency regarding starting material and breeding techniques
- promotion of participatory breeding
- promotion of diverse breeding programmes to enhance agrobiodiversity



Bioverita Label

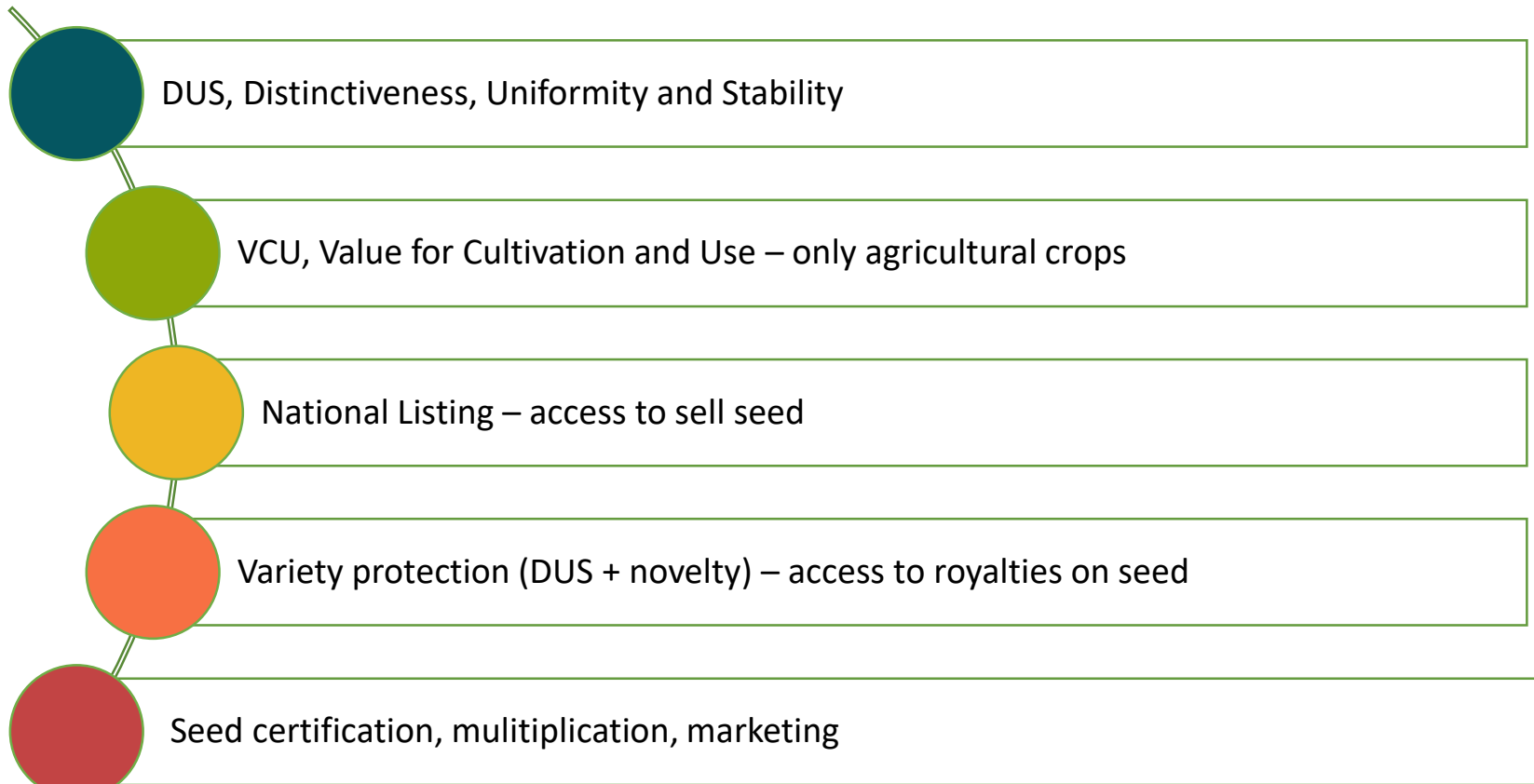
- Private label for almost 10 years – certification of organic varieties
- For organic and biodynamic breeders
- Value driven association with a holistic approach to support a sustainable and social development of agriculture
- Varieties bred for regional and organic conditions by use of organically compatible methods
- All breeding steps must be performed under organic conditions
- Hybrid varieties are not accepted, with the argument that hybrids limit the free availability of seed
- In the breeding methods no interference below cellular level allowed
- Reproductive ability must be respected
- No patents are allowed

Registration Process and Breeding Strategies for Organic Farming

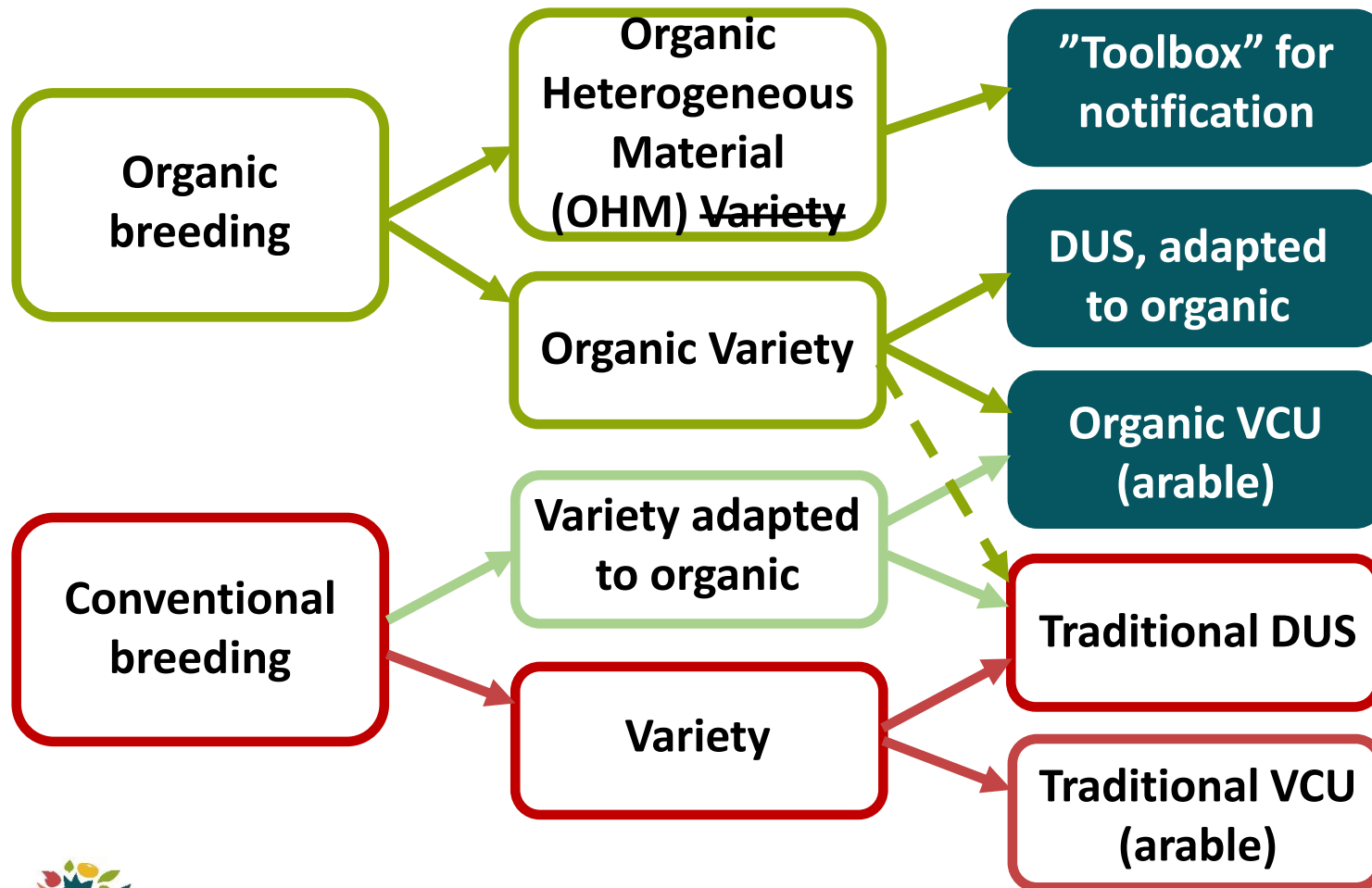


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Registration of Varieties



Breeding Strategies and Registration of Organic Varieties



Challenges in the Registration of Organic Varieties



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Why is there a need for adapted registration procedures of Organic Varieties?

- High demand for organic varieties suitable for organic agriculture
- Small market size vs. high demands/costs for registration
- Organic breeding initiatives aim at broad portfolio of crops and cultivars → difficult to finance by royalties or seed sale. Organic breeding initiatives are financed by non-profit foundations, public or value chain contribution
- Organic breeders cannot invest many resources to fulfill thresholds that are not relevant for farmers, processors or consumers
- Breeding techniques like genetic engineering or cell fusion not accepted by organic farmers and consumers limit choice of farmers



Challenges, DUS

- Strict uniformity requirements
- DUS for OP-varieties – lack of proper reference varieties
- Trade-off between uniformity level and inbreeding depression for OP-varieties
- No guarantee for market acceptance of varieties



Challenges

Value for Cultivation and Use (VCU)

- Lack of organic testing sites
- Yield potential and yield stability under low input conditions are often not considered
- Traits important for organic farming mostly not evaluated (e.g. seed borne diseases)
- Crop-mixtures are tested in pure stand
- Bias due to different seed sources and reference varieties (organic versus untreated conventional)



Value for Cultivation and Use (VCU), Organic conditions

Country	Organic trials	Supplementary organic trials
Germany	x (wheat, barley, oat)	
Austria	x (winter wheat)	x (several crops)
Denmark	x (winter wheat, spring barley)	
France		x (winter wheat)
Latvia		x (several crops)
Switzerland		One organic location

Status quo based on LIVESEED interviews in 15 European countries, 2019

Temporary Experiment on Organic Varieties



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Temporary Experiment in (EU) 2018/848

- “(39) In order to meet the needs of organic producers, to foster research and to develop **organic varieties suitable for organic production**, taking into account the specific needs and objectives of organic agriculture such as enhanced genetic diversity, disease resistance or tolerance and adaptation to diverse local soil and climate conditions, **a temporary experiment should be organized....** That temporary experiment should be for a term of **seven years**, should involve sufficient quantities of plant reproductive material and should be subject to yearly reporting. It should help to **establish the criteria for the description of the characteristics of that material and to determine the production and marketing conditions for that material.**”



Temporary Experiment, draft

- Implementing act to be developed
- The scope of the experiment to cover fodder plants, cereals, vine propagating material, beet seed, vegetable seed, seed potatoes, oil and fibre plants seed.
- Participating Member States to be authorised to derogate from certain existing legal provisions on DUS and VCU testing.



Temporary experiment and working groups, draft

The Commission have asked Member States and organisations to designate experts to working groups

- Small subgroups of experts to discuss establishment of adopted DUS protocols before the temporary experiment.
- 5 participants in each group - CPVO experts, examination offices, Member States experts and stakeholders (e.g. breeders, seed companies) plus DG SANTE representative.
- The preparatory work will concentrate on priority species identified by Member States and stakeholders in consultation process, spring 2020.



Proposed priority species

- Wheat
- Rye
- Maize
- Soybean
- Alfalfa/Lucerne
- Potato
- Carrot
- Kohlrabi
- Tomato
- Onion

Preparation for Temporary Experiment

- One-year investigation on Organic Varieties of carrot and kohlrabi, 2020
- Bingenheimer Saatgut, Louis Bolk Institute and Naktuinbouw
- Funding by Raad voor plantenrassen (Board for Plant Varieties) - the Dutch registration authority.



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Preparation for Temporary Experiment

UPOV Nr.		asterix characteristics	relevance of utility for			importance for selection	ECO-PB proposal for adapted protocol	
			farmers / producers	trade / processors	consumers	organic carrot breeders	Characteristics to be considered mandatory	characteristics to be considered optionally on request (or recommendation) of the applicant
		characteristics of the UPOV protocol for carrots usable for fresh market (bundling and marketing with leaves)	(0=none, 1=medium, 2=great)			(0=none, 1=medium, 2= great)		
2		Leaf: attitude	2	1	0	1	1	0
4	(*)	Leaf: division	0	1	0	1	0	1
6	(*)	Leaf: anthocyanin coloration of petiole	0	1	0	1	0	1
14	(*)	Root: external colour	1	2	2	2	1	0
17		Root: extent of green colour of skin of shoulder	2	2	2	2	1	0
18		Root: ridging of surface	2	2	1	2	1	0
19	(*)	Root: diameter of core relative to total diameter	0	1	1	2	0	1
22	(*)	Root: colour of cortex	1	2	1	2	1	0
25	(*)	Root: extent of green coloration of interior (in longitudinal section)	2	2	2	2	1	0
31			<i>characteristics in total:</i>				20	11

Preparation for Temporary Experiment

Distinctness

- Mandatory criteria: the description and distinction of a new variety must be ensured.
- Optional criteria should also be described, but not be used for the decision.
- If distinction is not sufficient in the mandatory criteria, selected optional criteria may be used for the distinction. These selected criteria must exhibit normal uniformity, such as that required for distinction.



Preparation for Temporary Experiment

Uniformity

- Mandatory criteria should exhibit sufficient uniformity for distinction
- Use of only mandatory criteria should allow less uniformity in optional criteria
- Description using frequencies (in the case of optional criteria)

Stability

- OP-varieties are not necessarily stable over time: possibility of adapting description (e.g. after 10 years) and allow it to evolve with time on non-essential criteria.



Temporary Experiment

Recommendations for the 7-year experiment – in proces:

- Definition and characteristics of Organic Varieties
 - Also variety types with lower level of genetic diversity to be included (e.g. inbred lines)
 - Distinction from OHM -> use of trait frequencies
 - Duration under organic breeding -> 3-5 years for annual crops to ensure adaptation to organic conditions
 - Breeding techniques during the whole the breeding process in line with organic principles
 - Disclosure of breeding techniques



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Temporary Experiment

Recommendations for the 7-year experiment – in process:

- DUS and VCU testing of organic varieties
 - DUS, adapted protocols to be tested
 - If variety protection is requested traditional DUS might be mandatory
 - VCU under organic with adapted protocols and thresholds, possibility for voluntary testing in some cases



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Temporary Experiment

Recommendations for the 7-year experiment – in process:

- Registration of organic varieties
 - Registration procedures – e.g. pre-registration test marketing to test market relevance
 - Adjusted fee for registration
 - Seed certification, labelling and marketing conditions with special mention in EU common catalogue for the different types of registration
 - Maintain farmers freedom of variety choice in seed database



Questions – write question number 1-4 and answer in the chat

1. Minimum number of years in organic breeding program to be an Organic Variety?
2. Specific breeding techniques that should be excluded from breeding of Organic Varieties?
3. Should it be possible to have variety protection/Plant Breeders Rights for Organic Varieties with adapted DUS?
4. Should VCU (Value for Cultivation and Use) be optional for Organic Varieties? And why/when?





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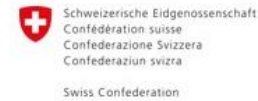
- Surveys
- Interviews
- Workshops
- Events



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Institute of Agricultural Resources and Economics



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This workshop in Zoom is now ending.

Please be so kind as to return to the **LIVESTREAM** in SpotMe.



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