RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'AGRICULTURE
C.T.P.S.
COMITÉ TECHNIQUE PERMANENT DE LA SÉLECTION DES PLANTES CULTIVÉES

ASSESSING VARIETIES FOR ORGANIC FARMING: what contribution from evaluation in conventional farming?

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EUCARPIA – Breeding and seed sector innovations for organic food systems
March 8-10, 2021
Session Regulatory & policy opportunities

CISAB

GEVES
Expertise & Performance

- Assessing varieties for organic farming (OF) : what contribution from conventional farming (CF)?
- Is it necessary to experiment varieties specifically in OF, especially for national registration?

- Results from ECoVAB* (research programme 2015-2018) = how to describe and evaluate a variety adapted to OF / case of **arable crops**
- Reflections within CISAB** = how to evaluate varieties adapted to OF, in order to promote their registration

CTPS - The Permanent Technical Committee for Plant Breeding (manages catalogue / implements rules for registration / Variety testing)

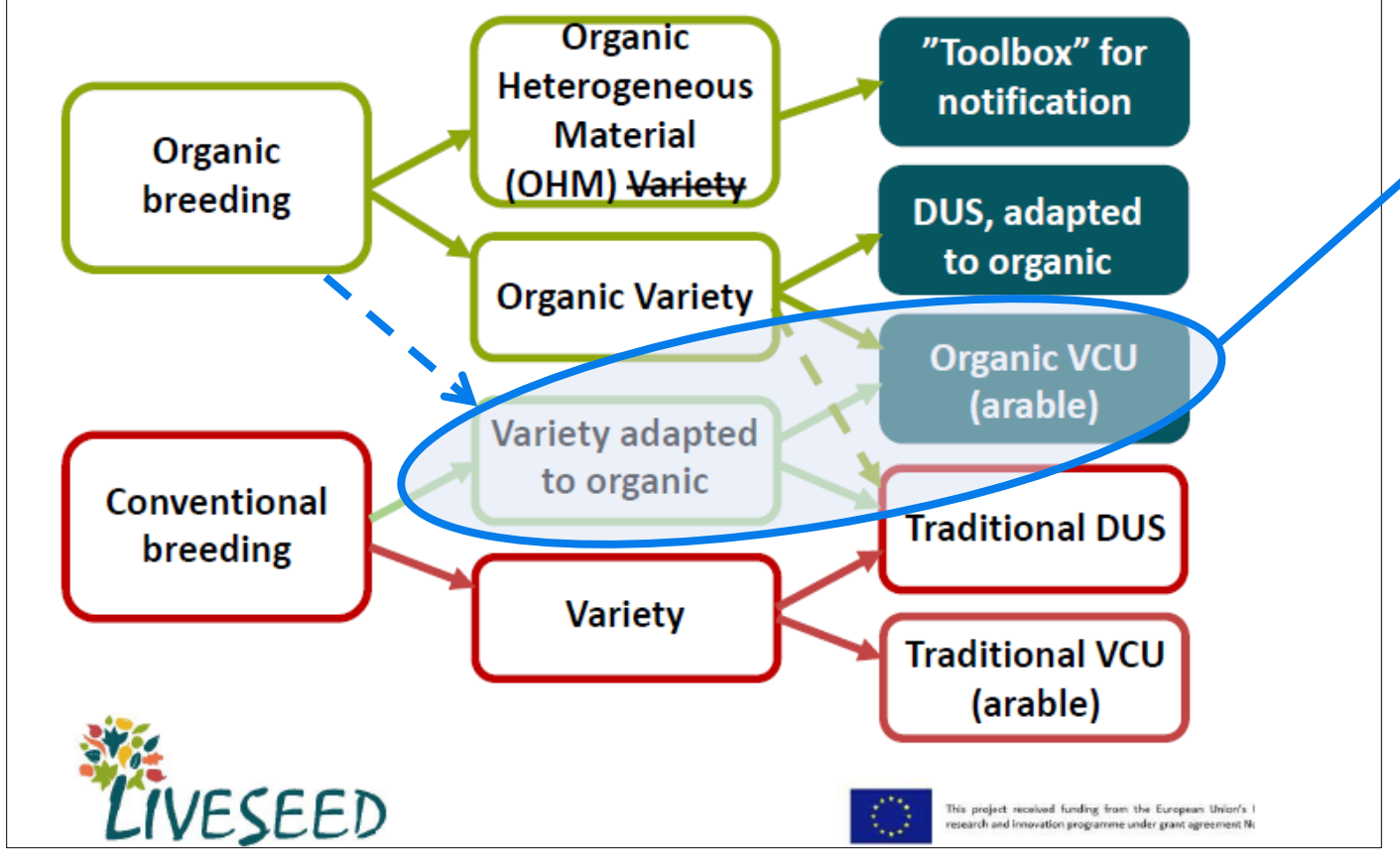
Cereals	Maize & sorghum	Faba beans & peas	Rapeseed & crucifers	Sunflower & soya	Beetroot & ind. chicory	Flax & hemp	Forage plants & grass	Potato	Vegetables plants	Ornemental plants	Vine	Fruit trees	Forest trees

CISAB **A forum for debate, with representatives of several colleges**

** ECoVAB was funded by CASDAR (French Ministry of Agriculture). ITAB project manager (Laurence Fontaine), GEVES partner (Marie-Hélène Bernicot).*

***CISAB, the Commission for OF, is a transversal committee within CTPS, the national authority managing registration for the Ministry of Agriculture. CISAB was created in 2015 to promote registration of varieties for OF.*

Breeding Strategies and Registration of Organic Varieties



Liveseed workshop on Organic Varieties. Organic innovation Days / Liveseed final conference for stakeholders and policymakers, 24th November 2020

CISAB
ECoVAB
reflections

What VCU for varieties adapted to OF?

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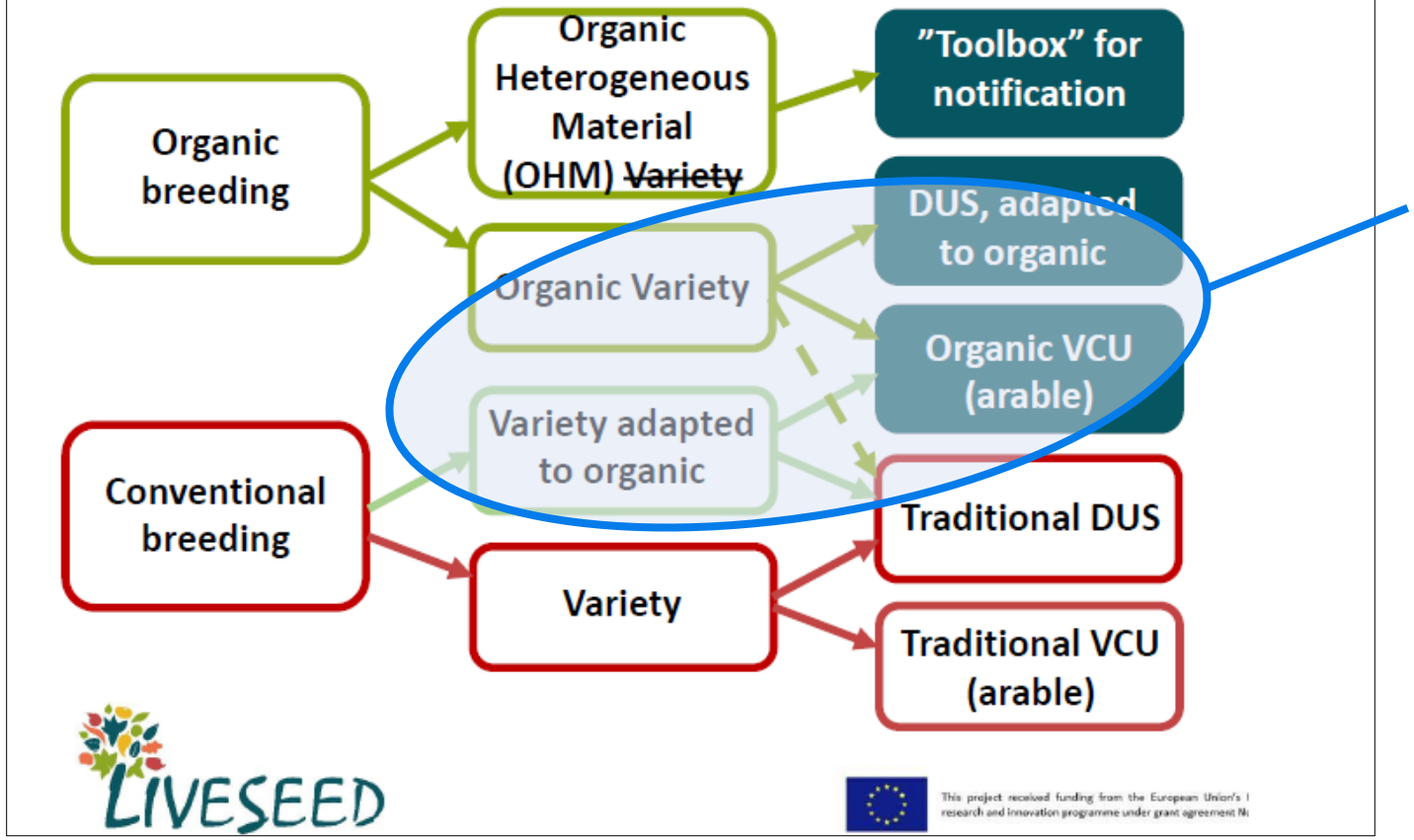

On-coming reflections of CISAB (temporary experiment)

What VCU for organic varieties?

Liveseed workshop on Organic Varieties. Organic innovation Days / Liveseed final conference for stakeholders and policymakers, 24th November 2020

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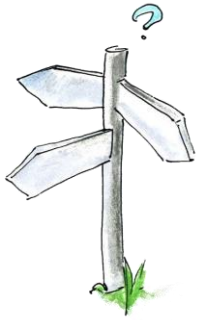
Comparisons CF-OF: results are variable (contradictory ?)



Example on bread wheat

CF is predictive for OF

Highly heritable traits

- Height
- earliness of heading
- specific weight
- thousand kernels weight

- Yield

CF = in extenso. No fungicide, little N

CF = more intensive

CF is not predictive for OF

G x E interaction

- Quality parameters (proteins, baking test…)

(Schwärel *et al*, 2006) (Le *Campion et al*, 2013) (Fontaine *et al*, 2021)

Comparisons CF-OF: results are variable ~~(contradictory ?)~~

Results depend on:

- Level of intensification (in CF & in OF)
- Gap between OF and CF
- Pedoclimatic situations (different yield potential and pest pressure)
- Observed traits (+/- heritable traits)
- The range of genotypes under study

⚠ Beware of what is being compared

Comparisons between CF and OF have limitations:

- Tests on close plots (OF vs CF) => soil, microclimate may differ
- Different crop management, rotations…
- A comparison OF/CF all things being equal is not possible

⚠ Comparisons may be endless, (useless?)

What VCU for varieties adapted to organic farming?

- It is <u>not</u> necessary to double experiments (VCU in conv. + VCU in organic)
  => SAVING
- Some results acquired in CF may be used for OF (and OF for CF), according to the crop and the traits
  => COMPLEMENTARITY

PROPOSED PROCEDURE:

Analyse expectations in OF
- Agronomic
- Cropping systems
- Quality

→

Determine what to do in OF / CF
- Specific traits required by OF
- Use existing data / evaluation systems in CF

→

Base registration for OF on relevant traits for OF
- Adapt registration rules
- Balance weighting between traits

Examples for two crops : 1/ wheat

France has a specific registration for OF for wheat

2012 to 2019:

Double networks:

Traditional variety trials in CF

Trials in OF for yield, quality, weed competitiveness

Traits in CF
- Diseases
- Lodging

Adapted registration rules for OF

Since 2020:

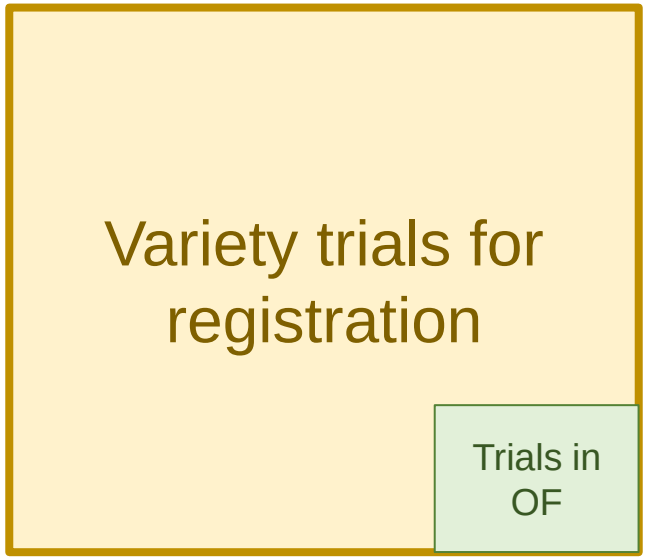
Variety trials in OF
- Yield
- Quality
- Weed competitiveness

Traits in CF
- Diseases
- Lodging
- **Common bunt** (specific for OF)

Adapted registration rules for OF

Examples for two crops : 2/ Soya

No specific registration for OF for soya, but a single network including OF:

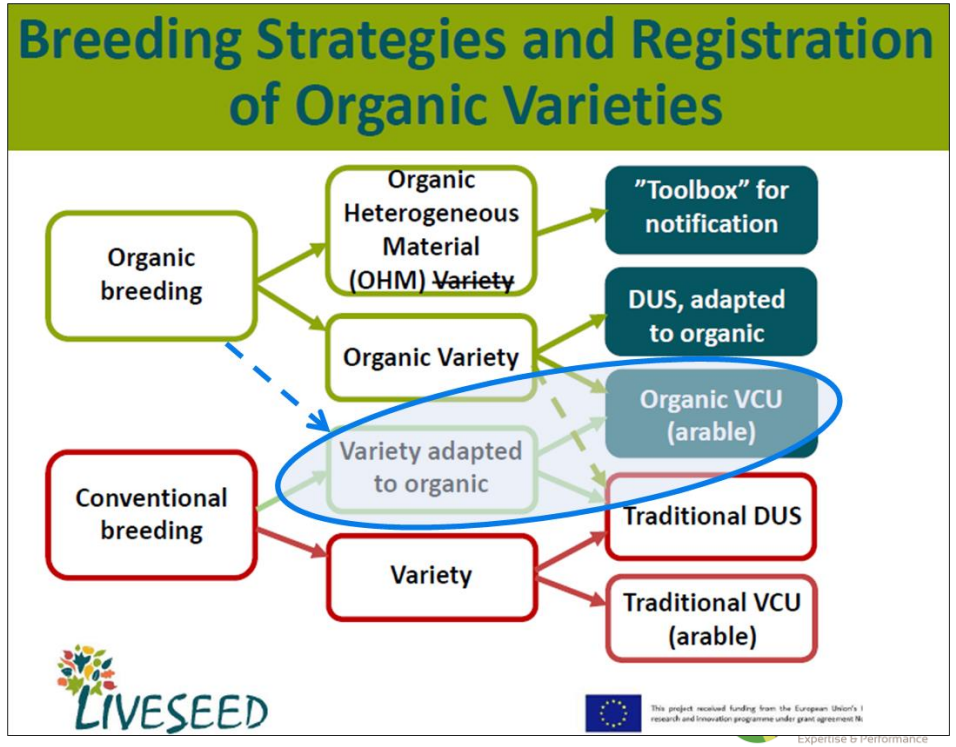


Under study for OF:

- Add notations expected for OF (covering ability)
- Add trials in OF in dry conditions (no irrigation) – *More common in OF*
- Adapt registration rules for OF

To conclude: an adapted VCU for varieties adapted to OF

- There is no need to double VCU networks (CF + OF) for registration: seek for complementarity
- Mandatory to assess characteristics of significant interest for OF
- Trials in OF are required, but not necessarilly all: some results in CF are useful for OF, depending on crops and traits
- This practical approach allows CTPS:
  - To be reactive for more crops and adapt rapidly VCU, in case of demand for registration aiming for OF
  - To focus on wether the variety is adapted to OF, not on the breeding scheme



What about a VCU for organic varieties?

Varieties adapted to OF and organic varieties:

- VCU provides expected & reliable information ==> VCU is usefull
- Performances are evaluated for VCU in a limited set of situations (soil, climate, cropping systems…) ==> Need for more evaluation in more situations
  - Trials & observations in various conditions of environment and use
  - Multi-actor approach
  - Need to share knowledge

Questions to discuss in the temporary experiment:

- Which varieties to evaluate?
- Which traits? Are some of them assessable in CF?
- What trials in which situations?