



## Need for integrated approach for Organic Plant Breeding to secure integrity of organic food

Monika Messmer, Freya Schäfer, Eva Winter

LIVESEED workshop on Organic plant breeding in a systems-based approach and integration in value chain partnerships

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[monika.Messmer@fibl.org](mailto:monika.Messmer@fibl.org)

[engagement.biozuechtung.org](http://engagement.biozuechtung.org)

# Great challenge for agriculture

Increasing and securing food production with increasing demands on quality by processors and consumers.

This is to be achieved

- With less external inputs on limited land
- Robust cultivars to combat risks due to more extreme and less predictable weather events (heat, frost, drought, flooding) and new emerging pest and diseases (climate change adaptation)
- less negative environmental impact ( less nutrient leaching, greenhouse gas emissions, residues, fossil fuel requirements) → climate-neutral agriculture

# Why do we need an independent organic breeding

- **Strong restriction of the genetic diversity** of cultivated species and animal breeds, patenting of living organisms and increasing dependence on a few multi-national breeding companies.
- Conventional breeding with a **focus on industrialised agriculture** is diverging more and more from the demands of organic producers for sustainable production and animal welfare.
- **Use of new breeding technologies** (e.g. cell fusion, gene editing, cis genetics) contradict the principles of IFOAM International.
- **Continuous adaptation of cultivars** to changing conditions (e.g. climate change, new harmful organisms, customer requirements, legal framework)
- Growing **organic market with high demands on** quality and integrity of production, fair trade, regional production, sustainable animal feed, closed nutrient and energy cycles, no environmental pollution, diverse and nutritious food, vegetarian and allergy free products

## **Demands of organic agriculture on the cultivars:**

Varieties adapted to organic farms, which deliver sufficiently high and above all **stable yields of high quality even** under low-input conditions and build up soil fertility.

Specific variety requirements:

- Rapid youth development
- Nutrient efficiency and high N-fixation
- Weed suppression capacity or weed tolerance
- Resistance to soil- and seed-borne diseases
- Good digestibility and nutritional value of forage plants
- Good processability, nutritional quality and taste

Option for Farm saved seed

Genetic diversity

Prohibition of GMOs (including cytoplasm fusion, gene editing)

Conservation and free access to GMO-free genetic resources

# Current situation in plant breeding: The integrity of the organic sector is at stake

Large conventional breeders concentrate on a few large crops with a focus on high input conventional agriculture. These varieties account for over 90% of organic farming

- neglect of niche crops important for organic farming such as legumes, catch crops and special crops
- Limited suitability of high-input varieties in organic farming

More and more methods used in conventional breeding do not comply with the IFOAM guidelines for organic farming.

- Cell fusion-derived CMS hybrids dominate the market for Brassica vegetables and chicory, but are no longer permitted in most organic labels leading to massive variety bottlenecks for cauliflower and broccoli.
- Farmer stopp cultivation of these crops

*Organic breeding relies on varieties that are cell fusion-free, reproducible, robust, yield stable, locally adapted and tasteful.*

# Why Organic Plant Breeding must be strongly promoted?

- Today there is high dependency on cultivars bred for high input conditions by multi-national companies (> 90%)
- Until now only few organic breeding initiatives covering a small number of crops driven by pioneers investing own resources
- Breeding is long term approach needs 10 to 20 years before first cultivars can be released, thus it needs long term engagement
- Special demand of organic sector needs higher and more diverse breeding efforts
- Capacity building and career development of young breeders is urgently needed
- Divergence in breeding goals and techniques will cause severe shortage of cultivars and contamination problems in near future
- → **loss of consumer trust**

# Present funding schemes for Organic Breeding

## Donations

**Donors:** Seed Fund, Software AG Foundation, Mercator Foundation Switzerland, etc.

- Most important resource for most organic breeders
- Minimal administrative effort
- non-profit status
- Purpose-oriented but limited in total volume

## Licenses, seed reproduction fees, variety development contributions & sale of seeds / vegetative plant material

**Donors:** farmers, gardeners

- Generate a certain amount of money backflow that can be invested in breeding, but the contribution is usually between 0-15%.
- Does not work if we strive for many cultivars and many different varieties and animal breeds

# Present funding schemes for Organic Breeding

## Public funding

**Donors:** BLE, EU, BMBF, EiP, BLW etc.

- Only for breeding research not for practical breeding work
- High administrative effort for applications and reporting
- Often tied to a high proportion of own funds that are not available

## Incentive charges for derogation of conventionally untreated seed

**Donors:** farmers, gardeners

- So far only works in Switzerland (coordinated by Bio Suisse)
- Legal regulation is not allowed as it will cause distortion of competition
- Danger of conventional suppliers increasing the price
- Will be obsolete as soon as 100% organic seed is reached



# Present funding schemes for Organic Breeding

## Participation of the value chain

**Donors:** Organic associations, processors, specialized trader, retailer, consumer

- Coop Fund for Sustainability supports wheat breeding of GZPK since 2003
- Fair Breeding 0.3% of net sales of fruit and vegetables
- Intensification project: Participation BNN and Software AG Foundation
- High Oleic Organic Sunflowers: 12 companies join forces to invest for 7 years
- Organic Cotton accelerator: Participation of the major textile labels in a joint pool financing of OCA, an organization that coordinates pool funds and promotes organic cotton breeding: Seeding the Green Future.

# Present funding schemes for Organic Breeding

## Crowd funding

**Donors:** consumers, citizen, broad public

- High administrative expenditure
- Non-profit status (Open Source Seed)

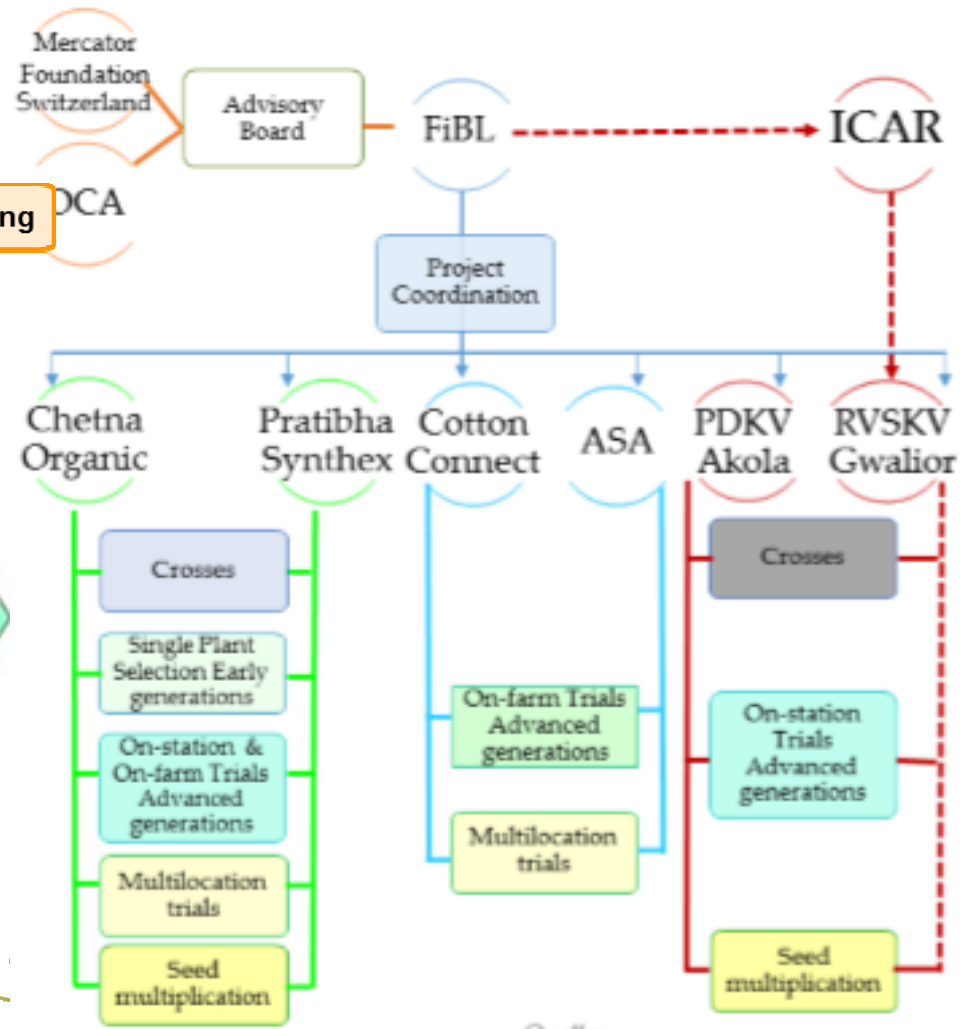
# Example for cross-sector promotion of organic cotton breeding



**Poolfunding of organic breeding:**  
 50% Foundation Mercator Switzerland  
 50% Organic Cotton Accelerator

**Fund raising**

## Project Governance, Activities & Partners



**FiBL**



# Different financing channels of organic breeding

## source of funds

## use of funds

**Investment in the future -  
the entire value chain**

**Licenses &  
Variety development  
contributions**

farmers, multipliers

**Non-profit financial  
resources**

Seed funds, animal breeding  
funds, FairBreeding© etc.

**Public subsidies**

LEAD, EU, BMBF, DLR, BLW

**Demand-oriented organic  
breeding as R&D for the  
processing sector, quality  
Taste**

**variety development**

Yield & suitability for  
cultivation

**Non-profit breeding**

Biodiversity, sustainable  
nutrition, cultural heritage

**Breeding research, pre-  
breeding, conservation**

Biodiversity, health,  
methodology

**organic breeding**

# The need for organic breeding to maintain the integrity of the value chain



# Insufficient and fragmented financing of organic breeding



# Call for joint action of the value chain to support organic breeding - Organic right from the start

## Engagement.BioBreeding

Through cross-sector engagement in organic breeding, it is possible to

- Maintain the integrity of the organic sector (consumer demand)
- Maintain the integrity of the genome (required by the IFOAM guidelines)
- Breed plant cultivars of many crops that are adapted to organic agriculture
- Integrate fragmented financing into a long-term approach that meets the needs of the organic sector
- enlarge financial resources (from 2.3 Mio € to 10-20 Mio €) allowing new breeding initiatives to emerge and promotion of young breeders

## What distinguishes a Value Chain Partnership

- Joint provision of sustainably produced food for the mutual benefit of all stakeholders. Sharing of risks and benefits.
- Functioning value chains and close cooperation between the actors based on partnership.
- Orientation towards added value for customers.

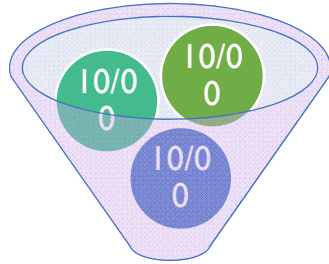
## Why breeding needs to be included in the Value Chain Partnership

- Organic breeding forms the basis for our organic foods of tomorrow and is therefore part of the value chain: organic right from the start.
- Organic breeding aims at the future: what is bred today will be on our plates in 10-15 years. That is why we must take responsibility today.



# Pool financing for sustainable organic breeding

## Players in the value chain



Committing at the point of sale e.g. 0.1-0.2% of organic turnover as engagement of as many market partners in the organic sector as possible



Cross-sector pool funding

**Bio right from the start  
Breeding Investment Fund  
Engagement. BioBreeding**

Monitoring by independent body

Strategic control

Trade, processors, producers, associations, BÖLW, breeding funds

Operational control

Lean administration

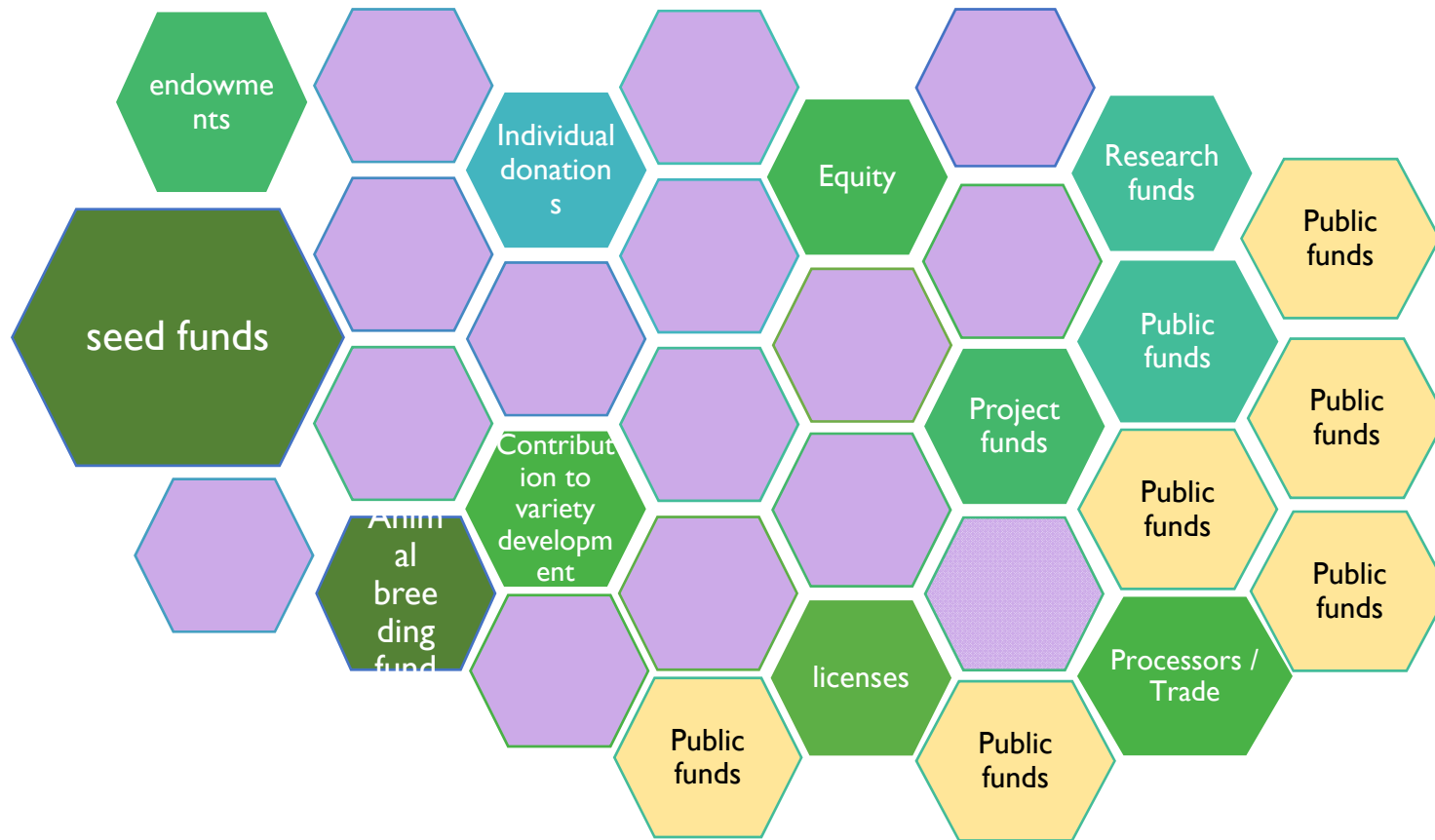
Advisory body

Organic breeders, endorsers, researchers

- 1
  - Identifying the needs of the industry
  - Prioritisation & tendering
- 2
  - Review of offers according to transparent criteria
- 3
  - Investment in breeding programmes (personnel, infrastructure, training)
  - Review of milestones



# Secured financing for organic breeding



# How does the organic sector benefits from organic breeding?

- Organic breeding respects the values and principles of the whole organic sector and does not use critical breeding methods. This ensures the integrity of organic products and strengthens consumer confidence.
- Organic breeding takes into account the needs of organic farmers, processors, traders and customers. The breeding lays the foundation for the high quality of organic food.
- Organic breeding produces animals that take animal welfare and sustainable feeding and husbandry into account and creates adapted plant varieties that satisfy farmers, processors and consumers.
- Organic breeding is the basis for a self-determined, independent further development of the organic sector.

# Challenge:

How can we cross the gap to making the engagement in organic breeding through value chain alliance as the new organic standard?

## Mind the Gap!

4

der Nischenfokus !

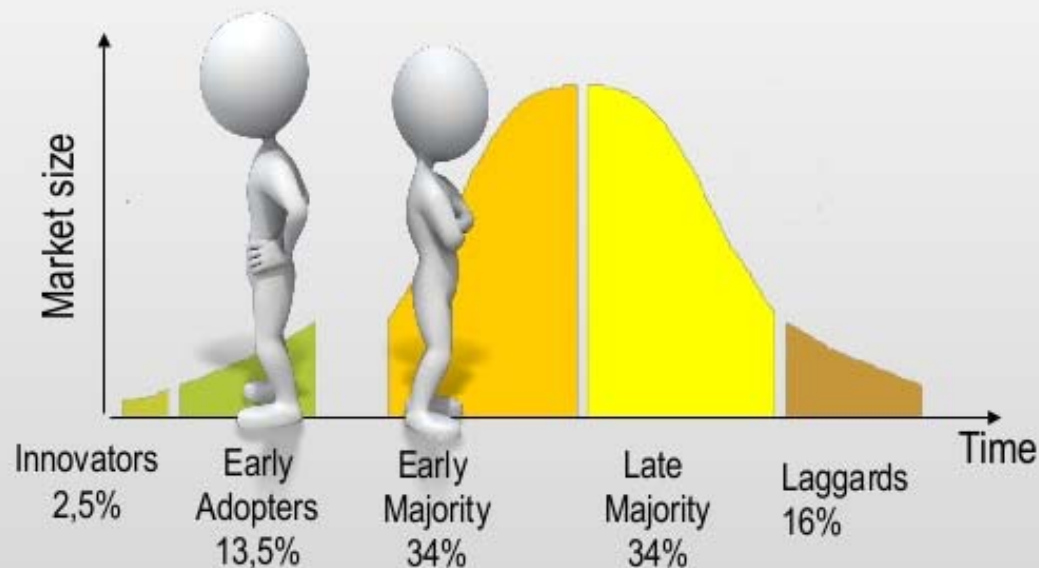


Chart basierend auf Moore 1999, S.12  
23.01.2015 Dr. Ute Hillmer

Normal people just see a seed:



Gardeners see the dreams within:



Joseph Tychonievich

**FiBL**

**LIVESEED**

**ECO-PB**

# Thank you very much for your attention.

## Kontakt:

Monika Messmer

E-Mail: [monika.messmer@fibl.org](mailto:monika.messmer@fibl.org)

[www.fibl.org](http://www.fibl.org)

[www.eco-pb.org](http://www.eco-pb.org)

[www.liveseed.eu](http://www.liveseed.eu)

[www.remix-intercrops.eu](http://www.remix-intercrops.eu)

[Engagement.biozuechtung.org](http://Engagement.biozuechtung.org)

[www.greencotton.org](http://www.greencotton.org)

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# LIVSEED



[www.livseed.eu](http://www.livseed.eu)

## Boosting organic seed and Plant breeding across Europe 2017-2021

Bram Moeskops IFOAM EU, Project Coordinator  
Monika Messmer, FiBL-CH, Scientific Coordinator  
[www.livseed.eu](http://www.livseed.eu)



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# World Café Guidelines





# World Café Concept

Fascilitate Communication Across Disciplines  
Broad Engagement on Strategic Initiatives  
Create Shared Direction, Momentum for Action  
Cross Pollinate Learning, Generate New Insight  
Build Community and Trust  
Uncovering Deeper Issues



## Word Café rules

Listen to understand

Focus on what matters

Contribute your thinking

Speak your mind and heart

Link and connect ideas

Listen together for insights and deeper questions.

Doodle – on your tablecloths

Have Fun!

# Instructions to the World Café

First round:

1 person will host a café table to discuss one major issue

4 to 5 persons can join one Table to discuss with each other

Host presents the main question

brainstorming about the questions

host will note most important points

After 20 min guests move to new table

Host stays at his/her table

**Total 20 minuntes per round**

# Instructions to the World Café

2nd + 3rd round

Host stays at his table

4 – 6 persons can join the Table to discuss with each other

Host presents the main question

Host will summarize the previous discussions **5 min**

brainstorming about the questions **15 min**

host will note most important points

Host will present outcome to the plenum

Host makes a short written summary for the conference protocol

# World Café Questions

1. Why should different value chain partners support organic plant breeding (Eva & Monika)
2. What is the advantage of organic plant breeding for the value chain (farmers, processors, traders, etc.) (Edith & Pauline)
3. What is the advantage of organic plant breeding for consumers and society (local and global) (Edwin )