



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

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

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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.

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)

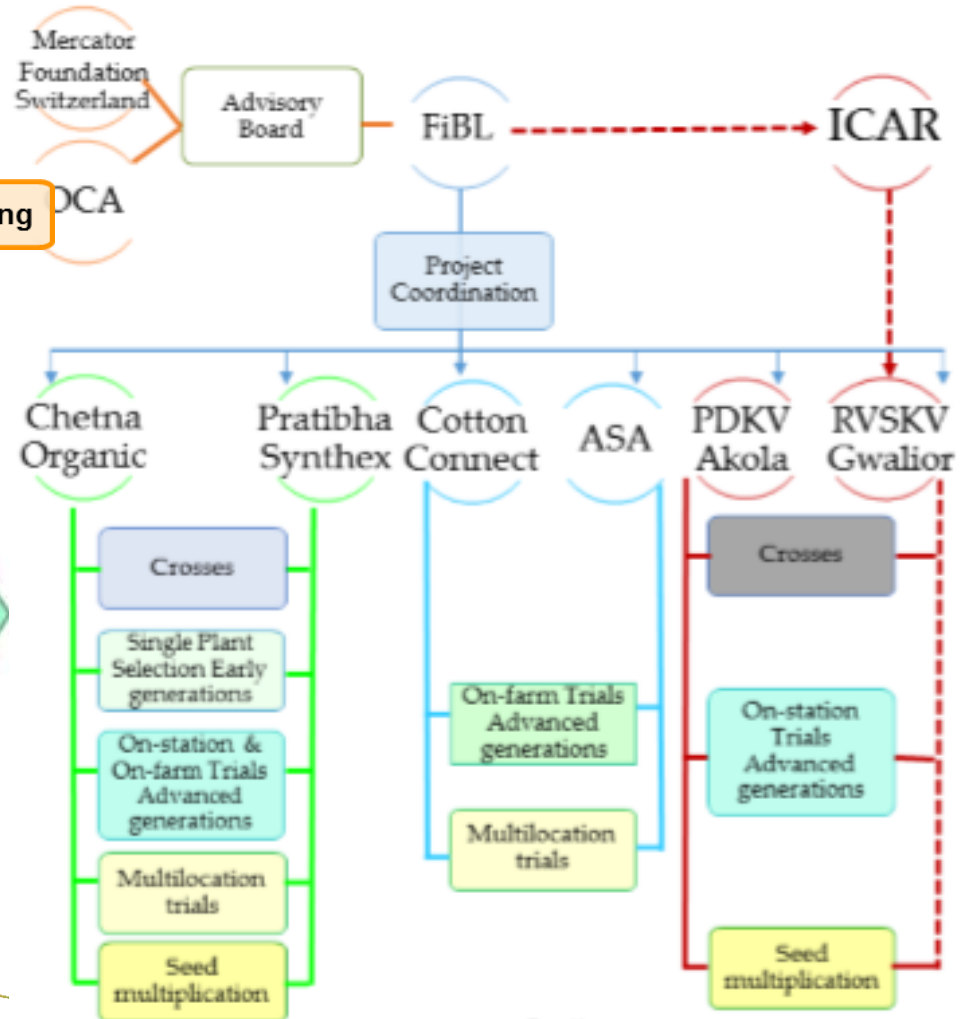
Example for cross-sector promotion of organic cotton breeding



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**

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

**Licenses &
Variety development
contributions**

variety development
Yield & suitability for
cultivation

farmers, multipliers

**Non-profit financial
resources**

Seed funds, animal breeding
funds, FairBreeding© etc.

Non-profit breeding

Biodiversity, sustainable
nutrition, cultural heritage

Public subsidies

LEAD, EU, BMBF, DLR, BLW

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

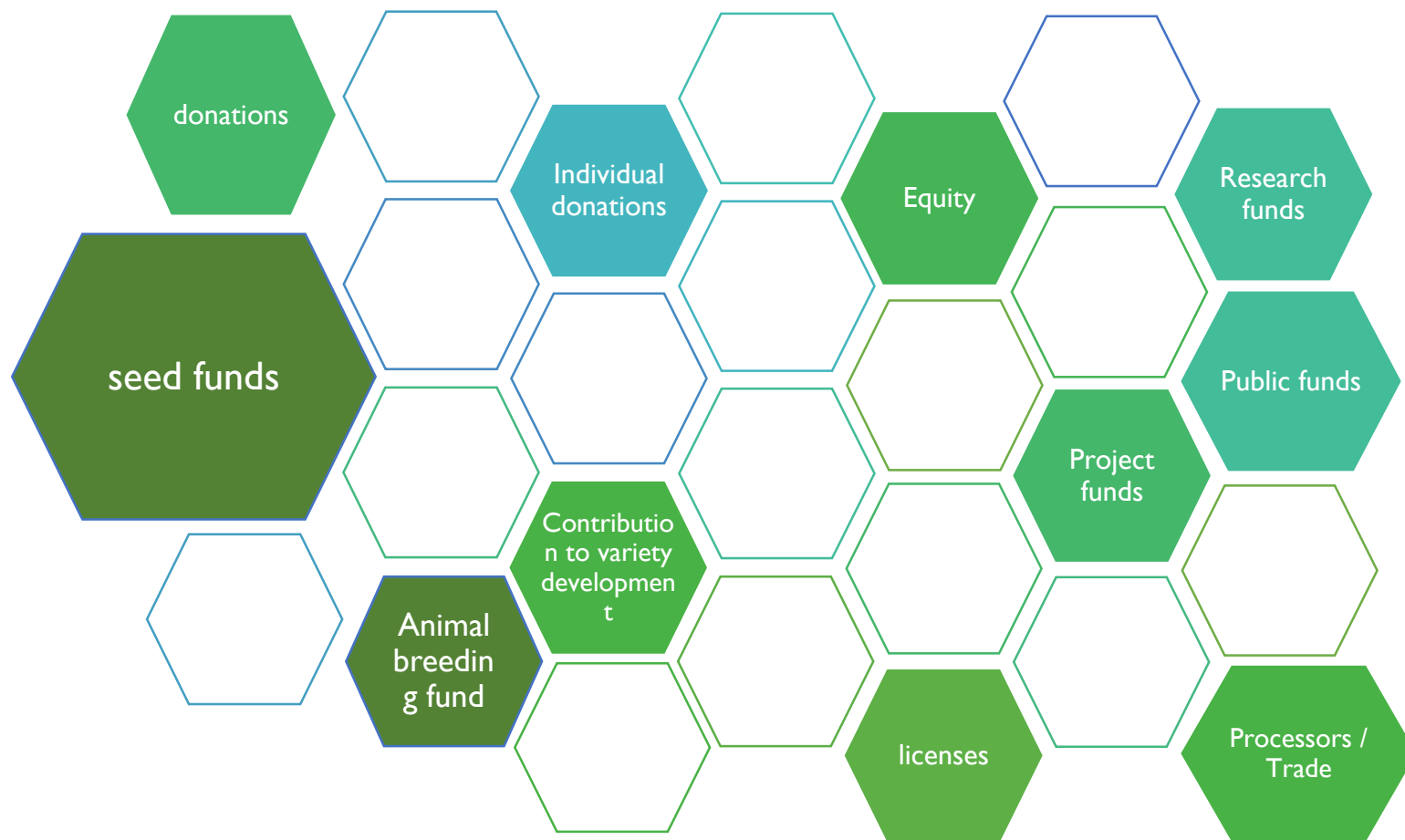
Biodiversity, health,
methodology

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

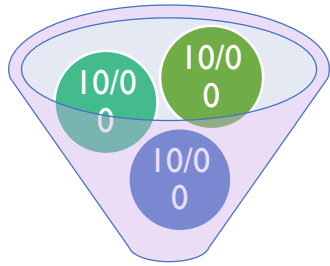
- Joint provision of sustainably produced food for the mutual benefit of all stakeholders. Sharing of risks and benefits.
- Functioning value chains and close cooperation between the actors based on partnership.
- Orientation towards added value for customers.

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



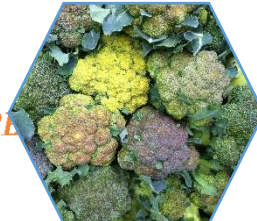
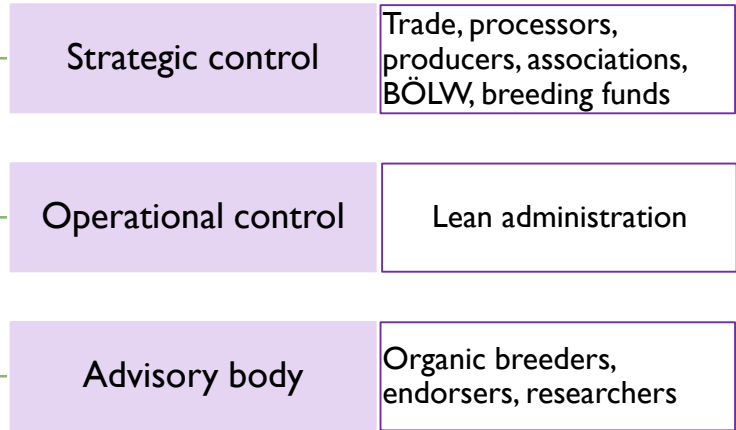
Committing at the point of sale e.g. 0.1-0.2% of organic turnover as engagement of as many market partners in the organic sector as possible

Cross-sector pool funding

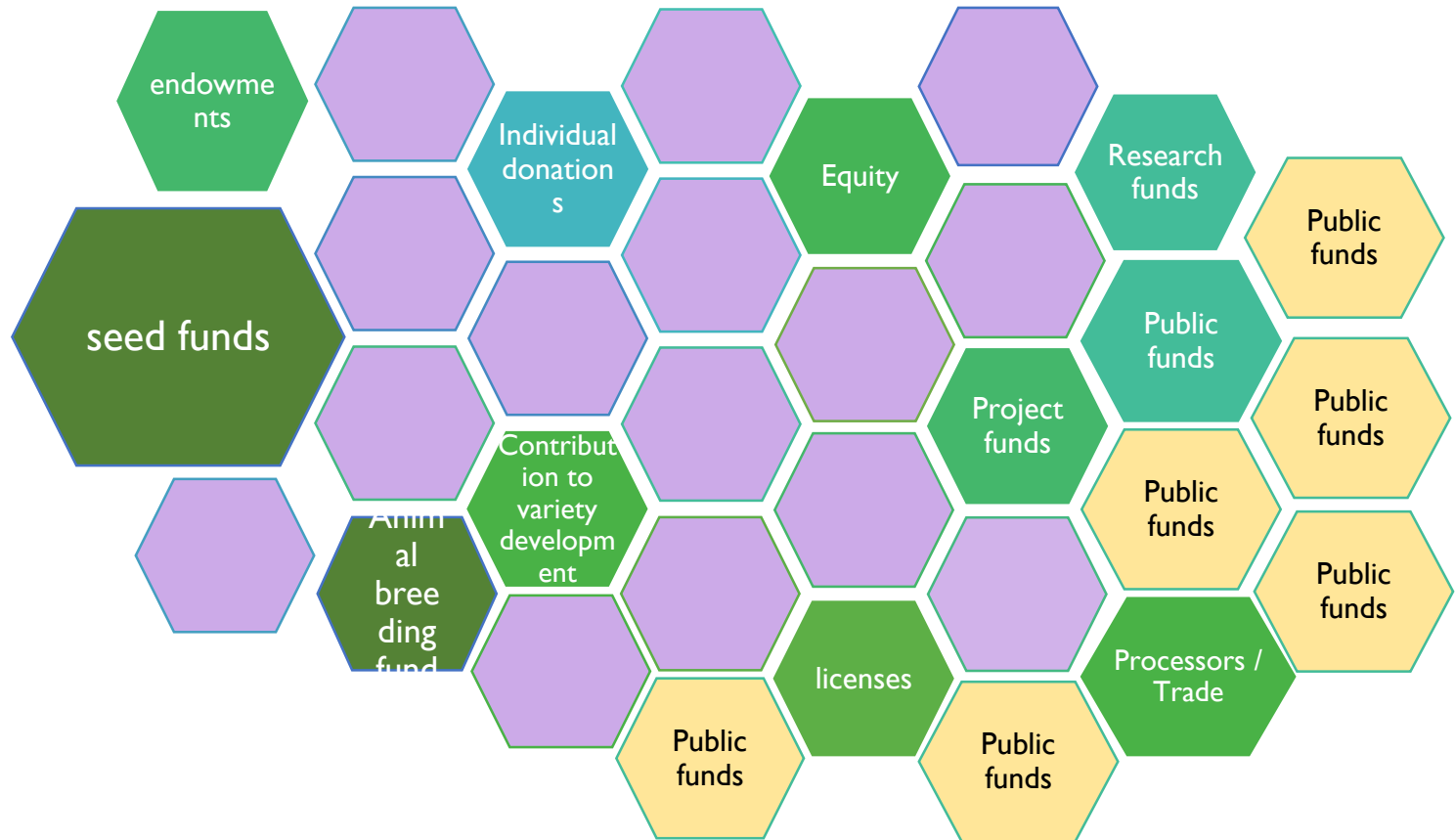
Bio right from the start
Breeding Investment Fund
Engagement. BioBreeding

Monitoring by independent body

- 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 !

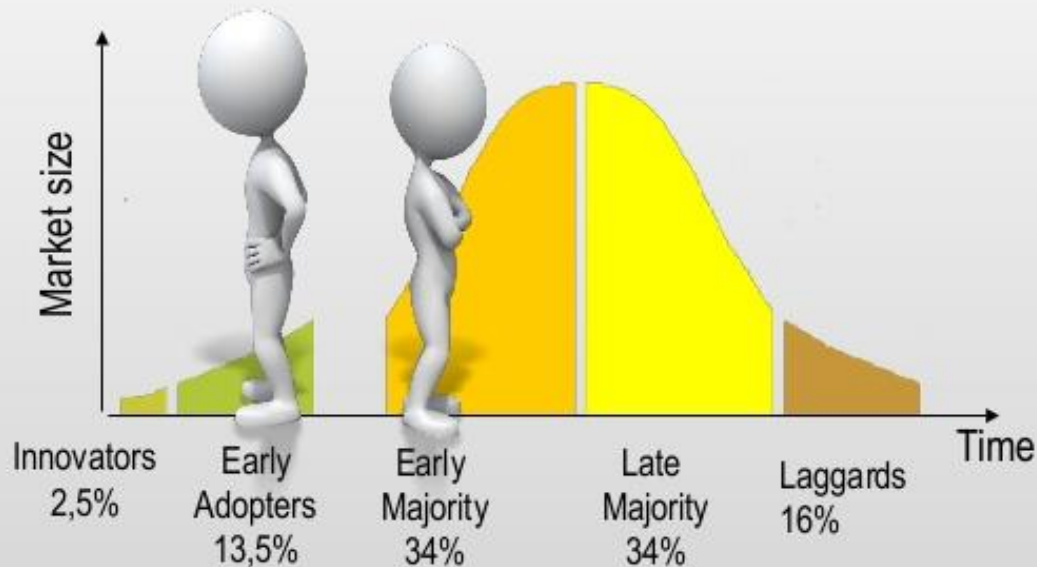


Chart basierend auf Moore 1999, S.12
23.01.2015 Dr. Ute Hillmer

BETTER
REALITY
MARKETING

Normal people just see a seed:



Gardeners see the dreams within:



Joseph Tychonievich

Thank you very much for your attention.

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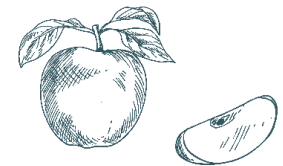
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LIVeseed

Boosting organic seed and Plant breeding across Europe 2017-2021

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World Café Guidelines



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 minutes 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)