



AGROECOLOGY WORKS!

Agrobiodiversity and participatory plant breeding for an agroecological transformation of agriculture?

Bern, 2 November, 2021



Participatory Plant Breeding in Switzerland

Opportunities and challenges

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**AGROECOLOGY
WORKS!**



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Participatory Plant Breeding in Switzerland

Reflections on possible contributions of plant breeding to agroecological transformation

- Agroecology, transdisciplinarity and plant breeding
- Contradictions between plant breeding and agroecology
- Mercator Project: Grain legumes for an agroecological transformation of Swiss agriculture

Participatory Plant Breeding in Switzerland

Reflection on possible contributions of plant breeding to agroecological transformation

Participatory plant breeding → only way to develop appropriate agrobiodiversity for agroecological food production

Agroecological movement → need to strengthen cooperation and build networks for participatory breeding and other processes of agroecological transformation

Agroecology – farmer' perspective

*Declaration of Evenstad,
February 2014*



Agroecology

Transforming society through food production and the peasant
struggle**

This document strives to define the concept of agroecology as understood by the peasant farmers of the European Coordination Via Campesina. We are food producers and see agroecology as a way of life and a way of interacting with our surroundings. It is also our way of making progress towards Food Sovereignty. **We understand agroecology as a process of individual and collective Transformation (...). Agroecology entails a comprehensive view, where processes and practices are adapted to local conditions, at all scales.** This concept affects and transforms all aspects of life. Below we present **six essential principles** for bringing this about.

Agroecology – farmers' perspective

1. Feelings

Peasant sentiment is an essential part of agroecology. It is based on awareness, and love and respect for the Earth, the commons, nature and all life forms.

2. Diversity and biodiversity

Agroecology favors biodiversity as harmony and synergy among various systems: natural, social, and cultural. Agroecology fosters and safeguards agricultural ecosystems in viewing them above all in terms of local diversity and interacting systems.

3. Peasant knowledge

Agroecology protects, shares and pools traditional peasant knowledge in its various contexts and realities. It enhances intergenerational transmission and exchanges from farmer to farmer. It fosters innovation through observation, creativity and continuous learning and provides means for overcoming new challenges.

ECVC, Declaration of Evenstad, February 2014

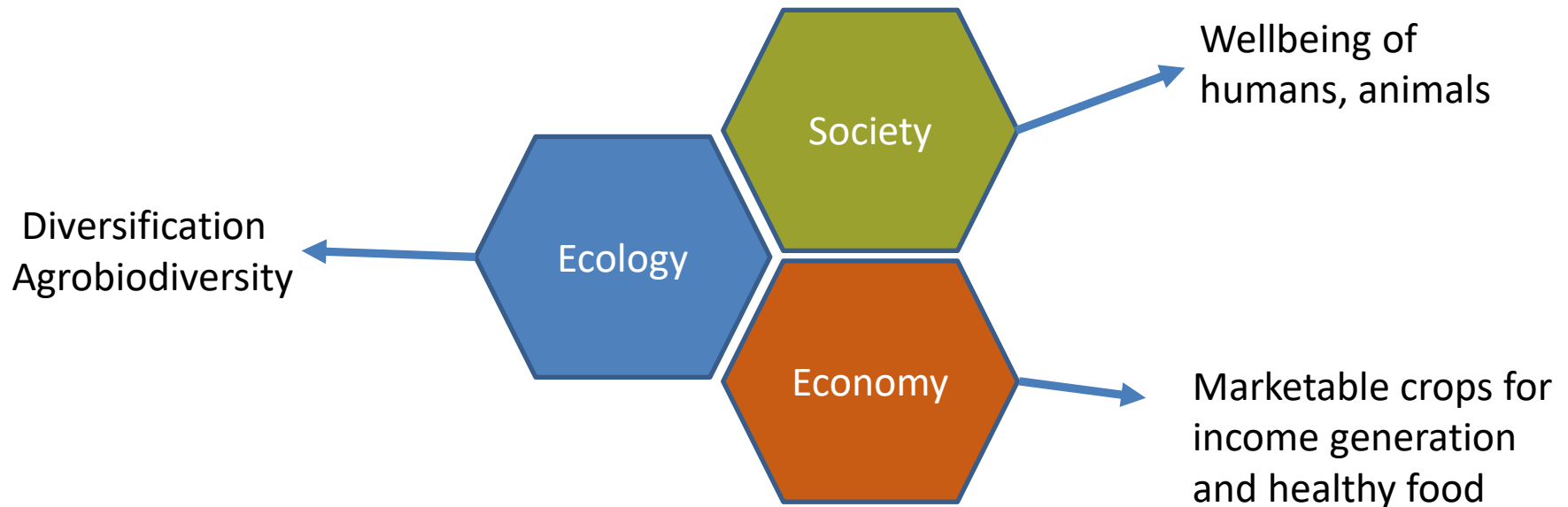
Plant breeding and Agroecology

Politicians and society agree that we **urgently need to change our agricultural and food economy**. We need healthy food for all, produced in a way that respects the environment and animal welfare and provides fair wages for all. ... Agroecology is a promising approach to achieve this.... Agroecology **combines scientific thinking and local knowledge**. In this way, it secures food, preserves natural resources and biodiversity, and improves livelihoods. **Agroecology recognises that agricultural systems are diverse and complex. It seeks to** conserve local seeds and livestock breeds, **improve soil fertility** and water-holding capacity. **Nutrients and energy should be reused on the farm instead of depending on external inputs**. It should be both productive and environmentally sound. Agroecology places high emphasis on secure access to land, healthy and sustainable food and decent work. It puts the rights of farmers and consumers at the center and promotes social justice.

Agroecology works! Petition, 2021

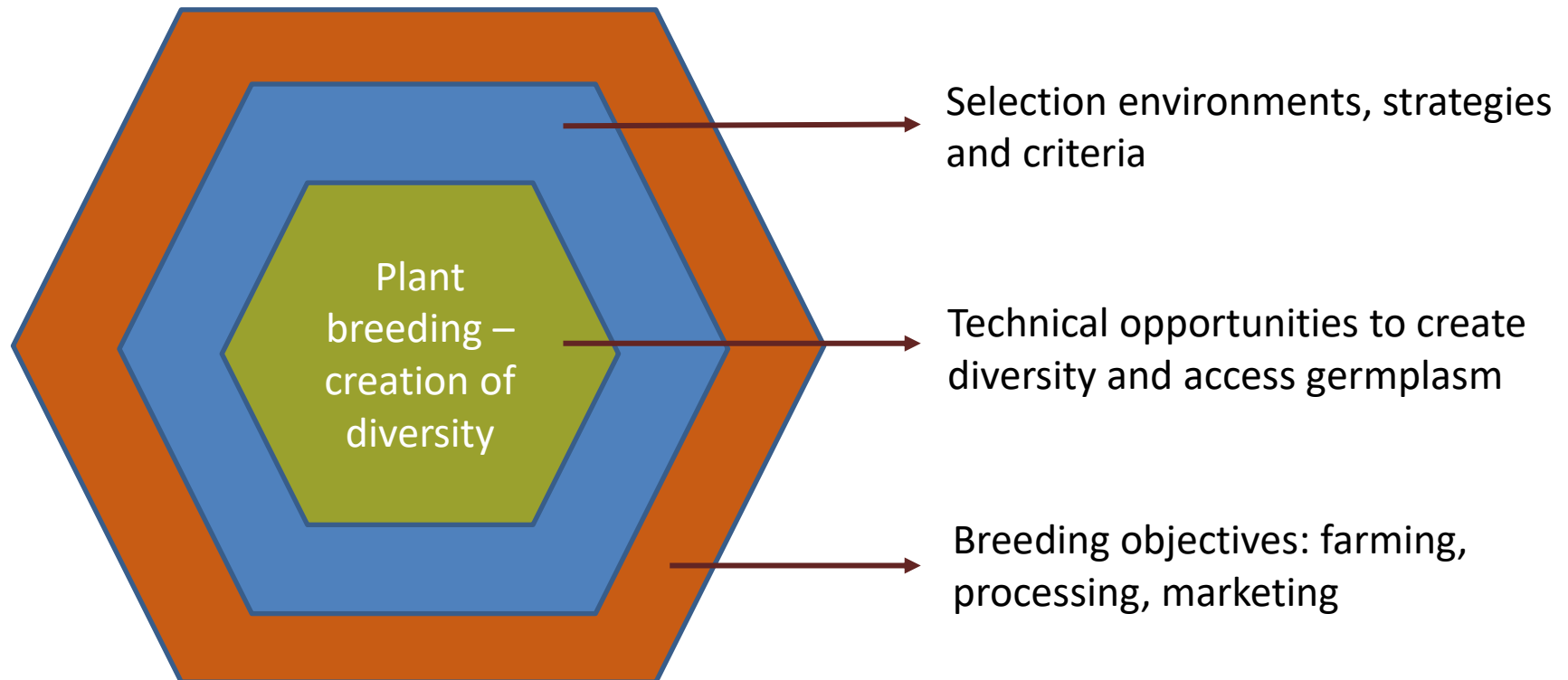
Plant breeding and Agroecology

How can plant breeding contribute to the agricultural transformation in Switzerland/the Global North?



Plant breeding and Agroecology

How can plant breeding contribute to the agricultural transformation in Switzerland/the Global North?



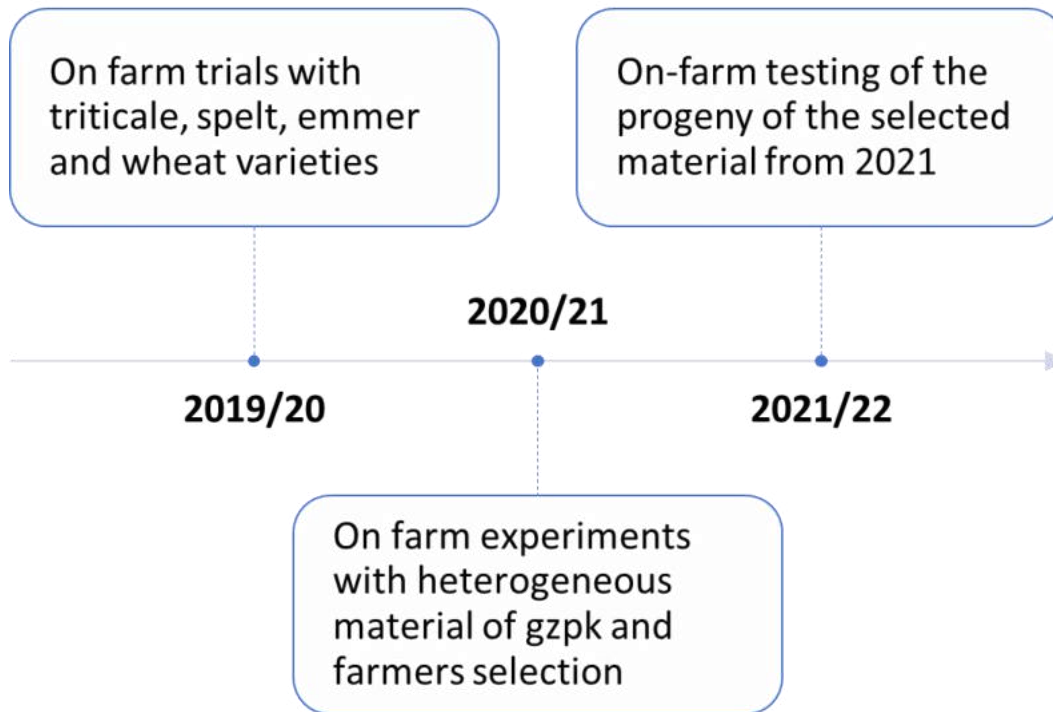
Plant breeding and Agroecology

Major vs. minor crops – different markets

- Agroecological objective: **Diversification**
 - healthy and sustainable food, diversified crop rotations, soil fertility, etc.
- Breeding Minor Crops → in Switzerland e.g. grain legumes including lupine, field pea, grass pea
- Advantages: nitrogen fixation, protein crops, meat substitute
 - **Challenges in breeding: small market, lack of precise breeding objectives, agronomically challenging species**
 - **Comparison wheat vs. field pea**

Plant breeding and Agroecology

gzpk-Project “Klimafenster”



Plant breeding and Agroecology

gzpk-Project “Klimafenster”

Size: 3*3m Block in an existing cereal field

- 7 varieties of wheat, 6 of spelt, 2 of emmer and 3 of triticale
- Farmers got protocols and lists for data collection in the field during the season
- breeders were in contact with the farmers via e-mail and WhatsApp
- the data was sent to gzpk at the end of the year



Plant breeding and Agroecology

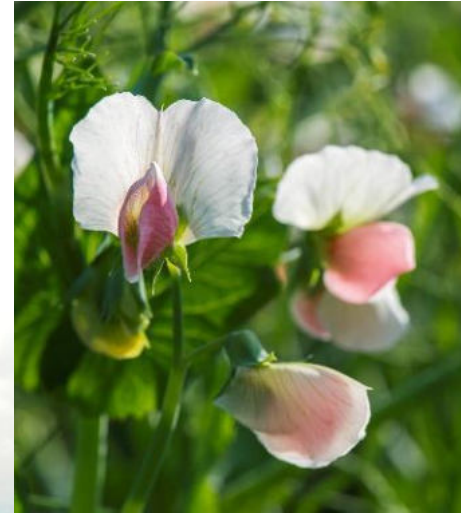
gzpk-Project “Klimafenster”



Beobachtungsblatt 1																	
Beurteilung Auflauf nach Saat																	
Name																	
Datum																	
Ort																	
Beurteilung	-	= unbefriedigend															
	++	= ok															
	++	= ausgezeichnet															
	1m																
	X	13.A I	13.B I	14.A I	14.B I	15.A I	15.B I	16.A I	16.B I	17.A I	17.B I	18.A I	18.B I				
		7.A I	7.B I	8.A I	8.B I	9.A I	9.B I	10.A I	10.B I	11.A I	11.B I	12.A I	12.B I				
		1.A I	1.B I	2.A I	2.B I	3.A I	3.B I	4.A I	4.B I	5.A I	5.B I	6.A I	6.B I				
	X	12.5cm Rand															
Bemerkung																	
X: Feldstecken blau																	
X: Feldstecken orange																	
18 Sorten à 2 Reihen: A & B																	
Weizen: 1-7; Dinkel: 8-13; Emmer: 14-15; Triticale: 16-18																	
Bemerkungen:																	



Contradictions between plant breeding and agroecology



Mercator Project: Grain legumes for an agroecological transformation of Swiss agriculture

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- analysis of framework conditions that have hindered or promoted the cultivation of grain legumes – **semnar**
- participatory breeding trials for site-adapted, agroecological agriculture considering specific needs of agricultural and processing - **gzpk**
- conceptualisation and testing processes of decentralised participatory selection – **gzpk**
- investigation of the potential of the climate-resilient crop grass pea – **CSS/gzpk**

Mercator Project: Grain legumes for an agroecological transformation of Swiss agriculture

→ Starting point for the long-term establishment of transdisciplinary breeding structures

