

QUALITY ASSURANCE IN FARMERS' SEED SYSTEM

November 20th, 2023

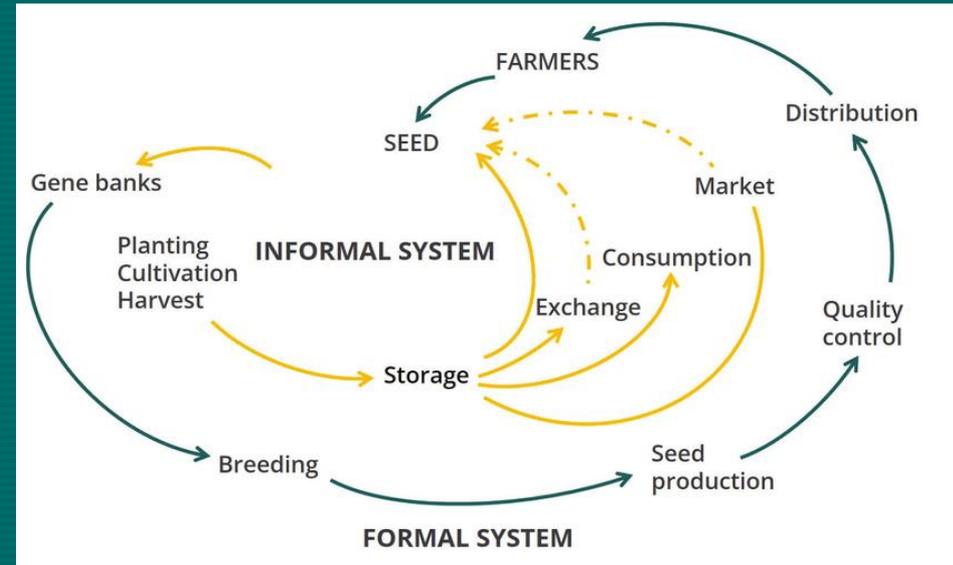
Ensuring farmers' seed quality : Lessons learned
from informal seed system and small scale farmers'
network activities in Greece



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Informal seed system

- Exchanging
- Community Seed Banks
- Conserving local PGR
- Farmers' & seed savers' seeds
- Broadening biodiversity



Seed quality play a vital role for resilience of local food systems

Farmer's seed or farm-saved seed?



- Landraces, populations, obsolete varieties, modern homogenous varieties, wild species, mixtures
- Farmers' selections (conservation # management)
- Each one's farmer's seed is different and unique (evolution of biodiversity)
- GX E X F interaction (genotype, terroir, farmer's personality)

Farmer's seed quality

- Standard (vigor, viability, purity, phytosanitary)
- Organic or agroecological quality (adaptation, robustness, nontreatment, tolerance)

Seeds should have the memory of nature (organic bred + microbiom) and opportunities to realize this memory (agroecological management)



Farmer's seed quality

- adaptation to agroecological systems
- insect pest and disease resistance,
- weed tolerance,
- adaptation to biologically mediated nutrient availability,
- and tolerance to climatic and environmental stresses, such as drought, cold or wet soils

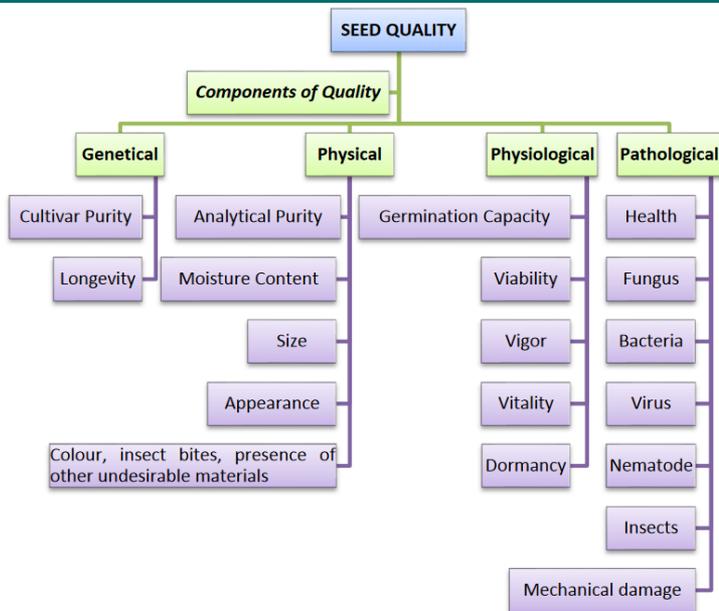


Fig. A structural concept of seed quality (Huda, 2001)

Participatory organic breeding enhances agroecological concept of farmers' seed quality

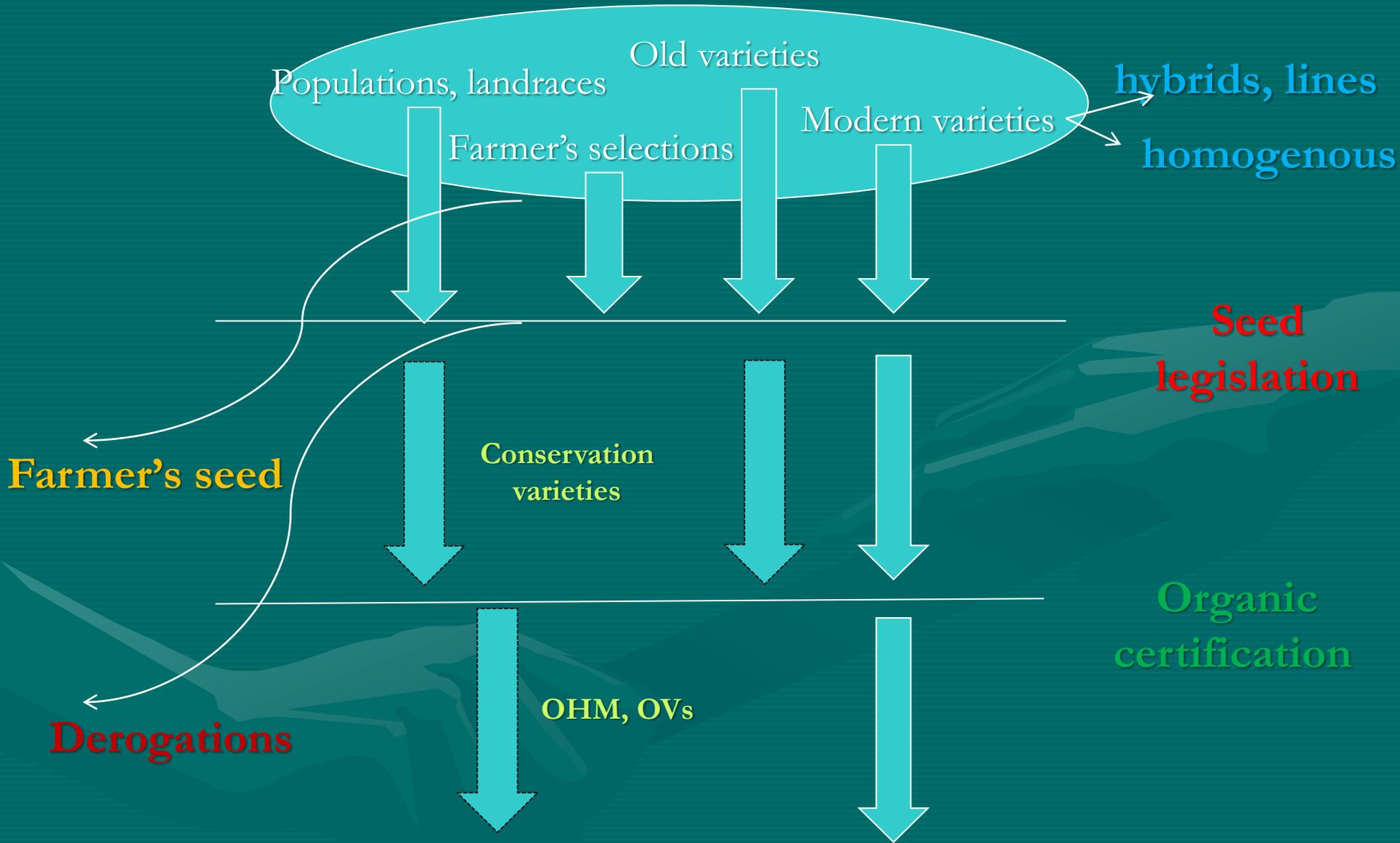
Farmer's seed in Greece

- Generally, high percentage in greek agriculture (>70% for some crops)

Facts :

- Inferior quality (standard) than certified
- Variable quantities from year to year
- Professional farmers can hardly find good quality seed (esp. landraces) from neighbors or seed – savers' networks
- Problems with seed regulation regime and certification standards (DUS, VCU or VCUS, phytosanitary, seed-exchange)

Agrobiodiversity and EU Seed Law (under revision now)





Founded in 2004

Main focus :

- to preserve agrobiodiversity and
- enhance organic agriculture

Objectives :

- to conserve heritage varieties and traditional agricultural knowledge
- to develop plant varieties adapted to local organic conditions
- to strengthen the role of the farmers

AEGILOPS' Focal Points and farmers' network



- Volos
- Thessaloniki
- Kastoria
- Aridaia
- Kilkis
- Lesvos Island
- Kefalonia Island
- Athens
- Patra
- Crete





Seed activities

- Heritage seed conservation and community seed banking
- Participatory evaluation and selection of adapted varieties for organic agriculture
- Strengthening the local seed supply systems



collection, documentation



community seed banking



on farm conservation



participatory organic breeding, selection



Aegilops' organic farmers' network



local and niche market, alternative food chain

Ensuring farmer's seed quality

Lessons learned 1

- Encourage farmers to produce rather to buy and consume market seeds (free choice of production model, self sufficiency)
- Raising farmers' ability to manage biodiversity (document, test and select, evolve, adapt)
- Train to apply practical or scientific agroecological methods for standard seed quality (purity, germination, health, vigour)

practical –scientific agroecological methods

- Seed born diseases : e.g thermal treatment (vegetable), Vinegar (cereal),
- Seed harvesting and appropriate processing
- Post harvest and seed storage methods of conservation and pest & disease management

Organic Farm Knowledge

SEARCH TOOLBOX SERVICES THEMES & DISCUSSION ABOUT JOIN US CONTACT & SITE INFO

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Themes and discussion

Explore a variety of organic farming topics, join the discussions, and exchange ideas and information with colleagues and scientists.

← Back

Seed quality

Organic seed multiplication requires time and specific skills to produce high quality, healthy seed without chemical inputs and seed treatment, organic seed health and quality start in the field through an integrated approach taking into account the whole ecosystem soil, pathogens, genetics and seed microbiome. After the harvest, seed cleaning and selection are fundamental to choose the best quality seed with the highest germination rate and vigor. Seed testing is required.

On this page, you can find tools and resources to help you monitor and improve the quality and health of your organic seeds, including available organic treatments for seed borne pests and diseases.

Tools

Title	Issuing organization	Project	Year of release	Rating
Application of acetic acid as a seed treatment in organic cereal seed (German)	Agrologica		2020	
Iron Seed Treatment: a simple approach without specific laboratory equipment...	FIL - Research Institute of Organic Agriculture		2019	
Bunt management (Swedish video)	OMKI - Hungarian Research Institute of Organic Agriculture		2020	
Bunt treatment methods (Fedia video) (Swedish video)	OMKI - Hungarian Research Institute of Organic Agriculture		2020	
Calibrinometry – a phenotyping tool to assess pea germination efficiency under...	University of Essex		2020	

PRACTICE ABSTRACT No. 41
Target audience: farmers, farm advisors, seed producers

Agrologica
Boosting organic seed

LIVESEED

Application of acetic acid as a seed treatment in organic cereal seed

Problems

Common bunt is a devastating seed borne disease in wheat. If a seed lot is contaminated with just a few spores, there is a high risk that the disease will develop and reduce yield and quality of the crop. Acetic acid is very effective to control common bunt in wheat, but there is a high risk of negative effects on germination. Therefore the procedure of application is crucial for a successful treatment.

Solutions

The crucial point in seed treatments with acetic acid is to make sure that the entire seed surface is covered, to affect all bunt spores. It is crucial that the application is as uniform as possible and as fast as possible. It is easier to cover all the kernel surface with acid, if a higher amount of acid are applied, but if so, the seed needs to be dried after 30 to 60 seconds to avoid negative effects on germination.

Figure: Vinegar treatment in a cement drum (Photo: Matteo Pettiti)

Practical recommendations

- Small seed samples (0-2kg) can be treated in a box with high amounts of acetic acid (<20ml/kg) and drying with a hair dryer or similar after 30 seconds.
- Seed samples of 5-20kg can be treated in a cement drum by applying acetic acid just enough to make the seed humid. 20ml/kg is optimal, but a slightly higher amount can be applied if the seed after treatment is spread on a clean surface in the sun or wind for drying.
- If huge amount of seed need to be treated, it is crucial not to exceed the limit of 20ml/kg, as it will be difficult to dry the seed quickly enough after treatment before germination is affected.
- If you are uncertain whether your treatment is optimal, it is better to use a lower dose, and then repeat the treatment after the seed has been properly dried.

Further information

1. Borgen, A. og B.J.Nielsen 2001: Effect of seed treatment with acetic acid in control of seed borne diseases. In: Proceedings from BCPC Symposium No. 76: "Seed Treatment: Challenges & Opportunities", eds. A. J. Siddie, BCPC, Farnham, 135-140.
2. PA#2: Managing common bunt in wheat seed [lets](#)
3. LIVESEED video on bunt treatment methods

Authors: Anders Borgen (Agrologica)
Contact: borgen@agrologica.dk
Publisher: OMKI Hungarian Research Institute of Organic Agriculture
Date: May 2020

LIVESEED: Boosting organic seed and plant breeding across Europe. LIVESEED is based on the concept that cultivars adapted to organic systems are key for realising the full potential of organic agriculture in Europe. Research project 2017-2021.

Social Media: Facebook [LIVESEED] & Twitter [LIVESEEDeu]

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 722930 and by the Swiss State Secretariat for Education, Research and Innovation under contract number 17.0000.0000.

• <https://organic-farmknowledge.org/>

practical –scientific agroecological methods

- Participatory selection of resistant organic varieties in fruit trees
- <https://innobreed.eu//>
- Participatory organic breeding and cultivar testing (all crops except fruits)
- <https://liveseeding.eu//>

practical –scientific agroecological methods

- Technical Manual series on Community Seed Banks
DINAVERSITY project

<https://liberatediversity.org/>

Organic Seed production guides and webinars

<https://seedalliance.org/>

Ensuring farmer's seed quality

Lessons learned 2



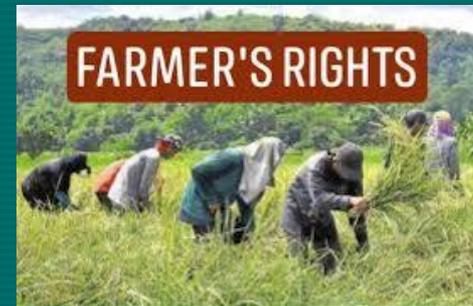
- Encourage farmers to work collectively and participatory (self-sufficiency #community sufficiency, share knowledge and infrastructure)
- Enhance farmers' involvement in community seed banking, participatory testing and breeding



Ensuring farmer's seed quality

Lessons learned 3

- Defend Farmers' Rights on seed and genetic resources (conserve, use, exchange, and sell propagating material) and benefit sharing of agrobiodiversity
- Working on resilience of food systems and defending consumers' free choice on quality healthy food



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