

Alternative ways of European participatory organic fruit breeding projects

# Breeding of robust peach and apple cultivars for organic production



IWOB   
Institute of  
Viticulture and  
Pomology

UNIVERSITY OF NATURAL RESOURCES  
AND LIFE SCIENCES, VIENNA

InnOBreed



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# BOKU - University of natural resources and life sciences in Vienna

The University of natural resources and life sciences (BOKU) in Vienna, Austria, is distinguished by its holistic approach to research and teaching. BOKU's scientists, students and graduates work on solutions for the protection and sustainable use of our natural resources.

At the Institute of viticulture and pomology, basic and applied research, as well as teaching, address topics along the whole value chain of the wine and fruit industry concerning their biological, economic and social implications within their environments. The institute provides innovative and independent research and believes in knowledge sharing by science-driven teaching, international cooperation and connection with other disciplines.

The main research fields in the sector of fruit sciences are plant diversity, organic fruit growing and breeding, biotic and abiotic stress factors, fruit quality and sustainable management systems, partly integrated and represented in this case study.

InnoBreed



Germinated seeds after stratification in vermiculite substrate



Andreas Spornberger, Case study leader and head of the fruit science Working Group at the institute of viticulture and pomology (BOKU, Vienna)

# Breeding of robust peach and apple cultivars for organic production

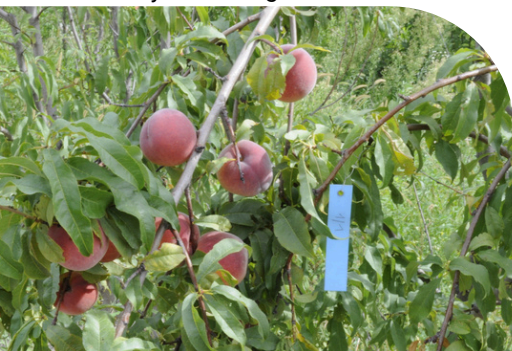
*The main focus of the activities is to find robust apple and peach varieties for organic and extensive production from regional gene banks or bred in Austria. In this way, BOKU is promoting the organic peach breeding project and the evaluation of cultivars (mainly apples) in non-treated orchards of some partner organisations.*

On the basis of long-term observations in an organically managed orchard with many peach cultivars planted in 2003, the first crosses of identified suitable genitors in peach were done in 2017 and continued the following years. For apples, some of the first crossing experiments were started in 2018, but the process to identify suitable genetic resources is still ongoing, especially for the local ones.

The progress in peach is quite more advanced and there has been a fruitful process so far. After the first fruit set on the new plants, in 2020 and an ongoing selection process, focused on fruit quality traits, as well as robustness to pests and diseases (e.g. *Taphrina deformans*, brown rot on fruit) several interesting selections were identified, which were grafted in summer 2023 and are going to be planted at three sites for further observations.

***BOKU is actively participating in a network of public institutions and NGOs (ARGE Streuobst), which is working on pomological topics and on the re-use of endangered and robust fruit genetic resources for organic and extensive orchards, with the aim to integrate local organic fruit growers and gardeners into a new breeding network.***

The University research and teaching are highly connected. In this framework, activities are partly integrated in student bachelor or master thesis projects (e.g. comparing methods for stratification and germination of peach seeds) and students as well as other interested people are invited and integrated in the selection process (e.g. tasting new hybrids to figure out consumer demands).



Evaluation of new peach selection in the orchard of the institute

# InnOBreed collaboration

***The cooperation and exchange among InnOBreed partner institutions with the same ambition is a basic requirement for improvement and finding solutions in a common topic.***

Discussing common topics and improving from the experience of others in breeding and evaluation of organic fruits imply a great benefit, e.g. identifying and assessing new or before unknown diseases.

***With the planned use of digital tools for data assessments and innovative instruments like NIRS, being part of the project community significantly expands the possibilities of the BOKU activities in this area.***

The collaboration through the InnOBreed project also provides opportunity for sharing experiences related to issues of breeding work (practices, selection, techniques, ...), results on genetic resources and plant material. In this area, BOKU, together with other partners, contributes to the common objectives of the project.

Collecting and providing data among InnOBreed partner's fruit collections for the evaluation of genetic resources (references and local) to carry out their characteristics for suitability for organic fruit breeding and uses, is of high value with possibilities to both enrich partners' activities and contribute to common objectives.

More information about BOKU's activities is available here: <https://boku.ac.at/en/dnw/wob>  
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Young peach trees from the breeding program