

More sustainable, resilient, and competitive food systems through the development of intermediate food value chains



PRACTICE ABSTRACT No: 28

Potential use of apple draff vinegar as seed treatment

Replacing synthetic pesticide as well as finding alternatives to energy-intensive steam or hot water treatments are key to ensure a reduction in the impact of seed treatment and to meet consumer demand for pesticide-free food.

Vinegar, a basic substance defined in Regulation EC 1107/2009 on Plant Protection Products (PPP), can be used to treat wheat against pathogens without impacting germination rate. In organic agriculture, chemical treatments are lacking. To circumvent this, vinegar soaking was tested with aromatic plants (e.g. lemon balm, sage, thyme) as well as vegetables (e.g. carrots, beets, celeries).

Seeds were soaked in pure apple draff vinegar with 5% acidity (i.e. total organic acids) for 30 minutes and left to dry at room temperature without rinsing. This combination of vinegar concentration and soaking duration did not negatively affect germination rates. Soaking beetroot seeds in vinegar had a stimulating effect on germination. The seeds of aromatic plants were not sufficiently infected: it was not possible to determine whether soaking in vinegar had antifungal effects. No antifungal effect was observed on carrot seeds infected with *Alternaria sp.*. However, vinegar soaking had antifungal effect on beet seeds infected with *C. beticola*. Knowledge about the effect of this fungus on beetroot seeds germination rate is scarce. Nevertheless, vinegar soaking showed a fungicidal effect on beetroot seeds.

These results make apple draff vinegar a promising agent for treating beetroot seeds in particular. Additional experiments with naturally infected seeds and other vegetable seeds must take place to prove the fungicide effect of vinegar soaking and extend its application to other crops.

Recommendation: for beetroot seeds, soak in pure apple draff vinegar containing with 5% acidity (i.e. total organic acids) for 30 minutes and left to dry at room temperature without rinsing.

Benefits: stimulating effect on germination and fungicidal effect on beetroot seeds.

Authors

Moulin-Moix Aurélie,
Simonnet Xavier, Rime
Thomas, Christ Bastien

Affiliation

Grangeneuve (IG),
Agroscope

Contact

aurelie.moulin@fr.ch

End Users

Farmer & Cooperative

Country

Switzerland



FAIRCHAIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000723.

More sustainable, resilient, and competitive food systems through the development of intermediate food value chains



PRACTICE ABSTRACT No: 28

Links for additional information



[FairchainEU](#)



[FAIRCHAIN EU](#)



www.fairchain-h2020.eu

All Practice Abstracts prepared by FAIRCHAIN can be found [here!](#)

ABOUT FAIRCHAIN

The FAIRCHAIN project launched in 2020 and coordinated by INRAE, is developing intermediate food value chains in the fruits and vegetable and dairy sectors. Through technological, organizational and social innovations and by developing business models FAIRCHAIN will enable small and mid-size stakeholders to scale up to supply fresh, sustainable and high-quality food products to consumers at a regional level.

FAIRCHAIN PARTNERS



DISCLAIMER

This Practice abstract reflects only the author's view. The FAIRCHAIN project is not responsible for any use that might be made of the information it contains.

LICENCE

This Practice abstract is licensed under a [Creative Commons Attribution 4.0 International Licence](#)



FAIRCHAIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000723.