

How to increase the efficiency of cultivar choice in organic farming

Problems

All farmers are searching for the best performing cultivars, but there is still lack of knowledge on the most efficient way to choose these cultivars in organic agriculture. Additionally, there is a strong limitation in the number of cultivars that can be tested annually with current on-farm trials.

Solutions

The use of small plot trials in on-farm testing environments as an initial screening trial would greatly increase the number of cultivars that could be examined under the targeted organic conditions. Cooperation between farmers and nearby research institutions would give the possibility to establish small plot trials on farmers' fields with research machinery.

In the case of winter wheat, the best (in NIR, e.g. protein and gluten) and worst (in grain yield) performing group of cultivars are the same in on-farm testing and small plot trials, thus

effective further testing on-farm can be carried out. Testing of such preselected cultivars under farming conditions (mainly for yield) would help to choose the most reliable wheat cultivar(s) for the target environment.

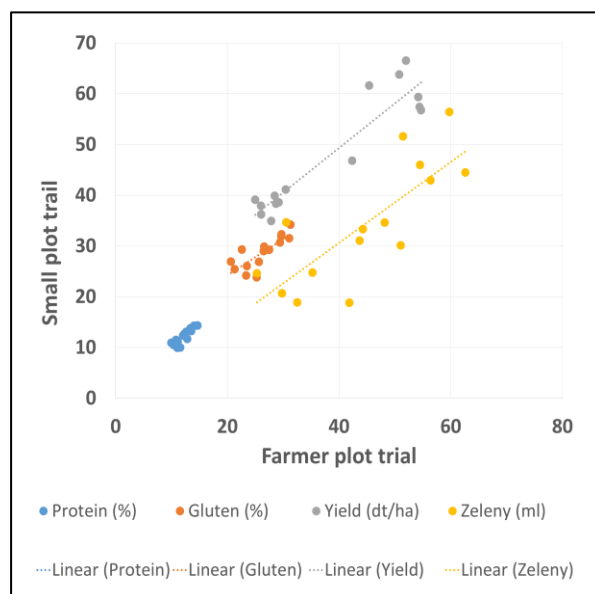


Figure: Correlation between wheat trial types (2019-2020, Hungary)

Practical recommendations

- The first step is testing cultivars in replicated randomized small plot trials for two years, assessing the most important traits like yield, disease resistance, lodging and quality.
- Based on the ranking of the tested cultivars, the best performing ones could be tested on large farm plots for one more year, following a more detailed assessment protocol. Rapid NIR measurement is adequate to determine a ranking regarding quality traits.

Further information

1. Eucarpia-LIVESEED 2021 conference abstract/poster on winter wheat by Mikó et al.

<https://eucarpialiveseed2021.eu/posters/p44-on-farm-comparison-of-trials-based-on-different-plot-sizes-to-help-farmers-wheat-cultivar-choice/>

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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.

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