

Practice abstract #3.7

The potential of small landscape features to increase biodiversity and ecosystem services in arable farmland



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CHALLENGE

This work aims to address three key questions:

- 1) Can annual plant community mixes be developed to target ecosystem services using plant trait-based research?
- 2) Are there trade-offs when designing plant communities to support multiple ecosystem services?
- 3) Can underutilised crops replace wildflower mixes to support ecosystem services?

SOLUTION

Annual, wildflower mixes could provide field margins delivering ecosystem services within the first year of sowing. These margins could be utilized in a mobile and targeted manner.

We tested annual, wildflower and crop margins' efficacy using plant trait-based research to target pollinator and natural enemy protection and water and soil health. Trade-offs were assessed between single function mixes, mixes combining all ecosystem services and mixes with underutilised, arable crops.

Community traits, including vegetative, floral and bare ground cover, were collected to explore trade-offs in efficacy. Reseeding performance was observed in each mix the following year.

OUTCOME

Within the first year of data collection, trade-offs between single and multifunctional ecosystem service mixes containing wildflowers appeared minimal. Often, the multifunctional mix outperformed the single mixes slightly. Underutilised crop mixes underperformed compared to wildflower mixes, possibly due to reduced complexity of sown species.

PRACTICAL RECOMMENDATIONS

Data suggests that annual wildflower mixes that offer multifunctional ecosystem services can be used in the future. These have the potential to form part of legislation and subsidies by governments, prompting their use to enhance multiple ecosystem services in arable landscapes.



About CROPDIVA

CROPDIVA wants to put 6 underused arable crops back in the fields: oats, hull-less barley for human consumption, triticale, buckwheat, faba beans and lupins. 27 European partners are joining forces to enhance agrobiodiversity in Europe. They will achieve this by focusing on crop diversity and creating local value chains. The project is running from September 2021 to August 2025.



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