

# 3<sup>rd</sup> Global Soil Biodiversity Conference 2023 Book of Abstracts

# What Are The Most Biodiversity-friendly Agricultural Practices?

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## Aim:

Agricultural activities are one of the main drivers of ongoing biodiversity loss. Numerous agricultural management practices impact plants, animals and micro-organisms abundance, richness or evenness. These effects are now compiled in a growing number of meta-analyses, yet, identifying the best agricultural options to preserve biodiversity remains a challenge.

### Method:

We compiled the results of 191 meta-analyses integrating more than 58 000 paired-experiments. We extracted the effect (negative/neutral/positive) of each agricultural practices on each biodiversity indices and each taxa. We then used a cumulative link multilevel models to synthesize the ordinal vote count findings, using a hierarchical model and a variance-covariance matrix to consider possible common primary studies between meta-analyses.

#### Results:

Organic farming is 5 and 11 times more likely to benefit soil micro-organisms and vertebrates and invertebrates animals than to detrimentally affect it. Conservation farming also results in a 8 times more probable increase of animal biodiversity. Crop diversification could also play an important role to protect cropland biodiversity (estimated effect of 5.5X and 8.8X on animals and microorganisms). Drivers at the landscape scale also promote animal biodiversity (e.g. landscape complexification: Estimated effect of 7X). We then details our results for abundance, richness and evenness biodiversity indices.

#### Conclusions:

Alternative systems to conventional agriculture had large and positive effect on biodiversity. Our study rank best promising options to preserve cropland biodiversity, and are useful to guide future evidence based policy.

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