Factors associated with the adoption of diversified farming systems: a global meta-analysis.

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INTRODUCTION

Diversified farming systems (DFS) are increasingly recognized as a set of cross-scale functional practices that make it possible to produce food more sustainably by providing economic, environmental and social benefits to farmers, rural communities and wider society [1, 2, 3].

Despite the benefits of DFS, unsustainable monocultures and intensive farming systems continue to be promoted over DFS in many places [4]. To reverse this trend and achieve a global goal to shift to sustainable agricultural production systems, policymakers and businesses would benefit from understanding which farm-household specific and contextual factors affect DFS adoption.

RESEARCH QUESTION

What factors are associated with the adoption of Diversified Farming Systems, worldwide?

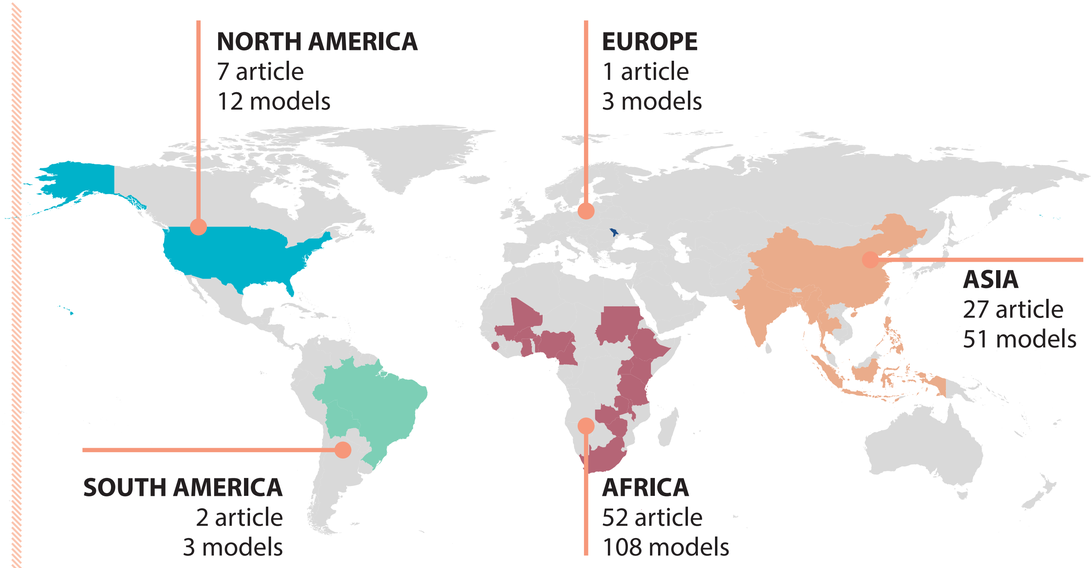

Figure 1. Geographic distribution of the included articles and regression models.

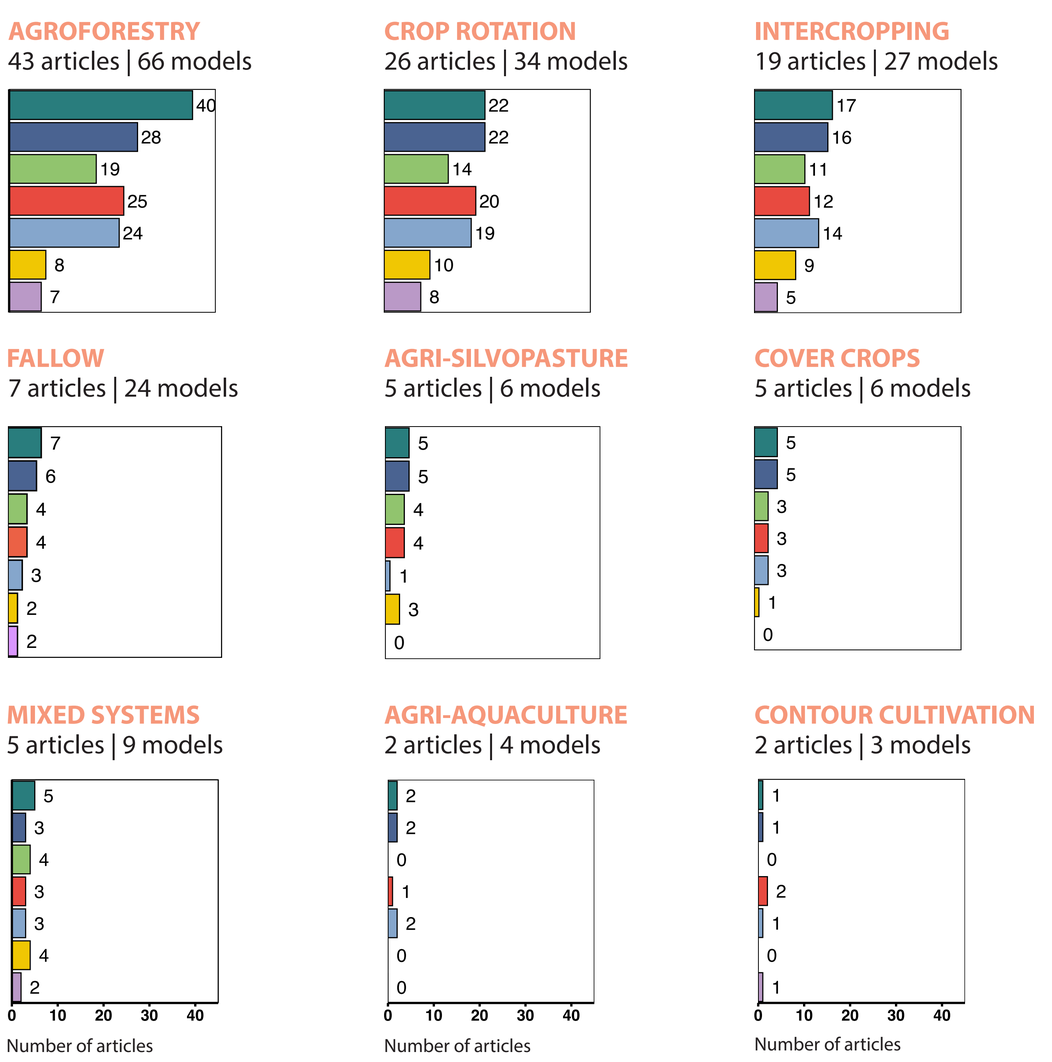

Figure 2. Distribution of the included articles by Diversified Farming System and factor category. The bar colours represent the different factor categories.

RESULTS

- 89 articles met our inclusion criteria, reporting results of 177 regression models.
- Our final meta-dataset included 30 factors that could be associated with the adoption of 9 DFS in 29 countries.
- The most studied factors were farm size, household size, and farmer's age, gender and association membership.
- The most studied DFS were agroforestry, crop rotation, intercropping and fallow.
- DFS adoption was positively associated with increased access to extension services, agricultural training, formal education, and secure land tenure.

REFERENCES

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METHODOLOGY

SYSTEMATIC LITERATURE REVIEW

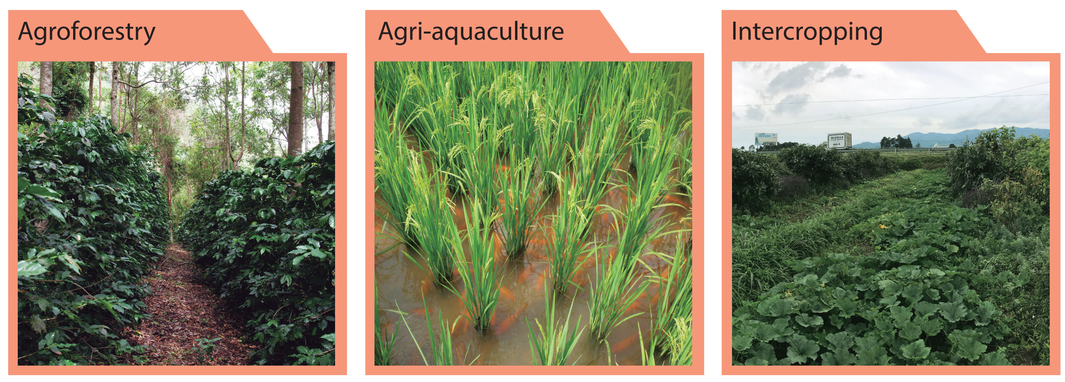
- String-based search on Web of Science and Scopus
- Systematic search in the reference of publish meta-analyses on this subject
- 5879 articles were identified and screened for inclusion.

INCLUSION CRITERIA

- Articles with full text in English.
- Using multiple regression models to test which factors are associated with the adoption of DFS.
- Providing quantitative data: regression coefficients, sample sizes and precision measure (SE, t-value, or p-value).
- No restrictions on the year of publication or location.

META-ANALYSIS

- Partial Correlation Coefficient (PCC) effect sizes were computed using the t-ratio and the degrees of freedom (*df*)[5]. PCC is a free-scale measure of association between two variables.
- Three-level random effects meta-analysis was conducted to estimate the overall association between analysed factors and the adoption of DFS.



by Projeto Cafe Gato-Maurisco, 2022. Retrieved from Unsplash. *by* FAO-GIAHS, 2012. Retreived from Flickr. *by* Eric Toensmeier, 2017. Retreived from Flickr.

Figure 3: Diversified Farming Systems

Figure 4. Partial Correlation Coefficient (PCC) of the association between factors and the adoption of diversified faming systems. The value of each factor on adoption is represented as a point with error bars showing the ±95% CI. Significant at: * 5% level, ** 1% level, *** 0.1% level.

CONCLUSION

- Access to knowledge and secure land tenure are the most important drivers of DFS adoption.
- None of the biophysical factors had a significant influence on adoption, suggesting that DFS can happen anywhere, irrespective of soil type, climate, or topography.
- Adoption of DFS is not limited by overall household income, farm size or farm accessibility.
- Holistic initiatives and policies that encompass socio-economic empowerment, knowledge dissemination, and targeted support mechanisms are needed to drive sustainable agricultural transformations.

TRANSITIONS
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