

Ecosystem services of temperate grasslands under climatic extremes: a literature review


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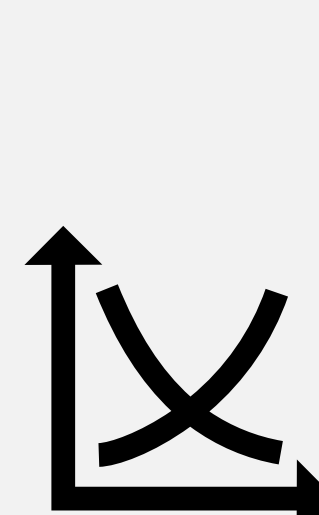
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1 Motivation & Method

Ecosystem services (ES) of temperate grasslands are strongly influenced by plant diversity and extreme events. Existing studies focused on single ES while syntheses on multiple ES under extreme conditions are still rare. We conducted a systematic literature review to assess the potential of plant diversity in mitigating the impact of extreme events (drought and heatwave) on ES.

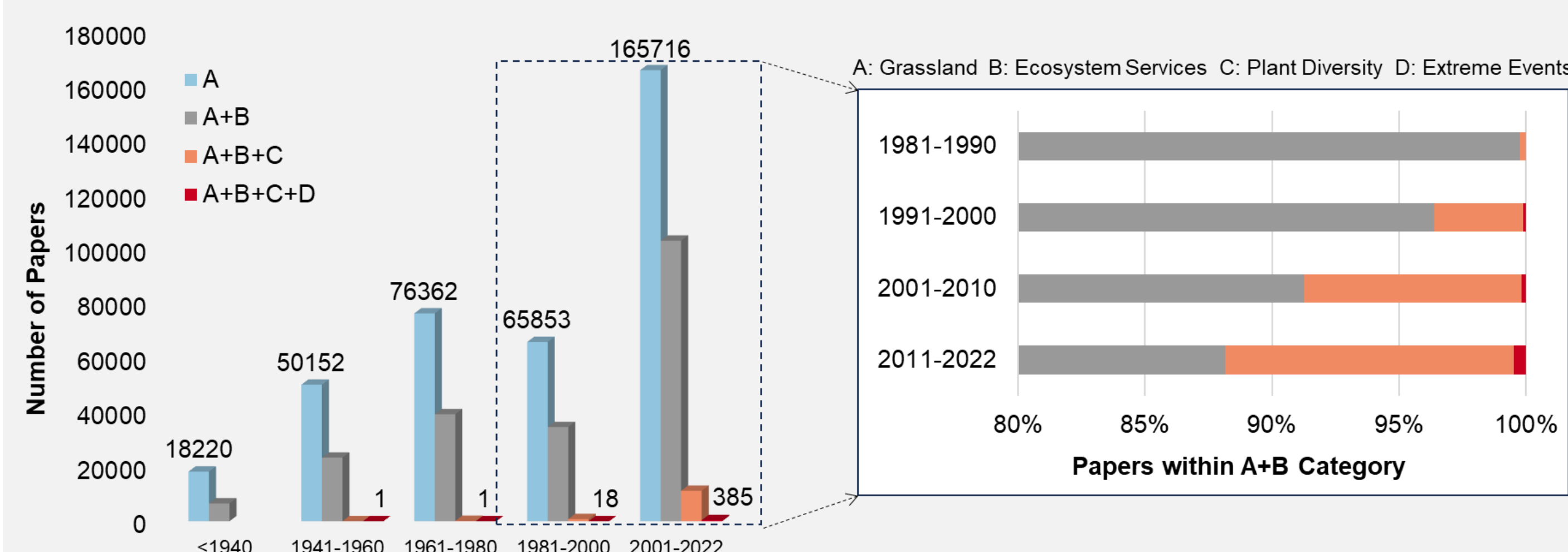
 775 papers from database search within Web of Science and CAB Abstracts

 31 studies from 22 countries remain after duplicate removal and eligibility screening

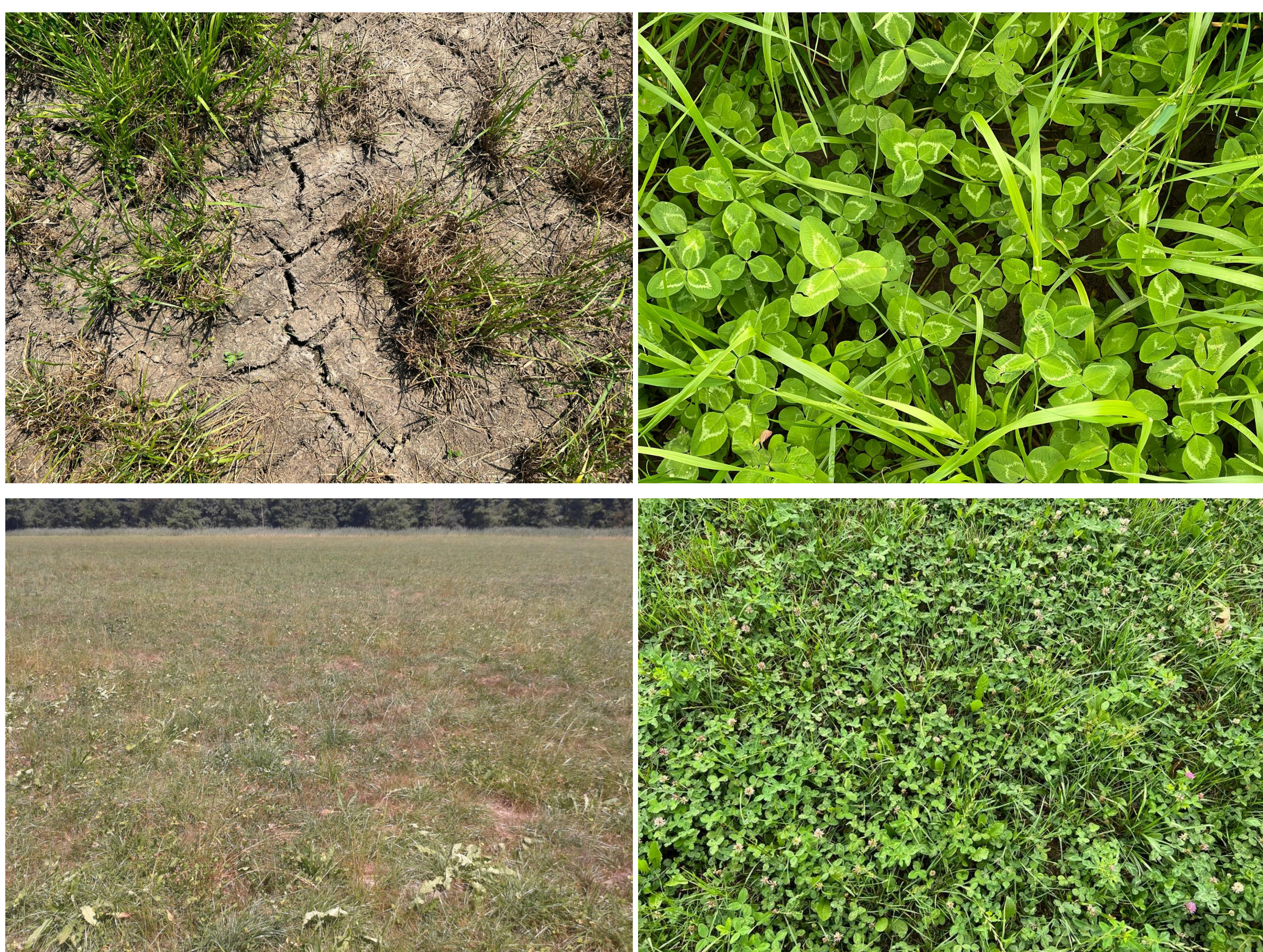
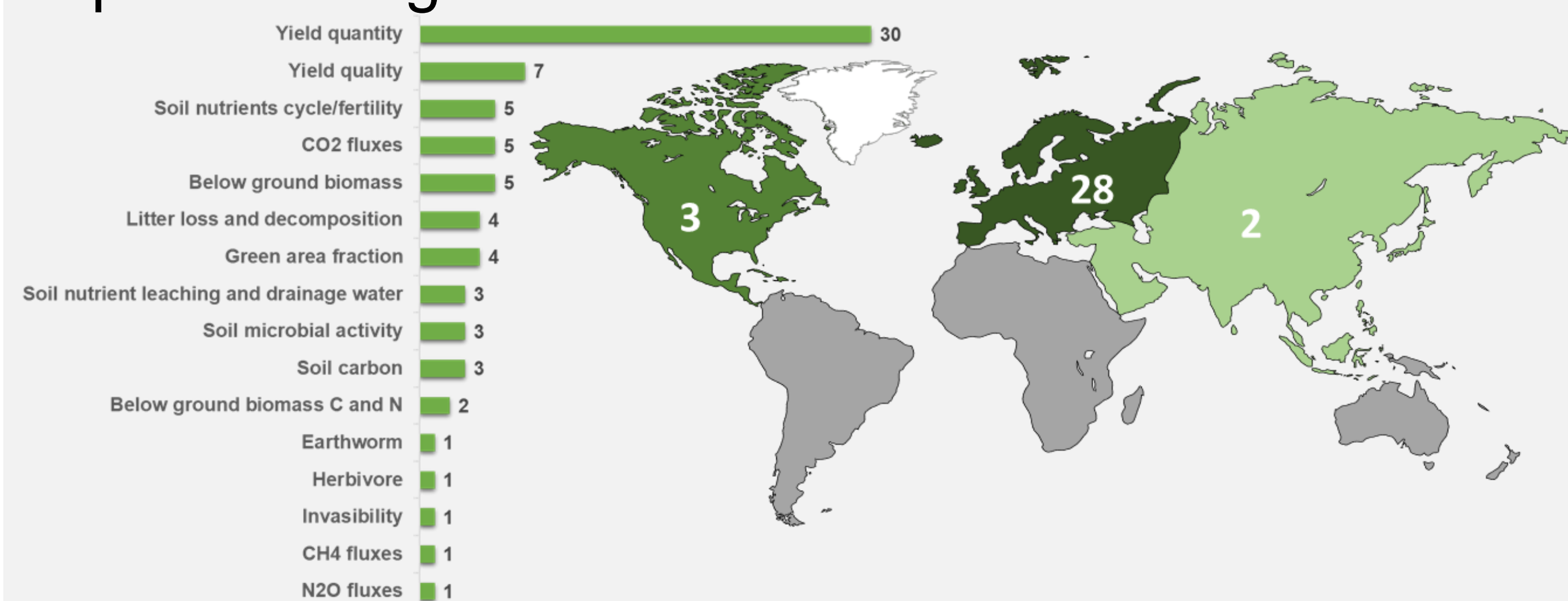
 Data extraction and result analysis

2 Results

Growing number of papers investigated the impact of plant diversity on grassland ES.



Most of the studies focused on provisioning services, while only 50% also investigated non-provisioning services.



3 Conclusion & Outlook

- ❖ Overall, the positive effects of higher species richness on grassland ES persisted under extreme conditions across different ES.
- ❖ However, the mitigating effect of plant diversity against losses in ES varied across studies, partially caused by different methods of quantifying plant diversity effect under extremes.
- ❖ More studies on how plant diversity mitigates non-provisioning services are needed.
- ❖ Other aspects of plant diversity (e.g., genotypic and functional group diversity) are also important.

4 Contribution to Sustainable Food Systems

- ✓ Evaluate changes of ecosystem services due to climate change and extreme events
- ✓ Foster communications with stakeholders to mitigate future climate risks
- ✓ Support insurance and policy improvement for sustainable grassland farming systems



(UN Sustainable Development Goals)

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