



Exploring the productivity of underutilized grassland forage C3 species under temperate and sub-tropical climatic conditions



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Introduction

Temporary grasslands provide multiple ecosystem services

Forage production • Soil health • Environmental protection • Sustainable agriculture

Climate change threatens productivity and resilience

Increasing interspecific and intraspecific diversity is suggested to counteract this development

RESEARCH GAP

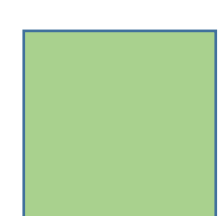
Which species and accessions—including underutilized ones—are well adapted to different climatic conditions?

→ Identifying locally adapted, functional species can support more resilient grasslands.

Results

Accessions

One



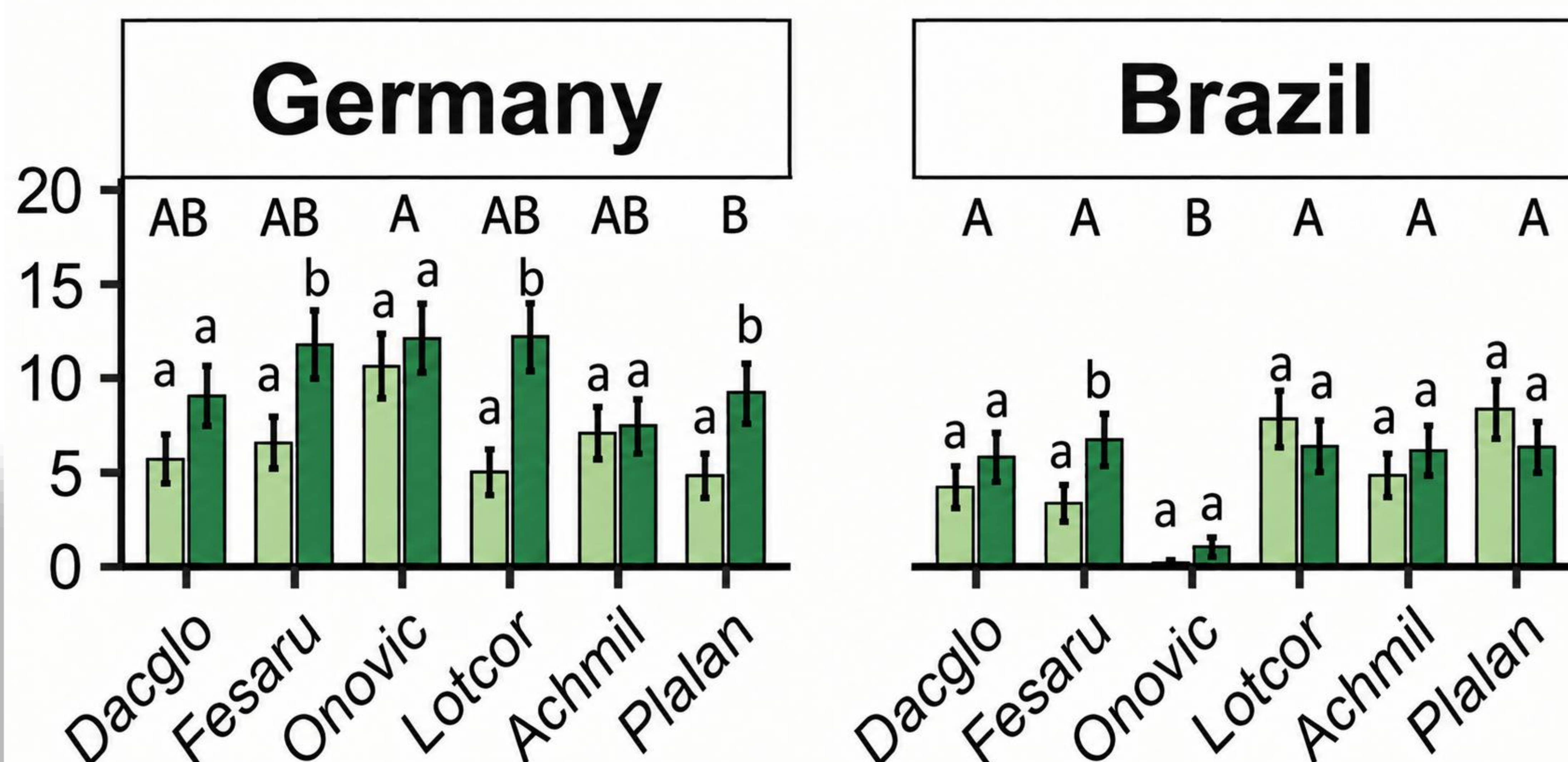
More



Conclusion

“Species vary in their forage productivity, and accession diversity enhances production. However, these effects are **species- and site-dependent**, demonstrating the need to select **locally adapted germplasm**.”

Dry matter yield (t/ha)



Different uppercase letters indicate significant differences among species within each site ($p \leq 0.001$), while lowercase letters indicate significant differences among accessions within each species and site ($p < 0.05$). Pairwise comparisons were performed using estimated marginal means (emmeans) followed by Tukey's HSD test.

Material and Methods

Sites



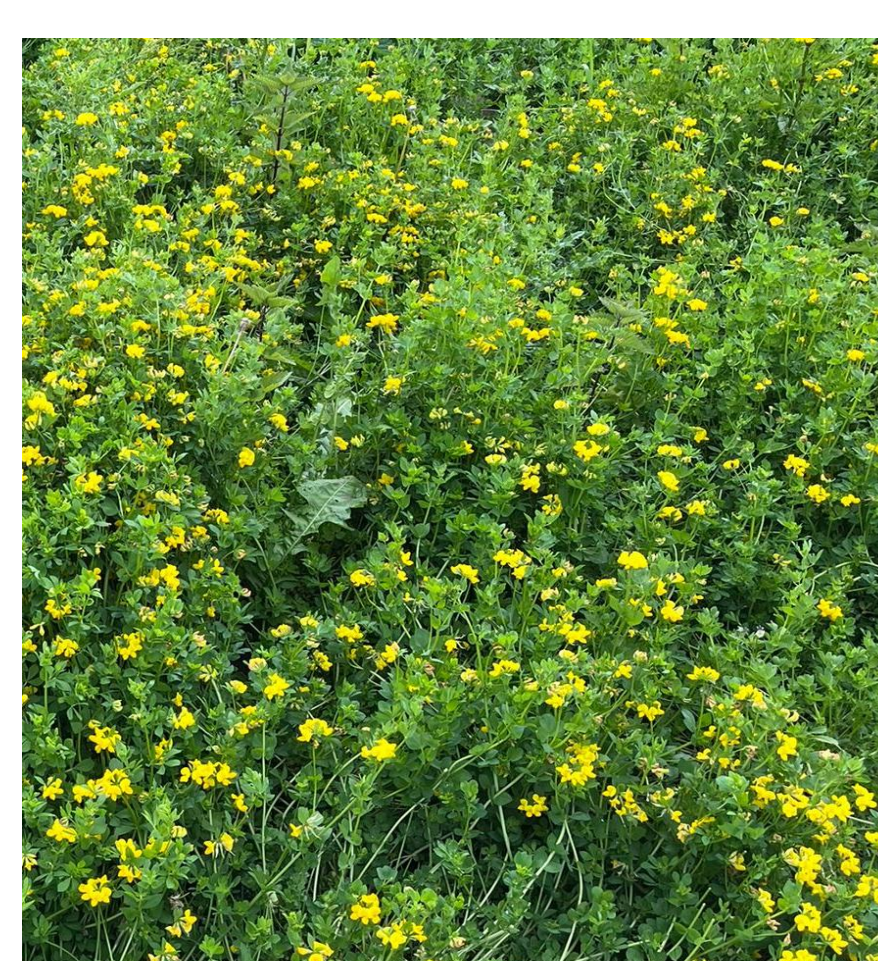
6 forage species grown in pure stands

Randomized block field experiments (4 Replications)

n= the number of the accessions 1 or 2 to 3



Dactylis glomerata (Dacglo) (n= 1 - 3)



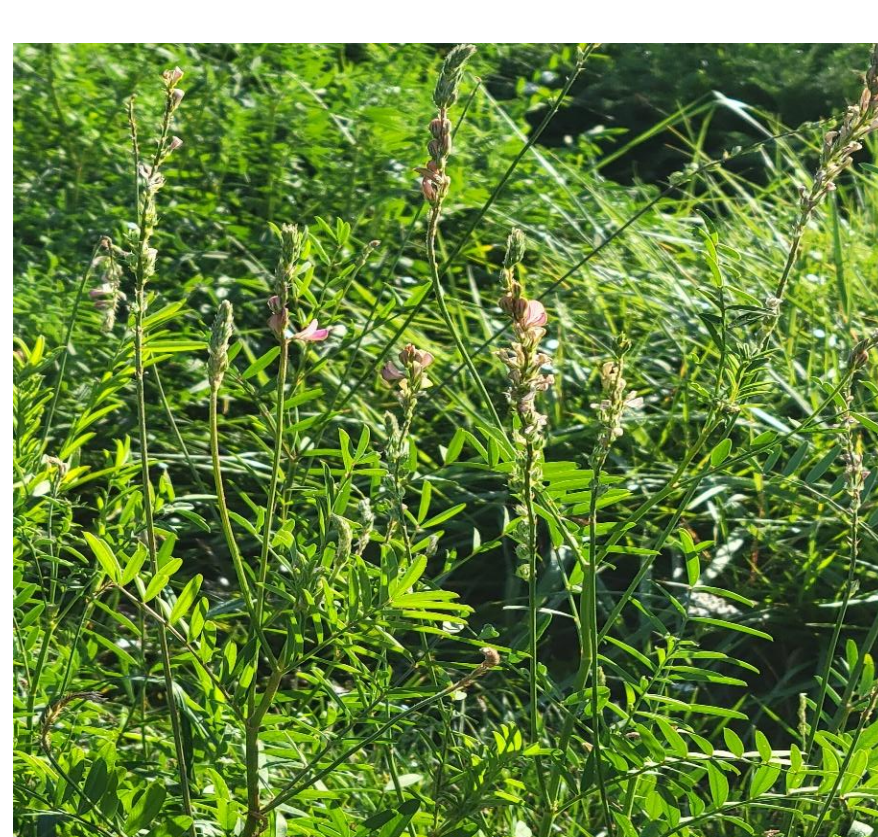
Lotus corniculatus (Lotcor) (n= 1 - 3)



Plantago lanceolata (Plalan) (n= 1 - 3)



Festuca arundinacea (Fesaru) (n= 1 - 3)



Onobrychis viciifolia (Onovic) (n= 1 - 2)



Achillea millefolium (Achmil) (n= 1 - 2)

Fertilisation

CAN (27% N):

120 kg N ha⁻¹ yr⁻¹

DE | Non-legumes ,

BR | All plots

Yield assessment

DE | Mean annual yield: 2 experimental years

BR | Annual yield: 1 experimental year

Statistics

Linear mixed-effects models

•Tukey's HSD