Soil types and vegetation on a grassland ecosystem in Uruguay

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Introduction

Uruguay: a country dominated by natural grasslands

• It is located with in Pampa Biome.

• The Pampa Biome is one of the most important temperate grassland biomes worldwide.

• 65% of Uruguay’s surface is covered by natural grasslands.
Grassland of Uruguay

- 400 Poaceae species
- Annual production between 2000-6000 kg.hectarea⁻¹.year⁻¹
- 12 million cattle
Uruguay: a country dominated by natural grasslands
The objective of this work is to study the associations between soil type and fertilization on the botanical composition of a natural field.
Materials and Methods
Treatments

- Natural grassland (N)
- Natural grassland improved with oversowing of *Trifolium pratense* and *Lotus tenuis* *(I)*
- Natural grassland fertilized with 120 kg.ha\(^{-1}\).year of N *(1)*
- Natural grassland fertilized with 60 kg.ha\(^{-1}\).year of N *(6)*

* fertilized with 40 kg.ha\(^{-1}\).year of P\(_2\)O\(_5\)*
Soils

Argiaquic argialboll (AA)

Lithic hapludoll (LH)

Pachic argiudoll (PA)

Typic Natraquoll (TN)
Sampling

155 samples took, 3-5 per each type of soil and treatment.

The vegetation associated was assessed in 1m$^2$ squares. The coverage of each species was registered.
Functional type

Life cycle
- Annual (A)
- Perennial (P)

Productive cycle
- Cold grasses (C)
- Warm grasses (W)

Vegetal type
- Cespitose (C)
- Stolonifera (S)
- Rizhome (Rz)
Functional type

PWC

PWRz

PWS

ACC

PCC
Results and discussion

144 species

55 Poaceae species

47 Perennials

32 Warm season

16 Cold season

9 Annuals

1 Warm season

8 Cold season
Diagram of ordination by principal coordinates based on Functional types
Conclusion

• The association between dominant functional groups and areas corresponds to the differences in the adaptation of the flora to physical and chemical restrictions of the soils.

• A greater proportion of species that indicate high fertility was observed in deeper soils and species that indicate low fertility were observed in TNs.
Any questions?

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Thank you.