

Relationship between soil microbial and floristic biodiversity of hay meadows in the Dolomite areas

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Little is known about how plant community characteristics influence soil microbial communities in permanent meadows. Understanding these relationships is essential for explaining soil fertility, nutrient cycling, and grassland ecosystem resilience under changing environmental conditions.

AIM

The aim of this study was to investigate how plant biodiversity in 12 fertilized mountain meadows of the Eastern Alps influences soil microbial diversity and vice versa.



MATERIALS AND METHODS

During growing season:

- ▶ Botanical surveys
(*Broun-Blanquet method*)
- ▶ Soil core samples were collected for each area

Subsequently:

- ▶ Soil microbial diversity
- ▶ Bacterial activity



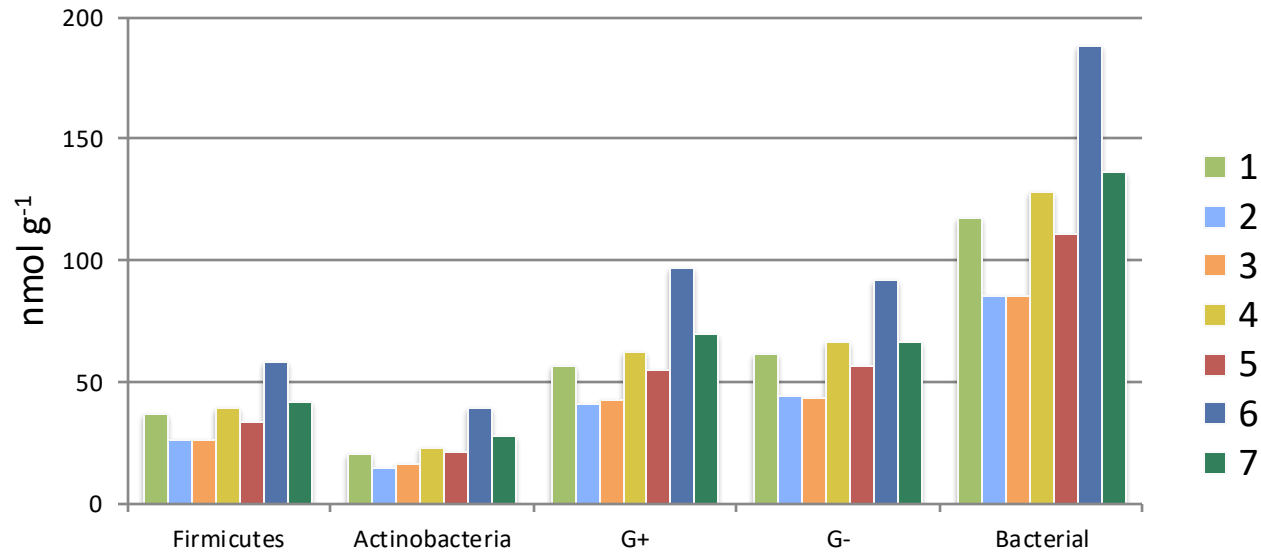
Phospholipid fatty acid (PLFA) analysis
using gas chromatography (GC).



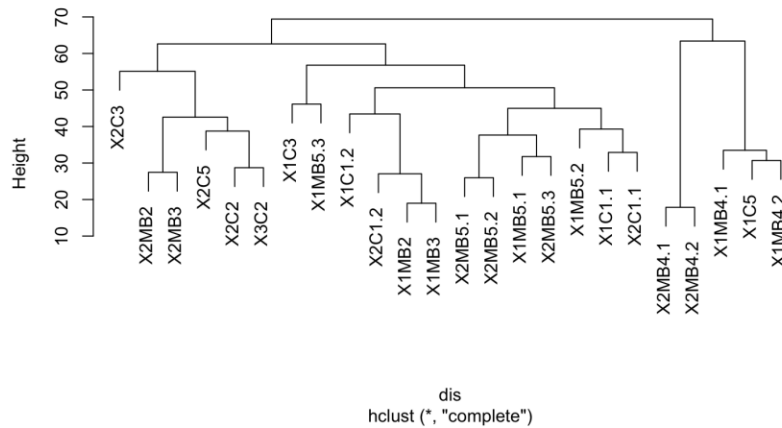
Tritiated leucine incorporation technique.

RESULTS AND DISCUSSION

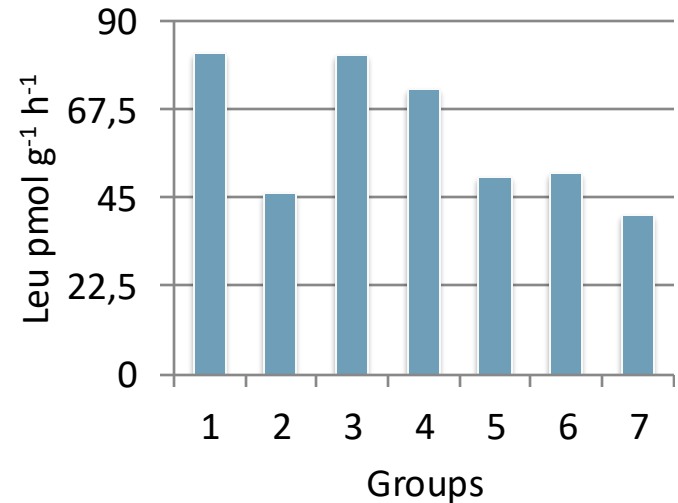
Bacteria



Cluster Dendrogram



Bacterial growth



CONCLUSIONS

- Plant community composition was associated with differences in bacterial biomass and activity;
- Bacterial biomass and activity were not strictly related, indicating that factors other than biomass may influence microbial activity;
- Similar patterns were observed for fungal biomass (data not shown);
- Differences among vegetation groups may be related to soil properties (e.g., pH and nitrogen availability), which deserve further study.



Thank you for your attention!