



Field Work

2020

2021



Acari



Collembola
Symphypleona



Collembola
Entomobryomorpha



Collembola
Poduromorpha



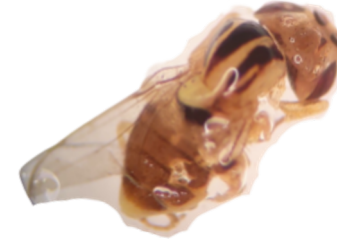
Isopod



Psocoptera



Gastropod



Diptera



Hymenoptera



Hemiptera



Coleoptera



Araneae

Mesofauna

< 2mm

Macrofauna

> 2mm

Variables	Tests
Soil moisture	Shannon Index
Abundance	Shapiro-Wilks
Diversity	GLME (Generalized Linear Mixed
Richness	Effects)
Biomass	EMM (post-hoc, Estimated Marginal
Community composition	Means)
	NMDS (non-metric Multi-dimensional
	Scaling)

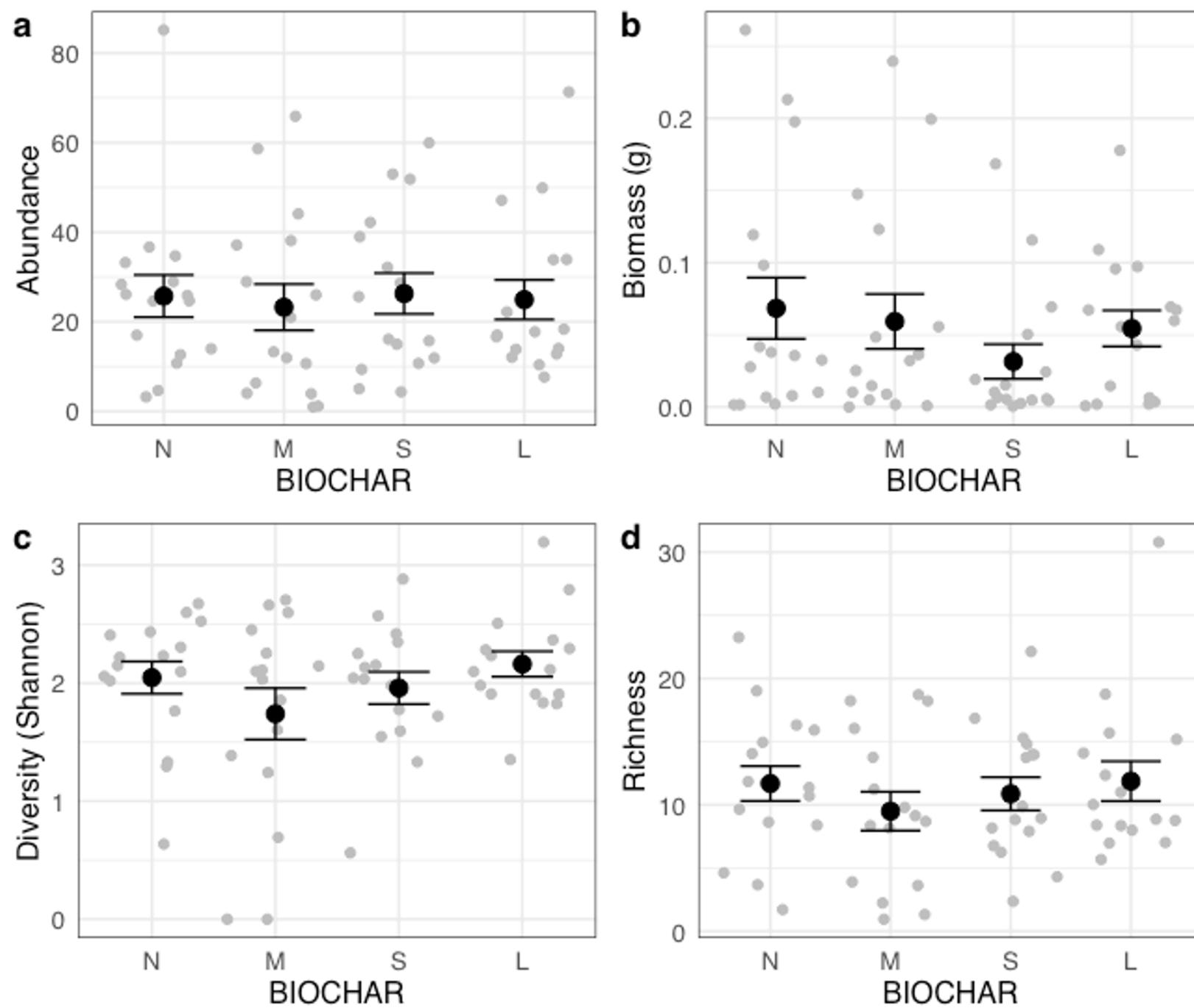
Results & disussion

Abundance, biomass, diversity, richness

Moisture

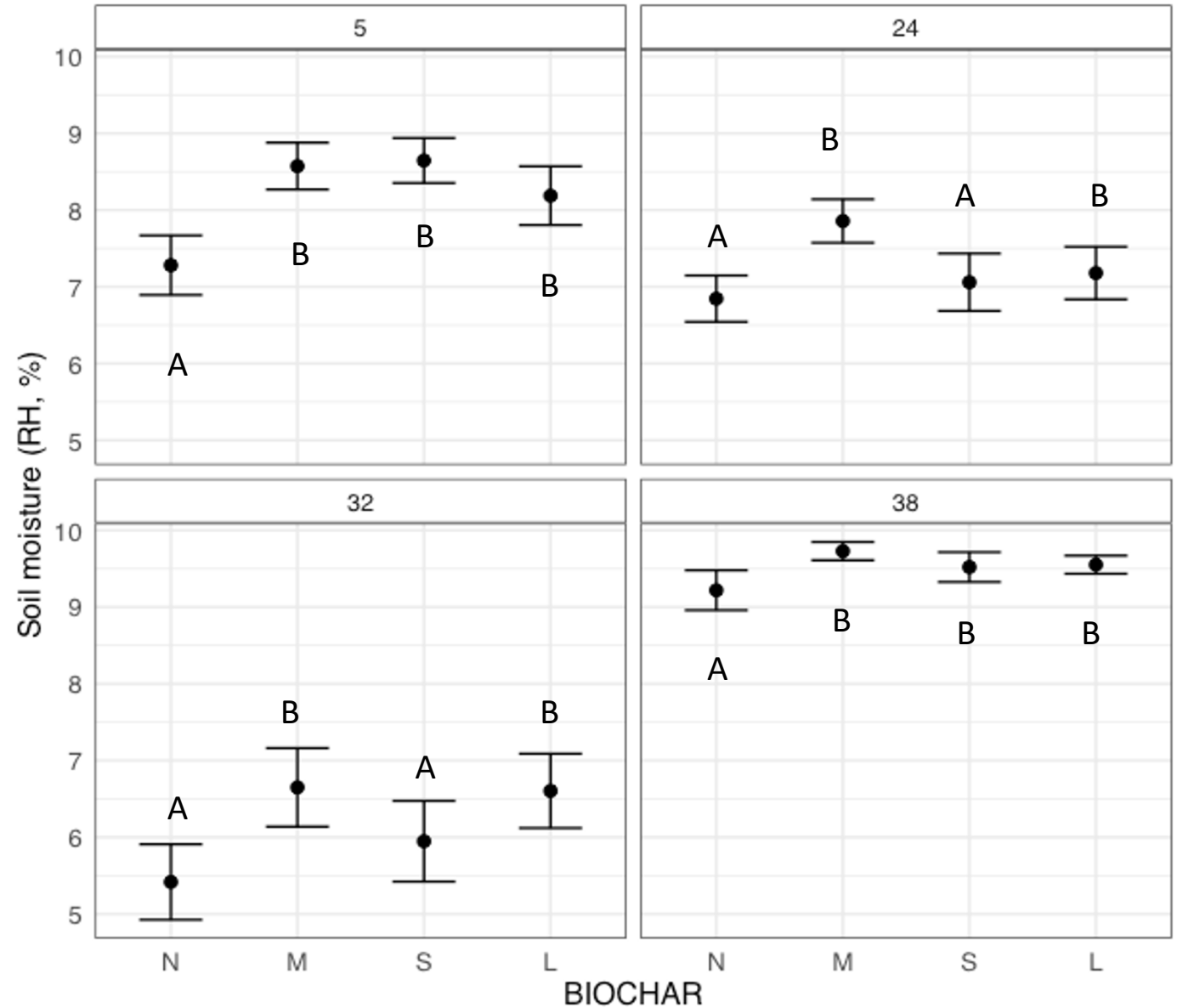
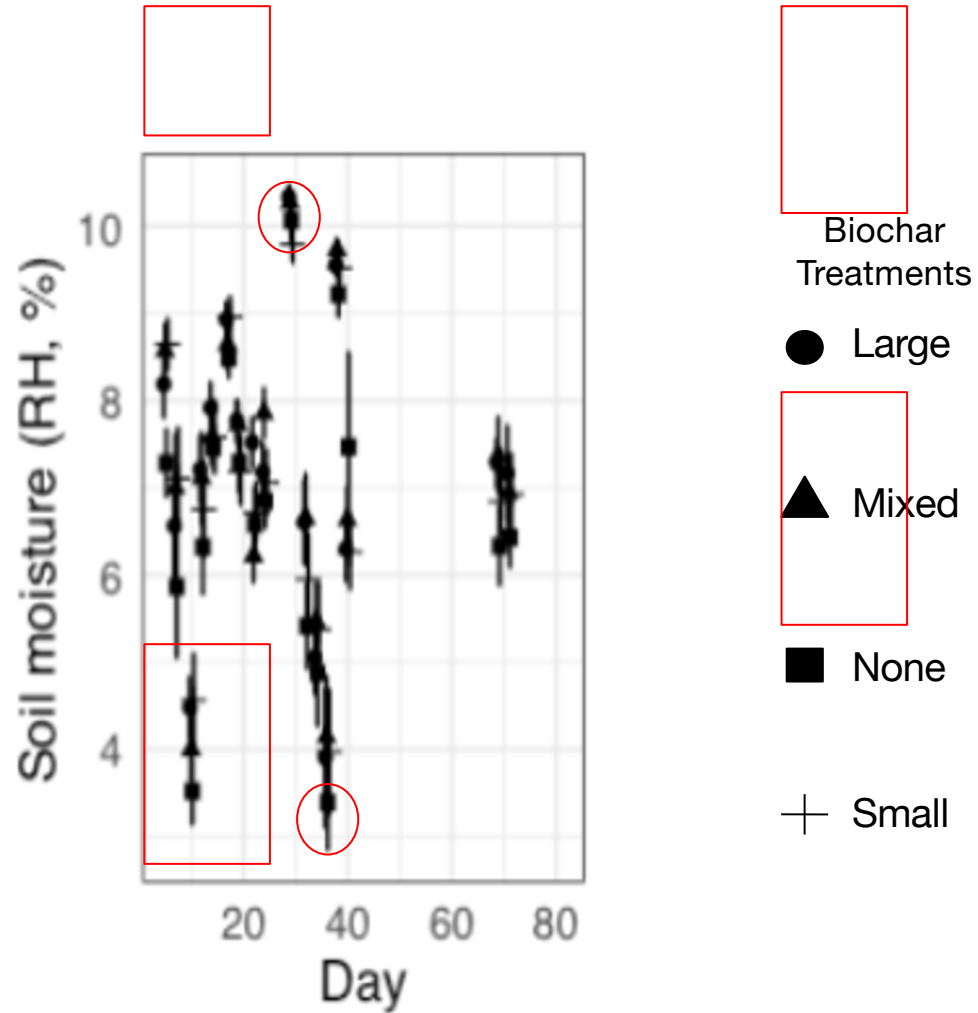
Community

All General Results

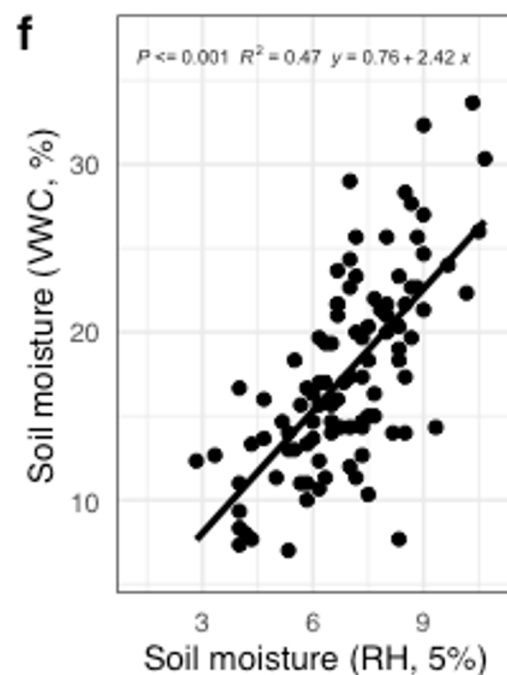
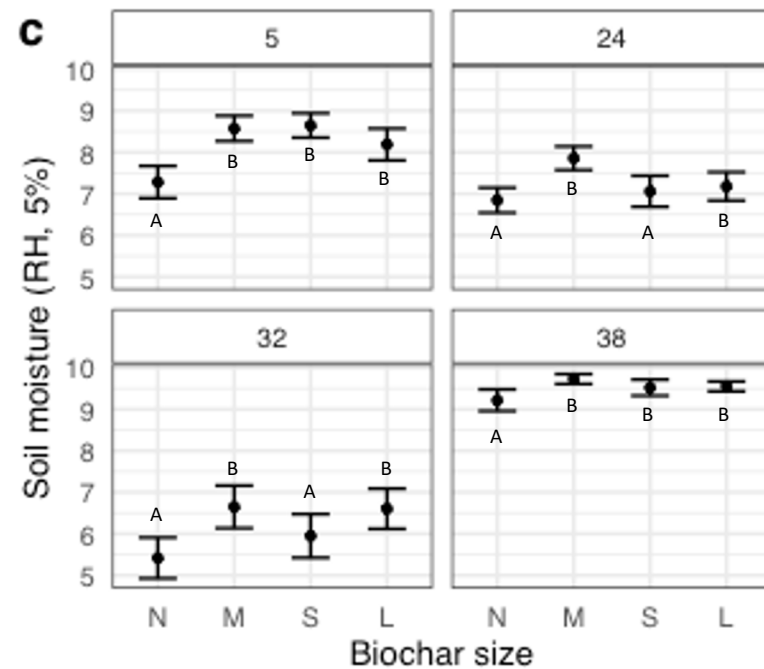
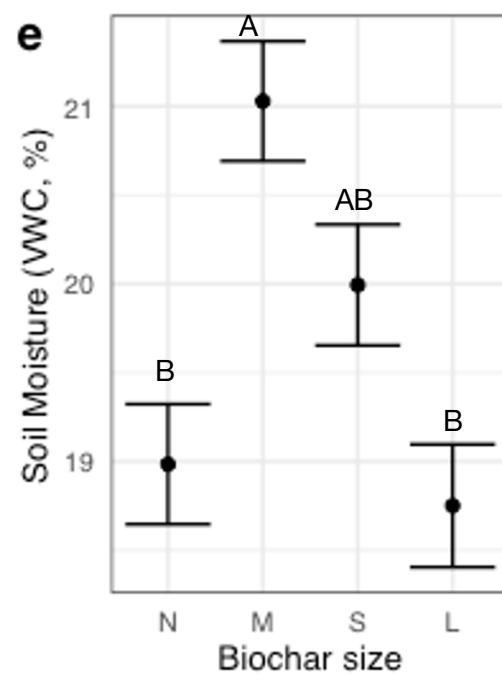
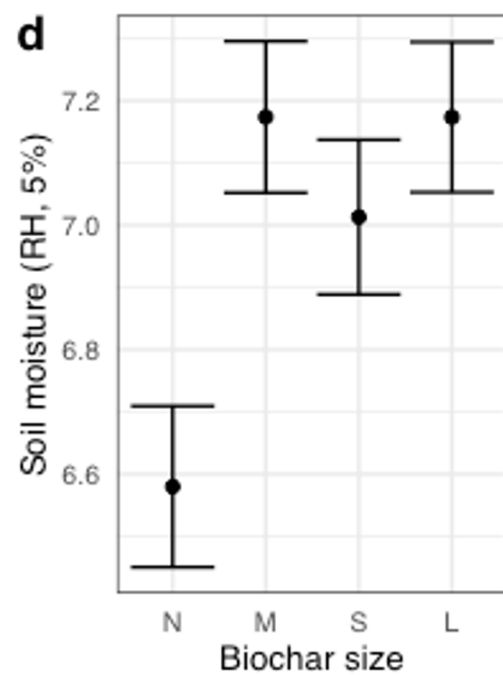
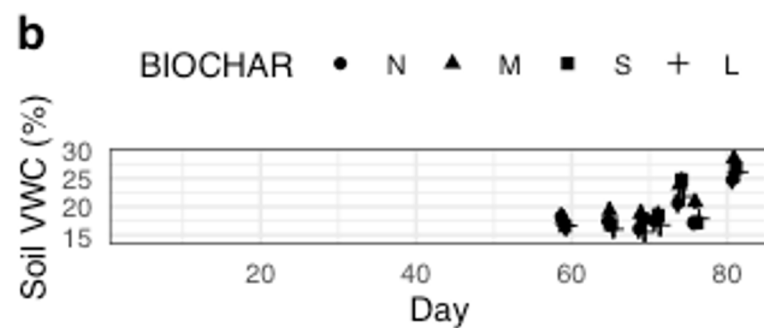
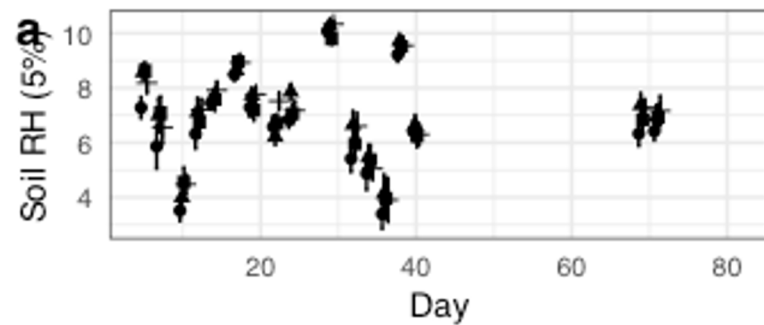


Moisture by Treatment

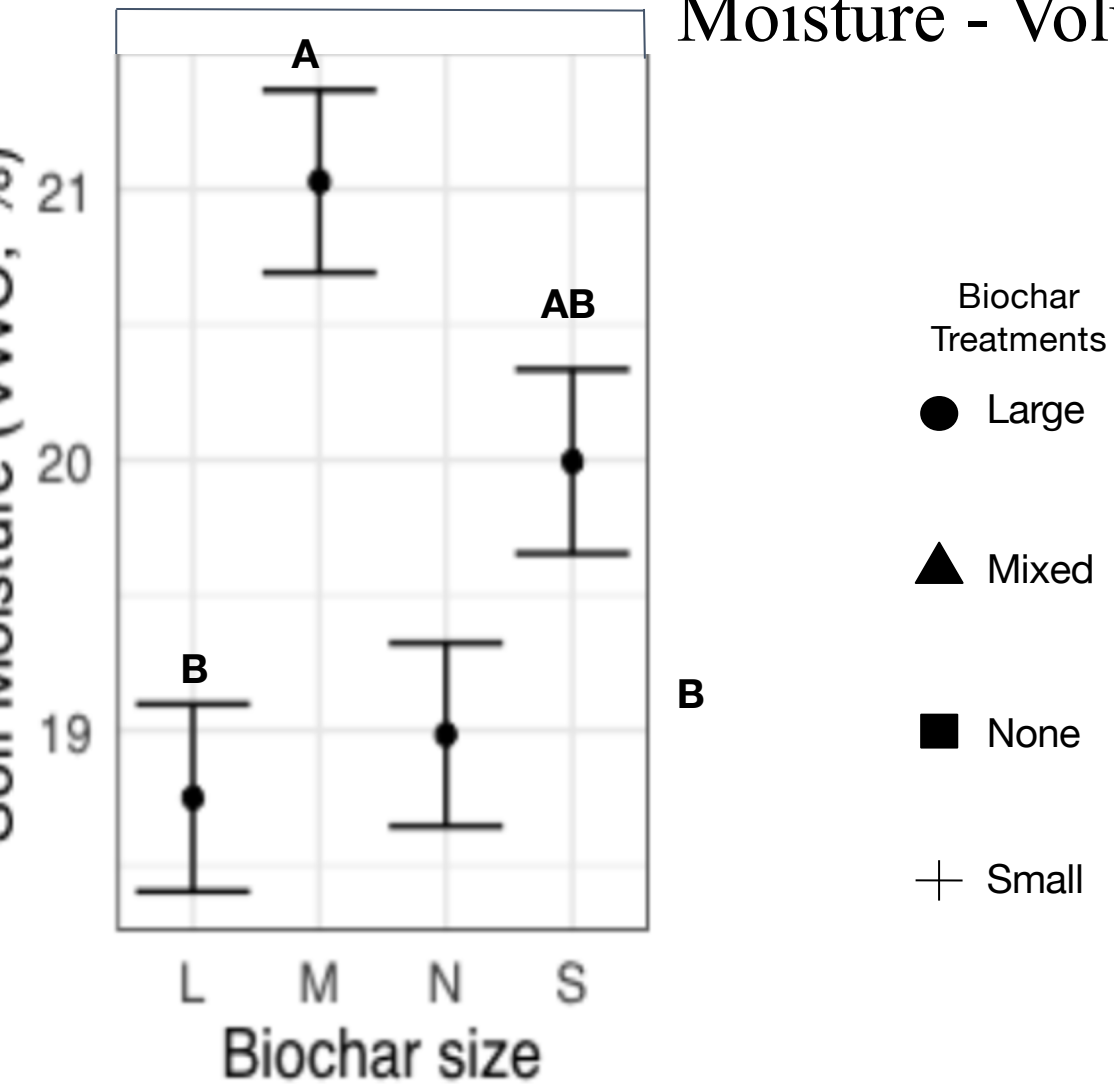
Moisture - Relative Humidity



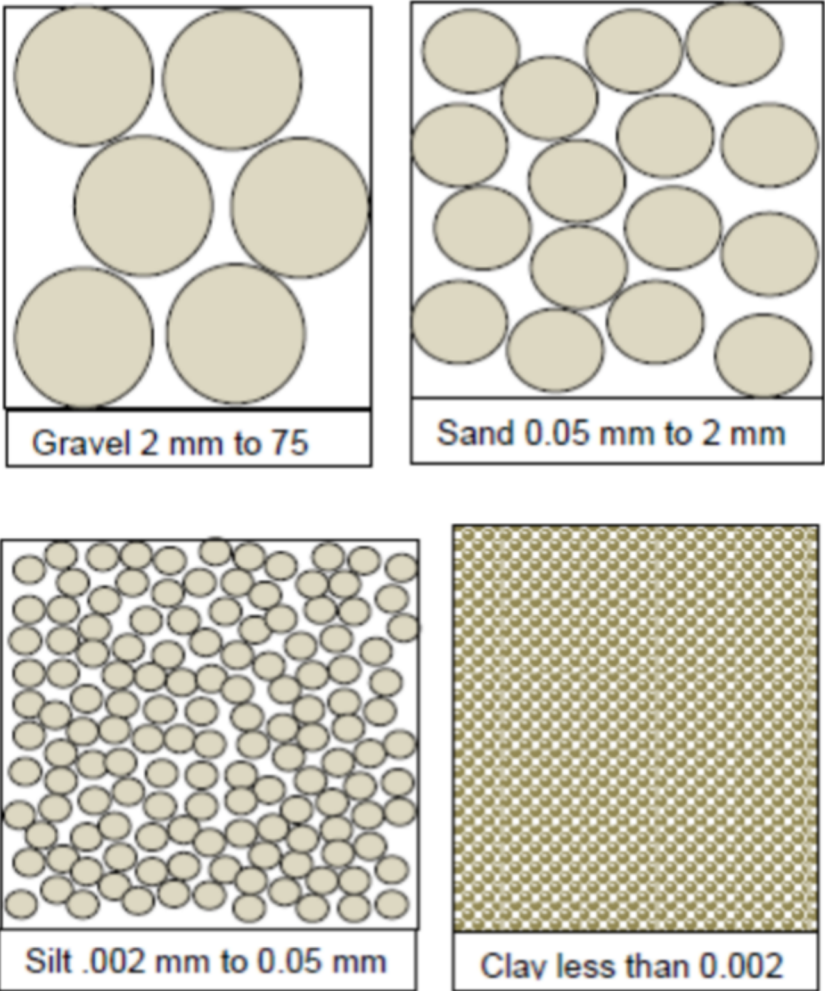
Moisture by treatment; $p < 0.05$



Moisture - Volumetric Water Content



Particle sizes and pore space:

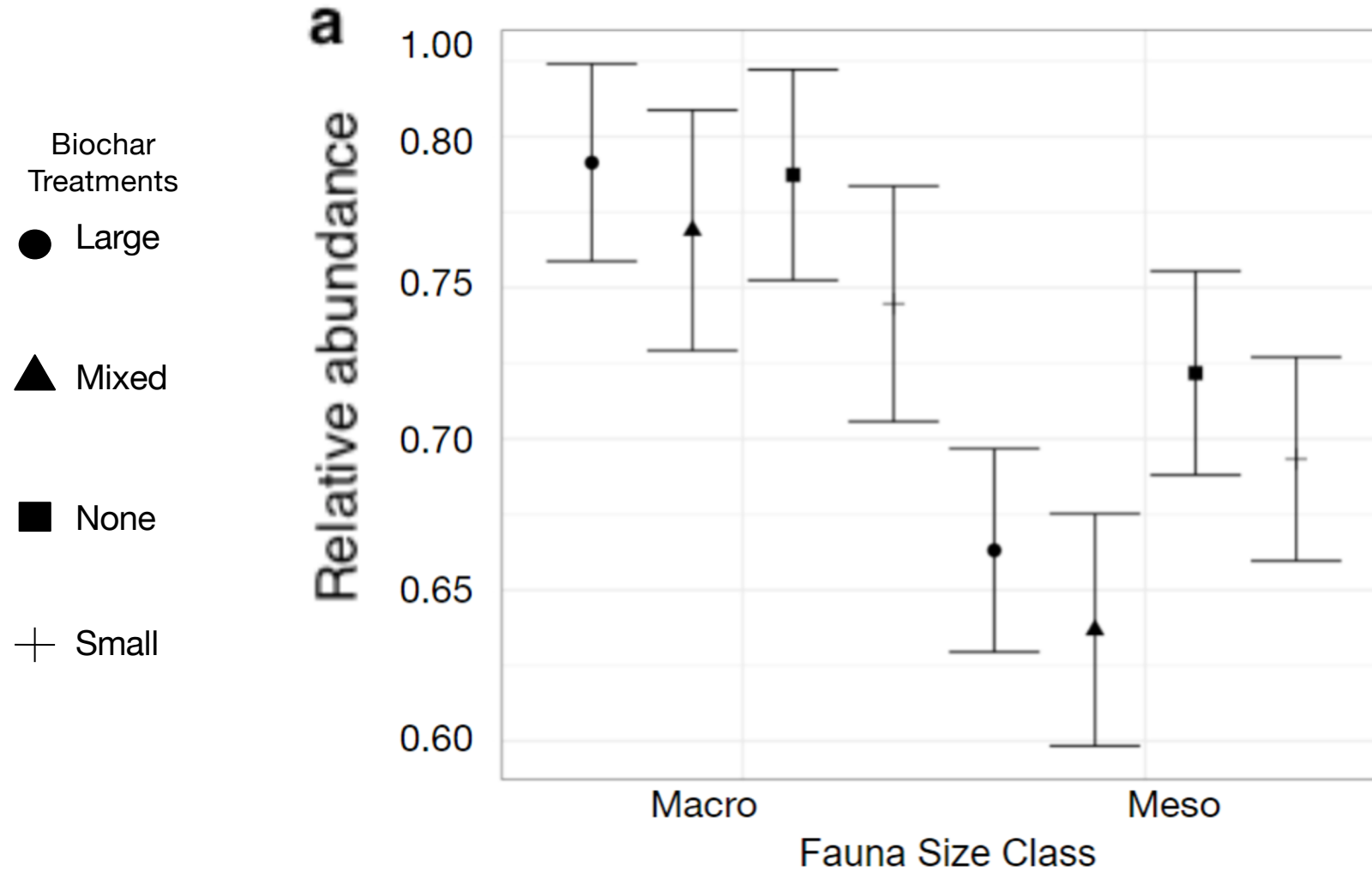


Volumetric Water Content per

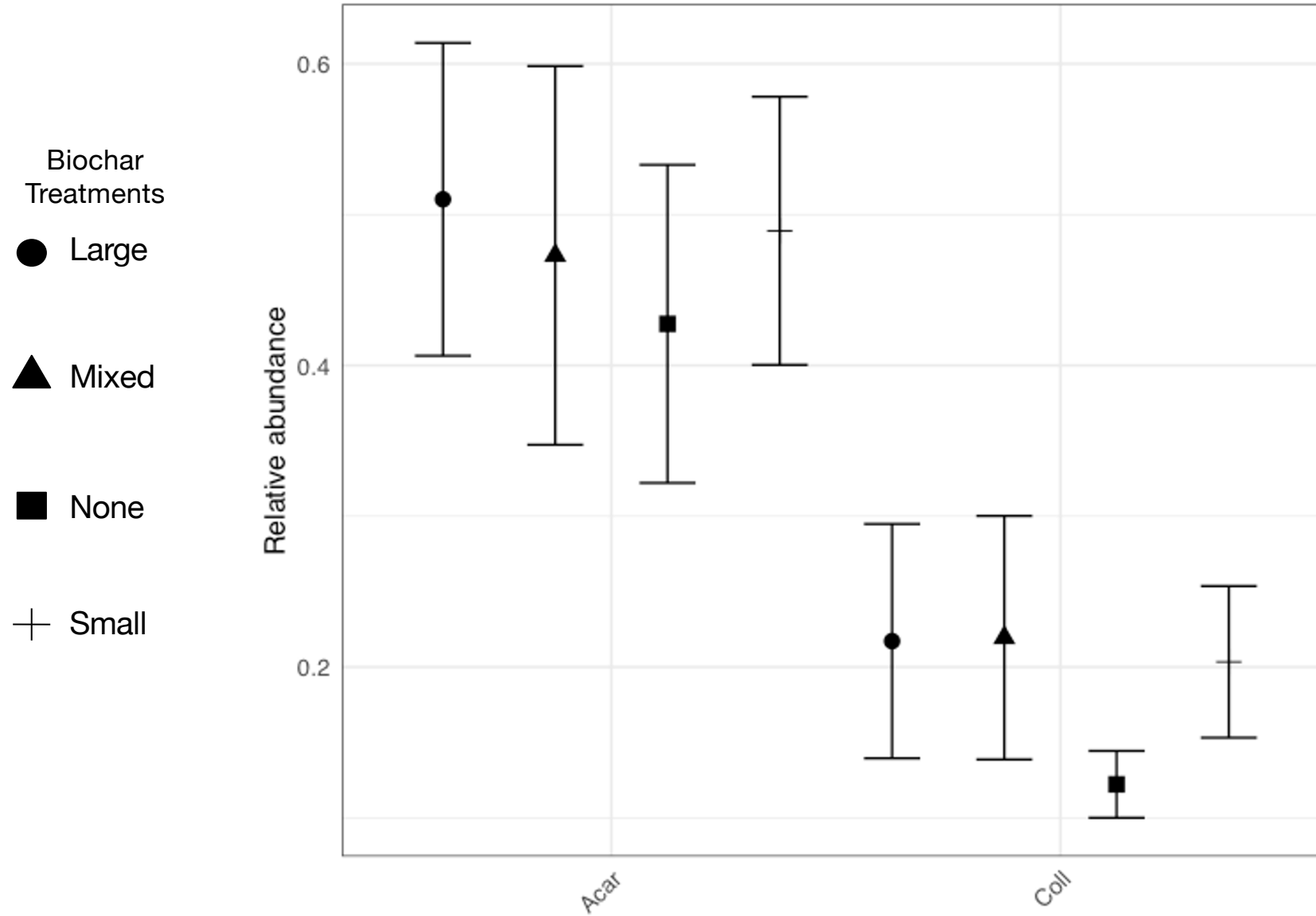
100 g of soil

Abundance per treatment
across orders

Abundance per treatment across orders

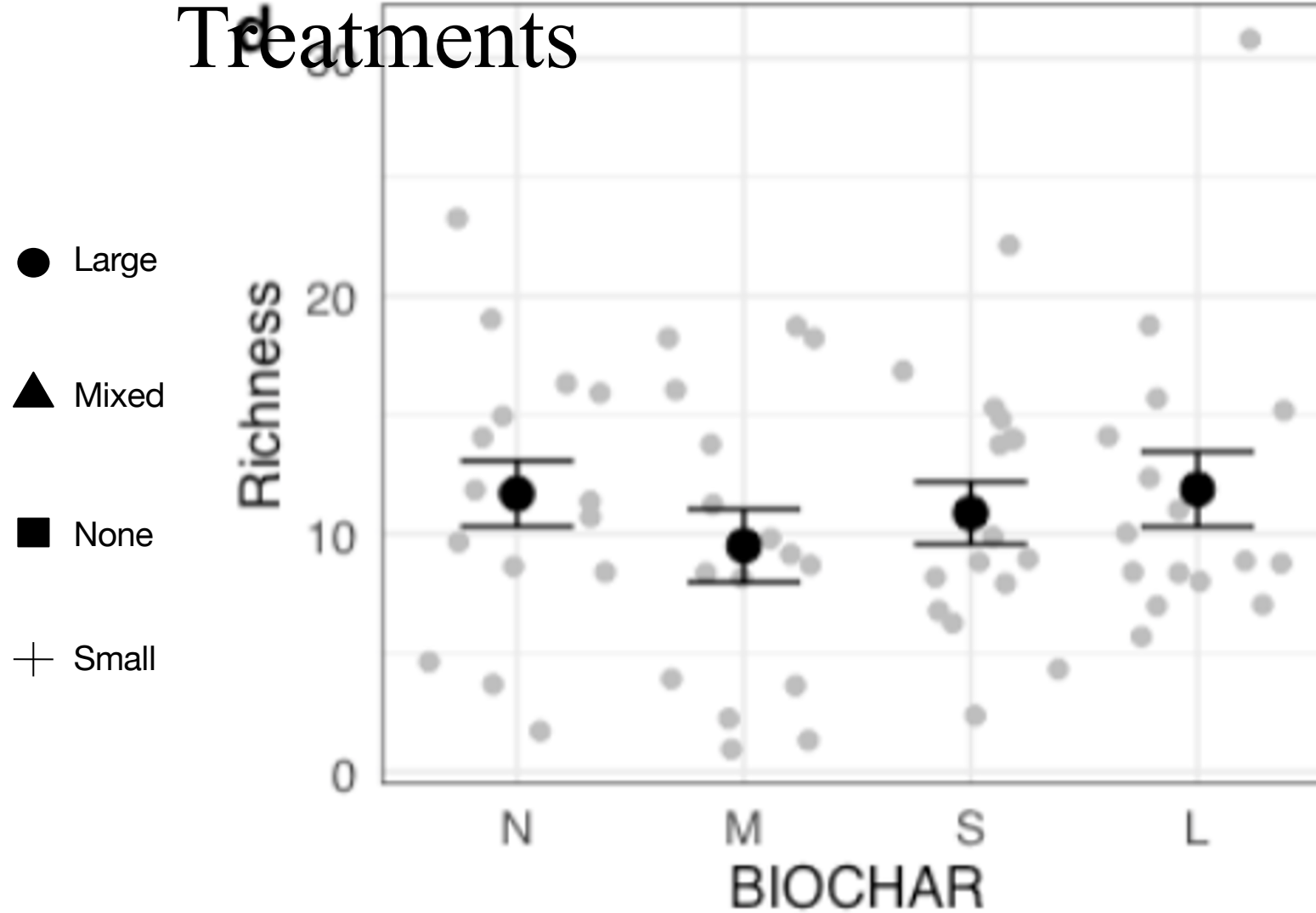


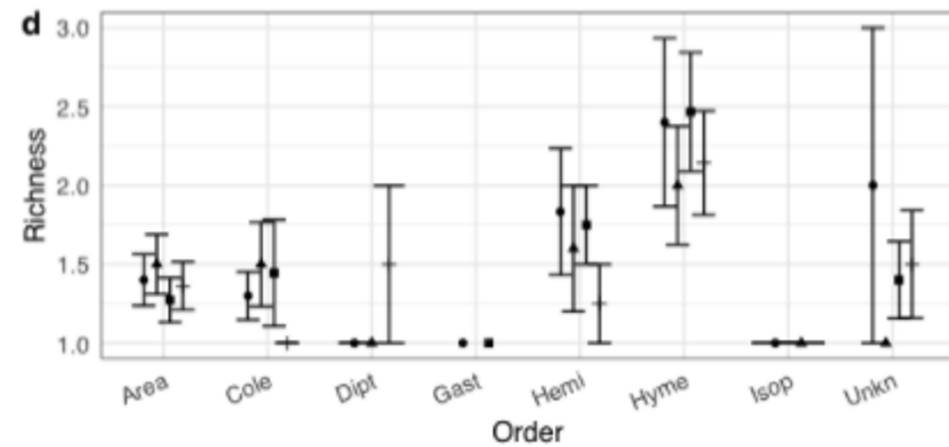
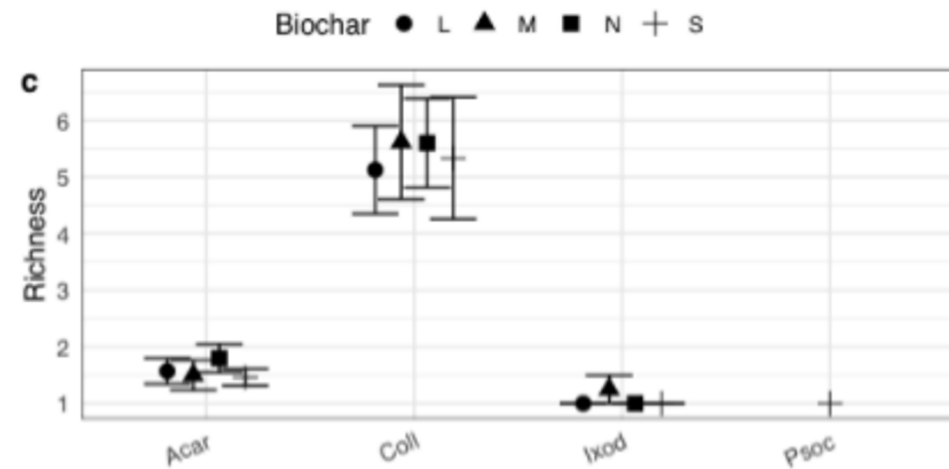
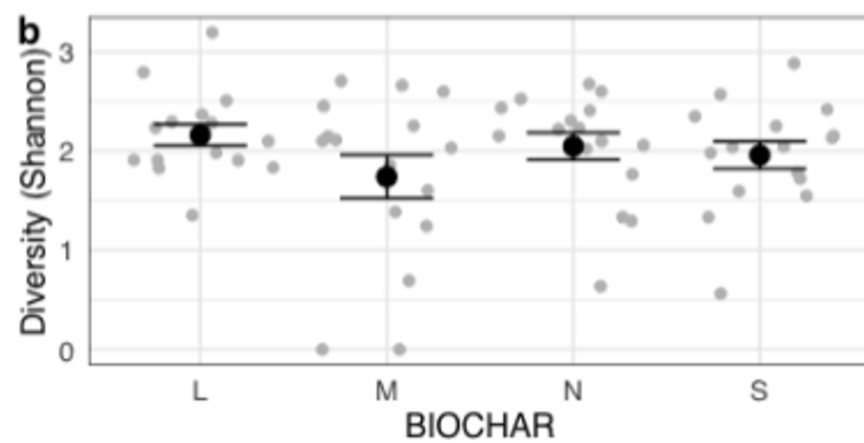
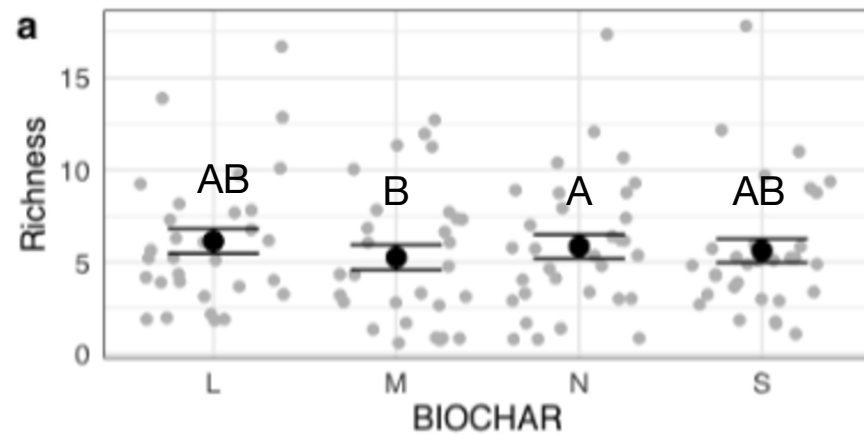
Abundance per treatment across orders



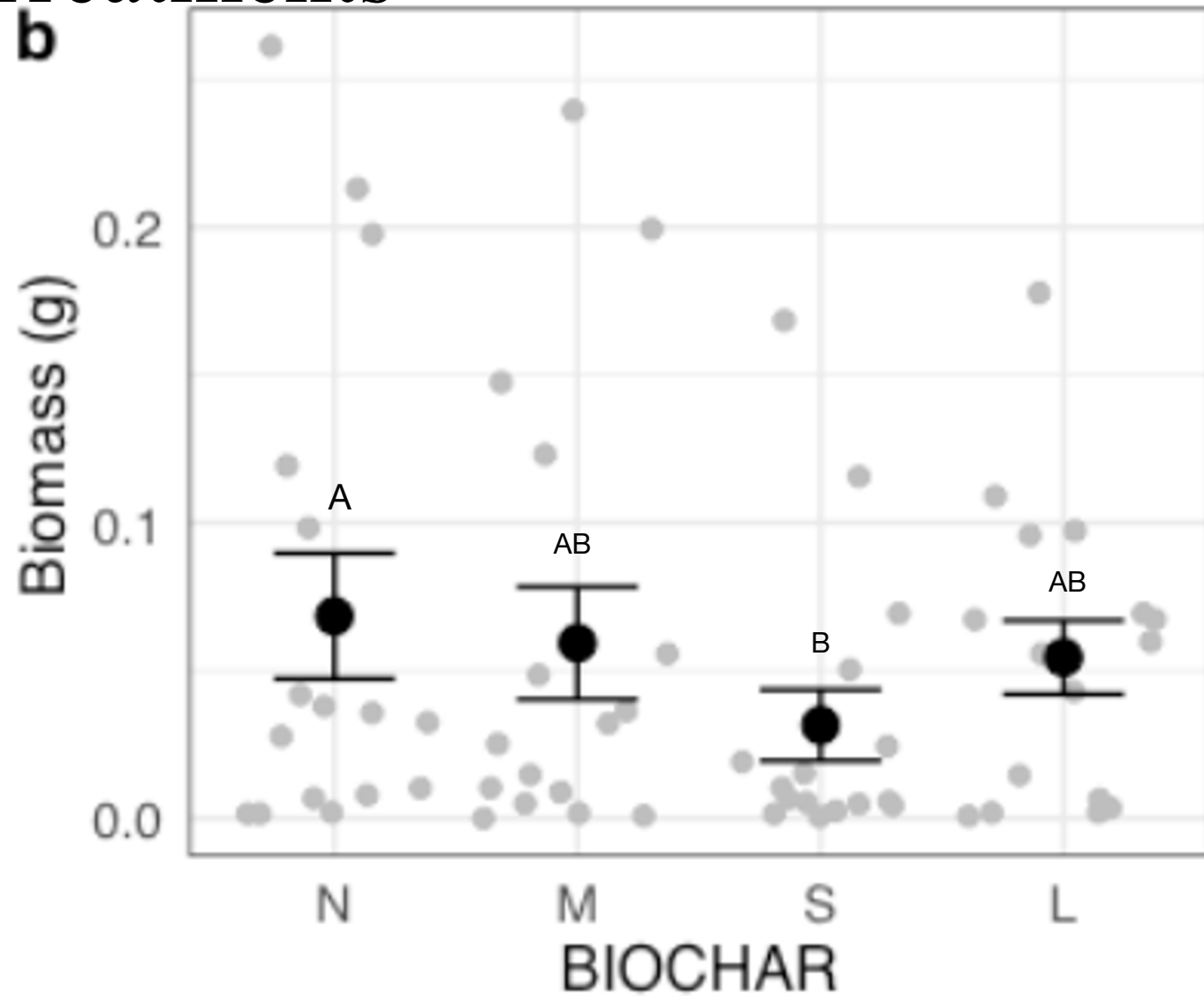
Community analysis Across Treatment

Community Analysis - Across Treatments





Community Analysis - Across Treatments



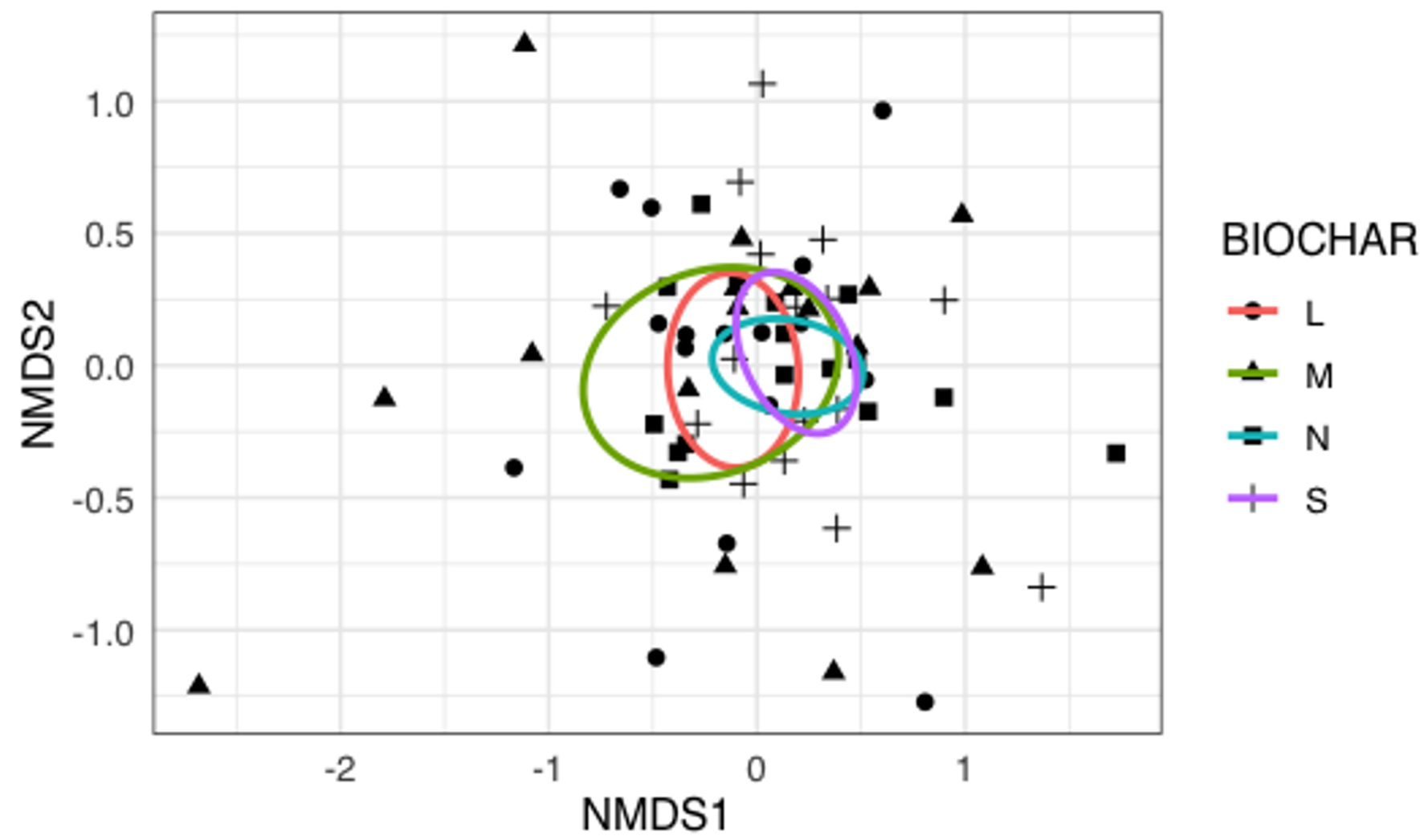
A

AB

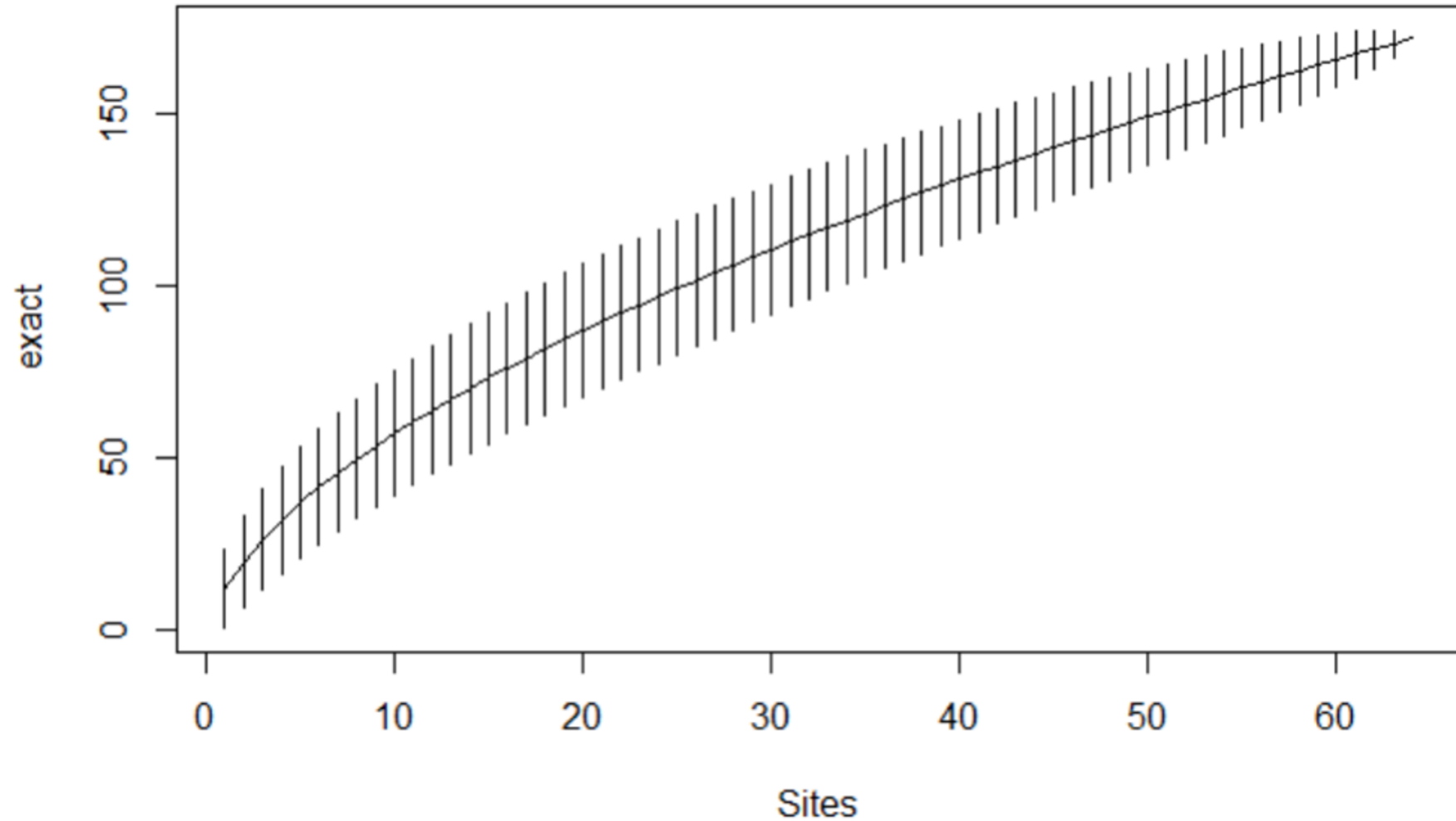
Conclusion

- Urbanization increasing, along with vacant land, need healthier soils for agriculture
- Biochar, inspired by indigenous knowledge, shows potential to be a solution to improve soil fertility, based on previous studies
- Many studies about biochar, but very few on soil fauna
- Experiment: What effect does biochar have in soil fauna and does particle size make a difference?
 - *Biochar increases moisture, likely due to small particles*
 - *Biochar may have net neutral and slight negative effects on biomass and richness, possibly due to toxicity*
- Are the effects more below ground than above ground when it comes to soil fauna, or biochar in agriculture?

NMDS



Species accumulation curve



Disrupted Urban Soils

- Disrupted soil structure
(Lal 2012; Lorenz 2015)



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- Pollutant and heavy metal contamination
(Kumar and Hundal 2016)



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- Importing and exporting of materials
(Lorenz 2015)



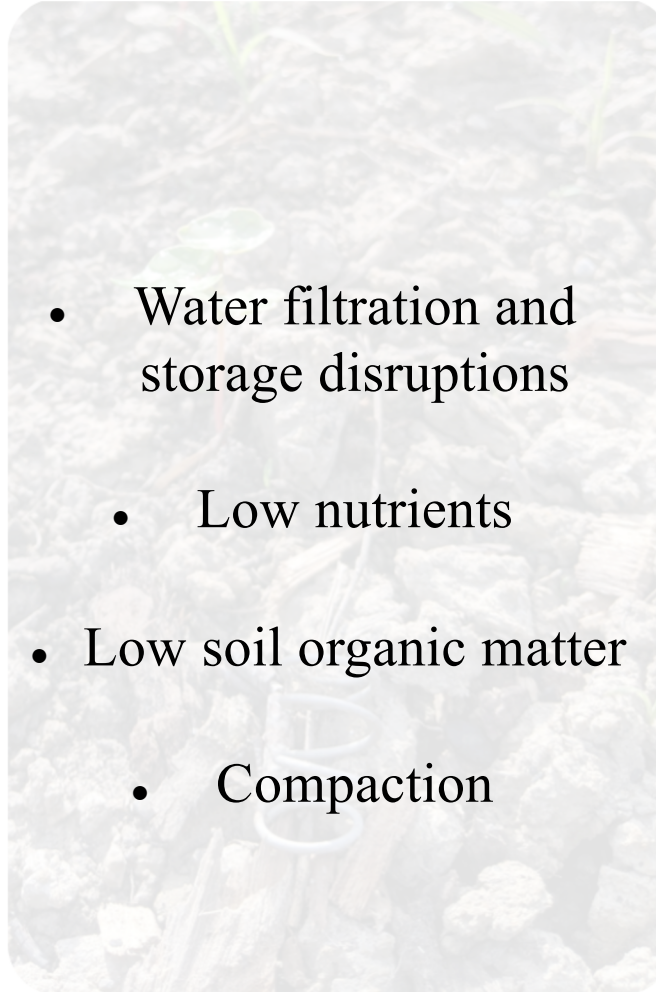
Disrupted Urban Soils

- Disrupted soil structure
(Lal 2012; Lorenz 2015)



- Pollutant and heavy metal contamination
(Kumar and Hundal 2016)

- Water filtration and storage disruptions
- Low nutrients
- Low soil organic matter
- Compaction



- Important and exporting of materials
(Lorenz 2015)

