



Soil organic carbon stocks in permanent and temporary grasslands

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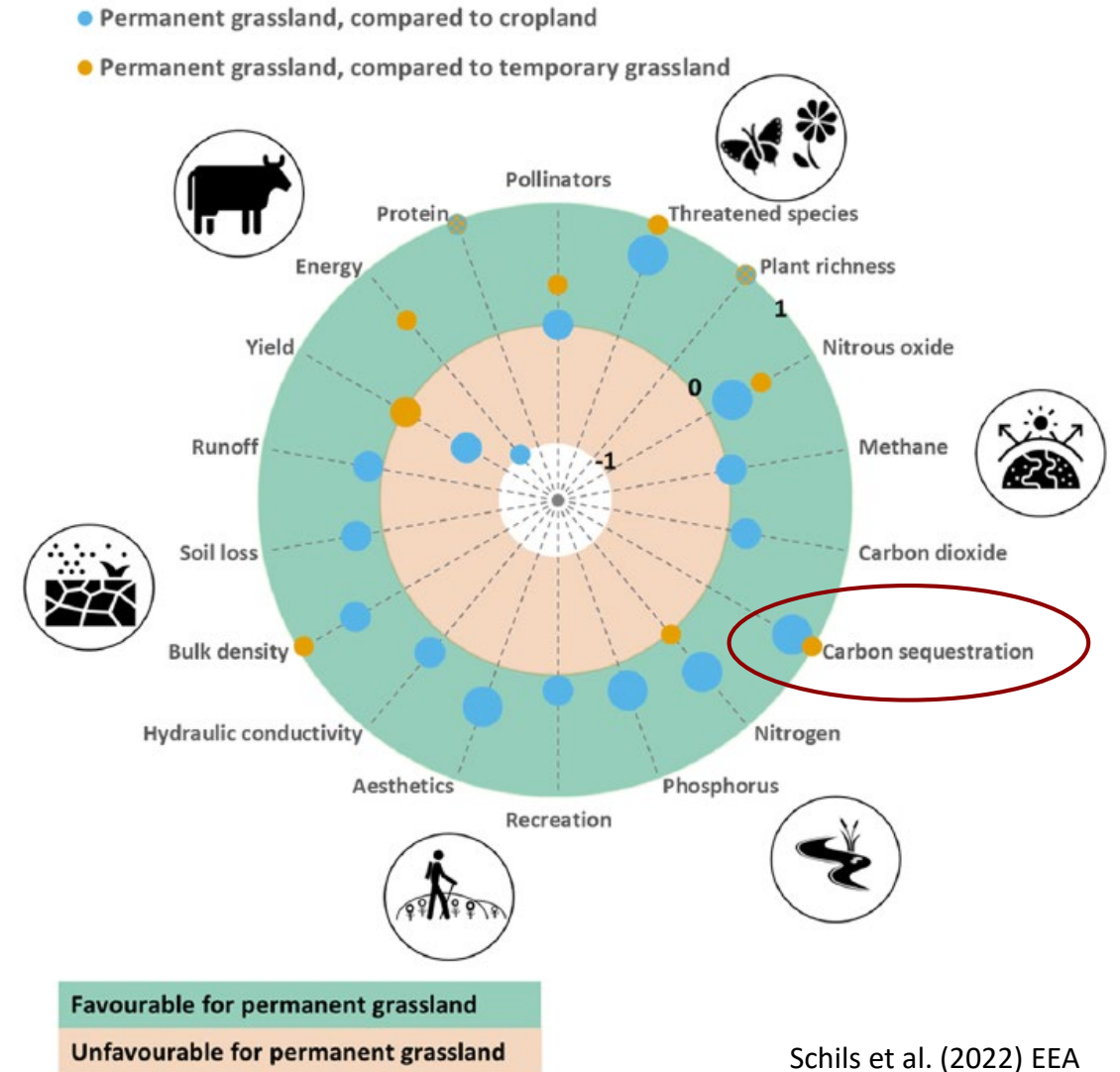
Background

Achieving a sustainable equilibrium among agricultural practices and environment is the main goal for agronomic research nowadays (Smith et al., 2015).

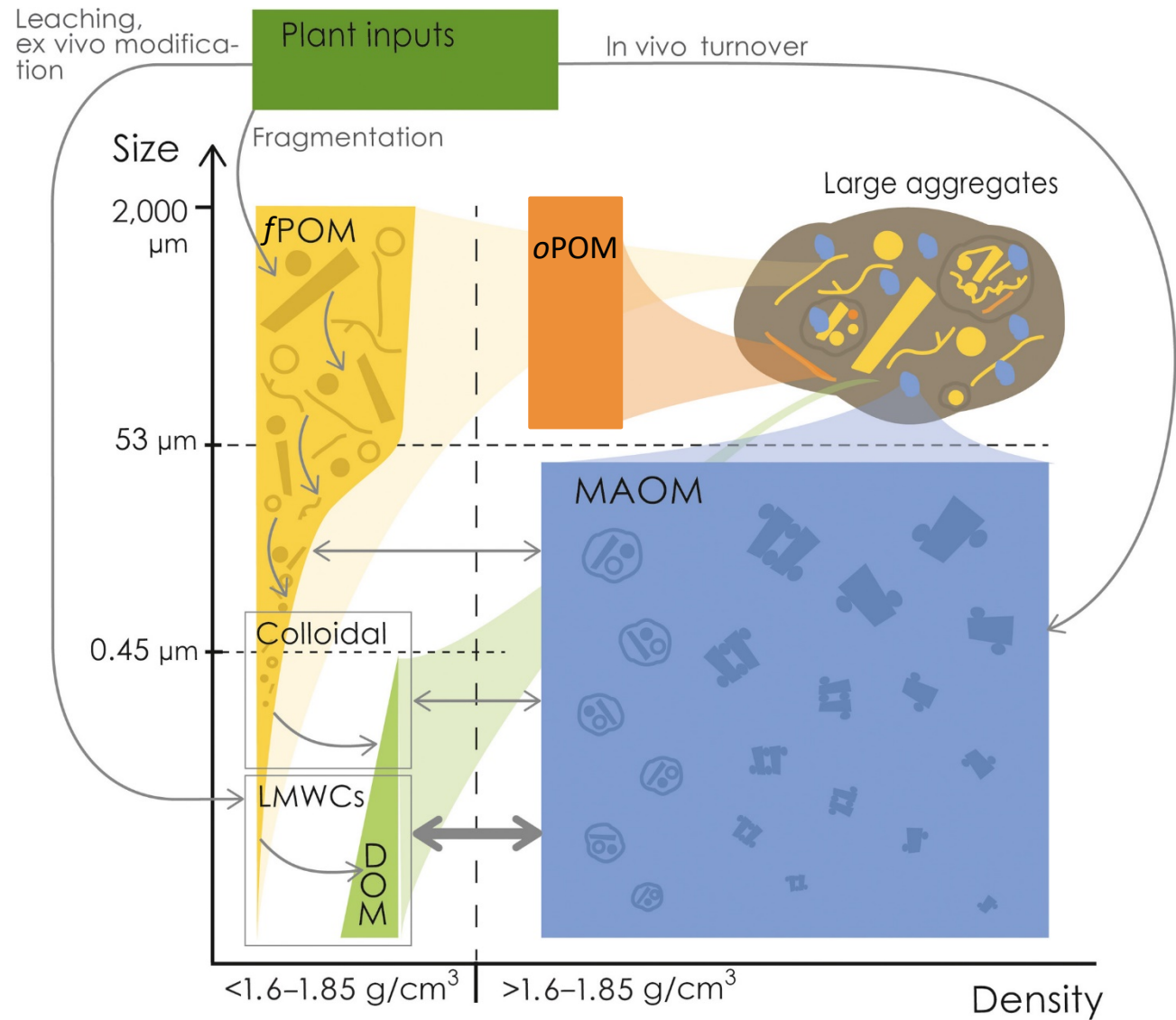
Land management should tend to a sustainable agriculture to guarantee or improve crop yields and soil quality, while limiting greenhouse gases emissions (IPCC, 2013).

Grasslands have been indicated as more efficient than cropping systems in terms of C sequestration and increasing biodiversity and nutrient availability of the agroecosystem (Lemaire et al., 2014).

However, there are some gaps related to comparisons between permanent and temporary grasslands, and effects of management practices on SOC pools.

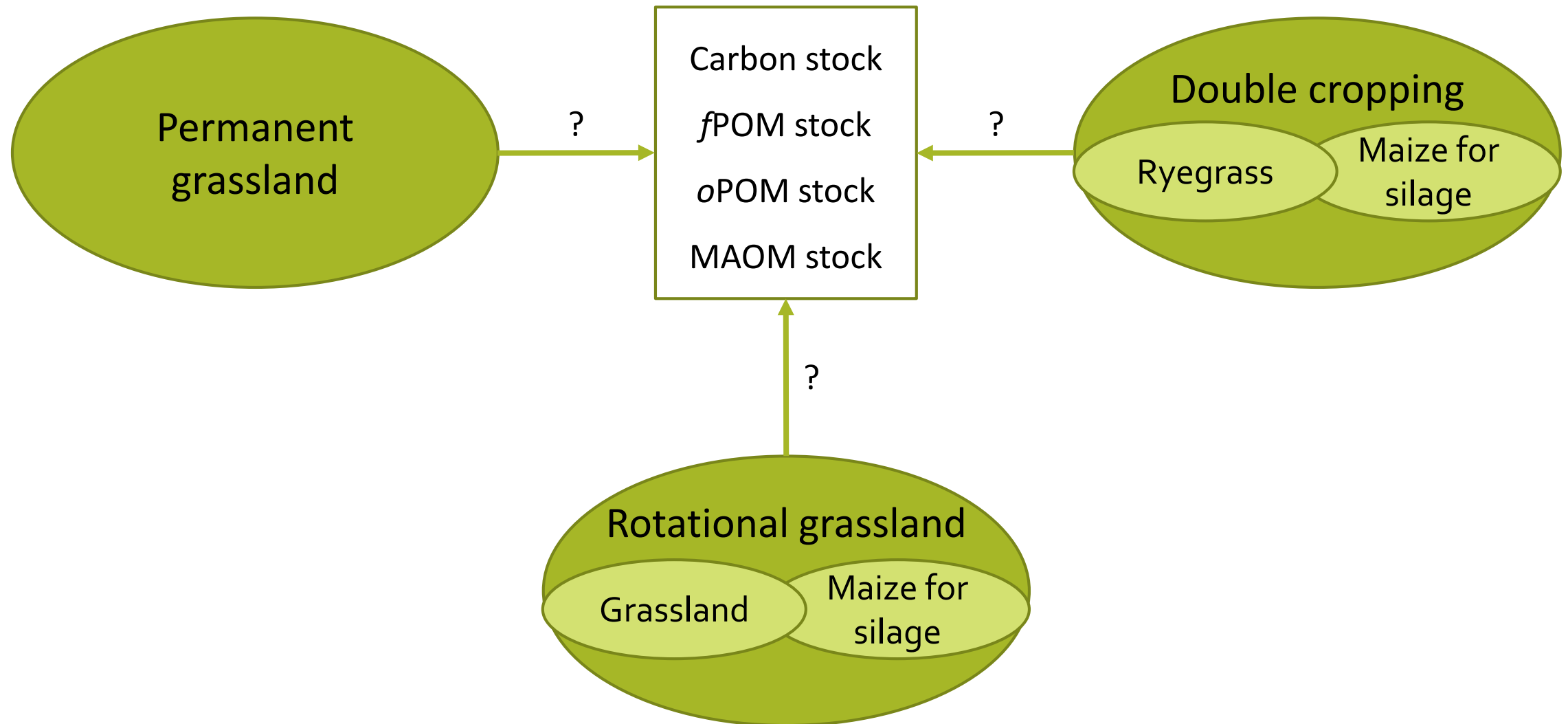


Background



Modified from Lavalle et al. (2020) GBC

Aim of the work



Experimental design

Soil: **loamy sand**, deep, calcareous (pH 8.1)

Randomized block experiment with three replicates

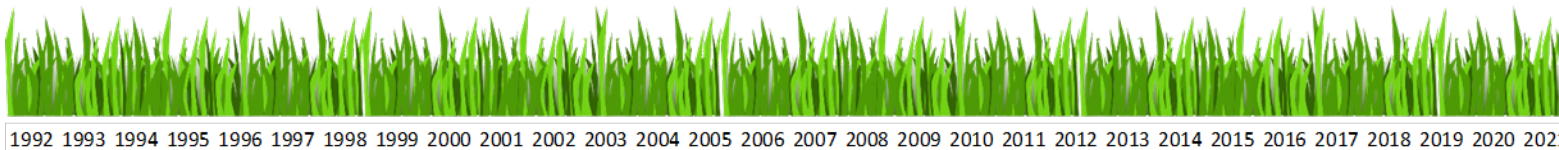
FYM applied at a dose corresponding to 170 kg N ha^{-1}

Soil sampling at 0-15 and 15-30 cm depth in March 2021

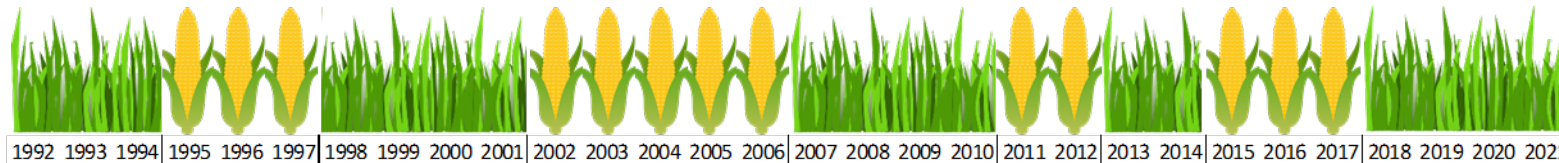
Soil bulk density sampled in March 2021



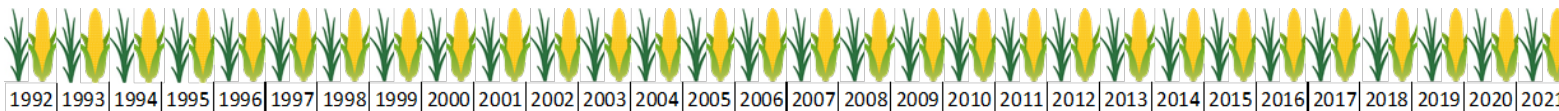
PG



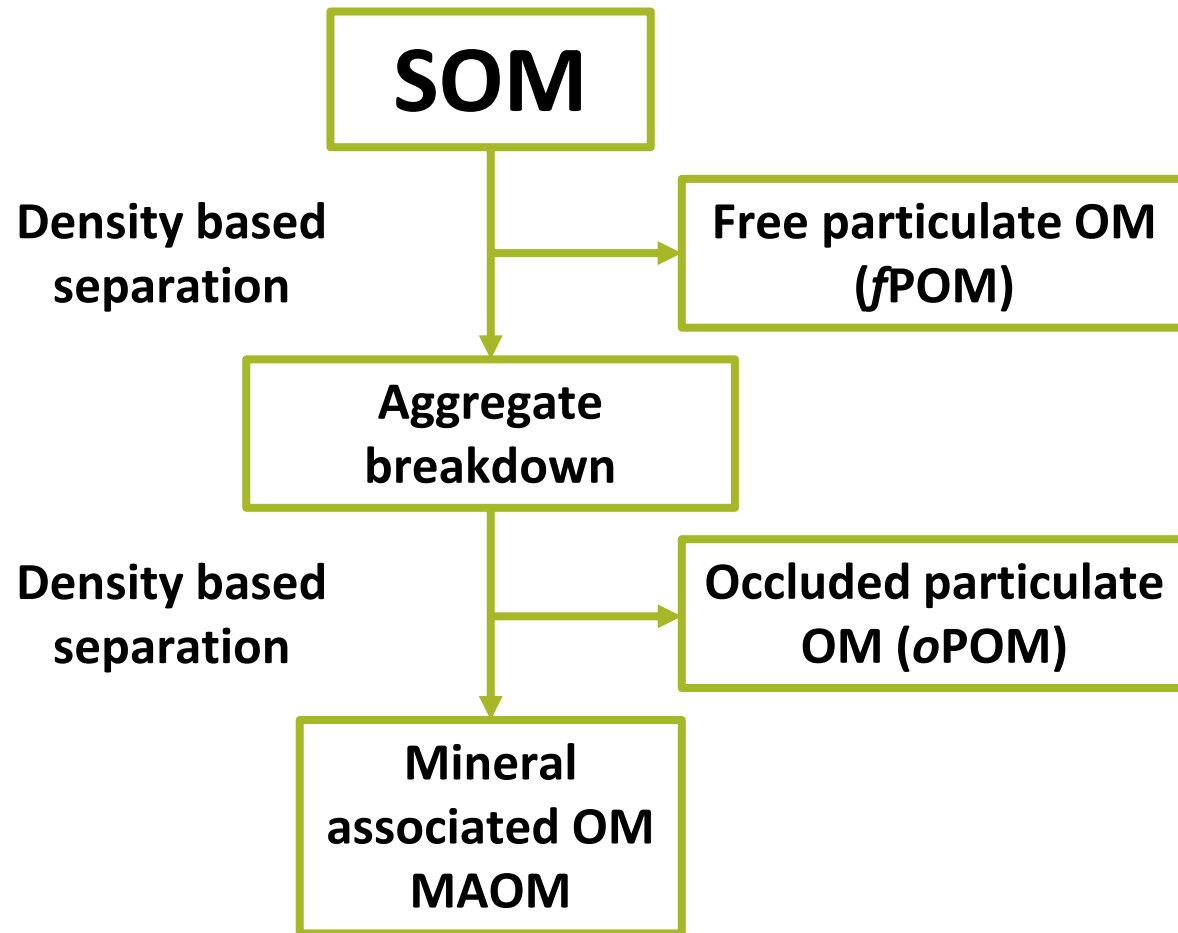
RG



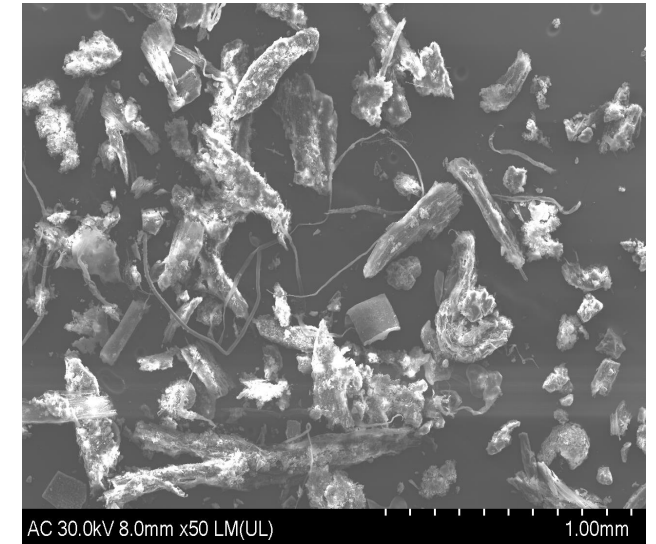
DC



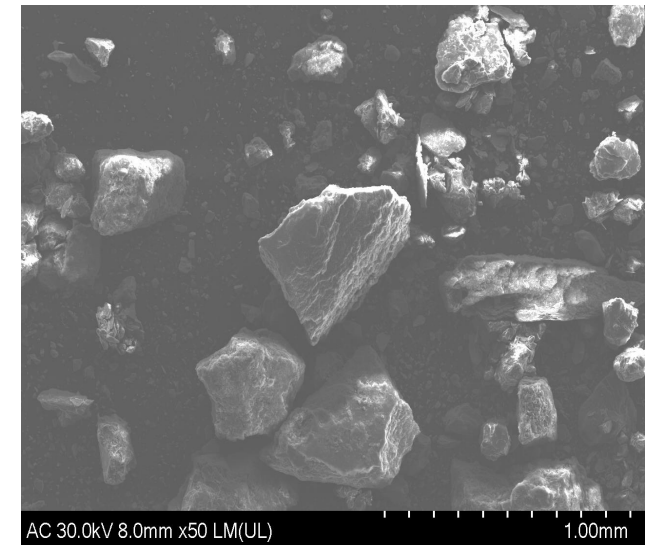
Measurements



(Cerli et al., 2012)



Particulate Organic Matter

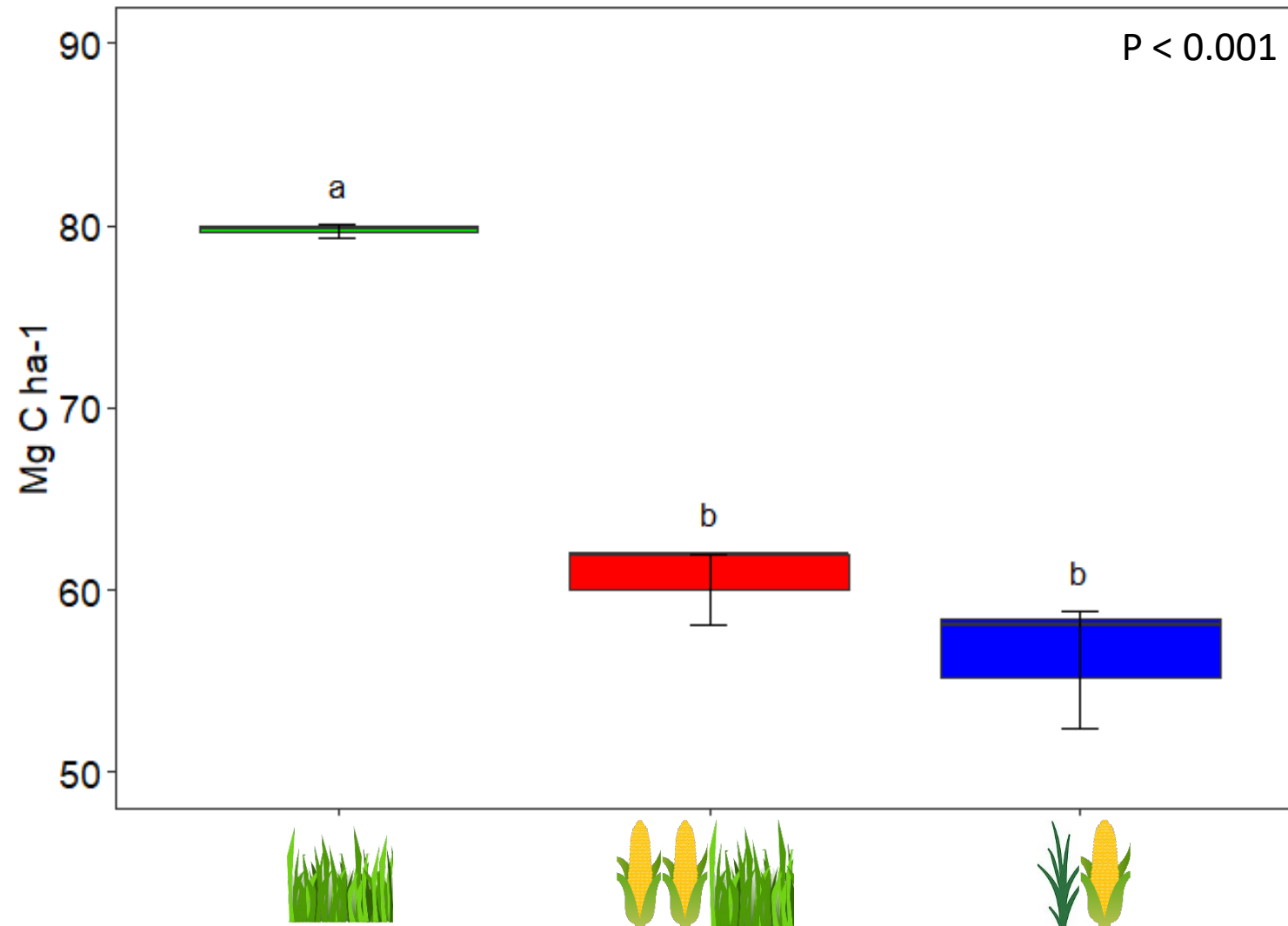


Mineral Associated Organic Matter

(Dămățircă et al., in preparation)

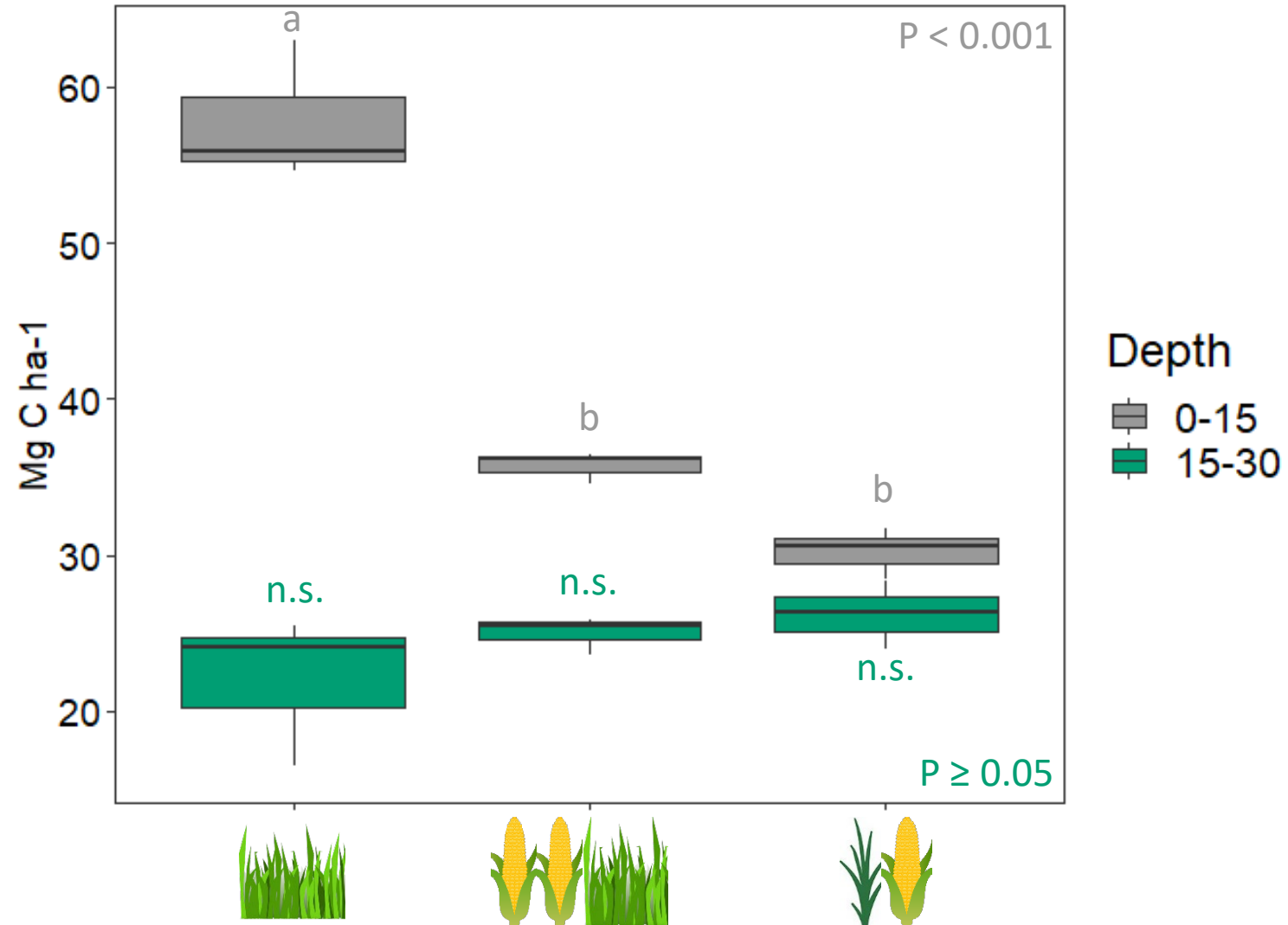
Results

SOC stock (0-30 cm)



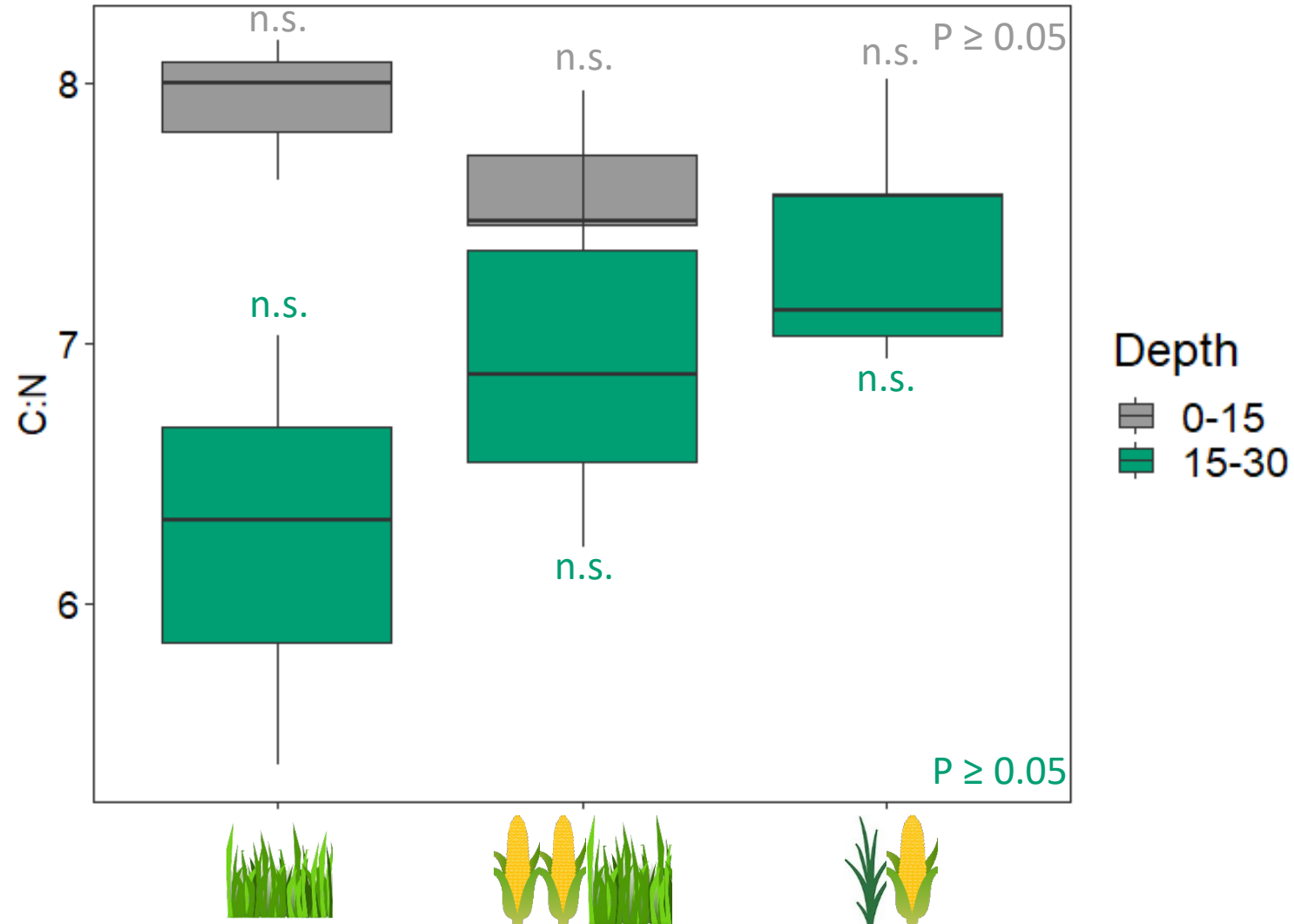
Results

Changes in C stocks with depth



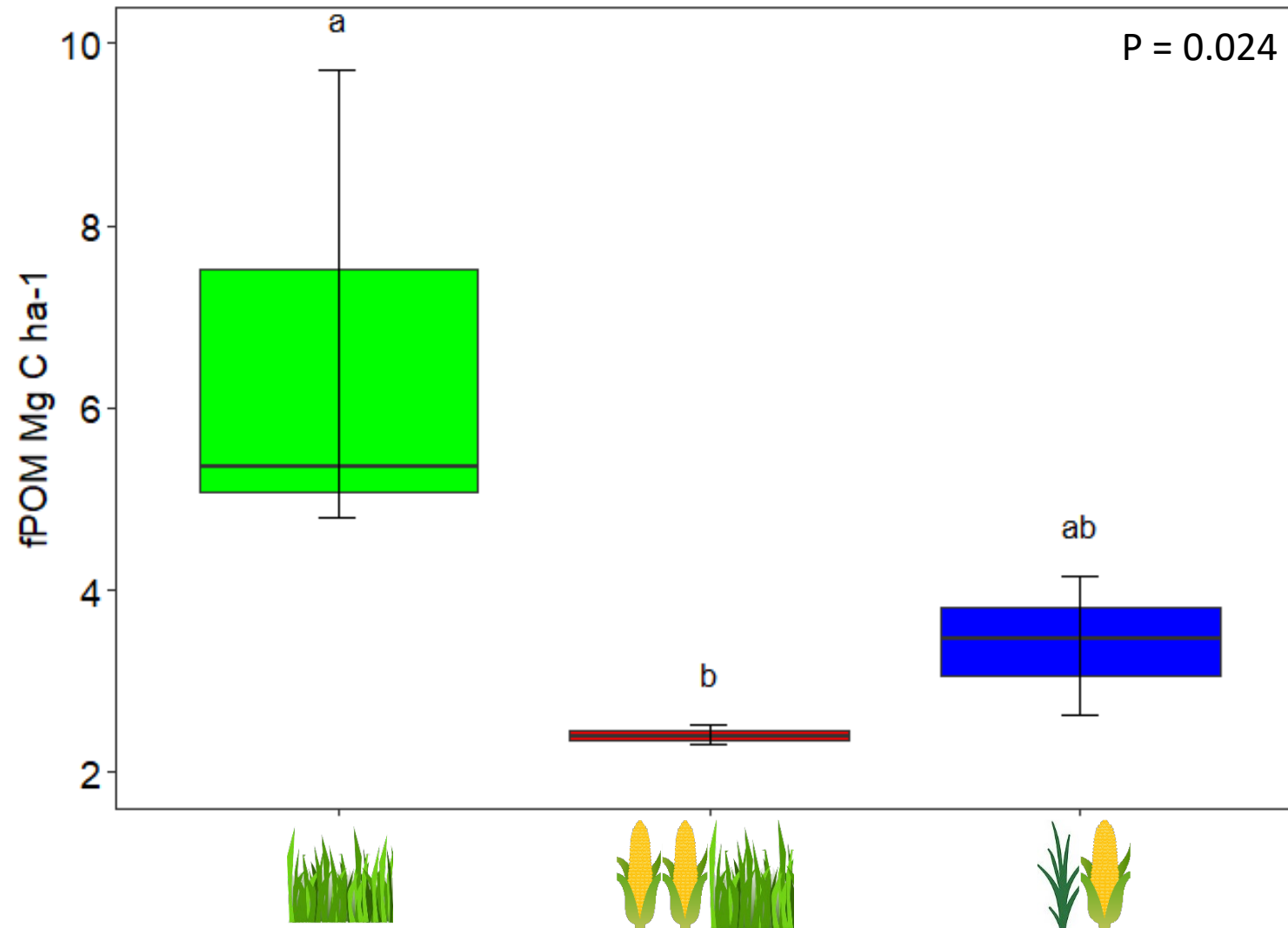
Results

Changes in bulk soil C:N with depth



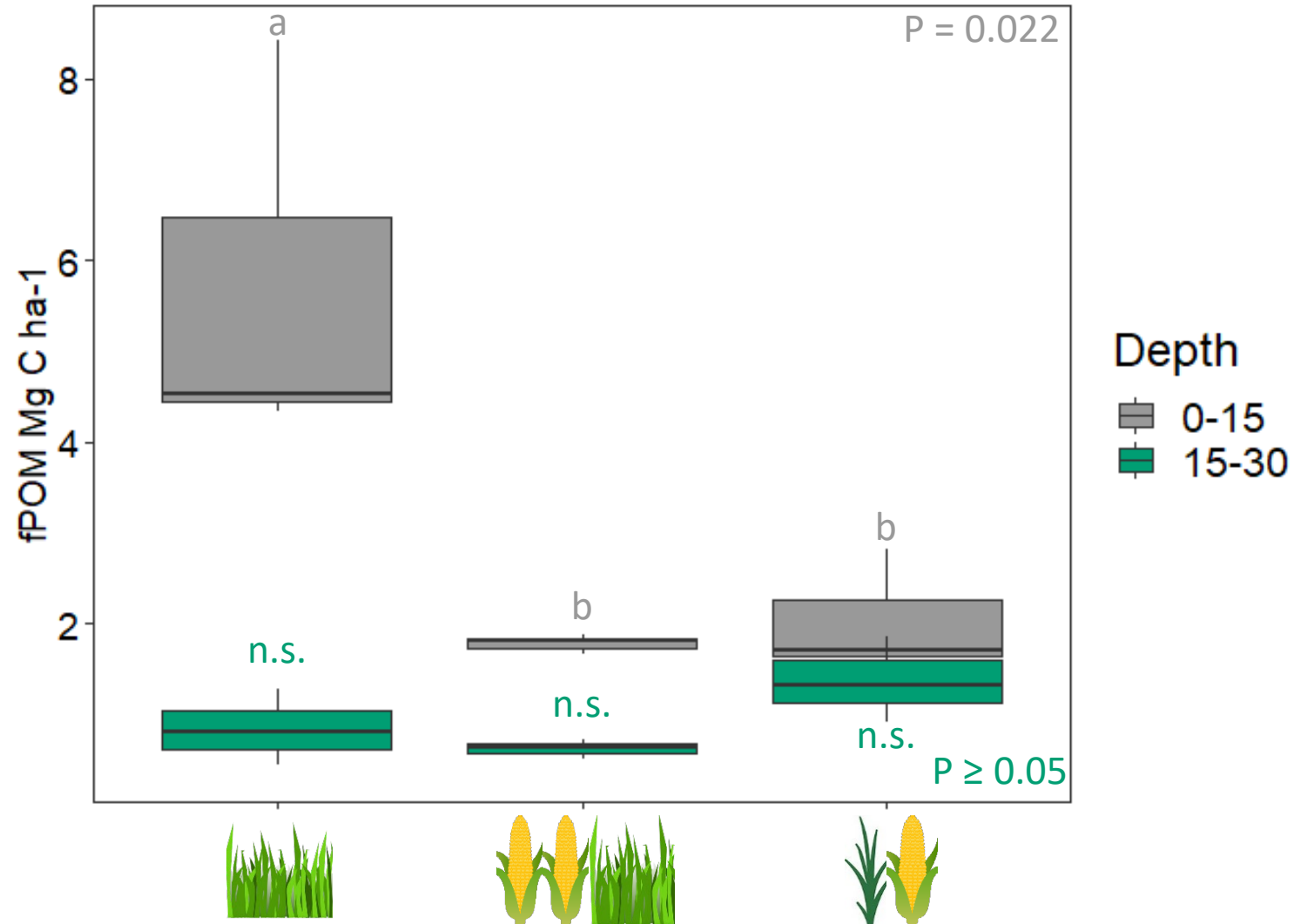
Results

*f*POM C stock (0-30 cm)



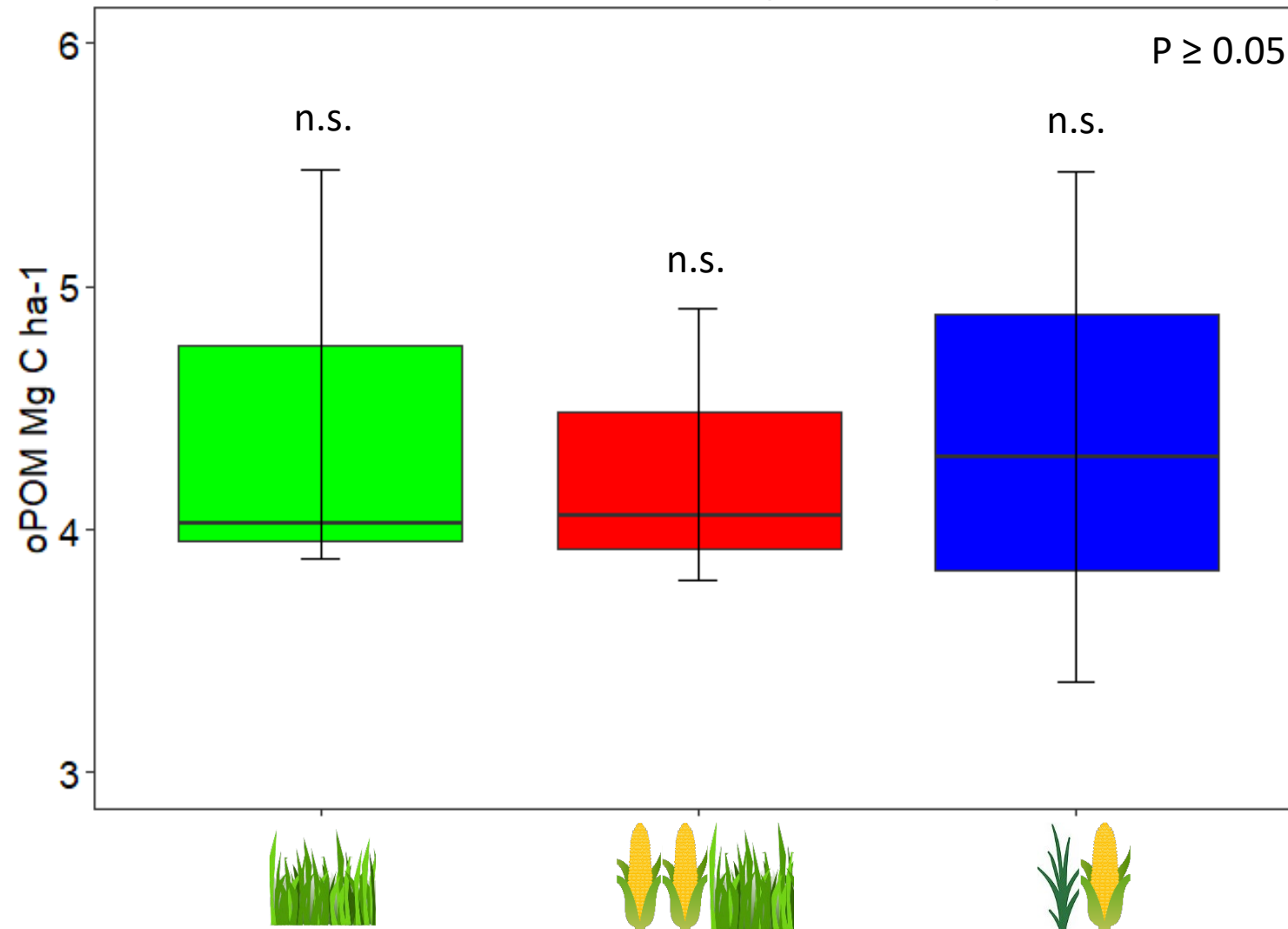
Results

Changes in *f*POM C stocks with depth



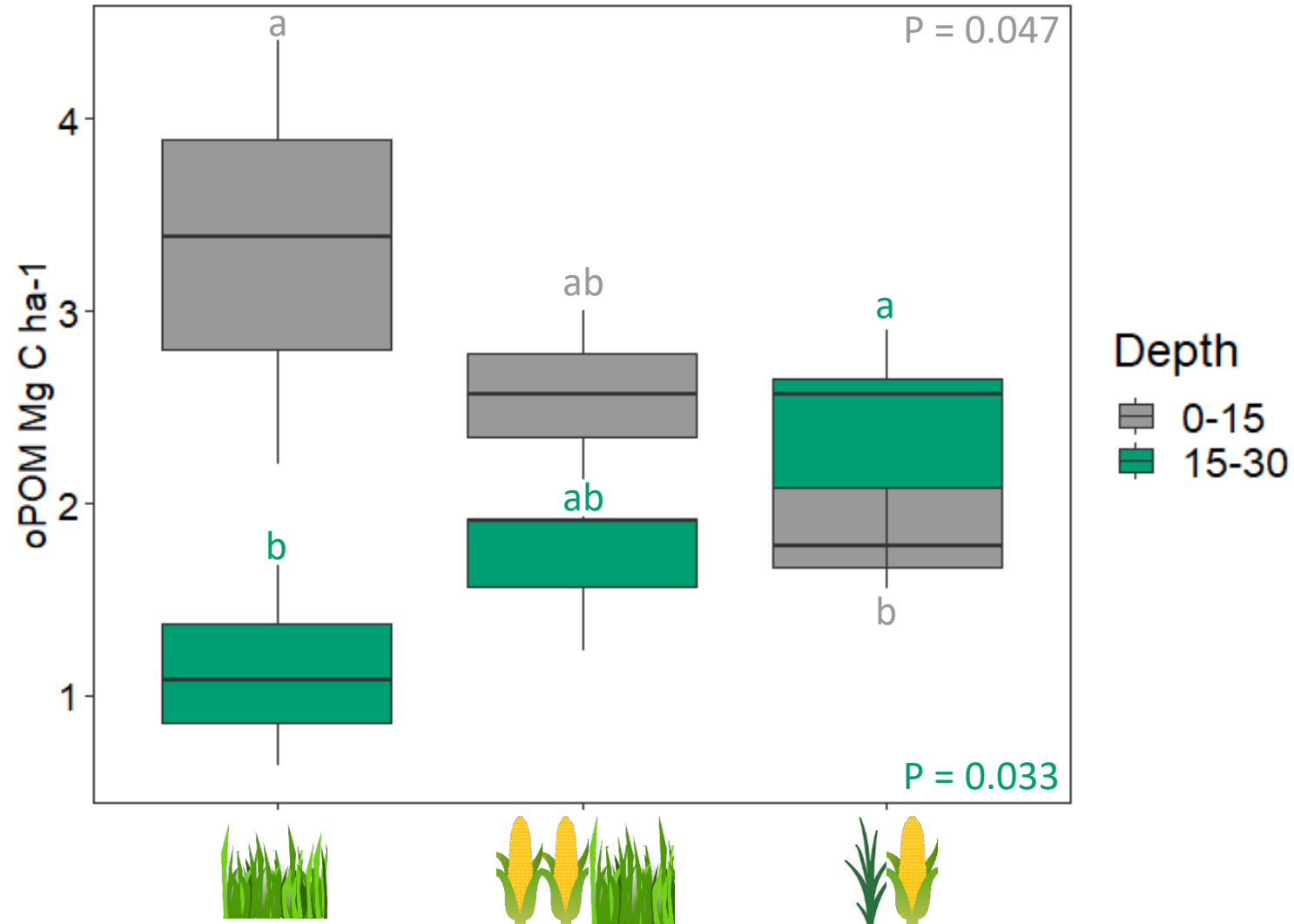
Results

oPOM C stock (0-30 cm)



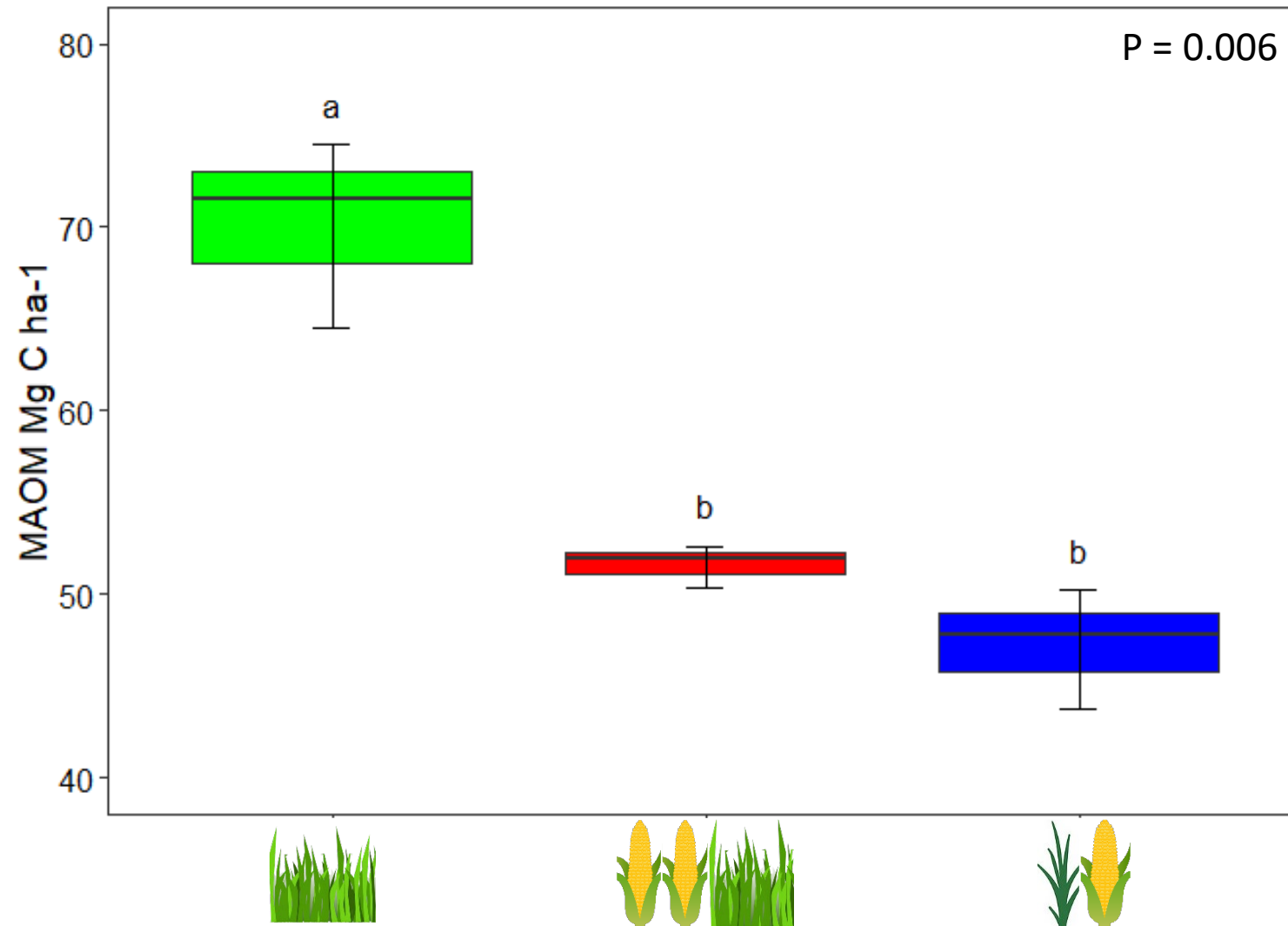
Results

Changes in oPOM C stocks with depth



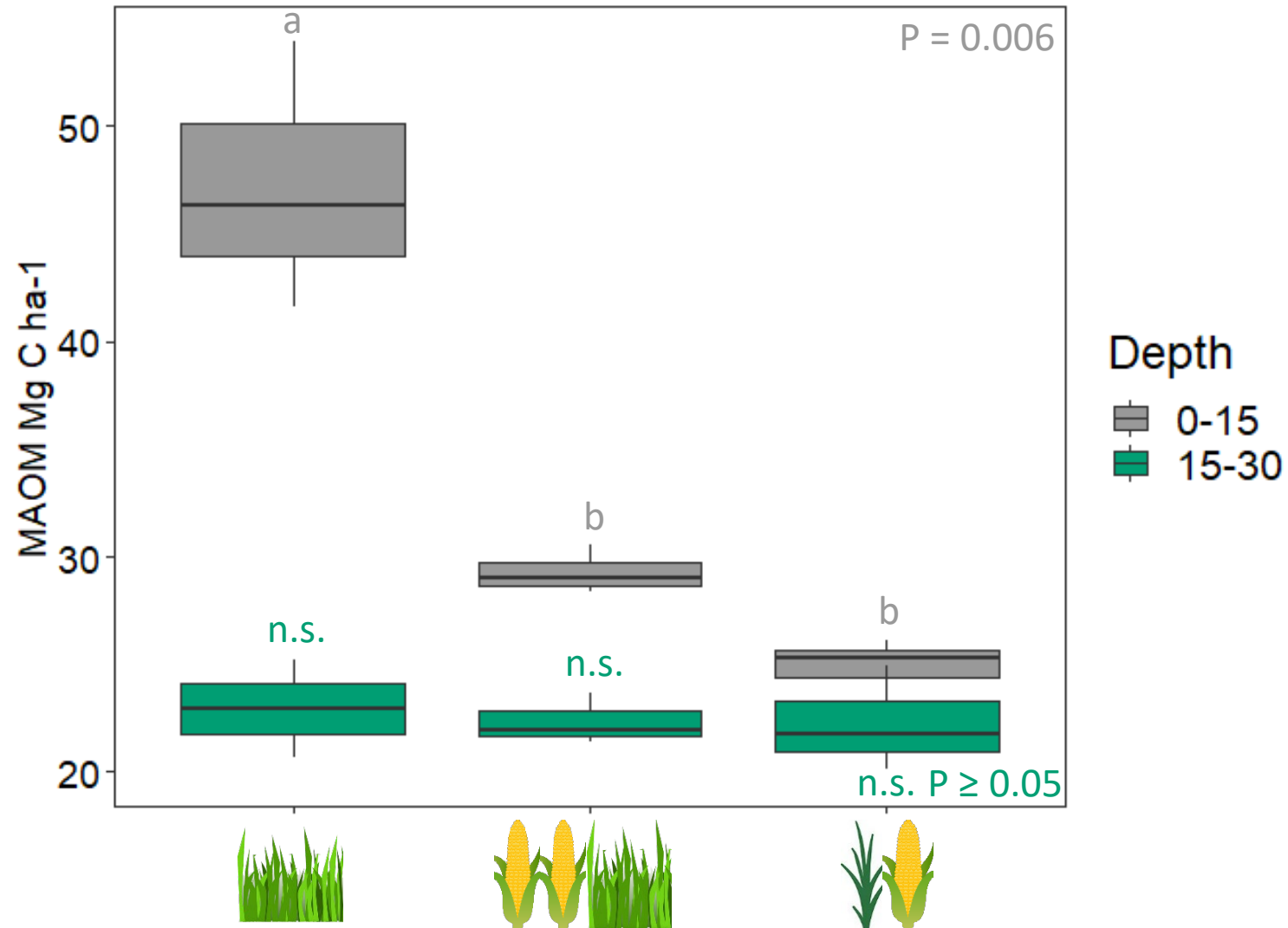
Results

MAOM C stock (0-30 cm)

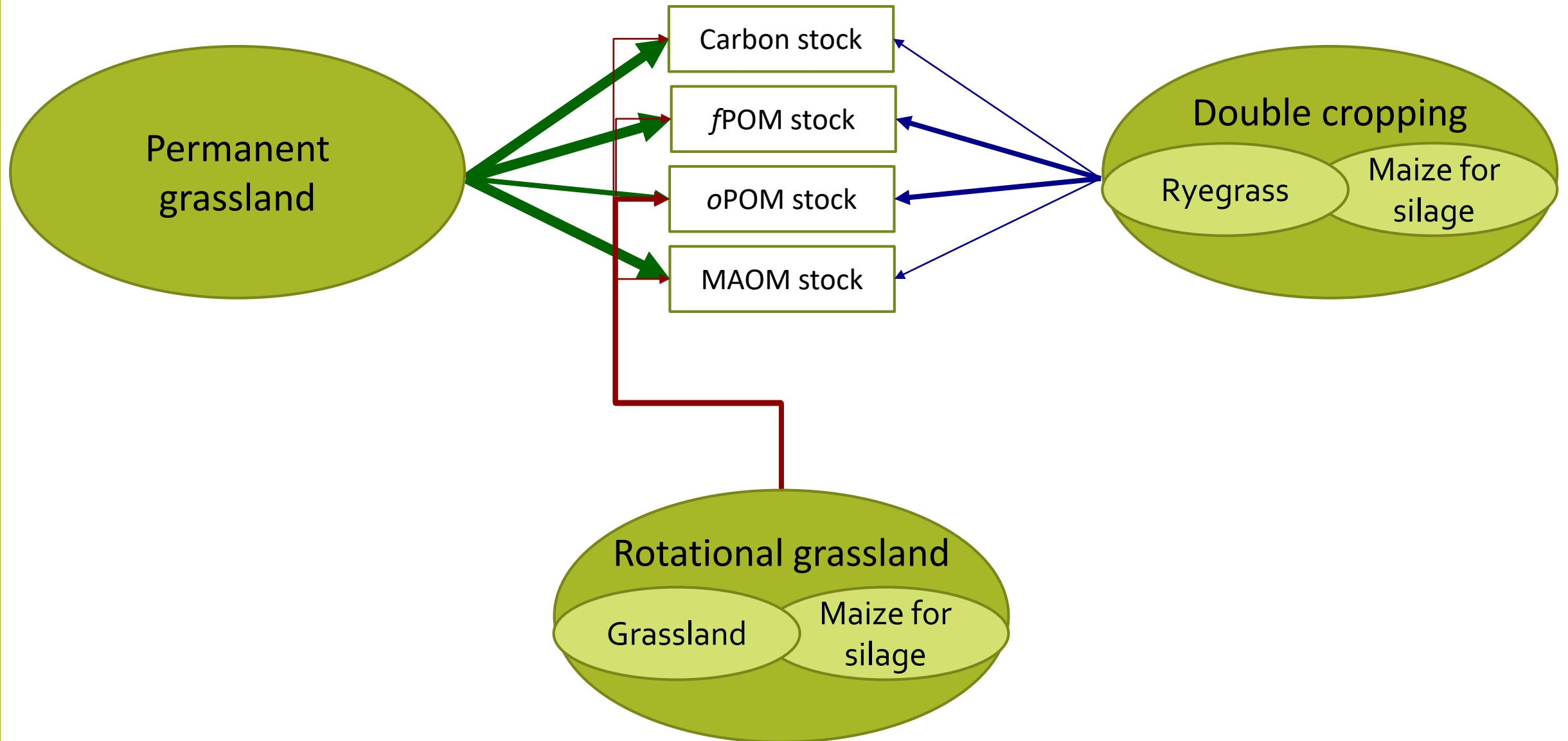


Results

Changes in MAOM C stocks with depth



Conclusions



Acknowledgments

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(<https://www.super-g.eu/>)



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Thank you for your attention!

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