

# Effect of biomass cutting on soil CO<sub>2</sub> efflux in a sandy grassland

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Carbon storage in grassland ecosystems is realized mostly belowground. The changes in the management activities of grasslands also influence the below-ground carbon stocks. Soil carbon-dioxide efflux ( $R_s$ ) is affected by abiotic (temperature ( $T_s$ ), soil water content (SWC)) and the biotic factors.

**The aim of the study** was to investigate the biotic factor, namely the belowground carbon allocation on soil respiration.

## Study site

The study was performed in a semi-arid sandy grassland at Bugac (Kiskunság National Park, Hungary).

The vegetation of the pasture was dominated by *Festuca pseudovina*, *Carex stenophylla* and *Cynodon dactylon* and the soil is a chernozem type soil with high organic carbon content (114 m a.s.l, average annual precipitation 562 mm, annual mean temperature 10.4°C).



Bugac

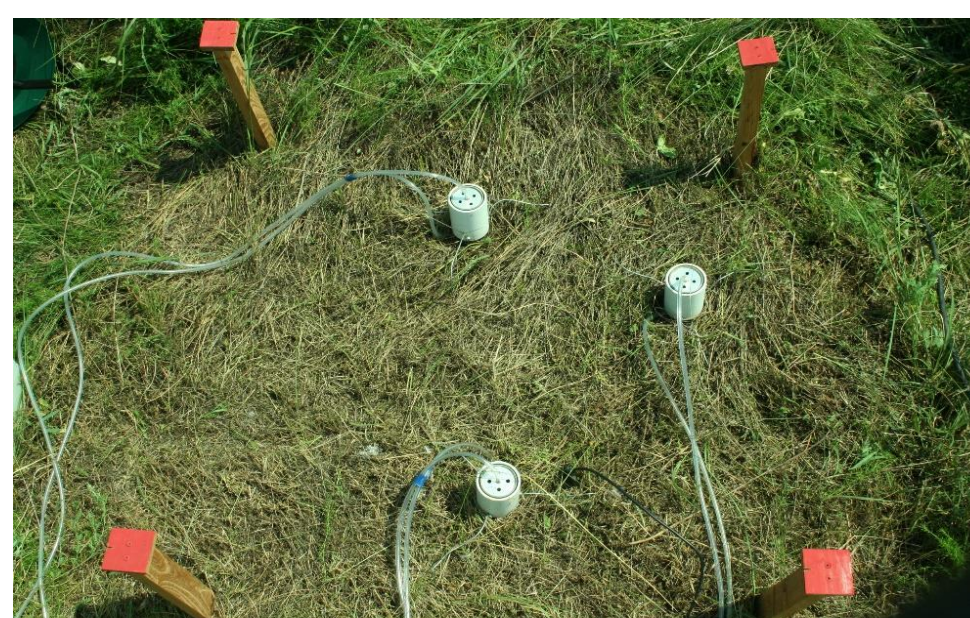
## Treatments:

After the cutting data was recorded from:

- 1) **non-cut (control)**
- 2) **half cut** and
- 3) **completely removed.**



Non-cut  
treatment  
(control)



Completely  
removed  
treatment



Automated open system (10 chambers)

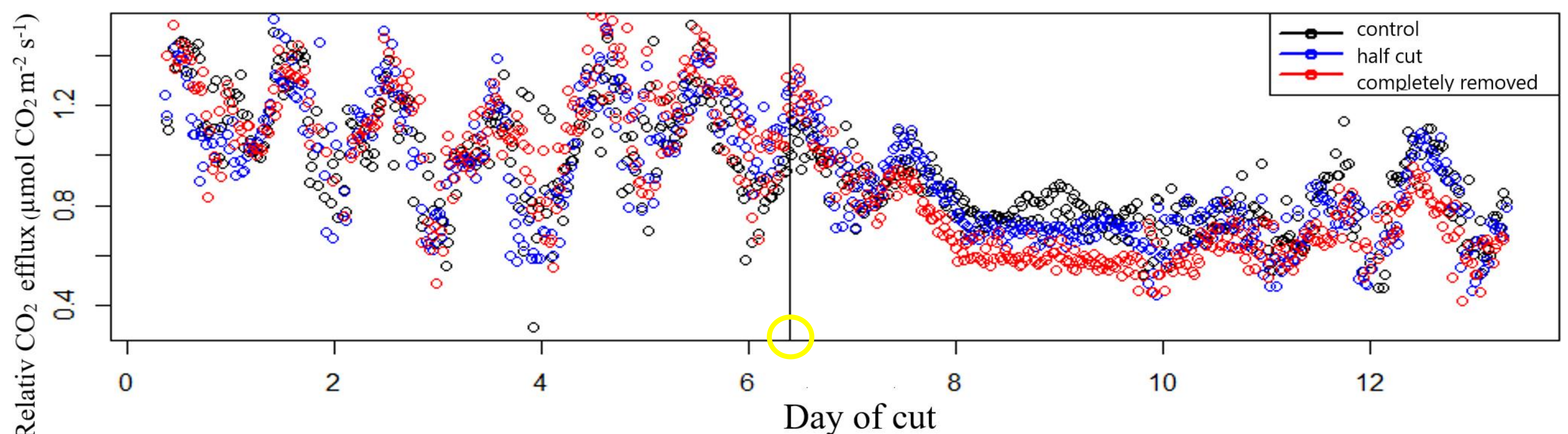


Figure 1: Half hour averages of soil respiration of different treatments before and after the cutting event.

**Results:** We observed that the respiration in half cut (Figure 1.) and completely removed treatments increased after they were cut off. The proportion of respiration after cutting in the half cut treatment reduced to 94% and the completely removed treatment reduced to 85% compared to the control one.

Our results highlight that the soil respiration is largely affected by belowground carbon allocation.

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