Faculty and Post Doc, Science and Engineering

SOIL RESPIRATION VARIATION UNDER THE CANOPY OF DOMINANT TREE SPECIES ACROSS DIFFERENT SEASON IN TEMPERATE FOREST

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ABSTRACT

The soil respiration was studied under the canopy of ten dominant tree species of temperate forest. Our study determined that highest soil respiration was under the canopy of *Eunonymous pendulus (EP)* i.e. 20.01 $\mu molm^{-2}\ s^{-1}$ and across season it was high during rainy.

1. INTRODUCTION

- Soil CO2 efflux account 70 % of ecosystem respiration in temperate forest (Law et al. 1999).

- Soil CO2 efflux from the soils of temperate forests for better understand the forests response to global C cycling (Wang et al. 2010)

2. OBJECTIVE

Determine soil respiration variation under the canopy of different tree species and among different seasons.

3. METHODOLOGY

LI–8100 IRGA (Li–COR, Lincoln, NE, USA) Instrument was used.

1. LI-8100 IRGA Instrument

2. Soil respiration measurement in Forest

4. RESULTS

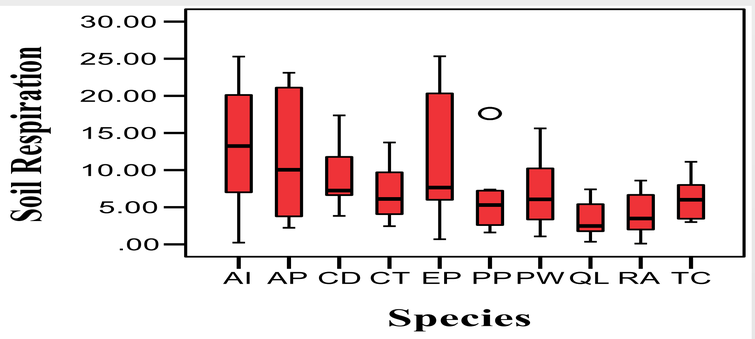

Figure1 Distribution of soil respiration among different species.

- Highest soil respiration in *Eunonymous pendulus (EP)* i.e. 20.01 $\mu molm^{-2}\ s^{-1}$ (Figure 1)

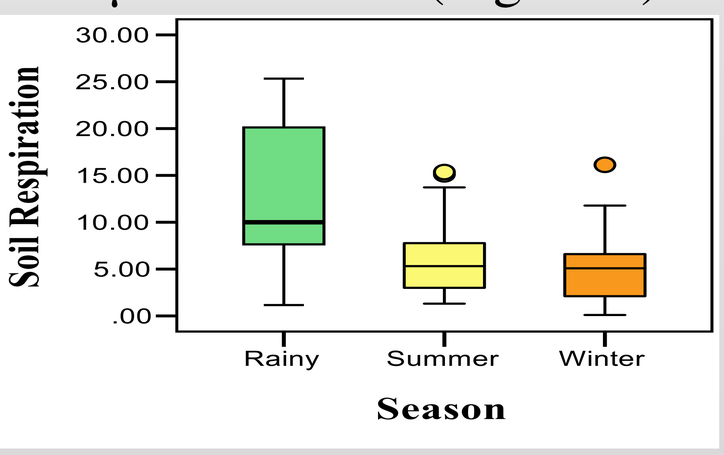

Figure 2 Seasonal variation among soil respiration

- Soil respiration is highest in rainy season i.e. 20 $\mu molm^{-2}\ s^{-1}$ (Figure 2)

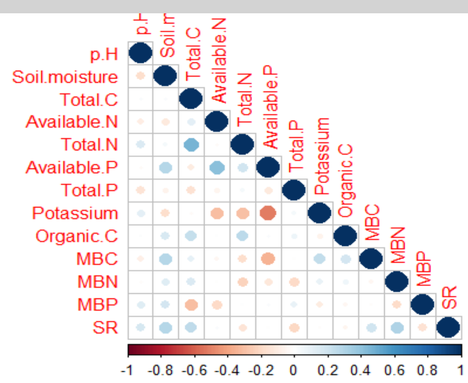

Figure 3 Correlation between soil respirationa and soil properties

- Positive correlation between soil respiration and pH, moisture, total C, microbial biomass C and N (Figure 3 with dark blue color circles)
- Negative correlation with microbial biomass P and total P (Figure 3 with red color circles)

5. CONCLUSION

- Different species has different contribution in soil respiration. The highest soil respiration rate was under the canopy of evergreen broadleaf species i.e. *Eunonymous pendulus*.
- Season has a significant effect on soil CO2 fluxes and in rainy season soil respiration was the highest.
- Soil parameters i.e. pH, moisture,total carbon,microbial biomass carbon and nitrogen has significant positive effect on soil respiration in temperate forest ecosystem

6. REFERENCES

1. Law, B. E., Ryan, M. G., & Anthoni, P. M. (1999). Seasonal and annual respiration of a ponderosa pine ecosystem. Global Change Biology, 5, 169–182.
2. Wang, X., Jiang, Y. L., Jia, B. R., Wang, F. Y., & Zhou, G. S.(2010). Comparison of soil respiration among three temperate forests in Changbai mountains, China. Canadian Journal of Forest Research, 40, 788–795.

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