

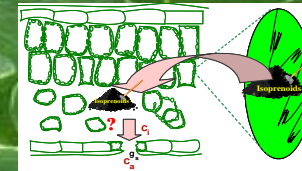
A Study on Isoprene Emission of three European Deciduous Oak Tree Species with two Provenances each as Impacted by Drought, Elevated Temperature and in Combination

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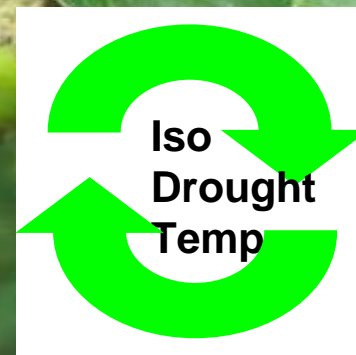
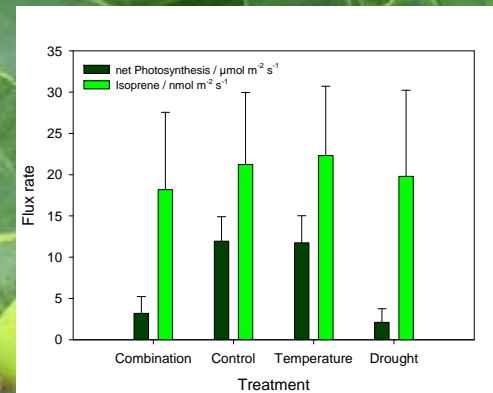
Methods

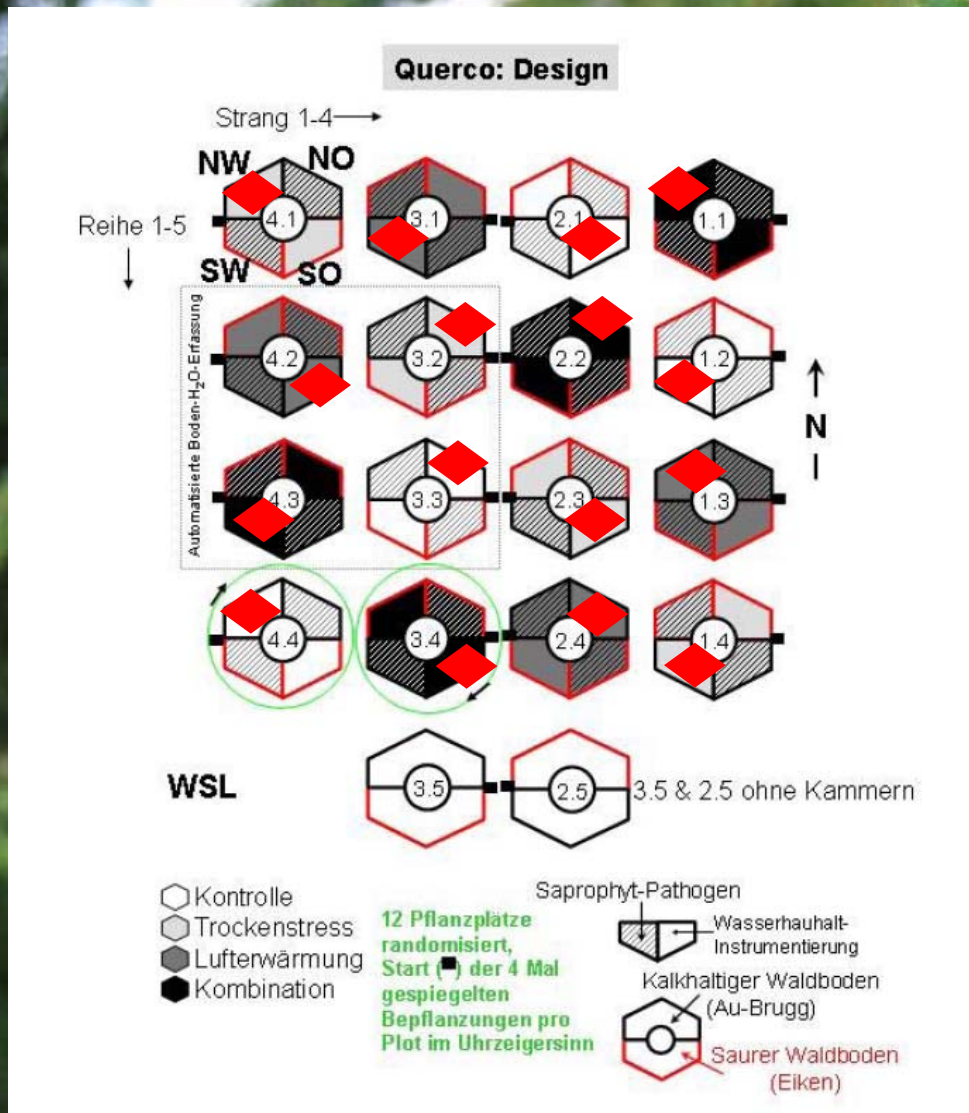


Results



Conclusions

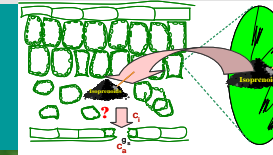




Measurements:

- All treatments
- Calcerous soil
- *Quercus petraea*, provenance Corcelles-P. Concise
- *Q. robur*, provenances Bonfol and Tagerwilen
- *Q. pubescens*, provenances Arrezo and Leuk

Methods



Gas exchange:

Isoprene, CO₂, Water Vapor

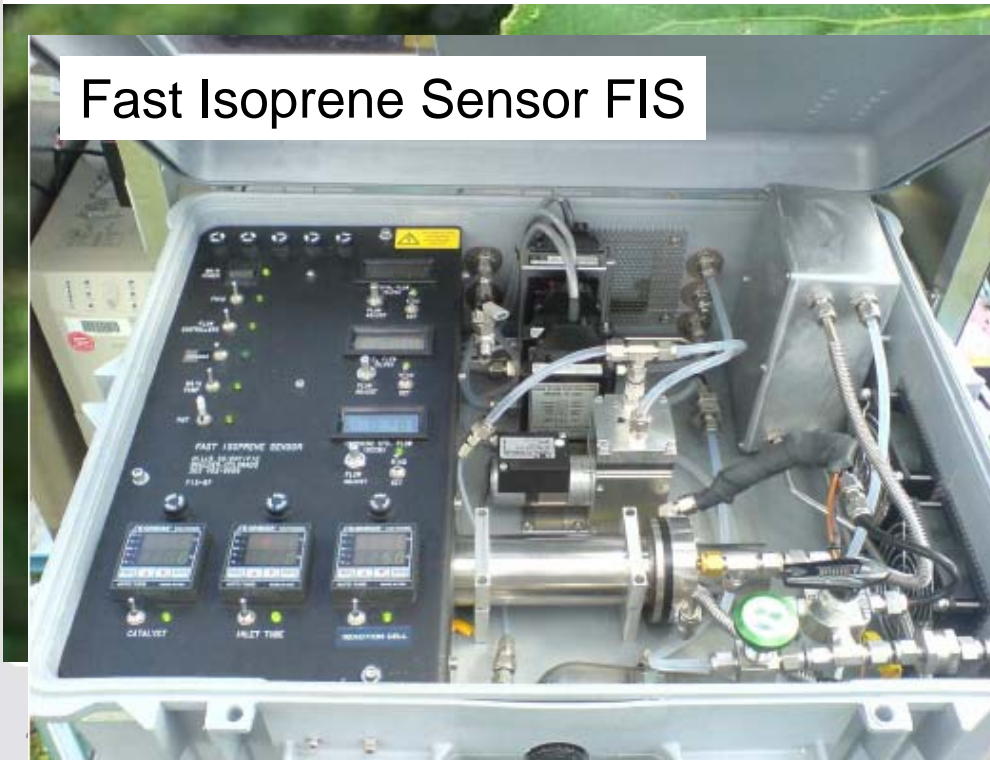
Standardised conditions:

28 °C leaf temperature; 1500 μE PAR;
rel. Hum. 45%; CO₂ 380 ppm



LI6400 Gas Exchange System

Fast Isoprene Sensor FIS





Data Evaluation

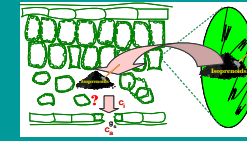
- The data set was statistically analysed using a multivariate model (SPSS 8.0).
- Tree effects, effects of provenance and treatment effects on isoprene emission, net photosynthesis and leaf to air water vapour conductance were tested.
- The measurements were performed during sunny as well as overcast days with some rain.



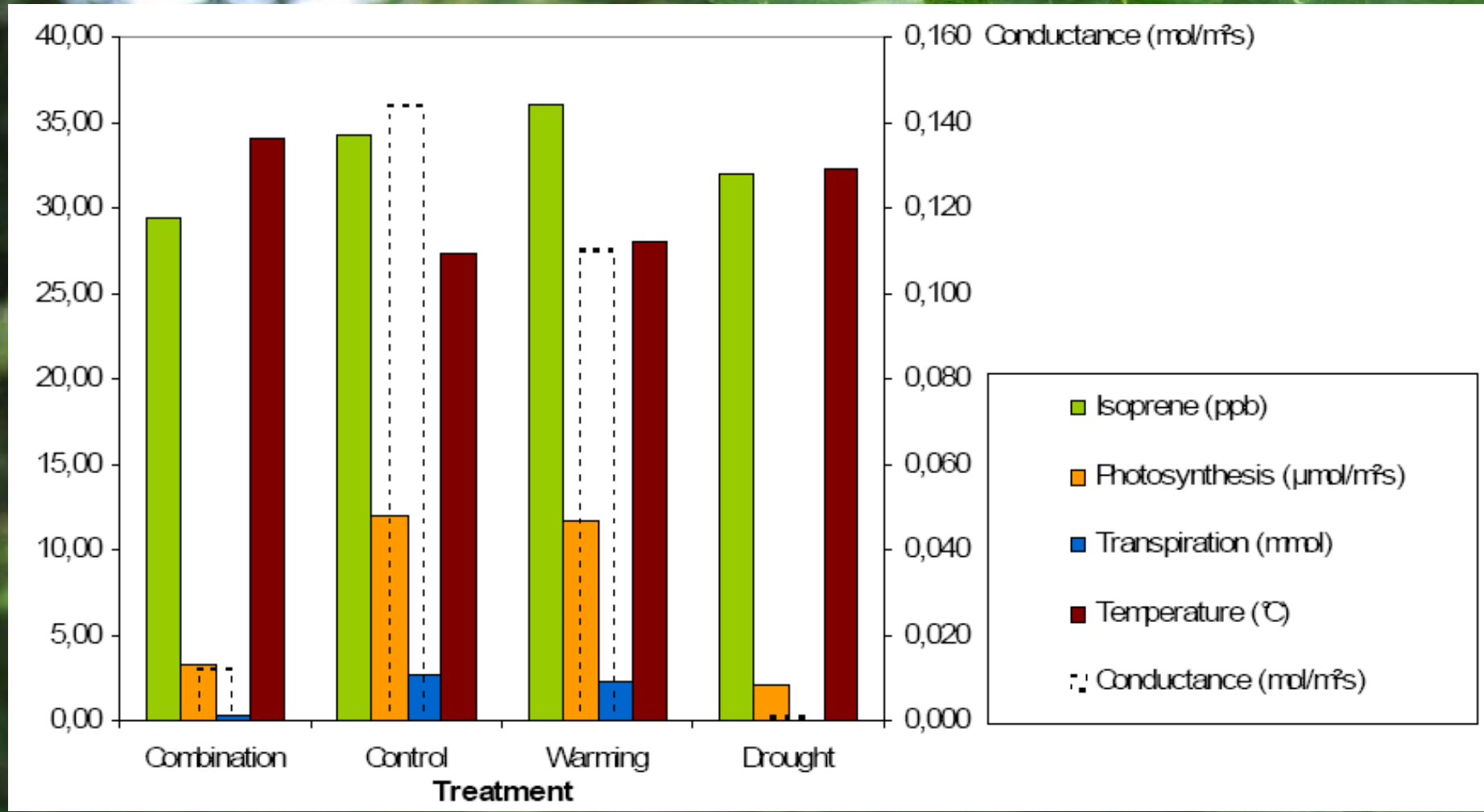
Statistical Analysis

- A multivariate analysis of the data set showed no significant ($P=0.05$) effect of tree species and provenance on isoprene emission in the different treatments. Statistical results of the other parameters are not shown.
- Isoprene emission potential, net photosynthesis and leaf-to-air water vapor conductance values were pooled between the three oak species and provenances and analysed in relation to treatment effects under standardized measurement conditions in July/August 2008.

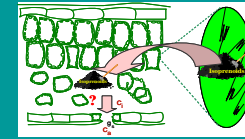
Results



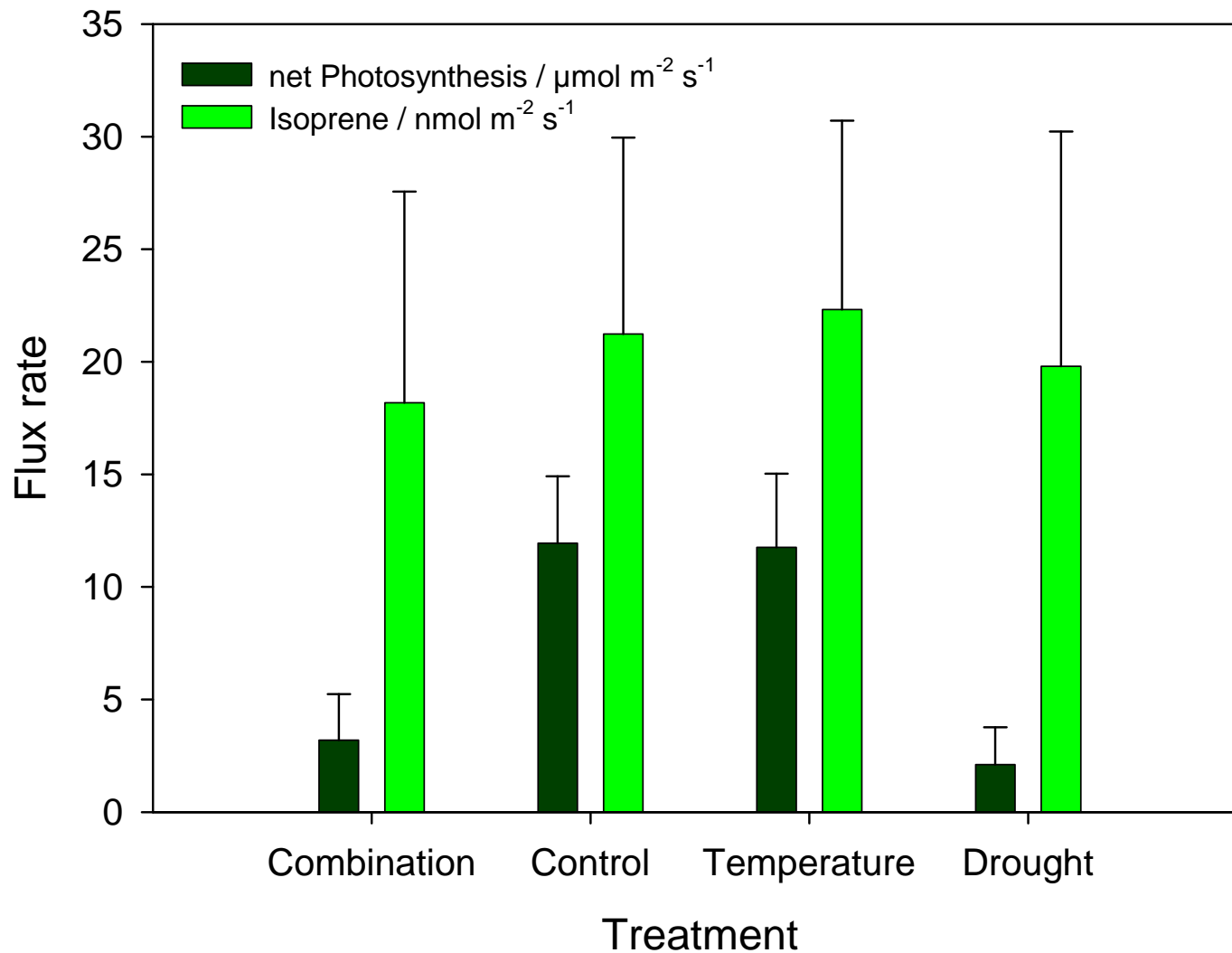
Gas Exchange and Treatments



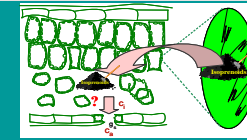
Results



Isoprene Emission and Photosynthesis

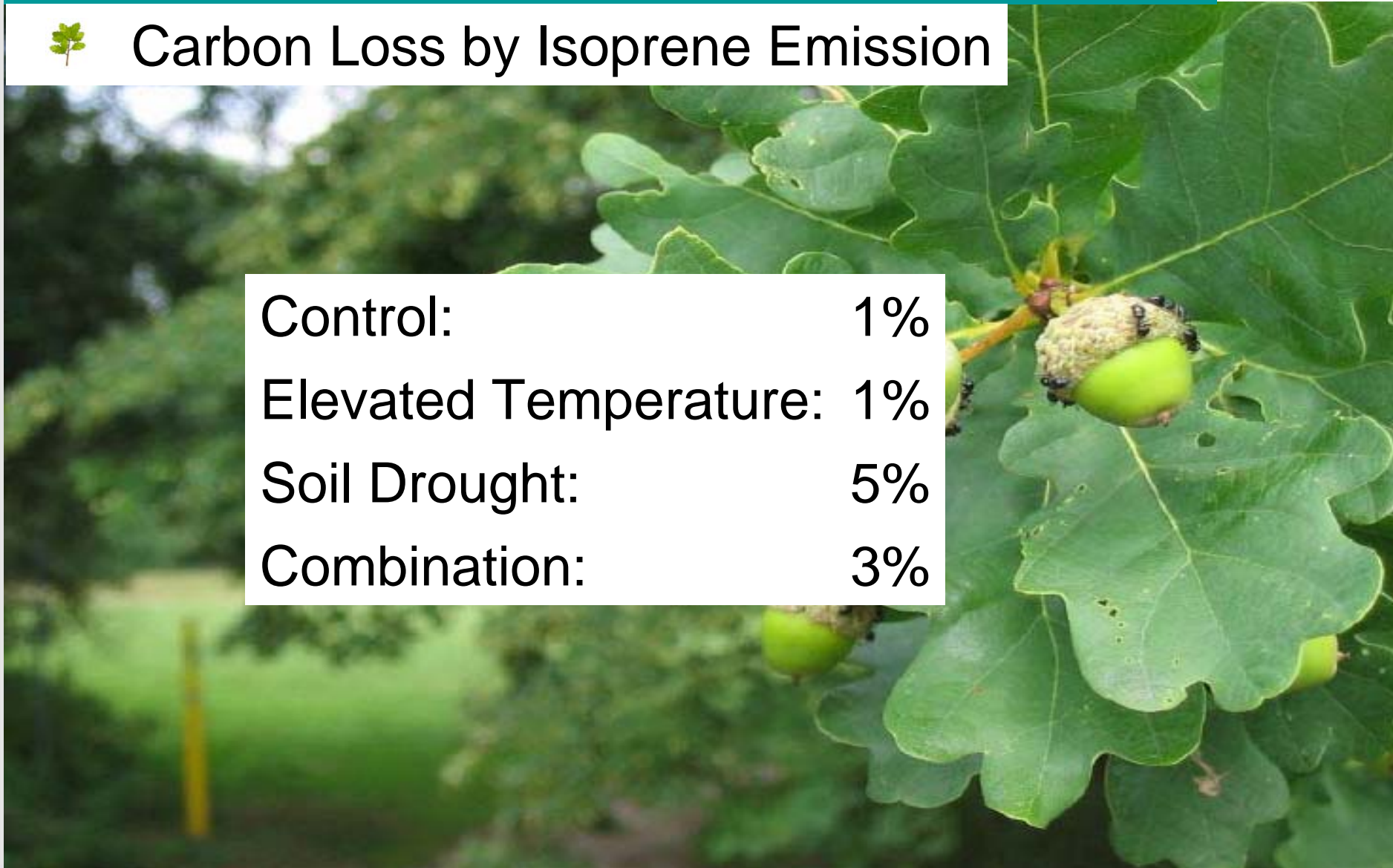


Results



Carbon Loss by Isoprene Emission

Control:	1%
Elevated Temperature:	1%
Soil Drought:	5%
Combination:	3%



Conclusions



Isoprene emission

- **Isoprene emission** of *Q. robur*, *Q. petraea*, and *Q. pubescens* including a maximum of 2 provenances is not different from each other.
- **Standardised isoprene emission** is not statistically significant ($P=0.05$) impacted by the elevated temperature, soil drought or by both parameter combined.
- **BVOC emission modelling:** The results indicate that at least in Europe a specific adaptation of isoprene emission factors for oaks in response to projected elevated temperature and soil drought seems not to be necessary.

Thank You!!

for your kind support
and for giving us the
opportunity being part of
this great integrated and
interdisciplinary project

