

# Study of the effect of electromagnetic pulsed fields on the rate of gas exchange in selected plant species

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TA CR, FW03010433: "System for streamlining plant production and microbiological processes" (2021–2023)).



From the analytical study of the ýZL

# Hypotheses

The  
influence of electromagnetic  
pulse on the physiological  
characteristics of plants.

There is a difference  
in the physiological  
parameters of  
the selected plants.

# Methodology

- The research was conducted on these plants: Flaxseed, Sunflower and Pea.
- Experiment set up in a greenhouse.
- The treated variant is irradiated using an EMF generator (electromagnetic field - ProEMgen technology)



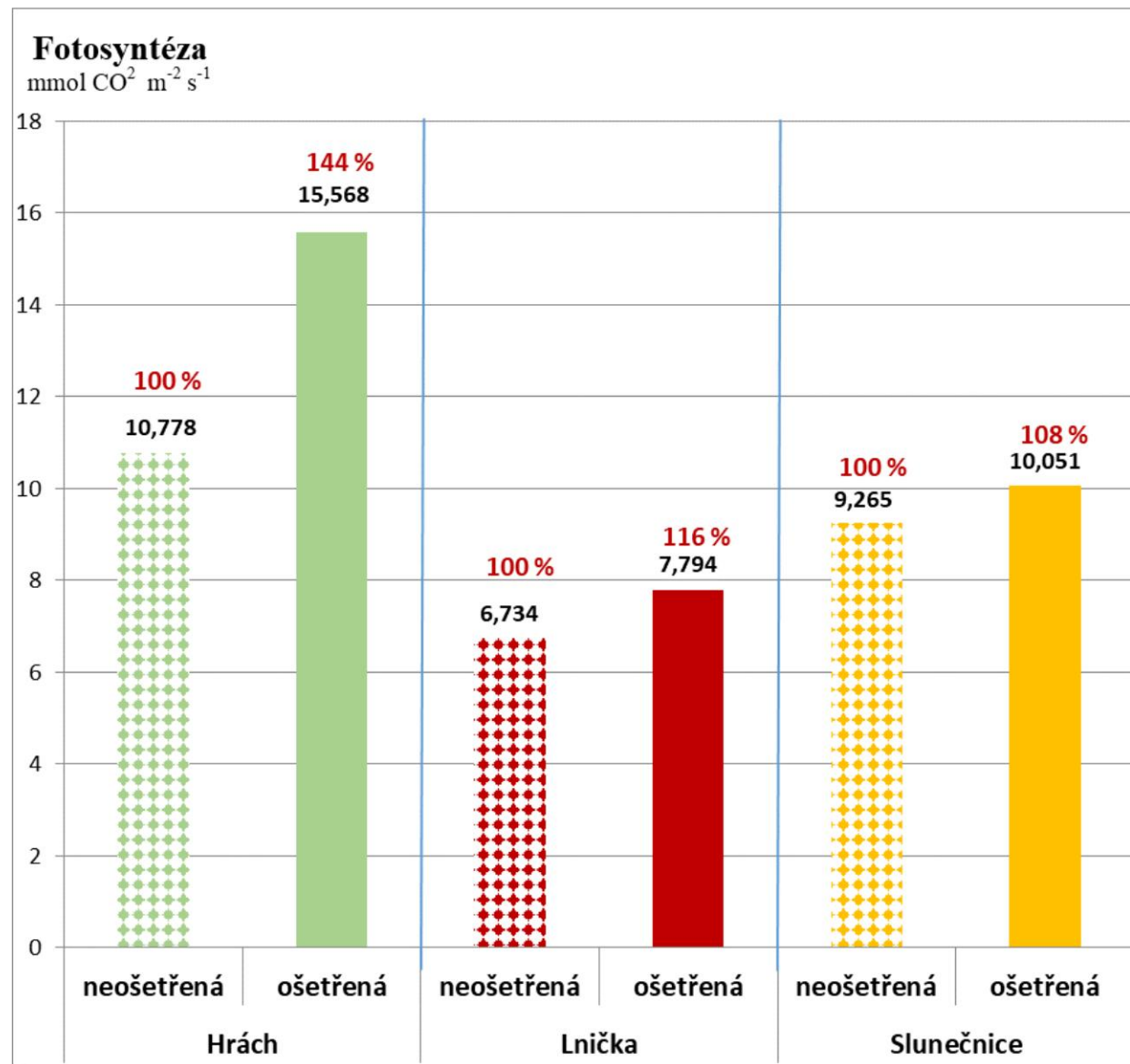
# Measurement

- Measurements were taken every 14 days
- Start of measurement in the 4 true leaf stage, end in the budding stage.
- Photosynthesis and transpiration: Key processes for growth plants.
- Chlorophyll and carotenoids: Pigments essential for photosynthesis.
- $F_v/F_0$  and  $F_v/F_m$ : Indicators of photosynthesis efficiency.
- Measurement of root growth and aboveground biomass



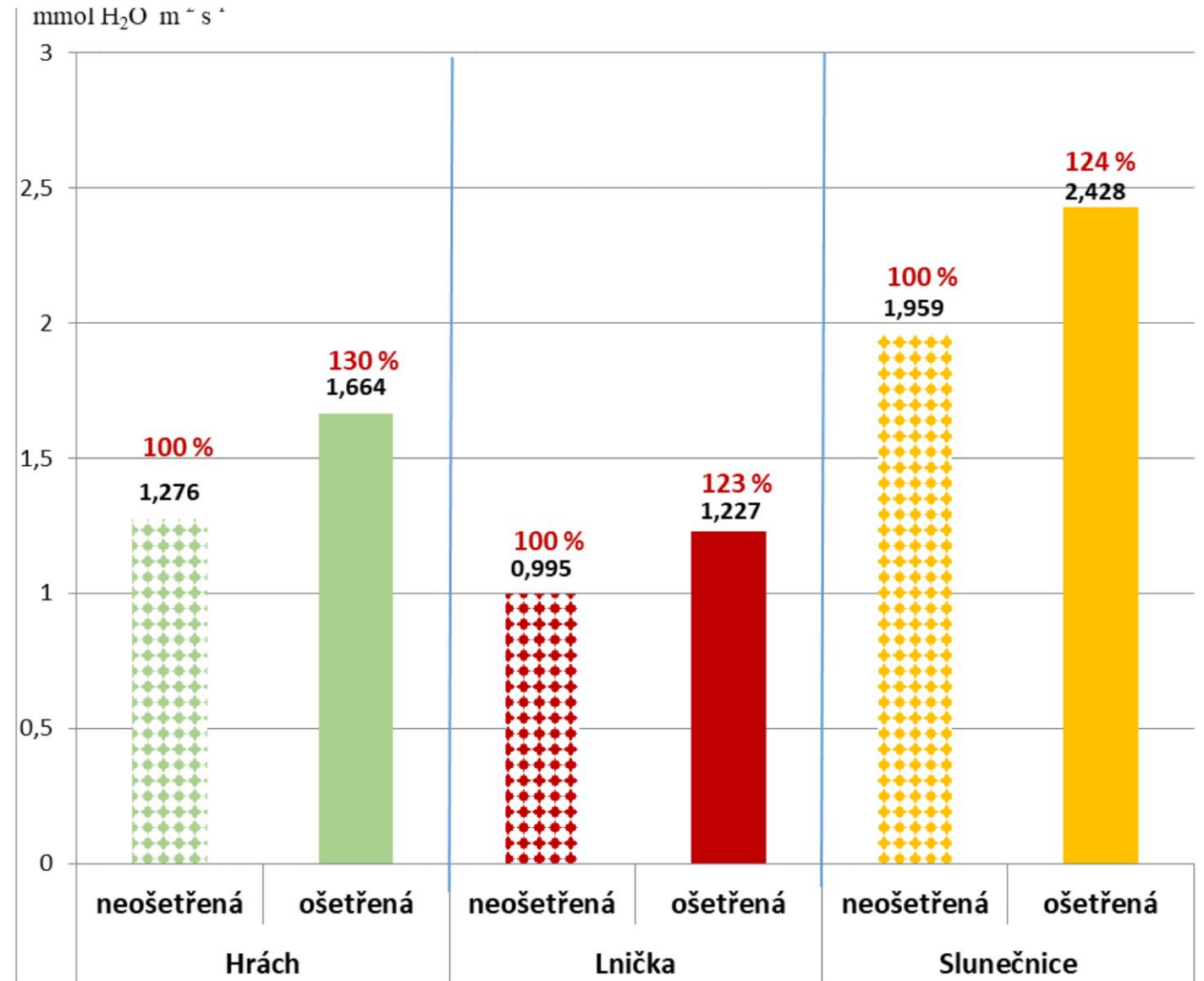
# Results

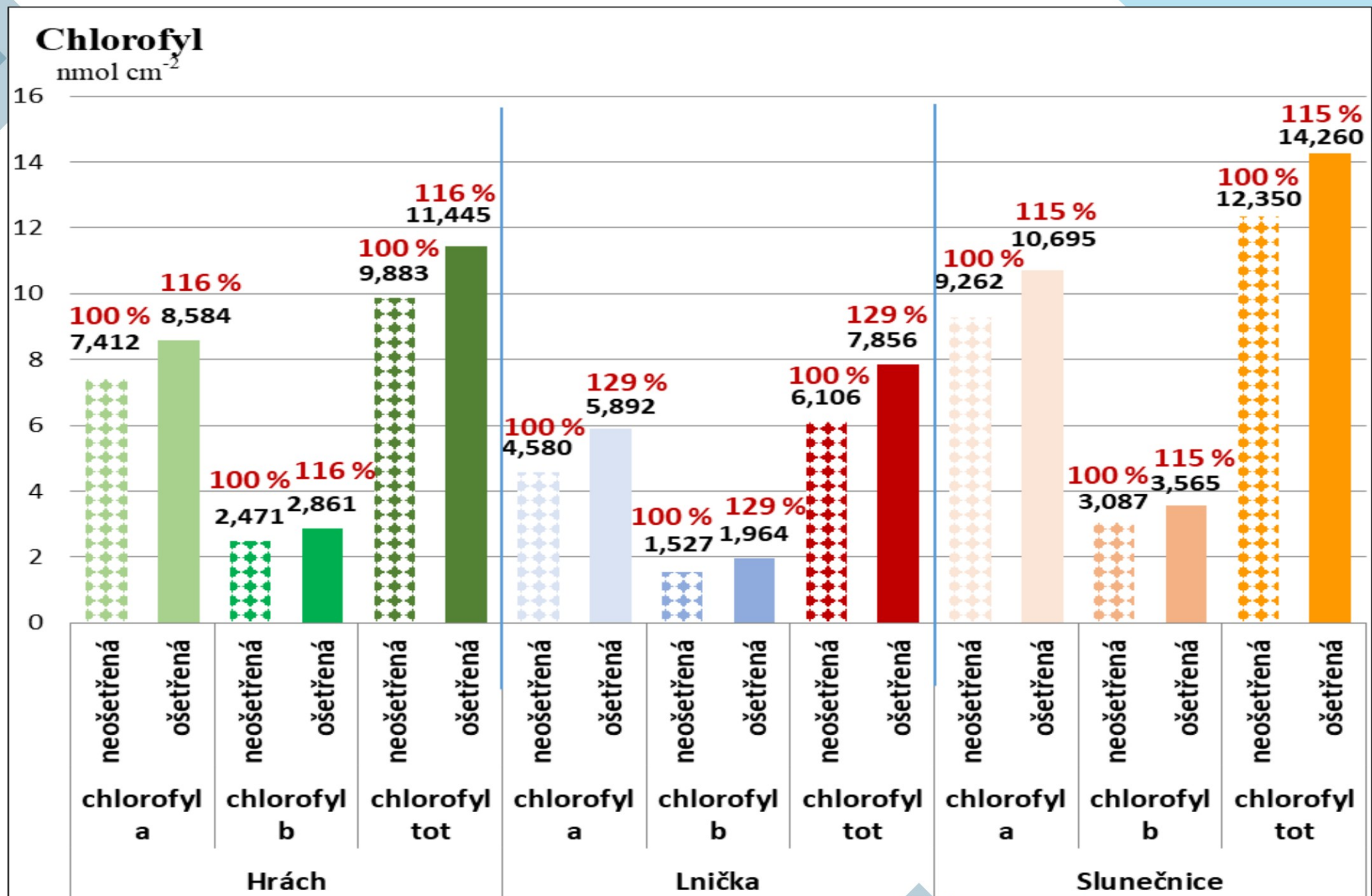
- Average rate of photosynthesis ( $\text{mmol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$ ) of monitored plants



# Transpiration

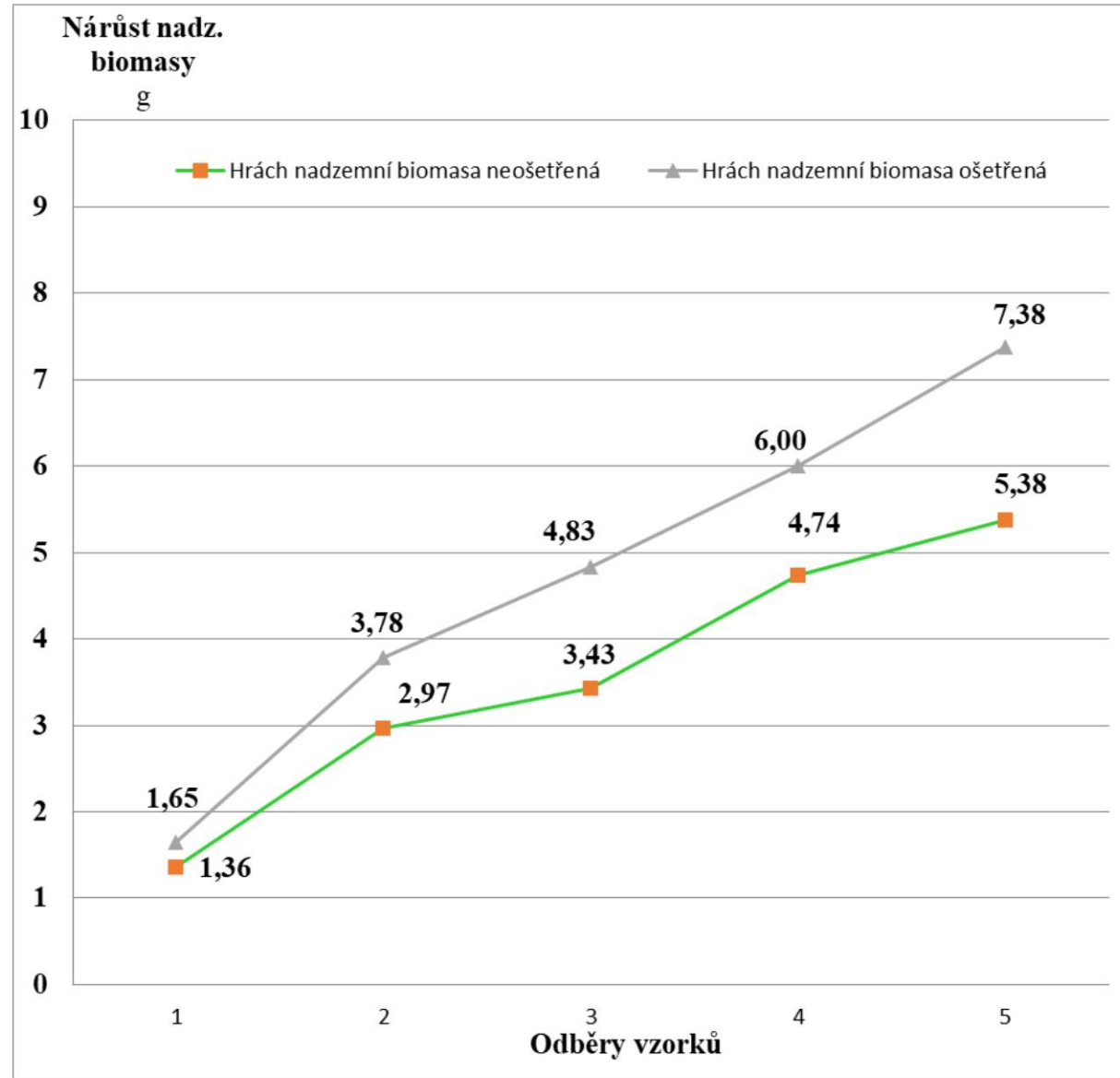
- Increased perspiration after treatment may be a result of better photosynthetic processes and increased activity plants.
- This can lead to more efficient water and nutrient use plants, which can potentially increase their growth and yield.





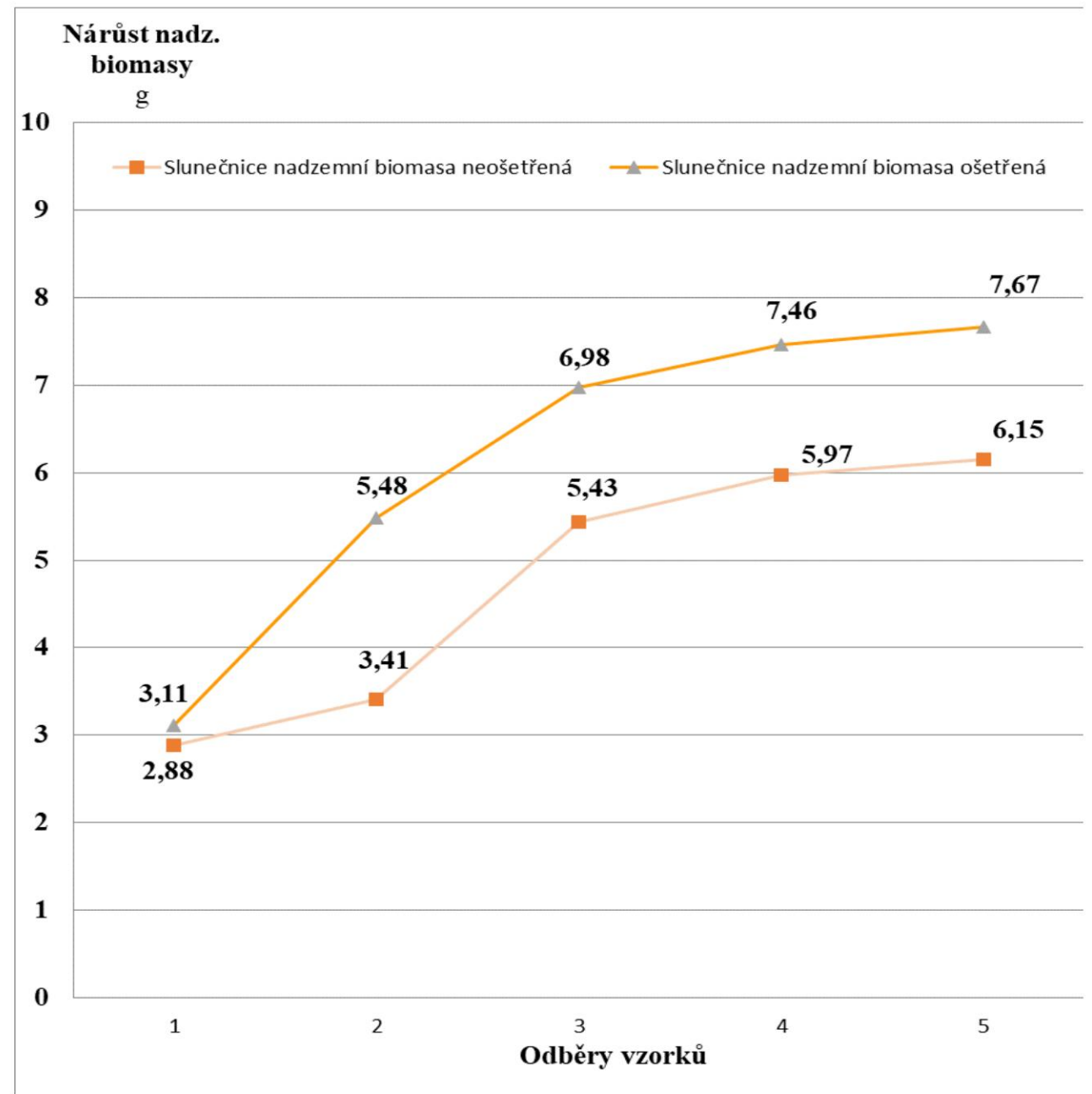
# Growth of aboveground biomass in peas over time

- the difference between the variants was 2.00 g in favor of the treated pea plants.



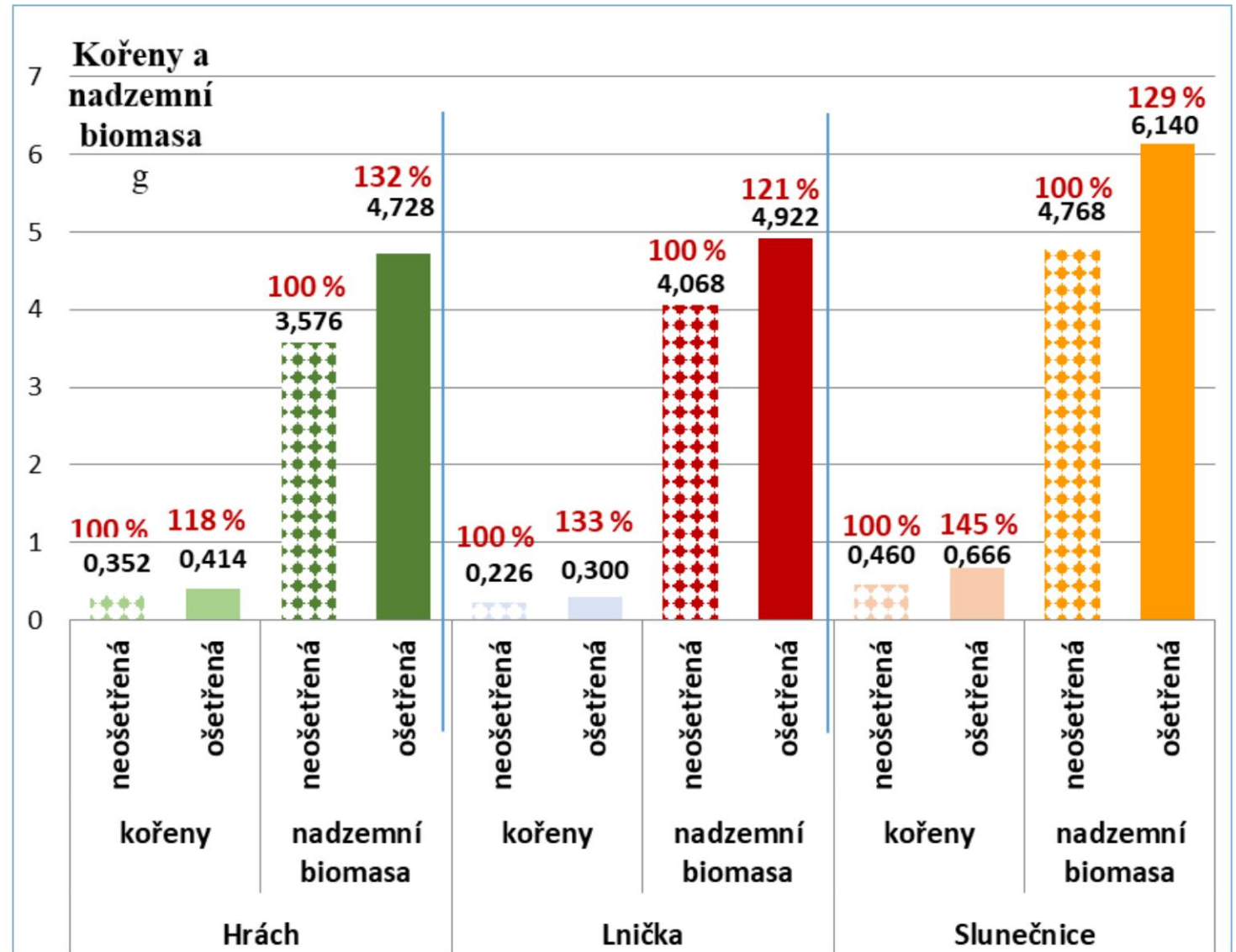
## Weight of aboveground biomass during measurement in sunflower

- The treated sunflower variant achieved a higher biomass weight of 1.52 g.



# Increase in roots and aboveground biomass

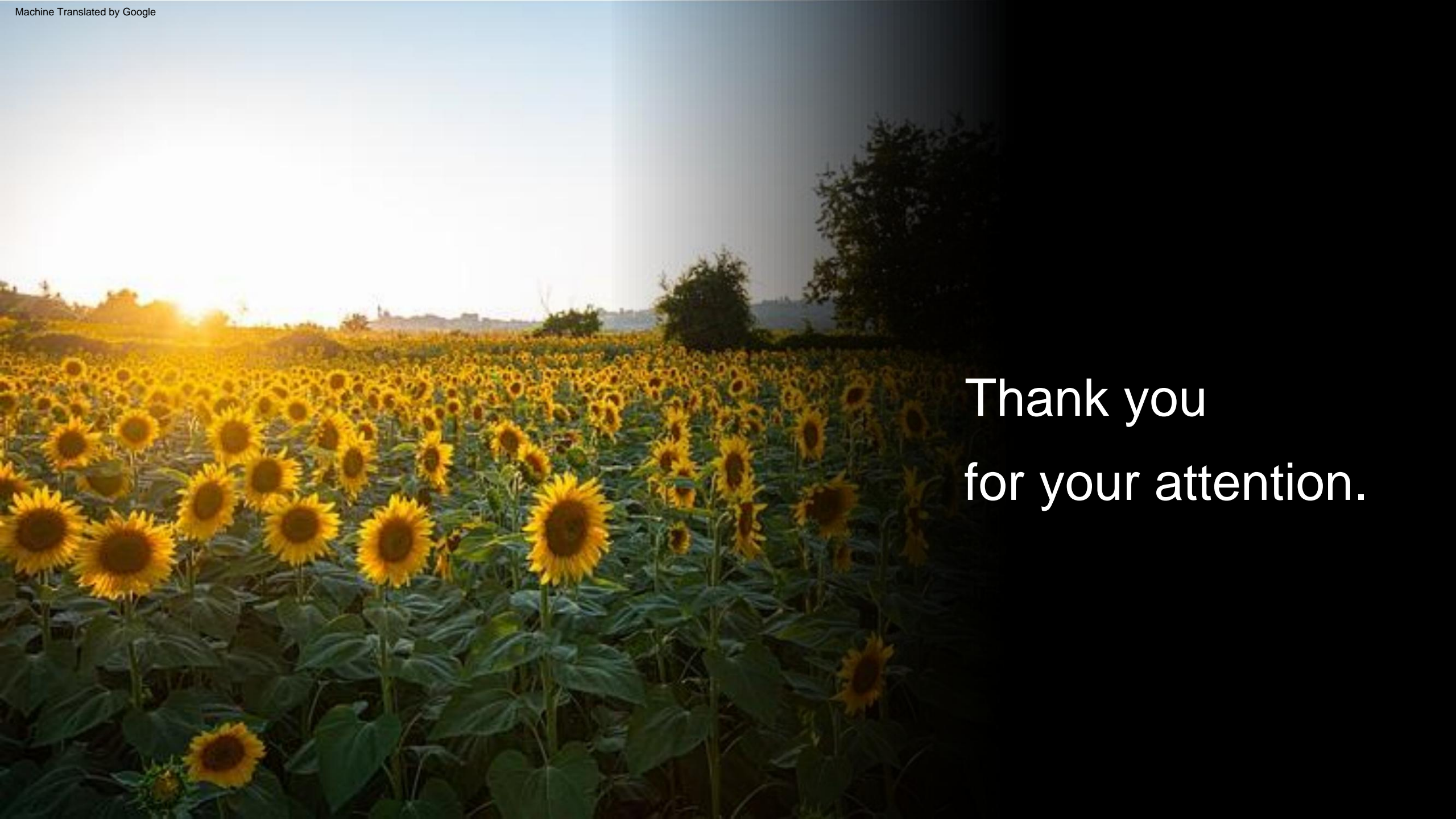
- Increased overhead growth biomass and roots after treatment suggests that the electromagnetic field can stimulate plant growth and development .





## conclusion

- An effect was found for all monitored variants and species. Furthermore, a demonstrable effect of the electromagnetic field on the formation of not only root biomass, but also above-ground biomass was found .
- On the electromagnetic field Sunflower responded best compared to the remaining species, followed by peas and finally flax.



Thank you  
for your attention.