

THE INFLUENCE OF HISTORICAL AND MODERN FOREST MANagements ON THE CONDITION OF COPPICE – RESULTS IN 2021

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PROJECT GOAL The main goal of this project is to assess the positive and negative impacts by different types of treatments – coppicing, livestock grazing, litter raking and thinning – on the forest ecosystem in terms of soil, diversity and species composition of plants. The aim of the poster is to present relative growth ratio (RGR in %) of oak standards and heights, diameters of sprouts. Data for this experiment were collected at the Training Forest Enterprise “Masaryk Forest” Křtiny.

INTRODUCTION Nowadays, we call some types of silviculture techniques "historical". For example, coppicing and livestock grazing belong to these techniques. In Central Europe, livestock grazing became common practice around the 12th century with the spread of cattle among the common people. The most common tree species used in grazing forests was oak. Due to disrupted canopy of the grazed coppices, ideal conditions were created to produce acorns, because their formation is conditioned by the sun exposure of the branches (Hooke, 2013). This poster presents results of biometric parameters of a coppice with application of combinations of livestock grazing and litter raking.

Fig.1. Mean values (level of significance $\alpha=0.05$) of circumference relative growth ratio of oak standards in years 2017-2021 compared between different treatments. RGR (%) –relative growth ratio of oak standards, C – control plots, LR – litter raking plots, G – grazing plots

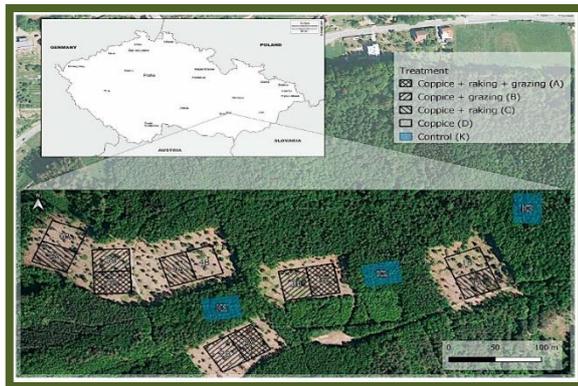
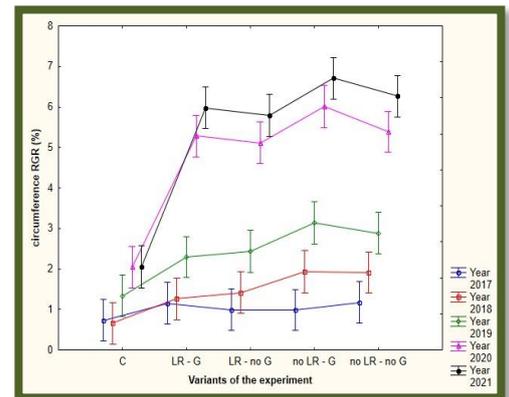


Fig.2. Design of the research plot Hradisko (Kadavý et al., 2019)

MATERIALS AND METHODS

The last litter raking on the research plot was performed in April 2019. The plots with grazing treatment were grazed by sheep from June to October in 2021 in 3 cycles. Dendrometry was focused on standards of *Quercus petraea* agg. (Matt.) Liebl. and the obtained diameter increments were transformed into relative growth ratio (RGR in %). Circumference RGR between all tested treatments and between all five years were compared. The upper heights and diameters of sprouts were measured in January 2021. These results were processed by the engineering student Bc. Martina Kašpárková.

RESULTS AND DISCUSSION

Control treatment biometrically differs from others, average RGR is there the lowest (Fig. 1). The result for the year 2021 is different in comparison with other years. Results of the ANOVA and multiple comparison test showed that growth of standards in year 2021 and 2020 were statistically different from growth of standards in all previous years. It was mainly due to higher precipitation during the summer periods. Data of the sprout dimensions development (see Fig. 3) show that sprouts in non-grazed variants reached larger dimensions than in those in grazed variants for both tree species. European hornbeam reached the largest dimensions in terms of diameter and height in the non-raked and non-grazed variants of the experiment.

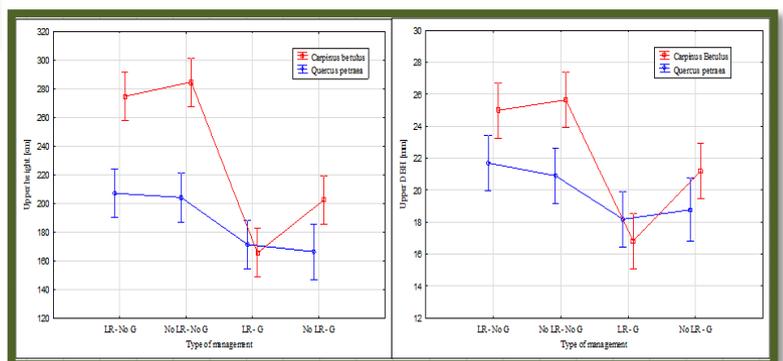


Fig.3. Mean values (level of significance $\alpha=0.05$) of upper DBH and height of sprouts compared between different treatments, LR – litter raking, G – grazing

CONCLUSION

The RGR (%) was several times higher in all variants than in the control treatment. In 2021 and 2020 the most significant increase in relative growth ratios was clearly recorded by treatment with grazing and no litter raking. The highest upper heights and diameters were recorded on variants that were not affected by grazing. The results of this project also show that the management of the release of crowns can be a management method not only for coppice-with-standards, but also for high forests.

ACKNOWLEDGEMENT

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