THE INFLUENCE OF HISTORICAL AND MODERN FOREST MANAGEMENTS ON THE CONDITION OF COPPICE – RESULTS IN 2022

Adamec Zdeněk, Friedl Michal, Kadavý Jan, Kneifl Michal, Knott Robert, Kománek Martin, Kostka Matěj, Kučera Aleš, Neubauer Štěpán, Uherková Barbora, Vichta Tomáš

THE AIMS OF THE PROJECT

The main aim of this project and research is to evaluate the impact of the practices of traditional management on forest ecosystems, especially on pedological and dendrometric properties.

THE METHODS AND MATERIALS

In order to evaluate the results of this research,15 research plots of different management were established. From each research plot 4 soil samples were taken. The dendrometric measurements of standards and sprouts were done in the end of vegetative season. From the pedological properties, the subject of evaluation is mainly the carbon content and the supply of nitrate and microbial nitrogen. The evaluation of dendrometric values is focused on absolute and relative growth of standards and sprouts.

RESEARCH PLOTS

Suitable forest stands for this research were found at locality named "Hradisko", which is located in the Masaryk's Forest Křtiny. These research plots were established in 2017 and are located in stands of sessile oak. The density of forest is 80 standards per hectare. In total, there are 15 research plots (40 × 30 m), which differ from each other by the type of forest management. So, plots of „No grazing and litter raking“, „Grazing and litter raking“, „Grazing and no litter raking“ and „No grazing and no litter raking“ you can find here. As you can see at Fig. 1, control plots are located too.

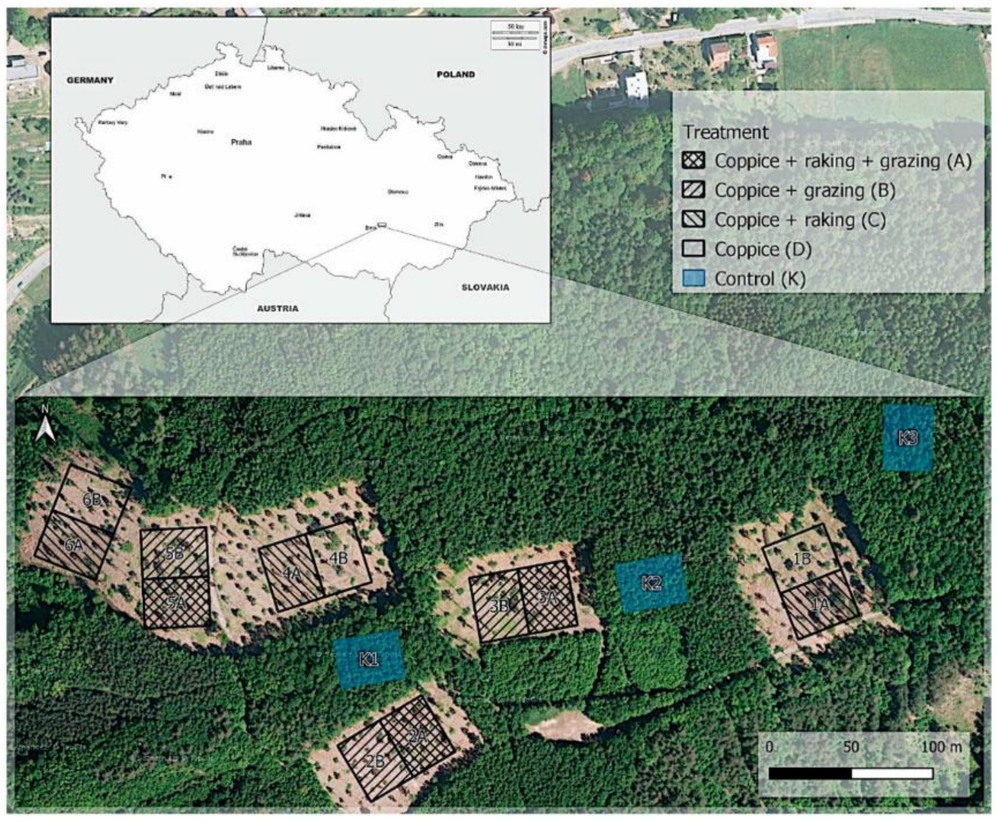

Fig.1 – Location of study plots at locality “Hradisko“, Masaryk´s Forest Křtiny

RESULTS

During evaluating the results significant differences were found in the quantification of litter. The highest amount of litter was recorded at the control plots. Similar results were also found in the case of carbon stock in the soil environment. The highest values of carbon content were found again at the control plots. On the contrary, on the plots of traditional management, the values of the carbon content were lower. Results of oak standard RGR in year 2022 differed from most of the other tested years, see Fig. 3. Oak circumference RGR in year 2022 is higher than in years 2017–2019 but is smaller than in years 2020 and 2021 respectively. Our results are similar with hypotheses of Jones and Thomas (2004) for diameter increment of released trees. They stated that increased increment showed up very fast, but after its culmination, it will return to the original values before the tree releasing. Different management treatments (grazing, litter raking, their combination etc.) effect is still statistically insignificant. Differences in circumference oak RGR between treatments are similar as in previous years.

Fig. 2 Mean values of mineral nitrogen in years 2017-2021 between different treatments.
TH - coppicing and litter raking;
T- coppicing; TPH - coppicing, grazing and litter raking
TP - coppicing and grazing; K- control plots

Fig. 3 Mean values (level of significance α=0.05) of circumference relative growth ratio of oak standards in years 2017-2022 compared between different treatments.
RGR (%) –relative growth ratio of oak standards, C – control plots, LR – litter raking plots, G – grazing plots.

REFERENCES

JONES, T. A. and THOMAS, S. C. 2004. The time course of diameter increment responses to selection harvests in *Acer saccharum*. Can. J. For. Res., 34(7): 1525–1533.

KOSTKA, M. 2022. Půdní prostředí v tradičních lesnických managementech po převodu lesa vysokého na les střední ve vztahu k dendrometrickým charakteristikám porostu [online] Brno. Master thesis. Mendel University in Brno. Supervisor: Ing. Aleš Kučera, Ph.D.

VOJTEK, F. 2022. Krátkodobá enzymatická aktivita půdy v tradičních lesnických managementech po převodu lesa vysokého na les střední [online] Brno. Master thesis. Mendel University in Brno. Supervisor: Ing. Aleš Kučera, Ph.D

ACKNOWLEDGEMENT

Supported by the Specific University Research Fund of the FFWT Mendel University in Brno, project No. LDF_TP_2020005.