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Influence of a planting hole application of dolomitic limestone powder and basalt grit on the growth of Carpathian birch (*Betula carpatica* W. et K.) and soil chemistry in the air-polluted Jizerské hory Mts.

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The objective of the study was to evaluate the growth potential of Carpathian birch (*Betula carpatica* W. et K.) at an environmentally harsh mountain site and a response of this species to altered soil chemistry after dolomitic limestone and basalt grit applications. The Carpathian birch proved to be a suitable species for the replanting of extreme acidic mountain sites. This birch shows a low mortality rate, grows well in the clear-felled patches and soon forms a cover which is necessary for the reintroducing of more sensitive tree species. The application of dolomitic limestone and basalt grit resulted in the slower growth of Carpathian birch plantations. Liming raised soil reaction, sum of exchangeable bases, base saturation, cation exchange capacity and reduced exchangeable Al content. On the other hand, liming decreased an amount of oxidizable soil organic matter and negatively affected soil N, exchangeable P and K. Basalt grit increased exchangeable P and K contents and raised soil reaction, however only slightly. The influence of basalt grit on the sum of exchangeable bases, base saturation and cation exchange capacity was also less pronounced compared to liming. Basalt grit elevated the proportion of exchangeable aluminium and reduced the content of soil N.

Keywords:

Carpathian birch (*Betula carpatica* W. et K.); Jizerské hory Mts.; chemical amelioration; liming; basalt grit; forest soils; acidic deposition; forest ecosystems

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