THE NATURAL GROWTH DYNAMICS OF MOUNTAIN POPULATIONS OF NORWAY SPRUCE ON MORPHOLOGICAL PARAMETERS OF TRANSPLANTS

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Norway spruce seedlings originating from mountainous areas are characterized by considerable variability in height growth in the first years after the sowing of a high proportion of small (slow growing) individuals. Previous long-term investigations have shown that these small seedlings originally grow very well after planting on mountain regions, and have better morphological characteristics and health status compared with the initially larger seedlings. Removing slowly growing trees can cause narrowing of the genetic spectrum of those plants that are best adapted to growth in extreme mountain conditions. In the years 2011-2014 we carried out extensive experiments with growing spruce seedlings originating from five mountain regions of the Czech Republic, from the foothills of a seed orchard in order to monitor the dynamics and intensity of their growth in relation to the altitude of the origin of the seed. Revealed significant differences in the dynamics of growth when the spruce seedlings from the mountainous regions terminate a height growth and terminal buds formed much earlier than seedlings from lower altitudes. The seedlings originating from the mountain elevation were the first and second season on average smaller but had a higher ratio of root weight to the above-ground parts than seedlings from the foothills of seeds or seedlings from seed orchard. Frequency distribution of heights showed a high proportion of small seedlings at mountain populations against a relatively uniform distribution of heights within populations from lower altitudes. The results confirmed the need for a specific approach to growing populations of mountain spruce, which is necessary to pay attention to the genetically valuable slow growing individuals and prevent their exclusion sorting before transplant.

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