Abstract

My point was to write about the conditions (mainly biotic) for germination and growth of Norway spruce (*Picea abies*). It is a literature research for my graduation theses. I found out, that the growth and survival of spruce seedlings is affected by a combination of biotic, abiotic and site conditions. The main abiotic factors are sufficient light and moisture availability, grain class, thickness and quality of humus, susceptible mineral nutrition, steady temperature conditions, thickness of snow cover and occurance of late frosts. I foccused on the growthe of spruce seedlings in vegetation cover, what was the main point of my study. It is because the succes of survival and growth of spruce depends primary on the surrounding, where seeds get after dispersion. Grass-species (for instance, *Deschampsia flexuosa, Calamagrostis sp*.) inhibited the growth by water and nitrogen uptake, as well as inappropriate temperature and light conditions. Litter also hindered natural regeneration in growth. Some mosses helped young spurces because of steady temperature and moisture regime, but some had too thick rhisosphere, and did not allow them to reach the mineral soil. Shrubs protected seedlings by preventing them from competition with graminoids, but were of no importance for seed protection. Herb layer, but not general, shaded germinants and so was helpful. Growth under tree canopy layer was hinder by too much shade, even though it protected plants against the competition form herbs and grass weed. Cluster growth was good for survival rate, mainly in early phases. How important was each of the bitoic and abiotic factors, depended on the site a microclimate conditions. In smaller scale it was e.g. the mound-pit effect, in bigger scale e.g. gap size or slope exposition. At the close I compared suitability of silvicultural treatments for supporting of natural regeneration (scarification, salvage logging). According to the variability of results (depending on the combination of ecological paramaters of the stand), there are more studies necessery. The herb and vegetation layer, as the relevant factor for the succes of natural regeneration, should be studied and evaluated separately from the other site-specific factors.

KEYWORDS: Norway spruce, Picea abies, seedlings, germination, abiotic factors, biotic factors, light, moisture, snow, mineral nutrition, litter, herbs, vegetation, grass, weed, shrub, competition, site-factors, gap size, microclimate, site preparation