THE EFFECT OF SPATIAL CHARACTERISTICS ON THE STATE OF HEALTH OF NORWAY SPRUCE (*PICEA ABIES* (L.) KARST.) IN LATVIA

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In managing of coppices, it is often the case in forestry, that several risk factors: biotic, abiotic and anthropogenic has to be dealt with. Anthropogenic factor has a great importance in management of forests, because a human, using ecosystems for his needs and benefiting from it, still has to take care of maintaince of the spatial structure of the forest, so that bigger damages would not emerge and the state of health would not worsen. Changes in the structure of forest might be promoted by the establishment of infrastructural objects. Forest roads may be seen as a kind of ecosystem, which is build and managed by a human, without them economic activity is impossible. This created ecosystem can influence adjacent plants and trees. Whatever the aims may be, it is important to maintain the productivity of future stands, that is why it is important to identify the silvicultural risk factors and find possibilities to reduce or prevent them. The aim of research is to analyse the impact of spatial characteristics on the sanitary state of pure stands of Norway spruce. Covering all territory of Latvia, empirical material was gathered in 25 pure stands, where 93 sample plots were established. To find out, how neighbouring stands impact the coppices of spruce, the location in forest array was detected. Using State Forest service (VMD) geographical information systems (ĢIS) maps ArcGIS 9.1, 9.2. and 9.3 the forms (regular of irregular) of forest compartments were found. The compartments of regular form were artificially made and they have precise geometric form, while those of irregular form have natural occurrence. In identifying the risk factors, attention should be drawn to the form of compartment and its location in forest array, because in compartments of regular form the damages are usually bigger. Correlation between occurrence and intensity of damages by cloven-hoofed is relevant $r_{fact}=0.988 > r_{crit}=0.088$ with probability of 95%. Also occurrence and intensity of *Lophophacidium hyperboreum* Lagerb. and damages of root rot is relevant $r_{fact}=0.991 > r_{crit}=0.062$ un $r_{fact}=0.981 > r_{crit}=0.088$ with probability of 95%.

Key words: forestry risk factors, young forest stands, compartment shape, compartment location

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