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Peat soil composition as indicator of plants growth environment

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Exhausted milled peat areas have been left behind as a result of decades-lasting intensive peat production in Estonia and Europe. According to different data there in Estonia is 10 000 – 15 000 ha of exhausted milled peat areas that should be vegetated. Restoration using *Sphagnum* species is most advantageous, as it creates ecological conditions closest to the natural succession towards a natural bog area. It is also thought that the large scale translocation of vegetation from intact bogs, as used in some Canadian restoration trials, is not applicable in most of European sites due to limited availability of suitable donor areas. Another possibility to reduce the CO_2 emission in these areas is their use for cultivation of species that requires minimum agrotechnical measures exploitation. It is found by experiments that it is possible to establish on *Vaccinium* species for revegetation of exhausted milled peat areas.

Several physiological activity of the plant is regulated by the number of phytohormones. These substances in low quantities move within the plant from a site of production to a site of action. Phytohormone, indole-3-acetic acid (IAA) is formed in soils from tryptophane by enzymatic conversion. This compound seems to play an important function in nature as result to its influence in regulation of plant growth and development. A principal feature of IAA is its ability to affect growth, development and health of plants. This compound activates root morphology and metabolic changes in the host plant. The physiological impact of this substance is involved in cell elongation, apical dominance, root initiation, parthenocarpy, abscission, callus formation and the respiration.

The investigation areas are located in the county of Tartu (58˚ 22’ N, 26˚ 43’ E), in the southern part of Estonia. The soil of the experimental fields belongs according to the WRB soil classification, to the soils subgroups of *Fibri–Dystric Histosols*. The investigation areas were chosen by following criteria: (1) plantcover age; (2) cultivated plant species; (3) utilized agrotechnology; (4) comparisons between different factors were created by using natural growth areas of *Vaccinaceae* (natural bog area, Vaccinaceae growth area on mineral soil). For the investigation is important to choose areas with different age of plant covers, because according to plants age the surface of exhausted peat land will be covered in relation to the width of plants. The purpose of current article is to investigate the biological and chemical parameters co-influences in peat soil. Thus, the major interest is on the plant growth hormone indole-3-acetic acid distribution and dynamics in peat soil and dependence of plant cover, also its influence to the plants growth. Moreover, its contribution to yield and new growth area invasion will be discussed.