



Impact of the kind of peat and the depth of sampling on the biochemical activity

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Soils samples were taken from two points located on the peatland Tagan, (near Tomsk, West Siberia): No 1 and No 2 each from two depth 0-25 and 50-75 cm. Point 1: coordinates 56°21' E.L., 84°47' 84°48' N.W. The Point presents itself virgin area. Peat deposit has the thickness 350 cm and is laid under silting sand. The upper layer is presented by grass moss of eutrophic peat (0-50 cm) with degree of the decomposition 35%, ash content 9-11%; grass moss gipnum of eutrophic peat (50-75 cm) with degree of the decomposition 25-30% and ash content 11%. Peat is characterized by pH equal to 6.0.

The Point 2: coordinates: 56°21'E.L., 84°48' N.W. Presents itself area with agro-forest-melioration. Along area are organized furrows by depth 0,5 m and distance between furrow 2-3-4 m. Peat deposit have the thickness about 3 m. Upper layer (0-25 cm) is presented by wood peat, degree of the decomposition 35% and ach content 14,4%. Further follows grass moss (25-50 cm) with degree of the decomposition 30%, ach content 12,6%. There is at the depth 50-75 cm wood-grass peat, degree of the decomposition 30-35%, ash content 9,7%. Peat is characterized by pH equal to 6.0.

In these samples two form of organic carbon (total organic carbon and dissolved organic carbon) were determined, and the activity of the following enzymes: xanthine oxidase, phenolic oxidase, peroxidase, urease, nitrate reductase were measured. These enzymes participate in several biochemical conversions in soil connected with redox potential. In both kinds of peats the concentrations of indole-3-acetic acid was measured.

It was observed in both place of sampling significant increase of the total organic carbon with increase of the depth. However the quantity of dissolved organic carbon decreased with increase of the depth, suggesting lower microbiological activity of this level. The results indicate that the ratios Fe^{2+}/Fe^3 for both depth 0-25 were similar (0.56 and 0.59) indicating similar redox properties of these levels. The ratio Fe^{2+}/Fe^3 for the depth 50-75 of the sample No 2 equaled to 0.84 was lower than for the sample No 1 from the depth 50-75. It suggests higher oxidizing properties in level 50-75 cm for sample No 2 than for No 1. With this observation agrees the activity of nitrate reductase, peroxidase, phenolic acididase and xanthine oxidase. The activities of these enzymes are sensitive for redox potential. In both kinds of samples was observed the decrease of an activity of urease with an increase of the depth. It indicates lower rate of the degradation process of urea created from the decomposition of peat peptides.

In sample No 1 the concentrations of indole-3-acetic acid very famous phytohormone were similar in both determined levels. However for sample No 2 the significant decrease of the concentrations of indole-3-acetic acid with increase of the depth of sampling was observed.