**Trends in mineralogical composition changes in upper horizons of postagrogenic soils.**

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**Introduction**

Due to large areas of abandoned land in Russia, it is necessary to identify indicators that allow to establish the direction of the evolution of the properties and composition of the post-agrogenic soil. This is necessary for the rational use of abandoned areas. One of these indicators is the mineralogical composition of finely-dispersed fractions (<1, 1-5, 5-10 µm), which determine the stocks of plant nutrients and a number of physical properties and soil fertility.

Plant communities play the leading role in transformation of soil. The need of studying former arable lands increases due to large number of abandoned lands in Russia. It is necessary to study mineralogical composition of soils involved into natural processes to understand the trends of their development after agricultural activities in the past.

The aim of the study is to identify changes in mineralogical composition of the upper horizons of postagrogenic soils.

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**Compositions**

<table>
<thead>
<tr>
<th>Horizon</th>
<th>Description</th>
<th>Particle-size composition</th>
<th>Particle-size composition</th>
<th>Particle-size composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albic Dystric Retisol (Cutanic Abruptic Loamic)</td>
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<tr>
<td>D0-5 cm</td>
<td>5-10 cm</td>
<td>10-15 cm</td>
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**Discussion**

Inside the aggregates there are few clay nodules. It is represented by clay minerals, which are destroyed by cracking or dissolving.

Such nodules are in the intra-pedal mass and apparently were brought from the underlying horizons as a result of plowing or activity of the mesofauna.

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**Objects & Methods**

Soils were sampled in the south of Arkhangelsk region. Soils are formed on clay moraine of Moscow glaciation. Soil profiles were dug on interfluv. We selected 2 plant communities on different stages of succession: 16-year-old spruce forest with no herbaceous vegetation and 70-year-old bilberry spruce forest with domination of Vaccinium myrtillus and Vaccinium vitis-idaea.

To separate soil fractions <1 micron, 1-5 micron and 5-10 micron samples were rubbed into a thick paste and sedimented. Oriented preparations of fractions were examined by XRD method. The content of the main mineral phases in the fraction less than 1 µm is determined by the method of Biscaye. Micromorphological studies have been performed on the classical methods using mineralogical microscope Olympus BHS1 with a digital camera Olympus DP26.

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**Conclusion**

1. Under the 70-year-old spruce forest the former plowed horizon (Elp) acquired morphological features similar to the native EL horizon with no apparent division into sub-horizons. There is only morphological feature of the former plowing like flat border with the horizon BEI.
2. For 70 years the processes of podzol formation in the old spruce grove led to the clarification of the upper horizon and to the decrease of the content of the clay fraction.
3. Under the 17-year-old spruce grove it is also impossible to divide sub-horizons at the macro level in the Pe horizon. The traces of the formerly plowing of the BT horizon appear in a higher content of silt and brown coloration.
4. The processes of podzolization in the course of 17 years of postagrogenic development are at the initial stage. An increase in the crystallization of mixed-layer minerals to the lower part of the former arable horizon was noted, which suggests the initial stages of podzol formation in its upper 5 cm.