

EGU2020-21158

<https://doi.org/10.5194/egusphere-egu2020-21158>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Postagrogenic differentiation of the old-arable horizon of different-aged fallow soils

Leysan Fattakhova and Dilyara Kuzina

Institute of Geology and Petroleum Technologies, Kazan Federal University, Kazan, Russian Federation

The study of different-aged fallow soils seems to be interesting from the point of view of changes in their conditions of genesis and functioning because a radical change of pedogenesis nature in time the removal of arable land to fallow leads to soil evolution. If the climax stages of postagrogenic successions are quite achievable, then the process of restoring the original climax vegetation should be associated with a reversible return of the soil to its original state. But pedogenesis is not limited only to the processes of converting organic residues into soil humus, binding it to mineral surfaces, humus, and biophilic elements accumulation. It also includes a slow chemical transformation of the parent rocks, due to the course of a number of reactions that rarely reach chemical equilibrium. And for soils that were once plowed, we can state with confidence that there is no identity between the component and phase compositions of fine mineral phases at the stages of involving virgin soil to cultivation and removing arable soil to fallow. Accordingly, the once homogeneous old-arable layer can be considered as a lithologically homogeneous soil-forming rock for the magnetic subprofile that is formed on it in the process of successional restoration of ecosystems. Therefore, the study of the magnetic properties of the upper part of the profile of different-aged fallow soils is appropriate in the aspect of the kinetic parameters of postagrogenic differentiation of the old-arable horizon. This work is devoted to studying magnetic properties of different-aged light-gray forest (30-35 years), dark grey forest (10-15 years) and sod-podzolic (12-17 years) fallow forest-steppe soils of the Republic of Tatarstan for the diagnosis of postagrogenic signs of differentiation of the old-arable horizon.

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University and with the support of the RFBR in the framework of the scientific project No. 19-35-50040.