



Spoilbanks grounds of quarries in Russian North-West: influence on speed of revegetation and soil regeneration

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Quarries of Russian North-West characterizes by extremely big diversity of spoilbanks grounds exposed on the surface of postantropogenic landscapes. The main kinds of these grounds are following: quaternary loams (from moraine and glacial lakes), carbonate loams, coarse textured derivates of limestones, glaciolacustrine and fluvioglacial sands, sifting of granite and limestones crushing, actually and potentially sulfate-acid grounds. Investigation of soils and revegetation chronoserries on different types of spoilbanks grounds allows us to understand the main features of parent materials which are important for quarry rehabilitation process. Investigation conducted show that physical properties and particle size distribution are main features of dumps substrata which determine the general trend of soil formation and speed of main pedogenic process. Also these characteristics influence on stability of regenerated ecosystem and sustainability of spoilbanks surface to the erosion impact. Chemical properties of grounds became essential for soil formation only in case of its toxicity, e.g. in case of sulfate acid grounds exposition in dumps or accumulation of big portion of exchangeable aluminum in thin fraction.

Speed of soil regeneration is maximum on sands, loams and carbonate loams, which is characterizes by low portion of coarse skeleton fraction, favorable water retention capacity, friableness, and absence of toxic compounds. Here we can find the weak developed microprofiles of Podzols, Albeluvisols and Rendzinas. These types of grounds occupied by a forests type of vegetation. Cambrian and Carbon clays in spoilbanks show the very low speed of soil formation, due to decreased water penetration ability, bogging, development of redoximoprphic or gleyic conditions. Soils which is forms on clays are Sod-Gleyic soils. Development of trees on clays are very slow processes, and after 20-30 years of revegetation starts to die out due to meeting of roots with

dense layers impermeable for water. Sifting of granite crushing are very unstable on the surface of quarries, they exposes to wind erosion, translocation. Soils here forms only in refuges (relief depressions) and can be classified as Arenosols. Siftings of limestones crushing are very dense and dry, that is why soils on these substrata characterizes by a weak profile of Rendzic Leptosols under rare gross cover. Technogenic carbonate debris characterizes by well expressed dryness and low portion of thin fraction, but due to increased friableness profiles of Rendzinas here are deeper and show more expresses Asod and A horizon in comparison with soils on siftings of limestones crushing. The most dangerous type of spoilbanks substrata is sulfate-acid loams and clays, which can not be rehabilitated without chemical improvement by calcium carbonate addition.

On the base of obtained data on the speed of soil formation, types of soil profile, characteristic features of vegetation cover, main properties of spoilbanks grounds we have work out the classification of grounds of quarries for its suitability for soil regeneration and revegetation. These schemes also give practical recommendations for intensification of nature restoration on the quarries of humid taiga on the territory of Russian North-West.