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Phytoremediation of disturbed lands in Polar Regions of Russia

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In the Northern regions the problem of restoration of disturbed lands as a result of anthropogenic activities is particularly acut. A large role for the success of native plants to take hold and re-establish themselves is to allow the natural process to work without human intervention. However observation shows that low reserves of available moisture, poor soil nutrients, exposure to wind and water erosion make impossible of a complete restoration of lands due to natural revegetation. One of the methods used to minimize the effect of these factors is the phytoremediation.
Research on the Pelyatinskom gas condensate field in the Taimyr Dolgano-Nenets municipal district revealed the efficacy of biological remediation of awnless brome, wildrye siberian, red fescue and kentucky bluegrass.
Geobotanical studies of the tailings fields in Yakutia showed that for the phytoremediation of tailings of alluvial deposits of diamonds slough grass can be successfully used, and on the dumps of coal deposits with a high degree of survival of the willow, poplar, larch, alder stand and pine.
Development of technology for remediation of placer gold deposits of the Komsomol mine and Bilibino in Chukotka has shown the effectiveness of sowing common oat, wildrye and larch.
The study of the experience of recultivation on objects of the "Transneft-Baltic" in the North-Western Federal district allowed us to select as the recommended mixtures of species: meadow fescue, cocksfoot, timothy grass, white and alsike clover and alfalfa.
The multicomponent mixture of red fescue, awnless brome, meadow fescue, timothy grass, couch grass, kentucky bluegrass, beckman's grass were successfully used at the mine of the Bovanenkovo oil and gas condensate field.
On the technological grounds of the complex pumping station in the Yamalo-Nenets Autonomous area willows were planted. Pine and willow trees were planted on quarry workings in the Northern taiga of Western Siberia land .Planting of pines has shown its effectiveness in quarries and construction materials in the vicinity of Syktyvkar.
In the course of practical activities carried out in the area of Monchegorsk, on the copper-Nickel plant, the possibility of using willow for remediation of metal contaminated land is also being discussed, as this plant is efficient for phytoextraction.
For land reclamation along the pipeline messoyakha-Noril'sk in the region of the drilling rigs on the Taimyr Peninsula and industrial tailings of the Norilsk industrial district, it is recommended to use the red and sheep fescue, Alpine and meadow bluegrass, arctophila reddish, meadow foxtail.
In biological recultivation of disturbed territories on the Yamal Peninsula to accelerate the growth and development of plants peat textiles with sowing of red and meadow fescue, awnless brome, timothy grass, couch grass, kentucky bluegrass, beckman's grass were used.
The technology of phytoremediation is widely used in Alaska. For recultivation of zinc mines in Northwest Alaska glaucous spear grass, blue joint grass, slough grass were used.
The positive effect of Alaska red fescue and ryegrass multiflorous on degradation of hydrocarbons in contaminated soils was also studied.
To clean the territory of Alaska from the polychlorinated biphenyls arctic willow and spruce were used.