Annotation

Raspopina S. P., Degtyarev V. V.
Effective use of soils transferred for afforestation

The total area of the land fund of Ukraine is 60.4 million hectares of which agricultural land is 68.8% (including 54.9% of arable land), forests and other wooded areas – 17.6% (as of 1.01.2014). In Ukraine the level of arable land is the highest in the world. At the same time, average efficiency of land use in Ukraine is lower than on average in Europe. Intensive use of agricultural land has led to its degradation. Degradation processes are primarily related to erosion, compaction, salinization and soil contamination.

One of the most effective tools that contribute reducing the intensity of land degradation is the exemption from arable soil low productive soils and their subsequent transformation into forests and pastures. At the same time afforestation in these lands requires a detailed assessment of their forest growth potential and in general their suitability for forest cultivation.

Currently in Ukraine there is State program "Forests of Ukraine" aimed at optimizing the structure of the land fund of the country. By this program it is planned to create 415 thousand hectares of forest plantations during 2010-2015 on marginal lands exempted from agricultural use. Today, the largest volumes of forest planting on the newly adopted lands are carried out in the steppe zone. Among the predominant types of lands that should be afforested are: pastures, stony lands, infertile arable lands, ravines and sandy soils.

Studies were carried out on the lands transferred for afforestation to Poltava Regional Management of Forestry and Hunting in the Forest-Steppe zone. As these soils are solonchak-like in one way or another, their afforestation involves considerable difficulties. Thus, selected over the years forest crops (Salix alba L., Quercus rubra L., Robinia pseudoacacia L., Pinus sylvestris L.) have a low adaptability, depression, and in some places – massively dry out.

Researches included a detailed soil survey and phytoindication of silvicultural areas, as well as agrochemical analysis to determine cation-anion composition (GOST 2628-85) and pH of the aqueous extract (State Standard ISO 10390:2007).

The soil studies in silvicultural plots showed that meadow chernozem soils which in varying degrees solonchak-like predominate on loess clay loams. Composition of the salinization in most cases is sodic, in some areas – sulfate-sodic. Salts occur high, preferably in a layer of 0-40 cm.

Research results allow us to estimate the degree of forest growth potential of soils for afforestation, as well as their overall forest applicability. Only two plots (area of 36.7hectares) of the seven are suitable for afforestation, one – not suitable (11.2ha) and the remainder (43hectares) – conditionally suitable.

It is defined that afforestation of unproductive soils must be preceded by comprehensive phased soil studies using the method of phytoindication and obligatory agrochemical analysis – determination of cation-anion composition and pH of the aqueous extract. Only an integrated approach to the development of unproductive soils provides an objective assessment of their forest growth potential and the overall suitability for afforestation.

Key words: *afforestation of underproductive soils, assessment of the level of suitability for afforestation of solonchak-like soils.*