



The geochemical characteristics of soils of vineyards and tea gardens before and after their use in the South of Russia

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The concentrations of 25 chemical elements in the forest soils, where formerly the vineyards and tea gardens were cultivated, and in the soils of functioning and abandoned 5, 10, 25, 30 and 50 years ago vineyards and tea gardens were considered. The loss and accumulation of elements were studied in the top-horizon (30 centimeters) during the human impact and after its ending. All the data are given with the probability of 95 %. The analyses of more than 1000 samples were used.

Comparing to the forest soils, in the tea gardens soils has accumulated P (+702) and leached away Ge (-0.36), Yb (-0.54), Be (-0.84), Ba (-114) (in the gapes – concentration, tons per square kilometer). The leaching of row of elements has continued in the soils of abandoned plantations comparing to the forest soils with some changes in intensity; besides the accumulation of Mn (+318) and Ti (+804) had been occurred during the last 50 years.

Comparing to the contemporary plantations in the soils of abandoned ones had been taken place the accumulation of elements during the last 50 years. Its maximum had manifested after 30 years: Mn (366) > Zn (34.8) > V (28.2) > Ni (6.6) > Ga (1.8) > Sn (0.4). The loss was detected for P.

The intensity of all considered processes of loss and accumulation was spasmodic changing in the different time periods. During the last 50 years ecology-geochemical “recovery” of abandoned tea gardens soil has not happened. In the functioning vineyards soils, comparing to the initial forest soils has raised the concentrations of Cu (+16.1) and P (+96); declined – Bi (-0.12), Mo (-0.4), Co (-3), Ga (-4.3), Pb (-5.3), Li (-5.5), Mn (-126) and Ti (-684).

In the soils of abandoned vineyards, comparing to the forest soils, during the last 25 years had been taken place accumulation of Mo (+0.7), Cr (+29.4), Cu (+50.3) and leaching away Co (-1.8), Ga (-3.7), Ni (-4.2), Li (-7.4).

In the soils of abandoned vineyards, comparing to the functioning ones, during the last 25 years had been taken place accumulation of Bi, Mn, Cr, Mo, Cu. The most intensive accumulation of Pb, Ga and Ti was found in the soils of vineyards, which were abandoned 5 years ago.

As can be seen from the above, the creation of tea gardens and vineyards has changed the geochemical characteristics of soils in the region. The processes of elements loss and accumulation continue after the end of landscapes exploitation, and they have not returned to the initial conditions for the last 25-50 years.