

## **Environmental assessment of water-salt regime of irrigated soils in the Central-Chernozem Region of Russia**

Liliia Alaeva, Elena Negrobova, Lidiia Jablonskikh, and Irina Rumyantseva  
Voronezh State University, Voronezh, Russia (liliya-250477@yandex.ru)

Environmental assessment of water-salt regime of irrigated soils in the Central-Chernozem Region of Russia

Liliia Alaeva, Elena Negrobova, Lidiia Jablonskikh and Irina Rumyantseva  
Voronezh State University, 394006 Voronezh Universitetskaya Square, 1  
(liliya-250477@yandex.ru)

A large part of Central Chernozem Region is located in the zone of risky agriculture. This led to intensive use of soil in the irrigation system. Therefore, a detailed analysis of water-salt regime of irrigated soils required for ecological state assessment of soils for irrigation.

In the investigated area the fone component of the soil cover on the levelled plateau are chernozems. On the slopes formed a meadow-chernozem soils. Parent material is a cover loess-like calcareous non-saline clay. In these soils, our studies found component-quantitative composition of the aqueous extract, the chemism of salinity, which allowed us to make conclusions about the direction of the salinisation process in soils when used in the system of irrigated agriculture.

By quantity water extract chernozems are non-saline, the ratio of anions and cations are chloride-sulphate magnesium-calcium salinization. In the composition of easily soluble salts dominated by  $\text{Ca}(\text{HCO}_3)_2$ . On sum of toxic salts in the soils are non-saline. This type and chemism of salinity deep brackish groundwater (more than 5 m) can be actively used in the system of rational irrigation.

The meadow-chernozem soils formed under conditions of increased surface and soil moisture in the shallow brackish water at a depth of 3-5 m. These soils by quantity water extract are non-saline, anionic-cationic ratio - chloride-sulphate magnesium-calcium salinization. Permanent components of salt associations are  $\text{Ca}(\text{HCO}_3)_2$ ,  $\text{MgCl}_2$ ,  $\text{Na}_2\text{SO}_4$ . On sum of toxic salts in the soil is not saline throughout the profile. The chemism of salinity and the proximity of groundwater at irregular watering can lead to the rise of groundwater level, the development of gleyed and sodium alkalization.

Thus, the introduction of intensive irrigated agriculture on hernozeems and hydromorphic analogues may lead to the development in them of negative consequences. The most dynamic indicator is the water-salt regime, the systematic monitoring and control which will allow to achieve maximum efficiency of irrigation of crops in these areas.