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Data support of a state and intelligent use of irrigated and solonetzic soils

Goal. Determine the normative and methodical aspects of information provision of the state and the management of the fertility of irrigated and sootlot soils. Methods. Historical, systemic, statistical, analysis and synthesis. Results The normative-methodical aspects of the system of information provision of the state and the management of the fertility of irrigated and sootlot soils are determined. On the principles of complexity, compliance with current legislation and using international experience national standards of Ukraine have been created for assessing the state of such soils and their effective use. Conclusions The application of the developed complex of national standards of Ukraine in the field of protection and enhancement of fertility of irrigated and sootless soils will contribute to obtaining objective and reliable data on their condition, which will ensure their rational use.

Key words: irrigated and sootlonic soils, system of information support, normative-methodical base, complex of standards, fertility management.

Today, more than half of the territory of Ukraine is in zones of insufficient and unstable moisture. The protracted periods of drought have become more frequent, therefore, the food and resource supply of the country, as well as many countries of the world, depends to a large extent on the availability, condition and efficiency of the use of irrigated and saline soils. The area of irrigated and irrigated land is 2.17 million hectares and 2.8 million hectares of solonetines [1, 4]. Improving the completeness, quality, transparency and availability of information about their condition on the basis of scientific data, basic methods and standards is the basis for ensuring the harmonization of productive and ecological functions of soils.

The purpose is to determine the normative and methodological aspects of the information provision of the state and the management of the fertility of irrigated and saline soils.

Research methodology. The methodological basis was based on modern methods of scientific research: historical, systematic, statistical, analysis and synthesis.

Research results. The deterioration of the soil-reclamation state of irrigated land, the loss of soil fertility and the disbalance of natural systems in general are also possible due to insufficient level of information provision of the state and rational utilization of soil resources. By significantly reducing the area of irrigated land in Ukraine, the volume of use of chemical meliorants, phytomelirants and fertilizers, violations of irrigation methods and regimes, and the lack of normalization of land reclamation loads, predictions based on obsolete information, previously developed by scientists, correspond to 30-40% [1, 2, 4, 5]. Irrigation, limited by suitable and inappropriate waters (according to agronomic and environmental criteria) in the conditions of high technogenic loading on the environment, has a definite effect on the condition and properties of hydrodyfic soils and may be accompanied by even more substantial changes that require obtaining sufficient, accurate, accurate and operational information on irrigated, seized from irrigation and saline soils for various meliorative loads. Preferably, information on the land reclamation state of irrigated lands is obtained during the conduct of eco-melioration monitoring (EMM) of their condition. EMM is carried out in pursuance of the Law of Ukraine "On land reclamation", the Water Code of Ukraine and a number of resolutions of the Cabinet of Ministers of Ukraine. Systematic control covers irrigated land at an area of 2.17 million hectares (as of 16.03.2014). However, the EMM has no deficiencies: a limited set of indicators is controlled - the quality of water for irrigation, groundwater level, groundwater mineralization, drainage runoff, salinity, salinity. At the same time, irrigated, isolated from irrigation and saline soils perform agro-chemical

survey of soils under other methodological approaches, and the results characterize fields and workspaces rather than soils. Materials of large-scale soil monitoring (1957 - 1961) with further corrections are obsolete and do not require updating on the new normative-methodical basis [3].

The need for special study of irrigation water is associated with their use in significant volumes (environmentally safe permafrost norms on the layer of 0-50 cm of medium-loamy and clay soils are 300-400 m3 / ha), mainly in vegetation periods and significant and with ambiguous influence on soils, plants and agroecosystem in general. In the Ukrainian standards system, the assessment of the quality of water for irrigation is regulated by DSTU 2730-94. The quality of natural water for irrigation. Agronomic criteria. However, the practical application of this standard by the State Agency for Water Services for 20 years has shown that DSTU 2730 - 94 is not without defects and needs to be refined. This resulted in the development of a new National Standard of Ukraine DSTU 2730: 2015. Quality of the environment. The quality of natural water for growth, in which considerable attention is paid to the assessment of the quality of irrigation water, depending on the genetic type and soil properties that irrigate it, takes into account the diversity of the soil cover of the irrigation regions of Ukraine, provides a more differentiated approach to assessing the quality of water due to the danger of salting - Grounding, erosion and soil soils. To reveal the scale of distribution and spatial assessment of the nature and extent of the processes of salinity and salinization DSTU 7850: 2015 was developed on irrigated, removed from irrigation and adjoining lands. The quality of the soil. The procedure for conducting soil-salt survey of lands. The system for the diagnosis of salt properties of irrigated and saline soils involves the determination of the cationic and anionic composition of the aqueous extract (DSTU 7908, DSTU 7909 and DSTU 7943 - DSTU 7945 and DSTU 8346), the content of exchange cations (DSTU 7604, DSTU 8345), thermodynamic indices (DSTU 7540, DSTU 7608, DSTU 7834). Taking into account the indicated diagnostic parameters, a classification of soils based on the degree of secondary salinity (DSTU 7827: 2015. Soil quality, classification of soils by the degree of secondary salinity), secondary solonetry (DSTU 3866 - 99. Soils, classification of soils by the degree of secondary salinity) and for the degree of splitting (DSTU 7845: 2015. The quality of soil, the classification of soils by the degree of lifting).

Under the influence of irrigation of the land undergo radical changes (both positive and negative) [1, 2, 4, 5]. According to DSTU 7856: 2015. The quality of the soil. Indicators and parameters of the soil-reclamation state of irrigated land, integrated assessment of the ecological and agro-ameliorative state of irrigated land are carried out in complexes of hydrogeological, engineering-geological, soil-reclamation, agronomic and ecological and toxicological criteria and indicators of state and contamination of soils and waters Separately assess the state of agri-irrigation load on the ground. In order to obtain current and operational information necessary for the management of the soil-reclamation and ecological-agro-amelioration status of irrigated land, a regulated set of indicators and their parameters has been developed (DSTU 7864: 2015. Quality of soil: criteria and indicators for assessing ecological -Agremelioration status of irrigated lands). To assess the manifestations of degradation processes in soils, DSTU 7872: 2015 has been developed. Soil protection. Degradation of soils. Assessment of chemical and physical degradation of soils, DSTU 7874: 2015. Soil protection. Degradation of soils. The main provisions of DSTU 7875: 2015. Soil protection. Ecological normulation of anthropogenic loading on the soil cover. Substantive provisions. DSTU 7848: 2015 was developed for chemical amelioration. The quality of the soil.The procedure for conducting chemical melioration of natural-solonetseal and secondary-solontium soils. The introduction of chemical meliorants in the form of aqueous solutions and suspensions is recommended in accordance with DSTU 7830: 2015. The quality of the soil. The procedure for the application of chemical meliorants in the form of aqueous solutions and suspensions in sootnous soils.

The conducted studies made it possible to improve the list of basic indicators of soil suitability assessment for land reclamation plantation plowing [8]. In order to ensure a reliable determination of the suitability of soils for land reclamation plowing was developed and introduced into operation by DSTU 5041: 2008. The quality of the soil. Estimation of the suitability of soils for land reclamation plantation plowing. The procedure for doing this is also developed a land reclamation measure and an assessment of the quality of its implementation (DSTU 7860: 2015. Soil quality: the procedure for carrying out reclamation plowing on solonetsoff soils and DSTU 7859: 2015. Quality of soil, evaluation of the quality of melioration plantation plowing).

Improved regulatory and methodological approaches to the system of information provision of the state and the management of the fertility of irrigated and saline soils will contribute to obtaining objective and reliable data on the state of soil resources by the executive authorities and local self-government bodies, scientific institutions and the public, which will ensure their coherence. activities in making decisions on the conservation, efficient and rational use of soil resources.

Conclusions

For the determination of the potential soil productivity, monitoring, implementation of agrotechnologies adapted to specific soil and ecological conditions, for the formation of sustainable land use, the creation of a modern state system of information provision of the state and rational utilization of Ukraine's soil resources, based on modern normative - methodically and will facilitate the receipt of objective and reliable data on their condition, which will ensure their effective and rational ne use.

Bibliography

1. *Комплекс* протидеградаційних заходів на зрошуваних землях України/С.А. Балюк, О.А. Носоненко, М.А. Захарова, О.М. Дрозд, В.Я. Ладних, Л.І. Воротинцева, О.А. Недоцюк, Ю.О. Афанасьєв та ін.]; за наук. ред. С.А. Балюка, М.І. Ромащенка, В.А. Сташука. — К.: Аграр. наука, 2013. — 160 с.

2. *Концепція* інтегрованого управління екологічним ризиком деградації ґрунтів/[С.А. Балюк, М.А. Захарова та ін.]; за наук. ред. С.А. Балюка, М.І. Ромащенка. — Х.: Міськдрук, 2012. — 50 с.

3. *Наукові* засади розвитку державної системи інформаційного забезпечення стану та раціонального використання ґрунтових ресурсів України: наукова доповідь/[С.А. Балюк, В.Б. Соловей, М.А. Захарова, А.В. Кучер, С.Р. Трускавецький]. — Х.: ТОВ «Смугаста типографія», 2014. — 36 с.

4. *Наукові* основи охорони та раціонального використання зрошуваних земель України; за ред. С.А. Балюка, М.І. Ромащенка, В.А. Сташука. — К.: Аграр. наука, 2009. — 624 с.

5. *Оцінка* стійкості агроландшафтів і ґрунтів до впливу зрошення: рекомендації/[С.А. Балюк, В.Я. Ладних, Л.І. Воротинцева, О.А. Недоцюк, Г.А. Верніченко]. — Х.: Міськдрук, 2013. — 48 с.

6. *Стратегія* збалансованого використання, відтворення і управління ґрунтовими ресурсами України; за наук. ред. С.А. Балюка, В.В. Меведєва. — К.: Аграр. наука, 2012 — 240 с.

7. *IPCC,* 2007: Climate Change, 2007: Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change/[Core Writing Team, Pachauri, R.K. and Reisinger, A. (Eds.)]. — IPCC, Geneva, Switzerland, 2007. — 104 p.

8. *Baliuk S.* Scientific approaches to the rational use and management of saline soils fertility in Ukraine/ S. Baliuk, E. Drozd, M. Zakharova//2nd International Conference on Arid Land Studies «Innovations for sustainability and food security in arid and semi arid areas». 10 – 14 September, 2014, Samarkand, Uzbekistan. Abstract book. — Samarkand, 2014. — P. 16.

9. *Report* of the second meeting of the plenary assembly of the Global Soil Partnership (Rome, 22 – 24 July 2014). Rome, Food and Agriculture Organization of the United Nations, 2014. — 26 p.