табылады. Жүргізілген зерттеулер барлық зауыттық желілердің бұқашықтары мен қашарларында барлық жас кезеңдерінде тірілей салмақтары тұқым стандартының талаптарынан асып түскенін көрсетеді, бұл ретте тірілей салмақ бойынша 6 ай жасында Кактус 7969 зауыттық желісінің және 12 ай жасында Король 13682 зауыттық ізінің ұрпақтары ерекшелік көрсетті. Дене бітімінің негізгі өлшемдері бойынша 12 айлық жасында бұқашықтарда аталық іздер арасында айырмашылықтар байқалды, ал 15 айлық жасында олар біртектілікпен сипатталды.

Түйін сөздер: *етті ірі қара, қазақ ақбас тұқымы, зауыттық із, тірілей салмақ, салмақ қосу, экстерьер, конституция.*

EXTERIOR AND CONSTITUTIONAL FEATURES AND DYNAMICS OF CHANGE OF LIVE WEIGHT OF YOUNG GROWTH OF THE KAZAKH WHITE-HEADED BREED OF VARIOUS GENOTYPES OF THE FARM "KHAFIZ" OF THE WEST KAZAKHSTAN REGION

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The article presents the results of the study of exterior-constitutional features and dynamics of changes in the live weight of young Kazakh white-headed breed of different factory lines of the Kazakh white-headed breed of the peasant farm "Hafiz" West Kazakhstan selection. The main methods of improving the Kazakh white-headed breed of the domestic population at the present stage are linear breeding, as well as evaluation, selection and intensive use of the best bulls of the breed of tall type of physique. Studies show that bulls and heifers of all factory lines in all age periods live weight exceeds the requirements of the breed standard, while the largest live weight significantly allocated descendants of the factory line Cactus 7969 at the age of 6 months and the factory line King 13682 at the age of 12 months.According to the main body measurements, more noticeable interline differences were observed in bulls at the age of 12 months, while at the age of 15 months they were characterized by uniformity.

Key words: *beef cattle, Kazakh white-headed breed, factory line, live weight, growth, exterior, constitution.*

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ENVIRONMENTAL ASSESSMENT OF THE STUDY AREA GRAY SOILS OF ZHAMBYL REGION

Annotation: *Based on data on soil and environmental conditions of sierozemic-meadow saline soils, methods for improving ecological and meliorative measures against the background of deep loosening have been developed, for the effective use of water resources in irrigated areas, and optimal washing rates of the investigated area have been established. The ecological coefficients characterizing the level of danger in the calculated soil layer are determined.*

Soil degradation, which is the result of different causes, is one of the most dangerous types of environmental violations, both in terms of the scale of its manifestation, and because of the significance of the environmental, economic, social and political consequences. Scientists have long known that degraded soils are dangerous natural objects. These kinds of soils cease to perform environmentally significant functions, they are able to provoke processes of general degradation of the earth's surface and even climate change.

Key words: *soil degradation, environmental assessment, agro-climatic assessment, water availability.*

Introduction

One of the main problems of destruction of the fertile layer is soil erosion. It occurs mainly because of the so-called “agro-industrial” agriculture: the soil is plowed over large areas, and then the fertile layer is blown out by the wind or washed away by water. For this reason, to date, there has been a partial loss of soil fertility on the area of 152 million hectares, or 2/3 of the total area of arable land. It is established that 20-centimeter layer of soil on gentle slopes is destroyed by erosion of iodine by cotton culture for 21 years, under maize culture − for 50 years, under meadow grasses − for 25 thous. years, under the canopy of the forest -for 170 thous. years.

Prediction of individual degradation processes as well as total soil degradation due to various adverse anthropogenic and other factors continues to be a complex and insufficiently studied problem. The annual volume of soil flushing on the globe as a result of water erosion reaches

about 25 bln. tons. Ultimately, all this soil gets into rivers and then into the oceans. Water erosion leads to the fact that the productivity of agricultural land is sharply reduced. The accumulated sedimentary material in the lower reaches of the river hinders navigation, creates a threat of flooding and silting of reservoirs, time is estimated to be 24 mln. tons [2-3].

The main natural areas of Zhambyl region are deserts, foothill semi-deserts and mountains. As a result of extensive development of water and land resources in the area whole landscape area − foothill desert completely disappeared. Under the influence of man-made impact on the environment has changed completely not only the conditions of existence of plant and animal, but also the geography of vast territories.

Among the main reasons for the deterioration of the living conditions of flora and fauna are: changes in the hydrological and hydrochemical regime of water bodies; the absence of institutionalised sector responsible for the protection, regulation, use of plant resources along the rivers and other reservoirs; extensive development and use of land resources, local overloading of pastures; unregulated hunting, fishing and other types of fisheries; non-compliance with the normative volumes and terms of procurement of medicinal plants.

In the region, the land degradation extends to almost all types of natural complexes: rivers and lakes; vegetation of floodplain and adjacent desert lands; water and semi-aquatic animals. Although, in general, due to a sharp decrease in the number of farm animals, the load on pastures is reduced, negative factors of overgrazing continue to take place.

This happens for the following reasons. As a result of the difficult economic situation of the population and economic entities of the agricultural sector, agricultural cattle began to concentrate near settlements where the specific load exceeds the permissible level, with all the ensuing consequences.

As a result of denationalization and privatization, the unified system of inter-Republican, inter-regional and inter-district regulation of animal farming, in particular the issues of seasonal cattle breeding for the purpose of rational use of pastures, has been destroyed. This factor also plays a negative role both in animal farming and in environmental terms, in local areas. In particular, there is a reduction of valuable meadows and hayfields in floodplains and around settlements. In general, in the Zhambyl region the process of degradation of pastures in the desert zone, away from densely populated areas, is suspended, and even the natural process of their recovery has begun.

The combination of all these factors makes it possible to assess the ecological situation in the lower reaches of river basins as unfavorable [4].

In general, analyzing the available data on livestock, crop, water and land resources, as well as data on the state of health of the population, it can be concluded that the regulation of the flow of the Talas river and significant amounts of water withdrawal in the upper reaches and ignoring environmental issues, adversely affected the environmental situation in the lower reaches of the Talas river.

Social and environmental aspects in the construction of water facilities have been considered only in recent years. The experience of recent years shows that when justifying the development of water management systems or individual large objects, their economic efficiency, social significance and environmental safety of the recommended measures should be consistently studied and evaluated at the design stage.

The development of methods for assessing and forecasting the impact of water intake and river flow regulation on the ecological state of the environment makes it possible to further develop methodological provisions for the regulation of environmental releases to the lower reaches of water intake structures and reservoirs, which will ensure the environmental well-being of the natural environment, as well as improve the socio - economic situation of the population living in the lower reaches of rivers with regulated flow.

For the Talas river basins, due to the decrease in the flow in the lower reaches of the rivers associated with the regulation of their flow, the natural biological ability of self-purification of reservoirs has also decreased, which immediately affected the quality of drinking water in the region.

As a result of man-made human intervention, in the river basins there is a gradual degradation of the natural system up to desertification. A significant contribution to the deterioration of the ecological situation in the lower reaches of the river is made by the ill-considered anthropogenic impact on them. Most of the region's territory falls on the desert and semi-desert

zone. As established by surveys in recent years, as well as according to the Shu-Talas Department of ecology – land in desert and semi-desert areas are subjected to intense desertification, which leads to a decrease in their economic value. In the process of desertification, natural ecosystems are actively degraded, biodiversity is significantly reduced.

The main causes of anthropogenic impacts on desertification are associated with extreme natural-climatic conditions and extensive production activities, exceeding the threshold of stability of ecosystems; overgrazing on pastures, runoff control activities in rivers and water management construction, risky rainfed agriculture in the piedmont area, the contamination of soils and water with pesticides and other chemicals, haphazard felling of saxaul to the sand zone, etc. the Total area of land desertification in the area is 7600 hectares, or 52.7% of its territory.

Intensive and unsystematic use of pastures and grazing also led to a decrease in their yield, deterioration of the species composition of grass (55%-60%), and in some places to obvious degradation. The area of the brought down pastures from its total area makes 7,8% (1104 thousand hectares), and clogged with poisonous and inedible plants for cattle − 3% (437,3 thousand hectares). Desertification in the arid zone of Talas, Moiynkum and Sarysu districts is particularly problematic.

As a result of extensive development of water and land resources the whole landscape zone - foothill deserts completely disappeared in the region. Under the influence of man-made impact on nature changed not only the conditions of existence of flora and fauna, but also the geography of vast territories.

In this aspect, it is important to reliably predict the intensity and direction of changes in hydrogeological, hydrochemical, biological and other processes under anthropogenic impact on the environment. The ecological characteristic of this region is a comparison of the level of anthropogenic load (population density, the level of development of industrial and agricultural production, the degree of toxicity of industry, etc.) with the capacity of water resources. It should be noted that a comprehensive criterion assessing the level of technogenic and anthropogenic load on both water sources and on the territory under development has not yet been developed.

In Kazakhstan, the development and improvement of soil-water-energy-saving technologies for the production of agricultural crops, ensuring the environmental sustainability of agricultural landscapes to soil degradation and desertification.

The ecological state of the studied irrigation massif depends largely on the hydrochemical regime of water sources, the system of agriculture and is determined by the factors of optimal management of natural and anthropogenic processes. Regulation sierozemic-meadow soils of chloride-sulphate salinization by controlling the supply of groundwater through seepage of channels, the determination of the mechanism of movement of salts in the soil with the use of the technological scheme of washing, to establish the permissible content of salts and evaporation from the groundwater surface will serve as a basis of rational nature management, as it will ensure the environmental sustainability of guarantee and will create favourable conditions for long-term exploitation of natural resources without their depletion, degradation and pollution.

On irrigated lands, the source of pollution is often water used for irrigation from polluted water bodies.

In this regard, the development of agriculture, it is necessary to form an environmentally sound strategy for the implementation of integrated reclamation, consisting of the following basic principles:

− optimization of crop moisture supply with maximum use of natural moisture reserves and minimum irrigation water costs;

− preservation and reproduction of soil fertility;

− prevention and elimination of existing pollution of surface and underground waters by production waste;

− rational science-based use of water for reclamation;

− substantiation of new technologies of non-waste and low-waste production, preventing violation of ecological balance in nature.

The study of soil processes provides a better understanding of the properties of the soil itself. On the one hand, the properties of the soil determine the soil process, on the other – the soil processes form new soil properties.

Human activities have a powerful impact on the environment man-made in particular pollution of soil and water waste production and life, where a significant proportion of organic

pollutants. As a result of pollution of soil and water by organic substances, natural biota is suppressed, the relations between separate groups of microorganisms change and in general the direction of metabolism changes, natural processes of self-purification are disturbed. Man-made and man-made land metabolism violated the natural processes of self-purification. Technogenic and anthropogenic disturbances of ecological balance significantly change the sanitary condition of saline lands, their soil formation, worsen the conditions of people.

Soil pollution in the form of salinization occurs mainly due to human activities, with the wrong conduct of land improvement, agrotechnical and reclamation activities. This occurs as a result of ignoring the implementation of interrelated laws governing the natural balance of soil evolution, as well as hydrogelogical, hydrochemical and geochemical interactions during ecological and meliorative works.

Based on data on soil-ecological conditions of the sierozemic-meadow and dark chestnut carbonate soils, there is a need to regulate the water regime of the root layer, as the main factor of moisture and salt transfer of the aeration zone of soils.

RESEARCH RESULT

Establishing the ability of soils to retain water available to plants depends on certain properties. Any additional amount of water in the form of precipitation or irrigation, groundwater table rise (ERW), exceeding the value of the lowest water capacity (HB), is excessive and can disrupt the hydrogeological balance of soils. Depending on the water permeability of the soil, transformed into waterlogging areas, affect the natural landscape, the environment, environmental and economic activities, as well as soil fertility, meaning that it is a pollution factor. Irrigation, soil-ecological, factors of geosystems, the coefficients of the ecological state of the environment, characterizing the level of pollution with varying degrees of salinity of soils are important to prevent and combat waterlogging (table 1) [5-8].

Table 1 − Environmental factors that characterize the level of risk in the current layer of soil

Indicators	Degree of salinity of the soil		
	Weak	Medium	Strong
Area, СЭнт, ha	700	700	700
Porosity, in fractions	0,47	0,47	0,47
Initial mineralization, SN ,g/l	2,7	3,5	4,6
Soil density,γ,t/m3	1,47	1,47	1,47
Degree of salinity, S_0 , %	0,49	0,57	1,4
Salt residue, Δ S, t/ha	33	31	62
Groundwater level (GWT), h, m	3,2	3,2	3,2
Volume of water before GWT, W ,kg/ha	15040	15040	15040
Rinsing the net norm, Nнт, m3/ha	6000	7000	8000
Rinsing norm gross, Nбр, m3/ha	7000	8000	9000
Salt stock in GW, S , kg/ha	40608	52640	69184
Allowable salinity in the soil solution C_M = Δ S+S/ W + $N_{бр.}$ g/l	3,3	3,6	5,5
Water inflow from channels, Q ,m3/s	0,4	0,4	0,4
The duration of the wash t=$N_{нт}$.СЭ$_{нт}$/ *86400.η.Q. day*	146	171	195
Share of the volume of transit water discharged into the river during washing V_T =$N_{нт}$.СЭ$_{нт}$/ *86400.Q.t,*	0,83	0,83	0,83
Leaching period precipitation, P, м^3/га	750	870	1000
Moisture saturation in the design layer, W_H , m3/ha	3381	3381	3381
Evaporation during washing, E0, m3/ha	1000	1000	1000
Proportion of volume of wash water coming from the СВС: =(Nнт+P-E0)/ Nбр. q_K =($N_{нт}$+*P*-W_H -E_0)/ $N_{бр.}$	0,34	0,44	0,51
Salinity chemistry, chloride – (x)	x	x	x
Environmental factor En=1-exp(-C_H.V_T.q_K)	0,61	0,73	0,90
Level of danger	dangerous	very dangerous	very dangerous

Discussions

Analysis of the calculations given in tabular form shows that the quantitative assessment of the environmental situation of the object under study: the level of danger (very dangerous - EC= 0,61-0,90) [5-8]. Thus, it is necessary to carry out ecological and meliorative measures to improve the environmental situation in the regions.

Based on the perennial studies of sierozemic-meadow saline soils, namely, analysis of the soil-ecological and meliorative status of the studied array of irrigation came to the following conclusion:

- on the basis of the studied data on soil and climatic conditions for sierozemic-meadow carbonate soils, as well as due to the insufficient humidity, it is necessary to regulate the water regime of the root layer.
- environmental assessment of methods for improving saline lands, taking into account heat and moisture availability, based on the study of water-physical regime and the degree of salinity with different irrigation technologies, which make it possible to determine the level of environmental hazard coefficient.

Literature

1. Degradation and soil protection //Under the editorship of Dobrovolsky, G. V. M.:MSU, 2002, − 190 C.
2. Zimovets B. A., Khitrov N.B., and others. Assessment of degradation of irrigated soils.//Soil Science, 1998, − No.9, − pp. 1119-1126.
3. Mirzhulava Ts. E. Soil degradation and ways of predicting adverse situations in irrigation.//Soil science, 2001.
4. Bazarbayev A. T. and others. Environmental problems in the lower reaches of the transboundary rivers Shu, Asa, Talas. Scientific and practical conference dedicated to the 10th anniversary of the Interstate Coordination State Commission. Water 2002 Almaty − 2002, − pp.421-422.
5. Seitkaziev A. S., Salibaev S. J., Muzbaeva K. M., Baizakova A. E. Environmental assessment productivity improvement of saline soils in desert zones of Kazakhstan. Taraz, 2011, − 274 s.
6.Seitkaziyev Adeubai. .Shilibek Kenzhegali.Salybaiev Satipalde. Seitkaziyeva Karlygash. The Research of the Ground Water Supply Process on Irrigated Soils at Various Flushing Technologies // World Applied Journal 26(9):1168-1173.2013.
7.Seitkaziev A. S. Soil-ecological assessment of saline soils in the conditions of arid areas// materials of the international-scientific practical conference “Melioration in Russia –traditions and modernity” is dedicated to the 110th anniversary of S. F. Averyanov , Moscow,2013, pp. 162-170.
8.Khachaturyan V. H. Rationale for agricultural reclamation and environmental positions//of the Bulletin of agricultural science, 1990, − No. 5(404), pp. 43-48.

ЖАМБЫЛ ОБЛЫСЫ ЗЕРТТЕУ ТАНАБЫНДАҒЫ СҰР ТОПЫРАҚТАРДЫ ЭКОЛОГИЯЛЫҚ БАҒАЛАУ

А.С. Сейтказиев. А.К. Маймакова

Тұзданған сұр топырақтың алынған топырақтық-экологиялық мәліметтері негізінде, суармалы аймақтарда су ресурстарын тиімді пайдалану үшін, экологиялық-мелиоративтік шараларды жақсарту мақсатында терең қопсыту әдісі жасалынды. Топырақтың есептік қабатындағы қауіптілік деңгейін сипаттайтын экологиялық коэффициенттер анықталды.

Қарастырылған топырақтың тозу процестерін сандық бағалау үшін топырақтың есептік қабатындағы қауіптілік деңгейін сипаттайтын экологиялық коэффициенттер анықталды.

Тозған топырақты қалпына келтіру және оларды суармалы аймақтарда тиімді пайдалану үшін терең қопсыту, экологиялық-мелиоративтік жағдайларды жақсарту әдістері әзірленді және зерттелетін учаскені шаюдың оңтайлы нормалары анықталды.

Түйін сөздер: *топырақтың тозуы, экологиялық бағалау, агроклиматтық бағалау, ылғалмен қамтамасыз ету.*

ЭКОЛОГИЧЕСКАЯ ОЦЕНКА ИССЛЕДУЕМОГО УЧАСТКА СЕРОЗЕМНЫХ ПОЧВ ЖАМБЫЛСКОЙ ОБЛАСТИ

А.С. Сейтказиев, А.К. Маймакова

На основе данных по почвенно-экологическим условиям сероземных засоленных почв, для эффективного использования водных ресурсов в орошаемых зонах разработаны методы улучшения эколого-мелиоративных мероприятий на фоне глубокого рыхления.

Для количественной оценки деградационных процессов рассматриваемых почв были определены экологические коэффициенты, характеризующие уровень опасности в расчетном слое почвы. Для восстановления деградированных почв и эффективного их использования в орошаемых зонах разработаны методы улучшения эколого-мелиоративных условий на фоне глубокого рыхления и установлены оптимальные нормы промывки исследуемого участка.

Ключевые слова: *деградация почв, экологическая оценка, агроклиматическая оценка, влагообеспеченность.*