Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

ISSUES OF EFFICIENT LAND USE IN KARAKALPAKISTAN'S WATER SHORTAGE

Reimov Nietbay 1,
Utepbergenova Venera 2,
Reymov Ómirbay 3,
Xudaybergenova Nilufar 4,
Reymova Feruza5.

Abstract
In recent years, the process of land degradation in the Republic of Karakalpakstan is intensifying. The main reasons for this are the shortage of water, the decrease in water demand for agriculture by 39-41% in 1999-2001, by 50-55% in 2007-2010, and by 54-58% in recent years. pouring, worries humanity.

Keywords: Aral Sea, Karakalpakstan, water scarcity, saline soil, recultivation, degradation, soil, green landscape, limited water limit, agriculture.

Introduction

Decree No. PF-5742 of the President of the Republic of Uzbekistan, dated June 17, 2019, defined comprehensive tasks on measures for effective use of land and water resources in agriculture. In order to positively solve this problem, the Republic of Karakalpakstan within the Republic of Uzbekistan is located at the end of the main water body of the Amudarya and on the shores of the drying Aral Sea. In order to mitigate the bringig of up to 425–650 kilograms of dust-mixed salts to each hectare of our Republic due to the salinity of the irrigation water coming to the Republic and the fact that the water from the groundwater is also salty to a certain extent, time will tell that farming here is a very difficult issue.

United Nations Secretary-General Ban Ki-moon, who brought up the environmental situation in Karakalpakstan during his visit, the environmental situation in Karakalpakstan during his visit, said, "Having seen the ecological degradation in the island region with my own eyes, I am convinced that the situation in the region is very worrying." I have seen many ecological tragedies in the world, but I have not yet seen such a dangerous one. It is necessary for all the countries in the region to solve this global problem together," he said.

At the same time, regarding the environmental problem in Karakalpakstan, "Let the Aral Sea be a symbol of the destruction of our planet by mankind, and let it be a lesson for all of us to mobilize the entire international community in the implementation of the Paris Agreement on climate... so that the tragedies I saw in Uzbekistan do not happen again," United Nations Secretary General Antonio Guterres said.

Today, the land used for agriculture in the world is 4.0 billion hectares, but currently only 1.6 billion. Hectares of land are in active use. The remaining 2.4 billion hectares of land are degraded for various reasons (due to the active development of industry, lack of water, construction of new roads and railways, extraction of minerals and ores, etc.) and require cultivation.

In the conditions of water scarcity in Karakalpakstan, effective use of agricultural land and agro technology, re-use of degraded and unused land, introduction of crops resistant to water shortage in crop rotation systems, and development of natural and cultural pastures are urgent issues.

Ensuring the food security of the inhabitants of the Aral region, using the available resources to raise agriculture to a higher level, increasing the productivity of agricultural crops and increasing the soil fertility, adapting the previously cultivated crops and newly imported crops from other regions to our soil and climate conditions, water in Karakalpakstan taking into account the shortage, in order to develop the livestock-farming economy in the districts of the Republic suitable for livestock farming, for lives for   for livestock farming, it is urgent to develop the forage base, as well as other types of agriculture, for the effective use of land resources, to bring the lands that have been out of use for various reasons back into use for the national economy is an issue.

Relevance of the Topic

In Uzbekistan, including Karakalpakstan, the lack of water, the fact that the ecological balance does not fully meet the demand, the failure of the currently cultivated agricultural crops to produce the planned harvest, and the high price of flour, which is a grain product, force the planting of crops that require less water and have a positive effect on soil fertility.

According to the analyses of the experts around the world in the Republic, due to the low water demand for the Republic of Karakalpakstan, there is a lack of water, and no water is poured into the island at all. According to the estimates of world experts, the water shortage will increase by 15–17% in the future, the years of water shortage will be repeated, and by 2050, the current water supply may be reduced by five times. In this situation, the recultivation of abandoned agricultural lands in the Republic of Karakalpakstan, located in the Arol region, is one of the urgent issues.

The substance of the Matter

In order to prevent negative processes on the island and its shores, and to preserve the content of active livelihood, President Sh.M. Mirziyaev at the 48th session of the UN General Assembly and the 50th session of October 24, 1995 and the 72nd session of the UN General Assembly in 2017, representatives of the countries of the whole world and the Central Asian region called on the world community to help save Orol and it's an island. As a result, in 1996, the International Island

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

Rescue Fund (IRFIF), which was founded by Uzbekistan, Kazakhstan, Tajikistan, Kyrgyzstan and Turkmenistan, was established and many useful decisions were made. Of course, in order to prevent pollution of the environment from the salt in the snow of the Aral Sea, which is drying up due to these coastal activities, plantations of various salt-tolerant and fast-growing plants were established under the personal leadership of the President of the Republic of Kazakhstan on about 2 million areas that were exposed to water. As a result of this auspicious work, the number of dust storms, which bring dust-silt-salt mixtures, which are frequent in the Republic of Karakalpakstan in recent years, has decreased, and the air content has been cleaned to a certain extent.

Results of the Experiment

Previously, the rice and cotton crops planted in Karakalpakstan were useful crops from an economic and strategic point of view, but in the Republic, especially in the northern and western districts, there is a lack of water during the implementation period, the unevenness of the land, the mechanical composition of the soil does not fully meet the requirements, and the low amount of the agronomically valuable fraction of the soil at the time of planting in early spring. Due to the low temperature, the need for recultivation of the soil due to the degradation and abandonment of the land, the low use of crop rotation, and the decrease in the productivity of the natural and cultural pastures that provide livestock with food, the planned harvest is not being obtained from the agricultural crops that are being planted. For example, rice is a crop that is constantly in water, so it does not produce at all, while cotton, due to a lack of water, produces white flowers from the top and chokes the crop.

In the experiment conducted by prof. N. Reimov on the effectiveness of different land leveling methods, in order to determine the effect of different land leveling methods on the productivity of the Chimboy 5018 variety, the average salinity of the "Seyfil" massif in the "Bakhtl" QFY area of Chimboy district was determined. It was carried out on meadow alluvial soils. In the experiment, the unevenness of the land was leveled to ± 3-5 cm.

In the unleveled control method of the experiment, by the 1st of September, the plant height was 89.7-96.3-99.0 cm in proportion to the years, and the number of harvested branches was 10.2-11.6-11.7 pieces. If the number of pods was 7.0-7.7-8.0 cm, in the 2nd method of simple current leveling, the plant height was 96.3-97.3-98.3 cm, and the yield of the number of branches was 12.9-13.8-14.2 units, and the number of pods was 7.9-8.4-8.8 units, compared to the control method.

In the 3rd method of capital leveling in the experiment, the height of the plant is 100.3-103.6-106.0 cm, the number of branches is 13.5-14.4-14.4, and the number of pods is 8. It was 3-8,8-9,2 pieces.

The highest values were observed in the laser leveling method; the plant height was 13.8–10.2–9.0 cm compared to the control method; the number of harvested branches was 3.8–3.2–3.9 per grain; and it was found that the number of cells was 1.7–1.7–1.4 more.

When determining the effect of different land leveling methods on the productivity of the Chimboy 5018 cotton variety, an average yield of 19.1 c/ha was obtained in the unleveled (control method) next year, while in the current leveling, the cotton yield was 27.2 c/ha. In the capital leveling method, an additional yield of 9.7 was obtained compared to the control and 1.6 c/c compared to the current leveling method.

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

In the experiment, in the control method, an average yield of 19.1 chapter hectare was obtained over the years, and we believe that the relatively low yield was caused by the unevenness of the land, the lack of water supply compared to other years of the year, and the unfavorable weather.

When determining the effect of different land leveling methods on the productivity of the Chimboy 5018 cotton variety, in 2015, in laser leveling, the average yield of unleveled (control method) was 20.8 c/ha, while in the current leveling, the cotton yield was 26.7 c/ha.. The capital leveling method yielded 29.3 c/ha, the laser leveling method yielded 32.7 c/ha, 11.9 c/ha compared to the control, 6.0 c/ha compared to the current leveling method, and 3.4 c/ha compared to the capital leveling method. An additional harvest was obtained.

The number of cotton plants is 107,000, the average height of cotton is 106 cm, and the yield is 31.4–36.7 c/ha during the experimental years. The average yield is 33, which is equal to.6 c/ha.

The cotton yield was 12.5 c/ha higher than the control method without leveling, 6.8 c/ha compared to the method with current exploitation works, and 9.1 c/ha higher than the method with capital leveling operations.

The net profit obtained from different land leveling methods is 137.2 thousand soums/ha in the unleveled control method, 216.2 thousand soums/ha in the current leveling method, 333.8 thousand soums/ha in capital leveling, and 333,000 soums/ha in the laser leveling method. It is equal to 8 thousand soums/ha, and the laser leveling method was found to be the most effective among the various error leveling methods.

When we analyzed the scientific research, it was proven in our research that there was very little difference between the amount of work done on leveling the fields and the costs used for it from an agro technical and economic point of view.

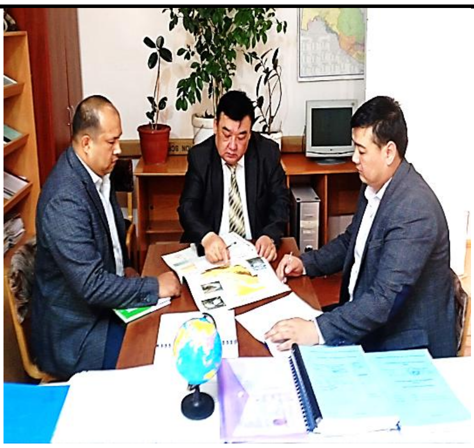
In conclusion, it is necessary to include laser leveling software in the agrotechnology system of agricultural crops instead of current or capital leveling work.

Based on the obtained data, it can be concluded that it is necessary to fully recommend the production of laser land leveling.

The soil of the Republic of Karakalpakstan has a low amount of humus and vegetation, and due to the insufficient application of manure to the field, the fertility of the soil, including its graininess, is very low. In this region, the issue of creating granular soil during the preparation of land for planting in the spring is urgent. Due to the low humus content of the soil, it dries up quickly if it is not plowed, and in the planting contours, lumps appear in the amount of 55–60% of the mechanical composition of the general soil, which harms planting.

In agriculture, with the appearance of equipment that connects work equipment operations, it is very necessary to level it for intensive use of land, the size of which is 0.25–10 mm. the beneficial effect of softening factors increasing the volume of agronomical valuable fractions up to Under the influence of tractors passing the field several times, it compacts the soil, reduces the physical properties of the soil, and, in most cases, reduces the level of efficiency.

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781



One of the effective methods of preparing the soil for planting, increasing work efficiency, and reducing the level of adverse effects of agricultural machinery is the use of complex and large-area processing aggregates in one pass. Multiple tasks are performed during one pass of the tractor when using comprehensive and combination aggregates, which combine most methods of agricultural crop care and fully utilize the tractor's pulling capabilities. An experiment was conducted with the help of milling cultivator KFG-3,6 to improve the technology of increasing the yield of crops and soil fertility in the rotation system. The soil of the experimental site is a grassy alluvial soil that has been irrigated since ancient times. It is medium loam according to its mechanical composition and moderately saline. Seepage waters are located at a depth of 2.–2.3 meters from the ground level.

KFG 3.6 cm of aggregate soil with the help of shovels. ha and softens up to 18–23 cm using deep softeners and 10–13 cm. milling the soil with the help of an equipment milling machine.

The better the soil granularity, the less moisture is lost lost through the capillary system. Due to the fact that the amount of small soil fractions, agronomical valuable fractions, which are very important for the life of plants, reached 80–86%, sprouts germinated evenly and began to develop quickly in the method treated with KFG-3.6 aggregate.

Analyzing the data obtained from the study on the effect of the study on soil water-physical properties, emergence of sprouts, and growth and productivity of cotton, after plowing the land three times, the amount of soil aggregates measured 10-0.25 mm at the time of planting, i.e., the amount of agronomically valuable aggregates was 63.5%. The measurements at the time of planting with KFG-3.6 and grinding were 10-0. The amount of soil aggregates of 25 mm is 76.9%, and the amount of soil aggregates with dimensions of 10-0.25 mm during planting with KFG-3.6, that is, agronomic rare soil particles, reached 83.2%.

After plowing the soil, the level of compaction of the soil was equal to 0.43 MPa when it was worked with a harrow and trowel three times in the usual way, and when the soil was treated with KFG-3.6, leveled with a trowel, and compacted before planting, it was 0.34 MPa, equal to 0.41 MPa when the soil was worked with KFG-3.6 equipment and compacted with a roller. If 0.40–0.41 MPa is necessary for the normal growth of agricultural crops, then soil compaction with KFG-3.6 equipment and a roller is a very necessary method for plant seed germination. As a result of the research, 3.7 c/ha compared to the control when pre-sowing soil cultivation with KFG-3.6 milling deep softener cultivator and trowel and soil cultivation with KFG-3.6 milling deep softener cultivator and roller compared to the control method an additional yield of 5.2 c/ha was obtained. That is, in the method of pre-sowing soil cultivation with a KFG-3.6 milling deep softener cultivator and a roller, 1.5 c/ha additional cotton yield was received compared to the method of pre-planting soil cultivation with a KFG-3.6 milling deep softener cultivator and a trowel.

After plowing the soil, the average yield of cotton for three years was 30.6 c/ha when the soil was worked three times with a harrow and a trowel. Before planting, when the soil was treated with KFG-3.6 and leveled with a trowel, the yield was 34.3 c/ha, while when the soil was treated with

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

KFG-3.6 equipment and compacted with a roller, the yield was 35.8 c/ha.
In the experiments conducted on increasing the areas of corn, sesame, millet, beans, mash, and alfalfa that require less water instead of water-intensive agricultural crops by analyzing the issues of specialization in the conditions of water scarcity in the Republic of Karakalpakstan, the total income received when planting cotton was 13,640,000 soums, while 23,500,000 soums were earned when growing corn from crops that require little water, that is, 9,400,000 soums compared to cotton cultivation and 1,360,000 soums for alfalfa cultivation. It was proven that 610 thousand soums more profit will be obtained when sesame is grown.

The total income from planting crops that require a lot of water—cotton, wheat, rice, and sorghum—was 32 million, 890 thousand sums, and 62 million, 50 thousand sums from crops that require little water—sorghum, sesame, millet, and alfalfa. 29,160,000 soums more income was obtained from crops that require less water than from crops that require a lot of water.

Irrigation water used for crops that require a lot of water—cotton, rice, wheat, and oleander crops—totaled 41.8 thousand cubic meters, while irrigation water used for growing crops that require less water—corn, millet, sesame, and alfalfa The data from our scientific research proved that 23.0 thousand cubic meters of water are saved, for a total of 18.8 thousand cubic meters.

It is necessary to strengthen the material and technical bases of agriculture and water management.
It is necessary to develop non-traditional areas of agriculture (beekeeping, fishing, etc.).

In order to effectively use land resources in conditions of water scarcity, specialization should be carried out depending on the water supply of the place.

Based on the estimates of world experts, in conditions where the water supply is expected to decrease by 15–17% by 2050, it is advisable to increase the agro cluster activity in the Republic of Karakalpakstan on the coast of the island, plant food crops that require little water, and expand the size of livestock.

In the research years in the Republic of Karakalpakstan, cotton, rice, and other water-loving plants, which require a lot of water and have reduced areas, used 7 ha of millet, 6 ha of sesame, or 1 ha of water used to grow rice (24.6 thousand m3). Since it is possible to grow alfalfa on 4.4 hectares or sorghum on 4.6 hectares, it is necessary to expand the area of agricultural crops that require little water: sorghum, sesame, millet, beans, mash, and alfalfa. In the livestock sector, all types of large-horned cattle increased by 101.3%, horse breeding by 114.2%, horse breeding by 102–124%, poultry breeding by 107.0%, egg production by 116.7%, wool production by 109.8%, and honey production by 112.9%. Due to the fact that the amount of fish caught increased by 123,6%, and cocoons increased by 112%, we suggest making changes to the specialization plans for efficient use of land.

Field experiments were conducted by doctoral student Reimov Omirbay to determine the efficiency of cultivating land through cultivation. Experimental field on the farms "Atabay Mukhtar," “Kaharman Taxta," and "Torangil Say" in the village of "Agitay Adilov," Takhtakópir District, Republic of Karakalpakstan. With the help of a bulldozer, a scraper, and a laser leveler, the bottoms of them were leveled from 77–81 cm to 0–5 cm. After cultivation, all agro-technological works were carried out without changes according to the technological map of the planted crops.

In the experiment that assessed the effect of land cultivation methods on the yield of sorghum, in the control method with simple cultivation, the yield of sorghum was obtained from 23.6 centners to 25.6 centners per hectare. Among variant returns, the highest yield (25.6 c/ha) was obtained in the fourth return and the lowest yield (23 c/ha) in the third return.

The dried wild grass collected from the field of the experiment was crushed, sanded, and cultivated. According to the results of the experiment, the yield was from 25.1 cents to 26.4 cents per hectare, and the average return of the experiment was equal to 25.8 cents. Among variant returns, the highest yield (26.4 c/ha) was obtained in the fourth return and the lowest yield (25.4 c/ha) in the third return. An additional 1.2 c/ha of sorghum yield was obtained from the method of grinding and cultivating dry stalks. This indicator shows that the soil of our republic is very low in nutrients and low in fertility.

In our experiment, cultivation was carried out and gung was given at the rate of 30 t/ha (the third method). According to the results of the experiment, the yield of hemp was obtained from 27.0 centners to 29.4 centners per hectare, and the average return of the experiment was equal to 28.3 centners. Among variant returns, the highest yield (29.4 c/ha) was obtained in the fourth return and the lowest yield (27.0 c/ha) in the third return. In the method of recultivation and 30 t/ha of gunk per hectare, compared to the method with only recultivation, ± 3.7 cents more grain yield per hectare was obtained.

In the fourth method of the experiment, i.e., recultivation, gunk was given at a rate of 30 t/ha per hectare, and ammophos was given at a physical weight of 300 kg (the third method). The experimental returns ranged from 30.8 centners to 32.3 centners per hectare, and the average of the four experimental returns was equal to 31.7 centners. In the method of recultivation and 30 t/ha of gunk per hectare, compared to the method with only recultivation, the yield of 3.4 cents per hectare was increased. In the method with recultivation and no recultivation, 5.9 t/ha of dried wild grasses were crushed and sanded. Compared to the first control method, an additional yield of 7.1 c/h was obtained.

32 million 890 thousand soums were earned from planting crops that require a lot of water-cotton and rice—and 62 million 50 thousand soums were received from crops that require less water—sorghum, sesame, millet, and alfalfa. 29,160,000 times more income was obtained from crops that require less water than from crops that require a lot of water.

Irrigation water used for crops that require a lot of water—cotton, rice, winter wheat, and sweet potato crops—totaled 41.8 thousand cubic meters, while irrigation water used for growing crops that require little water—corn, millet, sesame, and alfalfa—totaled 18.8 thousand cubic meters. 23,000 cubic meters of water are saved per cubic meter, according to the data from our scientific research.

In conditions of water shortage, the total income received when planting cotton was 13 million 640 thousand soms, while growing sorghum from crops that require less water received 23 million 50 thousand soms, i.e., 9 million 400 thousand soms compared to cotton cultivation and 1 million

360 thousand soms for alfalfa cultivation. It was proved that 610 thousand soms more profit will be obtained when sesame is grown.

In the research years in the Republic of Karakalpakstan, in the case of cotton, rice, and other water-loving plants, which require a lot of water and whose areas are reduced, 7 ha of millet, 6 ha of sesame, 4.4 ha of alfalfa, or 4.6 ha of sorghum can be grown with 1 ha of water used to grow rice. Due to this, we suggest expanding the areas of agricultural crops that require little water: corn, sesame, millet, and alfalfa.

In Uzbekistan, including Karakalpakstan, it will be necessary to return to active use the lands that have gone out of active use due to degradation and to prevent the degradation process.

In order to maintain the ecological, economic, and social stability of abandoned lands, it is desirable to put them back into use through cultivation.

In the second method of the experiment, during the cultivation works, the dry sedges collected from the contour (81 kg in 20x20=400 meters and 2025 kg per hectare) were crushed and sanded, and an average yield of 25.8 centners per hectare was obtained. The obtained net profit was equal to 3 million 949 thousand soms, and the level of profitability was equal to 32.8%.

In the third method of the experiment, an average yield of 28.3 quintals per hectare was obtained from the experimental returns from the method of gung at a rate of 30 t/ha during cultivation. The obtained net profit was equal to 4 million 666 thousand sums, and the level of profitability was equal to 36.2%.

In the fourth method of the experiment, i.e., cultivation, gunk was given at a rate of 30 t/ha and amorphous was given at a physical weight of 300 kg, and an average yield of 31.7 cents per hectare was obtained. The obtained net profit was equal to 5 million 774 thousand sums, and the level of profitability was equal to 41.6%.

The net profit was 2 million 178 thousand soms, and the yield rate was equal to 25.3% when the "Langar" variety of wheat was planted and cultivated, but no additional fertilizer was given. With the natural fertility of the soil, i.e., without fertilizer, the yield was 43.1 t/ha.

In the second method, after the cultivation work, the dried straws collected from this contour (81 kg in 20x20 = 400 meters and 2025 kg per hectare) were crushed and sanded, yielding 46.0 t/ha of wheat. The net profit was 2 million 577 thousand soms, and the rate of return was equal to 28.8%.

Cultivation was carried out, gung was given at a rate of 30 t/ha per hectare, and amorphous was given at a physical weight of 300 kg. The net profit of 54.8 t/ha of the wheat variety "Langar" was 3 million 8227 thousand soms, and the rate of profitability was 38.6%.

After the reclamation works, the dried grass stalks collected from this contour were crushed and sanded (81 kg per 20x20 = 400 meters and 2025 kg per hectare). The net profit obtained when growing 46.7 cents of alfalfa grass per hectare was equal to 3 million 319 thousand soms, and the profitability level reached 39.7%.

After the cultivation works, the net profit obtained when growing alfalfa for 49.4 cents of hay per hectare was equal to 3 million 829 thousand soms, and the level of profitability reached 34.9%.

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

Cultivation was carried out, gung was given at a rate of 30 t/ha per hectare, and amorphous was given at a physical weight of 300 kg. The net profit obtained when growing alfalfa for 52.7 cents of hay per hectare was equal to 4 million 459 thousand soms, and the level of profitability reached 51.1%.

In the cultivation of the abandoned lands in the Republic of Karakalpakstan, without additional measures (the use of organic and mineral fertilizers and crushed weeds as fertilizers), the yield of 24.6 tons/ha of wheat is 3 million 425 thousand soms/ha, and the yield of 43.1 tons/ha of wheat is 2 million 178 thousand sums/ha, and for 43.4 ts/ha of alfalfa hay crops, 2 665 thousand sums/ha net profit is obtained per hectare.

At the time of cultivation, without spending money on mineral and organic fertilizers, when using the organic fertilizers that overcame the contour of this place as fertilizer, a yield of 25.8 cents of wheat was obtained, the net profit was 3 million 949 thousand soms per hectare, and the yield of wheat was 46.0 t/ha. The profit is 2 million 577 thousand soms per hectare, and the net profit obtained when growing 46.7 cents of alfalfa grass per hectare is 3 million 319 thousand soms. In the third method of the experiment, during cultivation, an average yield of 28.3 cents per hectare was obtained by applying gunk at a rate of 30 t/ha. The net profit was 4,666,000 soums, and 49,2 c/wheat was harvested; the net profit was 2,929,000 soms; and the net profit was 3,829,000 soms per hectare for alfalfa for 49.4 cents of hay.

At the time of cultivation, an average yield of 31.7 cents per hectare was obtained by applying gunk at a rate of 30 t/ha and amorphous at a physical weight of 300 kg. The net profit from planting haze amounted to 5 million 774 thousand soums; the net profit obtained from wheat (54.8 ts/ha) was 3 million 8227 thousand soms; and the yield of alfalfa was 43.4 ts; the net profit from alfalfa was 2 665 thousand soms/ha. Analyzing the scientific research carried out by Venera Utepbergenova, an independent researcher on increasing the productivity and area of cultural pastures in Karakalpakstan, it is possible to see the promising, multi-year production of sorghum from low-water, fertile pasture plants. "Azamat" variety gives a good yield in conditions of water shortage. For the Vakhsh-10 variety of sorghum, which can be harvested a lot, it is determined that it is necessary to breed ryegrass plants in cultural pastures**.**

Beruniy Karakul Cluster LLC, Karauzyak Karakul Cluster LLC, Ustyurt Karakulchilik Cluster LLC, and Panaev S. Karakulchilik Cluster LLC are carrying out important work on increasing the productivity of cultural pastures. In the scientific research of the independent researcher Reymova Feruza, scientific results were obtained on the testing of varieties of spring wheat (Intensive, Hazrati Bashir, and Janub Gavkhari) in the conditions of the Republic of Karakalpakstan. He proved that 32.6 c/ha was obtained from the intensive variety of spring wheat, 38.7 from the Hazrati Bashir variety, and 38.2 c/ha from the Janub Gavhari variety. Shundak tested the possibility of yielding white and yellow corn in the Republic of Karakalpakstan in a field experiment. To preserve the natural pastures that are deteriorating due to the lack of water reaching natural pastures in our republic, climate change, salinization of the land, livestock grazing in pastures without pretending to take turns. In the conclusions of the scientific work of the doctoral student Jaksibay Kalimbetov, who is conducting scientific research on the development of natural pastures, it is recommended to alternately feed livestock in the fields of natural pastures, allow the plants in the pastures to grow, use the fields of natural pastures in several parts, as well as use artesian and other underground water in the areas of natural pastures, which proved to be the basis for effective use of natural pastures.

Taking into account the water shortage in Karakalpakstan, global climate change, salinization, and degradation of land, the project of planning agricultural crops that can provide the planned harvest in the conditions of water deficit and salinity of the soil and maintain soil fertility. According to the information obtained by Nilufar Khudaybergenova, a doctoral student who is conducting scientific research, the advantages of designing leguminous crops in the first stage of crop rotation are mash, beans, alfalfa, and clovers, and in the second stage of crop rotation, oats, sesame, spring wheat, and millet.

References

1. The decision of the President of the Republic of Uzbekistan dated January 28, 2020 No. PQ-4574 "On ensuring the improvement of the efficiency of the use of land and water resources in the sustainable development of agriculture and the use of environmental protection systems". Tashkent. January 28, 2020.

2. Реимов Н.Б. и др. Сохранение, повышение плодородиа почвы и улучшение агроэкологии в Каракалпакстан. //Материалы ИВ Европейской конференции по сельскому хозяйству проведенноее по инициативу ассоциации перспективных исследований и высшего образование. "Восток-Запад". Austria. Vienna. December 23.2014.

3. Reimov N.B., Utepbergenova V.M. Development of Cultivated Pastures in the Ecological Crisis and Water Deficiency in the Aral Sea Area. //EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal. Volume: 7| Issue: 12| December 2021|| Journal DOI: 10.36713 || SJIF Impact Factor 2021: 8.047. pp. 296-298. 2021 5 papers

4. Reimov N.B., Kdirbaeva G.U. Issues of agricultural specialization and improvement of crops agrotechnology in the Aral Sea region. Epra international journal of "Research & development". Sjif impact factor 2021: 8.013| isi i.f.value:1.241| journal doi: 10.36713/. (ijrd). 147-148 pp. 24-12-2021.

5. Reimov N.B., Reimov O.N., Djolımbetov O.N., Reymova F.N. Methods of controlling the growth of flax on reclaimed land. Recommendation. Nókis 2022. 1.25b/t.

6. Reimov N.B., Utepbergenova V.M. Deficiency of cultural conditions for improved plants. //British Journal of Global Ecology and Sustainable Development Volume-16, May, 2023 ISSN (E): 2754-9291, SJIF-5,576, JIF -8,355, 111-113 pp.

Volume 3, Issue 2, February - 2025
ISSN (E): 2938-3781

7. Reimov N.B., Kdirbaeva G.U. Improvement of agricultural specialization in Karakalpakstan during water shortage. Bulletin of Khorezm Ma'mun Academy. 2023-6-1. June issue. OAC-listed journal). Pages 211-215.
8. Реимов Н.Б., Кдырбаева Г.У. Повышение эффективности использования земель путем усовершенствования специализаций сельского хозяйства. //Журнал «Актуальные вопросы современной науки.#1(136). 2024 г. ИСБН-1680-2721. Журнал официально включен в перечень журналов ВАК Республики Узбекистан. http://www. Sputnikplus.ru. E-mail: print @sputnikplus.ru 109428, str 34-37.
9. Reymov O.N., Reymova F.N., Reimov N.B., The need for efficient land use during water shortage in Karakalpagistan. // Web of Agriculture: Journal of Agriculture and Biological Sciences. Volume 2, Issue 1, January 2024. ISSN (E): 2938-3781.38-42pp.
10. Reimov N.B., Kdyrbaeva G.U, Reimov O.N Increasing the efficiency of land use in agriculture// Scientific-practical-innovative magazine "Uzbekistan zamini- Lahd of Uzbekistan". 2023 issue 4. Pages 46-51. Publishing house of "Uzdaverloyiha" Institute of Scientific Design.
11. Reimov N.B., Kudaybergenova N.B. Inclusion of water-tolerant crops in crop rotation systems under conditions of water scarcity. //In an International Conference - Scientific Conference. Moscow Russia. Date: 10.08.2023 ISSN(E):2835-5733 SJIF:5.111. on pages 46-53.

INFORMATION ABOUT THE AUTHORS;

Reimov Nietbay Baynazarovich – Professor of the department «Water management and land use» of Karakalpakstan Institute of Agriculture and Agrotechnologies, doctor of agricultural sciences, professor. Academician of the Turan Academy of Sciences;
Utepbergenova Venera Makhsetovna - Independent researcher, assistant of the department «Water management and land use» of Karakalpakstan Institute of Agriculture and Agrotechnologies;
Reimov Omirbay Nietbaevich - Independent researcher, assistant of the department «Water management and land use» of Karakalpakstan Institute of Agriculture and Agrotechnologies;
Khudaybergenova Nilufar Bakhtiyarovna - 3nd stage basic doctoral student of Karakalpakstan Institute of Agriculture and Agrotechnologies;
Reymova Feruza Nietbaevna - 3nd stage basic doctoral student of Karakalpak State University