



DEVELOPMENT OF CULTURAL PASTURES UNDER THE ENVIRONMENTAL CRISIS AND WATER DEFICIENCY IN THE ARAL REGION

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ABSTRACT

The ecological situation has changed in Karakalpakstan. In 2000-2001 and even other separate years, there was an extreme shortage of irrigation water, which led to a sharp decrease in the productivity of leading crops such as cotton, wheat, rice, vegetables, melons, etc. According to international experts, this phenomenon may repeat itself in the future. Under such extreme climatic circumstances, it is advisable to develop cultivated pastures for animal husbandry.

KEY WORDS: Aral Sea region, Republic of Karakalpakstan, extreme climate, water deficit, saline soil, harvest, Aral Sea, agriculture, Amudarya, Syrdarya;

INTRODUCTION

The Republic of Karakalpakstan is located between three deserts (Karakum, Kyzylkum and Ustyurt) and at the very end of the central irrigation system of the Amudarya River. Therefore, there is a tense situation associated with the distribution of water resources. Therefore, not all plants in such soil and climatic conditions are able to grow and give a good harvest [3].

For example: in 2000-2001. and other separate years in Karakalpakstan, an extreme lack of water was felt in the fields, which led to a sharp decrease in the productivity of leading crops such as cotton, rice, etc. [5]. According to international experts, this phenomenon may be repeated in the future.

The Aral Sea, which belonged to Uzbekistan and Kazakhstan, occupied the fourth place among the lakes and therefore it was called the sea. Since the 1990s, Kazakhstan and Uzbekistan, from the rostrum of the United Nations and other international and regional organizations, have constantly attracted the attention of the world community and the inhabitants of the globe to the Aral Sea problem [1,2] and its close relationship with the issues of regional and global security.

PURPOSE OF RESEARCH

To solve the essence of the problem, we conducted a specific comparative mathematical comparative analysis for the period 1991 - 2021. The main goal of our analysis is mainly to soften the situation in the Aral Sea region, for this it will be necessary. Develop a forage production strategy based

on the strengthening of cultivated pastures in Karakalpakstan for the development of livestock.

MATERIALS AND METHODS

Until the 1960s, the Aral was the largest commercial fish reservoir in Central Asia with an annual catch of up to 40,000 tons of fish. The level of the water surface of the Aral was almost 80 m above the level of the Caspian Sea. It was 428 km long and 234 km wide, with a maximum depth of 69 m and a volume of 1064 cubic km. The Aral Sea zone was considered a region with a large variety of flora and fauna [2].

The Aral Sea at one time served as a climate-regulating reservoir and softened sharp fluctuations in the weather throughout the region. The air masses that invaded the region warmed up in winter, and cooled over the sea in summer [2,3]. Due to the negligence of mankind, negative factors appeared in the region, of which the first one was the Aralkum desert with an area of 5.5 million hectares. The second is that the local climate in the Aral Sea region has changed. Third - to maintain a continuous flow of water, highly mineralized drainage and domestic waste waters were discharged into the Amu Darya and Syr Darya [2]. The fourth is the lack of drinking water, the growth of dangerous diseases, the deterioration of living conditions, the reduction in employment opportunities and migration to other countries [5]. Fifth - the productivity of the main pastures is reduced and the sixth - there is a decrease and disappearance of wild plant and animal species.

If the current situation in the Aral Sea region is not regulated taking into account water availability, this can cause



crop losses, which, with demographic growth, will pose a serious risk to food security [5].

RESEARCH RESULTS AND DISCUSSION

In the Republic of Karakalpakstan, due to the extreme climate and lack of water, as well as salinity of the soil, there is sparse vegetation. Based on research, it was found that licorice, wild alfalfa, wild clover, reed, sorghum, azhrik, cherkez, kandym, keurek, zhuusan, etc. grow mainly on cultivated pastures. However, these crops are limited to certain yields. Therefore, according to the established program, we studied the influence of the cultivation of certain species and varieties of non-traditional crops such as sorghum. We mainly studied new varieties of sorghum as a perennial and multi-cut forage variety "Azamat", a multi-cut grain-forage variety "Vakhsh 10" and a multi-cut variety of Sudanese grass "Chimbayskaya-Yubileynaya".

Among the studied crops, in terms of yield and duration of cultivation, the multi-cutting promising variety "Azamat" was distinguished, which in the first year of cultivation provided 3 cuts and an average of 687 centners/ha of yield in each. From the very beginning of cultivation, this variety has been producing a stable increasing yield every year for the 3rd year. The following years provided 4 cuttings of 691 c/ha of crop and 1 aftermath.

Also, to enhance the fodder return of cultivated pastures, the sorghum variety "Vakhsh 10" turned out to be suitable for animal husbandry, which gave 3 mowings of 367 centners / ha in each mowing, the sorghum variety "Vakhsh 10" and the Sudanese grass variety "Chimbayskaya-Yubileynaya" gave 4 mowings, which in each provided 467 c/ha of green mass. In addition, these crops provided 1 grazing aftermath. Indeed, under such circumstances, it will be necessary to develop and expand the areas of these salt-tolerant and high-yielding crops. Since, according to international experts, approximately 11-13% of the total remains from the Aral Sea, and until 2017, 16.5 million tons of salt and dust precipitation annually rises from the bottom of the dried bottom of the Aral Sea and falls on 1 hectare of the land of the Southern Aral Sea on average 425 -650 kilograms of salt and dust precipitation, i.e. increases the degree of salinization processes [2,3]. In addition to these, these crops are less drought-resistant crops than cotton and rice. According to the forecast, by 2050 the volume of river flow in the Amudarya river basin will be reduced by 10-15% and the Syrdarya by 2-5% [4]. The number of dry years and the number of years with drought will increase with the loss of runoff up to 25-40%, which will cause a sharp increase in water demand and a worsening of water scarcity [4]. Under such a situation, these crops to improve the ability of cultivated pastures to provide livestock with green belts.

Seeing the consequences of the ecological crisis in the Aral Sea region, the UN Secretary General Ban Ki-moon said, "I was personally convinced of the complexity of the ecological situation in the Aral Sea region. This is a serious warning for all mankind. This global problem must be solved jointly by all the states of the region."

CONCLUSIONS

1. It is necessary to increase the sown areas of high-yielding crops as a new perennial promising variety "Azamat", as a high-yielding and drought-salt-resistant sorghum variety, capable of producing a good harvest in conditions of irrigation water shortage. This variety provides 4 cuts of the crop at 691 c/ha each and 1 aftermath.
2. To enhance the fodder return of cultivated pastures for animal husbandry, it is necessary to sow the sorghum variety "Vakhsh 10" which gave 3 mowings of 367 c/ha in each mowing, the sorghum variety "Vakhsh 10" and the Sudanese grass variety "Chimbayskaya-Yubileynaya" gave 4 mowings, which in each provided 467 c/ha of green mass. In addition, these crops provided 1 grazing aftermath.
3. It is necessary to continue work on the formation of natural landscapes on the bottom and the Aral Sea area of natural and cultivated pastures to increase the volume of animal husbandry, as well as to prevent the rise of salt and dust precipitation from the surface of the dried seabed.
4. For the full development of the dried bottom of the Aral Sea and the creation of a microclimate at the bottom of the Aral Sea region, it will be necessary to continue the development of forest plantations with crops of drought-resistant trees and shrubs (saxaul, selenium, chogon, turanga, zhuusan, etc.) and thereby organize new pastures in desert and cultivated areas.
5. In order to create new pasture places in desert and cultivated areas, as well as to create a microclimate on the dried bottom of the sea and the Aral Sea region, it is necessary to form more fountains from underground spring waters.

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