

Methods For Enhancing The Vegetation Cover Of Desert Pastures

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Abstract: Measures to improve the condition of desert pastures in arid areas, such as water, air (rain, disco), nutrition (local, mineral fertilizers), weed control, tillage, seeding, etc.

Keywords: desert, hill, plant, pasture, yield, shrubs, semi-shrubs.

Introduction

An important branch of animal husbandry of the Republic is the area adapted for year-round use of pastures of desert and hilly regions. It is necessary and important to use pastures efficiently, that is, to know every inch of land at your disposal, to know well the plant species distributed in natural pastures, to know the laws of development of pasture plants.

Characteristic features of pastures are that their food reserves are very low (1.5-3.6 ts / ha per hectare) and in terms of use are mainly seasonal, highly variable by years and seasons, and water sources (wells, pipes, boreholes, etc.) is directly related to the supply.

Pasture areas used in animal husbandry are not evenly distributed across the provinces. In this regard, Navoi region and the Republic of Karakalpakstan occupy the highest position. Farms in Bukhara and Kashkadarya regions also have 2.6 and 1.5 million hectares of pastures, respectively.

The existing pastures and hayfields in the country are located in 4 natural regions (desert, hills, pastures): in the desert region their share is 78.1 hills -15.2, mountain -4.5 and pastures -2.2%.

If we look at the current state of pastures, it is clear that about 40% of the land used for karakul farming is in crisis at various levels. In particular, in Navoi region - 43.8%, in the Republic of Karakalpakstan - 43.4%, Bukhara - 37.6%, Samarkand, Kashkadarya, Jizzakh regions - 23.4-25.4%.

As a result of the pasture crisis, their forage yields have also declined significantly over the last 10 years, from 2.4 quintals per hectare to 1.8 quintals per hectare, or 21%.

The decline in productivity across the regions is as follows: Karakalpakstan - 27, Bukhara - 18.5, Jizzakh - 16.9, Navoi - 26.5, Samarkand - 11.0, Kashkadarya - 6.2, Surkhandarya - 17.4%.

The factors contributing to the crisis are also, of course, diverse: including their total number of more than 45, 87% of which are directly related to human activities; the remaining 13% are natural processes. For example, the highest crisis (about 44%) is due to changes in plant cover; the rest (56%) are the influence of accumulative factors, including deflation (sand migration) -12%, salinity -9%, water erosion -6%, man-made and other factors 31%.

Every 10 years, pasture productivity indicators change as follows: 3 years - yield; 4 years - medium yield; and 3 years - low yields. Also, pasture yield and forage nutrient content vary not only over the years but also throughout the seasons.

It is obvious that improving the condition of pastures is a very important issue.

It should be noted that as a positive result of many years of research by scientists of the Research and Production Center "Botanics", Uzbek Forestry Research Institute and other scientific institutions, a system of methods of surface and radical improvement of pastures and agro-technical measures for practical application of these methods.

Surface improvement of pastures means the application of a system of methods aimed at improving the water-physical properties of the soil in areas with useful seed plants that have not developed well or insufficiently in the vegetation, but have not lost their ability to germinate, with almost no damage to their natural vegetation cover.

The advantage of superficial improvement from the economic point of view is cheaper, and its implementation does not require complex tools and mechanisms.

Although the system of surface improvement of pastures consists of a relatively large number of measures, in arid regions there are only a few of them, namely, improvement of water, air regime (storm, disco), nutrition (local, mineral fertilizers), weed control, without tillage only measures such as seeding can be effective.

When applying superficial improvement measures in desert areas, good results are obtained first by removing foreign, inedible plant species, and then by storming, sowing the seeds of nutritious plants, and feeding measures when possible.

Currently, the most effective way to improve the condition of pastures is to radically improve them.

During the radical improvement of pastures, the soil in the crisis part of it is cultivated in the form of zones (strips) and pasture agrophytocenoses (crops) are established. Establishment of agrophytocenoses allows performing 3 types of tasks simultaneously:

- Pasture productivity increases;
- Food quality improves,
- The total number and variety of plants in the vegetation cover increases sharply.

The following system of effective measures has been developed to radically improve the condition of pastures in desert areas:

- Establishment of autumn-winter pastures on hills;
- Establishment of reserves;
- Establishment of pasture agrophytocenoses that allow the use of pastures in different seasons

The essence and necessity of establishing autumn-winter pastures in the hills is that the autumn-winter months create many difficulties in grazing cattle due to the absence or lack of shrubs and semi-shrubs, although the hill pastures are relatively high-yielding and mostly highly nutritious species.

In order to overcome this shortcoming of hill pastures, first of all, wells, which are in crisis, vegetation is dominated by weeds such as fungus, white sorghum, incense, areas close to settlements, and most of them are semi-shrub species (black saxaul, pig, izen plant), pasture, wormwood, teresken) new pastures will be built.

Pasture areas are not evenly distributed across the provinces. Thus, the Republic of Karakalpakstan, Navoi, Bukhara, Jizzakh and Kashkadarya regions consist mainly of desert pastures.

The existing pastures and hayfields in the country are distributed in four natural zones; the main part of the pasture fund (%) belongs to the desert region (-78.1%), hills (-15.2%), mountain (4.5%), pastures (2.2%) occupy a very small share (Figure 1).

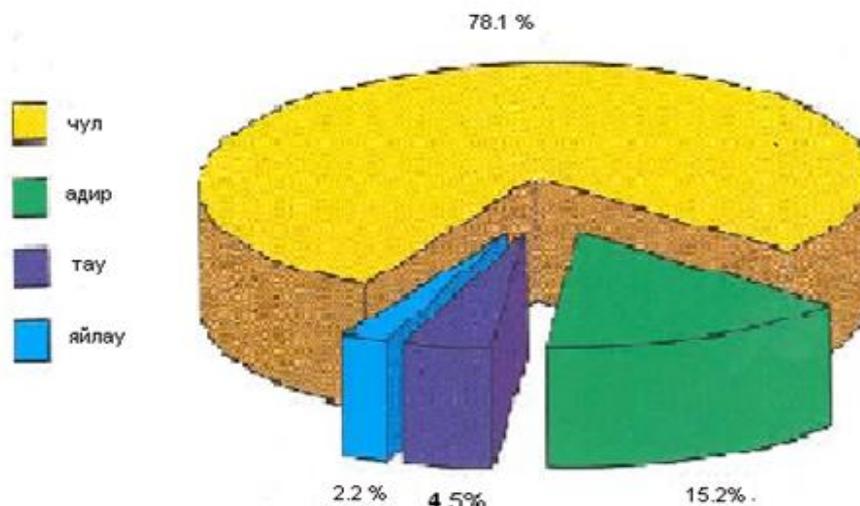


Figure 1. Proportion of pastures and hayfields of Uzbekistan across natural areas as %

The essence of the establishment of reservoirs in the desert areas is that they reduce the rate of strong winds typical of the desert, ensure the accumulation of snow in the winter and allow for longer storage of moisture reserves in the soil. As a result of improved growth and development conditions of pasture plants, their productivity will increase by 1.5-2 times.

Black saxaul itself is also a satisfactory food for sheep and camels during the autumn-winter months.

It is advisable to build enclosures in favorable soil-climatic conditions, on pastures where large shrubs do not grow.

For such purposes, pastures with light mechanical composition gray, brown-gray, sandy soil, slightly saline are selected.

The importance of establishing pasture agrophytocenoses that allow the use of pastures in different seasons is that pasture agrophytocenoses consisting of a mixture of different life forms (shrubs, semi-shrubs, and transitional species) are created, taking into account the characteristics of each desert.

The first advantage of new crop areas is that they are multi-tiered (layered) and can be used in the required season of the year as they are composed of species that are kept green in almost all seasons of the year; Even in years of inclement weather, hay yields remain relatively stable.

Shrubs, semi-shrubs, seed mixtures of different proportions of transitional species are used in the construction of pasture agrophytocenoses specific to each ecological condition. Most importantly, due to the presence in the agrophytocenoses of plants that can be eaten in spring, summer, autumn and winter, it is possible to use them in one of these seasons. Prospective phytomeliorants for the Kyzylkum desert are distributed as follows: shrubs-4, semi-shrubs-15, perennial grasses-5, annual grasses-6 species (Table 1).

For sandy deserts, white and black saxaul, chogon, cherkez, kandym species (type 4), teresken, izen, mausoleum, cotton, male grass, osma; For gypsum deserts-black saxaul, keyreuk, chogon, izen, tetir, ermon wormwood, fish, brown, sagebrush are promising phytomeliorants.

The tables list the main promising phytomeliorants used to improve the condition of pastures in desert areas and their important adaptive properties.

1 – table Future phytomeliorants used to improve the condition of natural pastures in arid regions of Uzbekistan

Phytomeliorants		Life form	Ec
Latin	Uzbek		
1	2	3	
1. Haloxylon aphyllum (Minkw). Iljin	Black saxophone	Tree bush	H
2. Haloxylon persicum Bunge	White saxophone	Buta	H
3. Calligonum caput medusae Shrenk	Red Kandim	Tree bush	H
4. Calligonum setosum Litv.	Kandim	Buta	H
5. Calligonum aphyllum (Pall.) Garke	Kandim	Buta	H
6. S richteri Karel.	Circassian	Buta	H
7. Salsola Paletziana Karel.	Paletsky Church	Buta	H
8. Salsola arbuscula Pall.	Boyalich	Buta	H
9. Salsola gemascens Pall.	Tetir	Half bush	H
10. Salsola orientalis S.G.Gmel.	Keyreuk	Half bush	H
11. Salsola paulsenii Litv.	Camel belly	Annual	H
12. Climacoptera lanata (Pall.) Botsch	Fish eye	Annual	H
13. Kraschennikovvia ewersmanniana (stschegl. Ex Losinsk Grub.)	Teresken	Half bush	H
14. K. ceratoides (L.) Guclidenst.	Teresken	Half bush	H
15. Halothamnus suba phyllus (C.A.Mey.) Botsch.	Chogon	Half bush	H
16. Camphorosma Lessingii Litv.	Kam forosma	Half bush	H
17. Kochia prostrata subsp. Virescens (Fenzl.) Pratov	Izen (sandy)	Half bush	H
18. K. prostarata subsp. Grisea Pratov	Izen (stone)	Half bush	H

19. Astragalus unifoliolatus Bunge	Singren	Half bush	H
20. Astragalus villosimus Bunge	Singren	Half bush	H
21. Alhagi pseudalhagi (Bieb.) Decv.	Yantoq	Perennial grass	H
22. Artemisia turanica H.Krasch.	Black wormwood	Half a bush	H
23. Artemisia diffusa H.Krasch.	White wormwood	Half bush	The
24. Artemisia sogdiana Bunge.	Sogdiana wormwood	Half bush	The
25. Artemisia ferganensis	Fergana wormwood	Half bush	The
26. Gramma amabitis Butk. et Majtnn		Perennial grass	X
27. Onobrychis choroosanica Bunge	Khorosan espartseti	Perennial grass	X
28. Hardeum buitbosum L.		Perennial grass	X
29. Agropyron cristatum	Male grass	Perennial grass	X
30. Poa bulbosa	Rainbow	Perennial grass	
31. Isatis bous sieriana Bchb.f	Tumor	Annual	

Table 2 Adaptation characteristics of the main promising shrub and semi-shrub phytomeliorants in desert conditions

Indicators	Life forms		
	Shrubs	Semi-shrubs	Herbs
Plant height, m	2,5-3,0	0,5-1,2	0,3-0,6
Vegetation period	Spring-summer	Spring-summer	Spring-summer
Summer drying of leaves,%	15-20	35-70	-
Root system, m	4-14	3,5-5	2-2,5
The amount of water in the tissue,%	55-87	42-80	56-79
Highest daily water deficit,%	12-22	58-63	21-27
Daily osmotic pressure, atm	17-43	65-67	5-19
Heat resistance, S0	59,5-62,8	52-56	50-51
Average yield, ts / ha	13-15	18-22	8-10

Season of use	Fall-winter	Summer-fall-winter	Spring-summer
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As mentioned earlier, the peculiarity of desert pastures is that their food reserves are very low and fluctuate sharply over the years and seasons. On top of that, pastures in many areas are in crisis to varying degrees (Table 2).

A new technology developed in recent years and used in the field - the method of increasing the productivity of pastures on the basis of nature protection - is based on the preservation of certain parts of natural vegetation without damage.

Due to the sharp decline in fuel and labor costs, labor costs, narrow area cultivation, soil erosion is prevented even if the weather is unfavorable and crops do not develop satisfactorily, and the growth of growing plants near the regions is significantly improved.

Special multi-purpose units AS-2 and AS-4 were created in collaboration with the Bishkek Institute of Technology to implement environmental protection technology. The APP-2.8 unit created by the team of the Uzbek Institute of Agricultural Mechanization is also designed to increase the productivity of desert pastures in this way.

In order to create autumn-winter pastures on the hills, the crisis pastures are selected and processed regionally.

For example, the width of cultivated and sown areas should not exceed 12 m in sparse grasslands and 24 m in densely vegetated areas. At the same latitudes (12-24m) natural pastures are left uncultivated.

The best time to cultivate and sow pastures is autumn-winter (November-February).

In the conditions of the hills (Koshrobat, Jam, Kattakurgan, Nurata, Nishan, Dehkanabad, etc.) semi-shrubs such as chagan, izen, teresken, kuyruvuk, wormwood; Pasture agrophytocenoses (crops) consisting of transitional species such as cotton, male grass, chytyr, brown grass are established.

In this case, the share of semi-shrubs is 65-70%, and the share of herbaceous species -35-30%.

In order to produce a satisfactory amount of grass, the following sowing rates are recommended: izen-3-4, sorghum-8-10, sorghum -5-6, teresken -10-12, wormwood -0.5-1.0, male grass - 2-3, cotton -3-4 kg.

When the seed mixture is sown using SST-3, SZT-3,6 seeders or other modern aggregates, full germination is ensured, labor productivity increases sharply.

Construction technology. As we have noted, the establishment of reservoirs in desert areas slows down the wind speed of strong desert winds; ensuring longer accumulation of moisture in the soil, ensuring the accumulation of snow in the winter.

As a result of improved growth conditions of pasture plants, their productivity will increase by 1.5-2 times. Black saxaul itself is also a good food for sheep and camels during the autumn-winter months.

Gray, brown-gray, sandy-loam, low-salinity pastures are selected for the establishment of reserves in the pastures of the Karakul areas, which are in crisis in favorable soil conditions and do not grow large shrubs.

The enclosures are located in the form of main and auxiliary zones. The main zones face the blowing winds; the auxiliary zones are placed on it in 900 cases.

Areas with a total width of no more than 25m will not be plowed en masse, but will be cultivated in 5 places in the region from 2.8m each, leaving 2.5-3m wide natural pastures uncultivated between them. Thus, the total area of the treated area does not exceed 56%.

The best time to sow seeds is December-January.

Optimal seed consumption rate is 4-5 kg per hectare of seeds with 100% viability.

Black saxaul seeds germinate well when buried in the soil to a depth of 1-2 cm. Another effective way to improve pasture productivity is to establish pasture agrophytocenoses (crops) consisting of high-yielding and various life forms (shrubs, semi-shrubs, transitional species) for year-round use.

The essence of the establishment of pasture agrophytocenoses is that the productivity of pastures will increase to 10-12 quintals per hectare, and it will be possible to use it in the necessary season of the year.

A mixture of sugarcane, camphor, izen, teresken, and male grass is used in the construction of pastures used in spring and summer.

It is advisable to use a mixture of shrubs and semi-shrub species to create pastures for use in the required season of the year.

For such purposes, a mixture of black saxophone, izen, tail, chrysanthemum, brown, atriplex, annual saline is used.

Pasture areas to be improved will be plowed to a width of 12-24 m, leaving uncultivated areas at that width.

Tillage is carried out at a depth of 18-22 cm in autumn and winter.

It is inevitable that the work carried out in accordance with the necessary agro-technical terms and the proposed system of measures will yield the desired results.

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