The influence of different aged Black Saxaul plants on distribution, growth and accumulation of aboveground phytomass of *Poa Bulboza L.*

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Abstract. The purpose of this study was to determine the nature and degree of influence of different-aged plants of Black Saxaul on Bulbous Bluegrass - one of the dominant species of sagebrush-ephemeral pastures. The study was conducted using phytometer method in the conditions of the desert zone of Uzbekistan on the ephemeroid-wormwood-black saxaul phytocenosis, formed as a result of self-seeding on inter-band spaces of pasture-protective Black Saxaul plantations. It is established that the character of the phytogenic influence of Saxaul on Bluegrass can be characterized as ambiguous conjugacy: in the minimal phytogenic field, the character of this influence is negative and therefore is gradually replaced, as a result of which the number of this species-phytometer significantly decreases, there are zones where bluegrass is absent. Growing specimens are stunted and poorly developed, so they accumulate insignificant aboveground phytomass. The character of the influence of Saxaul in the outer part of the phytogenic field on bluegrass was positive. Therefore, it is numerous here, grows better and accumulates 1,5-3 times more aboveground phytomass than outside the phytogenic field (control). Within the phytogenic field of Black Saxaul for Bluegrass Bulbous most “environmentally comfortable place” is the border of the internal and external parts of this field. In this part of the phytogenic field, due to its ecological and biological properties, the number of phytometer species reaches the highest value; they grow rapidly and accumulate the largest aboveground phytomass. The degree of influence depends on the age status of the Black Saxaul.The highest degree of influence on the abundance, growth and formation of over ground phytomass of Bluegrass Bulbous is observed in the phytogenic field of middle-aged species-edificators: the minimum field increases and reaches its maximum in the area where Bluegrass Bulbous is completely displaced, and on the border of internal and external parts and in the outer part opposed to a phytogenic one field due to the positive influence of species-edificators of the number of phytometra increases sharply, the values of the linear growth of shoots and accumulation of aboveground biomass reach the highest values. The smallest

phytogenic effect of the edifier species on the phytometer species is observed in the phytogenic field of virginal plants of the black saxaul. The phytogenic effect on bluegrass is distributed in virginal individuals of the active species outside the crown at a distance of 90 cm, in young generative - by 120 cm and in middle-aged generative - by 150 cm and even 180 cm. When further removed, the distribution, growth and formation of aboveground phytomass of the phytometer species does not depend on the edifier species.

1. Introduction

Desert and semi-desert pastures in Uzbekistan, which are the main food base for desert animal husbandry, including karakul farming, are characterized by low productivity. As a result of research works conducted for many years in the scientific institutions of the Republic of Uzbekistan, highly productive, environmentally resistant to extreme conditions of the desert phytomeliorants species were selected, effective technologies of phytomelioration of natural pastures were developed and introduced into the practice of pasture management. Among the selected species, a special importance has tree-like shrub Black Saxaul (Haloxylon aphyllum (Minkw.) Iljin), which is widely used as the most effective phytomeliorant in creating multicomponent shrub-grass pastures and pasture protection strips [1]. This species has a high environment- and price-forming capacity [2].

It was found that under the phytogenic influence of Black Saxaul, sharp fluctuations of abiotic environmental factors significantly decrease and become more moderate. In the minimal phytogenic field of Saxaul, illumination, soil and air temperature of the phytogenic field are significantly low during day time, and higher at night compared to the control levels in the absence of Black Saxaul. This reduces the daily amplitude of temperature fluctuations in the phytogenic field. At the same time, soil and air humidity is significantly higher in the phytogenic field of Black Saxaul, especially in its inner part. Black Saxaul has a significant impact on the mineral composition of soil. As a result of leaching of Black Saxaul fall, the field is salted mainly in the inner part of the phytogenic field, where there is predominance of sodium, which indicates the beginning of salinization process, the presence of soda toxic to a number of plants in the upper soil horizons [3]. Thus, the impact of Black Saxaul on the environment is, on the one hand, positive: a more moderate microclimate is created in the phytogenic field, which contributes to better growth and development, accumulation of crop fodder mass of plants of the lower tiers; on the other hand, negative, which is expressed in salinization of soil and a decrease in illumination of the phytogenic field. This environmental condition may affect the plants growing in those plant communities.

An important direction in the study of the influence of some plants on others in plant community is the study of their phytogenic fields [4]. The study of phytogenic fields of edificator species is particularly important. This is due to the fact that the appearance of the phytocenosis is largely determined by the edifier species, since the leading role in creating special environmental conditions around certain individuals and throughout the cenosis belongs to these plants [5].

Studies conducted in various ecological-geographical and phytocenotic conditions [5-11] and data obtained in the studies of the phytogenic field of Black Saxaul [3, 12-16] give grounds to assert that the influence of phytogenic fields on the distribution, growth and size of being formed phytomass of plants experiencing this effect serves as a good reflection of the intensity of the phytogenic field of edifier plants, especially in desert pastures, where sub- and close-to-crown microgroups of grass plants are pronounced, which differ from general background [17-19]. Therefore, the influence of phytogenic fields of different-aged Black Saxaul plants on Bulbous Bluegrass (Poa Bulbosa L.) was studied in the conditions of desert zone of Uzbekistan.

2. Method

The study was carried out using phytometer method in ephemerid Wormwood and Black Saxaul phytocenosis formed as a result of self-seeding on inter-band spaces of pasture-protective plantations of Black Saxaul [5]. For determining the number, growth, and aboveground phytomass of Bulbous

Bluegrass plants, 9 model individuals of Black Saxaul were selected: 3 virginal, 3 young generative, and 3 middle-aged generative. Around these individuals were laid transects in four directions (North, South, West, East) with width of 50 cm, the length of which slightly exceeded the radius of the crown of Black Saxaul. The number of transects in each age group was 12, and 36 in total. These transects were divided into sites with a size of 50x30 cm. In these sites, the number and linear growth of shoots of Bulbous Bluegrass were first determined (Figure1). After that, the phytometer plants of this species present in these sites were mowed and dried. Then their dry mass were determined. Obtained data were recalculated as for 1 m^2 and statistically analyzed [20].

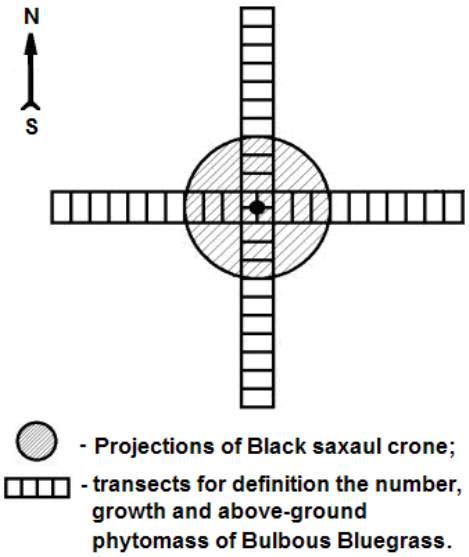

Figure 1. Scheme of transects built around different-aged Black saxaul individuals

3. Results and Discussion

The influence of virginal Saxaul individuals is observed on dominant grass cover – Bulbous Bluegrass and Thick-stemmed Sedge. In a minimal phytogenic field, their number is sensitively reduced. The number of shoots of Bulbous Bluegrass increases by 2 times in the outer part of the phytogenic field. They reach their maximum here at the very first near sites – 633.9-647.4 PCs/m^2 (Table 1).

Their value is also significant at a distance of 60 cm from the outer border of the minimum phytogenic field. Already by the next site, the number of Bluegrass shoots significantly decreases and farther it is stabilized at a distance of up to 240 cm from the crown of Black Saxaul. Approaching to the neighboring elementary source of the phytogenic field, the number of shoots of Bulbous Bluegrass significantly increases, which is the result of the phytogenic influence this Saxaul plant.

Thus, under the phytogenic influence of Black Saxaul of virginal age state, the phytometer species Bulbous Bluegrass is redistributed. However, this influence in the phytogenic field of edifier species of this age state is still poorly expressed.

The influence of the phytogenic field of Black Saxaul of the virginal age state on the Bulbous Bluegrass is well expressed. This phytometer species in the minimal phytogenic field, where the intensity of the phytogenic effect is highest, is displaced. The number of Bluegrass shoots here, in comparison with the zone outside of phytogenic influence, decreases within 16-22 %. In the close-to-crown space (30-90 cm from the outer border of the minimum phytogenic field), there is a significant increase in the number of Bulbous Bluegrass shoots, which is the result of the favorable influence of the active species on the phytometer species, i.e. their relationship is characterized by positive conjugation.

Table 1 shows data that characterize the influence of Black Saxaul of the young generative age state on the phytometer species. The character of the influence of Saxaul plant of this age state on the

distribution of Bulbous Bluegrass is similar to that of individuals of virginal age state. However, the phytogenic effect of the edifier species is even more clearly expressed here, which is the result of a relatively large environment-forming ability of young generative individuals than of virginal individuals of Black Saxaul.

The nature of the impact of young generative individuals of Saxaul on Bulbous Bluegrass, like virginal plants, is positive in the outer part of phytogenic field. In the minimal phytogenic field of individuals of this age, the number of shoots of Bulbous Bluegrass is reduced by more than 2 times, compared with virginal ones, which indicates an increase in the intensity of phytogenic effect. In the outer part of the phytogenic field, abrupt increase takes place in the number of shoots which reaches 956,6 PCs/m^2. High values of this indicator are maintained for 120 cm from the
projection of the crown of Black Saxaul and vary within 1028,7-1143,8 PCs/m^2. However, with the transition to the

Table 1. Changes in the number Poa bulbosa L. shoots in the phytogenic field of different age plants of Black Saxaul

Distace from the center of phytogenic field, cm	Number of Bulbous Bluegrass shoots, PCs/m^2			Average number of Bulbous Bluegrass shoots in phytogenic field of Black Saxaul
	In phytogenic field of virginal plants	In phytogenic field of young generative plants	In phytogenic field of middle-aged generative plants	
0	344.1±9.02	159.1±4.48	73.0±2.89	192.1±1.47
+30	633.9±11.81	956.6±29.44	982.6±10.70	857.7±12.21
+60	647.4±7.45	1143.8±67.17	1301.9±25.11	1031.1±30.38
+90	576.8±5.95	1140.7±36.70	1307.9±4.37	100.8±14.10
+120	441.6±8.05	1028.7±11.86	1188.7±28.84	868.3±11.85
+150	442.9±5.35	540.2±19.28	1070.7±43.70	684.6±18.13
+180	419.9±10.31	443.0±5.43	491.4±14.40	451.4±9.46
+210	430.4±4.88	439.6±5.66	438.3±6.25	436.1±5.43
+240	412.8±13.85	436.1±4.54	426.5±12.59	425.1±6.92
+270	476.9±8.97	524.4±10.34	537.0±8.63	512.8±0.94

Note: 0 is the minimum phytogenic field (sub-crown area)

5^{th} site at a distance of 150 cm from the crown projection, the number of shoots of Bulbous Bluegrass decreases to 540.2 PCs/m^2, which is 2 times less than in the previous sites. Farther distancing from the elementary source of the phytogenic field, the number of shoots of Bulbous Bluegrass is set within 436,1-443,0 PCs/m^2. Getting closer to a neighboring individual, the "attraction" of the Bulbous Bluegrass is again seen: the number of its shoots increases to 524.4 PCs/m^2. The reason for this distribution of Bluegrass is the environment-forming role of Black Saxaul. Increased soil salinity [2, 3, 17] and reduced illumination [3, 6, 21] resulted in decrease of number of Bluegrass shoots in the minimum phytogenic field, where soil and air humidity is the highest, temperature of air and soil is lower, and the amplitude of fluctuations of soil and air temperature are more stable. In the close proximity to the crown of Black Saxaul the lush development of Bluegrass within pronounced 120 cm stripe indicates that Saxaul individuals of this age state create favorable phytogenic fields, which is facilitated by positive microclimate conditions and a decrease in the concentration of easily soluble salts. At a greater distance from the plant the phytogenic effect is so reduced that it does not affect the distribution of the phytometer species Bulbous Bluegrass.

The increase in the intensity of the phytogenic field of the active species with the transition to an older age group is clearly reflected in the redistribution of the phytometer species (Table. 1). Ecological

situation in the minimal phytogenic field of medium-aged generative individuals as a result of an increase in the concentration of easily soluble salts and a decrease in illumination becomes even more unsuitable for Bluegrass, which leads to a decrease in its number.

The distribution of Bulbous Bluegrass in the outer part of the phytogenic field of middle-aged generative individuals is similar to the distribution in the phytogenic fields of younger (virginal and young generative) individuals of Black Saxaul.

The "attraction" of Bluegrass to Saxaul becomes more significant, which is expressed in an increase of the number of its shoots near the crown. The maximum number (1301.9 – 1307.9 PCs / m^2) is observed in sites 2 and 3. On the next pair of sites, this value is slightly reduced, which is associated with a decrease in the intensity of the phytogenic field. A sharp, more than 2-fold decrease in the number of shoots, compared with the previous ones, is observed in site 6. In sites 7 and 8, the number of shoots is approximately the same as outside the zone of the phytogenic field of virginal and young generative individuals of Black Saxaul. From this it follows that, starting from site 6, the reaction of Bulbous Bluegrass to the phytogenic effect of the middle-aged generative individuals of Saxaul is not detected. Approaching a neighboring individual, there is a slight increase in the number of Bluegrass shoots, which is explained by phytogenic effects.

Thus, the analysis of the placement of the Bulbous Bluegrass in the phytogenic field of middle-aged generative individuals of Black Saxaul showed that its response was observed in strip of 150 cm width. The results obtained confirm once again that the phytogenic effect of Black Saxaul of this age extends outside the crown at a distance of 150 cm.

The average data on the distribution of the phytometer species in the phytogenic field as a whole for the cenopopulation of Black Saxaul without differentiation into age groups are given. Analysis of these data makes it possible to determine the average size of the phytogenic field of the active species.

The microclimate created by Black Saxaul near its crown was the most favorable for Bluegrass. Here Bluegrass develops very well and as a result of this a dense Bluegrass turf is formed. As Rabotnov (1983) [22] points out "Sod is the horizon where the main mass of active plant roots is located, absorbing almost all the nitrogen consumed by them and most of the other elements of mineral nutrition...". According to Shamsutdinov and Chalbash [23], 85.9% of the Bluegrass root mass is located in the 0-10 cm layer. This surface-located root system helps it to capture and utilize precipitation exceptionally well [17]. In addition, Bluegrass has a high intensity of transpiration [17] which undoubtedly leads to rapid drying the upper layers of the soil.

All of the above mentioned ecological and biological features of the Bulbous Bluegrass lead to a deterioration in the moisture content of young individuals of Sagebrush, whose roots do not have time to go deep enough into the soil and, eventually, they die. In this regard, in these conditions, the cenopopulation of Sagebrush is not replenished by younger individuals, which is necessary for the further maintenance and survival of the population of this species. The deterioration of the soil moisture regime affects not only the vital condition of young but also adult individuals of Sagebrush [15].

As can be seen from the data in table 1 the number of Bulbous Bluegrass shoots is greatly reduced in the minimal phytogenic field of Black Saxaul. At the same time, with the transition to the outer part of the phytogenic field, this indicator of this type of phytometer increases by 4 times, and on 2^{nd} and 3^{rd} ring sites even more – by 5 times. As you move further away from the center, the intensity of the phytogenic field of Black Saxaul decreases markedly, which is manifested in a decrease in the number of Bluegrass shoots. At a distance of 180-240 cm outside the crown (6-8 sites), their number is stabilized and is 425.1-451.4 PCs/m^2, which indicates the practical absence of the phytogenic effect of Black Saxaul.

Thus, under the phytogenic influence of Black Saxaul, the phytometer species is redistributed. Middle-aged generative individuals have the greatest influence. In the minimal phytogenic field, the effect of Black Saxaul on the phytometer species is negative. As a result, they are pushed out of the community. In the external part of the phytogenic field, the influence of Saxaul on Bulbous Bluegrass is positive. The phytogenic effect of Black Saxaul extends beyond the crown depending on the age at a distance of

90-150 cm. When moving further away from the center of the phytogenic field, the intensity of the phytogenic effect of Black Saxaul is reduced to a minimum degree and there is no longer significant effect on the placement of Bulbous Bluegrass plants.

The phytogenic field of Black Saxaul has a significant impact on the growth and development of plants experiencing this influence. According to Uranov [4], the source of this field changes during ontogenetic development. This is confirmed by the reactions of the phytometer species to the phytogenic effects of Black Saxaul of different age states.

In the minimal phytogenic field of all studied ages of Black Saxaul, plants of the phytometer species grow much slower than in its outer part (Table 2). Their shortness is even more noticeable compared to the control. If the minimum phytogenic field Bulbous Bluegrass as a result of salinity of the soil and low light gradually becomes stunted and displaced, then with the exit to the outer part of the phytogenic field, a sharp increase in its linear growth indicators is observed.

Table 2. Indicators of linear growth dynamics of Bulbous Bluegrass shoots in the phytogenic field of different-aged Black Saxaul plants

Distace from the center of phytogenic field, cm	Indicators of linear growth of Bulbous Bluegrass shoots, cm		
	In phytogenic field of virginal plants	In phytogenic field of young generative plants	In phytogenic field of middle-aged generative plants
+30	16.53±0.41	0	0
+60	23.04±0.27	0	0
+90	23.86±0.21	12.26±0.58	0
+120	22.39±0.28	23.92±0.26	0
+150	19.52±0.27	24.92±0.26	8.43
+180	16.31±0.12	23.02±0.25	16.19±0.82
+210	16.21±0.08	21.60±0.19	21.04±1.13
+240	-	20.45±0.22	25.03±0.60
+270	-	16.75±0.18	25.22±0.51
+300	-	16.69±0.20	22.93±0.45
+330	-	-	19.35±0.67
+360	-	-	17.32±0.56
Control	16.18±0.78	16.18±0.78	16.18±0.78

Note: 0 – the Bulbous Bluegrass is not found here; dash means that Bulbous Bluegrass shoots length was not determined in these distances

As a result of the lowest intensity of the phytogenic field of virginal plants of Black Saxaul, its influence on the growth processes of plants of the phytometer species is small. The length of Bluegrass shoots in the minimum phytogenic field of the Saxaul of this age state is 16.53 cm, in the minimum phytogenic field of a young generative plant of the edifier species -12.26 cm, and in such a place of the phytogenic field of a medium-aged Saxaul plant even less – 8.43 cm.

With the exit to the outer part the reaction of Bulbous Bluegrass to the effect of the phytogenic field of the active species is positive. In the immediate vicinity of the crown border of Black Saxaul, the environmental situation is favorable for it and this is reflected not only in the increase in its population, but also in the indicators of linear growth. In this zone of the phytogenic field of the virginal (v)_plant of the active species, the length of its shoots is 22,39 – 23,86 cm, the young generative (g_1) – 23,02-24,92 cm and the middle aged (g_2) – 22.93 - 23.22 cm, and in the control – 16.18 cm (table 2). The highest values of linear growth of Bluegrass shoots are observed in the phytogenic field of middle-aged generative individuals of Black Saxaul.

As you move away from the center of the phytogenic field, the length of Bluegrass shoots decreases with a decrease in the intensity of the phytogenic effect. The phytogenic effect on the length of the

shoots of this ephemeroid is sensitive in virginal individuals of the active species outside the crown at a distance of 90 cm, in young generative ones – at 120 cm, and in middle-aged generative ones – at 150 cm or even 180 cm.

Bluegrass, as it is known, due to its adaptability to a certain extent to saline soils [24] quickly inhabits free territories, its number in the space close to crown increases to maximum, forming a dense sod. In addition, the surface location of roots and the high intensity of transpiration of this ephemeroid [23] contribute to deterioration of the living conditions (first of all, moisture supply) of other plants of the ephemeroid Wormwood-Black Saxaul phytocenosis.

Thus, it follows from the above that in the minimal phytogenic field Saxaul affects the Bluegrass negatively (the number decreases and the individuals are short). The influence of the active species on Bluegrass in the border of the external and internal parts of the phytogenic field, as well as in the external part of influence is positive. According to Uranov (1935) [25], this relationship between the active and subordinate species can be characterized as ambiguous conjugacy.

The results of studying the annual growth of the aboveground phytomass of Poa bulbosa L. – Bulbous Bluegrass, one of the dominant species of Sagebrush-ephemeral desert, in the phytogenic fields of different age individuals of Black Saxaul are shown in Table 3.

Table 3. Dynamics of Poa bulbosa L. aboveground phytomass in the phytogenic field of Black Saxaul different age plants

Distance from the center of the phytogenic field, cm	Annual growth of Bulbous Bluegrass aboveground phytomass (g/m^2) in the phytogenic field of Black Saxaul different-age plants		
	Virginal plant	Young generative plant	Middle-aged generative plants
+30	8.89±0.36	0	0
+60	26.55±2.04	0	0
+90	44.46±1.61	7.31±1.17	0
+120	41.53±1.89	29.42±2.75	0
+150	31.85±1.01	55.84±1.94	0.07
+180	21.37±1.26	52.26±2.33	7.33±1.86
+210	19.66±0.81	41.38±1.99	23.04±4.96
+240	-	37.86±1.62	48.65±3.34
+270	-	25.09±1.46	52.92±2.42
+300	-	19.97±1.24	41.05±2.51
+330	-	-	30.32±1.57
+360	-	-	24.96±1.96
Open Sagebrush-ephemeral pasture (control)			
	22.58±2.35	22.58±2.35	22.58±2.35

Note: 0 - there are no Bulbous Bluegrass plants here

In the minimal phytogenic fields of Black Saxaul, as a result of displacement and deterioration of growth and development of the Bulbous Bluegrass plant, a significantly smaller aboveground (forage) mass is accumulated. The size of the feed mass of plants of this ephemeroid depends on the age state of the active species (edifier species). If in the minimum phytogenic field of Black Saxaul of virginal age state, the annual increase in the aboveground phytomass of Bluegrass and bulbous is 8.89-26.55 g/m^2, then in the same place of the phytogenic field of young generative plants of Black Saxaul, these values are equal to 7.31-29.42 g/m^2, and in the middle-aged generative plants they are even less – 0.07-7.33 g/m2 (see table). It should be noted that in the minimum phytogenic field, the accumulation of forage mass by this type of phytometer changes with the distance from the source of the phytogenic

field, an increase in this value is observed when approached to the border of the external and internal parts of this field.

The highest production of aboveground Bluegrass phytomass noticed in close to Black Saxaul crown space reaches 44.46 g/m^2 in virginal plants of the edifier species, 55.26 g/m^2 in young generative plants, 52.92 g/m^2 in middle-aged plants, which is almost 2.0-2.5 times higher than in open Sagebrush-ephemeral pasture (control).

The influence of Black Saxaul on Bulbous Bluegrass aboveground phytomass depends on its age state. The least influence is observed in the phytogenic field of virginal plants of the active species. Here, the phytocenotic effect of Saxaul extends beyond the crown at a distance of 90 cm and the aboveground mass of Bluegrass is 31.85-44.46 g/m^2. The impact of the phytogenic field of Black Saxaul young generative plants extends beyond the crown at a distance of 120 cm and the accumulated above-ground phytomass of the phytometer species ranges from 37.86-55.84 g/m^2, which is significantly higher than that of virginil plants. The zone of influence of Black Saxaul middle-aged generative plants on Bluegrass is even wider, it extands 150 cm outside the crown, where the aboveground phytomass of this ephemeroid is 41.05-52.92 g/m^2 (Table 3).

Thus, the analysis of the data shows that the accumulation of aboveground phytomass by Bulbous Bluegrass plants depends on the phytogenic effect of Black Saxaul edifier species. In the minimal phytogenic field there is a negative effect of Black Saxaul on this type of phytometer. In the external part, the phytogenic effect of Black Saxaul acquires a positive character. The phyto-environment created here by Black Saxaul has a positive effect on the growth and development of Bulbous Bluegrass, as a result of which the indicators of above-ground phytomass of this ephemeroid reach the highest value.

4. Conclusions

1. The ecological condition created by Black Saxaul has a significant impact on the distribution, growth and accumulation of aboveground phytomass by Bulbous Bluegrass – the one of dominant species of ephemeroid-Sagebrush vegetation in the desert pastures of Uzbekistan. However, the nature of the phytogenic effect of Saxaul on Bluegrass within the phytogenic field is ambiguous: in the minimal phytogenic field, the nature of this influence is negative and therefore it is gradually displaced, as a result of which the number of this phytometer species is significantly reduced, zones appear where they are absent. Growing specimens are stunted and poorly developed, as a result of which they accumulate a small aboveground phytomass. Character of the influence of Saxaul in the external part of the phytogenic field on Bluegrass was positive. Therefore, it is abundant here, grows better and accumulates 1,5-3 times more above-ground phytomass than outside phytogenic field (control).

2. Within the phytogenic field of Black Saxaul, the border of the internal and external parts of this field is the most “ecologically comfortable place” for the Bulbous Bluegrass. In this part of the phytogenic field, due to its ecological and biological properties, the number of the phytometer species reaches the highest value, they grow rapidly and accumulate the maximum above-ground phytomass.

3. The degree of phytogenic influence of Black Saxaul on Bulbous Bluegrass depends on the ontogenetic stage of development of the edifier species. Virginal plants have the least influence on the distribution, growth, and accumulation of aboveground phytomass of the phytometer species. The degree of phytogenic influence of the edifier species on Bluegrass was found in middle-aged Black Saxaul plants. In the phytogenic field of middle-aged Saxaul plants edificatory effects of this type of edificators are pronounced: in the minimum field increases and reaches its maximum the area, where Bulbous Bluegrass is completely displaced, and on the border of internal and external parts and in the outer part due to the positive influence of the species-edificators the number of phytometer species increases sharply, the values of the linear growth of shoots and accumulation of above-ground phytomass reaches the highest value.

4. Analysis of the data shows that phytogenic effects of Black Saxaul outside its crown on distribution, growth and formation of aboveground phytomass of Bulbous Bluegrass occurs in virginal plants at a

distance of 90 cm, in young generative ones – 120 cm, and in middle-aged generative ones – 150 cm. At a farther distance from the center the phytogenic effect of Black Saxaul on the Bulbous Bluegrass is reduced to a minimum level where distribution, growth and formation of aboveground phytomass of phytometer species do not depend on the type of edificators.

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