



STUDY OF COTTON AGROCECENOSIS IN THE CONDITIONS OF THE KHORAZM OASIS

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Annotatsiya. Ushbu maqolada Xorazm vohasi qishloq xo'jaligi agrotsenozlarining ekologik holatiga iqlim hamda turli agrotekhnologiyalarning ta'siri, shuningdek, tashqi muhit omillarining g'o'za o'simligining o'sishi, rivojlanishi va hosildorligiga ta'sirining ilmiy va amaliy ahamiyati borasida ma'lumotlar berilgan.

Kalit so'zlar: agrotsenoz, ekologik omil, tuproq, g'o'za, iqlim, agrotekhnologiya.

Аннотация. В данной статье содержится информация о научно-практическом значении влияния климата и различных агротехнологий на экологическое состояние агроагроценозов Хорезмского оазиса, а также влияние факторов внешней среды на рост, развитие и продуктивность хлопчатника. завод.данный

Ключевые слова. агроценоз, экологический фактор, почва, хлопчатник, климат, агротехника.

Abstract. This article contains information on the scientific and practical significance of the influence of climate and various agricultural technologies on the ecological state of agro-agrocenoses of the Khorezm oasis, as well as the influence of environmental factors on the growth, development and productivity of cotton. factory data

Key words: agroecocenos, ecological factor, soil, cotton, climate, agricultural technology.

Enter. Agroecocenos is an artificial biocenosis created by man for his own purposes, having a certain level and character of fertility. Currently, agroecocenos occupy about 10% of the land. Agroecocenos, like any other natural ecosystem, forms a trophic network.

In agroecocenos, the diversity of organisms is distinguished. The uniqueness of agroecocenos and the poverty of species are supported by people with the help of special complex agrotechnical systems. Usually, one type of plant is planted in the field, as a result of which the content of living animals and microorganisms in the soil decreases. But even in very impoverished agroecocenos there are several dozen groups of organisms belonging to different systems and ecological groups. For example, there are weeds, insects and predators of cotton, invertebrates living in the soil and on the soil surface, pathogenic fungi, etc., in addition to cotton agroecocenos.

Humans support artificially bred species and they cannot survive without human help. Agrosystems receive additional energy as a result of human activity that provides conditions for growth.

In agroecocenos, instead of a plant that has deteriorated and adapted to the environment, natural selection is aimed at artificial selection based on obtaining a large crop of plants that are often needed by people.

So, the difference between agroecocenos and natural systems is that they are not regulated by themselves, they are controlled by humans. The purpose of such regulation is to increase the productivity of agroecocenos. It differs from the natural system by the instability of agroecocenos.

If they are not constantly supported, they will quickly disappear, which means that cultivated crops cannot compete with wild crops. Therefore, it is important to study the ecological characteristics of agrocenoses and the impact of external environmental factors on crops.

The degree of study of the problem. Since the beginning of the last century, scientific research on the creation and improvement of agrotechnology of cotton cultivation has been carried out in our country. Based on these scientific results, many practical recommendations and manuals for production have been developed (for example, "Ensiklopediya po khlopkovodstvu", Tashkent, 1985; "Pachtachilik spravochnigi", Tashkent, 1989).

In the years of independence, the scientific research work on cotton care agrotechnology of agricultural agrocenoses of our republic was developed more intensively. Regional agrotechnologies of cotton cultivation are being further improved based on the results of many scientific researches that have been carried out and are being carried out (Recommendations on water and resource-saving agrotechnologies in cotton care, Tashkent, UzPITI, 2007, 2011).

As the main agricultural crop in Uzbekistan until recently was cotton, E.A. Jobikov (1940), F.A. Turgin (1940), F.A. Turgin (1957), I.M. Madraimov (1972), I.N. Chumagenko (1979) and a number of other researchers have covered in detail in their scientific works. According to their instructions, the productivity of cotton depends not only on the rate and form of fertilizer, but also on the mobile amount of nutrients in the soil that the plant can easily absorb, as well as on external environmental factors.

The main part. It is to determine the ecological features of the state of cotton agrocenoses in the conditions of the Khorezm oasis, and to achieve this goal, the following tasks were defined.

Tasks of the research:

- to reveal the main trends of agrophysical and agrochemical parameters and anthropogenic changes of soils of agroecosystems;
- reveal the influence of external environmental factors on the main stages of plant growth and development;
- consists in evaluating the ecological potential and productivity of agricultural agrocenoses.

Research object and methods: based on the data collected on the basis of agricultural agrocenoses, cotton and applied agrotechnological measures, as well as on the implemented experiments. This, in turn, serves to determine the ecological characteristics of cotton agrocenoses in oasis conditions.

Research methods. Ecological (observation, comparison, experiment and modeling), placement of options for field experience in carrying out research, soil water-physical and chemical analysis based on ecological assessment methods (Tyurin, Kachinsky, EC-Hanna meter (electrical conductivity meter), Diver (groundwater level meter), biometric indicators of plant development, biomass, leaf area (LI-COR 3100), data correlation indicators (Excel – ANNOVA) were analyzed mathematically and statistically.

Research results. The heat regime (regime) of the region differs from the heat exchange of other regions of the same latitude. The harsh, continental climate of the oasis ensures that the average January temperature here is much lower, and July, on the contrary, much higher, and the annual temperature in the region is around $+11.5 + 14^{\circ}\text{C}$ (Table 1).

The average January temperature in the region is around $-4--7^{\circ}\text{C}$, but in some years the winter comes warm, the plants are not affected by the cold, vegetation continues, and such a period is called "vegetative winter" in the scientific literature. However, due to the fact that

the region is in the north of the Republic and due to a number of climate-forming factors mentioned above (non-blocking, inflow of air masses from the surrounding area, etc.), the vegetation period is 0-5% of winter. This indicator is 80-100% in Surkhandarya, 50-60% in Zarafshan and Kashkadarya, 30-50% in Tashkent, Fergana, Mirzachol. Vegetative winter is very beneficial for fall crops. Since the growing season is longer in the southern regions, many crops ripen 30-40 days earlier than in Khorezm, but most of the tropical crops grown in the republic are planted in spring or start growing again.

Every 20-30 years severe frosts are observed in the region (-25, -33°C). In winter, Arctic cold air masses enter through Siberia and stay there for ten or fifteen days. The observation of such cold days in the region is connected with the rhythmic changes in the sun. Sunspots, explosions, changes in magnetism that decrease and increase in the Earth's climate 2-3 years, 5-6 years, 11-12 years, 22-23 years, 30-35 years, 90-100 years and several thousands of years cause repetitive rhythms.¹

It is known that the climatic conditions of each place have favorable or unfavorable aspects for agricultural activities. In agriculture, it is important to know the length of the frost-free period and the sum of effective temperatures during the period of plant growth (vegetation).

Table 1

Some indicators of the order of heat exchange in the region

Weather station name	Height above sea level	Average temperature °C			Maximum temperature °C	Minimum temperature °C	Last frost in spring average duration (time of temperature rise above +10°C, day, month)	First cold snap in autumn, average duration (days and months)	Days that are not cold	The sum of the effective temperatures, hour
		Yearly	January	july						
Khiva	97	12,1	-4,5	27,4	44	-31	30. 03	25. X	208	2260
Urganch	101	11,8	-5,1	27,3	43	-32	31. 03	22. X	201	2215

After the average temperature in the oasis exceeds +10°, the vegetation period begins. This period usually falls on the last days of March. The vegetation period ends in the last decade of October. Previously, mid-ripening varieties of cotton were planted in the region, and it took 180-190 days for more than half of the boll to ripen. Nowadays, early varieties of cotton are planted, and the above period is reduced to about 1 month. For the ripening of medium fiber cotton, which is the main type of crop, the total effective temperature should be around 1900-2000°C. In the province, the total effective temperature is higher (Table 1).

In some years, in early spring, even after the crops have germinated, there are cases of frost, i.e., the air temperature drops below 0°C for a certain period of time, and the crops get cold. In some cases, crops are replanted several times. It should be noted here that this situation

¹ Баратов П. Ўзбекистон табиий географияси. Т., “Ўқитувчи”, 1996, 21; 34-бетлар.

applies more to tropical crops, especially cotton. 87% of frosts occur in spring, 93% in autumn, on windless nights.

The air humidity in the region is low. During the year, there are 180-200 dry days without rain. The main reason for this is the low rainfall in the region, the surrounding deserts, the temperature and the nature of the evaporating surface.

The average annual relative humidity of the air is 57-60 percent (in the oasis). Air humidity is especially low in the summer months, during this period the number of dusty days also increases (Table 2).

Average relative humidity in July in Khiva reaches 48% at noon. The amount of possible evaporation is extremely high. Its annual amount is around 1300-1400 mm. In other words, the possible evaporation is 14-15 times more than the average annual precipitation (Table 3). For comparison, it should be noted that this difference is 2-4 times in the foothills of the republic, and 3.5 times in the city of Tashkent. The level of evaporation is strong mainly in the hot season of the year, that is, between May and October, when the rainfall is the least.

The territory of the province is considered one of the driest regions not only of Central Asia, but also of the world. About 80-100 mm of rain falls during the year, and about 150 mm in the remote southeastern regions. It rains 6-7 times less in the oasis than in the foothills of the republic. The most interesting thing is that the rainfall is relatively higher in the surrounding desert than in the oasis. This situation is related to the large difference in the daily temperature amplitude over the desert and the rapid change in the nature of local air masses. Most of the precipitation falls in the winter (40%) and spring (44%) seasons. The driest period is summer (Table 3).

Table 2

Some indicators of regional weather

Indicators	Average monthly												Average monthly
	I	II	III	IV	V	VI	VII	VI II	IX	X	X I	X II	
According to the data of the Urganch weather station													
Relative air humidity, %	77	73	67	54	41	37	41	45	49	56	66	78	57
Dusty days	0,2	0,6	0,6	1	0,8	1	0,6	0,4	0,2	0,2	0,1	0,4	6
According to Khiva weather station data													
Relative air humidity, %	77	73	66	55	43	42	48	53	55	60	68	78	60
Dusty days	0,1	0,3	0,5	1	0,8	0,7	0,4	0,3	0,2	0,2	0,1	0,3	5

Summer and winter seasons or warm and cold periods are the most frequent in the province, summer and winter seasons last up to 140 days, spring and autumn seasons last 50-60 days.

Table 3

Periodic averages of precipitation in the region

Weather stations	Average monthly rainfall, mm												Annual precipitation, mm	By seasons, in percent			
	1	2	3	4	5	6	7	8	9	10	11	12		Winter	Spring	Summer	Autumn
Urganch	11	10	20	9	6	3	1	1	1	2	7	11	82	40,0	44,0	7,0	9,0
Cattle	73	86	121	111	64	26	10	5	8	52	82	96	734	34,5	40,0	5,5	20,0
Churuk	8	5	8	17	17	15	8	0,5	5	20	11	8	122,5	17,0	34,0	23,0	26,0

Summary. The geographical location of the Khorezm oasis, the fact that the surface structure is flat and located in the desert zone are also reflected in the climatic characteristics of this place. The openness of the region from all sides, the absence of large natural barriers in it creates conditions for the easy entry of air masses from the north, north-east and north-west. The dominance of these air masses in the majority of the year has a direct impact on the climate indicators in the research region, i.e. temperature and precipitation regime, wind direction.

The special feature of the Khorezm region's climate is that it is located between Qizilqum and Karakum, it is very hot in the summer, which makes it possible to grow agricultural crops, especially medium varieties of cotton, in the territory of the region.

References:

1. Rafikov A.A. Geoecological problems. T., "Science", 1996.
2. Tursunov L., Kuryazov S., Egamberdiev O. The role of natural and anthropogenic factors in the formation of soil cover and its characteristics of the Khorezm oasis. "Information of the Geographical Society of Uzbekistan", T., 2002.
3. Egamberdiev O. Economical technologies. "Journal of Agriculture of Uzbekistan", No. 4, 2005.
4. Eshchanov R.A. Agro-ecological basis of sustainable use of land and water resources (in the case of Khorezm region). Biol. science. dr. diss. autoref. T., 2008.
5. Hikmatov F.H., Chub V.Ye. Climate changes. T., UNEP, UZHYDROMET, 2005.
6. Methods of conducting field experiments. Tashkent, UzPITI, 2007.
7. Methodology polevikh opitov s khlopchatnikom v oroshaemix usloviyax. - Tashkent: SoyuzNIXI. 1981.