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THERMAL RESOURCES AND YIELD OF FORAGE CROPS IN THE CONDITIONS OF KARAKALPAKSTAN

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ABSTRACT

With the further development of animal husbandry in the Aral Sea region, the creation of high-quality fodder reserves is still relevant. Since in recent years, large-scale soil salinization of irrigated lands and water shortage, due to the deterioration of the region's water resources, has led to a reduction in the sown areas of fodder crops and a decrease in their productivity. Along with this, the decrease in the productivity of natural lands, accompanied by a reduction in their species and the alternation of aftermath, does not meet the requirements of animal husbandry in this region [1].

KEYWORDS: ***animal husbandry, effective temperature, finally, desalinate, green masses.***

INTRODUCTION

It is known that the thermal resources of the Republic of Karakalpakstan are significantly limited compared to other regions, even compared to other regions and regions of Uzbekistan. Therefore, it is expedient to create new varieties of fodder crops that are salt and moisture resistant and have a short growing season for the intensive development of animal husbandry. Their introduction with the effective use of soil and climatic resources (to obtain 2-3 crops per year) makes it possible to identify the potential of each species, obtain high-quality seeds, consistently provide various livestock feeds and, finally, desalinate and enrich the soil with nutrients [2].

Cultivation of various fodder crops improves the microclimate of the irrigated field, stably maintains soil moisture and thus prevents the danger of secondary salinization [3].

The purpose of this study was to identify the effect of thermal resources on the yield of fodder crops to obtain high-grade seeds and green mass in the region.

The mechanical composition of the soil of the experimental field in 2020-2021 in the meter layer is medium loamy. The type of salinity is chloride-sulfate, and the degree of salinity is medium. The cultivation technology of selected forage crops, such as sorghum, Sudanese grass and African millet, was in line with the accepted agricultural technology in the region.

The research method was: a comparative study of the main economically valuable features of fodder crops (the height of the main stem, the yield of seeds and green mass) depending (on the species and variety) of the obtained effective temperatures (above 10 ° C) during the growing season.

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THE MAIN FINDINGS AND RESULTS

We calculated effective temperatures (above 10°C) for 2020-2021. (Table 1.2).

In 2020, in the variety sample of Sudanese grass B-51, before heading, the effective temperature was 986.3 ° C (46 days from sowing), which is lower by 84.3-132.2 ° C, which allows early 1 mowing compared to other varieties.

Since the mowing of forage crops at the heading phase leads to obtaining the highest quality green and dry mass, which have been established as a result of many years of research in various regions of Uzbekistan.

In this case, 3 cuttings can be obtained from variety B-51. In sorghum (SSV-84) before the first cutting, the effective temperature obtained was 1050.2 °C (59 days), which is less than about 46.1-1528 °C from other accessions. (Table 1)

In African millet, before the first cutting, the lowest effective temperature (781.3 ° C) (91 days) was possessed by the "Pampu mijo" variety, which is lower by 63.4-183.0 ° C, which makes it possible to obtain up to 3 cuttings relative to other varieties.

(It should be noted that the relatively high values of soil moisture and obtaining a high effective temperature in 2021, as a rule, lengthens the growing season. At the same time, the yield of seeds and green mass mainly depends on the standing density, soil fertility and the level of agrotechnical measures.)

In 2021, the variety of Sudan grass samples before tillering received the minimum effective temperature (about 1249.1-1296.0 ° C, numbers N1 (B-51) and N3 (Chimbayskaya-12), which is almost 1000 ° C less than other numbers. (Table-2) The total (total) effective temperature (1779.0 ° C) was also minimal for V-51 (by 169.2-338.0 ° C)

In the sorghum variety Stavropolsky, Zersta-90, Stavrolskoye-36 (except for SSV-84) before the first cutting, the effective temperature was accumulated in the ranges of 1259.6-1309.5°C), and the sum of the effective temperature during the growing season was 1911.9-1943.6°C . Number N4 (SSV-84) turned out to be late ripening, i.e. the accumulated temperature was 2146.0°C before tillering, this number received 1429.2°C.

In samples of African millet before heading, the minimum effective temperature (almost 1200 ° C) was accumulated by variety G-6, which makes it possible to obtain 3 cuttings of green mass. The sum of the effective temperature during the growing season was also minimal (1890.0°C) compared to other varieties. The most late-ripening was K-4 (vegetation 128 days) with an accumulation of 2043.4 ° C effective temperature.

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Table-1
Effective air temperatures (oC) during the growing season.

№	Names of crops	Effective temperatures obtained at interfacial periods							
		Sowing-seedlings	shoots-tillering	tillering	basting-color	Bloom-milk. sang.	Moloch. sang-wax. sang	Wax ripe-full ripe	Sum
Sudan Grass (2020)									Sudan Grass (2020)
1	V-5	133,0	255,8	597,5	149,2	276,0	180,6	80,6	1492,1
2	Vakhshasi-10	111,8	276,7	68,2	204,0	162,9	125,5	64,6	1627,5
3	Chimbai-12	111,8	311,1	695,6	85,0	155,9	185,9	82,9	1628,2
4	Azimuth	95,7	352,2	664,3	85,3	218,9	146,3	126,6	1689,3
Sorghum (2020 год)									
1	Stavropol	198,6	459,8	544,6	155,9	118,5	156,9	143,0	1777,3
2	Zersta-90	198,6	385,9	511,8	107,5	126,4	115,7	98,6	1544,5
3	Stavropol-36	133,0	327,8	657,3	139,6	118,2	154,5	122,4	1652,8
4	SSV-84	112,0	292,8	645,4	492,1	94,3	155,8	123,7	1916,1
African millet (2020 год)									
1	Pampu mijo	90,9	297,7	392,7	121,8	126,7	145,0	211,4	1386,2
2	ICTP8203	155,3	286,2	523,3	148,6	107,3	172,7	183,3	1576,7
3	G-6	133,0	308,5	440,9	187,8	145,0	225,6	100,8	1541,6
4	K-4	112,0	329,7	403,0	226,2	145,0	258,7	139,3	1613,9
sudan grass (2021 год)									
1	B-5	94,1	598,0	603,9	97,7	218,8	187,5	132,9	779,0
2	Vakhshasi-10	66,5	638,6	637,1	70,9	370,2	183,4	144,5	1948,22
3	Chimbayskaya-12	83,0	631,0	535,0	120,3	221,4	244,0	119,3	1954,1
4	Azimuth	104,6	619,9	630,5	69,4	262,0	214,6	216,0	2117,0
Sorghum (2021 год)									
1	Stavropol	94,1	642,4	536,8	96,2	221,4	226,3	94,7	1911,9
2	Zersta-90	97,7	605,1	556,8	95,4	246,3	244,0	93,5	1943,6
3	Stavropol-36	83,6	619,9	606,0	93,9	222,4	180,8	116,0	1922,6
4	SSV-84	87,4	604,9	736,9	100,2	270,5	132,9	213,6	2146,4
African millet (2021 год)									
1	Pampu mijo	97,7	605,1	603,9	117,7	198,8	187,5	132,9	1943,6
2	ICTP8203	53,5	608,1	721,8	50,4	231,6	158,9	119,3	1943,6
3	G-6	43,4	628,4	527,7	194,1	120,5	225,5	150,4	1890,0
4	K-4	63,9	638,6	652,0	272,9	173,3	147,0	95,7	2043,7

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Table -2
Structural data of fodder crops

№	Names of crops	2020				2021			
		Main stem height (cm)	Seed yield, c/ha	Green mass yield, c/ha	cont. vegetation. period, days	Main stem height (cm)	Seed yield, c/ha	Green mass yield, c/ha	cont. vegetation. period, days
sudan grass									
1	AT 5	330,0	24,6	283,5	98	308,0	27,4	257,3	117
2	Vakhshasi-10	390,0	39,6	283,3	99	250,4	31,4	266,1	125
3	Chimbayskaya-12	350,0	35,8	380,0	98	286,4	48,1	443,2	118
4	Azimuth	325,0	19,9	257,4	82	344,0	36,0	344,0	176
Sorghum									
1	Stavropol	201,0	106,6	154,0	106	258,0	79,7	169,7	116
2	Zersta-90	164,0	48,4	346,3	98	153,0	87,6	324,7	117
3	Stavropol-36	244,0	24,4	332,0	98	314,0	54,0	383,5	127
4	SSV-84	294,3	113,3	433,5	113	320,0	99,6	662,3	128
African millet									
1	Pampu mijo	230,0	41,3	165,2	91	171,0	30,5	355,9	117
2	ICTP8203	190,0	24,2	405,0	95	217,0	34,0	322,8	136
3	G-6	270,0	46,8	297,0	86	158,0	60,4	495,0	118
4	K-4	230,0	44,9	262,7	91	196,0	54,4	357,3	128

Analysis of the data obtained in tables 1 and 2 shows that the growing season of fodder crops, depending on the type of variety and the degree of water content in the year, varies widely.

For example, in 2020-2021, the growing season of Sudan grass samples, depending on the variety and effective temperature, varies from 82 to 126 days, for sorghum within 98-128 days, for African millet 86-128 days.

With early sowing (10-11.04) of fodder crops (using the example of 2021), their growing season was 116-128 days and the sum of the effective temperature was 1890.0-2146.4 °C. With late sowing (May 18, 2020), their growing season was reduced to 86-113 days.

Seed yield at late sowing (2020 May 18) for Sudan grass: varied within 19.9-39.6 c/ha, for sorghum 24.4-113.3 c/ha, and African millet 24.2-46 .8 q/ha. With early sowing (April 11, 2021), respectively, they were equal: 31.4-48.1 c/ha, 54.0-99.6 c/ha and 30.5-60.4 c/ha.

Received green masses: with late sowing (2020) Sudanese grass: 257.4 c/ha (82 days) -380.0 (98 days) c / ha, sorghum: 154.1 (106 days) -433.5 (113 days), African millet 165.2 (91 days) -405.0 (95 days) centner/ha.

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With early sowing (2021): Sudanese grass 257.3 (117 days) -443.2 (118 days), sorghum: 169.7 (116 days) -662.3 (125 days) c/ha, African millet: 322.0 (136 days) -495.0 (118 days) q/ha.

With a shortage of water resources (using the example of 2020, where the irrigation rate was 2003.0 m3/ha), early-ripening fodder crops, regardless of the type of green mass, will become low-yielding, and water-supplied years (2021, the irrigation rate is 2316.1 m3/ha) early-ripening fodder crops can be not only low-yielding, but also high-yielding (for example, on African millet). Therefore, early ripening samples should be selected for green mass, from the minimum effective temperature to heading.

CONCLUSION

Summarizing the data for 2020-2021, it can be argued that the thermal resources of this region for fodder crops, although considered the main, but not decisive; as with the improvement of technological methods of cultivation (irrigation, application of mineral and organic fertilizers, inter-row tillage, etc.), the yield of seeds and green mass of early-ripening and late-ripening varieties and species increases at the accepted sowing dates in the region of the Republic of Karakalpakstan.

REFERENCES

1. *Reimov N.B., Aitmuratov M.T. Improving agricultural technologies to increase soil fertility and crop yields in the conditions of the Republic of Karakalpakstan. Modern directions in solving the problems of the agro-industrial complex based on innovative technologies. Proceedings of the international scientific and practical conference dedicated to the 90th anniversary of the formation of the Federal Research Center "Nemchinovka". Moscow 2021. 7 p.*
2. *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. 296-298pp
3. *Reimov N.B., Allaniyazov S. Yield of sorghum in conditions of water deficit. Journal "O'zbekiston kishloq kh'zhaligi" No. 8, p 23. Tashkent, 2003*