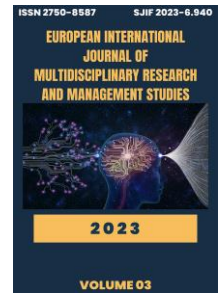


**EUROPEAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY  
RESEARCH AND MANAGEMENT STUDIES****VOLUME03 ISSUE05**DOI: <https://doi.org/10.55640/eijmrms-03-05-33>

Pages: 157-162

**SELECTION OF VARIETIES AND RANGES OF LENS (LENS CULINARIS) WITH HIGH GRAIN  
YIELD AND HIGH PROTEIN CONTENT****A.A.Ismoilov***Phd Candidate: Southern Agricultural Scientific, Uzbekistan***S.T. Jurayev***Research Institute Research Adviso: Doctor Of Biological Sciences, Professor, Tashkent State Agrarian University, Uzbekistan***ABOUT ARTICLE****Key words:** Lentil, yield, protein, southern region, selection, variety, ridge, return, template, phenological observation.**Received:** 21.05.2023**Accepted:** 26.05.2023**Published:** 31.05.2023**Abstract:** There are more than 7 billion people on earth today, of which 3 billion live in hunger. Along with the number of products grown for food, it is important for its diversity, ecological purity, and the richness of minerals useful for the human body and health. These beneficial substances are found in large quantities only in legumes, including lentils. Therefore, creating new varieties of lentils, increasing their productivity and grain quality is one of the urgent tasks.**INTRODUCTION**

The role and importance of the agricultural sector in ensuring the food security of the population on a global scale is increasing day by day. In particular, in our country, it is an urgent issue to use the available resources and opportunities to provide the population with guaranteed agricultural products, to further increase productivity and interest, and to introduce scientific achievements and modern approaches to the field.

Today, the effects of high temperature and water stress are attracting attention because they pose serious threats to the productivity of leguminous crops, as they affect pollen viability, fertilization and pod set [1].

In the irrigated field of the Southern Agricultural Research Institute in the Karshi district, 20 varieties and varieties of lentil were planted in 3 rotations on an area of 2 m<sup>2</sup> in the nursery of a competitive variety of lentil.

According to the results of the conducted research, when analyzing the germination period of lentil varieties and ridges in the nursery of the competitive variety, it was observed that according to the returns, it corresponded to March 5-7 on average. It was observed that the number of sprouted plants of lentil varieties and ridges is 36-38 (90-95%). The number of plants that have sprouted in the model "Darmon" and "Sarbon" varieties is 37. It was found that the number of sprouted plants in 5 ridges is higher than the sample varieties (Table 1).

**Table 1**

**Growth period of lentil cultivars and specimens in a competitive cultivar trial nursery (Karshi - 2022 y.)**

<b>№</b>	<b>Name of variety and specimens</b>	<b>Seed germination, date</b>	<b>Number of germinated plants, piece</b>	<b>Branching, date</b>	<b>Budding, date</b>	<b>blossom, date</b>	<b>Formation of leguminous seeds, date</b>	<b>Maturity, date</b>	<b>Maturity, day</b>
1	<b>Darmon</b>	05.mar	37	06.apr	20.apr	29.apr	11.may	27.may	83
2	<b>Sarbon</b>	06.mar	37	05.apr	20.apr	28.apr	10.may	27.may	82
3	KR20-LIEN-E-07	06.mar	37	06.apr	21.apr	28.apr	10.may	26.may	82
4	KR20-LIEN-E-08	06.mar	38	06.apr	20.apr	27.apr	09.may	27.may	82
5	KR20-LIEN-E-10	07.mar	38	06.apr	19.apr	28.apr	10.may	25.may	79
6	KR20-LIEN-E-11	07.mar	37	06.apr	21.apr	28.apr	10.may	28.may	82
7	KR20-LIEN-E-13	06.mar	37	05.apr	21.apr	28.apr	10.may	27.may	82
8	KR20-LIEN-E-18	07.mar	37	06.apr	21.apr	27.apr	09.may	24.may	78
9	KR20-LIEN-E-25	07.mar	37	06.apr	20.apr	27.apr	10.may	26.may	80
10	KR20-LIEN-L-01	07.mar	37	06.apr	21.apr	27.apr	10.may	27.may	82
11	KR20-LIEN-L-04	06.mar	37	06.apr	21.apr	29.apr	09.may	27.may	81
12	KR20-LIEN-L-06	05.mar	38	06.apr	21.apr	28.apr	10.may	27.may	83
13	KR20-LIEN-L-09	06.mar	37	06.apr	20.apr	28.apr	10.may	27.may	82
14	KR20-LIEN-L-10	06.mar	37	07.apr	19.apr	27.apr	09.may	26.may	81
15	KR20-LIEN-L-14	07.mar	37	05.apr	20.apr	28.apr	10.may	25.may	79
16	KR20-LIEN-L-16	06.mar	38	06.apr	21.apr	28.apr	10.may	28.may	83
17	KR20-LIEN-L-18	06.mar	38	05.apr	20.apr	28.apr	10.may	26.may	81
18	KR20-LIEN-L-22	07.mar	36	07.apr	20.apr	27.apr	09.may	26.may	81
19	KR20-LIEN-L-23	07.mar	37	06.apr	20.apr	27.apr	10.may	25.may	80
20	KR20-LIEN-L-25	06.mar	37	05.apr	20.apr	27.apr	10.may	27.may	81

<b>Average indicator</b>	<b>06.mar</b>	<b>37</b>	<b>06.apr</b>	<b>20.apr</b>	<b>28.apr</b>	<b>10.may</b>	<b>26.may</b>	<b>81</b>
<b>Minimum indicator</b>	<b>05.mar</b>	<b>36</b>	<b>05.apr</b>	<b>19.apr</b>	<b>27.apr</b>	<b>09.may</b>	<b>24.may</b>	<b>78</b>
<b>Maximum indicator</b>	<b>07.mar</b>	<b>38</b>	<b>07.apr</b>	<b>21.apr</b>	<b>29.apr</b>	<b>11.may</b>	<b>28.may</b>	<b>83</b>

According to the results of the conducted phenological observation, it was determined as a result of phenological observations that the transition of lentil varieties and samples to the branching phase corresponded to April 5-7 on average.

Raqobatli nav sinash ko`chatzoridagi yasmiq nav va tizmalarining fenologik kuzatuv natijalariga ko`ra g`unchalash fazasi tahlil qilinganda, qaytariqlar bo'yicha o`rtacha 19-apreldan 21-aprelgacha bo`lgan kunlarni o`z ichiga oldi. It was observed that the flowering phase lasted from April 27 to April 29 on average.

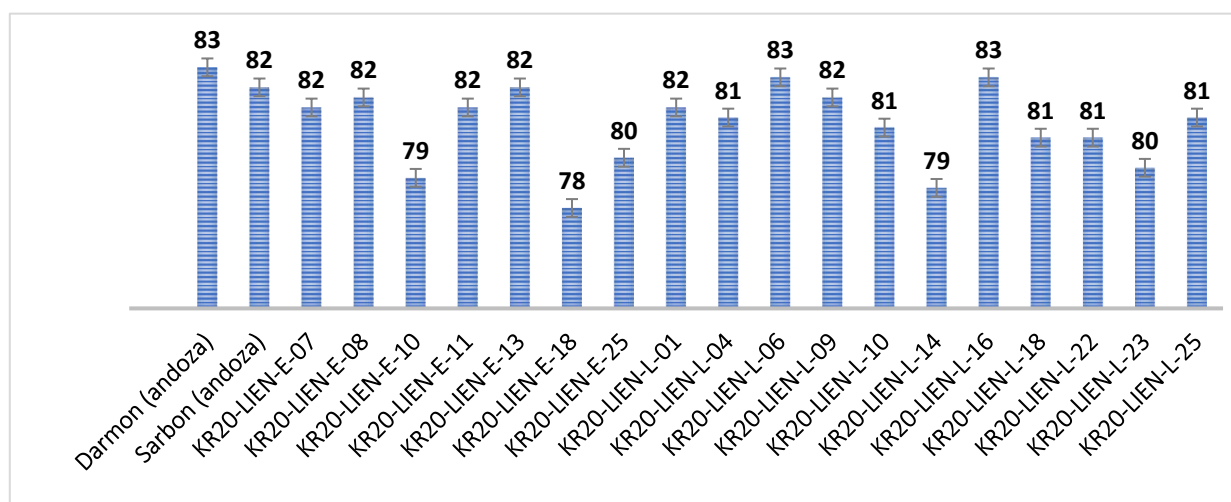
Temperatures greater than 32/20°C (max/min) during flowering and pod maturity have adverse effects on lentil growth from germination to grain filling, affecting yield and nutritional quality [2].

The pod formation phase of lentil varieties and ridges was observed on average from May 9 to May 11. It was found that the model produced pods early in 5 ridges compared to the varieties.

The effects of heat stress, mainly during the reproductive stage of plants and during seed development, seriously threaten pollen viability, fertilization and legume crop yields [3].

According to the conducted studies, the ripening period of lentil varieties and samples was determined from May 24 to May 28. The ripening phase was observed earlier in 9 samples compared to the model varieties.

It was observed that the days until ripening of lentil varieties and samples lasted from 78 to 83 days. As a result of research, it was found that the growth period of 10 samples is short compared to the model varieties (picture 1).



Picture 1. Maturation date of lentil varieties and samples.

According to the results of biometric measurement of lentil varieties and samples in the competitive variety testing nursery, it was determined that the average plant height is 29-55 cm. Compared to standard varieties, it was observed that the plant height index was higher in 10 samples.

According to the results of the conducted research, it was observed that the number of fully matured plants of lentil varieties and samples is from 33 to 37 (82.5 - 92.5%) (Table 2).

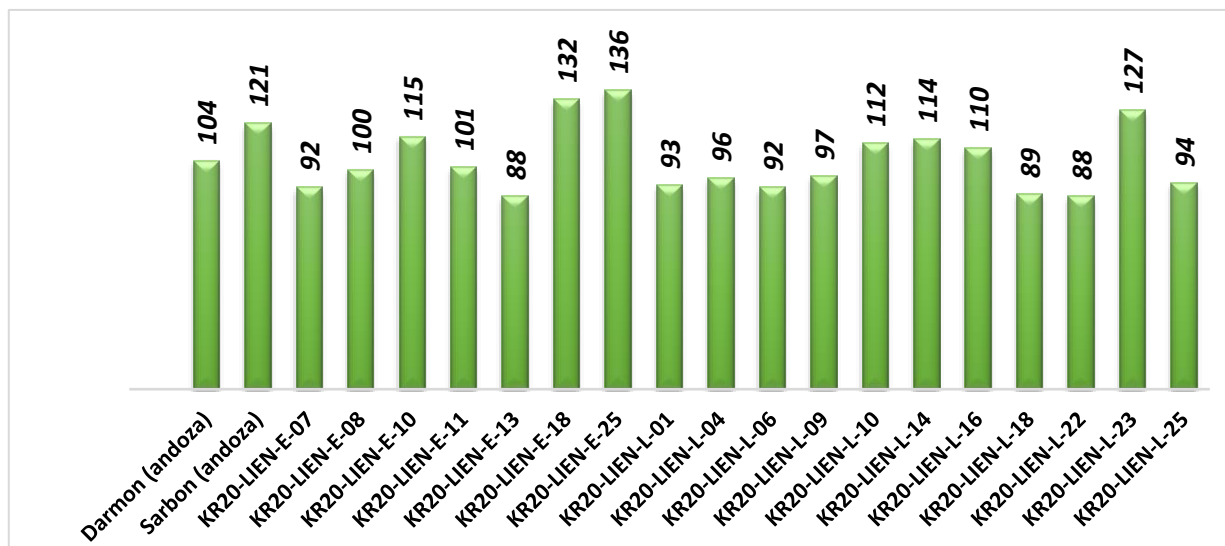
**Table 2**

**Productivity indicator of lentil varieties and samples in the competitive variety trial nursery  
(Karshi - 2022 y.).**

№	Name of variety and specimens	The number of fully ripe plants, pcs	The number of pods per plant, pcs				The number of grains in one plant, pcs	1000 grain weight, gram	Jami don soni	Productivity, quintal/gram	Protein content, %
			1 grain	2 grain	3 grain	Total					
1	Darmon	36	73	31		104	135	77	4858	18,8	25,4
2	Sarbon	34	91	30		121	151	73	5070	18,5	26,6
3	KR20-LIEN-E-07	35	71	21		92	113	68	3978	13,5	27,8
4	KR20-LIEN-E-08	37	67	33		100	133	78	4919	19,3	25,4
5	KR20-LIEN-E-10	37	90	26		115	141	83	5263	21,8	26,7
6	KR20-LIEN-E-11	35	84	17		101	118	68	4099	13,9	24,4
7	KR20-LIEN-E-13	36	62	25	2	88	115	76	4180	15,8	25,4
8	KR20-LIEN-E-18	37	104	28		132	160	80	5878	23,5	25,8
9	KR20-LIEN-E-25	35	109	26	1	136	163	83	5691	23,5	26,9
10	KR20-LIEN-L-01	36	58	34		93	127	70	4613	16,1	24,6
11	KR20-LIEN-L-04	36	67	29		96	125	76	4511	17,1	29,4
12	KR20-LIEN-L-06	33	78	14		92	106	60	3510	10,5	22,0
13	KR20-LIEN-L-09	36	66	30	2	97	129	70	4601	16,2	23,3
14	KR20-LIEN-L-10	35	92	20		112	132	75	4565	17,1	24,2
15	KR20-LIEN-L-14	37	90	24		114	138	80	5072	20,3	26,6
16	KR20-LIEN-L-16	37	87	23		110	134	74	4942	18,3	29,7
17	KR20-LIEN-L-18	33	70	18		89	107	61	3490	10,6	28,4
18	KR20-LIEN-L-22	36	64	23	2	88	113	75	4030	15,1	23,7
19	KR20-LIEN-L-23	37	102	24	3	127	153	83	5621	23,2	25,6
20	KR20-LIEN-L-25	37	70	24		94	118	78	4354	17,0	28,3
<b>Average indicator</b>		36	80	25	2	105	131	74	4662	17,5	26,0

<b>Minimum indicator</b>	33	58	14	1	88	106	60	3490	10,5	22,0
<b>Maximum indicator</b>	37	109	34	3	136	163	83	5878	23,5	29,7

It was determined that the number of one-grain pods in one bush of lentil varieties and samples is 58-109, the number of two-grain pods is 14-34, and the number of three-grain pods is 1-3. It was observed that the total number of legumes in one bush is 88-136 (picture 2).



**Picture 2. The number of pods in one plant of lentil varieties and samples, pcs**

According to the results of the experiment, it was determined that the number of grains in one bush of lentil varieties and samples is 106-136. When studied in laboratory conditions, it was found that the weight of 1000 grains of lentils is 60-83 grams. It was determined that the weight of 1000 grains of the sample "Darmon" variety is 77 grams, and the weight of 1000 grains of the "Sarbon" variety is 73 grams. 1000 grain weight was found to be higher in 6 samples compared to standard varieties.

According to the results of the conducted research, it was observed that the average yield of lentil varieties and samples is from 10.5 centners/ha to 23.5 centners/ha. It was determined that the yield index of the sample "Darmon" variety is 18.8 centners/ha and the yield index of the "Sarbon" variety is 18.5 centners/ha. Compared to standard varieties, it was found that 6 samples have higher productivity.

Several days of high temperatures limit many physiological processes, including processes such as photosynthesis, metabolic pathways, electron flow, and respiration rate [4].

According to the results of research carried out in laboratory conditions, it was found that the average protein content of lentil varieties and samples is 22.0-29.7%. It was determined that the protein content of the sample "Darmon" variety was 25.4% and the protein content of the "Sarbon" variety was 26.6%. It was found that the protein content of 7 samples was higher than that of the model varieties.

## CONCLUSION

In conclusion, it should be noted that high temperature during the development stages of leguminous crops, including lentils, had a significant effect on the yield and protein content of plant grains.

## REFERENCES

1. Gaur , P . M. et al. High temperature tolerance in grain legumes. 2014. C-54-58.
2. Bhardwaj, A. et al. Heat Priming of Lentil (*Lens culinaris* Medik.) Seeds and Foliar Treatment with  $\gamma$ -Aminobutyric Acid (GABA) , Confers Protection to Reproductive Function and Yield Traits under HighTemperature Stress Environments. International Journal of Molecular Sciences vol. 22 (2021) .
3. Gaur va boshq. , 2015). Gaur, P.M., Samineni, S., Krishnamurthy, L., Varshney, R.K, Kumar, S. and Ghanem, M.E. 2015. High temperature tolerance in grain legumes. Legume Perspect 7:23-24 .
4. Redden RJ, Hatfield JLP, Vara PV, Ebert AW, Yadav SS, O'Leary GJ. Temperature, climatechange, and globalfood security. In 'Temperature and plant development'. Vol. 1. (Eds KA Franklin, PA Wigge) pp. 181–202. (John Wiley & Sons: Hoboken, NJ, USA), 2014.