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RESULTS OF BREEDING WORKS OF OIL-CROPS IN THE CONDITIONS OF RAINFED IN UZBEKISTAN

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Abstract:

The article presents the data of selection work on oilseeds such as safflower and flax in the rainfed conditions of Uzbekistan. Based on the results of the research, data on the oil content and yield of new varieties are given.

Keywords: safflower, flax, seeds, rainfed crops, productivity, oil content, number of boxes, baskets, weight of 1000 seeds.

The increase in the areas of oilseeds is not accidental and temporary. In the Development Strategy of the Republic of Uzbekistan until 2030, an important place is given to providing the population with food and the issue of food security of the country, as well as the careful use of energy resources, both non-renewable and alternative, based on the development and implementation in production of scientifically based recommendations and proposals for the rational use of natural resources. resources.

Safflower, flax and sesame are the leading oil-bearing crops rotated in the rainfed conditions of the republic, and as you know, they are the main source that meets the needs of industry and the national economy in food and technical oils. In particular, in the feed industry, in farms and in the private sector, by-products of oilseeds - cake and meal are widely used as high-quality feed. At the same time, due to global climate change, the frequency of dry years and the duration of droughts are increasing. The total gross seed harvest for oilseeds is declining, and there is a certain shortage of vegetable oil in the region.

Dyeing safflower, aka wild saffron, aka dyeing thistle, aka American saffron - Cárthamus tinctórius L. (Arabic - karthum or karthom; Latin - tinctorius - dyeing). This is a herbaceous plant, which is an annual, less often a biennial; belongs to the family Asteraceae (Compositae) V.D. Anufriev, (1983).

As a fodder crop, safflower attracted attention when the question arose of strengthening the forage base, especially in the arid zones of S.E. Zemlinsky, (1971). Non-thorny varieties of safflower have fairly high nutritional properties. It is used in pure form or in mixtures with other crops for hay, silage, green fodder.

As a result, early sowing plants have high seed yields, in which their oil content also increases. The analysis of the scientific literature allows us to conclude that sowing dates are important in achieving high productivity of safflower crops, the establishment of which directly depends on the climatic and soil conditions of G.A. Lavronov (1972).

In the rainfed conditions of Uzbekistan, it is necessary to complete the sowing of oilseeds before the end of March, when the soil has the required amount of moisture. Early sowing has the advantage that the flowering phase of safflower coincides with the period when there is still enough moisture in the soil.

Oilseed flax is a valuable multi-purpose agricultural crop. Cultivated flax belongs to the species Linum usitatissimum L, of the flax family. According to morphological and economic features, 5 varieties of cultivated flax are distinguished: long-grained, mezheumki, curly, large-seeded and creeping.

Cake and meal is a valuable concentrated feed for animals, in terms of protein content it is in no way inferior to rapeseed cake. According to I.A. Minkevich (1957), flax seeds contain 25-45% oil and up to 30% protein, they also contain nitrogen - up to 5%, ash up to 4%, fiber up to 4.5%. One kilogram of linseed cake contains 1.14 feed units and 285 g of digestible protein. Linseed oil contains up to 16-20% oleic fatty acid, 14-17% linoleic, 50-60% linolenic, 5-7% palmitic, 3-4% stearic acid.

Recently, worldwide interest in the use of flaxseed oil in food due to its medicinal properties due to its high content of linolenic acid has increased. One of the unresolved problems of flax growing is obtaining a high yield of oilseed flax with a high oil content and improving its quality. It improves metabolism, removes cholesterol from the body, normalizes blood pressure, reduces the likelihood of tumor formation. Flaxseed oil reduces the risk of cardiovascular disease and is used to treat diabetes. The safflower varieties Milyutinsky-114, Gallyaaral, Jizzah-1, Moydor and oil flax varieties Bakhmal-2, Bahorikor and Lalmikor have been created at the Gallyaaral Research Institute of Rainfed Agriculture.

MATERIALS AND METHODS. Varieties of competitive testing of safflower and oil flax in rainfed conditions of the Scientific Research Institute of Rainfed Agriculture served as research material. The study of varieties of competitive variety testing of safflower and oil flax was carried out according to the methods of the State Commission for variety testing of oilseeds (1983).

STUDY RESULTS. The aim of our research was a comprehensive study of safflower and oilseed flax varieties in rainfed conditions.

The varieties of KSI of safflower and oil flax were studied, the plot area was 25 m2, the repetition was 4 times and the sowing period was 1-2 decades of March in a competitive variety trial over the years of research, the safflower varieties Jizzah-1, Moidor, No.-2018 distinguished themselves by the number of seeds in the basket /8, 2021/2 as well as by the number of seeds in a box of oil flax variety Bahorikor, Lalmikor, 2018/5 (Table 1.2.).

WEATHER.

The totality of changes in the annual regime of temperature and precipitation indicates the existence of two different phases of vegetation in Uzbekistan - spring mesothermic and summer - xerothermic.

The climate is sharply continental, summers are dry and hot, and winters are cold. The average long-term annual rainfall is 354 mm, with fluctuations in air temperature from 11.6 0C, and in summer (June-July) it reaches +45 0C.

Agrometeorological data for the growing seasons 2020-2022 are presented in table. 1.

Table 1.
Agrometeorological data for the growing seasons 2020-2022
(data for the Gallaaral agrometeorological station)

Indicators	Months									Average or sum
	X	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	
The amount of precipitation, mm										
Average perennial	17,1	35,0	55,0	40,4	52,0	65,0	53,6	35,4	8,4	361,9
2019-2020	5,3	32,2	16,3	57,8	61,3	39,5	91,5	87,0	0	391,0
2020-2021	0,0	48,0	9,6	3,2	10,5	95,7	5,7	14,7	0,0	187,4
2021-2022	18,4	0,4	13,8	53,4	13,0	173,6	39,3	78,0	5,8	395,3
Air temperature, ^{0}C										
Average perennial	12,1	5,9	0,3	1,7	0,9	6,8	14,1	19,6	22,5	11,6
2019-2020	13,2	3,7	3,5	1,4	4,6	4,6	9,4	19,6	26,8	9,6
2020-2021	10,4	1,1	-1,3	-4,3	5,3	7,4	14,3	22,0	26,6	9,0
2021-2022	10,0	4,3	3,8	3,4	4,7	4,9	18,2	20,0	25,4	10,5
Air humidity %										
Average perennial	32,0	52,0	69,0	72,0	66,0	60,0	48,0	35,0	23,0	51,0
2019-2020	55,0	78,0	80,0	88,0	78,0	70,0	73,0	67,0	51,0	71,0
2020-2021	22,0	25,0	53,0	79,0	71,0	76,0	56,0	49,0	29,0	51,0
2021-2022	52,0	66,0	75,0	86,0	73,0	76,0	63,0	62,0	43,0	66,0

Table data show that the amount of precipitation was 391.0 mm in 2019-2020, 187.4 mm in 2020-2021, 395.3 mm in 2021-2022 (long-term average -361.9 mm); air temperature in 2019-2020, 9.6 0C, in 2020-2021, 9.0 0C, in 2021-2022, 10.5 0C (long-term average - 11.60C), humidity in 2019-2020, 71 .0%, in 2020-2021, 51.0%, 2021-2022, 66% (multi-year average - 51.0%).

Table 2.
The main indicators of the competitive variety testing of safflower on rainfed land (Gallaaral 2020-2022)

№	Titles varieties	From one plant									Yield c/ha				Weight of 1000 grains g				Oil content %			
		2020 year			2021 year			2022 year															
		Number of branches	Number of baskets	Number of seeds in	Number of branches	Number of baskets	Number of seeds in	Number of branches	Number of baskets	Number of seeds in	2020 year	2021 year	2022 year	Ave-rage	2020 year	2021 year	2022 year	Ave-rage	2020 year	2021 year	2022 year	Ave-rage
1	Milyutinsky-114 Art.	9	23	30	8	18	28	8	22	29	7,5	5,4	7,5	6,8	36,7	34,4	31,3	34,1	27,1	23,1	33,4	27,9
2	Gallyaaral	11	21	32	9	17	24	6	19	32	5,8	4,9	7,0	5,9	39,0	39,4	32,8	37,1	24,7	22,5	28,2	25,1
3	Jizzakh-1	13	22	36	10	20	32	9	24	36	7,9	6,4	8,6	7,6	39,8	36,1	34,8	36,9	26,7	23,9	33,6	28,1
4	Moidor	13	25	37	11	21	38	10	28	42	8,2	7,1	7,9	7,7	40,2	38,4	34,5	37,7	28,6	24,4	33,5	28,8
5	2018/4	12	24	29	11	19	34	7	19	36	7,9	6,5	7,7	7,3	40,2	36,7	32,7	36,5	23,4	29,1	31,4	27,9
6	2019/6	6	18	29	9	17	26	8	23	29	7,1	5,0	7,5	6,5	36,9	37,9	30,5	35,1	20,3	26,5	34,5	27,1
7	2018/8	11	26	34	8	22	22	9	31	43	7,8	6,2	8,8	7,6	40,9	36,1	32,9	36,7	25,9	28,2	32,7	28,9
8	2018/10	11	24	31	11	21	25	8	29	33	7,5	6,8	8,0	7,4	38,5	39,4	34,8	37,5	22,1	27,3	35,4	28,2
9	2021/1	8	26	37	12	18	36	8	26	36	7,1	6,3	7,8	7,1	40,5	35,2	33,6	36,4	23,5	28,8	34,8	29,0
10	2021/2	10	27	32	13	23	28	9	24	40	8,8	6,8	8,7	8,1	39,6	37,1	32,9	36,5	24,8	29,9	35,6	30,1

It follows from the literature review that, despite a number of advantages of oilseeds, this crop has not been studied enough in agrotechnical terms.

According to the tabular data (Table 2.), it can be seen that the yield of safflower varieties in the competitive variety testing ranged from 5.8 centners / ha (Gallaaral) to 8.8 centners / ha (2021/2) for varieties in 2020, the standard 7.5 c/ha (Milyutin-114), in 2021 - from 4.9 c/ha (Gallaaral) to 7.1 c/ha (Moidor), the standard is 5.4 c/ha (Milyutin-114), in 2022 - from 7.0 c/ha (Gallaaral) to 8.8 c/ha (2018/8), the standard is 7.5 c/ha (Milyutin-114).

This can be explained by the fact that the conducted studies, depending on the weather, climatic and agrotechnical conditions, which, according to the results of the yield of oilseeds by years, are distinguished by different degrees. (Table 2).

In the competitive safflower variety testing over a three-year study, the average yield for safflower was 2021/2 (8.1 c / ha), the variety "Moydor" (7.7 c / ha), "Jizzakh-1" (7.6 c / ha) and also for oil flax variety "Lalmikor" (7.9 c/ha), 2021/5 (7.7 c/ha), and 2018/7 (7.5 c/ha), at the standard of the safflower variety " Milyutin-114" amounted to 6.8 c/ha and oil flax variety Bakhmal-2 to 6.6 c/ha.

More P.M. Zhukovsky (1971) pointed out that up to 60% of vegetable oils can accumulate in safflower seeds, and up to 37% in fruits. According to the data provided by the Ministry of Agriculture of Uzbekistan, in our country the share of imports of edible vegetable oils reaches 40-45%.

Increasing the production of own vegetable oil only by increasing the area of cultivation of the main oilseeds in rainfed conditions.

The oil content of safflower seeds in 2020-2022 in our experience averaged from 25.1 to 30.1%, for oil flax from 34.4 to 38.6%, which is 2.2-2.8% higher than the standard varieties (Table 2.3).

Table 3.
The main indicators of the competitive variety testing of oil flax on rainfed land (Gallyaaral 2020-2022)

№	Titles varieties	From one plant									Yield c/ha				Weight of 1000 grains g				Oil content %			
		2020 год			2021 год			2022 год															
		Number of branches	Number of boxes	Number of seeds in a box	Number of branches	Number of boxes	Number of seeds in a box	Number of branches	Number of boxes	Number of seeds in a box	2020 year	2021 year	2022 year	Ave-rage	2020 year	2021 year	2022 year	Ave-rage	2020 year	2021 year	2022 year	Ave-rage
1	Bakhmal-2 (st)	7	33	6	5	24	7	6	28	8	7,1	5,1	7,6	6,6	4,8	4,2	4,0	4,3	35,5	33,6	36,7	35,2
2	Bahorikor	9	27	9	7	28	7	6	30	8	6,8	6,2	8,1	7,0	5,2	5,0	4,6	4,9	37,3	34,8	42,6	38,2
3	Lalmikor	8	37	8	6	32	7	5	34	9	8,0	6,8	8,9	7,9	5,3	4,7	4,8	4.9	38,5	35,2	42,1	38,6
4	2018/4	9	32	5	7	36	6	7	27	8	6,8	5,2	7,9	6,6	4,6	4,2	4,4	4,4	33,7	31,8	37,7	34,4
5	2018/5	10	33	8	5	28	7	6	33	9	7,4	6,2	8,6	7,4	4,8	5,1	4,6	4,8	34,6	36,1	38,1	36,2
6	2018/6	8	23	6	5	31	6	6	25	8	6,4	6,3	7,2	6,6	4,7	4,1	4,1	4,3	35,0	36,4	39,2	36,8
7	2018/7	9	42	8	6	34	8	7	37	8	7,5	7,2	8,0	7,5	5,3	4,2	4,9	4,8	36,1	35,0	37,9	36,3
8	2018/8	6	29	5	7	28	7	6	31	8	7,3	6,0	7,8	7,0	4,8	4,3	4,8	4,6	35,3	34,4	36,4	35,3
9	2012/3	8	28	6	6	41	6	6	28	7	8,0	6,9	7,0	7,3	5,0	4,8	4,3	4,7	34,4	32,9	38,0	35,1
10	2021/5	7	38	7	5	32	7	7	32	8	7,9	6,8	8,4	7,7	5,2	4,9	5,3	5,1	35,9	34,6	37,7	36,0

The data in the table (Table 3.) show that the yield of oil flax in 2020 ranged from 6.4 c/ha (2018/6) to 8.0 c/ha (Lalmikor, 2012/3), the standard has 7.1 c/ha (Bakhmal-2), in 2021 - from 6.4 c/ha (2018/4.2018/8) to 7.2 c/ha (2018/7), the standard has 5.1 c/ha ha (Bakhmal-2), in 2022 - from 7.0 c/ha (2012/3) to 8.9 c/ha (Lalmikor), the standard has 7.6 c/ha (Bakhmal-2).

The oil content of oil flax varieties in 2020 ranged from 33.7% (2018/7) to 38.5% (Lalmilkor), in the standard 35.5% (Bakhmal-2), in 2021 from 31.8% (2018/4) to 36.1% (2018/5), for the standard 33.6% (Bakhmal-2), in 2022 - from 36.4% (2018/8) to 42.6% (Bakhorikor) , the standard has 36.7% (Bakhmal-2).

CONCLUSIONS. Thus, in the competitive variety testing, the safflower varieties 2021/2 (8.1 c/ha, 30.1%), izzakh-1 (7.6 c/ha, 28.1%), Moidor (7. 7 c/ha, 28.8%), 2018/8 (7.6 c/ha, 28.9%) 2021/5 (7.7 c/ha, 36.0%), 20185/7 (7.5 c/ha, 36.7%), 2018/5 (7.4 c/ha, 36.2%) , Selected varieties of safflower and oil flax are recommended for use in further breeding work.

In this regard, the development of science-based technologies for the cultivation of oilseeds, in relation to the biological characteristics of the newly released varieties, is very relevant for the dry land of Uzbekistan.

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