Volume 2, Issue 12, December - 2024
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

MORPHOLOGICAL FEATURES OF INDUSTRIAL HEMP CULTIVATION IN SOIL AND CLIMATIC CONDITIONS OF SYRDARYA REGION

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Abstract
This article describes that in 2024, research was carried out on the cultivation of technical hemp in the soil and climatic conditions of the Khavast district of the Syrdarya region, where 4 variety samples were studied in comparison with the standard variety Rodnik, which, with sufficient irrigation and compliance with agricultural cultivation technology, it is quite possible to successfully cultivate. Breeding work was carried out by the method of individual selection of industrial hemp plants with the necessary improved characteristics for further research in order to create new local varieties for our Republic.

Keywords: Industrial hemp, varieties, plants, seeds, soil.

Introduction

To date, on the basis of this Law, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 770 dated December 7, 2020 "On measures to streamline the activities of the use and cultivation of cannabis plants for industrial purposes not related to the production or manufacture of narcotic drugs and psychotropic substances" has been developed.

According to the resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated June 18, 2019 "On measures to create an agro-industrial cluster in the Syrdarya region", RS Success Agro LLC, owned by the Emirati company Industrial Innovation Group LLC, was established [6].

In 2024, according to the state project "Selection and creation of new varieties of technical hemp for cultivation in the soil and climatic conditions of the Republic", the following were planted in the nursery of the competitive test four cultivar samples in comparison with the standard variety Rodnik [3].

Hemp belongs to the family Cannabinaceaea (hemp) to the family Cannabis sativa L. Hemp is an annual bast fiber plant cultivated for fiber and seeds.

Hemp is an annual, usually dioecious plant, there are also monoecious forms. The duration of the growing season, depending on the geographical type of hemp, is 60-130 days. Hemp grows quickly. 10 days after the emergence of seedlings, hemp plants reach a height of 30-35 cm. In the future, it grows slowly for 20-30 days, and in the following days it begins to grow 4-5 cm. During budding and flowering, the growth is 5-8 cm, which contributes to the formation of up to 75% of the above-ground mass [1; 3].

Technical hemp does not have any psychotropic effects, unlike subtypes of narcotic marijuana. Industrial varieties contain less than 0.1% tetrahydrocannabinol (THC), which causes a psychotropic effect [4].

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Today, technical cannabis is considered among the substitutes for cotton and synthetic materials, and not only in the textile industry, but also in the automotive, aircraft and shipbuilding, in the medical, space, defense, pulp and paper, construction industries and the production of sports products [1].

Research Methodology

Before sowing technical cannabis seeds, an agrochemical analysis of the soil is taken, the repetition is 4 times, the area of the accounting plot is 28 m^2.

During the growing season, the care of industrial hemp plants consisted of 8-10 waterings, 2 cultivations and 2 manual weeding.

Irrigation: watering every 7-10 days. After sowing, abundant watering. During the budding period and before the start of fruit formation, it is necessary to feed plants with mineral and organic fertilizers.

It is necessary to apply fertilizers per hectare: $(NH4)_2\ SO_4$ (ammonium sulphate) - 50 kg, KCl (potassium chloride) - 50 kg and $NH_4H_2PO_4$ (ammophos) - 100 kg on an area of 0.04 hectares. They must be installed each time, taking into account the composition of the soil in terms of the main nutrients NPK, predecessor and weather conditions [2].

Research Results

The main goal of our research is the selection and creation of new varieties of technical cannabis suitable for cultivation in Uzbekistan for the production of seeds, oil and fiber, processing of agricultural raw materials and the production of competitive, exportable products.

Soil analyses carried out in the educational and scientific laboratory of Tashkent State Agrarian University together with the SAG AGRO MCHJ laboratory showed that the soils are poorly structured with a large number of dust particles. After watering, a fairly dense crust is formed, which then cracks. The arable layer contains humus 0.46 – 0.67%, gross nitrogen 0.1330 – 0.1535 %, gross phosphorus 0.220 – 0.276 % and gross potassium 1.75-2.20 %, and in the subsurface horizon their content is slightly lower (Table 1).

Table 1. Agrochemical analysis of the soil of the variety-testing site

Horizon cm	Humus, %	Gross form content, %			Mobile form content, mg/kg			
		N	P	K	$N\text{-}NH_4$	$N\text{-}NO_3$	P_2O_5	K_2O
0-15	0,67	0,1535	0,276	2,20	13,5	10,9	5,41	145
15-30	0,46	0,1330	0,220	1,75	12,4	8,2	11,7	98

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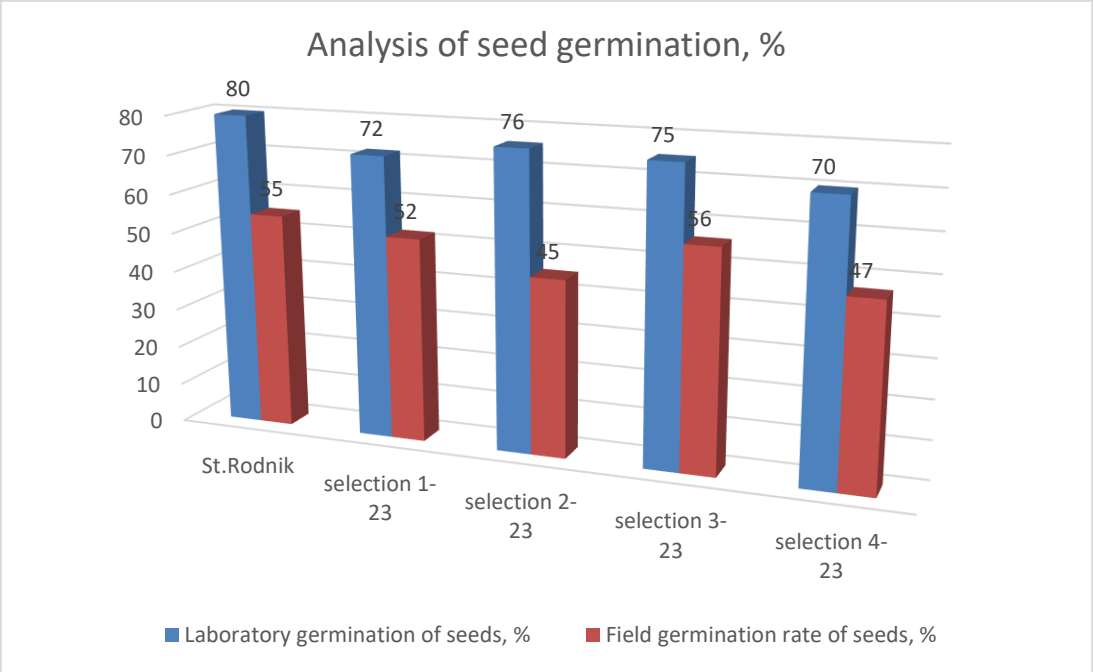

Figure 2., shows the data of the analysis of seed germination, in laboratory and field conditions. The results of morphological features of industrial hemp variety samples are presented in Table 3.

Table - 3. Morphological features of varieties

№	Variety	Plant height, cm	Technical. Length, cm	Stem diameter, mm	Number of internodes. state.	Internode length, cm
1	St. Rodnik	96,6	28,7	5,2	5	5,7
2	Selection 1-23	127,8	46,3	4,3	7	6,3
3	Selection 2-23	114,4	42,7	4,7	7	6,5
4	Selection 3-23	122,5	43,0	4,4	7	6,8
5	Selection 4-23	107,3	33,6	4,8	6	6,3
	∑	*568,6*	*194,3*	*23,4*	*32*	*31,6*
	X	*113,7*	*38,9*	*4,7*	*6,2*	*6,3*

According to Table 3, the highest plant height was found in selection 1-23 and selection 3-23 (127.8 and 122.5 cm), respectively. The Rodnik standard had a plant height of 96.6 cm.

Productivity of technical hemp variety samples

Variety	Weight from one plant, g				Fiber content in one plant	
	Seed		Stems			
	g.	± to St. %	г.	± to St. %	%	± to St.
St. Rodnik	1,26	100	13,2	100	21,3	100
Selection 1-23	0,53	42	14,7	111	25,7	121
Selection 2-23	0,85	67	14,1	109	23,6	110
Selection 3-23	0,72	57	13,5	102	22,8	107
Selection 4-23	0,64	51	12,3	93	23,0	108
∑	*4,0*		*67,8*		*116,4*	
X	*0,8*		*13,6*		*23,3*	

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In terms of the productivity of technical hemp, the largest mass of seeds from one plant was in the standard variety Rodnik - 1.26 grams. All other varieties were inferior in this indicator and amounted to (0.53 - 0.85) grams.

Conclusion

As a result of our research, in 2024, research was carried out on the cultivation of industrial hemp in the soil and climatic conditions of the Khavast district of the Syrdarya region, where 4 variety samples were studied in comparison with the standard variety Rodnik, which, with sufficient irrigation and compliance with agricultural cultivation technology, it is quite possible to successfully cultivate. Breeding work was carried out by the method of individual selection of industrial hemp plants with the necessary improved characteristics for further research in order to create new local varieties for our Republic.

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