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TECHNICAL HEMP AS AN AGRICULTURAL CROP IN UZBEKISTAN

Kim V.V.1., Khotamov M.M.[1]., Gaibullaev G.S.[2]
Institute of Genetics and Experimental Plant Biology.
Tashkent region. Tashkent. Uzbekistan[1]
Samarkand Institute of Agroinnovation and Science.
Samarkand. Uzbekistan.[2]

Abstract

This article describes that for the first time studies were conducted on the culture of industrial hemp in the soil and climatic conditions of the Khavast district of the Syrdarya region, where 5 varieties were studied, which, with sufficient irrigation and compliance with agricultural technology of cultivation, can be successfully cultivated. Selection 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, Resolution No. 770 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 7, 2020 "On measures to regulate the use and cultivation of cannabis plants for industrial purposes not related to the production or manufacture of narcotic drugs and psychotropic substances" was 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 was created, owned by the Emirati company Industrial Innovation Group LLC [16].

For the first time in 2022, under the state project “Selection and creation of new varieties of industrial hemp for cultivation in the soil and climatic conditions of the Republic”, five foreign varieties of industrial hemp were planted in the collection nursery.

Hemp belongs to the Cannabinaceaea family (hemp) to the Cannabis sativa L family. Hemp is an annual bast-fiber plant cultivated for fiber and seeds [8].

Industrial hemp does not have any psychotropic effects, unlike subspecies of narcotic marijuana. Industrial varieties contain less than 0.1% tetrahydrocannabinol (THC), which causes a psychotropic effect [7].

Today, industrial cannabis is considered among the substitutes for cotton,

synthetic materials, and not only in the textile industry, but also in the automobile, aircraft and shipbuilding, in the medical, space, defense, pulp and paper, construction industries and the production of sports goods [1; 9; 11]. The plant actively absorbs greenhouse gas, according to experts, 1 hectare of hemp can replace 4 hectares of forest. Hemp fiber is a strong plant fiber, from which, in addition to hemp, ropes, coarse canvas, high-quality clothing, footwear, underwear are made. The wear resistance of such clothing and footwear is quite high [5; 15].

Hemp is divided into 3 types: northern, central Russian and southern. Central Russian hemp plants are approximately 1.25-2 m tall, with medium-sized leaves, with 5 to 9 lobes. The vegetation period is 80-120 days. The seeds are light gray; the weight of 1000 seeds is 13-18 g [3; 14]. The hemp stem is a complex of tissues differentiated by position in the stem, structure and functionally it consists of epidermis, collenchyma, cortex parenchyma, primary bast fibers, bast parenchyma, conductive tissue, cambium, wood, core [2; 13].

The hemp root system consists of the main taproot and lateral roots. The main root gives rise to first- and second-order roots. The main root penetrates the soil to a depth of 2 m or more, and the first-order lateral roots penetrate to a depth of 80 cm. Compared to the above-ground mass, the hemp root system is poorly developed, which is one of the reasons why hemp is so demanding of soil fertility [6; 10].

The male flower consists of a peduncle, a five-leafed yellow-green perianth and five stamens with long anthers attached to thin threads. Female flowers, like male flowers, are located at the base of branches emerging from the leaf axils. The female flower is surrounded by a sheath-like bract, from which only the pistil columns stand out. The pistil consists of two thin colorless stigmas fused at the base and a single-celled ovary formed from two carpels, in the middle of which the ovule is located. Female flowers of hemp are small; the beginning of their flowering is determined by the emergence of stigmas 1-2 mm of the carpel outward. The inflorescence of hemp is small loose brushes on the lateral branches and at the top of the stem. The inflorescence of motherwort is seed heads located in the leaf axils [4; 12].

Research methodology

Experiments on the selection of industrial hemp seedlings were laid out in the Syr Darya region, Khavast district, in 2022. Five varieties were planted in the collection nursery: Ferimon, Santhica, Felina, Fedora, Rodnik. Before sowing the seeds of industrial hemp, an agrochemical analysis of the soil was taken. The sowing date was April 12, the repetition was 4-fold, the area of the accounting plot was 28 m2, with underground drip irrigation (irrigation pipes pass at a depth of 20 cm, where water is supplied to the roots of plants under the pressure of pumps).

Observations, field and laboratory records and measurements were carried out according to the "Methodological guidelines for hemp selection and production testing

of completed research work" and "Methodological guidelines for conducting field and vegetation experiments with hemp" (VNIILK, 1980).

Research results

The main objective of our research is to select and create new varieties of industrial cannabis suitable for cultivation in the conditions of Uzbekistan for the production of seeds, oil and fiber, processing of agricultural raw materials and production of competitive, exportable products.

Soil analyses conducted in the educational and scientific laboratory of TashSAU together with the laboratory of SAG AGRO MCHJ showed that the soils are poorly structured with a large number of dust particles. After irrigation, a fairly dense crust is formed, which then cracks. The arable layer contains humus 0.46 - 0.67 %, total nitrogen 0.1330 - 0.1535%, total phosphorus 0.220 - 0.276 % and total potassium 1.75-2.20%, and in the subsoil horizon their content is slightly less.

Phenological observations of industrial hemp varieties are presented in diagram 1. As can be seen from figure 1, the earliest mass shoots were observed in the Ferimon variety. This variety also stood out for its flowering, seed setting and earlier technical seed maturity. Later seed ripening was observed in the Rodnik and Felina varieties (102 and 104 days after mass shoots).

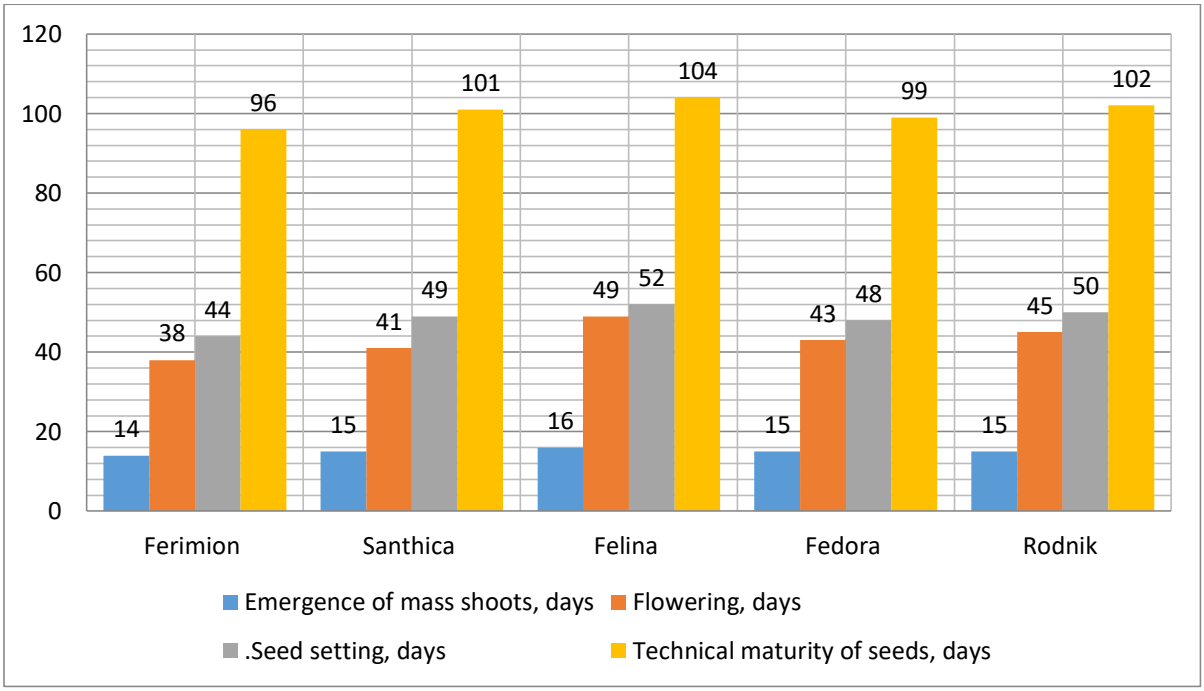

Figure - 1. Phenological observations of industrial hemp varieties for 2022-2023.

The results of biometric measurements of industrial hemp varieties for 2022 and 2023 (averaged) are presented in Table 1.

Table - 1. Biometric measurements of industrial hemp varieties at 90th from mass shoots in 2022-2023

	Plant height, cm	Number of internodes, pcs.	Root length, cm	Stem diameter, mm
∑	648,6	32	102,8	31,8
X	129,7	6,4	20,6	6,4

Biometric measurements were carried out on the 90th day from mass shoots, which showed that the highest plant height and the number of internodes were observed in the Santhica variety - 138.4 cm and 7 pcs., and the lowest in the Rodnik variety, respectively - 92.7 cm and 5 pcs. The remaining varieties Ferimion, Felina, Fedora had intermediate biometric indicators.

Conclusions

Based on the research we conducted, we can draw the following conclusions:

For the first time, research was conducted on the culture of industrial hemp in the soil and climatic conditions of the Syrdarya region, where 5 varieties were studied, which, with sufficient irrigation and compliance with cultivation technology, can be successfully cultivated.

Agrochemical analysis of the soil showed an increased salt content and a low humus content, which must be replenished by adding mineral fertilizers during the vegetation of plants.

Breeding work was carried out using 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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16. E-mail: info@uzcanna.com.