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MORPHOLOGICAL PROPERTIES OF LOCAL SUNFLOWER VARIETIES (REVIEW)

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ABOUT ARTICLE

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Abstract: The article examines the morphological properties of sunflower varieties and hybrids included in the State Register of Agricultural Crops and recommended for sowing on the territory of the Republic of Uzbekistan, such as Jahongir, Dilbar, Osiyo, Yangi Zamon, Navruz, Dushko, Romeo, Vladimir, Bosphora.

INTRODUCTION

Oilseeds are plants whose seeds, fruits or tissues accumulate fatty oils in quantities that economically justify their industrial processing. Of greatest practical interest are two products obtained from seeds - oils and proteins. Vegetable oils, along with other food products, constitute an important component of a balanced human diet. Vegetable oils are consumed directly as food, used in bakery and confectionery production as additives to dough, in the manufacture of cookies, chocolate, halva, candy fillings and other various products [1,2].

According to the Uzyog`moysanoat Association [3], which unites more than 90% of oil seed processors in Uzbekistan, the actual consumption of vegetable oils in the country is 488 thousand tons per year. Today, domestic production provides 293 thousand tons of these products. The rest is covered by imports of vegetable oil. Today, there are 300 oil-extracting enterprises operating in the Republic, with a total processing capacity of 4.3 million tons of oilseeds per year. At the same time, capacity utilization reaches only 62%.

Chairman of the Board of the Association of Oil and Fat Enterprises of the Republic of Uzbekistan Uzyog`moysanoat Oybek Zufarov during the third international conference "Asia Grains&Oils Conference in Tashkent 2023" noted that Uzbekistan is increasing not only the import of vegetable oils and oilseeds, but also its own production of oilseeds. Thus, the sown area of sunflower in 2023 increased to 75 thousand hectares (against 73 thousand hectares in 2022, 71 thousand hectares in 2021 and 17 thousand hectares in 2020), and the yield - up to 135 thousand tons (versus 119, 114 and 17 thousand tons, respectively).

In 2022, enterprises in the oil and fat industry produced industrial products worth 6.13 trillion soums , in this regard a growth rate of 108.2 percent was achieved compared to the previous year. Including: 201 thousand tons of vegetable oil (growth rate of 103.6 percent) [4].

Plant fatty oils represent a concentrated energy and construction reserve concentrated in seeds and other plant organs. The fat content in the seeds and fruits of plants varies widely - from 2 to 70% and depends on the geographical location and climatic conditions in the area of their growth, as well as on the morphological characteristics of various varieties and hybrids of oilseed plants [5].

Based on this, the study of the morphological properties of local sunflower varieties and hybrids in order to select the most suitable sunflower varieties planted in Uzbekistan to increase the production of high-quality vegetable oil that meets food safety requirements to meet the internal needs of the republic is relevant.

METHODS

To study the morphological characteristics of local varieties and hybrids of sunflower with the aim of using them for the production of raw materials for the oil and fat industry, methods of analysis and synthesis of scientific and technical literature, system analysis and logical thinking were used.

RESULTS

As is known [1,6,7,8], sunflower is an annual herbaceous plant of the family that belongs to the Composite family of the genus *Helianthus*, which includes several dozen species. *Helianthus* is common in agricultural production *annus L.* is an annual sunflower. Other species are annual and perennial wild and ornamental forms. The components and structure of sunflower are shown in Fig. 1 [9].

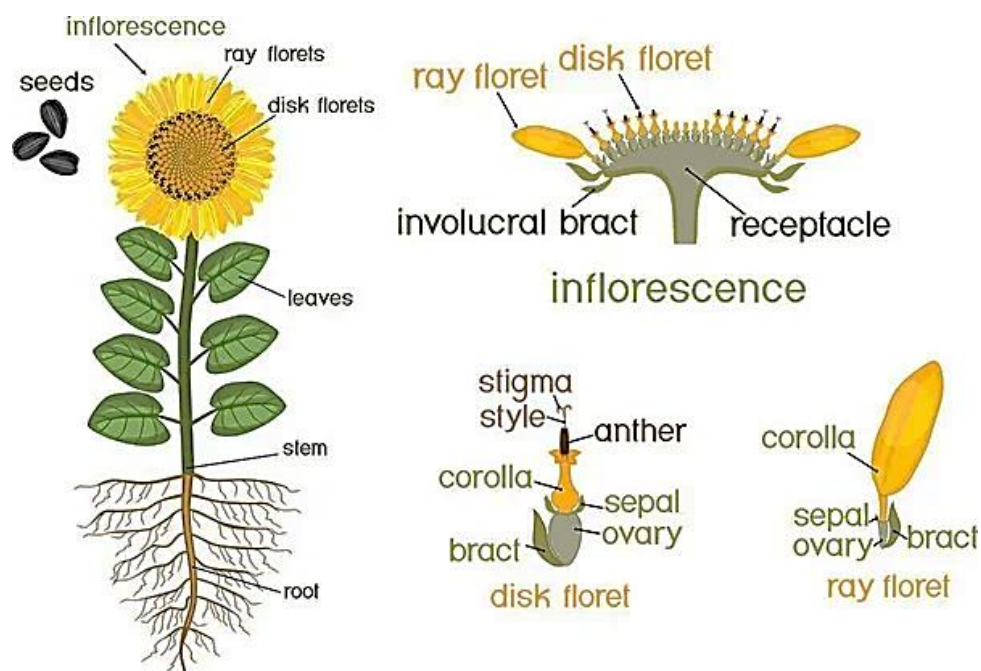


Fig.1. Sunflower structure

Let's consider the main breeding varieties of sunflower recommended for sowing in the fields of Uzbekistan, according to data [10,11].

Jakhongir (2002009) is a breeding variety of the Research Institute of Plant Growing of Uzbekistan. Authors: Amanova M, Rustamov M, Rustamov A, Khodzhiev F. Origin: obtained by single and group selection from Turkish samples of the collection k-Uz007085 A 502. Since 2006, included in the State Register of Agricultural Crops Recommended for Sowing in the Republic of Uzbekistan for Samarkand and Tashkent regions.

The average height of the plant is 140-160 cm. The stem of the plant is moderately pubescent. The leaf is heart-shaped, moderately pubescent. The basket is dense, 25-30 cm in diameter, curved down. The seeds are black, dark gray in appearance, and medium in size. Average weight of 1000 grains is 60.2-69.2 g. Medium early. The growing season is 98-108 days. Resistance to lodging and shedding Resistance to lodging and falling off 5.0 points. Average yield is 1.92-2.20 t/ha. The amount of oil in the seeds is 48-52%. During the years of testing, the variety was not affected by agricultural diseases and insects.

Grown high-quality seeds are recommended for main and repeated sowings. For the convenience of dehqan and farm enterprises and to eliminate possible problems, a centralized system for supplying seeds through oil and fat enterprises has been established.

Dilbar (2001060) is a breeding variety of the experimental station of oilseed crops of Uzbekistan. Authors: Anarbaev I, Khaitov T, Azizov T, Zietulina D, Volkova L, Tukhtaeva S, Yusupov Kh, Bakibekova R. Origin: obtained from samples (NS-H-45-Serbia) by single and group selection. Since 2013, it has been included in the State Register of Agricultural Crops recommended for sowing on the territory of the Republic of Uzbekistan.

Belongs to the group of medium-sized varieties. The average height of the plant is 170 cm. The average weight of 1000 seeds is 72.0-85.0 g. Morning. The growing season is 95-100 days. The variety is resistant to lodging and shedding - 4.5 points. The average yield in the main period is 3.31 t/ha. Seed oil content is 47-51%. There were no cases of agricultural diseases during the years of testing.

Oshiyo (2014071) - a selection variety of the seed farm of the scientific direction "Asaka oil plant seeds » Andijan. Authors: Anarbaev I, Israilov A, Abidov A, Shaimanova G, Khabibullaev Kh, Abidova M. Origin: created by the method of single and group selection from samples of the collection (NS-N-45-Serbia). Since 2016, it has been recommended for sowing as main and secondary crops on irrigated lands of the Republic of Uzbekistan, and is included in the State Register of Agricultural Crops. The average plant height is 170 cm. The basket is medium size. The seeds are black. The average weight of 1000 seeds is 55.4 g. The growing season is 100 days. The variety is resistant to lodging and shedding - 5.0 points. The average yield is 2.38 t/ha. Oil content is 48-52%. During the period of competitive testing, no cases of agricultural diseases were observed.

Yangi Zamon (2014072) - a selection variety of the seed farm of the scientific direction "Asaka" oil plant seeds » Andijan. Authors: Anarbaev I, Israilov A, Abidov A, Shaimanova G, Khabibullaev Kh, Abidova A. Origin: created by the method of single and group selection from the R-453 variety of Russian selection. Since 2016, it has been recommended for sowing as main and secondary crops on irrigated lands of the Republic of Uzbekistan, and is included in the State Register of Agricultural Crops. The average plant height is 175 cm. The grain is black. Medium size basket. The average weight of 1000 seeds is 55.0 g. The growing season is 105 days. The variety is resistant to lodging and shedding - 5.0 points. Average yield 2.29 t/ha. Oil content is 49-53%. During the period of competitive testing, no cases of agricultural diseases were observed.

For two years now, during the second sowing, we have been sowing the sunflower variety "Yangi Zamon" and getting a rich harvest," says Mavluda Mirzaeva, head of the Kogon Fazenda farm in the Kagan district of the Bukhara region. – This year, 15 hectares were sown with this variety, the yield was 3.45 tons per hectare. This is a good variety, resistant to diseases and produces a rich harvest.

Navruz (2011059) - selection variety of selection of the experimental station of oilseed crops of Uzbekistan. Authors: Anarbaev I, Idiyatulina D, Tursunov L, Li Alevtina Anatolyevna, Balkibekova R. Origin: Obtained from the collection (K-60 "Amisson", France) by the method of individual and group selection. Since 2013, it has been recommended for sowing on the territory of the Republic of Uzbekistan and included in the State Register of Agricultural Crops. Belongs to the group of medium-sized varieties. The average height of the plant is 170 cm. The average weight of 1000 seeds is 71.0 g. The basket is dense, curved down, the seeds are black. Morning. The growing season is 98-110 days. Wear resistance, 4.5 points. The average yield is 3.23 t/ha. There were no cases of agricultural diseases during the years of testing.

Let's consider the main hybrid sunflower varieties recommended for sowing in the fields of Uzbekistan.

Sunflower seeds Dusko F1 (2010051) are a hybrid of Serbian selection for traditional cultivation technology, which over the years of cultivation has established itself as a hybrid resistant to all races of downy mildew. Since 2012, it has been included in the State Register of Agricultural Crops recommended for sowing on the territory of the Republic of Uzbekistan.

Dushko is a mid-late sunflower hybrid. The stem is straight, strong, resistant to lodging, and covered with stiff hairs. Vegetation period 91 days. Plant height 170-190 cm. Basket with a diameter of 20-25 cm, convex in shape. The root system is taproot, from which strong and highly branched lateral roots emerge. Leaves are large, oval-heart-shaped forms. Productivity 3.25 t/ha. Drought resistance 8 out of 10. Dushko sunflower seeds have an oil content of 50-52%. The achene is medium-sized, black. Weight 1000 pcs. approximately 70-80 g.

Advantages of Dushko sunflower seeds: the hybrid is suitable for growing in drought conditions. Genetically resistant to all races of powdery mildew, which saves on chemical treatment fungicides. Strong stem and root system holds well plant in the soil even under unfavorable weather conditions and strong winds.

Sunflower hybrid seeds Romeo (F1). Selection - Serbia (NS SEME - Institute of Field Growing, Novi Sad). The type of hybrid is simple. Plant height 170-180 cm. Stem of medium thickness. The root system is powerful, branched, and allows the use of soil moisture from a depth of 1.5-2.5 m. The basket is thin, convex in shape, turned down, diameter 21-25 cm Classic technology. Vegetation - Mid-early - 107-112 days. Yield potential - 4.5 t/ha. Drought resistance is high. Resistance to lodging and shedding is high. The foliage is excellent, at the initial stages of growth it is characterized by a small leaf surface, in the

budding phase the leaves completely cover the soil. Black seeds, elongated, weight 1000 pcs. – 60-70 g. Oil content 49-51%.

Sunflower seeds Vladimir (2010052) - a hybrid of Serbian selection for traditional growing technology. Since 2012, it has been included in the State Register of Agricultural Crops recommended for sowing on the territory of the Republic of Uzbekistan.

High germination energy. Resistant to 6 broomrape races. Growing season: 90 – 95 days (from germination to full ripeness). Plant height: 175-185 cm. Yield potential – 3.0-3.8 t/ha. The period of germination - flowering is 60-65 days. The basket is convex in shape. High resistance to diseases and abiotic factors, heat and drought resistance makes it possible to obtain a stable yield even in conditions when most hybrids are not able to form a crop. Black seeds, weight 1000 pcs. approximately equal to 62-63 g. Seed oil content 48% - 50%.

The Vladimir variety is an early variety and is therefore characterized by very rapid ripening in the second half of the growing season and uniform ripening.

Sunflower seeds Bosphora (2013068) – selective hybrid of Switzerland. Since 2015, it has been included in the State Register of Agricultural Crops recommended for sowing on the territory of the Republic of Uzbekistan for the Namangan and Tashkent regions.

The average plant height is 175 cm. The growing season is 87-95 days. The hybrid is resistant to lodging and shedding, 5.0 points. The average yield is 2.22-2.4 t/ha. Seed color is black. The average weight of 1000 seeds is 60.0 -70.0 g. Oil content is 48-50%.

Unlike sunflower varieties, its hybrids are annual plants. The variety can be sown repeatedly, provided that there is no other variety nearby in the fields; when cross-pollinated , the varieties degenerate. The morphological characteristics of the hybrids are homogeneous: they germinate together, have identical plant heights and the same growing season and ripening periods. All this greatly facilitates the work of farmers when treating plants with herbicides and harvesting [12].

Based on this and according to the oil content of the seeds, the varieties Osiyo and Yangi Zamon, hybrids Dusko, Romeo and Basfora were chosen for further research .

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