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Scientific Foundations of Organizing Oil Crop Seed Production

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Annotation: To date, 180,000 hectares of oilseed crops have been sown in our republic. However, due to improperly organized seed production systems under production conditions, the potential for increasing yields is limited. This article provides information on the development of a seed production system and the basic requirements for seed material.

Seed production is considered one of the most important measures for increasing crop yields and agricultural production in our country. Scientific advancements and advanced production experience indicate that a modern, properly organized seed production system increases crop yields by 20-25 percent. The goal of the seed industry is to multiply the seeds of regionalized (state-registered) varieties while maintaining varietal purity and biological and economic characteristics.

Keywords: Variety, rainfed, safflower, seed production, progeny, line, standard, growing.

Introduction. As a result of the growth of the world's population and the rising standard of living, there is an increase in the demand for food products, as well as oil and fat products. Resolution No. 438 of the Cabinet of Ministers of the Republic of Uzbekistan dated July 14, 2025, "On Additional Measures for the Development of Oil Crop Production in the Republic," defines such tasks as "Creating new varieties of oil crops in cooperation with foreign countries." Based on these tasks, in the selection of oilseeds on rainfed lands, one of the urgent tasks today is the creation of high-yielding varieties with high oil content and quality, resistant to drought and various diseases and pests, and the implementation of their seed production system. **[1].**

Currently, in the field of oilseeds, due to the incomplete development of a clearly scientifically based seed production system and the lack of a systematic organization of primary seed production of crops, a decrease in the quality of annually produced seed products is observed. As a result, due to the low yield of such crops as sunflower, safflower, sesame, and oil flax, as well as the lack of high-quality varietal seeds, a decrease in yield indicators is observed. **[2].**

It is known that the systematic conduct of initial seed production of oilseeds requires adherence to the seed production scheme, regulatory agrotechnical measures, and specific recommendations. When distinguishing varieties of oilseeds from each other and analyzing morphological characteristics, it is possible to use the methodology for conducting research on the difference, homogeneity, and stability of safflower (Carthamus tinctorius L.), and the methodological guidelines for conducting research on the difference, homogeneity, and stability of flax (Linum usitatissimum L.) **[3].**

The initial seed production system of oilseed crop varieties is carried out in stages, first of all, lines from typical plants characteristic of this variety and homogeneous in morphological features are selected from areas with high reproduction (elite) for the first year of the first-generation testing nursery, seeds are sown separately (by pedigree method) in rows of 1 m^2 manually, and after the seeds ripen, the best seeds, i.e., large, uninfected lines, are selected and harvested separately.

Research (method) methods: Lines with identical morphological characteristics, selected from the previous year's I-generation testing nursery for the II-generation testing nursery, are sown on an area of 5 m^2 and evaluated in field conditions, and based on the selection, lines with identical biological and morphological characteristics of varieties are selected, diseased and unstable lines are rejected based on negative selection.

Seeds selected from the second-generation testing nursery are cleaned, combined, and prepared for planting in the first-year propagation area. During field observations, the characteristics of all sown families for this variety, the general development period, early maturity, pest resistance, productivity, and main morphological traits are carefully studied and evaluated based on phenological observations.Harvested crops from all seed fields are cleaned by special manual labor and prepared for subsequent stages of the seed production system, bringing them to the required condition of seeds. **[4].**

Determination of varietal characteristics of oilseed crops and conducting field approbation are carried out in collaboration with relevant specialists and breeding scientists based on generally accepted methods. Before entering field approbation, the documents characterizing the quality of sown seeds (seed certificate) are checked. During the approbation process, typical plants of the same variety with similar morphological characteristics from areas with high reproduction are analyzed on-site. Also, during the approbation process, such main indicators as the shape of the fruit baskets (sunflower), the number of grains in the baskets, the degree of thornyness (safflower), the number and weight of grains in one plant, the shape of the bolls, and simultaneous ripening (flax) are analyzed. If varietal cleaning has not been carried out in the sown areas, the

varietal purity specified during the approbation process is reduced by one category **[5].**

The obtained results and their novelty: Currently, when preparing oilseed seeds, according to the state **standard Qz DST 2823:2014** , the quality, purity, and other regulatory indicators of seeds have been established. Varietal and sowing qualities of seeds are classified according to regulatory requirements: original (OU), elite (EU), reproductive for seed purposes (RU), for growing commercial products (RUT) **[6].**

The variety and seed quality of oilseeds, essential oilseeds, and industrial crops are determined based on the following requirements (Qz DST 2823:2014).

Crop type	Descendant	Variety at least, %	Seed purity not less than,%	Other seeds pcs/kg.		Germination at least, %
				total	Weeds up to	
Peanut	OU,EU RU, RU_T	99.6 98.0 95.0	95. 92. 90.	0 0 0	0 0 0	90. 80. 80.
Hemp	OU,EU RU RU_T	98.0 95.0 90.0	96.0 95.0 94.0	75 units 150 units 200 units	50 units 100 units 150 units	90. 85. 80.
Oil sorghum	OU,EU RU RU_T	100. 97.0 95.0	99.0 98.0 96.0	0 100 units 1500 units	0 pcs 80 units 1000 units	90. 85. 80.
Sesame	OU,EU RU RU_T	99.6 98.0 92.0	98.0 96.0 95.	200 units 500 units 1,500	160 units 330 units 400 units	90. 85. 85.
Safflower	OU,EU RU RU_T	99.6 97.0 90.0	98.0 97.0 97.0	4 pieces 30 units 36 units	0 10 units 16 units	90. 85. 80.
Flax	OU,EU RU RU_T	99.6 98.0 97.0	98.0 97.0 96.0	200 units 550 units 1550 units	150 units 500 units 1500 units	90. 85. 80.
Shadow	OU,EU RU RU_T	99.5 98.5 98.0	98. 96. 95.	10 units 15 units 25 units	5 pieces 8 units 15 units	90. 85. 80.

Conclusion. Organization of a scientifically based seed production system in the cultivation of oilseeds based on the above-required state standards will allow achieving pure varietal purity of these crops, as well as creating the possibility of producing high-quality seeds in LLCs, dehkan and farmer farms that continue to operate in the field of oilseed production.

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