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BREEDING OF ELITE SEEDS

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Abstract:

This article provides valuable information on the procedures, instructions, and methods for growing elite seeds, as well as the procedures for organizing nurseries and classifying first- and second-year generations into classes when using individual and mass selection methods.

Keywords: elite, super elite, r-1, seed, single and mass selection, first and second year generations

INTRODUCTION. During seed renewal, all farms should be fully supplied with super elite and elite seeds of regionalized varieties.

Cultivation of elite seeds is aimed at restoring the valuable characteristics and qualities lost due to long-term reproduction and use of regionalized varieties in production.

Methods for producing elite seeds may vary depending on the conditions of the region where they are grown, the type and variety of crops, and the volume of seed production. Institutions engaged in the production of elite seeds are recommended to use the method that is most effective in their conditions.

When growing elite seeds, the following must be strictly adhered to:

- maintaining all the valuable biological and economic characteristics of the variety at the initial level;
- to create favorable conditions for the improvement of valuable signs;
-to maintain a high level of varietal purity by rapidly multiplying seeds, cleaning them from diseases and pests, and preventing mechanical and biological contamination of the variety.

Cultivation of elite seeds is based on the following three factors;

-testing and breeding the best varieties;
- selection of the best elite plants based on their productivity and other valuable characteristics when producing elite seeds;
- to take care of them in convenient and high-quality agrotechnics, to determine countermeasures for protection against diseases and pests.

Elite seeds of cereal crops are produced by individual selection and testing of the progeny of selected plants. In some cases, mass selection can also be used to quickly multiply the seed.

When producing seeds of cereal crops by alternating individual and mass selection methods, seed for planting in primary seed nurseries is obtained from one of the following nurseries:

1) from seeds of individually selected ears of regionalized varieties from breeding, super elite or elite nurseries with high varietal purity;
2) from seeds obtained from breeding fields of institutions that own the variety;
3) from seeds obtained for the first time from breeding and competitive variety testing nurseries of regionalized varieties in scientific organizations.

When using the individual selection method for producing elite seeds, the following nurseries are established:

1) a nursery for selecting first-year generations;
2) a nursery for seeding second-year generations;
3) a nursery for propagation (1-2 years, sometimes up to 4 years);
4) super elite;
5) elite.

RESEARCH MATERIALS AND METHODS. Based on the above urgent tasks, scientists at the Southern Agricultural Research Institute are conducting scientific research on the methods of breeding and growing elite seeds at the central experimental field in Karshi district. The scientific research was carried out based on the methods developed by the State Variety Testing Commission of the Republic of Uzbekistan.

ANALYSIS AND RESULTS. The first-year generation selection nursery is planted with families consisting of seeds of ears selected individually from crops of this variety with high varietal quality and varietal specificity. This nursery should be located in a fertile field with a very good leveling of the soil surface and fertility.

In nurseries for the selection of first-year generations, about 1,000 (but not less than 300) of the best families are often planted. The number of families is determined by their main quantitative characteristics:

The amount should be such that it allows for a thorough assessment when comparing the height of the belt, total productivity, mass of one plant grain, productive accumulation, number of grains per ear, mass of 1000 grains, grain quality, and other valuable economic and biological characteristics.

In this nursery, appropriate observations are made on the growth and development of the plants. Families with poor performance (diseased or contaminated) should be removed from self-pollinating plants before harvesting. The remaining best families are harvested separately and crushed, after laboratory evaluation and removal of the unsuitable ones, the seeds of the remaining lines are planted in the nursery for the second-year generations the following year.

It is advisable to mathematically examine the data obtained by constructing variation series for the lines selected from the first-year selection nursery, mainly on quantitative traits. In order to distinguish between hereditary and non-hereditary changes within a variety, the best results are obtained by using the main indicators of variation series - the average expression of traits (S) and their standard deviation (X) for the entire set of lines. Using these, all lines are classified into classes:

X-3S to 1st class;
X-2S to Class 2;
X=S to class 3;
X+S for 4th grade;
X-2S to class 5;
Families with X+3S indicators are included in the 6th class.

For planting second-year generations in the experimental nursery, seeds from families belonging to the X+2S class are selected and planted.

In the second-year trial nursery, seeds of selected lines from the first-year trial nursery are sown in special seeders or in rows. This makes it easier to monitor and remove non-varietal and diseased families. This nursery is also regularly inspected during the growing season, and non-varietal and diseased families are removed.

Seeds from the second-year generation test nursery are once again examined and sorted in the laboratory, and the well-treated seeds are sown in the propagation nursery with seeder.

Propagation nurseries can take anywhere from one to four years, depending on the crop's reproduction ratio and elite seed requirements.

The job of a propagation nursery is to propagate seeds as quickly as possible. In this nursery, during the growing season, a study on the purity of the variety is carried out. In this case, some plants that are not specific to the variety and are diseased are uprooted.

Seeds grown in a propagation nursery must be absolutely pure. The crop grown in this nursery is harvested with a combine, the seeds are then cleaned, sorted and treated, packed in new bags and stored in well-equipped warehouses. These seeds are used to create super-elite and then elite crops the following year (Table 1).

Table 1
Procedure for the cultivation of elite seeds of cereal crops

T/p	*Year*	*Crop varieties*	*The goal of the Ekinzor*	*Reserve fund, %*
1	1	First year testing of generations (selection)	Generations are judged on a number of characteristics and traits. The bad ones are eliminated and the good ones are selected.	100
2	2	Testing the generations for the second year	Generations are reassessed, good ones are selected, bad families are separated.	70-100
3	3	First year propagation nursery	Breeding seeds, breeding, maintaining the purity and health of the variety.	50-70
4	4-5	Second and third year propagation nursery	Breeding seeds, maintaining the purity, cleanliness and health of the variety.	50

5	6	Super elite	Breeding seeds, maintaining the purity, cleanliness and health of the variety.	30-50
6	7	Elite	Breeding seeds, maintaining the purity, cleanliness and health of the variety.	25-30

When the mass selection method is used to grow elite seeds of grain crops, the following nurseries are established:
1) Breeding nursery;
2) Super elite;
3) Elite.
Mass selection of typical plants and ears required for planting in the propagation nursery is carried out in high-yielding nurseries, such as super elite or elite. The selected plants are inspected by separating the grains from the ears and discarding the unsuitable ones. The seeds obtained for planting are sorted in a laboratory sieve and treated before planting.
To prevent accidental and biological contamination of varieties and to protect against diseases, all seed nurseries of a variety should be placed in limited areas, especially in breeding plots of this crop.
Conclusion. If there are enough elite seeds of newly zoned varieties, it is allowed to use the usual procedure, if there are small quantities, then shortened methods. For the rapid cultivation of such seeds, any reproductive seeds of the variety are grown in high agrotechnical conditions, and the resulting crop is registered as elite seeds. During the growing season, they are thoroughly weeded for species and variety purity, and diseased and poorly developed plants are uprooted. Rapidly cultivated elite seeds must fully meet the requirements of the state standard.

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