

Секція 1.

СЕЛЕКЦІЯ І ГЕНЕТИКА СОРТІВ РОСЛИН

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USE OF THE HYBRIDIZATION METHOD IN RAPESEED SELECTION

Rapeseed (*Brassica napus* L.) is one of the most important oilseed crops worldwide, widely cultivated for the production of oil, protein, and various industrial purposes. Its taxonomy and distribution are of great significance for breeding, conservation of genetic resources, and adaptation to climate change.

The success of breeding work is determined by a wide range of source material, research areas, and breeding methods. The main method of breeding is interspecific hybridization followed by selection. Through crossbreeding, it is possible to recombine the traits and characteristics of the crossed genotypes in a single organism, discard the undesirable ones, select the positive ones, and create genotypes with new traits and characteristics.

Sometimes, as a result of crossing, with complementary gene interaction, new traits and properties arise that radically distinguish the hybrid organism from the original parental forms.

The possibility of obtaining new organisms capable of combining and developing the valuable properties and traits of the parental forms, as well as forming new qualities, has made the method of hybridization important in solving the problems of artificial directed form formation.

Inter-variety hybridization remains the main method used in the creation of new rapeseed varieties. The success of hybridization is largely determined by the correct selection of crossing components. Therefore, knowledge of the patterns of variability of economically valuable traits that determine the productivity and quality of rapeseed seeds makes it possible to more effectively select the initial forms for crossing and to select valuable genotypes.

Breeding programs for the creation of high-yielding varieties should be based on scientific predictions of the development of traits and characteristics that are genetically determined. Therefore, it is necessary to know how traits and characteristics are inherited under certain conditions of development and to fully predict the final results of hybridization.

According to the heterosis dominance hypothesis, heterosis is the effect of many favorable dominant genes that a hybrid receives from each parent. This hypothesis is based on the assumption that genes that have a positive effect on the growth and development of organisms become dominant and semi-dominant under the influence of selection, while negative genes become recessive. The hypothesis links heterosis with three genetic effects of dominant genes: 1) their restraining effect on harmful recessive alleles; 2) the cumulative effect caused by the fact that loci with dominant alleles in parental lines do not coincide, as a result of which the hybrid receives a greater number of such loci, which have a positive effect on the development of the corresponding traits; 3) epistasis (interaction) of dominant genes located in different loci. The positive effect of epistasis on the development of traits exceeds the cumulative effect of loci in terms of magnitude.

Distant hybridization is one of the methods used to create source material for rapeseed breeding. Distant hybridization – the crossing of individuals belonging to different species, genera, or other taxonomic units – enables the combination of diverse gene sets within a single organism and serves as a reservoir of combinatorial variability. Distant hybridization enables the transfer of valuable traits and properties from wild plants to cultivated ones, including ecological plasticity, resistance to adverse environmental conditions, disease tolerance, and other beneficial characteristics. Since the species *Brassica napus* L. does not have yellow-seeded genotypes, this type of crossing makes it possible to obtain yellow-colored seeds, i.e., genes that control this trait and are subsequently valuable breeding material. An example is the cross between the genera *Brassica* and *Sinapis*, which has genes for light seed coat color.

Hybridization is an important method in rapeseed breeding to increase yield, expand genetic diversity, and improve quality indicators.

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ОЦІНКА ОЗНАК КОРМОВОЇ ПРОДУКТИВНОСТІ СЕЛЕКЦІЙНОГО МАТЕРІАЛУ ГОРОШКУ ПОСІВНОГО (ЯРОГО)

Зернобобові культури як харчового, так і кормового напрямку сприяють сталому розвитку сільського господарства в усьому світі. Горошок посівний (ярий) – високобілкова культура, яка в якості бобового компоненту входить до складу багатьох бобово-злакових травосумішок.