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INFLUENCE OF MUTAGENIC FACTORS ON GRAIN WEIGHT OF THE MAIN SPIKE IN HYBRID POPULATIONS OF WINTER BREAD WHEAT

Combining recombinational and mutational variability increases spectrum of formation of valuable traits being the basis to select new combinations of traits to create new lines and varieties of bread winter wheat. Therefore, the aim of the study was to reveal influence of mutagenic factors on one of the main elements of yield structure – grain weight of the main spike – in plants of F_3M_2-F_4M_3 hybrid populations.

For the research dry seeds of F_1 hybrids were treated with chemical mutagens: N-nitroso-N-ethyl-urea (NEU); N-nitroso-N-methyl-urea (NMU) and dimethylsulfate (DMS) at concentrations 0.01; 0.0125 and 0.0125%, respectively.

Indices of genetic variability and heritability for the trait were unstable and ambiguous in F_3M_2-F_4M_3 generations. Followed by mutagen acting, variability of mean value, standard deviation and coefficient of variation for this trait was revealed. The range of variations of average values in F_3M_2 was 1.24 – 2.48 g with the average value of 1.96 g, F_4M_3 – 1.25 – 2.53 g with the average value of 1.78.

Resulted from quantile analysis of transgressions variants where the upper decile (90 – 100% of cases) significantly exceeded parental forms and control variants. Hybrid-mutant forms Bohdana / Stanychna, Kolumbiia / Rozkishna, Gracija / Lytanivka when treating with mutagen NEU, 0.01%, Tilek / Panna – DMU, 0.0125%, for which there observed inheritance of transgression in F_3M_2-F_4M_3 generations were identified. Thus, the specificity of mutagen action on grain weight of the main spike plants of winter bread wheat hybrid populations F_3M_2-F_4M_3 was revealed. The results obtained showed the possibility of developing forms with higher values of grain weight of the main spike in hybrid-mutant populations and the effectiveness of selection for this trait in following generations.

Key words: winter wheat, hybrid combinations, mutagenic factor, quantitative trait, grain weight of the main spike, transgressive forms.