

UKRAINIAN WINTER WHEAT BREEDING MAY RETURN TO ADAPTIVITY IMPROVEMENT BY INCREASING PHOTOSENSITIVITY AND VERNALIZATION REQUIREMENT

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Natural habitat of spring wheat had been evolutionary widening through the selection of adaptive *vrn*, *vrđ* and *ppd* genes mutations (controlling vernalization requirement and photosensitiveness) to the Northern moderate latitudes. By those means winter wheats arose with their adaptation to overwintering autumn seedlings on the stage of tillering. And such masterpieces of domestic breeding as Odesskaya 16 or Mironovskaya 808 were characterized with the high indices of those properties. With the appearance of Bezostaya 1, and afterwards through the wide introduction to the breeding programs of spring Mexican semidwarf stocks the breeders gave constantly greater advantage to lowly photosensitive lines. And for today more than 90% advanced breeding lines of the Institute are almost insensitive to photoperiod.

Sure, the breeders have certain reasons for this preference leaning on the number of economic advantages of such genotypes (spring vegetation starts earlier, more effective utilization of moisture accumulated in winter, higher productivity). However, the low photosensitivity resulted simultaneously in reduction of vernalization requirement through physiological and biochemical interactions, in the acceleration of initial growth and development during autumn (leading to the decline of adaptiveness in winter), in the necessity of shifting sowing dates on later terms.

During more than last 15 years we carry out the estimation of photosensitivity and vernalization duration indices in modern cultivars and advanced breeding lines of the Institute. Experiments are conducted by planting 5-days green seedlings (artificially vernalized beforehand in growth chambers with the variants of different duration) in natural from the end of April and shortened to 10 hours photoperiods. The estimation of these indices has been carried out by comparison of average stocks' heading dates in various variants of vernalization durations and photoperiods. For result discussion the stocks have been distributed on 3 groups after each index: lowly photosensitive – 5-15 days; middle one – 15-25 days; highly sensitive – 25-35 days; and groups on duration of vernalization requirement: till 45 days, near 50 days and more than 55 days.

The sets of evaluated stocks created in the breeding laboratory and the department of the Institute did not differ after their distribution

in various groups (near $91,7 \pm 1,35\%$ stocks with low photosensitivity and about $70,5 \pm 2,30\%$ ones with less than 45 days vernalization requirement). However, at comparison of investigated stock sets during last and next to last 5-years periods there has been already revealed a tendency of reliable reduction on $-23,1 \pm 2,98\%$ their amount in the group of shorter vernalization requirement and reliable increase on $+6,5 \pm 0,88\%$ in the group of higher photosensitivity. Last year 24 modern collection stocks from Western Europe and USA were given us for a parallel estimation. They were selected by N.A.Litvinenko as carriers of different breeding valuable traits. In spite of small amount of stocks in the set the differences between that and Institute sets appeared to be striking. In modern foreign set it was observed on $-45,9 \pm 3,70\%$ less stocks with low photosensitivity and on $+21,3 \pm 2,83\%$ more ones with high sensitivity. Respectively, the amount of stocks with shorter vernalization requirement appeared to be lower on $-20,8 \pm 4,85\%$ but their number with more durable requirement increased on $+15,7 \pm 2,99\%$. Such facts can be the conformation of adaptive values of durable vernalization requirement and higher photosensitivity for foreign winter bread wheat cultivars even at modern productivity level.

In what direction the breeding will pass later it can be seen in future. Nevertheless, nowadays leading breeders show the personal interest in estimation of discussing parameters in modern foreign stocks. And from this year we try to widen such set in our experiment.

ЗБАГАЧЕННЯ ГЕНЕТИЧНОГО РІЗНОМАНІТТЯ КОЛЕКЦІЇ ПШЕНИЦІ М'ЯКОЇ ОЗИМОЇ

ENRICHMENT OF GENETIC DIVERSITY OF WINTER BREAD WHEAT COLLECTION

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В колекції пшениці м'якої озимой Национального центра генетических ресурсов сосредоточено 5427 образцов различных по эколого-географическому происхождению. В результате изучения 2668 образцов в течение 2011-2015 гг. выделены и приведены в тезисах источники ценных хозяйственных признаков: зимостойкости, устойчивости к септориозу листьев, мучнистой росы, бурой ржавчине, полеганию; урожайности. Сформированы и зарегистрированы признаковые коллекции пшеницы мягкой озимой по качеству зерна, по комплексу ценных хозяйственных признаков, по признакам отличимости; генетическая коллекция по устойчивости к болезням и