Use of haploid technologies in breeding of common wheat of national center of grain named after P.P. Lukyanenko

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Key message. *In order to obtain doubled haploids (DH) homozygous lines of common wheat in National Center of Grain named after P.P. Lukyanenko (NCG) the methods of selective elimination of chromosomes of maize in genome of intergenal hybrid embryos and anther culture are used. During the 2016-2019 years more than 1,500 diploid lines of 26 varieties of winter common wheat were produced.*

Keywords: *wheat, maize, anther culture, haploid plant, doubled haploids line*

Progress in the breeding of such an important crop as wheat is closely linked to the use of biotechnological techniques and in particular haploid technologies. Their use significantly expands the possibilities of traditional breeding and greatly accelerates the creation of new varieties. For production of doubled haploid lines of common wheat in NCG the methods of selective elimination of chromosomes of maize in genome of intergenerational hybrid embryos and anther culture are used. The first method is used in greenhouse conditions, the second complements the first and is used partly in field, partly in greenhouse. Until recently, we used the anther culture method to produce doubled haploids wheat lines. In order to optimize the creation of the technology of mass production of haploid wheat plants by the method of selective elimination of maize chromosomes in the genome of intergenerational hybrid embryos, 12 lines, 2 varieties and three hybrids of NCG maize breeding were studied. Effective haploid producers of line SM7 and Krasnodarskaya 935/86 inducing high formation of up to 26.8% haploid embryos from crossing with varieties of common wheat were selected. The work was done to optimize nutrient media and conditions for the cultivation of haploid embryos derived from the crossing of common wheat with maize and the regeneration of haploids derived from anther culture. Overall, using both methods for the three years (2016-2019) more than 1500 diploid lines from 26 varieties of winter common wheat selected by the NCG were produced. Thirty-eight DH lines obtained from 3 varieties were evaluated by the parameters of spike productivity (length of the main spike, number of flowers in the spike, number of grains from the spikes, weight of grain from the spike). There is a significant difference in the lines between each other and the varieties on the basis of which they are derived