FUSARIUM HEAD BLIGHT EVALUATION AND GENETIC STABILITY IN SYNTHETIC HEXAPLOID WHEATS

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The Fusarium head blight (FHB), a fungal disease caused by *Gibberella zeae (Fusarium graminearum),* and of great economic importance to the wheat culture, entails quantitative and qualitative losses in world grain production. As there is no effective management of the disease, genetic resistance is desirable. Currently, the breeding programs seek alternative sources of FHB resistance. Synthetic wheats result from the cross between a tetraploid species (genome AABB) and other diploid (DD), leading to a sterile hybrid ABD. To restore fertility, it is made artificial synthesis doubling the chromosomes by using colchicine, yielding a new hexaploid. These wheats are genomically amphidiploid and due to the combination of parental genomes have mainly resistance to fungi and insects. This work aimed to evaluate 20 accessions of synthetic wheats related to FHB, along with six cultivars (controls), previously characterized for resistance to FHB. The experiment was conducted in 2014 and 2015, at Embrapa Wheat, Passo Fundo, RS, in the experimental area with environment simulation favorable to the occurrence of the disease. The design was a randomized block with 26 treatments and the plots consists of a line of 5 m with 60 seeds suitable for linear meter. The spacing between two plots in the row was 1 m. Laterally the spacing between plots was 0.4 m. The spacing between the blocks was 0.8 m to allow the placement of hoses on the ground, aiming to wet the spikes. The phytosanitary control was carried out until the boot stage. In heading stage grains with perithecia and *G. zeae* were spread on the soil surface. Fifty spikes, of uniform size, from each plot were harvested and threshed and FHB was assessed by the incidence of grain symptoms. For the analysis of genetic stability, spikes in the pre-anthesis of five plants per genotype were collected and fixed in Carnoy solution. The cytological slides were made by soaking method and the coloration of cells was done with 1% acetic carmine. Observations were made under an optical microscope, analyzing the presence and absence of micronuclei in tetrad stage. Normal tetrads and micronuclei were counted for calculating meiotic index (MI). The genotypes were considered meiotic stable when the MI was above 90%. The best results for resistance to FHB and genetic stability were obtained with CIGM93.298 and CIGM92.1666 accesses respectively, which showed meiotic index above 90%. These accesses may be indicated to be part of breeding programs as possible FHB resistance sources.

Keywords: *Gibberella zeae*; resistance; micronuclei