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Phenotypic structure of grain size and shape variation in M5 mutation lines of spring wheat through gamma irradiation

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Grain size and shape, which are associated with milling quality, are two of the main targets for wheat breeding. Grain size is mainly characterized by grain weight and area, whereas grain shape means a relative proportion of the main growth axes of the grain. Grain shape is generally estimated by length (GL), width (GW), vertical perimeter, sphericity and horizontal axes proportion. Mutation breeding is one of an important tool in crop improvement with increased agronomic values. We developed high-yielding M5 mutant lines on yield components such as grain weight per plant and thousands grain weight through gamma radiation by 100 and 200 Gy doses. There were a significant differences between the parental cv. Zhenis and mutant lines for GL. The ranges of GL were 6.5 to 7.2 mm for germplasm developed by 100 Gy (mean=6.8 ±0.21; n=15) that was higher than cv. Zhenis within 6.9% -17.4%. In germplasm developed by 200 Gy GL ranged from 7.48 to 8.22 mm (mean=7.8 ±0.23; n=15). GW ranges was from 3.22 mm to 3.88 mm in 100 and 200 Gy germplasms, respectively (mean=3.6 ±0.18; n=15 and mean=3.8±0.08; n=15). The GW was the highest in three M5 lines of 100 Gy germplasm (№24(2), №26(7) and №26(9). Of them M5 line (№26(9) has the highest mean for GL and GW. There was a more positive association between grain L and W, grain L and length/width ratio in mutant germplasm developed by 200 Gy (r=0.90 and) than germplasm developed by 100 Gy (r=0.55).

Biography

Kenzhebayeva S has completed his PhD at the age of 30 years from Moscow State University named after M.V. Lomonosov and Postdoctoral studies from Kazakh Institute of Physiology, Genetics and Bioengineering of Plants. She is the Professor of Kazakh National University named after al-Farabi. She has published more than 125 papers in reputed journals.

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