Saule Kenzhebayeva, Adv Biochem Biotehcnol 2017, 02: 05 (Suppl)
DOI: 10.29011/2574-7258-C1-003

GAVIN CONFERENCES

International Conference on
Advances in Biotechnology
July 10-12, 2017 Dubai, UAE

Generation of spring wheat mutation resource for improving yield- and grain quality traits.

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Fe and Zn deficiency affects over half of the world's population. Wheat (*Triticum aestivum* L.) is a major cereal source of essential nutrinients for human and animal. To generate genetic variation, spring wheat seeds of cv. Eritrospermum-35 were γ-irradiated with 100 and 200 Gy doses using ^{60}Co and grown in field to the M_7 generation with successive rounds of selection for the highest yielding lines. Selected lines were evaluated for components productivity, and grain Fe, Zn and phytic acid (PA) concentrations. A number of mutant lines had 2 to 3 times more grain Fe and Zn concentrations, and less PA concentrations (1.1-3.5 times) and higher grain protein content (GPC) (11.2-12.4 %) relative to the parent. The M_7 lines with significantly larger thousand grain weight (1.3-1.5 times), grains per spike (2.0-2.1 times) than the parent were identified. Within the irradiated mutant lines there were a significant correlation between Zn and Fe concentrations, and between GPC, Zn, Fe and PA concentrations in 100 Gy-dosed lines (r^2=0.110, r^2=0.607 and r^2=0.711). Only in 100 Gy-dosed germplasm PA concentration was significantly correlated with grain weight per spike (r^2=0.313). These wheat grain quality properties can be improved without negatively impacting on crop productivity and these new mutation resource provide genetic diversity with promising donors for breeding.

Biography

Saule Kenzhebayeva has completed her 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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