



TITLE: Gene Editing Improves the Agronomic Important Traits of Wheat. CRISPR-Cas9 and Cas12/Cpf1

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ABSTRACT

A hexaploid Wheat (*Triticum aestivum* L.) is the 3rd most important staple food crop with 15% caloric intake next to maize and rice in the world. The global attention for wheat improvement is still encouraging. However, the population growth and demand for food at this time and in the next years could not be balanced. Due to this, huge investments have been established and performed to improve the most important agronomic traits of wheat. Among the new molecular tools and techniques that have given a big emphasis as it will have many concerns is gene editing. Many gene editing tools have been reported and being implemented including Zinc finger nuclease, transcription activator-like effector nuclease, and clustered regularly interspaced short palindromic repeats associated Cas9/12 system for targeted gene editing. Among these, clustered regularly interspaced short palindromic repeats associated Cas9/12 systems are very accurate and widely used for targeted gene editing. By using CRISPR-Cas mediated gene editing technique, important traits of wheat include disease and pest resistance, better grain and flour quality, gluten-free trait, better nutritional value, nitrogen use efficiency, threshability, and other yield components and has been edited and improved. Therefore, the use of gene editing technologies for wheat as well as other important crops improvement was irreversible.

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BIOGRAPHY

Habtamu Kefale has completed his M.Sc. in Plant Breeding at the age of 28 years from Debre Markos University, Ethiopia. He has employed in different governmental organizations and since 2014 he joined Debre Markos University as a lecturer and researcher in Department of Plant Science. He is currently a PhD candidate at China Graduate School of Chinese Academy of Agricultural Sciences (GSCAAS) in Crop Genetics and Breeding. He is young and has four publications that have been cited and his publication h-index is 4. He has been serving as an editorial board member of several reputed journals.

