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A FEATURED STEM DEVELOPMENT PATTERN IS DISPLAYED IN THE WINTER WHEAT MUTANT GENERATED BY HEAVY-ION BEAM MUTAGENESIS

Induced mutation plays an important role in securing world food demands by developing mutant varieties, introducing new genetic resources, and accelerating vital agricultural gene cloning. Among all the mutation induction methodologies, the newly developed heavy-ion beam mutagenesis is characterized by its capacity to generate new phenotypic features in plants. By using heavy ion beam implantation, we screened out a mutant displaying a novel stem development pattern in winter wheat in the M2 generation. After satisfying the temperature requirement for vernalization, the development of mutant and wild type plants was monitored, both entered the jointing stage at same time. During the jointing stage, the stems of the mutant elongated much quicker than that of wild type counterparts. As a consequence, the mutants are taller than wild type plants in this stage. However, the final plant height of both mutant and wild type plant was reached at the same time, at anthesis stage. The results from both plant hormone analysis and gene sequence comparison revealed that gibberellins play important roles in regulating the mutant phenotype establishment. Stem internodes length comparison was consistent with the dynamics of gibberellins biosynthesis. The mutation associated with this phenotype remains to be mapped and cloned. This stem development mutant supplies a new gibberellin sensitive semi-dwarf germplasm and a potential gene resource for wheat improvement.

Country or International Organization

China

Primary author: Dr XIE, Yongdun (Institute of Crop Science, CAAS)

Co-authors: Dr XIONG, Hongchun (Space Breeding Center, Institute of Crop Sciences, CAAS); Dr GUO, Huijun (Institute of Crop Sciences, Chinese Academy of Agricultural Sciences); Mrs ZHAO, Linshu (Institute of Crop Science, CAAS); Prof. LIU, Luxiang (Institute of Crop Science, CAAS)

Presenter: Dr XIE, Yongdun (Institute of Crop Science, CAAS)

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