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## CRISPR/Cas9 is New Breeding Strategy for Improving Agronomic Characteristics of Rice Response to Climate Change

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### [Abstract]

Rice is an important staple in the world. And drought is one of the important constraints that negatively affect yield loss and grain quality of rice. CRISPR/Cas9 is a new breeding strategy that can improve the characteristics of rice quickly and accurately. CRISPR/Cas9 is a novel approach that can reliably harvest rice yields in response to a rapidly changing climate. In addition, there is no externally inserted DNA left in genome-editing rice, and it is receiving attention as being able to take responsibility for future food because its characteristics are continuously improved. In the future, high levels of drought resistant in water-constrained environments will be required, which will reduce yield loss. *OsSAP* was genome-editing with CRISPR/Cas9 in rice. A different line number was assigned to each panicle, and the generation advanced by applying the ear-to-row method. Genome-editing rice has improved drought resistance in drought conditions. Also, in genome-editing rice, the target sequence was homozygous in the 0 generation, and the coefficient of variation of heading date, number of tiller, and 1,000-grain weight was very small in 2 generation. In the era of rapidly changing climate change, CRISPR/Cas9 presents a new breeding strategy that can rapidly and accurately improve agronomic traits of major food crops as well as rice. CRISPR/Cas9 is applied together with traditional breeding to develop into a new breeding strategy, it is suggested that food can be obtained stably in response to climate change.

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