

RESEARCH ARTICLE

# CRISPR-Cas9 Gene Editing for Drought-Resistant Crop Development

Yuki Tanaka, Aisha Osman

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**Abstract:**

We demonstrate the successful application of CRISPR-Cas9 gene editing technology to develop drought-resistant wheat varieties. Through targeted modification of the DREB transcription factor gene family, we achieved enhanced water-use efficiency and sustained yield under water-stress conditions. Field trials across three climate zones showed a 40% reduction in water requirements while maintaining 95% of normal yield. This approach offers a sustainable solution to food security challenges posed by global water scarcity.

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