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## CRISPR genome-editing as a modern breeding technology: How do we do it?

Clustered regularly interspaced short palindromic repeats (CRISPR)/CRISPR-associated (Cas) protein system is a revolutionary tool for precise genome editing. It can be used for targeted mutagenesis, precise sequence modification, transcriptional reprogramming, epigenome editing, and many more.

Genome editing is the process of making precise targeted changes to a DNA strand made up of sequences of four basic nucleotides (cytosine, guanine, adenine, and thymine) that are part of genes and other genomic traits and determine plant characteristics and diversity. With the help of CRISPR-Cas it is possible to make changes in the genetic sequences of plants, providing the desired characteristics. This revolutionary technology is expected to help scientists create innovative and environmentally sound solutions for farmers, similar to those achieved by traditional breeding methods, but with even better quality, accuracy and time efficiency.

The mechanism and process of crop genome editing is reviewed. The comparison between CRISPR technology and conventional breeding, marker-assisted breeding and GMO technologies is carried out.