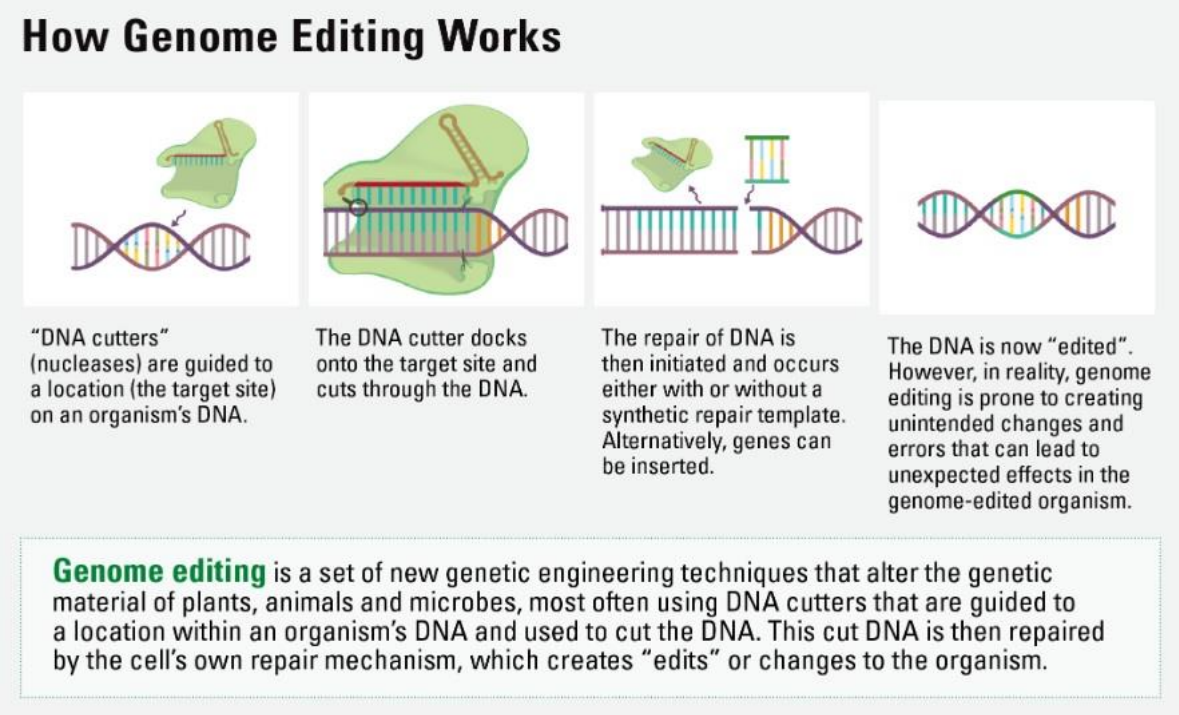
EDITING PLANT GENOMES : SCIENCE & TECHNOLOGY

NEWS : *ICAR, Penn State team makes a tool small enough to edit plant genomes*

WHAT'S IN THE NEWS?

This new gene-editing tool, based on the TnpB protein from *Deinococcus radiodurans*, represents a significant step forward in plant genome editing. Its compact size and enhanced efficiency make it a promising solution for overcoming the limitations of previous CRISPR systems, particularly in agricultural applications. The tool's potential to improve crop traits, such as pest resistance and reducing anti-nutrient factors, could lead to more resilient and nutritious crops.



TnpB-Based Genome Editor

- **Tool Name**: TnpB-based genome editor
- **Source**: Derived from the bacterium *Deinococcus radiodurans*.
- **Size**: Less than half the size of Cas9 and Cas12 proteins, making it more compact.
- **Function**: Targets and modifies specific DNA sequences with high precision.
- **Editing Efficiency**: Achieves an average editing efficiency of 33.58% in plant genomes.
- **Applications**: Effective in both monocots (e.g., rice) and dicots (e.g., Arabidopsis), showing versatility across different plant types.
- **Improvements**: Enhanced through codon optimization and added regulatory elements for improved performance.
- **Capabilities**: Supports both base editing and transcription activation, allowing for precise gene modifications.

- **Potential Uses**: Can be used to enhance crop traits, improve resistance to environmental factors, and eliminate anti-nutrient factors.

Source : https://epaper.thehindu.com/ccidist-ws/th/th_delhi/issues/96189/OPS/G7VD7PLLS.1+GRLD7PNM9.1.html