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# CNTC Technology as a Potential Genetic Tool to Improve Stress Tolerance

**Genetic tools are used to modify a plant's ethylene response, significantly accelerating crop recovery from environmental stressors like salt and drought.**

Researchers at Purdue University have developed a new method for stress recovery in plants using genetic tools on a negative regulator Constitutive Triple Response 1 (CTR1) orthologs in ethylene signaling pathway. There are many factors that contribute to plant stress for instance pollution and weather changes including drought, flood, and frost. Plant hormones, including ethylene, help plants adapt to environmental changes. Ethylene is unique because it naturally occurs as a gas, which makes it challenging to control and optimize. Purdue researchers were able to adjust how plants respond to ethylene by making localized alterations of CTR1 to nucleus. In testing with a model plant Arabidopsis, cell function exhibits no signs of disruption and the recovery of plants after stress such as salt and drought is significantly faster. By integrating this technique, crop plants such as tomatoes, potatoes, wheat, rice, cotton, soybeans, have potential to recover more quickly in harsh environments.

**Advantages**:

-Plant growth

-Stress relief

-Accurate

Potential Applications:

-Crop management

-Agriculture

-Botany

**TRL:** 3

**Technology ID**
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**Category**
Agriculture, Nutrition, & AgTech/Crop Genetics & Breeding
Biotechnology & Life Sciences/Synthetic Biology & Genetic Engineering

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**Intellectual Property:**

Provisional-Patent, 2019-10-16, United States | PCT-Gov. Funding, 2020-10-16, WO | NATL-Patent, 2022-04-12, United States

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