

A new approach to keeping crops, people safe

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Weeds cause tremendous damage in yield and productivity of crop plants. Losses from weeds account for more than \$40 billion in annual revenue for corn and soybean crops alone in North America, according to the Weed Science Society of America.

Genetically engineered crop plants have been developed to allow for better control of weeds using herbicides, but excess use has raised concerns about the impact on [human health](#) and some weeds have developed resistance to common herbicides.

Now, Purdue University researchers have developed a compound effective for controlling weeds that is also safe for people and the environment. They also developed a simple system for farmers to create plants resistant to this new [herbicide](#).

"Herbicide use is essential for modern agricultural production worldwide," said Chunhua Zhang, an assistant professor of botany and [plant pathology](#) in Purdue University's College of Agriculture. "The herbicide we developed can contribute to global food production and security, and is expected to be safer for the environment than conventional herbicides because of its selective nature."

The Purdue herbicide targets and kills broad [weed](#) species while not affecting crop plants that carry the resistance to the herbicide.

"There have been no new herbicides with novel models of action developed for decades in the world herbicide market," Zhang said. "We identified a new small molecule that could target the conserved catalytic site of an enzyme that is required for plant growth."

The Purdue team developed the new chemical inhibitor to stop weed growth. They also found that by changing a single nucleotide in the gene encoding the enzyme, they could easily produce crop varieties that are resistant to the new herbicide.

Purdue's herbicide also can be effectively used together with non-genetically modified [crop plants](#).

Provided by Purdue University

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