Genetic engineering allows crops to use water, soil nutrients more efficiently

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis.

Researchers with Arizona State University's School of Life Sciences, University of Arizona, University of North Texas and with the USDA/ARS Children's Nutrition Research Center, Baylor College of Medicine, have discovered a way to enhance a plant's tolerance to stress, which in turn improves how it uses water and nutrients from the soil. These improvements increase plant biomass and yield.

The study's findings are published in the scientific journal *Trends in Biotechnology*.

Associate professor Roberto Gaxiola with ASU School of Life Sciences said this discovery could be instrumental in agriculture and food security by improving crop sustainability and performance.

"We have learned how to modify the expression of a gene that codes for a plant proton pump," said Gaxiola, lead author of the study. "This gene helps to move photosynthates — or molecules made by photosynthesis in the leaves — to the places plants need them in order to grow better roots, fruits, young leaves and seeds. This gene is called type 1 H+-PPase and is found naturally in all plants."

Current agricultural methods often overuse fertilizer, causing environmental problems by polluting water with phosphates and creating dead zones in oceans downstream. Over-fertilization can also cause plants to have small roots — something that was not anticipated when fertilizers were developed in the early 1900s.

By changing how effectively a plant uses water and nutrients, famers would be able to use fewer resources to grow their crops.

Read full, original post: Researcher improves crop performance with new biotechnology