Better face for GMOs: Drought resistance and resistance to ‘superpest’

Much of the current criticism of GMOs rests on the currently-available varieties, dominated by RoundUp Ready (herbicide-resistant) and Bt (pesticide-producing) varieties. But these crops are hardly good measures of the potential for genetic technologies.

Even within the current GM categories, scientists are making advances that result in more even environmentally-friendly products. For example, scientists from the Max-Planck Institute in Germany reported a novel anti-pest potato plant in *Science* last month. This new GMO is able to fight off the Colorado potato beetle, a beast referred to as an “international superpest” because it has evolved resistance to all major insecticide classes over the past century. But it doesn’t kill by producing a general pesticide like Bt crops; instead, it produces very special insecticidal RNAs which kill only the potato beetles and nothing else.

Drought-resistance has been one of the top priorities for genetic engineers, but for decades, frustratingly few viable products have emerged. Monsanto’s DroughtGard corn is the only commercially available GM designed to withstand dwindling water supplies, and it has only just been released. Now, scientists are unlocking the secrets of efficient water use in plants’ genomes.

“We now have genetic tools to pre-adapt crops to future, drier climates,” said Peter Franks, Faculty of Agriculture and Environment at the University of Sydney and lead author of a study released this month in *New Phytologist*. “The goal here is to maintain or improve productivity with less water.”

And improve it they have. Their recent paper details how the overexpression of one gene — epidermal patterning factor 2 (EPF2) — gave *Arabidopsis thalania* plants (a kind of mustard green) an edge in drier environments.

Their new variety was able to use less water without sacrificing the plant’s photosynthetic ability or reproduction, especially in a high carbon dioxide atmosphere. In other words, they created a mustard green that will thrive in our dry, CO2-filled future.

There’s no doubt that the next generation of GM crops will look very little like the oft-maligned varieties available today. The real question is, will these new varieties be able to do what current ones cannot: win over the hearts and minds of the people they’re designed for.

Read full, original article: GMOs of the Future: Two Recent Studies Reveal Potential of Genetic Technologies