

Can returning crops to their wild states help feed the world?

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To feed the world's growing population—expected to reach nine billion by the year 2050—we will have to find ways to produce more food on less farmland, without causing additional harm to the remaining natural habitat. A feature review, to be published on December 16th in the Cell Press journal *Trends in Plant Science*, points the way to intensifying agriculture sustainably by fixing weaknesses that have sprung up quite by accident in the process of traditional crop breeding over the course of thousands of years.

Michael G. Palmgren of the University of Copenhagen and his colleagues suggest that the most efficient way to regain those lost properties is by reinserting good genes back into our crops after isolating them from related plants or to by using precision methods to repair [faulty genes](#). "Once the genes that have been mutated unintentionally have been identified, the next step would be to reestablish wild-type properties. Rewilding would allow [crop plants](#) not only to better utilize available resources in the environment and have higher nutritional value, but also to better resist diseases, pests, and weeds," says Palmgren.

While this back-to-nature breeding has great potential, there is one hitch, because crops restored to a more natural state in this manner would be classified, under current definitions, as [genetically modified organisms](#) (GMOs). "Studies tell us that many consumers look with some reservation upon GMO-based products, in part because they are considered alien," says Palmgren. "Rewilded crops represent a different path, yet if branded as GM products may likely face considerable

challenges for market penetration."

Palmgren notes that a discussion about which products should be labeled as GMOs is necessary. "It may be useful to distinguish between the product (the plant) and the process (the breeding technology)," he says. If a crop regains beneficial properties of a wild relative, such as disease resistance, it makes little sense to consider one plant as natural and the other as alien purely based on the method used to reach the same end result.

The bottom line for Palmgren is this: the plants we eat and depend on are not the same as those originally found in the wild, whether they've been genetically modified or not. "Reintroduction of some of the lost properties does not make our crops alien," he says.

More information: Palmgren et al.: "Are we ready for back-to-nature crop breeding?" *Trends in Plant Science*, 2014.

Provided by Cell Press

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