

Turbocharged photosynthesis could turn GMOs into invasive species

A joint team from Cornell University in New York and [Rothamsted Research](#) in the UK has [successfully replaced a key enzyme in tobacco plants with a faster version from a cyanobacterium](#), allowing for more efficient photosynthesis. Their success promises huge gains in agricultural productivity – but is likely to become controversial as people wake up to the implications.

It now seems certain that supercrops with “turbocharged photosynthesis” will be growing in our fields in a few decades, if not sooner. This seems like great news in a world where demand for food, biofuels and plant materials like cotton continues to increase, and where global warming will have an ever greater impact on crop production. More productive plants means greater yields.

But there is a danger too. Critics of genetic modification have long argued that GM crops will spread in the wild, or that their modified genes will “pollute” wild relatives, with disastrous effects. So far these fears seem exaggerated. There are monster plants running rampant through many countries, but they are not GM creations – they are invasive species.

This is not surprising: most GM traits are not useful to wild plants. A trait such as herbicide resistance is only useful to plants growing in areas where herbicides are used, such as in fields and road verges.

Upgrading photosynthesis is a different story. If biologists succeed in boosting it by 25 percent or more, the upgraded plants are going to have a big advantage over their unmodified cousins. And that could spell trouble.

There is a precedent. About 30 million years ago some plants evolved a way to concentrate CO₂ like cyanobacteria do. These are called C₄ plants, and although they make up only 4 percent of plant species, they account for 25 percent of plant biomass. Look out over a grassy savannah and just about every living thing you see will be a C₄ plant.

If we fill our fields with supercrops and plant forests of supertrees it seems inevitable that they will turn feral and, like C₄ plants before them, come to dominate some ecosystems – though it might take millennia. That prospect will horrify many. When anti-GM campaigners start protesting against the introduction of turbocharged crops, they will have a point: the wisdom of growing superplants in open fields is definitely debatable.

Read full, original article: [Should we upgrade photosynthesis and grow supercrops?](#),