

These Three New GM Crops Will Change How We Farm



Ria Misra | Gawker Media Apr 25, 2016, 08.30 PM IST



Three of the world's most troubling crop diseases were just hit with three new disease-resistant crops varieties, thanks to genetic modification—each with a slightly different mechanism. The details of these modifications appear in three new papers out today in [Nature Biotechnology](#).

For wheat stem rust, researchers in the UK's John Innes Centre were able to find two separate resistance genes which they stacked on each other to create a stalk that can fight off the disease. For asian soybean rust, researchers at Brazil's Universidade Federal de Viçosa yanked a resistant gene out of pigeonpea and popped it into a soybean to create a crop that can survive the rust. The last paper deals with late potato blight, the disease blamed for Ireland's famine in the 1800s. For that one, researchers in the UK's Sainsbury Laboratory genetically modified an American wild potato variety, which was able to survive the disease.

What is intriguing is not merely the fact that we now have resistant strains—that is actually pretty common. The significance is in how prevalent and devastating these diseases can be when they hit—and

how little we knew about how to fight them before.

"Although potato late blight resistance genes have previously been isolated, the new method should greatly accelerate isolation of additional genes. Wheat stem rust resistance genes have also been isolated, but again, new gene isolations will be greatly accelerated with the new method. No genes from asian soybean rust resistance have previously been isolated and shown to work in soybean," Jonathan Jones a co-author of the research from The Sainsbury Laboratory told Gizmodo. "We can foresee these genes being used to elevate disease resistance in crops over the next 5-10 years."

The impact of all three of these diseases so far has been extreme. "In each case, these diseases cause pretty substantial loses of up to 80 percent [of the total crop yield]," Jack Westwood, External Affairs Director for The 2Blades Foundation who supported the research for all three strains, told Gizmodo. "I know in Brazil, Asian Soybean Rust alone costs \$2 billion, so the resistance would be able to help bring that cost way down."

Because all three diseases hit crops so hard, and in so many places around the world, the potential for adoption of these new modified varieties high. Chances are, we'll be seeing a lot of these new GM crops in the not too distant future.

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