Researchers aim to develop heartier potatoes, but ‘generations of inbreeding’ may pose a challenge

Scientists are trying to revolutionize potatoes and….cure the tubers’ depression, the result of generations of inbreeding.

….Potatoes reproduce through cloning, so their genome is laden with mutations. Those mutations could result in ….stunted growth or shorter lifespans. A team of Chinese scientists looked for a better way to make potatoes reproduce, and along the way learned more about the genetics behind spuds’ “inbreeding depression.”

….Generations of cloning means that harmful genetic mutations remain in the genome, but….most varieties are “tetraploid,” meaning they have four sets of chromosomes. If there’s a bad mutation….there are presumably three ….working versions of the gene.

But there are drawbacks to these tetraploid potatoes….[T]he result of mixing that genetic information up in sexual reproduction leads to offspring that are worse-off than their parents, according to one 2016 paper. That can make selective breeding to create new potato lines difficult.

A team of scientists meeting in 2016….proposed….reinventing the potato as a diploid crop, one with two….sets of chromosomes. The researchers would then be able to selectively breed (and then inbreed) the resulting potatoes….But one issue is that these diploid potatoes would expose generations of inbreeding.

…

[R]esearchers hope [the new study] will serve as a basis for designing these new diploid potato lines, and hopefully to understanding how years of clonal propagation can affect the overall fitness of a plant species….

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