Next breakthrough CRISPR crop? Turning wild rice species into a domesticated crop

[Jiayang] Li, a plant geneticist at the Institute of Genetics and Developmental Biology in Beijing, is working on a wild rice species from South America called *Oryza alta*. It produces edible, nutritious grains, but they cannot be harvested because the seeds drop to the ground as soon as they ripen. To tame the plant, Li and his colleagues need to remove this trait, known as seed shattering, and alter a few others.

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The modification of this rice is one of a growing number of efforts to rapidly domesticate new crops using genome editing. Through this process, known as *de novo* domestication, transformations that took the world's early farmers millennia could be achieved in just a handful of years. The work might improve the resilience of the global food supply: many wild relatives of staple crops have useful traits that could prove valuable when climate change puts stress on global agriculture. *O. alta*, for example, has "very sharp resistance to salt and to drought and to some very severe or very dangerous diseases", says Li.

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But the technical challenges of *de novo* domestication are immense. Most wild plants are understudied, and without an understanding of their fundamental biology it is impossible to domesticate them by rewriting their genomes. Targeted gene editing, using tools such as CRISPR–Cas9, is a powerful approach, but it cannot fully replicate the thousands of mutations that have fine-tuned modern domestic crops for growing and harvest.

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