Potato breeding ‘revolution’ aims to safeguard spuds against proliferating pests and climate change

In Peru and around the world, enhancing the potato has become a high priority. It is the most important food crop after wheat and rice. Potatoes are already a staple for 1.3 billion people….Keeping up with the demand means adapting the potato to various soils and climates. It must also resist new threats from pests, disease, heat, and drought.

Unlike other major crops, however, the potato has not had a breeding breakthrough of the kind that helped dramatically boost yields during the Green Revolution of the 1950s and 1960s. The reason is that creating a new potato variety is slow and difficult….Commercial varieties carry four copies of each chromosome, which forces breeders to create and test hundreds of thousands of seedlings….Readying a new variety for farm fields can take a decade or more.

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But new approaches, including genetic engineering, promise to add more options. Potato breeders are particularly excited about a radical new way of creating better varieties. This system, called hybrid diploid breeding, could cut the time required by more than half, make it easier to combine traits in one variety, and allow farmers to plant seeds instead of bulky chunks of tuber. “It will change the world tremendously,” says Paul Struik, an agronomist at Wageningen University in the Netherlands.

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