Banana genome helps fruit on the slippery slope

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Researchers unravelled the genome of a wild Asian banana strain called Musa acuminata in a bid to pinpoint genes that could help yields, fruit quality and resistance to fungus threats.

They found more than 36,500 genes -- some 14,000 more than in humans -- and uncovered a 7,000-year-old journey of domestication.

Today's supermarket banana typically has three sets of chromosomes instead of two, which means its plants are sterile.

Farmers propagate them by taking plantlets, which appear at the base of old plants each year, and putting them in the ground.

But the commercial banana is now at risk.

It has been kept in evolutionary limbo for so long that it is losing the battle against against fast-mutating threats. In fact, half of the world's edible bananas are derived from a single variety called Cavendish.

"Pests and diseases have gradually become adapted, representing an imminent danger for global banana production," says the study, headed by Angelique D'Hont of CIRAD, France's International Centre for Cooperation in Agronomic Research for Development.

"Up to 50 pesticide treatments a year are required in large plantations against black leaf streak disease, a recent pandemy caused by Mycosphaerella fijiensis.

"Moreover, outbreaks of a new race of the devastating Panama disease fungus (Fusarium oxysporum) are spreading in Asia."

In the 1950s, the prevailing commercial variety of the time, Gros Michel, was wiped out by Panama disease. It was replaced on farms by Cavendish, a southern Chinese variety that at the time was resistant to the fungus.

Identifying useful genes is only the first step for breeders.

Transferring the genes to commercial varieties will be hard because cross-breeding between sterile plants is impossible. Some banana experts

say the only way is through genetic modification, a technology viewed with suspicion in Europe and other markets.

GM bananas have been grown in field trials in Uganda in an effort to counter a wilt-causing germ that is hitting plantations in Africa's Great Lakes region.

Australian scientists have also grown transgenic bananas with higher levels of iron and vitamin A, part of a project to improve nutrition in poor countries.

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