

Toward Climate-Resilient Rice: Genetic Insights from African Rice (*Oryza glaberrima*)

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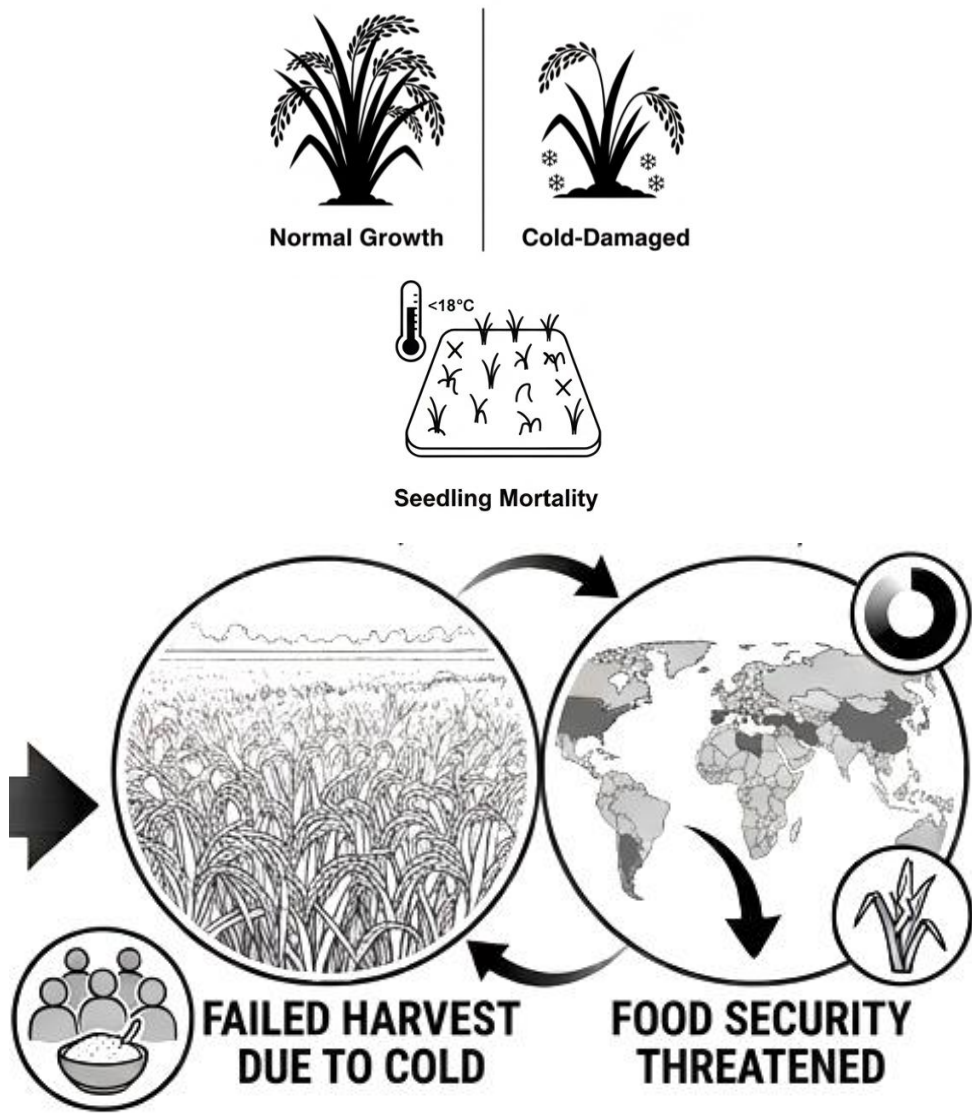


未来社会のあるべきかたち

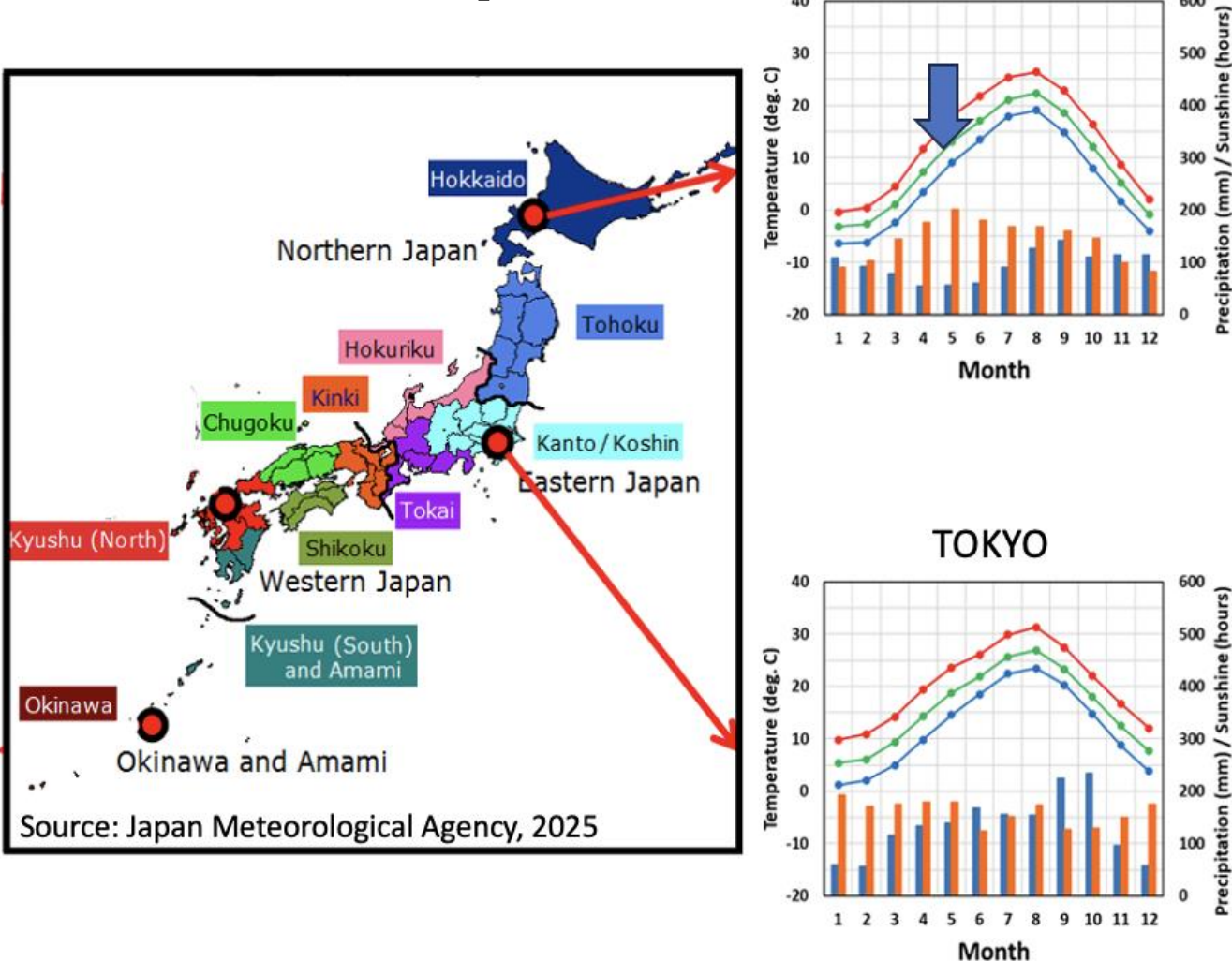
Farmers worldwide are growing climate-resilient rice, building a food system that withstands unpredictable weather (世界中の農家があらゆる気候に耐性を持つ稲を栽培し、予測不能な天候にも耐えうる食料システムを築く社会).

Challenges:

Most vulnerable stage to cold stress

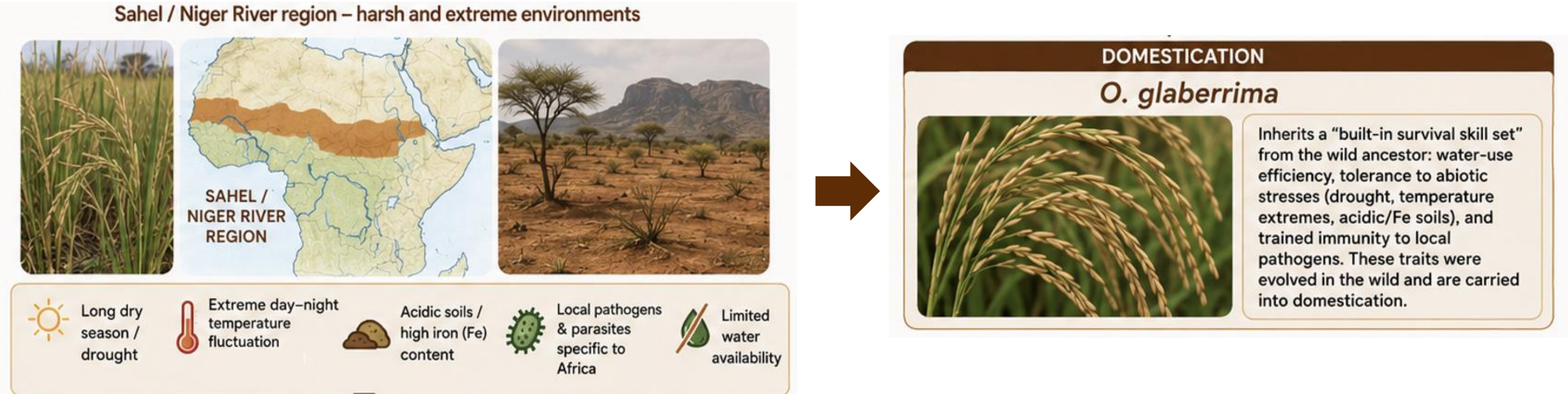


The early planting season is still cold in such a country as Hokkaido, Japan.



Solution:

Utilized African rice (*O. glaberrima*) as a potential genetic resource

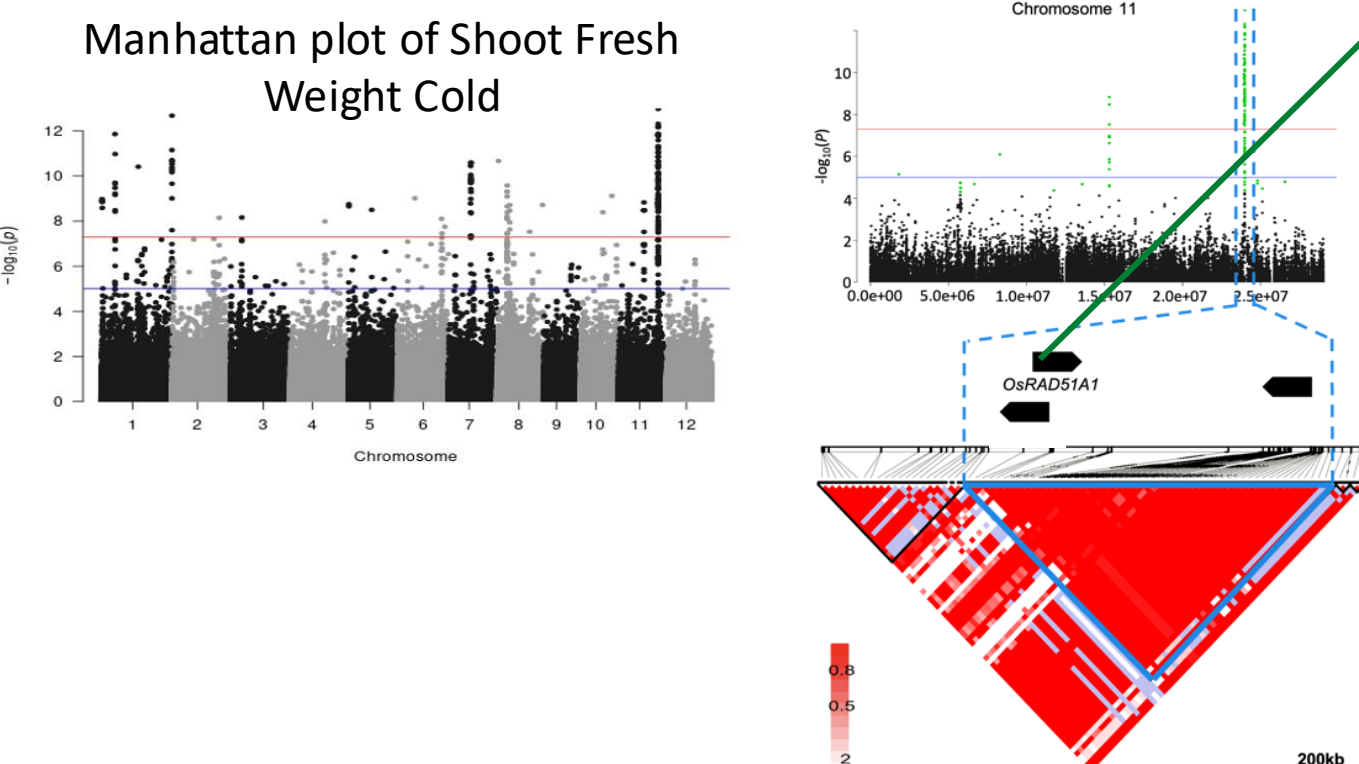


How are we looking for their genetic potential?

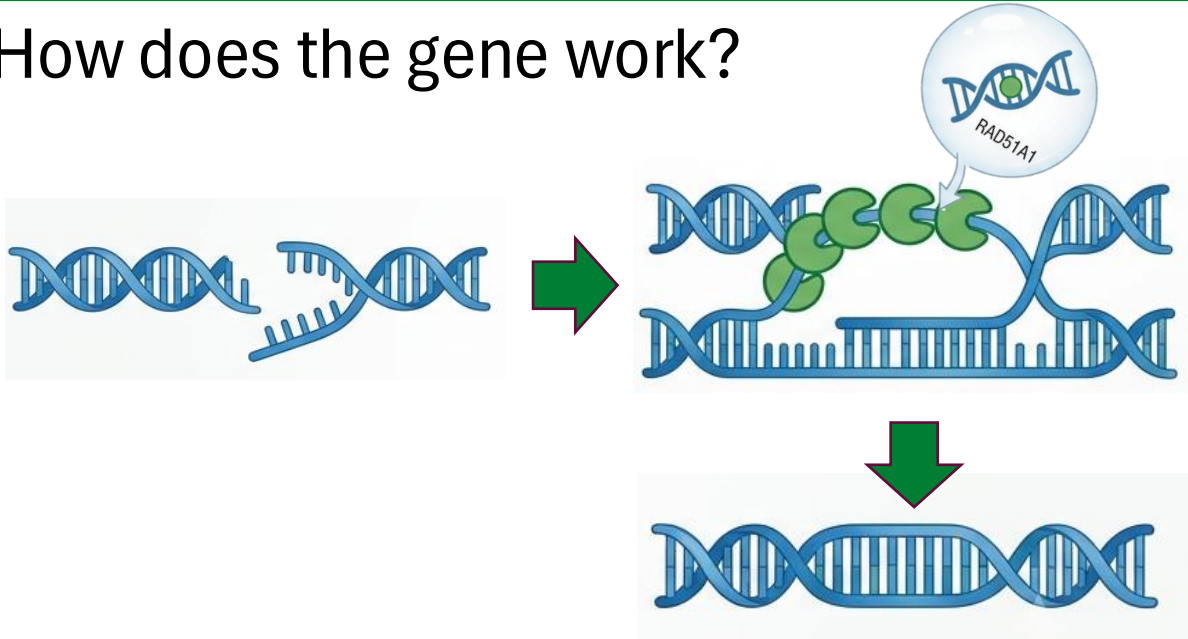
1. Testing Plant Stress Tolerance



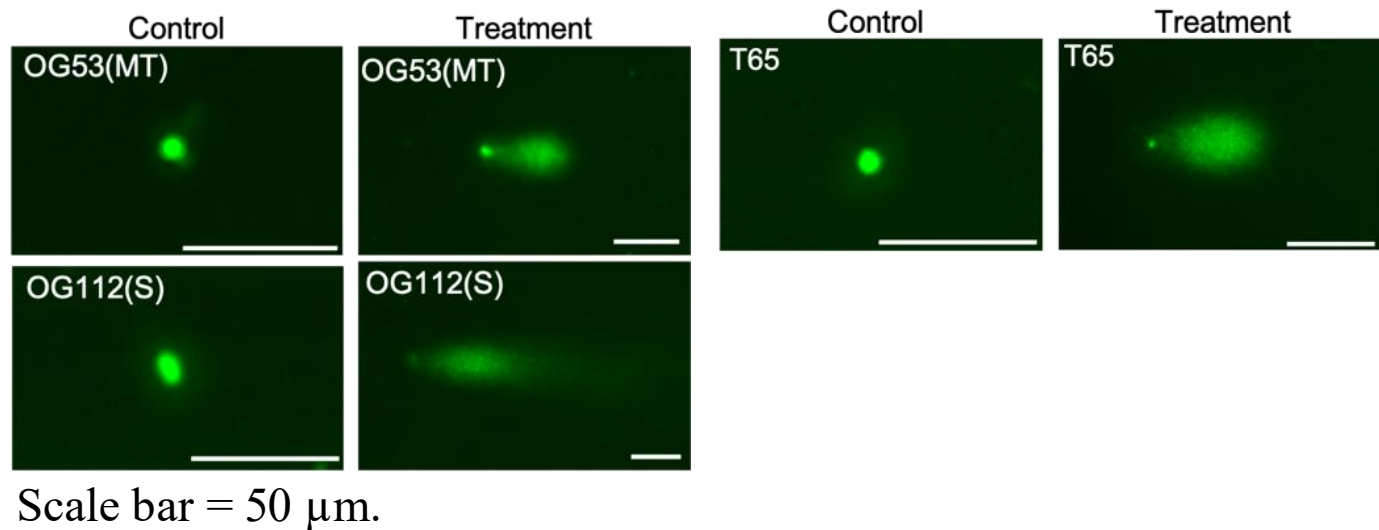
2. Compared DNA across hundreds of rice varieties to find the gene (GWAS analysis)



How does the gene work?



3. Confirmed the gene's effect at the cellular level.



DNA repair function enables tolerant genotypes to withstand cold stress and maintain yield. In contrast, loss of this function in sensitive genotypes increases their vulnerability, which poses a threat to global food security.

The Impact of Research on the SDGs:

- 2** 飢餓をゼロに Supports climate-resilient rice that protects harvests feeding over half the world's population.
- 15** 陸の豊かさも守ろう Elevates the value of African rice's underused genetic diversity, supporting its conservation for future generations.
- 13** 気候変動に具体的な対策を Provides a genetic foundation for agricultural adaptation to increasingly frequent extreme weather