

Increasing Efficiency of Clonal Seed Formation in Hybrid Crops

Tech ID: 34556 / UC Case 2023-510-0

ABSTRACT

Researchers at the University of California, Davis have enabled the creation of hybrid crops with enhanced fertility and yield by overcoming genetic distance barriers.

FULL DESCRIPTION

This invention presents a method for generating progeny of subspecies plant crosses with significantly improved fertility rates. By employing a single nucleic acid construct that induces a synthetic form of apomixis, this technique allows for the propagation of F1 hybrid seeds across generations without loss of hybrid vigor. This breakthrough addresses the challenge of producing F1 hybrid seeds in crops with naturally low outcrossing rates, such as rice, by bypassing the need for complex male sterility systems and reducing seed production costs.

APPLICATIONS

- ▶ Hybrid seed production for staple crops with enhanced yield and stability.
- ▶ Development of new agricultural products leveraging synthetic apomixis for cost-effective seed production.
- ▶ Genetic engineering services for crop improvement and sustainability.

FEATURES/BENEFITS

- ▶ Significantly increases the fertility rate of hybrid crops compared to natural subspecies crosses.
- ▶ Enables the stable propagation of hybrid vigor across generations without the need for complex sterility systems.
- ▶ Reduces the cost and complexity of hybrid seed production.
- ▶ Potentially applicable to a wide range of crops, including rice, barley, wheat, and maize.
- ▶ Improves accessibility of hybrid crop benefits to a broader range of farmers, enhancing food security.
- ▶ Tackles low outcrossing rates and high seed costs associated with the production of F1 hybrid seeds.
- ▶ Resolves the loss of hybrid vigor in subsequent generations due to trait segregation.
- ▶ Handles limited accessibility of hybrid crops to regions without advanced seed production and distribution systems.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

agriculture biotechnology, clonal seeds, crop improvement, genetic crosses, hybrid crops, hybrid vigor, MiMe phenotype, seed production, stable progeny, synthetic apomixis

CATEGORIZED AS

- ▶ **Agriculture & Animal Science**
 - ▶ Plant Traits
 - ▶ Plant Varieties
 - ▶ Transgenics
- ▶ **Biotechnology**

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