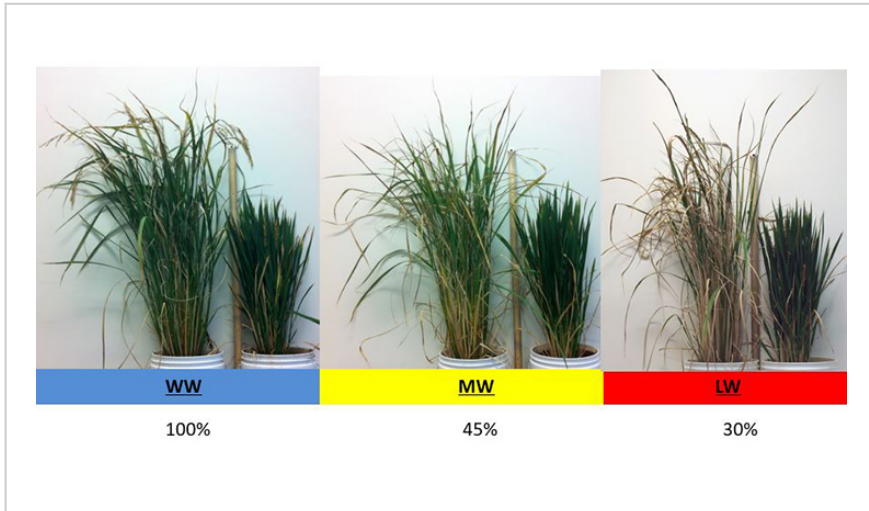


A genetically modified, drought tolerant plant with higher seed yield

ID# 2012-3949



Water stress levels

Technology Summary

The Penn State inventors have identified a gene and/or protein, which, when rendered inactive, results in rice having higher seed production and yield under drought conditions. The Penn State researchers identified this phenotype in a publicly available rice cultivar, known to harbor a non-functional mutant gene; this gene (RGA1) in wild-type plants encodes the alpha subunit of a heterotrimeric G protein. This is a spontaneous dwarf mutant with reduced height and shorter, erect, thicker, broad, dark green leaves, compact panicles, and short, round grains.

Application & Market Utility

Experiments performed demonstrated that the plants present higher photosynthetic rates, stomatal conductance, and leaf area than wild type during both moderate and severe water limitation. The mutants containing the non-functional gene showed increased grain yield under both moderate and severe drought stress relative to wild-type.

The invention has immediate commercial utility as germplasm to improve existing rice cultivars. As noted above, cultivars containing the non-functional gene can be produced via traditional breeding and/or through the use of genetic transformation.

Next Steps

Seeking licensing opportunities.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing | Research

Keywords

- Drought tolerant and drought resistant
- rice, maize, cotton, soybean, wheat
- G-protein
- plant breeding and higher seed yields
- U.S. Patent No. 9,434,957

Researchers

Sally Assmann

Waller Professor, Biology

[Online Bio](#)

[Website](#)

Originating College

Eberly College of Science

Office of Technology Management Contact

Smith, Matthew
mds126@psu.edu
814-863-1122



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