

INCREDIBLE
FEATS OF

PLANT BREEDING

PBCC
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BREEDERS BOOST FLAVOR
AND NUTRITION WITH
BRILLIANT RED-BRAN RICE!



Untapped genes for yield,
flavor, & quality found in a
WEEDY + WILD relative
of cultivated rice!

SEE INSIDE FOR DETAILS!

THE PROBLEM

Rice is life! As a cultivated crop, rice is the primary food source for over half of the world's population. Beyond the common milled rice found on US store shelves, there are countless varieties grown around the world boasting different colors, textures, and aromas. This vast genetic diversity can be traced back to rice's **weedy ancestral species**, wild species that still have much to offer to modern agriculture. Researchers at Cornell University and the USDA/ARS partnered to determine if **Oryza rufipogon**, one such weedy relative, harbored genes that could increase the productivity of current rice varieties. Although some undesirable "weedy" traits are usually associated with the red bran (seed coat) of this species, such red pigments are also linked to **high nutritional value**. The research team set out to create a new type of red rice that contains all the flavor and nutrition but none of the weediness.

THE SCIENCE

In 2018, the resulting variety '**Scarlett**' became the first cultivated rice variety with a **red pericarp** (the seed's bran layer) to be released in the United States. Up until then, red rice in the United States was generally considered a "noxious weed" because the genes that result in a red pericarp are genetically linked (i.e. usually associated) with such unfavorable "weedy" traits as seed dormancy and shattering (where seeds fall easily from stalks), making it hard to get rid of weedy red rice from the field. During the breeding of Scarlett, these undesirable genetic linkages were broken via **generations of strategic backcrossing** (repeated pollination back to 'Jefferson', Scarlett's white, long-grained parent) and **selection**, so that the red pericarp in the new variety was not accompanied by any unwanted weedy characteristics from its other wild parent (*Oryza rufipogon*).

THE IMPACT

Now planted on approximately **2,000 acres** in the southern US, 'Scarlett' is a novel whole-grain rice with a nutty, rich flavor, packed with nutrients. In addition to the naturally high vitamin E found in whole grain rice, Scarlett's stunning red bran has high levels of antioxidants and flavonoids associated with health benefits. As the first long-grain rice variety with red bran released in the US, Scarlett's future is bright, offering new high value traits for **specialty culinary markets**.

THE TEAM



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