Rice ‘Jojutla’ - Parboiling Quality

USDA Agricultural Research Service, USA

The improved nutrition and cooking quality of parboiled rice has led to its increased consumption worldwide. ‘Jojutla’, a landrace rice cultivar introduced from Mexico in 1955, contributed to the development of new commercial varieties adapted to the Southern U.S. with superior parboiling and canning quality. ‘Newrex’ was the first rice variety grown in the Unites States specifically for the processing industry. Essentially all Southern U.S. varieties preferred by the parboiling industry today trace their lineage to ‘Jojutla’.

Photo by Anna McClung, USDA-ARS

Rice that has inherited parboiling qualities from ‘Jojutla’.

PROJECT GOALS

- ✓ Develop rice that produces a superior parboiled product for the canning, soup, and restaurant industries.

Problems Addressed

Parboiled rice is precooked under pressure with the bran layer intact; this causes the vitamins and nutrients in the bran to be absorbed into the grain, thus improving nutritional qualities. Consequently, parboiled rice is the primary type of rice used by the restaurant and soup industries. When typical long grain rice undergoes parboiling and canning, it loses grain starch during cooking. The final product is therefore soft with poor grain integrity, decreasing both yield and end product value. It can also result in extra costs to the industry to clean up water effluent generated from the parboiling process.

Solutions Developed

The landrace variety ‘Jojutla’ was found to produce a superior cooked product. This is thanks to an allele of the major gene that controls amylose content in the grain, resulting in parboiled rice that is firm with less starch solids loss. ‘Jojutla’ was incorporated into the USDA rice breeding program in Texas. It contributed to the release of ‘Newrex’, a cultivar suited to the Southern U.S. with a grain chemistry that results in superior parboiling quality. 30 years later, USDA researchers identified the specific DNA sequence responsible for this trait—a discovery that has rapidly accelerated the breeding process.

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