

RICE BREEDING

RU1104077, A PROMISING CONVENTIONAL LINE WITH HIGH AMYLOSE CONTENT, LOW CHALK AND EXCELLENT MILLING QUALITY

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GRAIN QUALITY ISSUES RAISED AGAINST U.S. RICE IN RECENT YEARS MAKE IT IMPERATIVE FOR U.S. RICE BREEDING PROGRAMS TO RE-EMPHASIZE GRAIN QUALITY TRAITS, ALONG WITH YIELD, THAT COULD HELP RESTORE LOST MARKETS AND INCREASE COMPETITIVENESS IN CAPTURING NEW OPPORTUNITIES.

Conventional pureline varieties account for about one third of the area planted in Mississippi. Certified seeds of conventional varieties cost significantly less than proprietary hybrids and herbicide technology-based varietal types. They are thus preferred by

growers for reducing cost of production. The MSU breeding program has developed five pureline conventional varieties since 1986 – Litton, Priscilla, Pace, Bowman, and Rex. In 2013, Rex occupied roughly 15% of the rice area in the state and remains the

Seeding rate

Drill seeded- 75 to 90 lbs/ac

Cooking characteristics

Apparent amylose- 23.6%

Gelatinization- intermediate

Cook type-long grain

Agronomic traits

Average yield-231 bu/ac

Milling yield- 54/69

Bushel weight- 46

Plant height- 39

Lodging- 7%

Days of heading- 89

Days to maturity- 128

Seed weight (1000)- 25

Seeds/lb- 18,056

Fertilization

Clay soils- 120 to 135 pounds of nitrogen per acre pre-flood followed by a mid-season treatment of 45 pounds of nitrogen per acre.

Silt loam soils- 120 pounds of nitrogen per acre pre-flood followed by a mid-season treatment of 45 pounds of nitrogen per acre.

Disease resistance

Thad is susceptible to sheath blight, leaf blast, bacterial panicle blight, and rotten neck blast.

Rice grain dimensions

	<u>Paddy</u>	<u>Brown</u>	<u>Milled</u>
Length (mm)	8.96	7.05	6.55
Width (mm)	2.75	2.39	2.31
Thickness (mm)	1.92	1.69	1.59
L/W ratio	3.27	2.95	2.84



most popular conventional variety presently. A new conventional breeding line, RU1104077, has been identified as a promising candidate for release based on yield performance and other traits in multiyear, and multilocation tests. RU1104077 has the standard varieties Rosemont, Mars, Newrex and Tebonnet in its pedigree. It is an early maturing, semidwarf pureline with good yield potential, excellent straw strength, and good standability. The grain yields average 231 bu/ac in small plot tests. Milling yields have averaged 54 percent whole and 69 percent total. RU1104077 has the Newrex cooking profile that makes it superior to almost all other commercial cultivars for parboiled and canned rice. Its high

amylose content of 24 percent makes it highly suited to the eating preferences of Central and South American consumers. RU1104077 is rated susceptible to sheath blight, leaf blast, bacterial panicle blight, and rotten neck blast but is moderately resistant to the straighthead disorder. In blind milling tests conducted in 2015 by USA Rice and seven major US rice mills, it was the only entry unanimously found to be acceptable based on milling and grain quality traits. With high yield, low-chalk and unique properties, this promising pureline has good potential for capturing added value in the contract/identity preservation markets and for increasing overall grain quality of rice grown in Mississippi.