

2022 Missouri Rice Nitrogen Trials

Flood-Irrigated and Furrow-Irrigated Production Systems

Conducted by the
University of Missouri Rice Agronomy Program

Funding and support provided by the
Missouri Rice Research and Merchandising Council

By J.L. Chlapecka, M. Johnson, K. McCorkle, C. Hunt



University of Missouri

Rice Agronomy

2022 Missouri Planting Date / Furrow-Irrigated Rice Cultivar Trials

Site	Nearest Town	Planting Date	Emergence Date	Flood Date	Harvest Date	Soil Type	Location Info	Water Management	N Management	N Rate (lbs N/ac)
FDRC Flood	Portageville, Pemiscot County	May 12	May 22	June 22	October 7	Clay	Research Station	Flood	Variable	Variable
MRRMC FIR Top	Glennonville, Dunklin County	May 19	May 28	June 21	October 21	Silt Loam	Research Station	Non-Flood	Variable	Variable
MRRMC FIR Middle	Glennonville, Dunklin County	May 19	May 28	June 21	October 21	Silt Loam	Research Station	Muddy	Variable	Variable
MRRMC FIR Bottom	Glennonville, Dunklin County	May 19	May 28	June 21	October 21	Silt Loam	Research Station	Flood	Variable	Variable
FDRC FIR Top	Portageville, Pemiscot County	April 27	May 8	June 5	September 14	Silt Loam	Research Station	Non-Flood	Variable	Variable

Materials & Methods: The flood-irrigated rice variety x nitrogen (VxN) trial was conducted at Portageville with two cultivars, RT XP753 and Diamond, four nitrogen rates (0, 80, 120, and 160 lbs N/ac), and two timings [single pre-flood and 2-way split with second application made at midseason (at least green ring stage and 4 weeks after pre-flood incorporation)]. One furrow-irrigated VxN trial was conducted in the top, middle, and bottom of the field at the Rice Farm and included CLL16 and DG263L with either 0 N applied, a single pre-flood application of 120 lbs N/ac, three applications of 46 lbs N/ac, four applications of 46 lbs N/ac, or 60 lbs N/ac applied at pre-flood timing, 60 lbs N/ac applied two weeks later, and 46 lbs N/ac applied one week after the second application. The second VxN trial in furrow-irrigated rice was altered due to space constraints and included DG263L under the same N management strategies as the other furrow-irrigated trial. However, there were two timings for the first N application, either at 4-leaf or 6-leaf stage, to determine the optimum time to initiate N fertilization in furrow-irrigated rice.

2022 Portageville Flood Rice VxN

Cultivar	N Rate	App Method	Yield
	lb/ac	Splits	bu/ac
Diamond	0	0	156
Diamond	80	SPF	172
Diamond	120	SPF	189
Diamond	160	SPF	186
Diamond	80	2-way	160
Diamond	120	2-way	185
Diamond	160	2-way	186
RT XP753	0	0	177
RT XP753	80	SPF	197
RT XP753	120	SPF	199
RT XP753	160	SPF	207
RT XP753	80	2-way	173
RT XP753	120	2-way	198
RT XP753	160	2-way	198
AVERAGE			184

Conclusions: With quick flood establishment (1-2 days after application), a single pre-flood application provided either the same or slightly greater yield potential compared to a 2-way split with the same season-total N rate. A SPF of 120 lbs N/ac maximized yield potential in Diamond, while a SPF of 160 lbs N/ac maximized the yield of RT XP753, although 80 lbs N/ac was more economical.

In furrow-irrigated rice at MRRMC, all three- to four-way split applications maximized yield potential of both CLL16 and DG263L in all three portions of the field. At Portageville (FDRC), yield potential was greatest with the 60-60-46 lbs N/ac split was utilized, with a season-total N rate of 166 lbs N/ac, regardless of the initiation timing.

