

AGRONOMY

NITROGEN FERTILIZER RESPONSE PROFILES FOR NEW AND EMERGING RICE VARIETIES

Bobby Golden, Justin McCoy, Richard Turner, Lindsey Bell, Robert Sullivan, and Willie Earl Clark

As rice varieties are brought to market it is necessary to know how the variety will perform in response to differing management strategies. Nitrogen (N) can influence rice grain yield more than any other nutrient under normal production practices. Trials are conducted annually across the Delta to determine the appropriate nitrogen rate for new varieties across a range of soil textures.

In general for each variety as nitrogen rate increased yield potential increased before reaching a plateau at 200 lb N/ac on clay soils and 150 lbs N/ac on the silt loam soils. On both clay and silt loam soils the greatest numerical yield was achieved with XP760 the only hybrid rice variety entered into the 2015 trials. The newly released MSU bred CL163 required 200 lb

N/ac to maximize yield on clay soils and 150 lb N/ac on silt loams. LaKast yields on clay soils continued to increase across the N application range, but for the silt loam were maximized at 180 lb N/ac. Dissimilar to LaKast and CL163, CL172 maximized yield on clay soils with 160 lb N/ac, while on the silt loams 150 lb N/ac was needed to produce top yields. RU1104077 an experimental line from MSU produced the numerical least grain yield at each nitrogen rate when compared to other varieties in 2015. The nitrogen response profile for RU1104077 was similar to that of CL172 on both the clay and silt loam soils. These data are preliminary in the sense that we would like to have three to four years of N management data for a variety before a full N recommendation can be made.

NITROGEN REPRESENTS X% OF THE TOTAL PRODUCTION BUDGET FOR RICE. IT'S IMPERATIVE THAT THE PROPER NITROGEN RATE IS APPLIED TO MINIMIZE COSTS ASSOCIATED WITH FERTILIZATION.

N Rate	Mean Rice Grain Yield by Variety (bu/ac)				
(lb N/ac)	LaKast	CL163	CL172	XP760	RU1104077
0	85	111	74	104	85
80	117	143	122	170	112
120	141	170	134	186	130
160	171	172	164	218	150
200	185	183	165	219	157
220	195	189	167	230	165

Mean grain yield response of new rice cultivars to nitrogen rate on clay soils in Mississippi during 2015.

N Rate	Mean Rice Grain Yield by Variety (bu/ac)				
(lb N/ac)	LaKast	CL163	CL172	XP760	RU1104077
0	80	117	101	121	95
60	146	155	145	177	123
90	154	185	154	191	136
120	166	177	160	209	149
150	187	196	181	208	159
180	193	197	177	197	173

Mean grain yield response of new rice cultivars to nitrogen rate on silt loam soils in Mississippi during 2015.