

ARICE

INFORMATION

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Arkansas Rice Performance Trials, 2009-2011¹

Variety selection is one of the most important management decisions made each year by rice producers. This choice is generally based upon past experience, seed availability, agronomic traits and variety yield potential. When choosing a rice variety, grain and milling yields, lodging, maturity, disease susceptibility, seeding date, field characteristics, the potential for quality reductions due to pecky rice, and market strategy should all be considered. Variety performance data included in this publication are from the Arkansas Rice Performance Trials (ARPT), disease observation plots in grower fields, and from seeding date studies conducted during 2009-2011. Additional information can be found on the Arkansas Cooperative Extension website (www.uaex.edu) and the annual B.R. Wells Rice Research Series publication (<http://www.uark.edu/depts/agripub/Publications/researchseries/>).

Varieties grown in the Arkansas Rice Performance Trials (ARPT) in 2011 averaged **162** bu/A of rough rice compared to the state average yield of **152** bu/A as reported by the USDA Crop Reporting Service (<http://usda.mannlib.cornell.edu/usda/current/CropProd/CropProd-11-10-2011.pdf>). Data averaged over years and locations are more reliable than a single year of data for evaluating rice performance for such important factors as grain and milling yields, kernel size, maturity, lodging resistance, plant height and disease susceptibility. It becomes more critical to evaluate as many years of information as possible, particularly when extreme heat is experienced such as during 2010 and 2011.

The ARPT and disease observation tests are supported through grower check-off funds administered by the Arkansas Rice Research and Promotion Board. These studies are conducted every year to compare promising new experimental lines and newly-released varieties from the

¹Prepared by: Charles E. Wilson, Jr., Professor/Interim Director/Extension Agronomist-Rice; Karen Moldenhauer, Professor, RREC; James Gibbons, Research Assistant Professor; Rick Cartwright, Professor/Extension Plant Pathologist; Fleet Lee, Professor; Rick Norman, Professor; John Bernhardt, Research Assistant Professor; Charles Parsons, Program Associate; Donna Frizzell, Program Associate; Jamie Branson, Program Technician; Maurice Blocker, Program Associate; Jill Bulloch, Program Technician; Edward Castaneda, Program Technician; Stewart Runsick, Program Associate; and Ralph Mazzanti, Program Associate.

breeding programs in Arkansas, Louisiana, Texas, and Mississippi, with established varieties currently grown in Arkansas. Descriptions of varieties included in the ARPT and disease observation tests are provided in Table 7 at the end of this report. The 2010 ARPT were conducted at six locations in Arkansas (Figure 1). Multiple locations each year allow for continued reassessment of the performance and adaptability of advanced breeding lines and commercial varieties to environmental conditions, soil properties and management factors. Twenty-five entries, which were either promising breeding lines or established varieties, were grown in each of the four maturity groups (early, very-short, short and mid-season) for a total of 100 entries.



1. Pine Tree Branch Experiment Station (Calloway silt loam)
2. Newport Branch Experiment Station
3. Goodman Farm, Clay County

Figure 1. Locations (1-6) of the Arkansas Rice Performance Trials and Rice Disease Monitoring Sites (shaded) conducted in 2011.

The 2011 ARPT tests were located at Pine Tree (PTBS), at Newport (NBES), and the Jerry and Blake Goodman farm in Clay County. The studies were seeded on April 12, May 26 and April 2, respectively. Cultural practices varied somewhat among the ARPT locations, but overall the trials were grown under conditions for high yield. Nitrogen was applied to ARPT tests located on experiment stations in a single application of 120 lbs N/A at pre-flood on the silt loam soils, and 150 lbs N/A on the clay soils. Phosphorus and potassium fertilizers were applied before seeding at each location.

The average yields for the 2009, 2010 and 2011 ARPT are listed in Table 1. Agronomic traits and grain yields from the 2011 ARPT are shown in Table 2. Averaged across all locations, Rice Tec XP753, Jupiter and Roy J were the top-yielding varieties in the 2011 ARPT (Table 2). Rice Tec XP753, Roy J and Francis were the highest-yielding long grains in 2011. Rice Tec XL723, CL XL 729 and CL XL 745 have been the highest yielding cultivars averaged across the past three years (Table 1). Roy J, Francis and Jupiter were the top three yielding conventional varieties from 2009 to 2011 (Table 1).

The most recent disease ratings for each variety are listed in Table 3. Ratings for disease susceptibility should be evaluated critically to optimize variety selection. Varieties should be selected for specific fields relative to the potential yield limitations observed in historical yields. For example, Francis and Wells are both susceptible to rice blast disease and should be planted in fields with low risk of this disease. Other varieties should be considered for fields that have limited water availability, poor water-holding ability, historical blast infestations, high risk of straighthead, and tree lines or other natural barriers that encourage long dew periods. Considerations for bacterial panicle blight should also be considered. High-risk fields should be planted to resistant varieties (hybrids and Jupiter). Conventional rice should be planted early and

prior to planting hybrids. Conventional rice should be managed as timely as possible to avoid unnecessary stress. Ratings are a general guide based on our expectations of the cultivar reaction under conditions that strongly favor disease; however, environment will modify the actual reaction in different fields. Also, resistance to particular diseases, like blast, can be overcome by the fungus over time. Do not expect these ratings to be an absolute predictor of variety performance with respect to a particular disease in all situations.

Each year replicated variety trials are established in numerous grower fields to monitor rice variety reaction to diseases. The counties where the 2011 Rice Disease Monitoring Plots (ARDMP) were located are shaded in Fig. 1. Yield information from these trials provides additional valuable information on how varieties and advanced experimental lines perform across the state when subjected to different environments and management practices (Table 4). Variety disease reaction data from these trials are used to help establish disease-susceptibility ratings. A Clearfield-only version is also conducted at a few locations to enable monitoring the impact of Newpath herbicides on the Clearfield varieties. Averaged across all locations, Roy J and Taggart were the highest-yielding cultivars tested in the ARDMP. Yield variability among the various locations represents different environments, but also susceptibility to various diseases present at specific locations.

Descriptions of the varieties tested in the 2011 ARPT are provided in Table 5. New varieties included in the 20110 Arkansas Rice Performance Trials include Caffey, CL 152, CL 162, Jazzman2, Rice Tec XP753, XP754 and CL XP 756.

Growers are encouraged to seed newly released varieties on a small acreage to evaluate performance under their specific management practices, soils and environment. Growers are also encouraged to seed rice acreage in several varieties to reduce the risk of disease epidemics and environmental effects. Varieties that have been tested under Arkansas growing conditions will reduce potential risks associated with crop failure. Additional information on specific varieties not listed in this publication is available upon request. Contact your local county Extension agent for more information.

ADDITIONAL INFORMATION SOURCES

University of Arkansas Cooperative Extension Service Web:

www.uaex.edu

- Rice Information Sheet No. 151
- Rice Information Sheet No. 153
- Rice Information Sheet No. 154
- Rice Information Sheet No. 156
- Rice Information Sheet No. 162
- Rice Information Sheet No. 164

University of Arkansas Agricultural Publications:

<http://www.uark.edu/depts/agripub/Publications/>

- B.R. Wells Rice Research Studies 2001 - 2006

Table 1. Results of the Arkansas Rice Performance Trials averaged across the three-year period of 2009-2011.

Maturity Group and Variety	Grain Length ¹	Straw Strength ²	50% Heading ³	Plant Height	Test Weight	Milled Kernel Wt	Chalky Kernels	Milling Yield				Grain Yield by Year			
		Rating	Days	in.	lbs/bus	mg	%	2009	2010	2011	Mean	2009	2010	2011	Mean
		% Head Rice - % Total Rice							Bushels / Acre						
Very Early Season															
CL111	L	3.0	83	41	43.9	21.6	1.1	62-70	58-65	57-72	59-69	146	163	158	156
CL151	L	5.0	83	40	43.2	19.5	1.4	63-70	54-64	60-66	59-67	155	178	142	158
CL261	M	3.0	79	40	42.4	19.5	1.6		55-66	56-68	56-67		164	163	164
Rex	L	1.0	81	42	43.2	21.7	1.5		55-64	63-71	59-67		164	175	169
Rice Tec CLXL729	L	4.0	82	44	44.3	20.4	2.4	61-72	54-64	65-71	60-69	194	211	180	195
Rice Tec CLXL745	L	4.7	80	45	43.9	21.5	1.3	62-72	55-66	63-72	60-70	183	203	184	190
Rice Tec XL723	L	3.0	83	45	44.5	21.5	2.8	65-72	54-66	53-67	57-68	188	224	191	201
Short Season															
Bengal	M	3.0	85	38	41.9	22.6	0.9	64-72	51-66	61-73	59-71	181	171	153	168
Cheniére	L	1.0	87	37	44.1	19.0	0.8	66-71	51-65	66-71	61-69	161	158	177	165
CL142AR	L	3.3	85	45	43.7	21.6	0.7	60-73	54-66	67-73	60-70	161	165	146	157
CL181AR	L	1.0	87	35	44.0	20.0	0.9	64-71	54-65	65-71	61-69	153	145	181	160
Cybonnet	L	1.7	86	39	44.2	20.0	0.7	68-73	57-66	63-70	63-70	157	158	155	157
Francis	L	2.3	85	41	43.9	18.9	0.9	66-72	55-65	68-70	63-70	183	179	195	186
JazzMan1	L	2.3	88	40	43.8	20.9	0.3	61-69	54-64	68-72	61-68	170	148	170	163
Jupiter	M	2.7	84	37	43.2	20.3	1.3	64-71	59-66	68-72	63-70	197	156	196	183
Wells	L	2.0	87	43	44.0	21.4	0.8	63-74	54-66	61-72	59-71	183	163	171	172
Mid-Season															
RoyJ	L	1.0	91	44	43.4	20.6	1.0	61-71	54-64	64-71	60-69	187	176	196	186
Taggart	L	2.0	89	45	43.7	22.7	0.7	65-72	53-67	59-67	59-69	183	175	163	174
Templeton	L	1.7	89	43	44.3	19.0	0.8	65-72	51-64	64-72	60-69	170	161	194	175
Mean		2.5	85	41	43.7	20.7	1.2	63-71	54-65	62-71	60-69	174	172	173	173

1 Grain Length: L=long grain; M=medium grain

2 Relative straw strength based on field tests using the scale: 0=very strong straw, 5=very weak straw; based on percent lodging.

3 Number of days from emergence until 50% of the panicles are visibly emerging from the boot

4 Data from 2009 and 2010 only.

Table 2. Results of the Arkansas Rice Performance Trials at three locations during 2011.

Maturity Group and Variety	Grain Length ¹	Straw Strength ²	50% Heading ³	Plant Height	Test Weight	Milling Yield	Grain Yield			
		Rating	Days	in.	lbs/bus	%HR-%TR	CLAY	NBES	PTBS	MEAN
							Bushels/Acre			
Very Early Season										
CL111	L	3.0	76	42	42.9	57-72	155	161	157	158
CL151	L	5.0	75	41	41.7	60-66	171	128	128	142
CL162 MS	L	3.0	74	43	38.0	61-69	150	177	170	166
CL261	M	2.0	74	41	42.3	56-68	164	165	161	163
Rice Tec CLXL729	L	4.0	75	46	43.1	65-71	207	160	173	180
Rice Tec CLXL745	L	4.0	73	48	42.9	63-72	191	144	218	184
Rice Tec XL723	L	3.0	76	48	43.5	53-67	182	165	226	191
Rice Tec XP753	L	1.0	74	45	43.0	58-72	276	225	260	254
Short Season										
Caffey	M	1.0	79	39	42.3	62-71	209	146	214	189
Cheniére	L	1.0	80	38	42.7	66-71	193	141	197	177
CL142AR	L	4.0	77	47	42.4	67-73	179	133	126	146
CL152	L	1.0	79	42	42.4	56-65	167	162	203	178
CL181AR	L	1.0	79	36	42.9	65-71	158	174	211	181
Cybonnet	L	2.0	78	42	42.9	63-70	167	149	149	155
Francis	L	1.0	77	42	42.8	68-70	189	155	242	195
JazzMan1	L	2.0	77	40	42.7	68-72	163	148	199	170
JazzMan2	L	1.0	77	38	42.6	67-73	159	127	189	159
Jupiter	M	1.0	79	39	41.1	68-72	189		204	196
Rex	L	1.0	77	43	43.2	63-71	154	158	212	175
Wells	L	2.0	79	45	42.5	61-72	175	177	162	171
Mid-Season										
Bengal	M	2.0	80	37	37.2	61-73	119	147	191	153
Rice Tec CLXP756	L	5.0	81	45	41.6	56-73	165	123	233	174
Rice Tec XP754	L	5.0	82	45	41.3	62-72	155	119	228	168
RoyJ	L	1.0	83	44	41.8	64-71	195	163	230	196
Taggart	L	1.0	81	45	42.8	59-67	157	173	161	163
Templeton	L	3.0	81	45	43.3	64-72	182	182	219	194
Mean		2.3	78	43	42.2	62-71	176	156	195	176

1 Grain Length: L=long grain; M=medium grain;

2 Relative straw strength based on field tests using the scale: 0=very strong straw, 5=very weak straw; based on percent lodging.

3 Number of days from emergence until 50% of the panicles are visibly emerging from the boot;

Table 3. Rice variety reactions¹ to diseases (2011).

Cultivar	Sheath Blight	Blast	Straighthead	Bacterial Panicle Blight	Narrow Brown Leaf Spot	Stem Rot	Kernel Smut	False Smut	Lodging	Black Sheath Rot	Sheath Spot
BENGAL	MS	S	VS	VS	S	VS	MS	MS	MR	MR	
CAFFEY	MS			S	R			MS			
CATAHOULA	VS	R	MS	S	MR	S	S	S	MR	S	
CHENIERE	S	VS	VS	VS	S	S	S	S	MR	MS	
CL 131	VS	MS	VS	VS	VS	VS	S	S	MR	S	
CL 151	S	VS	VS	VS	S	VS	S	S	MR	S	
CL 152	S	S	S	S	R		VS	S			
CL 162	VS	S		VS	R		S	S	S		
CL 261	MS	VS	S	VS	S	VS	MS	S	MS	MS	
CL111	VS	MS	S	VS	VS	VS	S	S	MS	S	
CL142 AR	MS	S	MS	S	S	S	S	S	S	S	
CL181AR	VS	MS	MS	VS	S	VS	S	S	MR	VS	
CL-XP756	MS							S		S	
COCODRIE	S	S	VS	S	S	VS	S	S	MR	S	
FRANCIS	MS	VS	MR	VS	S	S	VS	S	MS	S	
JAZZMAN 1	MS	S	S	MS	S	S	MS	S	MS	MS	
JAZZMAN2	VS	MS			MR			S			
JES	S	R	VS	S	R	VS	MS	MS	S	MR	
JUPITER	S	S	S	MR	MS	VS	MS	MS	MS	MR	
NEPTUNE	MS	MS	VS	VS	MS	VS	MS	MS	MR	MR	
REX	S	S	S	S	MS	S	S	S	MR	S	
ROY J	MS	S	S	S	MR	S	VS	S	MR	MS	
RT CL XL 745	S	R	R	MR	MS	S	MS	S	S	S	S
RT CL XL729	MS	R	MS	MR	MS	S	MS	S	S	S	
RT XL723	MS	R	S	MR	MS	S	MS	S	MS	S	
RT XP 753	MS							S		S	
RT XP 754	MS							S		S	S
RU0801081	MS	S	MS	S	S	S	S	S	MS	MS	S
TAGGART	MS	MS	R	S	MS	S	S	S	MS	MS	
TEMPLETON	MS	R	S	S	S	MS	S	S	MS	MS	
WELLS	S	S	S	S	S	VS	S	S	MS	MS	

1 Reaction: R = Resistant; MR = Moderately Resistant; MS = Moderately Susceptible; S = Susceptible; VS = Very Susceptible. Reactions were determined based on historical and recent observations from test plots and in grower fields across Arkansas. In general, these reactions would be expected under conditions that favor severe disease development including excessive nitrogen rates (most diseases) or low flood depth (blast).

Table prepared by Y. Wamishe, associate professor/extension plant pathologist and R.D. Cartwright, associate director – ag and natural resources

Table 4. Performance of selected cultivars in replicated rice disease monitoring tests located in grower fields in Arkansas during 2011.

	Grain Yields				Lodging				Milling Yield			
	Lincoln*	Poinsett	Prairie	Mean	Lincoln*	Poinsett	Prairie	Mean	Lincoln*	Poinsett	Prairie	Mean
	bushels/acre				%				%Head Rice - % Total Milled Rice			
ArizeQM1003	41	175	98	105	66.7	40.0	93.3	66.7	37-63	60-69	60-70	52-67
Caffey	114	160	159	144	0.0	0.0	0.0	0.0	66-70	64-74	68-73	66-72
Cheniere	96	164	142	134	0.0	0.0	0.0	0.0	60-68	69-74	65-69	65-70
CL111	84	180	138	134	0.0	0.0	0.0	0.0	51-62	59-74	64-72	58-69
CL142AR	79	174	149	134	0.0	0.0	0.0	0.0	47-64	62-73	50-74	53-70
CL151	122	197	146	155	0.0	0.0	0.0	0.0	64-69	66-73	63-72	64-71
CL152	94	166	127	129	0.0	0.0	0.0	0.0	60-66	67-73	64-70	64-70
CL162	86	177	124	129	0.0	0.0	0.0	0.0	54-66	66-74	62-70	61-70
CL181AR	57	171	147	125	0.0	0.0	0.0	0.0	47-53	67-73	64-72	59-66
CL261	79	172	145	132	0.0	0.0	0.0	0.0	56-65	58-74	69-72	61-70
Francis	107	174	163	148	0.0	0.0	0.0	0.0	58-65	67-73	65-73	63-70
JazzMan1	64	174	147	128	0.0	0.0	0.0	0.0	50-59	62-72	67-72	59-68
JazzMan2	86	157	131	125	0.0	0.0	0.0	0.0	58-64	62-72	65-73	62-70
JES	33	177	95	102	90.0	0.0	66.7	52.2	60-69	57-71	60-70	59-70
Jupiter	103	172	148	141	0.0	0.0	0.0	0.0	64-70	65-73	65-73	65-72
RoyJ	35	181	170	129	0.0	0.0	0.0	0.0	38-66	63-73	66-73	56-71
RTXL723	116	186	182	161	60.0	0.0	0.0	20.0	61-69	63-73	66-74	64-72
RTXP753	107	202	208	173	53.3	0.0	0.0	17.8	61-70	59-74	66-75	62-73
RTXP754	71	206	189	155	50.0	0.0	0.0	16.7	58-71	62-73	62-74	60-73
Taggart	78	161	170	136	0.0	0.0	0.0	0.0	47-66	60-69	64-74	57-70
Templeton	90	164	160	138	0.0	0.0	0.0	0.0	58-66	58-72	66-72	60-70
Wells	63	172	170	135	0.0	0.0	0.0	0.0	52-63	66-73	62-74	60-70
Mean	82	175	150	136	14.5	1.8	7.3	7.9	55-66	63-73	64-72	60-70

* Field was submerged for 3 weeks following emergence.

Table 5. General characteristics of varieties tested in the Arkansas Rice Performance Trials and Arkansas Rice Disease Monitoring Program.

Variety/Hybrid	Year Released & State	Pedigree	Highlights
Bengal	1992 – Louisiana	Mars/M-201//Mars	A short season, semi dwarf, medium-grain with good yield potential and milling quality. It has a preferred large grain size.
Bowman	2007 – Mississippi	RU8603006/3/Mars/Newrex//Tebonnet	A short-season, high-amylose long grain designed for canning rice market. Has good grain and milling yield potential and is susceptible to blast and moderately susceptible to sheath blight and straighthead.
Caffey	2010 – Louisiana		
Cheniere	2003 – Louisiana	Newbonnet/Katy/3/82CAY21/Lemont//L-202	A short season semi-dwarf long-grain with good yield potential and milling quality comparable to Cypress. Susceptible to sheath blight and blast.
CL 111	2008 – BASF, Horizon Ag	Proprietary variety	An early season, semi-dwarf long grain similar to CL 131. Susceptible to blast, straighthead, and bacterial panicle blight.
CL 142 AR	2009 – BASF, Horizon Ag	Proprietary variety; Developed from Francis and Wells	A midseason, semi-dwarf long-grain Clearfield similar to Francis with good yield potential, and high tolerance to Newpath herbicide. It is susceptible to blast and bacterial panicle blight, and moderately susceptible to sheath blight and straighthead.
CL 151	2007 – BASF, Horizon Ag	Proprietary variety	A midseason, semi-dwarf long-grain similar to Cocodrie with good yield potential and high tolerance to Newpath herbicide. It is very susceptible to blast, straighthead, and susceptible to lodging and sheath blight.
CL 152	2010 – BASF, Horizon Ag		
CL 162	2010 – BASF, Horizon Ag	Proprietary variety; Developed from Priscilla	
CL 181 AR	2009 – BASF, Horizon Ag	Proprietary variety; Developed from Francis	A midseason, semi-dwarf, long-grain Clearfield with good yield potential and milling quality.
CL 261	2008 – BASF, Horizon Ag	Proprietary variety	A short-season, medium-grain Clearfield variety similar to Bengal.
RT CL XL 729	2006 – Rice Tec, Inc.	Proprietary Hybrid	A short-season, long grain with excellent yield potential and moderately susceptible to sheath blight, and moderately resistant to blast.
RT CL XL 745	2007 – Rice Tec, Inc.	Proprietary Hybrid	A short-season, long grain with excellent yield potential, moderately susceptible to sheath blight, and moderately resistant to blast, and susceptible to lodging. Reported to have improved tolerance to shattering.

Table 5 (cont'd.). General characteristics of varieties tested in the Arkansas Rice Performance Trials and Arkansas Rice Disease Monitoring Program.

Variety/Hybrid	Year Released & State	Pedigree	Highlights
Cocodrie	1997 – Louisiana	Cypress//82CAY21/Tebonnet	A short season semi-dwarf long-grain with good yield potential and milling quality. Susceptible to sheath blight and straighthead. High bran oil content makes it somewhat of a milling concern to certain buyers.
Cybonnet	2004 – Arkansas	Cypress//Newbonnet/Katy	A short season, semi-dwarf long grain with good yield potential and excellent milling quality similar to Cypress. It has blast resistance similar to Katy and moderately susceptible to straighthead. Very susceptible to sheath blight.
Drew	1996 – Arkansas	Newbonnet/Katy	A mid-season, long-grain with average yield potential and milling quality. It is blast-resistant, straighthead-tolerant, and has a larger kernel size than Kaybonnet.
Francis	2002 – Arkansas	Lebonnet/9902/3/Dawn/9695/Starbonnet/4/ LaGrue	A very short season, long-grain with excellent yield potential, susceptible to rice blast and very susceptible to kernel smut. It is the best long grain for high pH and salt soils of NE Arkansas west of Crowley's Ridge, but should not be stressed for water due to blast concerns.
Jazzman1	2009 – Louisiana	Chinese aromatic/Ahrent	A Jasmine-type aromatic rice with good yield potential and milling quality.
Jazzman2	2010 – Louisiana		
JES	2009 – Arkansas	KDM ef sd	A Jasmine-type aromatic rice with good yield potential and milling quality.
Jupiter	2006 – Louisiana	Mercury//Mercury/Koshihikari/3/Bengal// Mercury/Rico	A short season, semi-dwarf, medium-grain with excellent yield potential and milling quality. It has a small grain size but has resistance to bacterial panicle blight.
Wells	1999 – Arkansas	Newbonnet/3/Lebonnet/CI9902//Labelle	A short season, long grain with excellent yield potential, average-to-good milling quality, large kernel size similar to Lemont, but is susceptible to rice blast. Only moderately susceptible to kernel smut and most other diseases.
RT XL 723	2003 – Rice Tec, Inc.	Proprietary Hybrid	A short-season, long-grain hybrid with excellent yield potential, average milling quality; resistant to blast and moderately susceptible to sheath blight.