

ARICE

INFORMATION

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'Ahrent' - A Summary of Research and Recommendations¹

Ahrent (RU9801030) is a high yielding, long grain rice variety developed and released by the University of Arkansas Agricultural Experiment Station in 2001. Ahrent is a blast-resistant variety that has high yield potential comparable to Drew, the most commonly grown blast-resistant variety. However, Ahrent has a shorter plant height and maturity than Drew. Ahrent was derived from the recurrent selection process and results from many crosses and many parents. Ahrent has typical U.S. long grain cooking qualities, an apparent starch amylose content of 22.1% and an intermediate gelatinization temperature (70 to 75°C).

Ahrent was entered into the Arkansas foundation seed program during 2000 at the Rice Research & Extension Center (RREC), located near Stuttgart, AR and foundation seed was made available to Arkansas seed growers in 2001. In 2001, Ahrent was seeded on about **1000 acres** in Arkansas. *Research on rice management and yield performance in Arkansas is made possible by rice grower check-off funds administered by the Arkansas Rice Research and Promotion Board.*

AGRONOMIC TRAITS AND YIELD COMPARISONS

Yield comparisons for Ahrent and other popular mid-south rice varieties from the Uniform Regional Rice Nursery (URRN) and Arkansas Rice Performance Trials (ARPT) show that Ahrent has excellent yield potential in all mid-south rice growing states (Tables 1 - 3). The head rice yield potential of Ahrent has been similar to Drew in most of these tests.

Date of seeding studies conducted at the RREC from 1998 to 2000 suggest that Ahrent yield potential is stable across a wide range of seeding dates but, as with most

¹Prepared by: Charles E. Wilson, Jr., Extension Agronomist; Karen Moldenhauer, Professor/Interim Director-RREC; Rick Cartwright, Extension Plant Pathologist; James Gibbons, Research Assistant Professor; Maurice Blocker, Research Associate; Rick Norman, Professor; John Bernhardt, Research Associate; Fleet Lee, Professor; and Nathan Slaton, Assistant Professor.

other currently grown varieties, yields tend to be better planted earlier (Table 3). Ahrent has consistently produced higher yields than Drew in most yield trials throughout the mid-south.

The number of days required to reach 50% heading varies with seeding date and management (Tables 4 and 5). Date of planting studies show that Ahrent heads about 5-7 days earlier than Drew and Cypress. Ahrent is supported by the Arkansas DD50 program. Based on 30-year weather norms and current DD50 thresholds, Ahrent requires approximately 54 (1360 DD50 units) and 82 (2061 DD50 units) days to reach ½ inch internode elongation (IE) and 50% heading, respectively (based on Stuttgart weather data and an emergence date of May 1; Tables 4 and 5). Differences in crop management and environment may result in a different rate of plant development than that predicted by the DD50 program.

The grain weight and seed dimensions of Ahrent are similar to those of Drew (Table 6). Based on seed weight, 85 lb/A is required to obtain 40 seed/ft² or 23 seed per 7 inch drill row foot. Straw strength and plant height are similar to that of Wells. Although seedling vigor tests have not been performed, visual observations in variety studies suggest that Ahrent has good seedling vigor and is comparable to Drew. Use of fungicide and/or gibberellic acid seed treatments are advised when seeding at reduced rates, early seed dates, poor seedbed conditions, no-till seedbeds, and on clay soils.

Results from a 2001 survey of Ahrent seed growers supports research observations on seedling vigor and yield potential at low seeding rates/stand densities (Table 7). All of the 14 responses returned indicated they would plant Ahrent in future years. The overall performance of Ahrent was rated as either good or excellent. Sheath blight was reported by 8 of the 14 responses while kernel smut was reported by only 5 of the 14 responses. However, only 2 of the 14 responses reported using fungicides.

FERTILIZATION

The recommended nitrogen (N) rate for Ahrent grown on silt and sandy loam soils following soybean in rotation is **135 lb N/A** (Table 8). This recommendation is for N applied in a 2 or 3-way split application where 75 lb N/A is applied pre-flood and followed by 60 lb N/A at midseason. The midseason N can be applied as a single application. The total and pre-flood N rate should be increased by 30 lb N/A for rice grown on clay soils. Ahrent has good straw strength, thus the pre-flood N rate should be increased by another 30 lb N/A (120 and 150 lb N/A pre-flood for silt loam and clay soils, respectively) for use of the “Optimum Pre-flood Method” (OPM).

Limited data is available to suggest how Ahrent will perform on high pH and salt affected soils in relation to other varieties. Follow University of Arkansas soil test recommendations for phosphorus, potassium and zinc fertilizer rate recommendations.

PEST MANAGEMENT

Ahrent has not shown sensitivity to registered herbicides when applied at the labeled rates and times. Always read the pesticide label to ensure that specific varieties are not excluded and/or included for each herbicide. For example, Ahrent and most other current varieties are not included in the “*WHIP 360 Herbicide can be applied only to the following varieties:*” statement on recent Whip labels.

Based on peck damage taken from the ARPT, Ahrent is more susceptible to rice stink bug damage than Cypress or Drew (Table 2). Ahrent has a similar disease resistance as Drew (Table 9). It is rated ***moderately susceptible*** to kernel smut, ***susceptible*** to false smut, ***moderately susceptible*** to straighthead, and ***moderately susceptible*** to sheath blight. Fungicide applications may be warranted when sheath blight incidence (% positive stops) reaches 50% between 7-14 days after ½ inch IE. Ahrent, similar to Drew, is resistant to most commonly found races of blast. Therefore, fungicides should not be needed for rice blast control. A deep flood (4-6 inches) is recommended following midseason to increase resistance to the disease.

ADDITIONAL INFORMATION SOURCES

Univ. of Arkansas Cooperative Extension Service Web - www.uaex.edu

S Rice Information Sheet No. 145

S Rice Information Sheet No. 146

S Rice Information Sheet No. 148

University of Arkansas Agricultural Publications

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

S B.R. Wells Rice Research Studies 1999 – 2001

Louisiana State University - <http://www.agctr.lsu.edu/Subjects/rice/RiceHome.htm>

Table 1. Grain yield and milling data collected from the 1999-2001 Uniform Regional Rice Nursery (URN - Stuttgart, Arkansas, Crowley, Louisiana, Stoneville, Mississippi, and Beaumont, Texas) for Ahrent and selected other varieties.

Variety	Grain Yield (bushels/Acre)					Milling Yield (%HR-TR) ¹				
	AR	LA	MS	TX	Avg.	AR	LA	MS	TX	Avg.
Ahrent	160	178	174	194	177	59-70	62-68	46-65	53-66	55-67
Drew	175	195	171	196	184	60-72	63-70	52-67	56-67	57-69
Cocodrie	193	195	165	210	191	62-71	63-69	49-66	55-68	57-69
Wells	200	194	194	224	203	59-72	61-71	42-68	52-67	54-69
LaGrue	204	211	195	220	208	60-70	60-69	48-66	45-63	53-67

¹ Milling yield is expressed as percent head rice (HR) and total rice (TR).

Table 2. Results of Ahrent and other selected varieties in the Arkansas Rice Performance Trials 1999 - 2001.

Maturity Group and Variety	Grain Type ¹	Straw Strength ²	50% Heading ³	Plant Height	Milled Grain Weight	Rough Seed Weight	Pecky Rice ⁴	Milling Yield				Grain Yield by Year			
								1999	2000	2001	Mean	1999	2000	2001	Mean
		Rating	Days	in.	mg	mg	%	% Head Rice - % Total Rice				Bushels / Acre			
Ahrent	L	3	82	41	16.4	22.2	1.90	60-69	63-69	63-67	62-68	172	154	176	171
Cocodrie	L	2	83	38	17.6	21.8	1.42	64-72	64-70	67-71	65-71	161	160	180	169
LaGrue	L	3	86	44	17.8	24.0	0.99	58-71	57-68	62-69	59-69	180	167	180	176
Kaybonnet	L	5	84	43	14.7	20.4	1.16	56-71	60-70	66-70	61-70	157	152	168	160
Wells	L	3	85	41	18.5	25.2	1.48	54-73	61-74	66-71	60-73	168	181	190	180
Cypress	L	2	86	36	17.4	23.1	1.33	65-72	65-70	66-70	65-70	144	147	154	148
Drew	L	4	87	45	16.1	21.4	1.27	57-72	62-71	65-70	61-71	160	159	166	162

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

2 Relative straw strength based on field tests using the scale: 0=very strong straw, 9=very weak straw.

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

4 Average percent, by weight, in brown rice for stink bug damage from 1999 and 2000

Table 3. Yield Performance of Ahrent and selected other varieties in date of seeding studies conducted during 1999 -2001 at the RREC.

Variety	1999 Seed Date				2001 Seed Date					
	April 13	May 10	May 27	June 10	1999 Avg.	April 4	April 26	May 17	June 11	2001 Avg.
	bus/acre									
Ahrent	181	158	158	146	161	165	156	156	142	155
Cocodrie	198	182	171	146	175	–	–	–	–	–
Drew	181	164	151	152	162	176	164	124	139	151
Wells	190	182	164	157	173	185	165	167	161	170
Bengal	–	–	–	–	–	175	174	185	173	177

Table 4. Effect of seeding date on the days required to reach ½internode elongation.

Variety	1999 Seed Date				2001 Seed Date			
	April 13	May 27	June 10	1999 Avg	April 4	April 26	June 11	2001 Avg.
	days to 50% Heading							
Ahrent	56	40	44	47	57	58	45	54
Cocodrie	51	34	38	41	–	–	–	–
Drew	56	42	45	48	63	57	44	55
Wells	58	43	42	48	64	57	45	55
Bengal	–	–	–	–	62	58	44	55

Table 5. Effect of seeding date on the days required to reach 50% heading.

Variety	1999 Seed Date				2001 Seed Date				
	April 13	May 27	June 10	1999 Avg	April 4	April 26	May 17	June 11	2001 Avg.
	days to 50% Heading								
Ahrent	82	68	74	74	81	82	67	73	76
Cocodrie	85	71	78	77	–	–	–	–	–
Drew	87	71	81	79	91	87	73	79	83
Wells	87	74	77	78	89	85	71	76	80
Bengal	–	–	–	–	88	83	72	74	79

Table 6. Kernel dimensions of Ahrent and Drew.

Kernel Class	Length, mm	Width, mm	Thickness, mm	Length/Width Ratio
Ahrent-Rough	8.59	2.46	1.91	3.49
Ahrent-Brown	6.65	2.07	1.76	3.21
Ahrent-Milled	6.23	2.05	1.65	3.05
Drew-Rough	9.43	2.42	1.83	3.90
Drew-Brown	7.24	2.19	1.62	3.31
Drew-Milled	6.93	2.01	1.56	3.44

Table 7. Results of 2001 seed grower survey for Ahrent.

Responses Returned	14		
Acres Represented	483		
Average Grain Yield @ 12% moisture	162		
Yield Range, bu/A	125 - 175		
Avg. Head Rice % (3 of 14 responses)	57		
Avg. Total Rice % (3 of 14 responses)	68		
Avg. Seed Rate (range)	35 lbs/acre (17 - 60)		
Seedling Vigor	Excellent - 6	Good - 8	Avg -0
Threshing at Harvest	Easy - 6	Avg - 5	Hard - 3
Lodging	2 - Slight; 1 - Moderate		
Average N Rate lb/A	158		
Blast Found; 0 of 14	Sheath Blight Rating; 8/14 slight		
Kernel Smut Found; 5/14	Fungicide Applied; 2/14		
Overall Rating	Excellent - 6	Good - 8	Avg -0

Table 8. Ahrent grain yield response to nitrogen fertilizer rate and method of application from variety × nitrogen rate studies conducted in 2000 and 2001. The N rate producing the highest yield is printed in bold type.

N Rate	RREC (DeWitt silt loam)		SEREC (Perry Clay)		PTBS (Calloway silt loam)		NEREC (Sharkey clay)			
	20001	2001	2001	2001	2001	2001	2001			
lb N /A	SPF2	2-WS3	SPF	2-WS	SPF	2-WS	SPF	2-WS	SPF	2-WS
	bushels per Acre									
0	118.4		99.3		97.4	97.4	143.2	126.4	32.2	42.0
60	141.4	152.7	169.5	131.7	--	--	180.8	154.1	138.6	107.1
90	157.8	167.4	180.1	148.3	198.7	177.0	201.9	162.8	156.5	125.6
120	172.7	162.4	188.3	181.5	205.3	201.2	212.2	192.0	168.7	151.6
150	169.2	177.8	180.9	183.3	213.8	214.2	216.2	208.3	169.8	165.1
180	160.7	168.0	179.4	179.2	207.4	207.9	217.4	213.5	174.4	167.9
210	-	-	-	-	195.5	211.4	--	--		
	-	-	-	-	187.4	195.7	--	--		

1 Source: B.R. Wells Rice Research Studies 2000, Research Series 468.

2 SPF, a single preflight N application of the listed N rate (OPM, Optimum Preflight Method)

3 2-WS, conventional 2-way split N application where preflight-midseason split for each N rate was applied as 60 (30-30), 90 (45-45), 120 (60-60), 150 (90-60), and 180 (120-60).

Table 9. Disease rating¹ for Ahrent and other selected long grain varieties for common diseases.

Variety	Sheath Blight	Blast	Kernel Smut	False Smut	Stem Rot	Brown Spot	Straighthead
Ahrent	MS	R	MS	S	S	R	MS
Cocodrie	VS	MS	VS	S	S	R	VS
LaGrue	MS	S	VS	S	MS	R	MS
Wells	MS	S	MR	S	MS	R	MS
Drew	MS	R	MS	S	MS	S	MS
Cypress	VS	MR	VS	S	MS	R	MS

1 Letter Ratings; R, resistant,; MR, moderately resistant; MS, moderately susceptible; S, susceptible; VS, very susceptible