UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE
Cooperative Extension Service

2005
University of Arkansas
Rice Research Verification Program

AG 961

University of Arkansas
Cooperative Extension Service
Agriculture Experiment Station
U.S. Department of Agriculture
And County Governments Cooperating

ARKANSAS Rice CHECK-OFF

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Introduction

In 1983, the Cooperative Extension Service established an interdisciplinary rice educational program that stresses management intensity and integrated pest management as ways of maximizing returns. The purpose of the Rice Research Verification Program (RRVP) was to verify the profitability of University of Arkansas recommendations in fields with less than optimum yields or returns. The objectives of the program are:

1. To conduct on-farm field trials to verify the utility of research-based recommendations with the intent of optimizing potential for profits.
2. To develop an on-farm database for use in economic analyses and computer assisted management programs.
3. To aid researchers in identifying areas of production that require further study.
4. To improve or refine existing recommendations that contribute to profitable production utilizing all production systems applicable to the commodity.
5. To increase County Extension Agents' expertise in the specified commodity.
6. To incorporate data and findings from the Research Verification Program into Extension educational programs at the county and state level.

Since 1983, the RRVP has been conducted on 243 commercial rice fields in 33 rice-producing counties in Arkansas. The program has typically averaged about 20 bushels/acre better than the state average. In 2005, the RRVP recorded a yield of 170 bu/acre (Table 1). This increase in yields over the state average can mainly be attributed to intensive and integrated pest management.

Rice was grown on 1.635 million acres in Arkansas in 2005. The distribution of varieties was Wells (37%), CL 161 (19%), Francis (10%), Cocodrie (10%), Cheniere (7%), Bengal (5%), and Rice Tec Hybrids (5%). The 2005 production year produced many challenges that were also reflected in the RRVP. Cold weather in April caused emergence problems and overall slow growth. Many fields across the state were replanted due to thin stands. Dry weather in May and June caused reduced herbicide activity and poor weed control; many fields were forced to be flushed. The lack of rainfall also increased the amount of irrigation water use in a year where fuel costs were high. Input costs were increased overall largely as a result of high fuel costs (Table 6). As a final blow, hurricanes in September caused approximately 35 % of remaining rice to lodge, resulting in decreased yields, decreased quality, slower harvest times, and added production costs.

Procedures

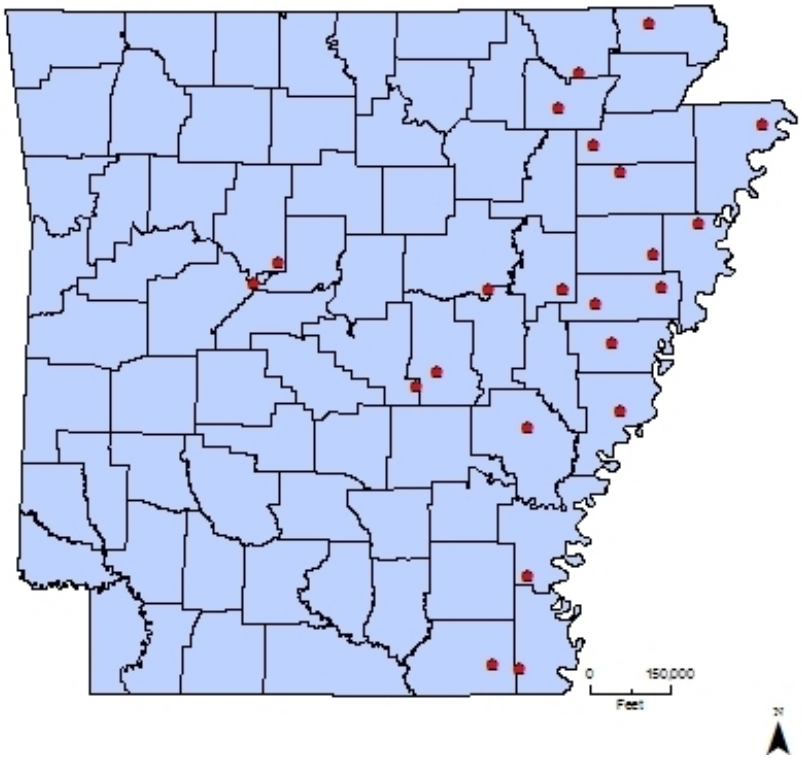
Twenty-two rice fields in twenty Arkansas counties were enrolled in the 2005 RRVP. The RRVP fields and cooperators are selected prior to the beginning of the growing season. Cooperators agree to pay production expenses, provide expense data, and implement university recommendations in a timely manner from planting to harvest. A designated county agent from each county assists the RRVP coordinator in collecting data, scouting the field, and maintaining regular contact with the producer. Management decisions are made using an integrated pest management philosophy based on current University of Arkansas recommendations. The

coordinator and county agents conduct weekly visits to monitor the growth and development of the crop and determine what cultural practices needed to be implemented. They also monitor the types and levels of weed, disease, and insect infestations for possible pesticide applications.

An advisory committee consisting of Extension specialists and university researchers with rice responsibility assists in decision-making, development of recommendations, and program direction. Field inspections by committee members were utilized to assist in fine tuning recommendations.

Counties participating in the program during 2005 included Arkansas, Ashley, Chicot, Clay, Craighead, Crittenden, Cross, Desha, Lawrence, Lee, Lonoke (2), Mississippi, Phillips, Poinsett, Pope, Prairie, Randolph, St. Francis (2), Woodruff and Yell (Figure 1). A total of 1390 acres were enrolled in the program. Five varieties (Wells, Cocodrie, Francis, Cheniere, Cybonnet and XP 723) were seeded in the 22 fields. University of Arkansas recommendations were used to manage the RRVP fields. Management decisions were based on field history, soil test results, variety, and data collected from individual fields during the growing season. Data collected included components such as stand density, weed populations, disease infestation levels, insect populations, plant dry matter accumulation, temperature, rainfall, irrigation amounts, dates for specific growth stages, grain yield, milling yield, and grain quality.

Figure 1. Location of the 2005 RRVP Fields



Results and Discussion

Yield

The average RRVP yield was 170 bu/A, with a range of 128 to 199 bu/A (Table 1). The 2005 RRVP average was two bushels less than the program's highest yield of 172 bu/A set in 2003. The highest yielding fields, located in Desha and Pope Counties, were seeded with Cheniere and XP 723 and yielded 199 bu/A. Two fields, located in Ashley and Randolph Counties, exceeded 190 bu/A. The lowest yielding field, located in Lawrence County, was seeded with Cybonnet.

Milling data was also recorded on all of the RRVP fields. The average milling yield for the 22 fields was 56/71, with the highest milling yield of 64/75 occurring in Lee County. The average milling was greater than 55/70, which is considered the standard used by the rice milling industry. The lowest milling field, located in Crittenden County, was seeded with Wells and milled 50/70 (Table 1).

Table 1. Variety, soil series, previous crop, acreage, yield, and milling for 2005 RRVP

County	Variety	Soil Series	Previous Crop	Acres	Yield Bu/A	Milling Yield
Arkansas	Wells	Dewitt silt loam	Soybean	135	186	60/68
Ashley	Cheniere	Portland silty clay	Soybean	45	190	64/72
Chicot	Cocodrie	Sharkey clay	Soybean	45	153	59/68
Clay	Wells	Foley silt loam	Soybean	94	179	55/72
Craighead	Francis	Hilleman silt loam	Soybean	93	179	62/71
Crittenden	Wells	Sharkey silty clay	Rice	25	148.5	50/70
Cross	Wells	Earle silty clay loam	Soybean	25.5	186	56/74
Desha	Cheniere	Sharkey silty clay	Soybean	27	199	57/67
Lawrence	Cybonnet	Dundee silt loam	Soybean	30	128	56/71
Lee	Wells	Henry silt loam	Soybean	71	161	64/75
Lonoke 1	Wells	Portland silty clay	Soybean	47	164	55/72
Lonoke 2	Wells	Perry silty clay	Soybean	64	158	52/72
Mississippi	Wells	Sharkey clay loam	Soybean	76	170	53/69
Phillips	Francis	Foley silt loam	Soybean	35	180	54/69
Poinsett	Wells	Hilleman silt loam	Soybean	183	147	51/72
Pope	XP 723	Roellen clay	Rice	72	199	59/69
Prairie	Wells	Calloway silt loam	G.Sorghum	80	160	53/73
Randolph	Wells	Crowley silt loam	Soybean	64	190	61/72
St. Francis1	Wells	Henry silt loam	Soybean	35	171	55/68
St. Francis2	Francis	Sharkey clay	Soybean	69	160	49/70
Woodruff	Francis	Calloway silt loam	Soybean	40	185	56/70
Yell	Francis	Roellen silty clay	Corn	34	153	51/70
Average				**63**	**170**	**56/71**

Planting and Emergence

All the fields were planted in the optimum time frame, beginning with Ashley and Craighead Counties planted April 4th and ending with Cross County planted May 14th (Table 2). An average of 113.5 lbs./A was seeded in the RRVP fields (Table 2). Seeding rates were determined with the Cooperative Extension Service RICESEED program for all fields. An average of 17 days was required for emergence. Stand density ranged from 8 to 30 plants/ft^2, with an average of 20 plants/ft^2. The seeding rates in several fields were higher than average, but planting method and soil type were the reasons for the elevated seeding rate.

Emergence required longer than average in most of the fields in 2005. The unseasonably cool temperatures in late April and early May delayed emergence. The temperatures slowed emergence while north winds dried the soil and formed a crust before the seedlings emerged. In many cases, this caused the fields to be flushed a second time.

Irrigation

Well water was used to irrigate twenty of the twenty-two fields in the 2005 RRVP. Yell and Pope Counties were irrigated with surface water. Five of the twenty-two fields used multiple inlet (MI) irrigation (Ashley, Cross, Lonoke, Phillips, and Craighead). Flow meters were used in sixteen of the fields to record water usage throughout the growing season and compare MI to conventional flooding.

An average of 39.2 acre-inches of water was used across both irrigation methods (Table 2). The fields with MI irrigation averaged 37 acre-inches of water compared to 39.3 acre-inches for fields using conventional flooding. This difference in water used is not as great as typically observed across irrigation methods. The extremely high temperatures in 2005 are the reason for elevated water use in 2005. Typically a 25 % reduction in water used is seen when using MI irrigation; however, in 2005 the difference was less than 10 %. The same trend was seen in 2004, but that year the high amount of rainfall received in June and July caused the two methods to appear similar in water usage.

Table 2. Stand density, irrigation, seeding rate, and important dates during the 2005 season.								
County	**Stand Density**	**Rainfall**	**Irrigation**	**Total Acre-in**	**Seeding Rate**	**Planting Date**	**Emergence Date**	**Harvest Date**
	Plants/ft^2	**Inches**	**Acre inches**	**Rainfall + Irrigation**	**Lbs/A**			
Arkansas	13	7.8	40.2	48	148	4-16	5-2	9-14
Ashley	19	7.4	29.8	37.2	123	4-4	4-17	8-19
Chicot	17	5.1	31.1	36.2	121	4-22	5-12	9-5
Clay	16	11.5	27.2	38.7	97	4-23	5-12	9-19
Craighead	19	12.9	38	50.9	95	4-4	4-20	9-5
Crittenden	28	12.9	55	67.9	135	5-6	5-15	9-12
Cross	19	10.2	31.9	42.1	123	5-14	6-3	9-23
Desha	17	7.9	45.2	53.1	115	4-29	5-18	9-10
Lawrence	28	11.9	40.2	52.1	96	4-18	5-2	9-10
Lee	19	7.3	40.2	47.5	106	4-25	5-7	9-10
Lonoke 1	24	13.1	43.6	56.7	112	4-20	5-15	9-7
Lonoke 2	16	13.2	39.5	52.7	123	4-22	5-22	9-13
Mississippi	20	10.4	35	45.4	135	4-25	5-9	9-3
Phillips	20	3.1	45.7	48.8	123	4-22	5-10	9-2
Poinsett	23	10.1	40.2	50.3	90	4-26	5-10	9-22
Pope	8	8.7	33	41.7	31	5-7	5-20	10-8
Prairie	21	11.1	35.6	46.7	95	5-3	5-12	9-17
Randolph	26	8.5	34.9	43.4	90	4-20	5-6	9-20
St. Francis 1	19	7.6	40.2	47.8	148	4-19	4-28	8-29
St. Francis 2	22	10.4	40.2	50.6	148	4-29	5-16	10-15
Woodruff	26	6.7	40.2	46.9	148	4-22	5-11	9-7
Yell	30	11.4	56.3	67.7	96	4-26	5-10	9-20
Average	**20.5**	**9.5**	**39.2**	**48.7**	**113.5**			

Fertilization

Nitrogen recommendations were based on a combination of factors including soil type and variety requirements (Table 3). The N rates applied across the fields vary due to factors such as previous crop and other adjustments recommended by the University of Arkansas. Nitrogen rates may look excessive, but in some fields corn was the previous crop and a clay soil type was present. These factors increase the N requirements significantly compared to a silt loam where soybeans were the previous crop.

Phosphorus, potassium, and zinc were applied based on soil test results (Table 3). The average cost of fertilizer across all fields was $99.89 (Table 6), which was significantly greater than the $57.49 spent in 2004.

Table 3. Soil test results from RRVP fields and fertility recommendations

County	Soil pH	P	K	Zn	Nitrogen Rate Urea (45%)[1]	Total N Rate/A	Fertility N-P-K-Zn[2]
		LB/A	LB/A	LB/A			
Arkansas	6.3	27	141	2.6	230-130	162	0-60-60-10
Ashley	6.5	65	466	4	250-100	180	23-0-0-0 *
Chicot	7.5	23	315	6.6	300-100	180	0-0-60-0
Clay	5.8	15	192	3.4	230-100	149	0-38-40-10
Craighead	6.5	20	170	5.0	230-100-70	180	0-73-139-0
Crittenden	5.9	30	614	8.7	300-100	180	0-0-0-0
Cross	6.6	54	485	5.8	300-100	180	0-0-40-0
Desha	6.8	25	851	6.6	250-100	184	0-27-60-0
Lawrence	6.0	33	250	4.7	230-100-70	180	0-0-0-.5
Lee	6.1	66	126	6.3	230-130	162	0-0-60-10
Lonoke 1	6.6	80	966	3.7	260-130	193	18-46-0-0
Lonoke 2	6.2	35	305	8.3	250-125	186	18-46-0-0
Mississippi	6.6	43	600	8.3	260-100-70	193	0-0-0-0
Phillips	6.9	25	216	4	275-100	191	23-0-0-0 *
Poinsett	7.1	24	150	1.9	230-100-70	180	0-60-60-10
Pope	6.5	18	746	3.5	270-70	191	55-62-0-.15
Prairie	6.8	18	108	3.2	250-100	158	0-60-90-3
Randolph	6.0	55	300	12.4	230-100	149	0-0-60-0
St. Francis1	6.4	29	202	4.3	230-100	149	0-40-0-10
St. Francis2	6.6	36	601	10.4	260-100	180	18-46-0-0
Woodruff	6.6	69	214	4	250-100	157	0-40-0-10
Yell	5.3	26	402	5.2	290-100	176	0-0-0-0

[1] preflood-midseason-boot

[2] N-P_2O_5-K_2O-Zn includes seed treatments

* A.S. flushed in 2-3 leaf rice

Weed Control

In 2005, the average herbicide cost was $53.25 (Table 6). Crittenden County had the most expensive weed control program at $78.53 an acre (Table 6). Lee County had the most inexpensive at $25.61 an acre.

Crittenden County was flushed one time. Stam and Permit was applied pre-flood to control emerged barnyardgrass and nutsedge.

Lee County was a very inexpensive field as far as herbicides were concerned. Command did an excellent job on the grasses early, but the lack of rainfall prior to flood contributed to the lack of emerging grass species. From the time of emergence until flood, no measurable rainfall was received.

Table 4. Herbicide rate and timings for 2005 RRVP fields.

Arkansas	**PRE:** Command (0.8 pt) **POST:** Facet (0.33 lbs.)
Ashley	**PRE:** Command (0.8 pt) **POST:** Facet (0.33 lbs.) Permit (1 oz)
Chicot	**POST:** Stam (4 qts) Facet (0.5 lbs)
Clay	**PRE:** Command (0.7 pt) Glyphosate (1 qt) **POST:** Aim (1.0 oz)
Craighead	**PRE:** Command (0.75 pt) Glyphosate (.875 qt) **POST:** Stam (2.5 qts) Facet (0.25 lb) Permit (0.33 oz)
Crittenden	**PRE:** Command (1.5 qts) Facet (0.5 lb) **POST:** Stam (4 qts) Permit (0.5 oz)
Cross	**PRE:** Command (1.0 pt) **POST:** Aim (1 oz) **POST-FLOOD:** Clincher (15 oz)
Desha	**PRE:** Command (0.8 pt) **POST:** Facet (0.33 lbs.) Aim (1 oz)
Lawrence	**PRE:** Command (0.8 pt) Glyphosate (1 qt) **POST:** Stam (4 qts)
Lee	**PRE:** Command (0.8 pt) **POST:** Aim (1 oz)
Lonoke 1	**PRE:** Command (1.5 pts) **POST:** Aim (1 oz) Prowl (2 pts) fb Ricestar (24 oz)
Lonoke 2	**PRE:** Command (0.8 pt) **POST:** Stam (3 qts) Grandstand (2/3 pt)
Mississippi	**PRE:** Command (1.0 pt) Glyphosate (0.75 qt) **POST-FLOOD:** Clincher (15 0z) fb Ultra Blazer (0.5 pt) On ½ field
Phillips	**PRE:** Command (1.0 pt) **POST:** Facet (0.33 lb) Permit (1 oz)
Poinsett	**PRE:** Command (0.8 pt) Glyphosate (1 qt) **POST-FLOOD:** Clincher (15 oz) ½ field
Pope	**PRE:** Command (1.6 pts) **POST:** Aim (1.5 oz)
Prairie	**PRE:** Glyphosate (0.75 qt) **POST:** Stam (4 qts) **POST-FLOOD:** Clincher (15 oz)
Randolph	**PRE:** Command (0.8 pt) **POST:** Stam (4 qts) Permit (1.3 oz)
St. Francis1	**PRE:** Command (0.8 pt) **POST:** Ricestar (24 oz) fb Permit (1 oz)
St. Francis2	**PRE:** Command (1.5 pt) **POST:** Facet (0.5 lb) Aim (1 oz) **POST-FLOOD:** Clincher (15 oz)
Woodruff	**PRE:** Command (0.8 pt) **POST:** Facet (0.33 lb) Permit (1 oz)
Yell	**PRE: POST:** Duet (4 qts) Permit (0.5 oz)

Disease Control

Fungicides were applied to half of the fields in 2005 for control of sheath blight and/or blast (table 5). The average cost for fungicide was $13.32 an acre (table 6).

Insect Control

Two of the RRVP fields were treated for rice water weevil in 2005 (table 5). Weevil traps were placed in the RRVP in cooperation with Dr. John Bernhardt. The traps and thresholds are being developed as a more accurate way of scouting for weevils as compared to the leaf scaring method. Two fields were treated for rice stinkbugs (Table 5). Both fields, in Cross and St. Francis counties, were later-planted fields.

Table 5. Fungicide and insecticide applications in 2005 RRVP fields.

County	Fungicide	Rice Water Weevil	Rice Stink Bug
Arkansas	------	------	------
Ashley	Stratego (16 oz)	------	------
Chicot	------	------	------
Clay	Quadris (8.5 oz)	Mustang Max (3.66 oz)	------
Craighead	------	Karate (2.13 oz)	------
Crittenden	Quadris (6.4 oz)	------	------
Cross	------	------	Karate (1.85 oz)
Desha	Stratego (16 oz)	------	------
Lawrence	Quadris (8.5 oz)	------	------
Lee	Stratego (19 oz)	------	------
Lonoke 1	------	------	------
Lonoke 2	Quadris (8.5 oz)	------	------
Mississippi	------	------	------
Phillips	Stratego (16 oz)	------	------
Poinsett	------	------	------
Pope	------	------	------
Prairie	------	------	------
Randolph	Quadris (8.5 oz)	------	------
St. Francis 1	------	------	------
St. Francis	Quadris (6.4 oz)	------	Karate (1.85 oz)
Woodruff	------	------	------
Yell	Stratego (19 oz)	------	------

Economic Analysis

This section provides information on the development of estimated production costs for the 2005 RRVP. Records of operations on each field provided the basis for estimating these costs. The field records were compiled by participating county Extension faculty, the coordinator of the RRVP, and the producers for each field.

Presented in this analysis are: specified operating costs, specified ownership costs, and total specified costs for each of the fields. Break-even prices for the various cost components and returns above, specified expenses at the average 2005 price are also presented.

Table 6.		Selected variable input expenses from 2005 RRVP fields[1]					
County	**Variety**	**Seed[2]**	**Fertilizer[3]**	**Herbicides[3]**	**Fungicides[3]**	**Insecticides[3]**	**Irrigation[4]**
		----------Input Cost /acre----------					
Arkansas	Wells	26.39	95.93	45.41	0.00	0.00	92.09
Ashley	Cheniere	21.90	95.68	59.56	24.50	0.00	67.97
Chicot	Cocodrie	30.89	107.48	49.12	0.00	0.00	84.88
Clay	Wells	18.96	93.56	30.65	24.42	8.16	62.77
Craighead	Francis	21.45	144.13	53.53	0.00	5.65	88.03
Crittenden	Wells	32.16	85.00	78.53	19.62	0.00	125.24
Cross	Wells	21.90	85.00	57.87	25.56	5.31	81.72
Desha	Cheniere	20.53	97.77	58.82	24.50	0.00	113.07
Lawrence	Cybonnet	30.37	90.05	55.68	24.42	0.00	117.09
Lee	Wells	18.96	101.93	25.61	28.15	0.00	92.09
Lonoke 1	Wells	19.94	101.93	69.40	0.00	0.00	91.87
Lonoke 2	Wells	21.90	107.18	44.58	23.28	0.00	90.52
Mississippi	Wells	26.39	96.87	47.44	0.00	0.00	80.37
Phillips	Francis	21.90	86.12	54.53	24.50	0.00	104.49
Poinsett	Wells	21.44	114.17	38.55	0.00	0.00	92.09
Pope	XP 723	89.17	95.79	36.47	0.00	0.00	96.59
Prairie	Wells	13.58	122.34	66.13	0.00	0.00	81.72
Randolph	Wells	21.44	97.29	56.44	24.42	0.00	80.14
St. Francis 1	Wells	26.39	85.94	59.07	0.00	0.00	92.09
St. Francis 2	Francis	32.16	98.75	58.82	19.62	10.62	82.95
Woodruff	Francis	26.39	100.18	56.69	0.00	0.00	92.09
Yell	Francis	22.81	94.57	44.89	30.15	0.00	128.40
Average		**26.68**	**99.89**	**52.17**	**13.32**	**1.35**	**92.65**

1 Does not include all variable costs, such as drying, hauling, equipment repair, etc.

2 Includes seed cost and treatments.

3 Includes the cost of material and application for each input.

4 Includes irrigation labor, irrigation supplies (levee gates & poly-pipe), irrigation repair and maintenance, and diesel fuel.

Specified Operating Costs

Specified operating costs are those expenditures that would generally require annual cash outlays and would be included on an annual operating loan application (Table 6). Actual quantities of all operating inputs were used in this analysis. The average of the actual prices paid by cooperating producers was used to calculate costs.

Table 7 **Milling Yield Impact on Gross Returns from 2005 RRVP[1]**

County	Yield	Milling Yield	Crop Price[2]	Specified Direct Expenses[3]	Specified Ownership Expenses[4]	Net Land Costs[5]	Return above Direct Costs	Return above Total Costs	BEP to Equal Operating Costs	BEP to Equal Total Costs	Milling Yield Impact on Gross Returns[7]
	bu/ac		$/bu	$/ac)					$/bu		$/ac
Arkansas	186	60/68	3.29	424	57	96	65	8	2.85	**3.23**	9.93
Ashley	190	64/72	3.47	416	47	106	112	65	2.74	**3.05**	38.40
Chicot	153	59/68	3.26	397	36	75	1	**(34)**	3.25	**3.54**	4.68
Clay	179	55/72	3.26	383	48	91	84	35	2.67	**3.01**	5.34
Craighead	179	62/71	3.40	463	51	96	23	**(28)**	3.24	**3.59**	25.72
Crittenden	149	50/70	3.09	496	57	68	**(129)**	**(186)**	4.17	**4.66**	**(15.29)**
Cross	186	56/74	3.33	422	48	98	74	26	2.84	**3.16**	16.42
Desha	199	57/67	3.20	451	34	101	59	25	2.83	**3.04**	**(2.67)**
Lawrence	128	56/71	3.26	454	52	60	**(120)**	**(172)**	4.43	**4.94**	3.82
Lee	161	64/75	3.55	398	44	89	60	16	3.09	**3.42**	42.56
Lonoke (JC)	164	55/72	3.24	423	47	81	2	**(45)**	3.23	**3.58**	2.53
Lonoke (KS)	158	52/72	3.19	433	52	76	**(30)**	**(82)**	3.43	**3.84**	**(4.04)**
Mississippi	170	53/69	3.14	377	39	81	49	10	2.78	**3.06**	**(11.05)**
Phillips	180	54/69	3.17	440	49	88	17	**(32)**	3.06	**3.39**	**(6.79)**
Poinsett	147	51/72	3.16	388	45	69	**(16)**	**(61)**	3.30	**3.68**	**(6.77)**
Pope	199	59/69	3.28	477	51	103	**45**	**(6)**	3.00	**3.32**	9.71
Prairie	160	53/73	3.23	447	55	79	**(33)**	**(88)**	3.49	**3.92**	1.74
Randolph	190	61/72	3.40	443	53	103	74	21	2.91	**3.26**	27.30
St. Francis (TM)	171	55/68	3.18	413	50	83	22	**(28)**	3.02	**3.38**	**(5.67)**
St. Francis (TW)	160	49/70	3.06	455	50	73	**(63)**	**(113)**	3.56	**3.95**	**(19.87)**
Woodruff	185	56/70	3.22	423	48	93	54	6	2.85	**3.18**	**(0.23)**
Yell	153	51/70	3.12	441	46	71	**(60)**	**(106)**	3.61	**3.98**	**(12.85)**
Average	*170*	***56/71***	*3.25*	*430*	*48*	*86*	*13*	***(35)***	*3.20*	***3.55***	*4.68*

[1] 20% Crop-Share Rent was Assumed.

[2] Loan Rate Milling Yield Value plus $0.2455/bu Premium.

[3] Includes all Variable Expenses from Table 6 plus Drying, Hauling, Miscellaneous Custom Expenses, Fuel, Repairs, Labor for field operations, and Interest on Operating Capital.

[4] Excludes ownership expenses of Irrigation Well.

[5] Includes Net Returns from 20% of Crop less Drying charges and Irrigation Fixed Expenses.

[6] Impact on Tenant's Gross Returns. (Gross Returns w/milling yields – Gross Returns at Standard Milling)

The producers' actual field operations were used as a basis for calculations and actual equipment sizes and types were matched as closely as possible. Fuel and repair costs were calculated by Extension models based on the size or horsepower of the equipment. Therefore, the producers' actual machinery costs may vary from the machinery cost estimates that are presented in this report. Specified operating costs for the 22 RRVP fields ranged from $377/A for Mississippi County, to $496/A for Crittenden County, with an overall average of $430/A.

Land Costs

Land costs incurred by producers participating in the RRVP would likely vary from land ownership, cash rent, or some form of crop-share arrangement. Therefore, a comparison of these divergent cost structures would contribute little to this analysis. For this reason, a 20% crop-share rent was assumed to provide a consistent standard for comparison. This is not meant to imply that this arrangement is normal, or that it should be used in place of existing arrangements. It is simply a consistent measure to be used across all RRVP fields. The average break-even price needed to cover specified operating costs, including the assumed 20% crop-share rent, was $3.20/bu. Furthermore, break-even prices ranged from $2.67/bu in Clay County up to $4.43/bu in Lawrence County (Table 7).

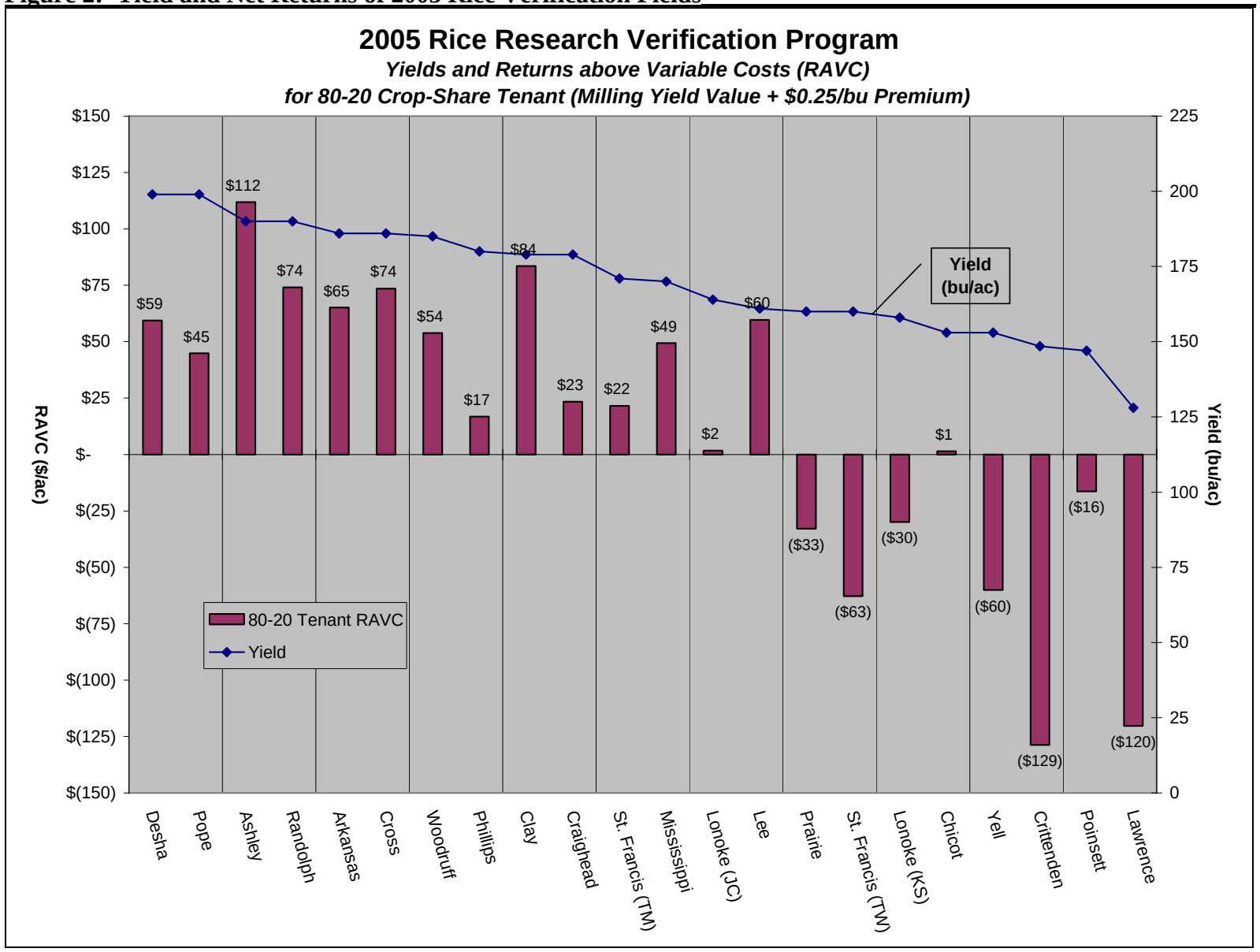
Returns

Table 7 includes estimated net returns above Specified Operating Expenses and Total Specified Costs. Net land costs and impacts of milling yields on gross returns are also included. Estimated landowner returns or net land costs were calculated assuming the landowner pays 20% of the drying expenses and $16.33/A for the irrigation system fixed costs. All Costs for risk, overhead and management were not included.

Crop price was estimated based on a harvest season average price of $3.22/bu, including LDP, which was a reported total cash price average for the period of August 22, 2005 – October 14, 2005. The associated premium above loan rate was $0.2455/bu based on the $6.61/CWT loan rate for 2005 Arkansas rice. Crop prices were calculated based on milling yields for each field and the 2005 USDA loan rates for whole and broken rice kernels. Estimated prices varied from $3.06/bu in St. Francis County to $3.55/bu in Lee County, with an average of $3.25/bu.

Net returns ranged from a $129/A loss in Crittenden County to a $112/A profit in Ashley County. Much of the difference in net returns can be attributed to yields and irrigation amounts, i.e. Irrigation of 54.9 ac-in in Crittenden County versus 29.5 ac-in in Ashley County. Figure 2 gives a visual representation of all fields in the 2005 RRVP from highest yield to lowest. It shows that other factors, besides yield, can have a huge impact on farm profits.

Figure 2: Yield and Net Returns of 2005 Rice Verification Fields



Additional Information Northern Fields

Victor Stone of Randolph County said, "I am extremely pleased with the results of the program. I consider 150 bushels an acre a good yield on my farm. This is the highest yield I have ever made on this field." This year, Mr. Stone's field made 190 bushels/A.

County Extension Agents also benefit from the program. "It has been a very valuable learning experience for all involved," says Craig Allen, Poinsett County Extension agent for the University of Arkansas Division of Agriculture. "Being able to be involved in the entire process from soil testing and variety selection through harvest has had a tremendous impact on my abilities as an agent. Being able to draw from the knowledge base of all our specialists, as well as gaining insight from the farmer's viewpoint about the strong points as well as limitations of this particular field has been invaluable."

As you read the contents of this report, you will notice some extremely good yields, some approaching 200 bushels/A. Success has to be measured on a field by field basis. Many of the producers experienced a yield increase of 10, 20, or even higher bushels per acre over the fields' historic yield. The disappointing figures are the input costs. Utilizing IPM practices, we are able to limit the number of applications made to the field. However, with the increase in fuel and fertilizer prices, the costs continue to rise.

Clay

The Clay county field was planted April 23 in Wells. Plant stand counts averaged 16 plants/ft², with some areas a little thin. The field was flushed twice due to extremely dry conditions, to aid in emergence and increase herbicide activity. Command did a good job controlling the grass. The field was sprayed with Aim for control of broadleaf weeds. Red rice pressure was heavier this year compared to 2003 and may have reduced yields slightly.

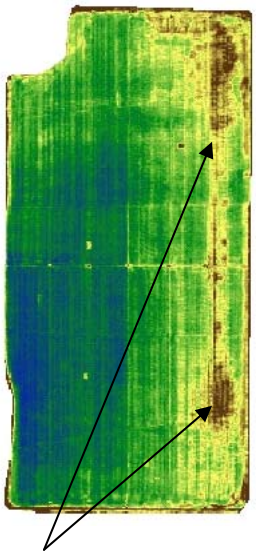
Rice water weevil traps were placed in the field. The number of water weevils caught in the traps exceeded the threshold of 40 in the top patty and along the east side of the field. 70 of the 94 acres in the field were treated with Mustang Max on June 10. Sheath blight levels approached treatment level the first week of July and the field was treated with Quadris at a rate of 8.5 oz/A on July 15. The field made 179 bushels/A this year compared to 201 bushels/A in 2003. The difference in yield was mainly due to the harsh environmental conditions this year and increased red rice pressure.

Craighead

The Craighead county field was the first field planted, planted on April 4th. The field was slow to emerge, requiring 16 days. The west half of the field was worked in the spring, the east half was planted stale seed bed. Stand counts averaged 14 plants/ft² on the east side of the field and 24 plants/ft² on the west side. The cold temperatures early caused overall slow growth and the rice was short when the flood was applied.

One week after flooding, the east side of the field showed symptoms of zinc deficiency. This area of the field also had heavy leaf scarring due to water weevil feeding. The weevil trap catches in this area of the field were just slightly below treatment level, but much higher than the west half. The flood was pulled off the top half of the field and treated with zinc and Karate on May 28. The rice greened up and recovered; however, there were a few areas in the field that the rice died.

Two weeks after the mid-season nitrogen application, the field began to turn yellow. The decision was made to apply an additional 70 lbs/A of urea as a boot application. The rice greened up and looked good the rest of the season. Sheath blight never reached treatment level; however, the thickest areas of the field did have false smut. The thickest areas of the field lodged. The field cut 179 bushels/A overall; however, the west side of the field made much better than the east side.



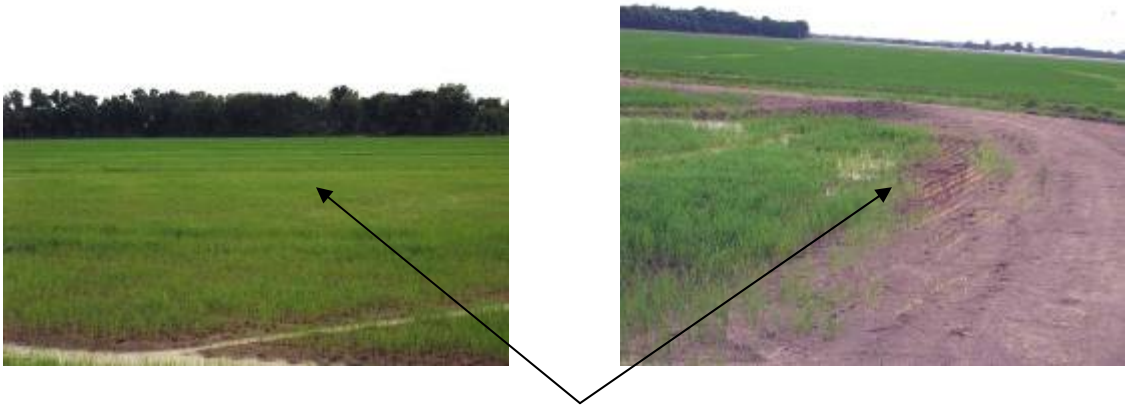
Yellow and brown areas indicate Zn deficiency and area treated for water weevils.

Crittenden

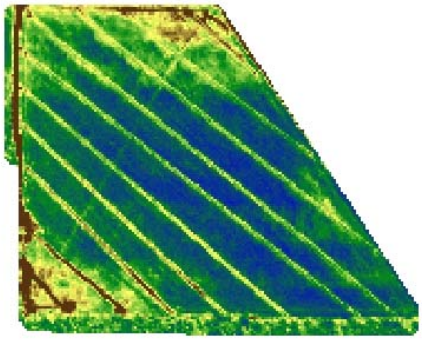
The heavy clay field in Crittenden County took a long time to dry out so that it could be disked and planted. The field had to be worked several times in order to get it ready to plant, causing a compaction problem. After planting, the field was flushed to aid in emergence and to activate the herbicide. Prior to flood, the rice seemed to never take off and grow. The top of the field had a pale yellow color and appeared to be stunted. Plant tissue and soil samples did not indicate a specific nutrient deficiency. I expected the field to green up and take off after the pre-flood nitrogen application was made, but it did not. I asked Dr. Cartwright to look at the field. As usual, he solved the mystery.

It appeared that a herbicide such as Glyphosate had been drifted across the field. The addition of Ammonium Sulfate in the affected area seemed to help the rice recover. We made the decision to apply Ammonium Sulfate to the entire field, but it was never

applied. Sheath blight reached treatment level in this field and it was treated with Quadris at a rate of 6.4 oz/A on July 24. The field cut a disappointing 149 bushels/A.



Herbicide Drift



Lawrence

Cybonnet was the selected variety in Lawrence County due to its resistance to blast and tolerance to straight head. This field was a 30 acre, precision-leveled, sandy field on the Black River. The field was planted on April 18th and came up to an excellent stand. The pre-flood nitrogen was applied with a truck which put out the first 30 acre load in the wrong field. When it finally got in the right field, the truck broke down before finishing. Later, it became apparent that it never came back to finish the field.

After pumping on the field for a week and only getting water across the first two patties, we discovered the field was not going to flood up. Poly-pipe was used to distribute the water across the field more uniformly, but still could not establish a flood. At that point, we were in a flushing situation, hoping for rain. The rice began to yellow in some of the areas where heavy leaching was occurring. The addition of nitrogen and sulfur in these areas turned the rice green within a few days. An additional 100 lb/A of urea was applied to the area of the field that appeared to have missed the pre-flood application. Mid-season nitrogen was applied the third week of June when half of the field was

flooded, and half of the field was dry. It finally rained around the first of July and got the entire field wet for the first time all year. The field started to yellow-up so 70 lb/A of urea was applied July 15th as a boot application. Sheath Blight was very aggressive in parts of this field. The field was sprayed with Quadris at a rate of 8.5 oz/A. Even with the fungicide application, the disease infected the panicles in certain areas. The field cut 128 bushels/A, but it could have been much worse. This field will probably never be planted in rice again.

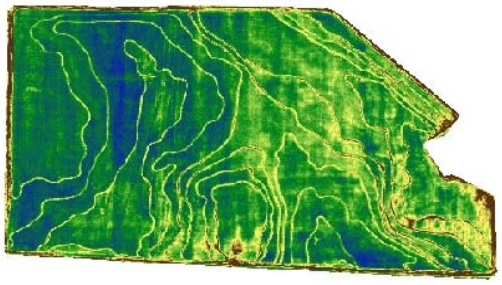
Mississippi

Mississippi County was the only broadcast-seeded field I had. This was actually two 40 acre precision-leveled fields. The rice came up to a very uniform stand at 20 plants/ft². Command did a good job controlling the weeds on the top 40 acres. The bottom 40 was treated with Clincher post-flood followed by Blazer for coffee bean. 260 lbs/A of urea was applied pre-flood. The field began to yellow-up two weeks post-flood so the mid-season application went out a few days before green ring. The field yellowed-up again three weeks after the mid-season application so 70 lbs/A of urea was applied as a boot application. The field was disease-free.

Poinsett

The Poinsett County field was 183 acres with two electric wells. The main well had to be replaced when it was determined it was not pumping. Urea with Agrotain was applied to the field, and the new well was in operation about a week after the application. The well ran a few days and a power-surge caused the well shaft to twist and it had to be pulled once again and be replaced. It ended up being three weeks after the urea application before the majority of the field was flooded.

The delayed flood caused problems with weed control as well. Clincher was applied to the half of the field that was flooded. We intended to apply Clincher to the other half the following week, but it was still dry. It was too dry for anything to work. When the water finally got there, some of the rice was at green ring and the barnyardgrass was too big to kill. Needless to say, we had to look at a grown-up mess on part of the field for the rest of the season. A boot application of 70 lb/A of urea was made since we had trouble with water management and lost some nitrogen. To top it off, the hurricane caused lodging during harvest of this field.



Left side untreated **Right side treated with Clincher**

Pope

The Pope County field was seeded in XP 723 hybrid. This field was planted in wells the previous year; however, half of the field was re-planted in a hybrid variety. The reason this was significant is because a lot of volunteer rice emerged from the previous crop. The hybrid volunteer plants are actually considered weeds since they may not flower or product seed. The field was slow to emerge and had to be flushed. After the flush, it seemed the field would never dry out. We finally ended up with a stand of 8 plants/ft^2 and two emergence dates. I was a little nervous, but we had no choice but to keep what we had. The field looked a little ragged, but ended up cutting 199 bushels/A.

The field was sprayed with Aim to control coffeebean and other broadleaf weeds. It ended up being three weeks after the Aim application before the entire field was flooded. Another late flush of coffeebean came up.

Thin stand due to low seeding rate

Volunteer hybrid from previous year

Prairie

The Prairie County field was seeded in wells on May 3. Command was not applied to this field. Stam was applied at a rate of 1 gallon/A, one week after emergence. Facet could not be used due to a garden nearby. The Stam provided about 80% control of the barnyardgrass. Clincher was applied post-flood and cleaned up the field. The rice looked excellent all year, and this was one field we didn't have any disasters in. The field was disease-free and did not require a fungicide. The field cut a respectable 160 bushels/A

Randolph

The Randolph County field yielded 190 bushels/A and looked excellent all year. This was the best-looking field I had in terms of being uniform and perfect stand on the levees. The pre-flood nitrogen was applied about one week later than we wanted, due to the applicator being backed up. Some barnyardgrass came up in the very bottom patty, due to the delay. Sheath blight went from 50% positive stops to 100% positive stops and half

way up the canopy within one week. The field was treated with Quadris at a rate of 8.5 oz/A.

Excellent stand on levees

Yell

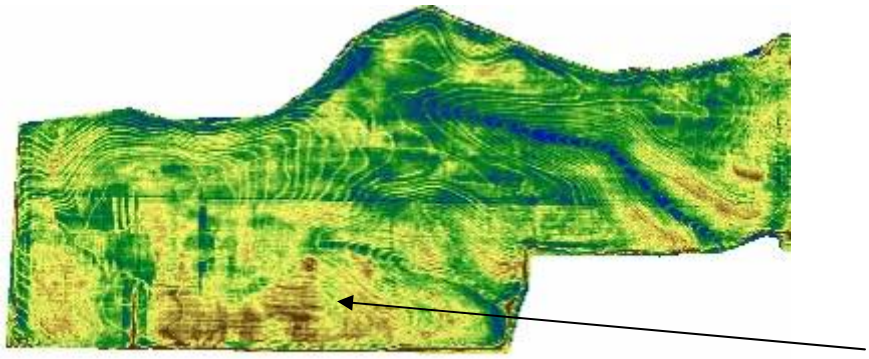
Blast was the major problem in Yell County and hurt yields more than I would have expected. After leaf blast lesions were discovered, the field was pumped up as deep as possible without washing out the levees. The field was sprayed with 19 oz/A of Stratego at boot split to very early heading. A second application was not made since weather conditions were not favorable for blast development. The disease did cause neck blast resulting in blanking on 5%- 10% of the panicles in the field.

Additional Information Southern Fields

Arkansas County

The Arkansas County field struggled the first four weeks after planting. The field had places where the ground was spongy and seed was planted a little deep and had trouble emerging. The field was seeded in two days, and the part of the field that was planted on the second day emerged more uniformly due to the soil having one more day of drying. The field was seeded with Wells at 3 bushels/A. The increased seeding rate was due to the number of levees in the field. In places, it was possible to step from one levee to the next.

At mid-season, the field had a yellow color which is not typical for Wells. The decision was made to increase the fertilizer from 100 to 125 lbs. of urea. The rice greened-up and looked good the rest of the season. Disease-pressure was light and no fungicide application was required. However, leaf blast developed after heading, but did not affect the panicles. The yield was greater than expected with the trouble establishing the stand and the amount of levees in the field. The field cut 197 bushels green weight and dried 186 bushels/A. The infrared photo below illustrates the levee contour and shows the trouble in stand establishment.



Areas with thin stand are yellow and brown.

Ashley County

The Ashley County field was planted April 4th and emerged before the cool temperatures that slowed the emergence of most of the states rice crop. The field was seeded with Cheniere and looked good all year. The field had some red rice, but not enough to significantly reduce yield.

Disease pressure was heavy and Stratego at 16 oz/A was applied for sheath blight control. The fungicide treatment did control the disease, but not long enough for all the panicles to emerge. In 2003 and 2004, in verification fields where Stratego was used, there were no panicles observed that were affected by sheath blight. In 2005, the weather pattern changed and more favorable condition for the disease were present. Although some panicles were affected, a significant yield loss did not occur. However, if the panicles had emerged a few days later, a significant yield loss would have been possible.

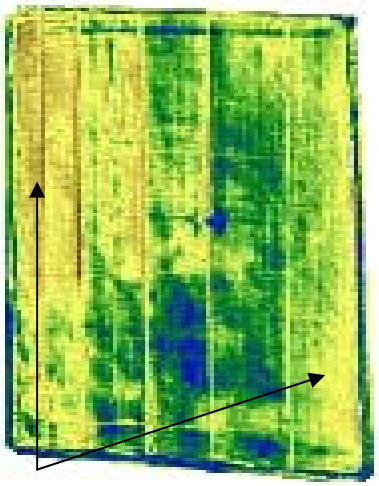
Heavy sheath blight pressure in Ashley County

Chicot County

The Chicot County field had trouble following the establishment of the permanent flood. The biggest issue with the field was salt. The soil and water salt levels were extremely high and proved to be higher than the rice could tolerate. The top two levees in the field started dying after the permanent flood was established. Usually when this happens, Zn is what comes to mind, but the rice did not have the typical look of a Zn deficiency, and the symptoms did not show up immediately. All the roots were rotting off the plants and the soil turned black and had a strong sulfur smell. The field was drained, and the rice started to recover almost immediately. However, the damage had already been done to that part of the field. The rice that was left did recover, but the stand was reduced to the point that a significant reduction in yield occurred.

The salt continued to cause problems throughout the year. At grain fill, some of the panicles started to turn white and did not produce grain. The symptoms look similar to stalk borers, but there was no evidence of the insect. On further inspection with Dr. Rick Cartwright and Dr. Chuck Wilson, it was determined that salt was once again causing the problem. The rainfall typically dilutes the salt throughout the year providing the rice time to overcome the injury. This year, the rainfall was extremely low and the dilution of the salt never occurred; instead, the salt accumulated over the growing season.

Stand loss due to high salt concentration



Areas in yellow were affected the most by salt.

Blank heads due to salt injury

Cross

The Cross County field looked like it was going to break all records previously set in the RRVP. The field looked very good, and it was not hard to find 12 and 13-inch heads of rice anywhere in the field.

Sheath blight pressure was heavy early and Quadris was applied early boot for suppression of the disease. Leaf blast was also visible prior to heading. A deep flood was maintained for the rest of the season, and the disease did not spread to any new growth, and treatment was not required. Stink bug pressure increased to treatment levels late in the season. The insect population leveled and did not appear to have time to increase significantly by maturity, due to the presence of only adult insects. Due to economic concerns and the ability to blend the rice, the decision was made to strip spray the field. The treatment decreased the number of insects significantly, and the population did not reach treatment level prior to grain maturity.

Hurricane Rita put about 75% of the rice in the field on the ground. The field was 27 acres and took two days to harvest. The field dried 186 bushel/A even after the loss caused by the hurricane.

Little rice left standing after Hurricane Rita

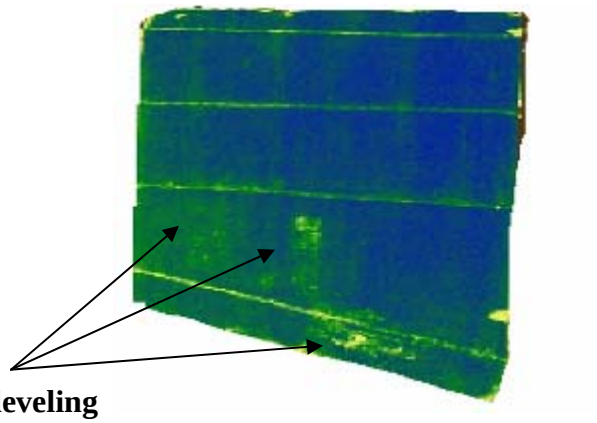
Disease-monitoring plots destroyed during hurricane

Desha

The Desha County field yielded 199 bushels/A which is the 3rd highest yield in the history of the program. The field was seeded with Cheniere and had a similar problem as the field in Ashley County. Sheath blight pressure was high and Stratego was applied at 16 oz/A at early boot. This treatment did not provided sufficient control of sheath blight. A second treatment was not required, but some heads were affected by the disease.

Infrared photography has been used in cotton for several years and aids in the management decisions. In rice production, the technology has not advanced to that point yet; however, it can show producers things about fields that may not be visible just by looking at the field. In

the photograph below, the bottom left hand corner was a deep cut in the field that has not yet recovered.



Deep cuts after leveling

Lee

The extremely dry spring and limited water in the Lee County field was the cause of several problems in this field. Parts of the field did not get flooded for three weeks after the pre-flood fertilize was applied. The trouble in establishing the flood was due to the high temperatures and lack of rainfall combined with the pumping capacity of the well. The decision to use Agrotain was made due to the limited water and soil type, and worked well under the conditions. The mid-season fertilizer was increased to 125 lbs/A due to the length of time it took to flood the field.

The field also had herbicide drift symptoms scattered across the field, but did not appear to significantly reduce yield. The Lee County field was the only field in the southern region that had to be sprayed for blast. Stratego at 19 oz/A was applied at 5 % heading to suppress the disease. A second application was not made because the disease had not spread to any flag leaves. There was no significant yield lost to blast in this field.

There was a high spot in the field that was difficult to water and chinch bugs almost destroyed an acre of rice. The field yielded 160 bushels/A even with the length of time it took to flood the field and all other problems the field encountered.

Chinch bug damage

Herbicide Drift in Lee County

Lonoke 1

The Lonoke County (1) field looked better than it ever had prior to flood according to the cooperator; however, the field starting turning yellow prior to mid-season, which is uncommon for the Wells variety. There was a definite pattern to the yellow color, but it was not streaked from the fertilizer application. The streaks followed shallow ruts left by the tractor at planting. These plants never recovered and did not respond to the mid-season fertilizer, which was increased to 135 lbs/A due to the streaks. The soil was dry when the pre-flood N was applied. One theory for the streaking is compaction from the tractor tires at planting. The soil is heavy clay and was a little spongy at planting which led to the shallow ruts.

This area of the state received very little rain throughout the growing season. Although rainfall totals look average according to what was received in the rest of the state, 9 inches of the total rainfall for the season was received in a 13 hour period. This resulted in the rice being submerged for a 36 hour period and the loss of the flood when the water receded. The rice had not entered the boot stage when this happened, and there was no visible injury to the plants.

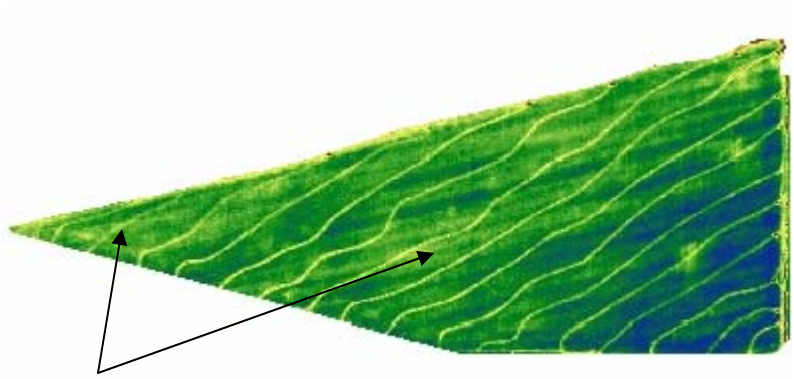
Lonoke County field after 9 inch rain

Tractor tracks visible at mid-season

Lonoke 2

The Lonoke County (2) field looked good all year and had few problems. This field also received 9 inches of rain in 13 hours, but due to the field location, the water drained off quickly and the rice did not go under water. The yield on the top of the field was reduced due to the loss of the pre-flood N. At the 2-3 leaf growth stage, 100 lbs. of urea was going to be applied and the field flushed. The remaining 150 lbs. of pre-flood N was to be applied when the soil dried and the flood would then be established. Miscommunication led to 250 lbs. of urea being applied instead of 100 lbs. When we figured out what happened, the top of the field had dried out. The soil had not been dry long, and the decision was made to apply the flood. The mid-season N was increased because some of the pre-flood N had been lost; however, more of the pre-flood N had been lost than what we thought. The top side of the

field cut significantly less rice than the bottom of the field that had not dried out following the flush.

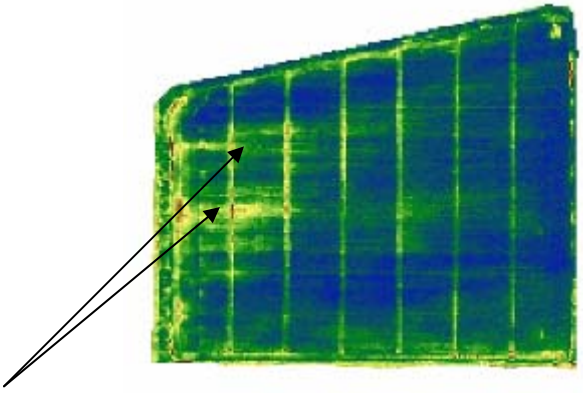


The lighter colors are the parts of the field that lost a significant amount of pre-flood N, and there was a noticeable difference in yield at harvest.

Phillips

The Phillips County field looked good all year. The field took a long time to establish a stand due to the cool temperatures, but this was common for most fields this year. The field had to be flushed twice to ensure the sprouting seed could penetrate the soil surface. The bottom of the field struggled longer than the top part in achieving a stand. This can be seen in the infrared photos of the field. The difference in emergence may be due to the gradual change in soil type from the top and bottom of the field.

The field had some scattered grass, but not at levels that justified treatment. Disease pressure was light in most of the field early in the season. At late boot, disease pressure increased and treatment was required. Stratego was applied at 19 oz/A, and provided excellent control of sheath blight and kernel smut.



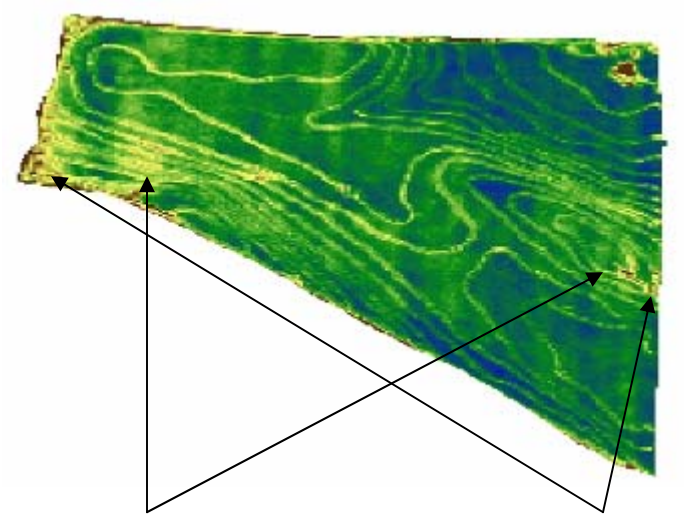
The difference in emergence is indicated by the lighter colors.

St. Francis 1

The St. Francis County (1) field looked good from the start. The field was one of the three fields in the program that was broadcast seeded. Command followed by Ricestar provided excellent control of grasses. Permit was applied for yellow nutsedge control, and pressure from other broadleaf weeds was very light and did not justify treatment.

Disease pressure was light for most of the season, but sheath blight pressure increased significantly at heading. No treatment was required, but had heading been a week later, a reduced rate of fungicide would have been required. A couple of areas of blast were observed after heading, but the field had a good flood all season and only a few panicles were affected.

The field has two wells for irrigation. The effects of cold water are visible in the infrared photographs. The blue areas in the photograph are the parts of the field that appear to be the least affected by clod water.



Cold water effect **Irrigation wells**

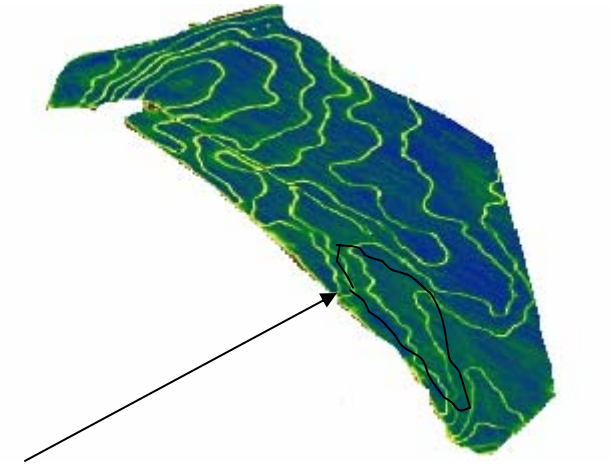
St. Francis 2

The St. Francis County (2) field got off to a good start and had high yield potential. The field was seeded with three bushels to the acre. This is higher than the recommended rate, but the field has a heavy clay soil type, and uniform stand establishment has been hard to achieve in the past. Although a high seeding rate was used, the stand counts were not high and were in the optimum range.

Command did a good job controlling grasses early, but grass started emerging prior to flood. A post-emergence application of Facet was applied and worked well in most of the field. However, there was a section of the field were the grass was not affected. The grass was in a streak and at first appeared to be an application error, but on further investigation, some of the grass was controlled. Although resistance has not been confirmed, it is a possibility.

Clincher was applied to this part of the field and the grass was controlled, but yield in this section was affected by competition.

This field was also one of the two fields in the program that had to be sprayed for rice stinkbug. The insect pressure was extremely high early and was treated with Karate at 1.85 oz/A. The field did not reach treatment level a second time. Hurricane Rita also had a significant impact on yield by lodging the majority of the field. The infrared photo shows the uniformity of the field. Most of the field is blue and dark green indicating the high levels of biomass; however, the yellow color of the levees is an indication of a thin stand. Stand establishment on the levees is hard to obtain due to soil type and condition of levee at seeding.



Area where resistant grass is suspected is circled. Darker color is where grass was controlled by first application.

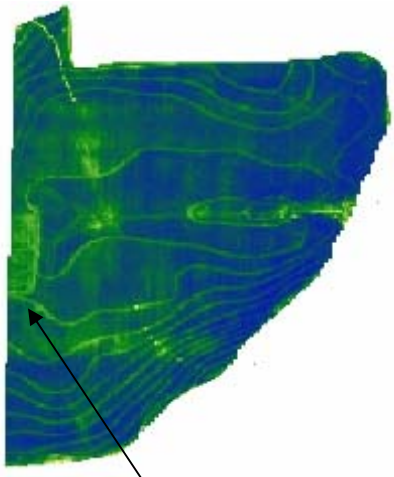
Lodged rice after hurricane Rita.

Woodruff

The Woodruff County field was another one of the fields that was broadcast-seeded. Emergence was uneven, but this is typical with the broadcast seeding method due to seed placement being at different depths. The field quickly became uniform, but in places, stand counts were elevated. There were no problems observed as a result of the high plant population. There were a couple of places where the stand was thin and was a result of water standing in low places in the field after flushing. These places are visible on the infrared photo, but did not appear to significantly affect yield.

The field had little disease or insect pressure. Sheath blight pressure was high on one edge of the field, but averages across the whole field did not justify treatment. The field was seeded

in Francis and yielded 185 bushels/A. Some panicles were extremely large with a few exceeding 12 inches a seen in the photograph below.



Places with lower plant populations are lighter in color. Seeding rate study also evident in photo as shown by arrow.

Panicles from Woodruff County field.

On Farm Research

Research was conducted in many of the verification fields in 2005. Disease monitoring tests were planted in ten RRVP fields (table 8). This provides information on how varieties perform under various environmental conditions and different soil types across the state. The highest yielding variety in 2005 was XP 721 at 238 bushels/A. Seeding rate studies were planted in Woodruff, Chicot and Cross Counties (table 9). These studies were established to determine the optimum seeding rate for various varieties. In most of the studies, there were no differences across seeding rates. This research over the past few years indicates that under certain conditions, the seeding rate can be reduced. The main concern when decreasing the rate is good seedbed conditions to ensure all the seed that germinate can make it to the soil surface.

A fungicide trial was established in Craighead County to compare Quadris, Stratego and Quilt for control of sheath blight, and to determine if fungicide treatments yielded greater than untreated plots (table 10). In this test, the untreated plots yielded as good as the plots that were treated with fungicides. These results are similar to the results that were obtained from tests conducted in the RRVP in 2004.

A fertilizer study was established in the bottom paddy in Randolph County to compare urea treated with Agrotain and urea alone (table 11). No difference in yield was observed between the treatments. In this field, the flood was established in three days. No benefit from Agrotain was observed due to the ability of establishing the flood quickly. This is in agreement with research conducted by University of Arkansas researchers.

An herbicide injury study was established in Arkansas and Poinsett counties to determine the effects of Permit applied pre-emergence (table 12). Permit was applied at rates ranging from 0 to 1.3 oz/A. Plots were flushed following herbicide application. No visible injury was observed to emerging rice, but yield was significantly lower when Permit was applied at 1.3 oz/A. Yields in Arkansas County were low due to the planting date. The study was planted in late June, but the same trends were observed in both studies.

Summary

The 2005 Rice Research Verification Program was conducted on 22 commercial rice fields across the state. Grain yield in the 2005 RRVP averaged 170 bushels/A with a range of 128 to 199 bushels/A. All fields were planted in April and May and many of the fields had to be flushed to emerge. The 2005 RRVP average yield was 20 bushels/acre greater than the estimated Arkansas state average of 150 bu/acre. The highest yielding fields were in Desha and Pope Counties with a grain yield of 199 bushels/A. The lowest yielding field was in Lawrence County and produced 128 bushels/A. Milling quality in the RRVP was comparable with milling from the Arkansas Rice Performance Trials and averaged56/70.

Table 8. Performance of selected varieties in replicated rice disease monitoring tests located in RRVP fields in 2005.

Cultivar	Ashley	Chicot	Craighead	Crittenden	Desha	Mississippi	Pope	Randolph	St. Francis	Woodruff
	----------Bushels/acre----------									
AMS114-109	146	150	77	129	154	181	189	184	164	103
AMS114-33	153	196	84	142	179	185	159	172	188	118
Banks	178	190	137	161	188	180	175	180	214	163
Bengal	182	187	141	175	196	138	180	198	211	167
Cheniere	178	197	162	180	170	192	193	196	193	172
CL131	166	149	160	168	174	184	166	177	199	149
CL161	141	168	150	157	124	155	146	166	192	138
Cocodrie	166	133	166	170	161	176	165	179	194	153
Cybonnet	176	199	129	171	158	175	160	191	176	140
Cypress	159	163	147	158	142	158	160		177	146
Francis	168	186	152	171	167	195	157	189	200	179
Jupiter	185	205	177	192	181	143	188	204	251	192
Medark	156	165	179	172	197	159	177	191	209	183
Pace	170	178	132	157	139	196	166	191	189	153
Rice Tec XP710	205	210	206	216	170	65	207	226	202	211
Rice Tec XP716	181	172	158	195	204	71	195	215	224	197
Rice Tec XP721	171	205	171	206	132	171	205	236	238	188
Rice Tec XP723	191	228	181	205	218	187	175	230	230	199
Rice TecCLXL8	187	185	187	176	211	176	178	217	199	175
Rice TecCLXP730	196	161	184	199	172	114	163	219	212	184
Spring	184	164	149	130	157	169	166	198	171	141
Trenasse	147	152	134	109	121	189	166	186	182	157
Wells	172	173	139	127	185	204	192	195	195	169
Mean	**172**	**179**	**152**	**168**	**170**	**164**	**175**	**197**	**200**	**164**
LSD	**34.5**	**49.8**	**33.6**	**32.6**	**43.1**	**34.7**	**27.2**	**22.9**	**35.3**	**25.5**
C.V. (%)	**12.4**	**17.2**	**13.6**	**10.4**	**14.2**	**13.1**	**9.6**	**7.0**	**10.5**	**9.5**

Table 9. Influence of seeding rate on rice grain yield at eight locations during 2005					
Seeding Rate	**Grain Yield**				
	Chicot	**Poinsett**	**Prairie-Bell**	**SEREC**	**Woodruff**
Lbs/acre	Bushels/acre				
45.0	136.1	130.7	170.9	155.7	164.2
67.5	133.7	134.2	171.5	164.0	165.4
90.0	132.4	137.2	170.0	166.8	160.9
112.5	128.6	140.8	176.9	163.4	147.0
135.0	134.8	136.0	174.6	163.7	162.1
$LSD_{(0.05)}$	14.4	7.5	7.4	8.2	14.8
C.V.	12.4	7.6	5.8	6.9	40.5

Table 10. Craighead County Fungicide Trial 2005.

Fungicide	**Rate oz/a**	**Yield bu/a**
Quadris	8.4	180
Quilt	29	182
Stratego	16	165
Check	0	183

Table 11. Randolph County Agrotain/Urea Study 2005.

Treatment	Yield bu/a
Agrotain	209
Urea	219

Table 12. Effects of Permit applied Pre-emergence on Grain Yield.

Treatment	Arkansas County	Poinsett County
Permit oz/A	Bushels/acre	
0	116	171
0.5	112	167
0.75	105	163
1.0	94	158
1.3	87	147
LSD	26.7	18