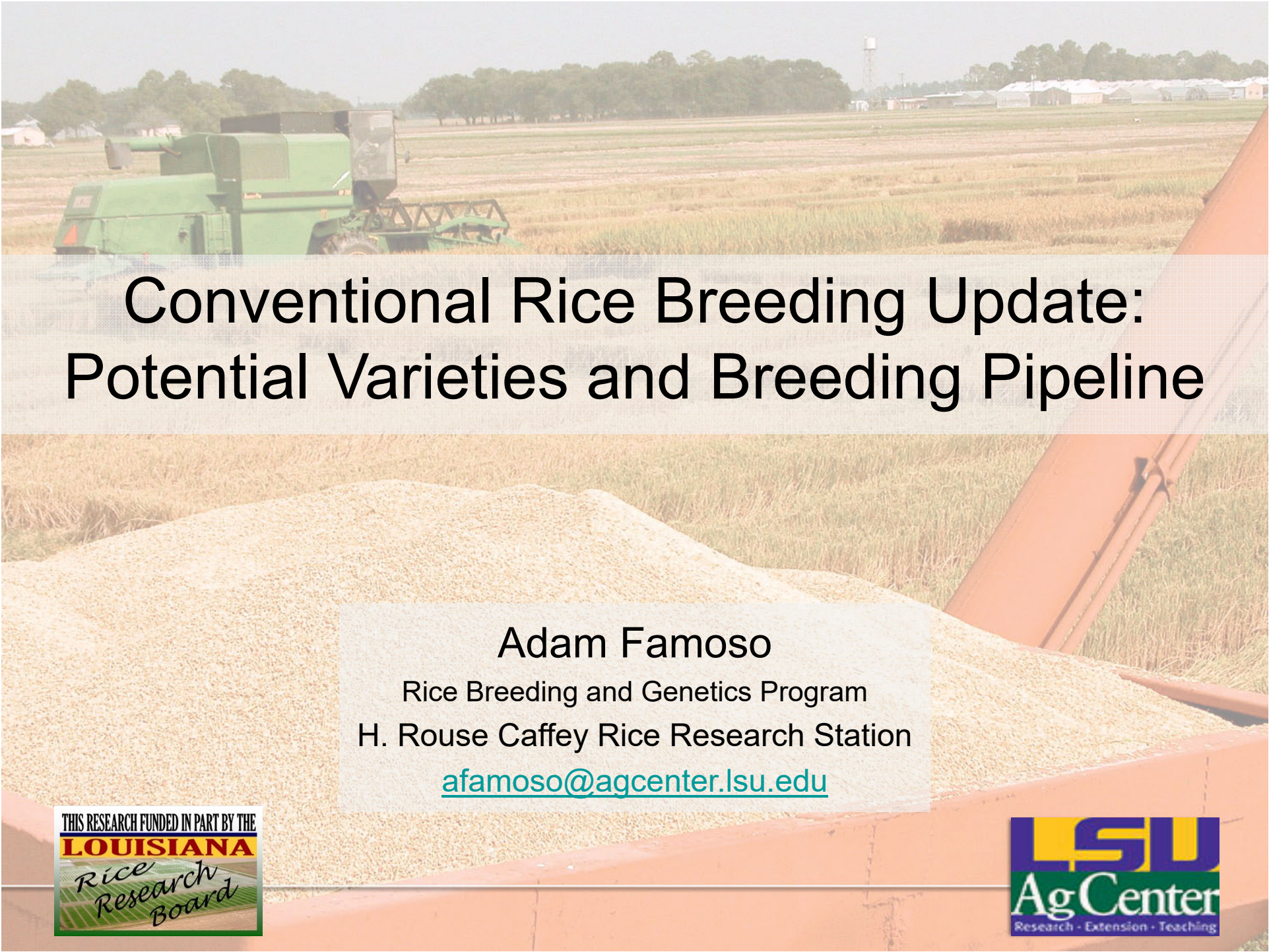




Conventional Rice Breeding Update: Potential Varieties and Breeding Pipeline

Adam Famoso

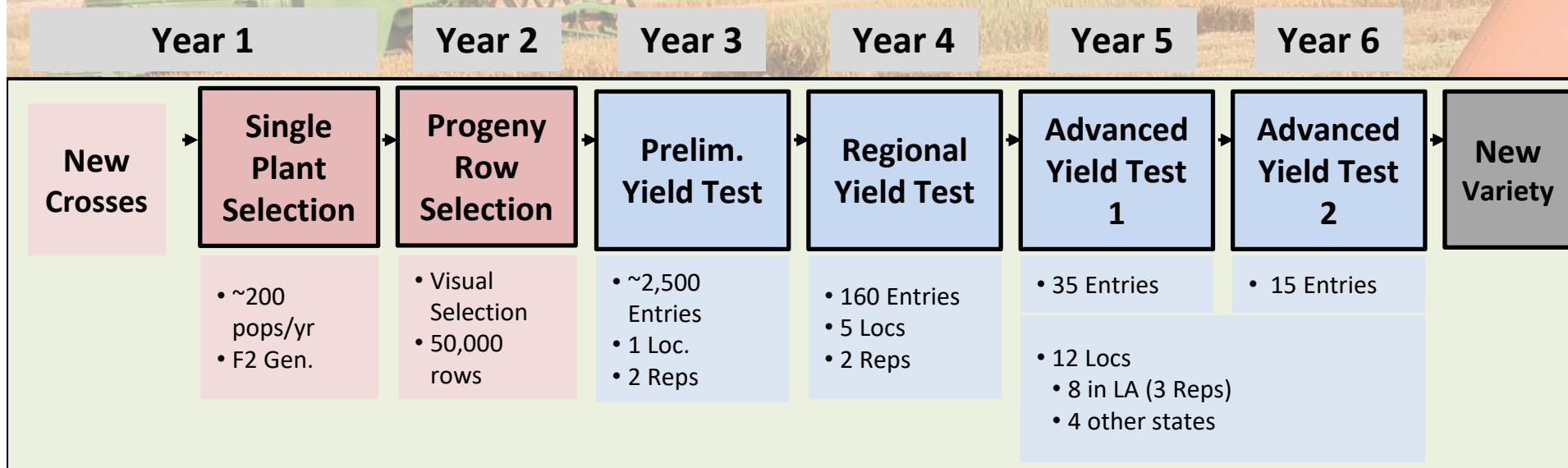
Rice Breeding and Genetics Program

H. Rouse Caffey Rice Research Station

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Breeding Program Overview



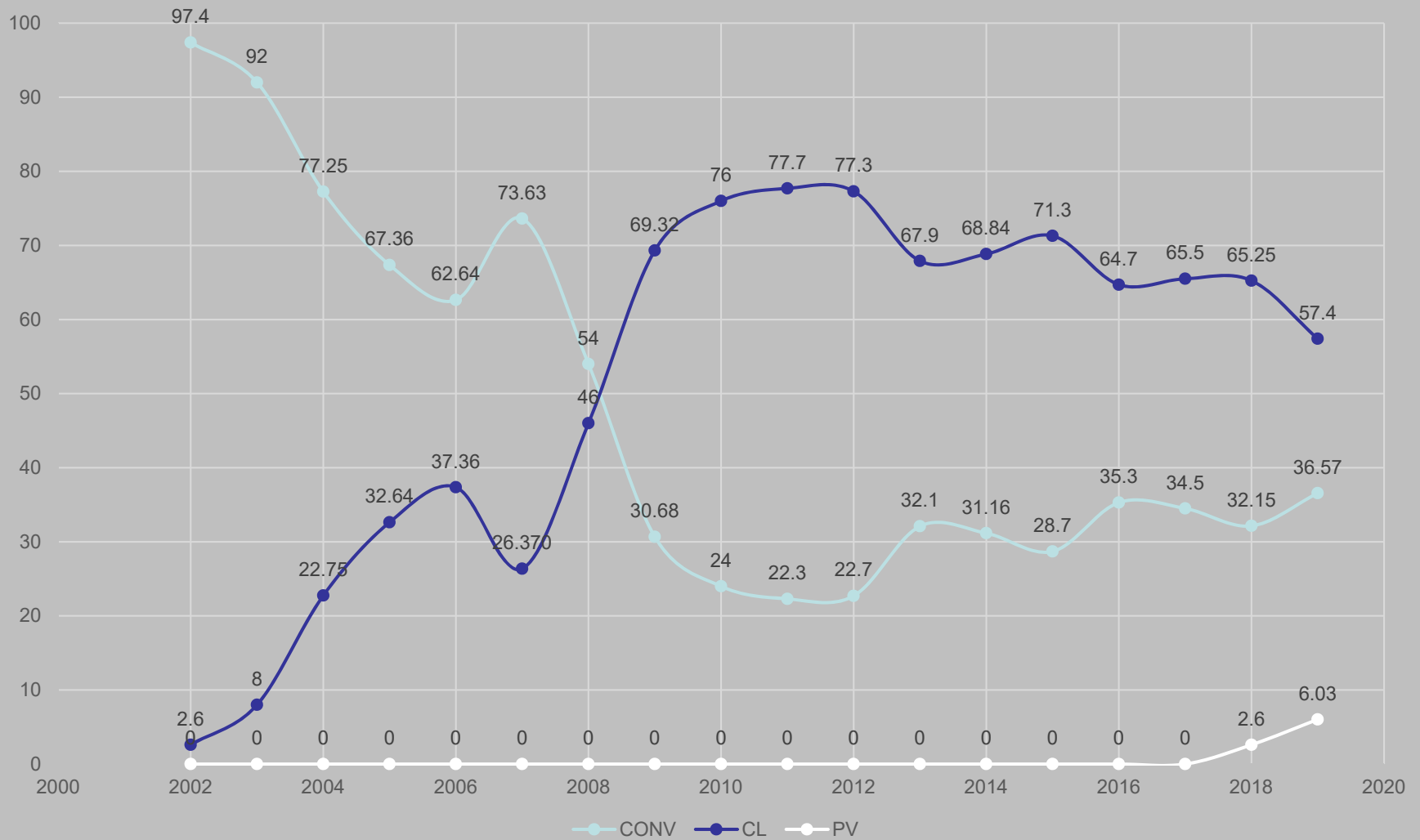
Simple Traits

Herbicide
Plant Height
Maturity

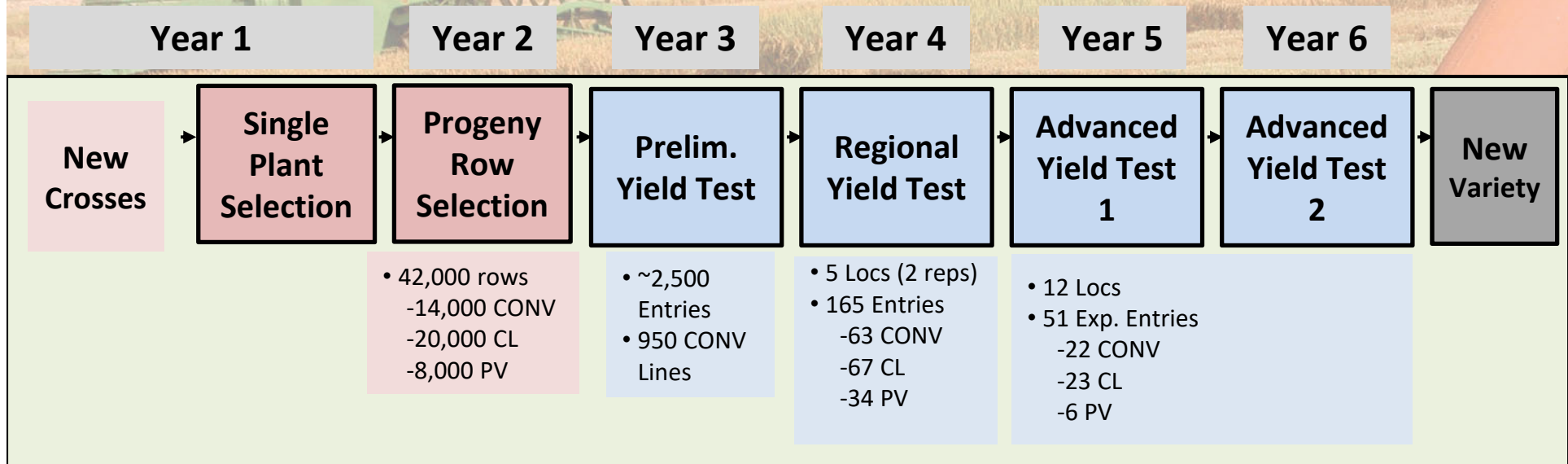
Complex Traits

Yield
Milling
Chalk
Disease Resistance

Percent of LA Long Grain Acres by Herbicide Type



Breeding Program 2020 Allocations



2020

RICE VARIETIES

& MANAGEMENT TIPS



2019 Louisiana Rice Variety Trials

Table 4. Results of 2019 Louisiana Rice Variety Trials.

Entry	Grain Type	Days to 50% Heading	Plant Height (in)	Milling %* (Whole - Total)	Chalk† (%)	LDG	RRS-URN‡	RRS‡	AD‡	CP‡	STL‡	RRS-S‡	TP‡	Mean*
Long Grain														
Gemini 214 CL	L	81	48	63-71	20.1	S	x	11,298	6,234	9,171	10,178	10,651	11,739	9,878
RT7301	L	78	41	64-71	20.6	MS	x	10,888	6,813	8,442	9,375	8,192	10,365	9,012
LA2195	L	79	41	65-71	16.7	MR	9,992	9,165	6,728	6,403	7,393	7,720	9,481	7,815
LaKast	L	78	44	64-71	18.3	MS	x	9,717	5,777	3,471	8,309	6,591	10,173	7,340
CLL15	L	79	39	64-70	19.5	MR	9,564	9,244	4,980	4,404	7,018	7,638	9,930	7,202
CL151	L	79	40	66-72	20.5	S	x	9,913	6,891	2,401	8,210	6,297	9,172	7,147
Diamond	L	80	42	61-69	13.0	MS	9,124	8,050	5,620	3,183	8,320	7,509	10,089	7,129
LA2140	L	79	41	63-71	14.9	MS	9,290	8,734	6,224	3,739	8,011	6,416	9,561	7,114
Mermentau	L	79	40	65-71	19.5	MR	x	8,246	5,678	3,744	7,419	7,824	9,420	7,055
CL153	L	80	42	62-70	18.5	MR	10,579	10,143	5,659	3,370	7,002	6,619	9,283	7,013
LA2097	L	80	41	62-70	15.3	MR	10,793	9,829	4,931	3,641	7,880	5,499	10,138	6,986
Cheniere	L	80	38	62-71	17.6	R	9,211	7,647	5,065	4,888	7,058	7,938	9,281	6,980
CL172	L	81	38	65-71	21.6	MS	x	8,113	4,095	5,433	6,492	7,649	9,299	6,847
CL111	L	76	39	65-71	16.4	MR	10,480	9,705	5,276	5,343	7,078	5,825	7,821	6,841
CCDR	L	78	40	64-71	20.8	MR	9,099	8,636	5,502	3,710	7,525	6,209	8,676	6,710
CL163	L	82	40	65-71	20.2	MR	8,453	8,761	4,636	2,401	7,742	6,533	9,730	6,634
Thad	L	82	41	64-70	14.0	MS	8,357	7,346	4,307	2,370	7,874	8,253	8,308	6,410
PVL02	L	79	43	66-72	14.9	MS	9,310	8,539	5,143	4,692	7,619	4,204	8,045	6,373
Presidio	L	80	40	68-71	9.9	R	8,465	7,314	3,947	5,002	6,664	7,346	6,961	6,205
PVL01	L	88	40	57-69	11.1	MR	7,802	6,847	4,094	2,427	6,293	6,065	9,190	5,819
Specialty Grain														
CLJ01	L	81	38	67-71	11.3	MR	8,883	9,261	4,318	4,532	6,675	7,055	8,913	6,792
Jazzman	L	83	40	65-71	12.9	MR	x	6,712	3,169	5,005	8,039	7,901	8,864	6,615
Della-2	L	83	42	64-71	14.5	MR	x	7,348	4,148	2,966	5,848	7,075	7,965	5,892
Jazzman-2	L	81	36	63-69	10.8	MR	x	6,199	3,995	3,025	5,696	6,639	7,438	5,499
Medium Grain														
Jupiter	M	82	39	65-71	21.2	MS	9,330	8,458	6,103	6,433	6,917	9,151	10,722	7,964
CLM04	M	82	42	66-70	17.2	MS	10,303	9,543	6,660	4,075	7,671	7,950	11,048	7,825
Titan	M	75	39	69-71	17.8	MR	10,735	11,104	6,594	4,084	7,445	8,703	8,560	7,748
RT3201	M	74	44	68-71	13.8	S	x	9,943	5,517	6,793	8,783	8,935	6,416	7,731
Caffey	M	80	38	66-70	21.2	MS	x	8,794	5,936	3,944	8,003	9,264	9,855	7,633
CL272	M	80	40	66-71	22.0	MR	9,418	8,597	4,991	2,410	7,872	7,225	9,880	6,829

* Milling and Chalk data from RRS.

† Chalk = Total percentage area of grain with chalk as determined by SeedCount image analyzer.

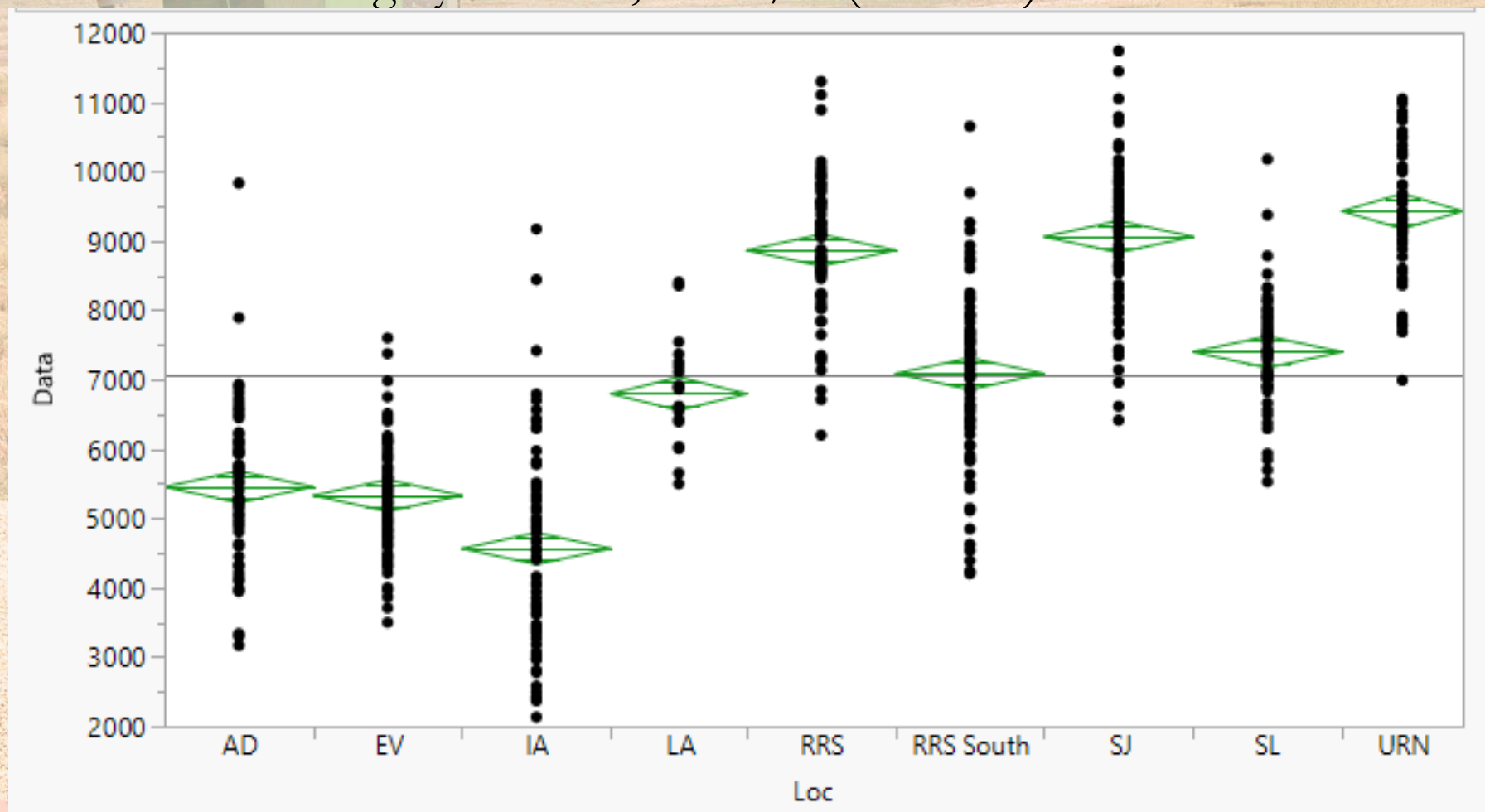
‡ RRS-URN = H. Rouse Caffey Rice Research Station Uniform Regional Rice Test; RRS = H. Rouse Caffey Rice Research Station; AD = Acadia Parish, R&Z Farm; CP = Calcasieu Parish, Hensgens Farm; STL = St. Landry Parish, Sunland Properties; RRS-S = H. Rouse Caffey Rice Research Station South Farm; TP = Tensas Parish, Northeast Research Station.

^ Means do not include RRS-URN.



2018 Louisiana Rice Variety Trials

- Overall average yield of 7,062 lb/A (~44 bbl) across all locations.



Recommended Conventional Varieties

Table I. Agronomic Characteristics and Yields of Recommended Rice Varieties (2017-2019) in Louisiana.

Variety	Grain Type	Seedling Vigor	Lodging	Days to 50% Heading	Plant Height (in)	2017 Milling % (Whole - Total)	2018 Milling % (Whole - Total)	2019 Milling % (Whole - Total)	Mean* Milling % (Whole - Total)	2017 Grain Yield (lb/A)	2018 Grain Yield (lb/A)	2019 Grain Yield (lb/A)	Mean* Grain Yield (lb/A)
Long Grain													
Diamond	L	G	MS	80	42	49-70	58-71	61-69	56-70	8,143	9,082	7,129	8,118
Thad	L	G	MS	82	41	55-71	61-71	64-70	60-71	7,302	8,547	6,410	7,420
Cheniere	L	G	R	80	38	61-74	61-74	62-71	61-73	7,288	7,923	6,980	7,397
Mermentau	L	G	MR	79	40	59-71	61-71	65-71	62-71	5,598	8,506	7,055	7,053
Presidio	L	G	R	80	40	60-73	60-72	68-71	63-72	7,036	7,458	6,205	6,900
Medium Grain													
Titan	M	G	MR	75	39	61-68	67-72	69-71	66-70	8,424	9,059	7,748	8,410
Jupiter	M	G	MS	82	39	58-61	68-70	65-71	64-67	8,360	8,778	7,964	8,367

Abbreviations: R = resistant, MR = moderately resistant, MS = moderately susceptible, VG = very good, G = good.

Lodging: Comparative estimate of resistance to lodging. Most varieties rated as resistant will lodge, especially under excessive levels of nitrogen.

Height: Height at maturity in inches from soil line to extended panicle.

*Mean is the average of 19 yield trials conducted over the three-year period. Mean is not the average of the three years because there were different numbers of trials each year.

Conventional Long Grain: 1702140

- **1702140:** Promising Conventional Long Grain variety
 - Cheniere/Mermentau
 - 3 years of testing, 2017-2019 in multi-location trials
- **Yield**
 - 8-10% yield advantage over Cheniere in 2017 and 2018
 - 5% yield advantage over CL111 and CL153 in 2018
 - 12% yield advantage over Cheniere in 2019, equal to CL153
- **Agronomics**
 - 2 inches taller than Cheniere
 - 2 days earlier to 50% heading than Cheniere
- **Grain**
 - Similar grain characteristics as Cheniere
 - Amylose and cooking characteristics like Mermentau



Conventional Breeding Update

- **LA2140: Conventional Long Grain**

- (Cheniere/Mermentau)
- 200 purified rows being grown in PR this winter
- Foundation seed production in 2020

- **1902207**

- CTHL/4/CPRS/KBNT//9502008/3/CCDR
- Top Conventional yielder in 2018 and 2019
- Over 6% and 10% yield advantage over Cheniere in 2018-2019
- Improved disease package, contains Pita blast gene, strong yield in IA
- Similar agronomic and grain characteristics to Cheniere

- **1902212**

- 13% yield advantage over Cheniere in 2018, 5% in 2019
- Similar milling and chalk levels and slightly longer grain



LA2140



1902207

Conventional Breeding Update

- **Breeding Pipeline**

- **2019 Regional Yield Test (RYT)**

- 41 Conv. long grains tested in 2019 (3x increase from 2018)
 - 6 lines with 5% yield advantage over Cheniere and Mermentau

- **181L1537: TGRT/3/TRNS//CCDR/JEFF**

- top yielding conventional line, 14% advantage over Cheniere in 2019 (4 locs)
 - Average yield over 9,600 lb/A in 2019 (4 locs)
 - Average yield of 10,346 lb/A in 2018
 - Long grain and very low chalk
 - Preliminary data suggests slight increase in blast susceptibility

Conventional Breeding Update

- **Conventional Medium Grain**
 - 1902227 (NPTN/JPTR)
 - 9% yield advantage over Jupiter in 2018 (5 locs average)
 - Equal yield to Jupiter and Titian in 2019
 - 2 inches shorter than Jupiter and contains Piz blast gene





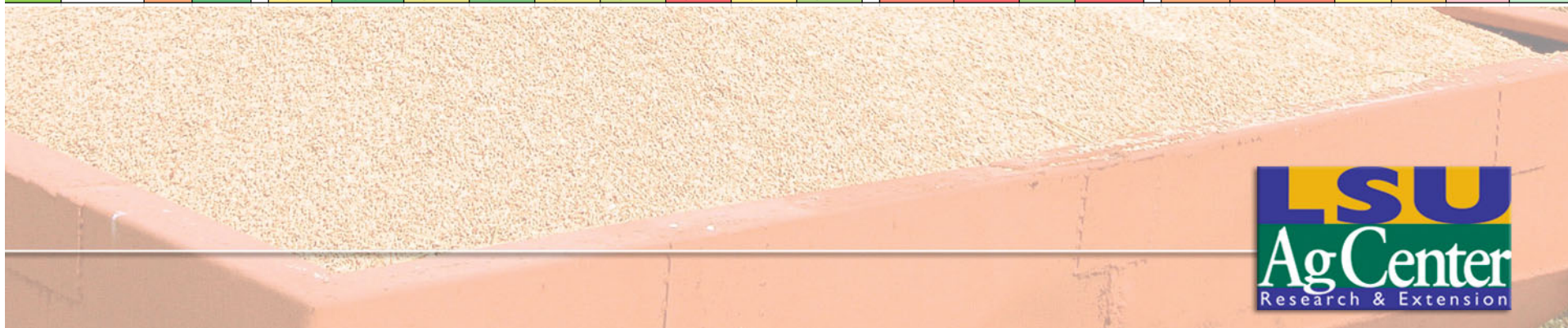
2019 Advance (CA) Test Long Results: Lines advanced to 2020

Name	PEDIGREE	DTH	PLHT	Yield RRS	Yield RRS	Yield URN	Yield AD	Yield SL	Yield IA	Yield LA	Yield EV	Grand Mean	WHOLE	TOTAL	% Chalk	Length	Sheath Blight	BPB	False Smut	Leaf Blast	Neck Blast	Pita-2	Piz
1902207		84.0	99.7	9,278	8,046	9,805	5,687	7,120	6,564	6,599	6,001	7,388	63.4	71.2	11.2	7.0	5.5	3.0	3.0	0.0	2.5	Res	Sus
1902212		79.3	94.3	9,458	7,367	8,968	5,942	7,782	4,175	7,367	6,101	7,145	64.7	70.9	13.7	7.1	5.5	5.0	0.0	2.5	6.5	Sus	Sus
1702140	CHNR/MRMT	84.0	99.0	8,734	6,416	9,290	6,224	8,011	3,739	8,406	5,449	7,034	62.9	71.3	8.1	6.5	4.8	3.0	0.0	2.8	5.8	Sus	Sus
1902202		84.0	97.3	8,190	7,538	9,567	6,554	7,034	5,013	6,617	5,404	6,990	63.7	70.8	15.0	6.9	6.0	2.5	2.0	2.0	5.5	Sus	Sus
1802086	LAH169	77.7	110.0	9,492	8,602		6,115	7,055	6,415	6,034	4,620	6,905	62.8	70.4	14.3	6.9	4.5	2.5	1.5	1.0	1.5	Sus	Sus
CHNR	CHENIERE	84.3	96.7	7,647	7,938	9,211	5,065	7,058	4,888	7,187	5,219	6,777	62.3	70.6	13.3	6.7	6.3	4.5	4.0	3.5	3.3	Sus	Sus
MRMT	MERMENTAU	83.7	96.3	8,246	7,824		5,678	7,419	3,744	7,545	5,714	6,596	64.6	71.0	16.2	6.9						Sus	Sus



2019 Advance (CA) Test Medium Results: Lines advanced to 2020

Name	PEDIGREE	DTH	PLHT	Yield RRS	Yield RRS	Yield URN	Yield AD	Yield SL	Yield IA	Yield LA	Yield EV	Grand Mean	WHOLE	TOTAL	% Chalk	Length	Sheath Blight	BPB	False Smut	Leaf Blast	Neck Blast	Pita-2	Piz
TITN	TITAN	77.0	97.3	11,104	8,703	10,735	6,594	7,445	4,084	6,599	6,510	7,722	69.0	70.8	9.6	6.1	6.5	5.2	0.0	4.3	2.3	Sus	Res
JPTR	JUPITER	84.7	101.0	8,458	9,151	9,330	6,103	6,917	6,433	7,109	6,101	7,450	65.4	70.5	16.8	6.4	5.5	2.2	2.3	4.3	0.0	Sus	Sus
1902227	NPTN/JPTR	84.3	92.0	8,790	9,694	9,662	6,509	7,350	5,483	6,034	5,715	7,405	62.5	69.9	10.3	6.1	6.0	4.5	3.5	2.5	4.0	Sus	Res



2019 RYT Long Results: Lines advanced to 2020

ENT	Name	PEDIGREE	Grain	Vigor	DTH	PLHT	RRS	St. Joe	RRS South	3 loc avg	WHOLE	TOTAL	% Chalk	Chalk Area	Length	LWRatio	Sheath Blight	BPB	Leaf Blas	Pita	Piz	NP damage
66	181L1537	TGRT/ST/TRANS/CCDB/JEFF	Long	5.0	85.5	105.0	9,136	11,415	8,416	9,655	65.3	69.4	3.8	9.9	7.0	3.0	5.3	3.6	5	Sus	Sus	None
74	181L1588	CCDB/ST/TRANS/CCDB/JEFF	Long	4.0	85.5	98.5	9,767	9,816	7,740	9,107	59.5	68.4	8.2	10.0	6.7	2.8	7	3.3	4	Sus	Sus	None
112	181L2083	CHTL/CL153	Long	3.0	86.0	100.5	8,205	10,019	8,794	9,006	61.2	38.2	7.3	12.3	7.0	3.0	6	2.6	0.3	Res	Sus	Low
75	181L1593	.....	Long	3.5	83.5	96.0	9,819	8,427	8,650	8,965	63.4	70.8	5.7	9.9	6.8	3.0	5.3	4.2	4.7	Sus	Sus	None
110	181L2063	CPRS/LKST	Long	3.5	82.5	100.5	8,925	8,472	8,702	8,699	63.5	71.1	6.2	10.8	6.9	2.9	5.7	2.9	1	Res	Sus	Low
83	181L1657	CHTL/MRMT	Long	4.0	83.0	102.0	8,198	8,998	8,685	8,627	63.2	39.1	11.2	14.6	6.9	3.2	6.3	3.6	2.3	Res	Sus	Medium
71	181L1576	.....	Long	3.5	83.5	105.5	9,245	8,402	8,205	8,617	59.6	68.4	9.2	12.8	7.0	3.2	4.3	3	2.7	Sus	Sus	Medium
82	181L1654	CHTL/MRMT	Long	3.5	83.0	101.0	8,502	9,056	8,255	8,604	64.0	39.6	8.8	12.1	7.0	3.0	4.7	3.9	1	Sus	Sus	Low
147	CHNR	Cheniere	Long	3.0	83.5	97.0	8,695	9,904	6,884	8,494	63.5	70.9	5.6	7.7	6.9	3.0	6	3.6	3	Sus	Sus	None
72	181L1577	.....	Long	3.0	83.0	103.5	9,390	8,781	7,199	8,457	60.6	37.8	9.5	11.1	6.9	3.1	4.7	3	3	Sus	Sus	High
84	181L1660	CHTL/MRMT	Long	4.5	82.5	98.5	7,830	9,339	8,188	8,452	60.5	38.5	8.1	10.9	7.0	3.0	5.3	2.9	0	Res	Sus	Medium
73	181L1578	.....	Long	3.5	83.0	105.5	9,030	8,188	8,050	8,422	61.6	69.5	11.3	14.4	6.9	3.1	6	4.3	4	Sus	Sus	High
140	MRMT	Mermentau	Long	2.5	81.0	103.5	9,476	8,400	6,801	8,225	63.8	70.1	8.3	11.9	7.2	3.1	5.7	3.6	4	Res	Sus	None
108	181L2027	MS4077/CHTL	Long-HI	3.0	89.0	108.0	7,424	8,992	8,074	8,163	60.1	69.0	7.2	12.5	7.1	3.0	4.3	2.6	0	Res	Sus	Medium
107	181L2018	MS4077/CHTL	Long-HI	3.0	85.5	105.0	7,192	8,702	7,278	7,724	61.6	69.7	6.9	11.2	7.1	2.9	5.3	3.6	3.3	Sus	Sus	None

2019 RYT Medium Results: Lines advanced to 2020

ENT	Name	PEDIGREE	Grain	Vigor	DTH	PLHT	RRS	St. Joe	RRS South	3 loc avg	WHOLE	TOTAL	% Chalk	Chalk Area	Length	LWRatio	Sheath Blight	BPB	Leaf Blas	Pita	Piz	NP damage
99	181M1763	NPTN/JPTR	Med	3.0	85.5	100.0	9,823	10,941	9,428	10,064	65.2	68.8	9.0	14.0	6.0	2.1	6	3.6	3.7	Sus	Res	High
98	181M1748	CHTL/ST/TRANS/CCDB/JEFF	Med	3.0	84.5	101.5	10,626	10,323	8,648	9,865	65.5	69.7	7.7	15.6	6.1	2.1	5	6.1	3	Sus	Sus	Medium
95	181M1736	.....	Med	2.5	86.0	100.0	8,896	10,391	8,616	9,301	63.9	68.1	6.4	11.9	6.0	2.1	5.3	5.3	4	Sus	Sus	Medium
143	TITN	Titan	Med	2.5	78.5	99.0	10,498	8,743	8,468	9,236	67.6	70.5	6.0	11.5	6.1	2.2	6	4.8	3.3	Sus	Res	None
97	181M1747	CHTL/ST/TRANS/CCDB/JEFF	Med	2.5	83.0	101.0	9,553	9,428	8,486	9,156	65.7	69.6	9.7	17.2	6.1	2.1	5.3	5.3	3.3	Sus	Sus	Medium
100	171M1867	LFTE/BNGL/CFY	Med	4.0	79.0	97.0	9,717	8,246	9,451	9,138	65.9	70.8	5.9	10.7	6.1	2.2	4.7	4.6	3.3	Sus	Res	Medium
96	181M1740	.....	Med	3.5	81.5	100.5	9,467	9,481	8,396	9,115	66.5	39.2	6.0	9.6	6.1	2.2	5.3	3.6	4.3	Sus	Res	Medium
94	181M1729	.....	Med	4.0	86.5	95.5	9,451	9,555	8,196	9,068	60.5	68.0	9.2	16.3	5.8	2.0	4.7	5.5	5.3	Sus	Sus	Medium
150	JPTR	Jupiter	Med	3.0	86.5	95.0	8,631	9,898	8,321	8,950	62.8	67.5	8.0	11.4	5.9	2.1	5.7	4.6	0.7	Sus	Sus	None
93	181M1725	.....	Med	3.5	85.5	90.5	8,450	9,957	7,997	8,801	62.9	67.8	4.5	10.3	5.9	2.0	5	4.2	3.7	Sus	Res	Medium
91	181M1715	.....	Med	3.5	85.5	90.5	7,430	8,830	6,158	7,473	59.5	65.7	8.8	11.0	5.9	2.2	5	4.3	6	Sus	Res	Medium
92	181M1716	.....	Med	6.0	85.0	90.5	6,619	8,481	7,240	7,446	60.6	66.7	11.1	15.0	5.9	2.2	4.7	4.4	6	Sus	Res	High

2019 Preliminary Yield Test 1: Lines advanced to 2020

Name	PEDIGREE	Grain	DTH	PLHT	Yield RRS	Ratoon	Total Yield	WHOLE	TOTAL	% Chalk	Chalk Area	Length	LWRatio	WN	Pita-2
191L1125	JZMN2/CTHL	Long-AL	82	94	9021.885	2064	11085.885	68.47	73.28	16.4	16.8	6.91	2.98	35.6	Sus
DLLA2	DLLA2	Long-AL	88.5	105	7520.02	3676	11196.02	63.03	69.13	7.6	9.73	7.18	2.97	37	Sus
191L1122	JZMN2/CTHL	Long-AL	82.5	95.5	9270.485	1851	11121.485	66.47	70.62	7.8	10.98	6.93	2.94	32.8	Sus
191L1159	JZMN2/CTHL	Long-AL	83	95	8443.055	2375	10818.055	63.81	71.52	12.9	16.9	7.02	2.92	38.4	Res
JZMN	JZMN	Long-AL	88.5	105	6681.635	2044.5	8726.135	68.88	72.76	4.5	5.29	7.07	2.98	34.6	Sus
191L1094	CTHL/CPMR/CTMT/CHNR/CHNR/CTHL	Long	84.5	105	9503.7	2187	11690.7	63.92	70.56	11.3	13.44	6.99	2.86	39.3	Res
MRMT	MRMT	Long	83	106	9278.21	2027	11305.21	64.19	70.17	14.8	17.33	6.99	3	38.1	Sus
191L1033	1104077/CTHL	Long-HI	84.5	108	9221.12	2772.5	11993.62	67.38	72.14	7.6	13.63	7.09	2.89	40.9	Res
191L1173	CTHL/MRMT	Long	81.5	95.5	8951.93	2081	11032.93	65.46	72	13.2	15.35	7.15	2.94	38.8	Sus
191L1119	MRMT/CTHL	Long	83.5	99	8917.575	1755.5	10673.075	67.08	72.12	13.2	16.02	7	3.1	35.2	Res
191L1190	1104077/CTHL	Long-HI	80.5	102.5	8868.435	4496	13364.435	67.75	72.42	8.6	14.19	7.06	2.79	41.5	Res
191L1031	CTHL/CPMR/CTMT/CHNR/CHNR/CTHL	Long	83	98	8820.035	1731.5	10551.535	67.74	72.65	10.9	14.88	6.95	2.92	41.6	Res
191L1040	CHNR/CTHL	Long	83.5	100	8787.21	1557	10344.21	65.62	71.68	10.4	12.91	7.02	3.03	39.6	Res
191L1111	1502085/CTHL	Long	82	100	8774.965	1890.5	10665.465	67.92	73.27	14.5	16.76	6.87	2.87	38.3	Res
191L1056	CL153/LKST	Long	84	97.5	8737.24	2520	11257.24	64.56	71.09	5.5	8.71	7.03	2.9	42.3	Res
191L1184	CTHL/MRMT	Long	84	102	8601.925	2453.5	11055.425	65.63	70.77	9.1	14.26	7.07	3.03	39.6	Res
191L1030	1104077/CTHL	Long-HI	85.5	100.5	8492.095	3198.5	11690.595	65.78	71.41	6.4	13.99	7.07	3.01	40.4	Res
191L1067	CTHL/MRMT	Long	80	99	8475.815	2283	10758.815	65.06	71.74	13.9	15.13	7.07	3.02	38.8	Res
191L1123	CTHL/LKST	Long	84.5	96	8391.76	2507.5	10899.26	64.3	70.98	12.5	16.05	7.34	3.16	38.3	Sus
191L1172	MRMT/CTHL	Long	82.5	97.5	8364.225	1881.5	10245.725	66.7	72.35	10.6	15.47	7.03	2.98	39.8	Res
CHNR	CHNR	Long	83.5	95	8342.67	1911.5	10254.17	65.85	71.88	5.5	7.1	7.17	3.13	39.8	Sus
191L1133	MRMT/CTHL	Long	86.5	102	8148.465	2323	10471.465	65.52	72.01	11.7	15.58	7.07	3.1	37.8	Res
191L1100	CHNR/PSDO	Long	82.5	95.5	8123.54	2160.5	10284.04	63.98	69.68	7.8	11.27	6.84	2.9	38.8	Sus
191L1174	1104077/CTHL	Long-HI	80.5	98.5	8090.64	2708.5	10799.14	65.98	72.01	8.7	13.53	7.14	3.09	37.3	Res
191L1108	1402174/CTHL	Long	84.5	99.5	8088.115	2329	10417.115	66.9	71.69	11.9	15.7	7.02	2.95	40.1	Res
191L1105	CTHL/MRMT	Long	83.5	95.5	8054.24	2253.5	10307.74	61.27	69.41	10.6	13.63	7.11	3.08	38.4	Res

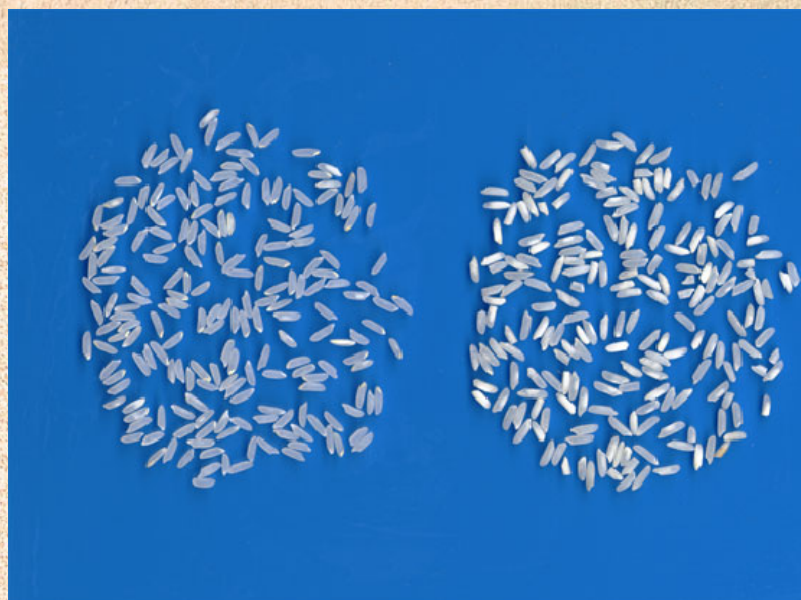


2019 Preliminary Yield Test 2: Lines advanced to 2020

Name	PEDIGREE	Grain	Vigor	DTH	PLHT	Yield	WHOLE	TOTAL	% Chalk	Chalk Area	Length	LWRatio	Pita-2	Piz
191L2099	CTHL/LKST	Long	3.5	65	95.5	8981	63.22	69.88	12.2	16.9	6.67	2.93	Sus	Sus
191L2051	RoyJ/CL153	Long	3	67.5	97.5	8585	64.87	69.36	8.4	13.7	6.93	3.12	Res	Sus
191L2071	CTHL/LKST	Long	3	73	102.5	8493	62.92	69.73	6.4	14.6	6.72	3.22	Res	Sus
191L2132	CTHL/LKST	Long	3.5	68	90.5	8433	63.19	70.4	15.4	17.1	7.14	2.98	Res	Sus
191L2073	CHTL/CL153	Long	3	64	98.5	8412	64.69	70.04	8.5	14.6	6.95	2.93	Res	Sus
191L2066	RoyJ/CL153	Long	3	66.5	93.5	8393	67.67	72.14	12.3	18.9	6.96	3.05	Res	Sus
191L2106	CTHL/LKST	Long	2	70	101.5	8328	64.01	69.98	6.9	11.7	6.65	3.06	Res	Sus
191L2122	TRNS/CTHL	Long	3	66	105	8316	63.99	70.09	7.7	10.8	6.68	2.88	Res	Sus
191L2093	CTHL/LKST	Long	3	74	97.5	8314	64.38	71.43	14.5	18.8	7.15	2.98	Res	Sus
191L2100	CTHL/LKST	Long	4	63.5	87	8286	64.72	71.2	11.3	15.8	7.23	3	Res	Res
191L2126	CL153/LKST	Long	3	66.5	95.5	8124	63.55	69.65	11.4	14.9	6.91	2.98	Res	Sus
191L2064	CTHL/LKST	Long	3.5	70	92	8095	65.92	71.86	15.9	22.2	6.97	2.94	Res	Sus
191L2123	CHTL/CL153	Long	3	65	103.5	8051	65.05	70.6	10.9	12.4	6.93	3.04	Res	Sus
191L2009	PSDO/CL153	Long	3	67	94	8005	64.68	69.51	5.5	9.32	6.93	3.18	Sus	Res
191L2087	CL153/LKST	Long	3.5	68.5	97	7994	64.23	69.31	7.8	13.6	6.88	3.02	Sus	Sus
191L2090	CHNR/CL111	Long	3.5	69	91.5	7976	63.87	69.47	7.2	12.8	6.87	3.05	Sus	Sus
191L2092	1602051/PSDO	Long	2.5	68.5	93	7897	61.17	69.62	5.4	10.1	6.99	3.21	Res	Res
191L2103	CL111/MRMT	Long	3.5	64.5	97	7872	64.62	70.61	10.8	15.8	7.1	3.16	Res	Sus
191L2108	TRNS/CTHL	Long	3.5	66	102.5	7831	66.41	71.56	8.1	11.5	6.89	3.04	Res	Sus
191L2025	PSDO/CL153	Long	3	66	100	7782	66.04	70.3	7.1	11.6	6.82	3.06	Res	Res
CHNR	CHNR	Long	3	70.5	104	7721	65.55	71.64	2.2	5.13	6.98	2.91	Sus	Sus
191L2054	TRNS/CTHL	Long	3.5	64.5	96	7662	64.82	70.17	10.1	15.7	6.95	3.03	Res	Sus
CL153	CL153	Long	3	67	98.5	7459	64.72	69.88	5.5	8.65	6.97	2.97	Res	Sus
MRMT	MRMT	Long	3.5	64	95.5	7343	63.91	70.09	14.7	17.2	6.93	3.11	Sus	Sus

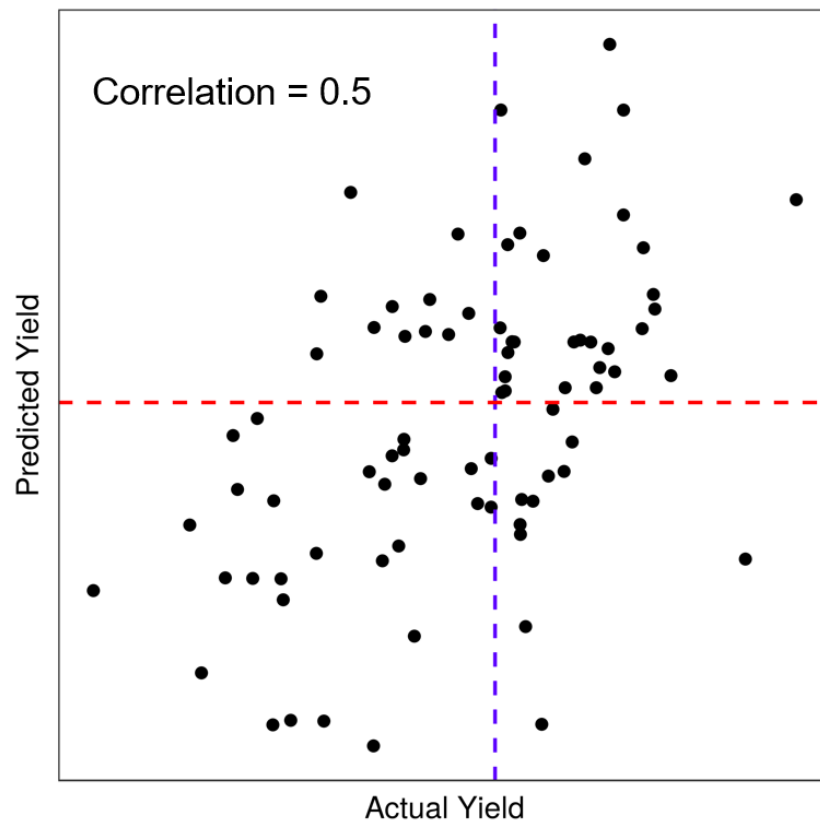
New Breeding Focus

- **High Quality for Latin American Export Market**
- Central America is 2nd largest export market
- Exports decreased 40% from 2007 to 2014
- Grain quality is the primary issue
 - Reduced quality of U.S. rice exports
 - Market preferences have shifted



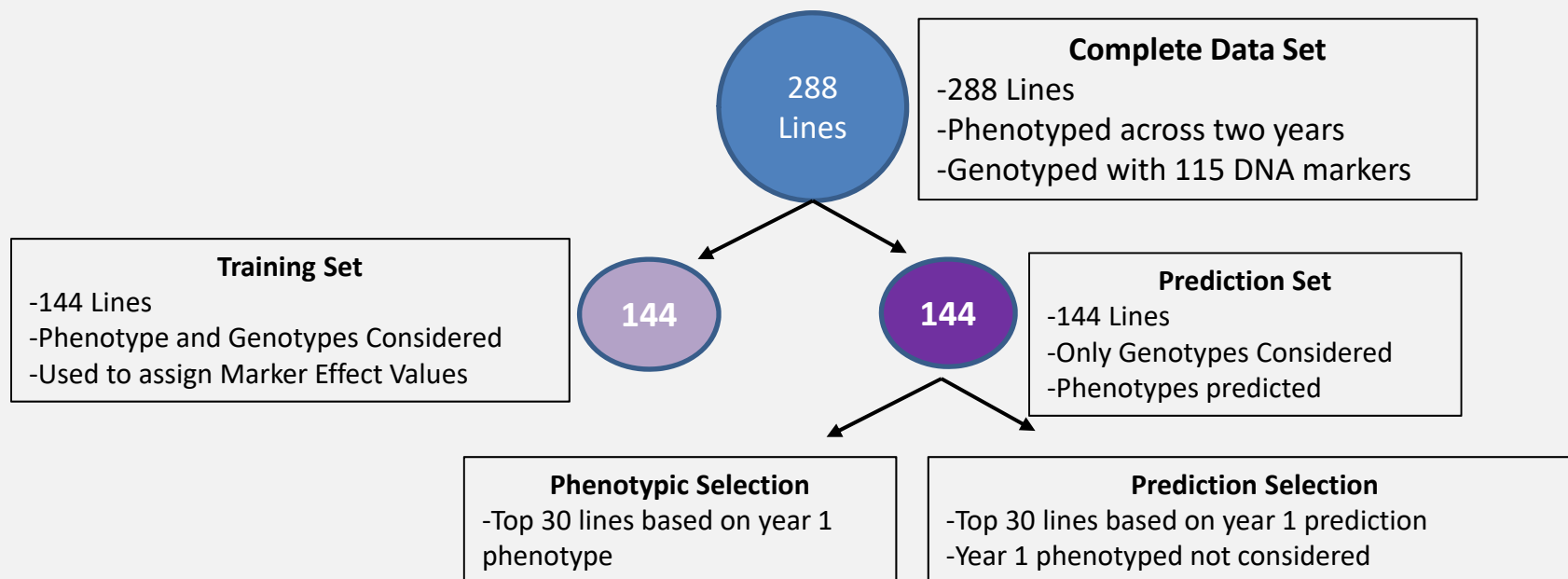
Applied Breeding Research

- **Optimization and Deployment of Whole Genome Prediction**
- Collaboration with Cornell University (Kelly Robbins and Susan McCouch)
- AgCenter Postdoctoral Associate (Chris Hernandez) is based there as visiting scientist
- 2-Year project funded through support of Horizon Ag



- Preliminary data indicates that predictions for complex traits has similar accuracy as a single location yield test
- Currently genotyping 5,000 breeding lines from 2017-2019
- Optimizing procedures and methods to be most cost effective
- Current costs are \$3.00 per line, which is much cheaper than cost to conduct field trial and can be easily scaled

Whole Genome Prediction



	Values measured from field		
	Year 2 Selected		Yr. 2 All
Trait	Phenotypic	Prediction	Phenotypic
Milling	64.8%	64.1%	58.2%
Chalk	3.0%	3.3%	5%
Heading	80.9 days	79.2 days	86.9 days

Thank You

- Question or Comments?
- Acknowledgements
 - Off-Station Co-operators
 - Louisiana Rice Research Board
 - Rice Station Faculty and Staff
 - Project Staff
 - Breeding Program
 - Karen Bearb, Corey Connor, Gavin Guidry, Brady Williams
 - Grad Students: Christopher Addison, Tommaso Cerioli
 - Student Workers: Seth Daigle, Logan Doucet, Briley LeJeune, Alex Simon, Logan Bogard
 - Molecular Breeding Lab
 - Brijesh Angira, Jennifer Dartez
 - Student Workers: Madeline Fruge, Haley Lejeune, Michelle Sonnier, Krysten Theunissen



CLL17: New Clearfield Long Grain

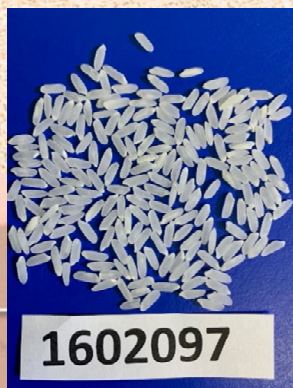
- **CLL17:** New CL long grain variety
 - Tested over last 4 years across 59 tests
 - 7% average yield advantage over CL153
 - 39 inches tall
 - CL111-38 inches
 - CL153-37 inches
 - 81 days to heading
 - CL111-79 days
 - CL153-82 days
 - 61.7% Whole Milling
 - CL111-62.3%
 - CL153-62.1%
 - 12.3% Total Chalk Area
 - CL111-12.43%
 - CL153-9.56%



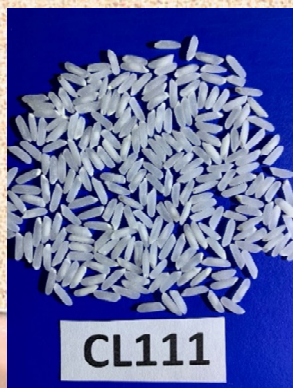
“CLL17”

1602097

9502008A/DREW//CLR20/4/CPRS/
KBNT//9502008A



1602097



CL111



CL153

CLL17: New Clearfield Long Grain

- **Yield Testing 2016-2019**

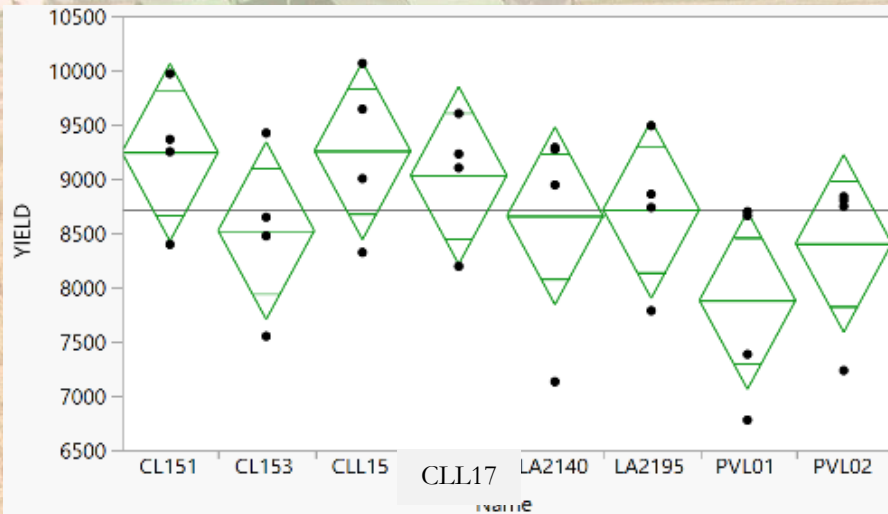
- 2016 Average Yield (4 tests): 7,728 lb/A
 - CL111: 8,287 lb/A (+3%)
 - CL153: 8,422 lb/A (+6%)
- 2017 Average Yield (22 tests): 8,030 lb/A
 - CL111: 7,227 lb/A (-11%)
 - CL153: 7,602 lb/A (-5.6%)
- 2018 Average Yield (12 tests): 8,703 lb/A
 - CL111: 7,613 lb/A (-14.3%)
 - CL153: 7,964 lb/A (-9.3%)
- 2019 Average Yield (20 tests): 7,056 lb/A
 - CL111: 6,502 lb/A (-8.5%)
 - CL153: 6,343 lb/A (-11.2%)



Year	Tests	LA2097	CL111	CL153	CHENIERE
2016	1	2125	2454	2825	2167
2017	3	2562	1926	2164	1901
2018	2	1920	2727	2920	1537
2019	2	2011	1870	1731	1508
4 YR AVG		2155	2244	2410	1778

Yield 2019

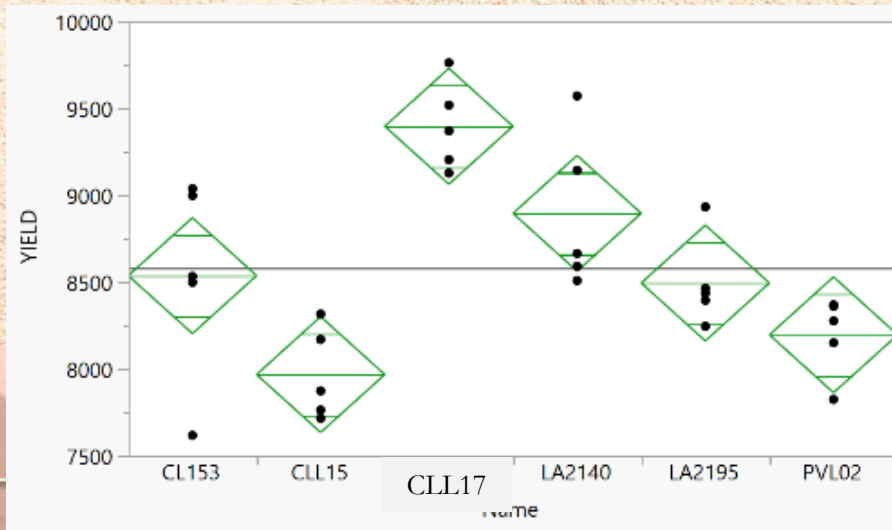
ARPT (4 tests/4 reps)



Yield of Checks relative to CLL17

- CL153: 0.94
- CL151: 1.02
- CLL15: 1.02
- PVL02: 0.937

VxN-RRS (5 tests (90,120,150,180,210lb/3 reps)



Yield of Checks relative to CLL17

- CL153: 0.91
- CLL15: 0.85
- PVL02: 0.87

Disease Ratings

DISEASE	YEAR	LA2097	CL111	CL153	CHENIERE
Rotten Neck Blast	2016	0.5	1.8	0.5	0.5
	2018	1.3	1.3	1.3	3.5
	2019	0.0	0.0	0.8	3.3
Grand Average		0.6	1.0	0.9	2.5
Rating		R	R	R	MS
Leaf Blast	2017	2.8	2.3	2.0	3.8
	2018	0.5	0.0	0.0	5.0
	2019	1.3	0.5	0.5	3.5
Grand Average		1.5	0.9	0.9	4.1
Rating		R	R	R	MS

Disease Ratings

DISEASE	YEAR	LA2097	CL111	CL153	CHENIERE
Bacterial Panicle Blight	2016	3.5	5.2	2.9	2.0
	2017	3.3	7.0	3.8	2.8
	2018	2.8	3.0	2.8	1.3
	2019	5.8	5.3	4.8	4.5
Grand Average		3.9	5.1	3.6	2.6
Rating		MS	VS	MS	MS
Narrow Brown Leaf Spot (Cercospora)					
	2019	0.0	0.0	2.0	4.0
Sheath Blight	2016	5.0	6.5	4.8	6.3
	2017	7.5	7.3	7.3	7.0
	2018	6.0	6.8	5.3	4.5
	2019	6.3	6.3	6.3	6.3
Grand Average		6.2	6.7	5.9	6.0
Rating		S	VS	S	S

Recommended PV Herbicide Varieties

Table 2. Agronomic Characteristics and Yields of Recommended Herbicide-Tolerant Rice Varieties (2017-2019) in Louisiana.

Variety	Grain Type	Seedling Vigor	Lodging	Days to 50% Heading	Plant Height (in)	2017 Milling % (Whole - Total)	2018 Milling % (Whole - Total)	2019 Milling % (Whole - Total)	Mean* Milling % (Whole - Total)	2017 Grain Yield (lb/A)	2018 Grain Yield (lb/A)	2019 Grain Yield (lb/A)	Mean* Grain Yield (lb/A)
CL272	M	G	MS	80	40	60-71	64-72	66-71	63-71	8,047	8,357	6,829	7,744
CL172	L	G	MS	81	38	59-73	62-72	65-71	62-72	7,594	8,584	6,847	7,675
CL153	L	G	MR	80	42	61-73	60-71	62-70	61-71	7,683	7,818	7,013	7,505
CL151	L	G	S	79	40	62-73	63-73	66-72	64-73	8,149	6,812	7,147	7,369
CL111	L	G	MR	76	39	61-72	59-72	65-71	62-72	6,699	7,642	6,841	7,061
PVL02	L	G	MS	79	43	63-74	61-73	66-73	63-73	7,065	8,627	6,373	7,355
PVL01	L	G	MR	88	40	57-72	55-71	56-71	56-71	6,631	7,616	5,819	6,689

Abbreviations: R = resistant, MR = moderately resistant, MS = moderately susceptible, VG = very good, G = good.

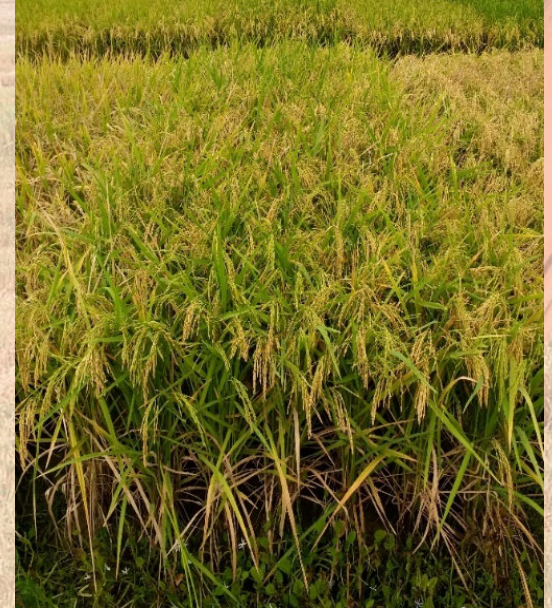
Lodging: Comparative estimate of resistance to lodging. Most varieties rated as resistant will lodge, especially under excessive levels of nitrogen.

Height: Height at maturity in inches from soil line to extended panicle.

*Mean is the average of 19 yield trials conducted over the three-year period. Mean is not the average of the three years because there were different numbers of trials each year.

Provisia- PVL02

- **PVL02** (*PVL108*): New Provisia variety
 - Tested over last 5 years across 55 tests with PVL01
 - Limited commercial seed available in 2020 (Horizon Ag)
- **Yield**
 - 11% average yield advantage over PVL01 across 5 years
 - 20% average yield advantage over PVL01 in 2019
- **Grain**
 - Low chalk like PVL01
 - Typical Southern Long Grain cooking characteristics
 - Improved milling over PVL01
 - PVL02: 63% whole
 - PVL01: 56% whole
 - Shorter grain length



PVL01



PVL02

Provisia- PVL02

- **PVL02** (*PVL108*): New Provisia variety

Days to heading

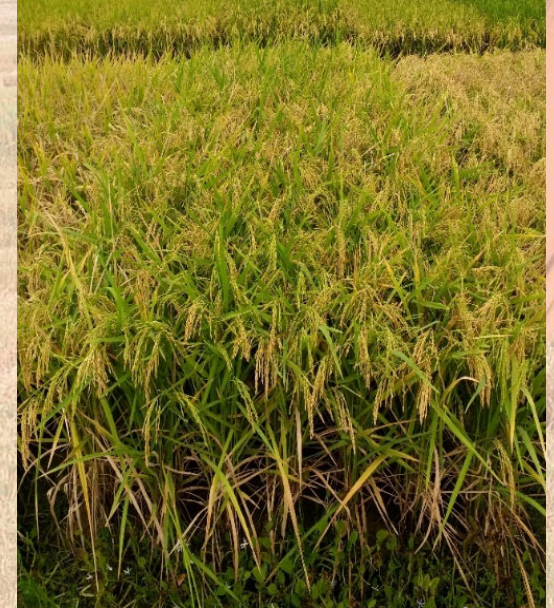
- PVL02: 79 days
- PVL01: 88 days
- CL153: 80 days

Plant Height

- PVL02: 43 inches
- PVL01: 40 inches

Disease

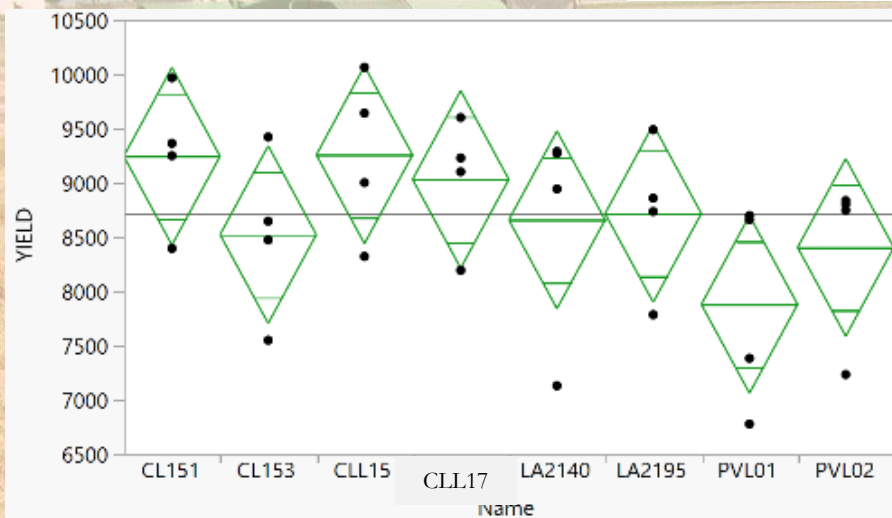
- Slight improvement on blast (Pikm)
- Similar to PVL01 for other diseases



Variety	Blast	Sheath Blight	Cercospora	Bacterial Panicle Blight	Straighthead	Blast Resistance Spectrum
Cheniere	MS	S	S	MS	MR	Limited
CLJ01	MR	MS	MR	S	—	Unknown
CL111	MS	VS	S	VS	S	Broad
CL151	VS	S	S	VS	VS	Limited
CL153	MS	S	MS	MS	MS	Broad
CL163	VS	S	R	MS	MS	Limited
PVL01	VS	S	MR	S	—	Minimal
PVL02	MS	MS	MS	S	—	Limited

Provisia- PVL02 Yield Trials

ARPT (4 tests/4 reps)

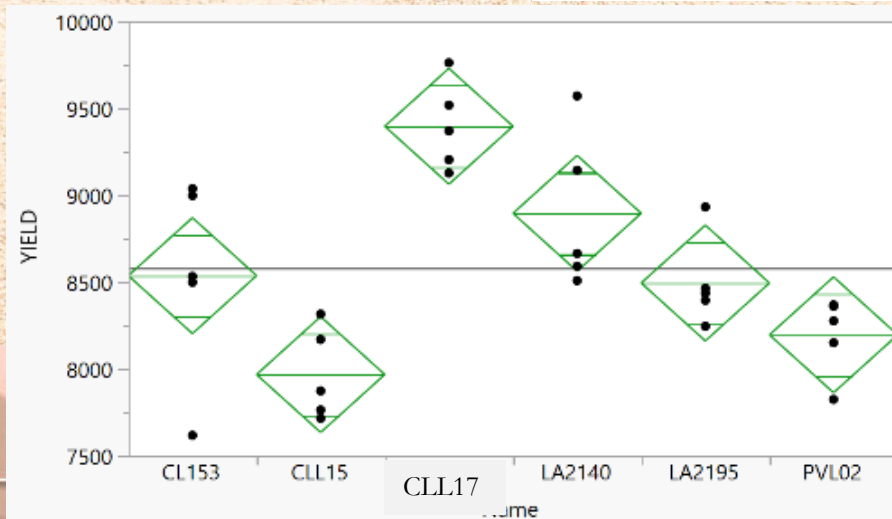


Level	Number	Mean
CL151	4	9242.07
CL153	4	8520.08
CLL15	4	9255.13
LA2097	4	9028.80
LA2140	4	8655.92
LA2195	4	8714.30
PVL01	4	7876.87
PVL02	4	8401.90

Yield of Checks relative to PVL02

- CL153: 1.01
- CL151: 1.10
- CLL15: 1.10
- PVL01: 0.937

VxN-RRS (5 tests (90,120,150,180,210lb/3 reps)



Level	Number	Mean
CL153	5	8535.20
CLL15	5	7966.00
LA2097	5	9395.20
LA2140	5	8894.20
LA2195	5	8492.80
PVL02	5	8194.60

Yield of Checks relative to LA2097

- CL153: 1.02
- CLL15: 0.94
- CLL17: 1.15

Provisia- Breeding Pipeline

- Four potential lines entering 3rd year of testing
 - All lines are full siblings from the cross PVL01 x Catahoula
 - All have improved yield over PVL02 (5-16%) in 2018-2019
 - Strong blast resistance with Pita blast resistance gene
 - Each has a long grain (>7mm) and low chalk
 - 30-50 rows of each being purified and increased in PR this winter
- Multi-location testing planned again for 2020 and initial seed purification/increase.

Hybrid LAH169

