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A study on the varietal preference of rice in north coastal zone of Andhra Pradesh

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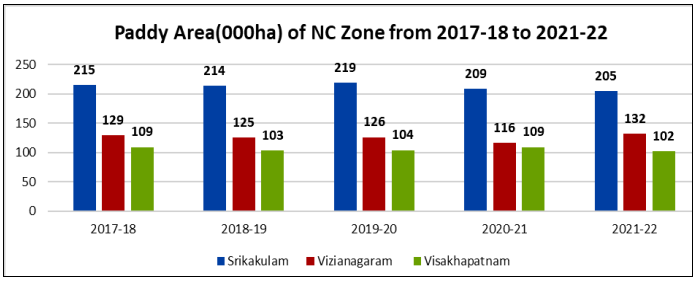
Abstract
Rice is the predominant food crop of the north coastal districts of Andhra Pradesh, where both farmers and consumers depend on it for livelihood and nutrition. Despite the availability of several varieties, a limited number are widely adopted due to differing preferences among farmers, millers, and consumers. This study analyzed varietal preferences, factors influencing adoption, and procurement trends in the districts of Srikakulam, *Vizi*anagaram, Visakhapatnam, and Anakapalli. Results revealed that paddy area declined in Srikakulam (–4.65%) and Visakhapatnam (–6.42%), while it increased marginally in *Vizi*anagaram (+2.32%) during 2011–2022. Farmer's prioritized high yield, millers preferred varieties with high head rice recovery and fewer brokens, whereas consumers focused on fine grain quality, whiteness, and aged rice. Rank order analysis showed RGL-2537 (Srikakulam sannalu), MTU-7029 (Swarna), and BPT-5204 (Samba mashuri) as most preferred by farmers; Swarna, Samba mashuri, and Sridruthi by millers; and Samba mashuri, Srikakulam sannalu, and Swarna by consumers. These findings highlight the need for integrating preferences across stakeholders to guide future varietal development and dissemination.

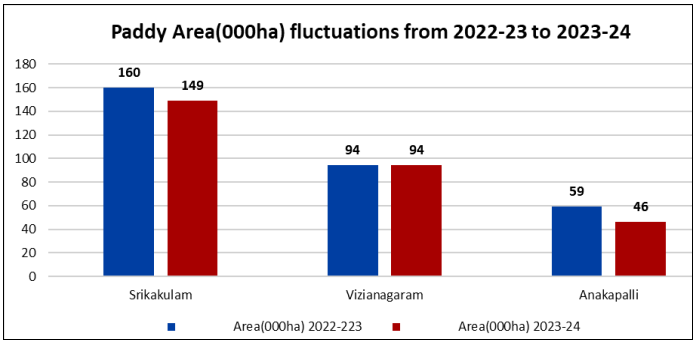
Keywords: Paddy varieties, varietal preference, Srikakulam sannalu, Samba mashuri, Swarna, consumer preference, milling recovery

Introduction
Rice is the staple food crop cultivated in India, with an area of approximately 44 million hectares. In the state of Andhra Pradesh, rice is cultivated in 25.5 lakh hectares with an average production of 131 lakh tonnes and a productivity of 5.13 tonnes per hectare. Paddy is the major food crop in north coastal districts of Andhra Pradesh. There are several different varieties of paddy are available in north coastal zone, however farmers are preferring only few varieties such as RGL-2537, Samba mashuri and swarna, for their cultivation. In a similar way the millers and consumers are also preferring few varieties for milling and consumption respectively. In this connection, it is important to study the varietal preference of farmers, millers and consumers, thereby feedback should be given to the researchers to refine the research programme. Paddy is the major crop of north coastal zone. Farmers are depending on paddy for major agricultural income. Farmers are adopting varieties based on their location preference but consumers and millers are having different priorities with regard to varieties. The study is under taken to bring coordination between farmers, millers and consumers with regard to adoption of paddy varieties.

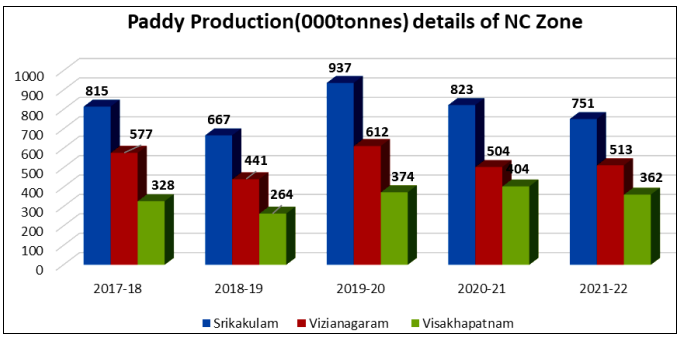
Materials and Methods
The study was conducted across Srikakulam, *Vizi*anagaram, Visakhapatnam and Anakapalli districts. Data were collected from seed distribution records (2017–2022), procurement statistics (2023–25), and surveys conducted with 60 farmers, 30 millers, and 30 consumers. Factors influencing preferences were ranked using mean score methods and frequency analysis.
As part of the study the basic data of North coastal zone with regard to paddy area, Production and productivity deviations over fast 10 years i.e., from 2011-12 to 2021-22. The data interprets that, the Paddy area decreased from 2,15,000 to 2,05,000ha i.e. 4.65% decline in area in Srikakulam district, The Paddy area increased from1,29,000 ha to 1,32,000ha i.e. there is 2.32% increase in area in case of *Vizi*anagaram district and The paddy area reduced from 1,09,000ha to

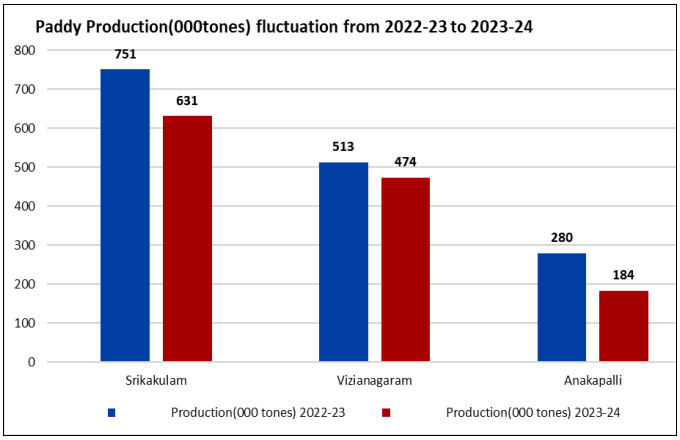
1,02,000ha i.e., there is 6.42% decline in area with regard to area in Visakhapatnam district.

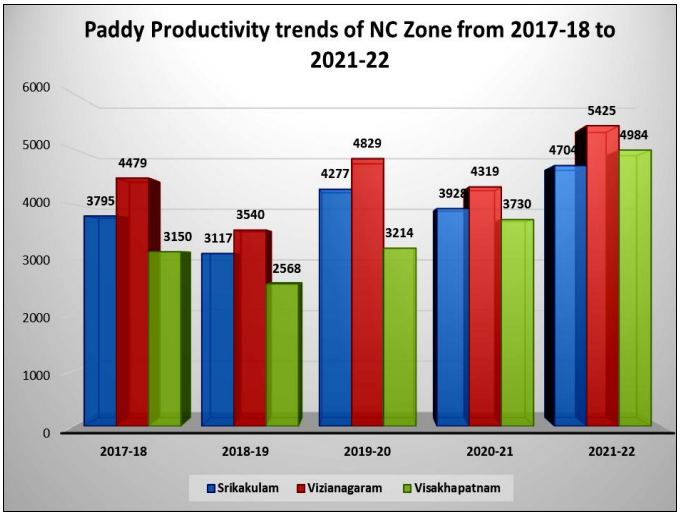


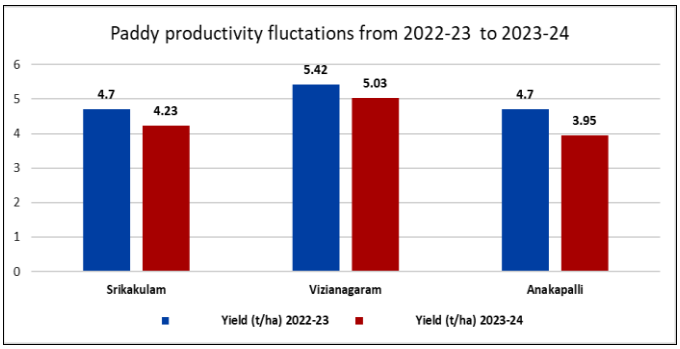


As part of the basic data of North coastal zone, The data interprets that the Paddy area decreased from 1,60,000 ha to 1,49,000 ha i.e6.87% decline in area in Srikakulam district, The Paddy area is maintained at 94,000ha without any deviation from past 2 years in *Vizianagaram* district and The paddy area reduced from 59,000ha to 46,000ha i.e., there is 22% decline in area with regard to area in Anakapalli district.









I. Paddy seed distribution data at Anakapalli district from 2017-18 to 2021-22

S. No	Crop	Variety	2017-18	2018-19	2019-20	2020-21	2021-22	Total	Rank
			Seed distributed in q						
1	Paddy	NLR-34449	132	250	6.6	152.1	333.4	874.1	XII
2		MTU-1061	308	400	442.5	291.9	530.7	1,973.1	X
3		MTU-1064	820	900	1,346.7	1,316.1	2,575.3	6,958.1	IV
4		MTU-1075	478	600	604.5	1,352.4	0	3,034.9	VIII
5		MTU 1001	1,583	1,750	0	0	0	3,333	VI
6		MTU 1010	464	1,000	0	0	0	1,464	XI
7		MTU 7029	777	900	1,095	993	1,028.3	4,793.3	V
8		BPT 5204 (samba mashuri)	2,353	2,500	2,444.8	2,688	3,688.3	13,674.1	II
9		BPT 3291 (Sona Mashuri)	1,189	1,200	2,429.2	4,042.8	4,147.2	13,008.2	III
10		JGL -1798	0	0	0	0	0	0	XIV
11		MTU-1121	0		149.7	718.2	1,653.7	2,521.6	IX
12		MTU-1156	0		2,248.2	909.3	0	3,157.5	VII
13		RNR-15048	0		0	0	91.25	91.25	XIII
14		RGL 2537 (Srikakulam Sannalu)	10,231	10,500	6,823.1	1,6474.8	17,509.6	54,883.15	I
		Total	18,335	20,000	17,590.3	28,938.6	31,557.75	99,921.65	

The distribution data show that RGL 2537 (Srikakulam Sannalu) was the most widely adopted variety, followed by Samba Mashuri (BPT-5204) and Sona Mashuri (BPT-3291). Farmers in Anakapalli strongly prefer RGL 2537 due to its high yield and market demand, while traditional fine-grain varieties like Samba Mashuri retain significant popularity

II. Paddy seed distribution data at *Vizi*anagaram district from 2017-18 to 2021-22

S. No	Crop	Variety	2017-18	2018-19	2019-20	2020-21	2021-22	Total	Rank
			Seed distributed in q						
1	Paddy	BPT-5204	2264.75	2183.20	2887.55	2323.50	2247.75	11,906.75	IV
2		MTU-7029	1930.50	1737.00	2121.50	1813.50	1356.30	8,958.80	VI
3		RGL-2537	992.75	557.50	2177.35	172.80	126.60	4,027	VII
4		NLR-34449	110.10	694.20	331.80	44.70	8.70	1189.50	IX
5		MTU-1064 (Amara)	2700.30	3047.70	8498.10	2645.70	2124.60	19,016.40	II
6		BPT-3291 (Sona Mashuri)	0.00	4061.85	7251.60	4400.70	2773.20	18,487.35	III
7		MTU-1061	200.10	110.10	89.40	34.20	20.70	454.50	XII
8		MTU-1075	1400.70	0.00	0.00	0.00	0.00	1400.70	VIII
9		MTU-1121 (Sridruthi)	36484.20	45254.30	33675.30	28332.00	31868.40	1,75,614.20	I
10		MTU-1156	10103.40	0.00	0.00	0.00	0.00	10103.40	V
11		MTU-1153	369.30	291.00	0.00	0.00	0.00	660.30	X
12		RNR-15048	0.00	0.00	117.05	1.35	1.75	120.15	XIII
13		MTU-1224	0.00	0.00	231.35	224.40	98.40	554.15	XI
14		MTU-1318	0.00	0.00	0.00	0.00	14.10	14.10	XIV
		Total	56556.10	57936.85	57421.20	39992.85	40640.50	2,52,547.50	

Sridruthi (MTU-1121) ranked first by a wide margin, followed by Amara (MTU-1064) and Sona Mashuri (BPT-3291). *Vizi*anagaram farmers exhibited a strong preference for Sridruthi, eflecting adaptability, yield performance, and demand among millers.

III. Paddy seed distribution data at Srikakulam district from 2020-21to 2024-25

S. No	Crop	Variety	2020-21	2021-22	2022-23	2023-24	2024-25	Total	Rank
			Seed distributed in qtls						
1	Paddy	MTU-7029(Swarna)	40190	38167	25375	19438	37634	1,60,804	I
2		BPT-5204	19446	16009	469	8788	1039	45,751	IV
3		MTU-1121(Sridruthi)	31115	17918	6875	12687	9641	78,236	III
4		MTU-1075	1944	1134	381	0	0	3,459	XI
5		MTU-1061(Indra)	9143	17241	27625	25312	27127	1,06,448	II
6		MTU-3291	7779	12315	350	637	0	21,081	VIII
7		RGL-2537	5834	7389	4500	4853	292	22,868	VII
8		MTU-1010	0	0	0	0	0	0	XVI
9		Others	1296	6288	4063	956	1490	14,093	X
10		MTU-1064	2568	6095	1312	4062	4698	18,735	IX
11		MTU-1156	2593	0	0	0	0	2,593	XIII
12		NLR-34449	91	117	94	28125	0	28,427	VI
13		MTU-1224	0	793	726	1006	914	3,439	XII
14		MTU-1210	0	246	69	6	0	321	XV
15		NP9558	0	0	22500	10750	6327	39,577	V
16		MTU-1318	0	0	0	1312	915	2,227	XIV
		Total							

Swarna (MTU-7029) was the most widely distributed variety, followed by Indra (MTU-1061) and Sridruthi (MTU-1121). Srikakulam farmers' preference for Swarna indicates reliance on its stability and millers' acceptance, despite the growing adoption of other fine-grain varieties.

IV. Factors influencing the varietal preference by the farmers of North coastal zone: (n= 60)

S. No.	Factor	Total Score	Mean Score	Rank
1	High Yield capacity	280	4.66	I
2	High Miller preference	275	4.58	II
3	High Market rate	272	4.53	III
4	Non lodging nature	271	4.52	IV
5	Submergence tolerance	264	4.40	V
6	Ideal Duration (140 – 145 days – Kharif, 120 – 125 days – Rabi)	238	3.96	VI
7	Resistance to pests and diseases	235	3.92	VII
8	Low grain shattering	234	3.9	VIII
9	Less Fertilizer requirement	228	3.8	IX
10	Ideal Dormancy	180	3.0	X
11	Suitable for direct seeding	104	1.73	XI

From table 4, it indicates that Farmers prioritized high yield capacity (Rank I), miller preference (Rank II), and market rate (Rank III). Other considerations included non-lodging nature, submergence tolerance, and pest resistance.

V. Rank order of Kharif paddy varieties cultivated in North Coastal zone (n=60)

Factor	RGL-2537 (srikakulam sannalu)	MTU 7029 (Swarna)	BPT 5204 (Samba mashuri)	MTU 1121 (Sridruthi)	BPT3291 (Sona Mashuri)	MTU1061 (Indra)	MTU1318 (MTU Rice)	MTU1064 (Marteru Samba)	Sampada sona	MTU-1153
Duration	124.0	87.0	110.0	112.0	105.0	84.0	112	105.0	82.0	77.0
Yield	126.0	121.0	111.0	108.0	104.0	98.0	110	95.0	100.0	84.0
Resistance	116.0	90.0	109.0	92.0	96.0	91.0	95	82.0	84.0	83.0
Non lodging	78.0	130.0	113.0	110.0	102.0	118.0	98	80.0	112.0	85.0
Low grain shattering	121.0	123.0	105.0	100.0	96.0	96.0	98	108.0	94.0	85.0
Less Fertilizer requirement	125.0	115.0	90.0	91.0	107.0	86.0	74	86.0	82.0	84.0
Dormancy	104.0	84.0	108.0	96.0	106.0	79.0	95	69.0	89.0	87.0
Submergence tolerance	104.0	121.0	116.0	108.0	105.0	121.0	94	73.0	92.0	90.0
Suitable for direct seeding	92.0	79.0	92.0	98.0	92.0	94.0	98	78.0	81.0	89.0
High Market rate	123.0	120.0	115.0	118.0	114.0	122.0	112	120.0	88.0	92.0
High Miller preference	122.0	122.0	115.0	116.0	114.0	123.0	112	118.0	88.0	92.0
Total Score	1235.0	1192.0	1184.0	1149.0	1141.0	1112.0	1098.0	1014.0	992.0	948.0
Mean Score	112.3	108.4	107.6	104.5	103.7	101.1	99.8	92.2	90.2	86.2
Rank	I	II	III	IV	V	VI	VII	VIII	IX	X

The study taken up to know the paddy varietal preference of farmers, millers and consumers. The factors influencing the farmers of North Coastal Zone regarding selection of paddy variety were high yield capacity, high millers preference and high market price in the order of priority. The preferred varieties of farmers of North Coastal Zone in the order of priority are RGL-2537, MTU-7029 and Samba mashuri.

VI. Status of Paddy procurement in Anakapalli district 2023-24 & 2024-25

S.no	Paddy Variety	Total Production	Procurement by Millers (MTS)	Rank	Procurement by Civil Suppl Corp (MTS)		Total Procurement	Rank
1	RGL-2537 (S.S)	1,59,850	10,790	I	29,173	I	39,963	I
2	BPT-5204	25,025	1,689	V	4,567	V	6,256	VI
3	BPT-3291	8,788	2,135	IV	5,773	IV	7,908	V
4	MTU-1121 (Sri Druthi)	16,013	3,891	III	10,520	II	14,411	II
5	MTU-1224	5,119	1,244	IX	3,363	IX	4,607	IX
6	MTU-1262	2,340	569	XI	1,537	XI	2,106	XI
7	MTU-1061	6,138	1,492	VI	4,033	VI	10,322	IV
8	MTU-1064 (Amara)	20,475	4,975	II	8,830	III	13,805	III
9	MTU-1318	5,408	1,314	VIII	3,553	VIII	4,867	VIII
10	MTU-7029	3,450	838	X	2,267	X	3,106	X
11	NLR-34449	158	38	XIII	103	XIII	141	XIII
12	RNR-15048	893	217	XII	586	XII	803	XII
13	Others	5,880	1,429	VII	3,863	VII	5,292	VII

The table 6 indicates that procurement data indicated RGL-2537 as the most procured by both millers and civil supplies, followed by Sridruthi and Amara, reflecting alignment with both production and consumption demand**.**

VII. Factors influencing the varietal preference by the millers of North Coastal Zone: (n=30)

S.no	Factor	Total Score	Mean Score	Rank
1	Less abdominal chalkiness or Less broken percentage	83	2.76	I
2	High Head Rice recovery	81	2.70	II
3	High milling recovery	80	2.66	III
4	Ideal moisture percentage	78	2.60	IV
5	High Market Rate	70	2.34	VI
6	Translucent kernel	68	2.26	V
7	High percent of by-products (brokens, bran, etc)	34	1.13	VIII
8	Suitable for value added products (Rice flakes, puffed rice, flour, bran oil etc)	32	1.06	VII
9	Less 1000 grain weight	30	1.00	IX

From table 7, it indicates that Millers emphasized less broken percentage, high head rice recovery, and high milling recovery. Secondary factors included ideal moisture percentage and translucent grain quality.

VIII. Rank order preference of Kharif varieties by Millers of North Coastal Zone: (n=30)

S.no	Variety	Frequency	%	Rank
1	MTU 7029 (Swarna)	25	83.34	I
2	BPT 5204 (Samba Mashuri)	16	53.34	II
3	MTU 1121 (Sri Dhruthi)	16	53.34	II
4	RGL 2537 (Srikakulam Sannalu)	14	46.67	III
5	MTU1061(Indra)	13	43.34	IV
6	MTU 1064 (Amara)	11	36.67	V
7	MTU Rice 1318	10	33.34	VI
8	MTU 1262 (MaruteruMashuri)	10	33.34	VI
9	PLA 1100 (BadavaMashuri)	8	26.67	VII
10	Sampada Swarna	6	20.00	VIII

From table 8, it concludes that MTU 7029, BPT 5204, MTU 1121 and RGL 2537 were the major varieties preferred by Millers during kharif. Millers' preference for Swarna reflects its processing efficiency and consumer demand for long-lasting storage rice.

IX. Factors influencing the rice preference by the consumers of North Coastal Zone: (n=30)

S.no	Factor	Total Score	Mean Score	Rank
1	Fine and translucent grain	76	2.53	I
2	White coloured Rice	71	2.36	II
3	Aged Rice	71	2.36	III
4	Separation of grain after cooking	69	2.30	IV
5	More expansion after cooking	68	2.26	V
6	More keeping quality after cooking	59	1.96	VI
7	Less brokens	56	1.86	VII
8	Low cost	54	1.80	VIII
9	Less time required for cooking	49	1.64	IX
10	Brown coloured Rice	39	1.30	X
11	Good Taste	35	1.16	XI
12	Good Aroma	33	1.10	XII
13	Freshly harvested Rice	32	1.06	XIII
14	Long slender grain	31	1.03	XIV

From table 9, it inferred that consumers ranked fine and translucent grain (Rank I), white color (Rank II), and aged rice (Rank III) as key determinants. Additional traits included separation after cooking, expansion, and taste.

X. Rank order preference of rice varieties by the consumers of North Coastal Zone: (n=30)

S.no	Variety and Local Name	Frequency	Percentage	Rank
1	Samba mashuri (BPT-5204)	17	34	I
2	Srikakulam Sannalu (RGL-2537)	15	30	II
3	Swarna (MTU-7029)	13	26	III
4	Sona mashuri(BPT-3291)	8	16	IV
5	Telangana sona(RNR-15048)	5	10	V
6	Nandhyalasannalu(NDLR-8)	5	10	V
7	Nellore molakolukulu (NLR-3186)	3	6	VII

The factors influencing the varietal preference by the millers of North Coastal zone are less broken rice, high head rice recovery and high milling recovery in the order of priority. The order of preference of varieties by millers of North Coastal Zone are Swarna, samba mashuri, sridruthi and Srikakulam sannalu. The factors influencing the consumers in purchasing of rice are fine grain, white colored rice and aged rice in the order of priority and varieties preferred by consumers in purchase of rice are samba mashuri, Srikakulam sannalu and Swarna etc.

Conclusion

The study reveals that varietal preferences vary among farmers, millers, and consumers in the north coastal districts of Andhra Pradesh. Farmers prioritize yield and marketability, millers focus on processing qualities, and consumers prefer grain quality and cooking attributes. RGL-2537, Swarna, and Samba Mashuri emerge as dominant varieties, though with different weightage across stakeholders. Bridging these preference gaps is essential for enhancing production efficiency, value chain integration, and consumer satisfaction.

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