



## RESEARCH PAPER

# Farmers perception towards farm university technologies of rice in Karnataka

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**Abstract :** The Zonal Agricultural Research Station, University of Agricultural Sciences, Bangaluru, has been carrying out the research on major crops like rice (*Oriza sativa* L.), finger millet (*Eleusine coracana*), sugarcane (*Saccharum officinarum*), maize (*Zea mays* L.) etc., considering the agro-climatic, location specific and need based demands of the farmers since its inception 1930s, many good agricultural practices were developed and transferred to farmers. There was need to evaluate the performance of these technologies in farmers' field from time to time. One such technology selected for the present study is, rice variety 'Thanu' (KMP-101) which was released during 2003-04 and it was compared with the local prevailing check earlier variety 'MTU-1001'. An *Ex-post-facto* survey type of research design was adopted. The research objectives of the study were to find out the perception of farmers regarding performance of this rice variety in the farmers' field regarding grain and straw yield, income generated out of it and to find out association between grain yields and social factors affecting it. The study was conducted in Mandya, Maddur and Srirangapatna taluks of Mandya district during 2009-10 and was re-tested in 2016 on pilot sample to ascertain the impact and performance of selected rice variety among the farmers. The sample size was 270 and the respondents were selected randomly and purposively from afore said taluks of Mandya district. The data were collected from the respondents by administering pre-tested, structured interview schedule. The nominal data were analyzed using Chi square test to draw the inferences. The study found that, majority of the farmers had obtained grain yield ranging from 21 to 25q/ac from 'Thanu' variety. However, this is lesser yield when compared to the check variety 'MTU-1001'. The respondents obtained more income of Rs.1850/ac from 'Thanu' variety when compared to that of check variety "MTU-1001", because of better market price, fetching additional price ranging from Rs.150 to 200/q in the market for its fine grain quality and consumer preference. The selected independent variables such as family size, land holding and education level of respondents have found to have no significant association with grain yield obtained. It implies that all the 3 variables had no influence on rice yield including the education level. The literacy had not played a key role in enhancing the grain yield level. Both illiterate and literate respondents had obtained same crop yield without much difference. Further, there is a need to evolve high yielding varieties retaining the some of its beneficial attributes of variety 'Thanu' to harness the genetic potential of the crop.

**Key Words :** Grain yield, Continued adoption, Family size, Land holdings, Technology adoption

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## INTRODUCTION

Quite often, the Indian farmers have been exposed to uncertainties as farming which is governed by vagaries of monsoon, facing many socio-economic and marketing problems (Zonal workshop proceedings, 2007). They required need based high yielding eco-friendly innovations to double the yield and income of farmers through manipulation of genetic and management practices (Status report, 2000 and Research highlights, 2005). From this back drop, the Zonal Agricultural Research Station (ZARS) Mandya, University of Agricultural Sciences (UAS), Bengaluru has been carrying out the research on major crops like rice (*Oriza sativa* L.) finger millet (*Eleusine coracana*), sugarcane (*Saccharum officinarum*), maize (*Zea mays* L.) etc., considering the agro-climatic, location specific and need based research to increase yield potential of the crops.

The earlier rice varieties were of low yielding. Thus, the farmers were looking for high yielding and fine grain for home consumption varieties such as Thanu. The salient features of this variety are, medium duration (130-135 days); medium slender grain, good rice quality less affected by stem blast and brown plant gopper; tolerant to sheath blight; grain yield ranging 65-70q/ha. This technology was transferred to farmers through UAS extension system, Karnataka State Department of Agriculture (KSDA), Indian Council of Agriculture Research (ICAR) in Mandya, Chamarajanagar, Mysore, Tumkur and Hassan districts of Karnataka (Diavadeenam and Somani, 2013). The present study

was conducted to evaluate the performance of rice variety 'Thanu' in the farmers' field as perceived by them. The variety was released by the UAS Bengaluru during 2003-04 (Rangaswamy, 2010).

The objectives of the study are; to find out the perception of farmers regarding performance of variety 'Thanu' interms of grain yield obtained and income earned in comparison with check variety 'MTU-1001'; and to find out association between grain yields and the social factors affecting it. The study was conducted in Mandya district during 2009-10 and was re-tested in 2016 on pilot basis to ascertain the impact and performance of technology in the farmers field. The UAS, Bengaluru has funded this project and wish to evaluate the performance of the technology in the farmers' field and their perception to continued adoption (Progress reports of AICRP, 2009). Considering this statement of problem, the alternative hypothesis ( $H_1$ ) were set. There would be difference in the rice yield between the two varieties 'Thanu' and 'MTU-1001'. There would be a significant association between the grain yield and the social factors of the respondents.

## MATERIAL AND METHODS

### Location of the study:

The study was conducted in Mandya district, Karnatakak state which consisted of seven taluks viz., Mandya, Maddur, Srirangapatna, K.R.Pet, Pandavapura, Malvalli and Nagamangala. Out of these, three taluks viz., Mandya, Maddur and Srirangapatana were

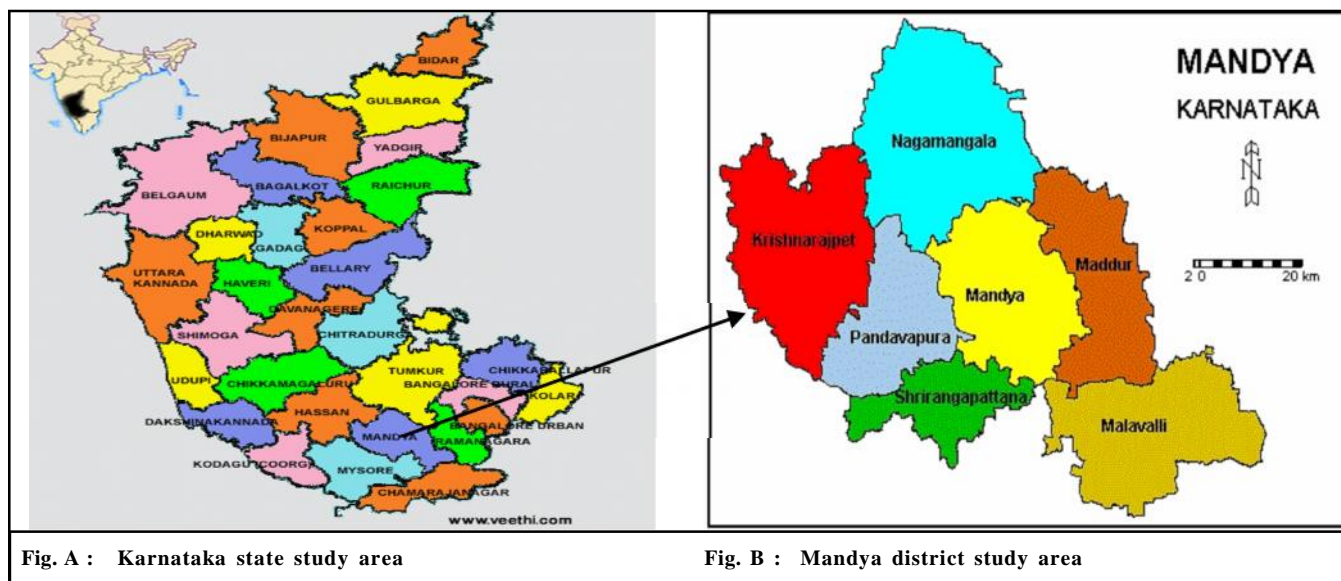


Fig. A : Karnataka state study area

Fig. B : Mandya district study area

Sr. No.	Taluk	Villages	Sample size (No)		Total
			Study group	Control group	
1.	Mandya	09	45	45	90
2.	Maddur	09	45	45	90
3.	Sriranagapatna	09	45	45	90
	Total	27	135	135	270

purposely selected for the study as there were more number of farmers had adopted the rice technologies (Fig. A and B).

### Sample size:

The farmers who had adopted the rice variety 'Thanu' and variety 'MTU-1001' in Mandya district were enlisted. A total of 270 respondents were randomly and purposely selected from all the 3 taluks of Mandya district (Table A).

### Research design:

An *Ex post facto* exploratory type of study was adopted, as the events of the phenomenon have already occurred. The instruments used for data collection were, interview schedule, participatory rural appraisal tools (transact walk, resource mapping and focus group discussions) to supplement the information (Progress reports of AICRP, 2009). A pre-tested, structured interview schedule was developed. The contents of it were framed with a logical flow including both 'close and open end' type of statements. The interview schedule was administered to the respondents by interviewing them in person in an undisturbed conditions at zero on-lookers influence. The information and data were recorded from the respondents memory and recall.

### Variables of the study:

The dependent variable of the study was 'rice yield'; this has been defined as physical quantity of grain yield obtained by the respondents in their fields and measured in quantals/acre (q/ac). The independent variables selected to find out the association were; family size, land holding and education level of respondents. The variable 'family' size was measured by categorizing into two, small and large families. The small family is defined as 2 to 4 members living under single roof *i.e.*, wife and husband with their children. The large family is one with more than 6 members living under single roof *i.e.*, wife and husband with children, their close family blood relation

kith and kin. The variable 'education' was categorized into two: illiterates and literates. The latter refers to functional literacy and number of school levels passed out. The variable 'land holding' was categorized in to two, small farmers owning land upto 2 ha and medium farmers owning 2 to 4 ha of cultivated land. The data were collected from the respondents by administering a pre-tested, structured interview schedule. The nominal data were analyzed by using statistical 'chi' square' test to find out the association between dependent and independent variables (Kumar, 2009). The other simple tools like percentage and frequency were employed to draw the inference.

Technologies selected for the study	Features
Rice variety 'Thanu'(KMP-101)	Released ZARS VC Farm, Mandya during 2003 and 2004, duration (130-135 days); grain-medium slender, good rice quality less affected by stem blast and BPH ; tolerant to sheath blight; and high grain yield range 26 to 28q/ac.
Rice variety 'MTU-1001'(Check variety )	Duration (130-to 135) days, bold grain, yield, range 26 to 28 q/ac.

## RESULTS AND DISCUSSION

The results emanated from the study are discussed as per the statement of the problem and objectives of the study. To find out the performance of the rice varieties in the farmers' field with respect to grain yield and income as perceived by them and to find out association between grain yields and social factors affecting it.

- Distribution of respondents with respect to rice grain yield obtained from variety Thanu.
- Distribution of respondents with respect to rice grain yield obtained from 'MTU-1001'
- The rice grain yield difference between varieties 'Thanu' and 'MTU-1001'
- Obtained income difference between varieties of 'Thanu' and 'MTU-1001'

– Perceived reasons of respondents to adopt or discontinue the rice variety ‘Thanu’ in comparison with variety ‘MTU-1001’

– Association between rice grain yields and the social variables; family size, land holding and education level of the respondents.

**Distribution of respondents with respect to rice grain yield obtained from variety Thanu :**

Majority of the farmers (60 %) harvested the grain yield ranging from 21-25q/ac in Mandya district. A similar yield trend was also observed in all the three taluks namely, Mandya Maddur and Srirangapatna. The minimum grain yield obtained was 15.0 q/ac and the maximum was 28.0 q/ac and the average yield was 19.50q/ ac (Table 1 and Fig. 1).

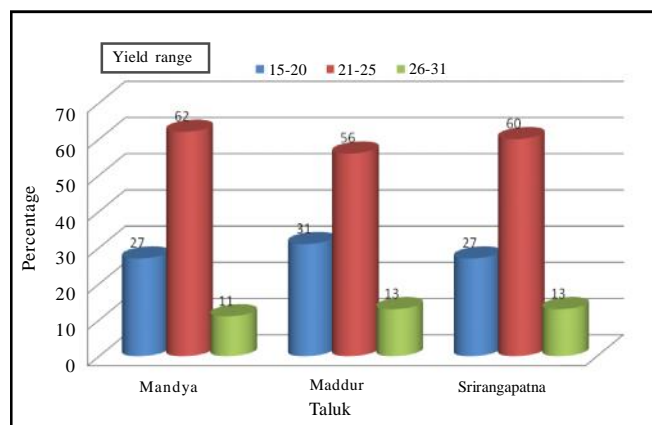


Fig. 1 : Distribution of respondents with respect to rice yield obtained from Thanu variety

**Distribution of respondents with respect to rice yield obtained from variety ‘MTU-1001’ :**

Majority of the farmers (67 %) obtained the rice grain yield ranging from 21-25q/ac in Mandya district. A similar yield trend was observed in all the three taluks Mandya Maddur and Srirangapatna. The minimum yield obtained was 18.0 q/ac and the maximum was 31.0q/ac and the average yield was 27.50q/ ac (Table 2 and Fig.2).

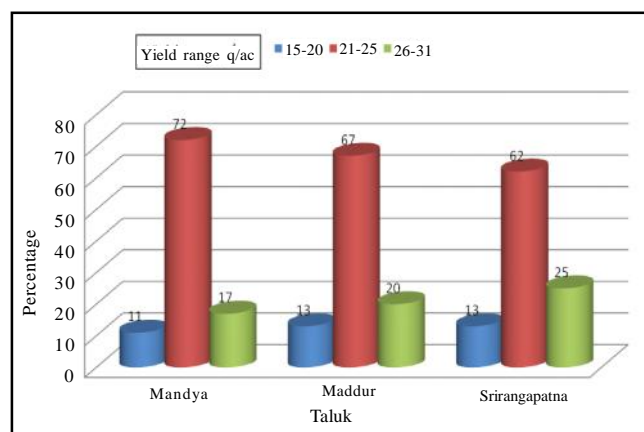


Fig. 2 : Distribution of respondents with respect to rice grain yield obtained from MTU 1001 variety

**The rice grain yield difference between varieties ‘Thanu’ and ‘MTU-1001’:**

It is observed from the Table 3 that the respondents had obtained lesser grain yield from variety ‘Thanu’ than that of ‘MTU-1001’ by 0.88 q/ac. To infer that the ‘MTU-1001’ had performed better in the farmers field

**Table 1: Distribution of respondents with respect to rice grain yield obtained from variety ‘Thanu’ (n=135)**

Yield range (qtl/ac)	Mandya		Maddur		Srirangapatna		Total	
	No	%	No	%	No	%	No	%
15-20	12	27.0	14	31.0	12	27.0	38	28.0
21-25	28	62.0	25	56.0	27	60.0	80	60.0
26-31	5	11.0	6	13.0	6	13.0	17	12.0
Total	45	100.0	45	100.0	45	100.0	135	100.0

Minimum: 15q/ac; Maximum: 28q/ac

**Table 2: Distribution of respondents with respect to rice grain yield obtained from variety ‘MTU-1001’ (n=90)**

Yield range (qtl/ac)	Mandya		Maddur		Srirangapatna		Total	
	No	%	No	%	No	%	No	%
15-20	5	11.0	6	13.0	6	13.0	17	12.0
21-25	32	72.0	30	67.0	28	62.0	90	67.0
26-31	8	17.0	9	20.0	11	25.0	28	21.0
Total	45	100.0	45	100.0	45	100.0	135	100.0

Minimum: 18 q/ac; Maximum: 31q/ac

with a margin of 88kg/ac more than that of variety Thanu (Fig. 3). However, the difference was non-significant (Table 3 and Fig. 3). The reasons could be the genetic potential of the variety as well as the management practices adopted by the farmers.

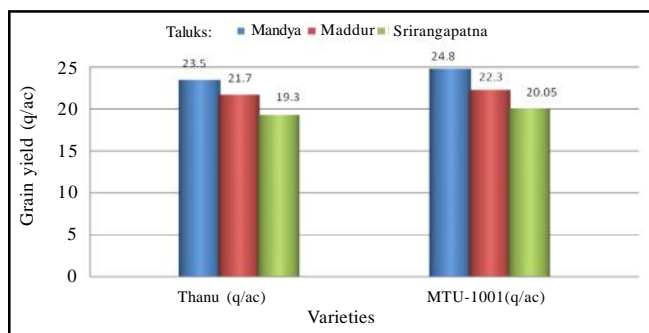


Fig. 3 : Difference of grain yield between varieties of rice 'Thanu' and 'MTU-1001'

### Obtained income difference between 'Thanu' and 'MTU-1001' varieties:

It was observed from the Table 4 that the respondents had obtained more income from variety 'Thanu' than that of 'MTU-1001' by earning Rs.1850 q/ac. However, the difference was non-significant (Table 4 and Fig. 4). The reasons could be the genetic potential of the variety as well as the management practices adopted by the farmers. The other reasons could be, better market price, fetching additional price ranging from Rs.150 to 200/q in the market for its fine grain quality and consumer preference (Table 4).

### Perceived reasons of respondents for continued adoption or discontinue the rice variety 'Thanu':

Majority of the farmers (50%) prefer to continue

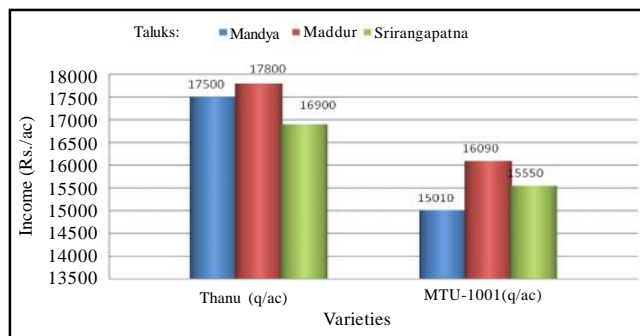


Fig. 4 : Difference of income obtained from varieties of rice 'Thanu' and 'MTU-1001'

the variety 'Thanu' followed by 'MTU-1001' because of its high yielding and desired quality attributes, Relatively more market price, better yield and grain quality, more grain yield and straw, better cooking quality, market price and straw (Table 5). However, there is a possibility to also to discontinue because it is susceptible to blast and less suitable for upland areas.

### The second objective:

*Association between rice yield and the social independent variables:*

Study of socio-economic attributes of farmers would help in reasons for adoption and rejection of technologies.

*Association between rice yield variety 'Thanu' and the family size:*

It was found that there was no significant association between cane yield and family size (Table 6). It implies that irrespective of family size, the respondents had obtained same grain yield without much difference (Chi square 4.80). The possible reasons for

Table 3 : Difference of grain yield between varieties of rice 'Thanu' and 'MTU-1001'

Taluks	'Thanu' (q/ac)	'MTU-1001' (q/ac)	Difference (q/ac)	t value
Mandya	23.50	24.80	1.30	
Maddur	21.70	22.30	0.60	0.158 NS
Srirangapatna	19.30	20.05	0.75	
Average	21.50	22.38	0.88	

NS= Non-significant association

Table 4 : Difference of income obtained from varieties of rice 'Thanu' and 'MTU-1001'

Taluks	'Thanu' (Rs./ac)	'MTU-1001' (Rs./ac)	Difference (Rs./ac)	t value
Mandya	17500	15010	2490	
Maddur	17800	16090	1710	0.169
Srirangapatna	16900	15550	1350	
Average	17400	15550	1850	

this could be the farm mechanisation which does not require big family size. The alternate hypothesis ( $H_1$ ) of association between the grain yield and family size is rejected and the Null hypothesis ( $H_0$ ) of no association is accepted.

**Association between rice yield and the land holding:**

It was found that there was no significant association between grain yield and land holding (Table 7). It implies that irrespective of land holding size, the respondents had obtained same rice yield without much difference (Chi square 2.01). The possible reasons could

be that the small farmers might have intensively undertaken the good agricultural practices and crop management compared to big farmers and it was matter of sole source of income and survival. The alternate hypothesis ( $H_1$ ) of association between the grain yield and land holding size is rejected and the Null hypothesis ( $H_0$ ) of no association is accepted.

**Association between rice yield ( variety Thanu) and education level :**

The study found that there was no significant association between rice yield and ‘education’ level (Table 8). It implies that the literacy had not played a

**Table 5 : Reasons for adoption rice var- ‘Thanu’compared with var. ‘MTU-1001’ (n=90)**

Sr. No.	Reasons for continuance	No	%
1.	Better yielder	88	98.0
2.	Better grain quality	90	100.0
3.	Relatively more market price	90	100.0
4.	Better yield and grain quality	88	98.0
5.	More grain yield and straw	76	84.0
6.	Better cooking quality, market price and straw	61	68.0
7.	Preferred for home consumption (fine grain)	78	87.0
8.	Cattle prefer the straw (palatable)	46	51.0
9.	Less chaffy of grains compared to ‘MTU-1001’	44	49.0
<b>Reasons for discontinuance</b>			
1.	Susceptible to blast	41	43.0
2.	Less suitable to uplands	44	49.0

**Table 6: Association between rice grain yield of variety ‘Thanu’and family size of the respondents (n=135)**

Family size (no)	Rice yield range (q/ac)				Chi -square value
	15-20	21-25	26-31	Total	
2-6	9 (7.0)	19 (14.0)	45 (33)	73 (54.0)	4.80 NS
7-11	5 (4.0)	11 (8.0)	46 (34.0)	62 (46.0)	
Total	14 (10.0)	30 (22.0)	91 (68.0)	135 (100.0)	

NS= Non-significant association      Figures in the parentheses indicate percentage of respondents

**Table 7 : Association between rice grain yield of variety ‘Thanu’ and land holding of the respondents (n=135)**

Land holding (ha)	Rice yield range (q/ac)				Chi-square value
	15-20	21-25	26-31	Total	
0.50 to 1.00	8 (6.0)	14 (10.0)	40 (30.0)	64 (46.0)	2.017 NS
1.01 to 2.00	6 (4.0)	16 (12.0)	51 (38.0)	71 (54.0)	
Total	14 (10.0)	30 (22.0)	91 (68.0)	135 (100.0)	

NS: Non-significant      Figures in the parentheses indicate percentage of respondents

**Table 8 : Association between rice grain yield of variety ‘Thanu’and education level of respondents (n=135)**

Education level	Rice grain yield range (q/ac)				Chi-square value
	41-45	46-50	51-55	Total	
Illiterates	5 (4.0)	8 (6.0)	14 (10.0)	27 (20.00)	4.84 NS
Literates	9 (7.0)	22 (16.0)	77 (57.0)	108 (80.00)	
Total	14 (11.0)	30 (22.0)	91 (67.0)	135 (100.0)	

NS= Non-significant association      Figures in the parentheses indicate percentage of respondents

key role in enhancing the rice yield. Both illiterates and literate respondents had obtained same rice yield without much difference (Chi square 4.89). The alternate hypothesis ( $H_1$ ) of association between the rice yield and education level is rejected and the Null hypothesis ( $H_0$ ) of no association is accepted. The possible reasons could be that for cultivation of rice it normally does not require much technical knowledge, unlike SRI (System of Rice Intensification) method, hybrid rice cultivation seed production etc. Here the genetic potentiality of the crop might have played a crucial role than that of respondents' education. The literate respondents might have used their educational knowledge in post-harvest handling and marketing activities of rice rather than production practices. The experience of the illiterate farmers could have also influenced to some extent.

### Conclusion:

The study was conducted in Mandya district during 2009-10 and was retested during 2016 on pilot sample to ascertain the perception of farmers regarding performance of farm university technologies in Mandya district of Karnataka. The differences between grain yields of two rice varieties were compared. It was found that the variety 'MTU 1001' yielded 0.88 q/ac more than that of Thanu'. Majority of the farmers obtained the grain yield ranging from 21 to 25 q/ac. Similar yield trend was observed in all the three taluks of Mandya district. In case of 'MTU-1001', majority of the farmers harvested the yield ranging from 21 to 25q/ac. Similar yield trend was observed in all the three taluks of the district. However, the respondents obtained higher profit of Rs. 1850/ac from 'Thanu' variety, compared to that of variety 'MTU 1001' because of the its higher market price.

Further, it was found that there was no significant association between grain yield and with the selected social variables; the family size, land holding and education level of the respondents. It implies that the literacy had not played a key role in enhancing the grain

yields.

### Recommendations:

The implications of the findings are, though the grain yield of rice variety 'Thanu' is relatively less compared to 'MTU-1001', the majority of the farmers were willing to continue to adopt it, as it had multiple advantages, thus, it should be promoted in large area in the Mandya and adjoining districts of Karnataka where similar agro climatic conditions exists. Further, there is a need to evolve new high yielding varieties retaining the some of the beneficial attributes of 'Thanu'. The selected social impendent variables were no significantly related to the dependent variable rice grain and yield and income. This implies that there are other social, psychological and cultural factors could be the contributing factors, those need to be explored for wider application of technologies in the recommended agro climatic zone.

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