

## Base-line survey for Tulaipanji rice production status in Uttar Dinajpur district of West Bengal, India

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### ABSTRACT

Tulaipanji, a popular aromatic rice landrace, is mostly cultivated in Uttar Dinajpur district as well as in some parts of Dakshin Dinajpur district of West Bengal, India for hundreds of years. In order to better understanding of the present status of Tulaipanji rice in North Dinajpur district, specially the crop environment, cultivation practices, grain yield, milling recovery, marketing network, socio-economic impact, etc., a base-line survey was conducted with 102 randomly selected Tulaipanji farmers in 4 blocks (viz. Raiganj, Kaliaganj, Hemtabad and Itahar) through personal interview using structured and pre-tested schedule during 2009. Among them, 25.5, 72.5 and 2.0% farmers belonged to general, O.B.C and S.C. category, respectively and the respondents had average land of 0.22 ha under Tulaipanji cultivation in each year. About 71.0% farmers used their own seeds and started their sowing operations during July with the preparation of wet seedbed (81.7%). They transplanted their seedlings during the month of August (73.6%) following random method of planting with average seedling age of 26.6 days. The chi-square test revealed that Tulaipanji growers obtained average grain yield of 2.33 t/ha, with a range between 2.04 t/ha (Itahar) and 2.57 t/ha (Kaliaganj). They had to travel about 7.9 km for milling of paddy and 87.2% of them sold their rice in nearby markets.

**Keywords:** Aromatic rice, base-line survey, processing, production

Tulaipanji is a popular aromatic rice landrace of West Bengal, which is mainly cultivated in Raiganj, Kaliaganj, Hemtabad and Itahar blocks of Uttar Dinajpur district as well as sporadically in some blocks of Dakshin Dinajpur district of the state. Major quality features of Tulaipanji are: straw colored grain, kernel length 5.0 mm, L/B ratio 2.7, medium slender kernel, elongation ratio >1.8, alkali spreading value 4.0, amylose 18.0%, protein 7.1% and medium-strong aroma (Ghosh and Ghose, 2007). With rapid adoption of modern rice varieties having high yield potentiality during last 3-4 decades, the cultivation of traditional rice varieties is being marginalized. However, the farmers of Uttar Dinajpur and Dakshin Dinajpur districts still cultivate Tulaipanji in some portion of their cultivable lands during *kharif* season mainly for domestic consumption and marketing for use as quality table rice specially during social functions and religious festivals in the region. In the context, it is necessary to examine the crop environment, cultivation practices, grain yield, milling recovery, marketing network and socio-economic impact for future up-scaling and long-term sustainability of Tulaipanji rice cultivation in native areas of West Bengal.

### MATERIALS AND METHODS

A base-line survey was conducted in four blocks (viz., Raiganj, Kaliaganj, Hemtabad and Itahar) of Uttar Dinajpur district during 2009 by a RKVY Project team of Uttar Banga Krishi Viswavidyalaya, West Bengal, India. Based on secondary information collected from block-level

Agriculture Offices, a total of 102 Tulaipanji farmers were randomly selected for the purpose. The data was collected through personal interview of Tulaipanji growers by using structured and pre-tested schedule. Descriptive statistics and Kruskal-Wallis Chi-square test (non-parametric ANOVA) following SPSS (version 7.5) were done to compare the block means in respect of different variables of the study.

### RESULTS AND DISCUSSION

#### Socio-economic status

The demographic and socio-economic status of 102 respondent farmers was analyzed and it revealed that about 25.5, 72.5 and 2.0% respondents belonged to general, O.B.C. and S.C. categories, respectively (Table 1). They cultivated Tulaipanji in 0.22 ha land with having either no or minor agricultural implements like sprayer, etc. Thus, the small and marginal farmers had an annual income of Rs. 18,547, with a range between Rs. 10,808 (Itahar) and Rs. 28,909 (Raiganj); out of which 93% came from agricultural activities. A survey based study on Kano rice value-chain system showed similar primary occupation and income of farmers in Kano state of Nigeria (Optimum Agricultural Consultants, 2007).

#### Cultivation practices

Sowing time was an important non-monetary input, which influenced the production of crop as well as the economic benefit of the farming community. About 71.0% farmers used their own seeds of Tulaipanji, while only 8.2% growers treated

their seeds before sowing as prophylactic measure against seed borne diseases (Table 1). On the contrary, a survey-based work in Jagatnarayanpur district of Orissa (Sadnagi *et al.*, 2008) revealed that most of the farmers (>96.0%) used certified seeds with known pedigree for rice seed production programme. Farmers generally started their sowing operations during July with the preparation of wet seedbed (81.7%) particularly in Raiganj and Hemtabad blocks of the district. Likewise, major (73.6%) transplanting operations were done during the month of August, which indicated that those farmers had Jute as a pre-kharif crop (*i.e.* the

preceding crop in the cropping system) with its harvesting period at middle of August. Random method of planting was generally followed in all four blocks of the study with average seedling age of 26.6 days. The farmers in Uttar Dinajpur district weeded their Tulaipanji plots manually either once (72.1%) at 27.9 days after transplanting or twice (15.1%). About 89.0% growers in the study irrigated their Tulaipanji paddy depending on distribution pattern and amount of rainfall during the cropping season. Mean grain yield in Uttar Dinajpur district was 2.33 t ha<sup>-1</sup> with significant variation between 2.04 t ha<sup>-1</sup> at Itahar and 2.57 t ha<sup>-1</sup> at Kaliaganj (Table 2).

**Table 1: Block comparison of Tulaipanji rice production system in North Dinajpur district during 2009**

Variables	Class	Block				Total (N=102)
		Raiganj (n=26)	Kaliaganj (n=26)	Hemtabad (n=27)	Itahar (n=23)	
Caste	General	57.7	11.5	11.5	21.7	25.5
	OBC	42.3	84.6	88.9	73.9	72.5
	SC	–	3.8	–	4.3	2.0
	ST	–	–	–	–	–
Agricultural implements	None	91.7	50.0	58.3	13.6	54.3
	Sprayer/duster	8.3	50.0	41.7	86.4	45.7
	Thresher/powertiller	–	–	–	–	–
	Shallow/submercible/tractor	–	–	–	–	–
Seed Source	Own	86.4	68.2	92.6	31.8	71.0
	Procured	13.6	31.8	7.4	68.2	29.0
Seedbed type	Dry	–	54.5	–	22.7	18.3
	Wet	100.0	45.5	100	77.3	81.7
Seed treatment	No	100.0	94.1	100.0	70.0	91.8
	Yes	–	5.9	–	30.0	8.2
Transplanting time	July	38.5	26.9	14.8	26.1	26.4
	August	61.5	73.1	85.2	73.9	73.6
Weeding	Once	90.9	89.5	95.7	13.6	72.1
	Twice	9.1	10.5	4.3	36.4	15.1
	Thrice	–	–	–	36.4	9.3
	Quadric	–	–	–	13.6	3.5
Irrigation	Without	–	35.0	11.1	–	11.0
	With	100.0	65.0	88.9	100.0	89.0
Rice use	Sale in market	100.0	95.5	100.0	52.2	87.2
	Use for own purpose	–	4.5	–	47.8	12.8
Seed conservation	No	100.0	31.8	25.9	52.2	51.1
	Yes	–	68.2	74.1	47.8	48.9

Note: Values are given in %

### Processing and marketing

The Tulaipanji rice growers of Uttar Dinajpur district had to travel about 7.9 km, with a range between 0.9 km (Kaliaganj) and 18.0 km (Itahar) for milling of their paddy at local indigenous or semi-modern rice mills (Table 2). Tulaipanji, a popular rice of the region, had general use as aromatic

table rice specially during social functions, festivals, etc. So, the farmers used a small portion of their rice for domestic consumption and mostly (87.2%) went for sale in markets. Similar kind of marketing of scented rice in Chhatishgarh area was reported by Marothia *et al.* (2007).

**Table 2: Analysis of Tulaipanji rice production system in Uttar Dinajpur district during 2009**

Parameter	Block				Total (N=102)	$\chi^2$
	Raiganj (n <sub>1</sub> =26)	Kaliaganj (n <sub>2</sub> =26)	Hemtabad (n <sub>3</sub> =27)	Itahar (n <sub>4</sub> =23)		
Annual income (Rs.)	28909	13557	21807	10808	18547	21.86**
Agricultural income (%)	98.0	94.0	95.0	97.0	93.0	31.68**
Land under Tulaipanji (ha)	0.24	0.22	0.22	0.19	0.22	6.38(NS)
Seedling age (days)	33.4	30.0	21.8	22.4	26.6	74.68**
Weeding time (days after transplanting)	30.5	29.5	30.0	21.6	27.9	66.6**
Yield (t ha <sup>-1</sup> )	2.13	2.57	2.53	2.04	2.33	30.14**
Distance of processing place (km)	1.0	0.9	10.1	18.0	7.9	82.73**

Note: \*\*n=number of farmers in a block, N=total number of farmers in the district under the survey work

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