



Yield Performance of Medium Duration *Sali* Rice Variety TTB 404 in Cachar District of Assam

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ABSTRACT

The predominant *kharif* rice varieties like Ranjit, Bahadur, local biroin (sticky rice) of Cachar district of Assam possess long maturity duration, which is undesirable when farmers have their mind for next season crops like potato, french bean etc. in the same piece of land. To overcome this problem, Krishi Vigyan Kendra, Cachar conducted an On Farm Trial (OFT) using medium duration rice variety TTB 404 for evaluation of its performance to fit in cropping sequence against local check Joria during 2014-15 and 2015-16. Three trials were conducted in three different locations of Cachar district during *sali* seasons. Critical inputs like seed of the said variety and recommended fertilizer were distributed to the farmers. Parameters like days to maturity, plant height, numbers of effective tillers per plant, yield (q/ha) and B: C ratio were recorded. The result revealed that the variety took about 140 d to mature, which is well fit for increasing cropping intensity in the district. Plant height was approximately 116 cm as compared to 121 cm of Joria, number of effective tillers per plant was higher (9 no), number of grains per panicle was also found higher than the local variety and thus higher yield was achieved (45.67 q/ha) as compared to control (35.58 q/ha).

Key Words: TTB 404, Cropping intensity, Duration, Maturity, Rice, Integrated nutrient management, Yield.

INTRODUCTION

In India Rice (*Oriza sativa L.*) is grown in an area of 45 Mha annually with a production of 90 MT which accounts for 45% of food grain production in the country (Singh *et al*, 2013). It is the most important grain with regard to human nutrition and caloric intake, providing more than one-fifth of the calories consumed worldwide by humans. Assam soil, topography and climate are very conducive for agriculture activity especially, for paddy cultivation. Therefore, Assam paddy cultivation shows almost six (*Ahu, Sali, Asra, Bao, Boro*, and Hill rice) agricultural classes on the basis of their time of harvest (Pathak *et al*, 2015).

In Assam, rice is cultivated in an area of 24.28 lakh ha with the production of 51.25 lakh tonnes during the year 2015-16 (Anon, 2016). In Cachar district of Barak valley zone, paddy cultivation is basis of agriculture accounting 1,07,139 ha area, of which winter paddy was predominant with 91,912

ha during 2012-13 (Anon, 2015). Along with this the district has a handsome amount of double and triple crop area (aprox.70,980 ha) in which rice is the main component of cropping system (Bhalerao, 2015). Though the predominant *kharif* rice varieties like Ranjit, Bahadur etc. have high yielding ability but it takes long time (150-155 d seed to seed) for maturity, which is undesirable when farmers have their mind for next season crops like potato, french bean etc. in the same piece of land. The main season of these varieties lies between June to October/ November at the same time the cropping season of rabi crops of the district (potato, french bean etc.) starts from mid October onwards. Therefore, farmers need a variety that can be harvested in the month of October or 15 to 20 d earlier than the existing long duration varieties. Again, unavailability of high yielding medium duration rice variety is the main concern in this area, for which farmers are still using local variety like *Joria*, *Koiyamurali*

etc. as a variety for their cropping sequence. These local varieties are low yielder with low responsive towards external inputs and prone to disease which leads to reduction in yield and income. Moreover due to unavailability of suitable local *kharif* variety, farmers are bound to grow transplanted *ahu* and after that land remains fallow till upcoming rabi season. To overcome this problem, Krishi Vigyan Kendra, Cachar conducted an on farm testing (OFT) on medium duration *sali* Rice variety TTB 404 during the year 2014-15 and 2015-16 in order to assess the yield performance of the variety as well as seeking suitable option for replacement of these local varieties and to fit in the cropping sequence. Moreover successful intervention will reduce the chances of scarifying yield by farmers due to late sowing or fallow land.

MATERIALS AND METHODS

The experiments were conducted at purposively selected three blocks namely Salchapra, Udharband and Sonai of Cachar district during the *Sali* season of 2014-15 and 2015-16. Purposive cum random technique were followed for selection of locations and beneficiaries on the basis of characters like risk bearing capacity of the farmers, existing cropping sequence of the farmers and potential area for increasing cropping intensity. Two technological options were used in this study and critical inputs of rice variety TTB 404 (Shrabani) and fertilizers were supplied to the farmers. The observations *viz.*, Plant

height (cm), days of maturity (DOM), numbers of effective tillers per plant (Number), number of grains per panicle, yield (q/ha) and benefit to cost ratio (BCR) were recorded.

RESULTS AND DISCUSSION

The data (Table 3) has shown that the evaluated variety TTB 404 was well adaptive to different region of the district and have desirable maturity duration (141.5 d) than the farmers' variety (147 d) for increasing cropping intensity in the district. The rice variety TTB 404 was of average plant height of 116.6 cm as compared to 121.14 cm of local Joria variety. It had more effective tillers (9 no) than Joria Variety (7.89 no) with higher grains per panicle (average 118.6 nos). The variety TTB 404 recorded higher yield of 45.67q/ha which was 28 per cent more over the control variety Joria (35.58 q/ha). Between these two varieties TTB 404 registered slightly higher cost benefit ratio than the Joria variety (Table 3) in the trial. During 2016-17 when this variety TTB-404 was used for conducting the front line demonstrations (FLD) under integrated nutrient management (INM) practice with addition of basal application of Zinc sulphate and Borax in two locations of the district, the results revealed that the variety TTB 404 had higher productive tiller (11.5 no) along with higher grain filling (172 no) and recorded a production of 58.8 q/ha The cost benefit ratio of the FLD was also encouraging (1:1.62) during season 2016-17 (Anony, 2017). The

Table 1. Technological Options.

Technology Option	Variety	Source of technology
TO1	Joria	Farmers' practice
TO2	TTB-404 (Shrabani)	RARS Titabor

Table 2. Characteristics of rice varieties selected for the study.

Name of the variety	Characters of the variety
TTB 404 (Shrabani)	Parentage: APMS6B/Piolee; Duration: 130-140 d; Season: Sali (Winter Rice); yield: 6.0-6.6 t/ha ; medium short duration variety suitable for double cropping with good grain quality.
Joria	Parentage: Farmers' variety; Duration: 140-150 d; Season : Sali (Winter Rice); Yield: Not documented

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Table 3. Performance of Rice varieties at farmers' Field.

Sr. No.	Parameter	Shrabani (TTB-404)			Joria		
		2014-15	2015-16	Mean	2014-15	2015-16	Mean
1.	Days to maturity (d)	142	141	141.5	145	149	147
2.	Plant height(cm)	123.3	109.6	116.6	138.67	103.6	121.14
3.	Number of grains per panicle	122	115.2	118.6	102	98.3	100.15
4.	Number of effective tillers/ plant	9.33	8.44	8.89	7.67	8.12	7.89
5.	Yield (q/ha)	47.67	43.67	45.67	36.67	34.5	35.58
6.	B: C ratio	1.51	1.42		1.5	1.3	

findings were in agreement with Banumathy *et al* (2016) and Kathiravan *et al* (2017).

Table 4. Results of FLD programme of Rice variety TTB-404 at farmers' Field during 2016-17(Average of 9 trials)

Sr. No.	Parameter	Performance of TTB-404
1.	Days to maturity (d)	142
2.	Plant height(cm)	120
3.	Number of grains/panicle	172
4.	Number of tillers/plant	11.5
5.	Yield (q/ha)	58.8
6.	B: C ratio	1.62

CONCLUSION

Rice variety TTB-404 was a medium duration with more number of productive tillers and higher grain filling which is the most important yield contributing parameter towards higher yield and B: C ratio. Hence, the farmers were satisfied with the rice variety TTB 404 cultivation. The grain quality of the variety was almost at par with high yielding long duration popular rice variety Ranjit and therefore, it fetched same commercial value and higher marketable price during the experiment. Hence, it was concluded that TTB 404 (Shrabani) is most suitable rice variety along with proper INM practice for *sali* season. As a medium duration rice variety it may be useful for increasing cropping intensity in the Cachar district and may be great alternative to the local cultivars.

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