



Research Article

ASSESSMENT OF MEDIUM DURATION HIGH YIELDING RICE VARIETIES IN DIBRUGARH DISTRICT OF ASSAM

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Abstract: The trial was carried out through on-farm testing during *sal* (*kharif*) season of 2017 in two villages of Dibrugarh district of Assam with an objective to evaluate the performance of two newly released medium duration rice varieties, CR-909 and Tripura Chikan Dhan with the recommended variety, Basundhara (check) of same duration. Results revealed that the variety, Basundhara performed similarly with that of variety CR-909 but slightly higher than Tripura Chikan Dhan in respect of yield attributes, yield and economic point of view. Both the newly introduced rice varieties may be substituted with the recommended, Basundhara variety.

Keywords: Medium duration, On-farm, Rice varieties

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Introduction

Rice is the predominant food crop of Assam occupying an area of 25.03 lakh ha where four types of rice viz., *ahu*, *sal*, *boro* and *bao* are grown. Out of the total area under rice, *sal* (*kharif*) rice covers the highest area of 18.81 lakh ha with an average productivity of 20.02 q/ha [1]. Long duration photosensitive local varieties of *sal* rice are mostly grown in Assam and only 10-15 percent area is devoted to high yielding varieties (HYV), as a result the productivity becomes low. Cultivation of long duration local varieties of rice creates problems to sow the *rabi* crops in time. If the farmers are able to harvest the *kharif* rice at least 25-30 days earlier than usual harvesting time then the next *rabi* crops could be sown in optimum time. Medium duration HYV of rice maturing about 125-135 days are important to fit in the existing cropping system followed in the state. Hence, the present study was undertaken to evaluate the performance of two pre released medium duration high yielding rice varieties along with a recommended variety of the same duration as check during *sal* (*kharif*) season on cultivators' field in Dibrugarh district of Assam.

Materials and Methods

On-farm trials were conducted under rainfed condition at seven farmers' fields during *sal* (*kharif*) season of 2017 in two villages viz., Melangial and Tengakhat under Dibrugarh district of Assam. Medium land situations were selected in all the farmers' fields and soil samples of the fields were analysed before conducting the trials. The range of analysed soil samples had pH 5.11-6.03, organic carbon 0.49-0.97 percent, available N 232.9-546.9 kg/ha, available P_2O_5 50.9-53.3 kg/ha and available K_2O 136.9-243.8 kg/ha. The treatments consisted of three varieties viz., CR-909, Tripura Chikan Dhan and Basundhara (check) were tested in randomized block design considering each farmers' field as the replication. The variety, CR-909 was developed by RRLRRS, Gerua, Assam and Tripura Chikan Dhan by ICAR, Tripura in the year 2014, while the variety, Basundhara was developed and recommended by Assam Agricultural University, Jorhat, Assam. The average grain yield of all the three varieties ranged from 35-40 q/ha. The plot size of each of the variety was 1300 m² with a total area of 3900 m² in each farmer. Twenty-five days old nursery raised seedlings of variety, CR-909 and Basundhara and 17 days old seedlings of Tripura Chikan Dhan were transplanted in puddled fields from

5-10 July, 2017 maintaining a spacing of 20 cm x 10 cm. The recommended dose of fertilizers @ 40-20-20 kg N, P_2O_5 , K_2O /ha was applied as half dose of N and full dose of P_2O_5 and K_2O as basal at the time of transplanting and remaining half dose of N was applied 25 days after transplanting. The crop was ready for harvest within 126-134 days in all the locations. The average rainfall received during the crop growing period ranged from 1189.5 to 1236.2 cm distributed in 56 to 60 rainy days.

Results and Discussions

The study revealed that among the three medium duration rice varieties, CR-909 and Basundhara attained almost similar plant height with maturity duration of 132 days [Table-1]. The Tripura Chikan Dhan produced the shortest plants and matured 8 days earlier than the other two varieties. The yield attributing characters viz., panicle length, panicles/m² and filled grains/panicle were recorded significantly higher with the check variety, Basundhara followed by CR-909 and Tripura Chikan Dhan. The differential response of tillering and other characters in the variety could be attributed to its genetic potentiality. The results are in agreement with Sarkar *et al.* (2013) [2]. and Samant *et al.* (2017) [3]. The highest grain yield was recorded with Basundhara which was at par with the variety, CR-909 but significantly higher than the variety, Tripura Chikan Dhan. The higher percentage of yield of Basundhara variety was observed than varieties CR-909 and Tripura Chikan Dhan as 1.15 percent and 6.02 percent, respectively. An analysis on economics [Table-1] revealed that check variety, Basundhara recorded the highest net return (Rs. 28,700/ha) with a benefit-cost ratio of 2.00 followed by CR-909 and Tripura Chikan Dhan. Similar trend was followed in case of monetary productivity. The results corroborate the findings of Mitra *et al.* (2014) [4] and Samant *et al.* (2015) [5].

Conclusion

Based on the study, it can be concluded that along with the recommended medium duration rice variety Basundhara, the variety CR-909 or Tripura Chikan Dhan may be cultivated considering the duration and economic benefit.

Application of research: Study on varietal performance of rice

Table-1 Growth, yield attributes, grain yield and economics of medium duration rice varieties at farmers' field

Variety	Plant height (cm)	Days to maturity	Panicle length (cm)	Panicles/m ²	Filled grains/panicle	1000 grain weight (g)	Grain yield (q/ha)	Net return (Rs./ha)	Benefit-cost ratio	Monetary productivity (Rs/ha/day)
CR-909	108	132	29.4	410	219	18.4	43.5	28,050.00	1.98	212.50
Tripura Chikan Dhan	98	124	23.0	375	213	16.8	41.5	25,450.00	1.89	205.24
Basundhara (Check)	109	132	30.2	430	223	18.5	44.0	28,700.00	2.00	217.42
SEm±	0.69	0.61	1.07	0.90	0.49	0.62	0.57	-	-	-
CD(P=0.05)	2.1	1.8	3.2	2.8	1.5	NS	1.7	-	-	-

NS = Non-significant

Research Category: Agronomy**Abbreviations:** HYV-High Yielding Variety**Acknowledgement / Funding:** Author is thankful to ICAR-Krishi Vigyan Kendra, Dibrugarh, 786 010, Assam Agricultural University, Jorhat, 785013, Assam, India***Principal Investigator or Chairperson of research:** Prof Dr C Thakuria

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Author Contributions: Sole author**Author statement:** Author read, reviewed, agreed and approved the final manuscript. Note-Author agreed that- Written informed consent was obtained from all participants prior to publish / enrolment**Study area / Sample Collection:** ICAR-Krishi Vigyan Kendra, Dibrugarh, 786 010**Cultivar / Variety / Breed name:** CR-909, Tripura Chikan Dhan, Basundhara**Conflict of Interest:** None declared**Ethical approval:** This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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