OPEN ACCESS

INTERNATIONAL JOURNAL OF GRADUATE RESEARCH AND REVIEW

Indexing & Abstracting

Open Academic Journals Index (OAJI), InfoBase Index, Cosmos, ResearchGate, CiteFactor, Scholar Stear, JourInfo, ISRA: Journal-Impact-Factor (JIF), Root Indexing etc.

Impact Factors*

IBI factor: 3

Impact factor (OAJI): 0.101

SEM-Biotech Publishing

*Kindly note that this is not the IF of Journal Citation Report (JCR)

Vol-4, Issue-2

May 2018

Research Article

On Farm Evaluation of Rice Genotypes under Rainfed Ecosystem in Central Terai of Nepal

Bisheswar P. Yadav[1]*, J. Tripathi[1], Dil R. Yadav[2], Rajendra P.Yadav[1], Rajib K. Yadav[2]

[1]Regional Agricultural Research Station, Parwanipur, Bara, Nepal
[2]National Rice Research Program, Hardinath, Dhanusha, Nepal

Abstract

Varietal experiment at farmers field trial of promising rice genotypes were tested at fatepur outreach site in Bara district with in the command area of Regional Agricultural Research Station, Parwanipur, Bara, during 2014/2015 and 2015/2016 under rainfed ecosystem in randomized complete block design with five replications in coordinated farmers' field trials composed by National Rice Research Program, Hardinath. Eight different rice genotypes were tested during the experimentation period. Some of the tested genotypes were significantly different for grain yield and farmers preferences. The genotypes IR-77721-92-2-2-1-2 and IR-83388-B-B-108-3 produced significantly higher grain yields and produced grain yield of more than 4 t/ha and these genotypes were preferred by farmers due to its high grain yield and less infestation of insect pests. The findings of the study reflect that these promising genotypes need to be further lasted in Farmers Acceptance Test (FAT) and Front Line Demonstration (FLD) for adoption in farmer's field disseminated to other locations having similar climatic conditions

Keywords: Rice genotype, on-farm trial, rainfed ecosystem.

Introduction

Rice is the major staple food crop of Nepal and it is grown in 1.36 million ha with total production and productivity of 4.29 million ton and 3.15 t/ha, respectively (MoAD 2015). About 49% rice area is under rainfed. The yield of rice in rainfed ecosystem is largely dependent on monsoon rains and it is fluctuated every year. Thus, it is important to increase the rice production in rainfed conditions to contribute in country's food security. Selection of suitable breeding materials and their adoption can be done more effectively by evaluating them under farmers' field conditions. In this study, farmers' field trials were conducted at Fattepur, Bara during two consecutive years to identify high yielding rice genotypes suitable for rainfed conditions.

Materials and Methods

Field experiments were carried out at farmers' field of Fattepur, Bara during 2014-2015. The climate of the experimental location is hot and humid summer. Promising rice genotypes obtained from National Rice Research Program, were evaluated along with Radha-4 as a check. The genotypes included in this study are given in Table 1. Nine genotypes were evaluated in a randomized complete block design with four replications. Plot size was 15 m^2 and spacing was 20 cm x 20 cm in all trials. Fertilizers were applied @ 100:30:30 N:P:K kg ha^{-1}. Full dose of phosphorus, Potash and half dose of Urea were applied at field preparation. Reaming dose of Urea was applied in two split at three and six after transplanting. Grain yield per plot was recorded and converted into t/ha after adjusting moisture at 14% moisture. Single site and combined

analyses model of ANOVA was used for data analysis using Cropstat V7.2 (IRRI 2007).

Table 1: Rice genotypes tested farmers' field trials during 2014-2015 in Bara district under rainfed conditions

S.N.	Genotype
1	Radha-4
2	APPO
3	IR-83388-B-B-95-2
4	IR77721-92-2-2-1-2
5	IR-83388-B-B-108-3
6	IR78581-12-3-3-3
7	IR79907-B-425-B-B
8	IR05N445

Results and Discussion

The on grain yield of rice genotypes tested in farmers' field trials during 2014/205 and 2015/2016 are presented in Table 2. Statistical analysis showed that all the tested genotypes were statistically significant for grain yield during both the years. The combined analysis over years showed that the genotypes IR83388-B-B-108-3 and IR77721-92-2-2-1-2 produced the highest grain yield in both years with average yield of 4.8 and 4.5 t/ha, respectively (Table 2.) Four genotypes gave the higher grain yield over the mean grain yield of all the tested genotypes. Dorward et al (2007) reported that farmers normally adapt varieties that yield more than their locally adapted cultivars and meet the preferred traits. Farmers were found positive to new varieties which yielded higher than their current existing varieties and check variety. Our present result showed agreement with previous similar reports (Prasai *et al.*, 2016; Shrestha *et al.*, 2016; Prasai *et al.*, 2017; Yadav *et al.*, 2017).

Table 2: Grain yield of rice genotypes evaluated at Farmers Field Trials in Bara district under rainfed conditions during 2014/15 and 2015/16

Genotype	Grain yield (t/ha)		
	2014	2015	Combined
Radha-4	4.2	4.4	4.3
APPO	3.4	3.3	3.35
IR-83388-B-B-95-2	3.9	3.9	3.9
IR77721-92-2-2-1-2	4.5	4.6	4.55
IR-83388-B-B-108-3	4.9	4.7	4.8
IR78581-12-3-3-3	3.2	3.5	3.35
IR79907-B-425-B-B	3.8	3.6	3.7
IR05N445	4.3	4.4	4.35
Grand Mean	4.0	4.1	4.0
CV%	5.12	5.97	5.63
LSD0.05	0.35	0.27	0.28

** Significant at 1% level of significance and ns = non-significant.

Acknowledgements

References

Dorward P, Craufurd P, Marfo K, Dogbe W, Bam R (2007). Improving participatory varietal selection processes: participatory varietal selection and the role of informal seed diffusion mechanisms for upland rice in Ghana. *Euphytica,* 155: 315-327.

Ministry of Agricultural Development (MoAD).2015. Statistical information on Nepalese agriculture 2014/15. Government of Nepal, Ministry of Agricultural Development, Agriculture-Business Promotion and Statistics Division, Statistics Section, Singh Durbar, Kathmandu, Nepal.

Prasai HK, Bhattarai R and Shrestha J (2016) Varietal Improvement of Normal Season Irrigated Rice for Eastern Terai Region of Nepal. *International Journal of Applied Sciences and Biotechnology* **4**(4): 489-497.

Prasai HK, Bhattarai R and Shrestha D (2017) Varietal Improvement of Rice for Rainfed Lowland Agro-Environment of Eastern Terai. *International Journal of Graduate Research and Review* **3**(1): 8-12.

Shrestha A, Sadashankar A, Gupta G, Adhikary DBB (2016) Evaluation of Drought Tolerant Rice Genotype in Mid Hills of Nepal. *International Journal of Graduate Research and Review* **2**(4): 73-76.

Yadav DR, Yadav BP, Yadav RK, Chaudhary B, Tiwari DN (2017) Participatory Evaluation of Rice Genotypes under Irrigated Ecosystem in Mid-Eastern Terai of Nepal. *International Journal of Graduate Research and Review* **3**(4): 77-81.

IRRI. (2007) Cropstat for Windows, version 7.2.3. Los Banos, Philippines.