



Research Article

EFFECT OF ON-FARM TRIALS IN POPULARIZATION OF RICE VARIETY NDLR-7 (NANDYAL SONA) IN CHITTOOR DISTRICT OF ANDHRA PRADESH

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Abstract: The Rice crop is grown in 43934 ha in Chittoor district of Andhra Pradesh during *Kharif* and *Rabi*. The traditional medium slender grain cultivar BPT-5204 is most popularly grown variety during *Kharif* and occupies 30-40% of area in the district, which is susceptible to BPH and blast resulting in low yields and low net returns. Hence on farm trials were conducted during 2012-13, 2013-14 & 2014-15 with objective to assess the performance of new rice variety NDLR-7 which is medium slender short duration (130-135d) variety with tolerance to BPH and blast. During all the three years maximum number of BPH/sample was very low in NDLR-7 than BPT 5204 and maximum collections were recorded in November followed by October month. During all the years the variety recorded 6.1t/ha with average net returns of Rs.76,808/- per ha where as BPT-5204 recorded 5.83t/ha with average net returns of Rs.68,542/ha. Because of its high yield, pest tolerance and good cooking quality it is widely accepted by farmers through horizontal spread of technology. Due to extension activities of KVK, Kalikiri area under NDLR-7 has been increased from 80ha in 2013-14 to 2000 ha in 2016-17 owing to its tolerance to BPH, fine grain and high market price and first choice of farmers, millers and traders.

Keywords: Rice, BPH, Assessment, NDLR-7

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Introduction

Rice (*Oryza sativa* L.) is major staple food crop grown in Andhra Pradesh being cultivated in 22.11 lakhs ha with average productivity of 3350 kg/ha. Rice cultivar BPT-5204 is one of the most popular cultivars being cultivated in Rayalaseema region of Andhra Pradesh and popularly known as Samba mashuri/Kurnool sona which is medium slender fine grain variety and having high market value and consumer acceptability. Due to continuous cultivation of this variety over three decades it has become susceptible to pest and diseases in general and in particular susceptible to BPH and blast, which are most devastating pests of rice. Due to its susceptibility to BPH and blast, BPT 5204 cultivation accrued in low yields and low net returns to the farmers. To overcome this, assessment of pre released rice cultivar NDLR-7 (Nandyal sona) which has tolerance to BPH and blast and with good cooking quality was conducted in farmers' field conditions with objective to assess its performance in Chittoor district of Andhra Pradesh.

Materials and Methods

Assessment of performance of rice variety NDLR-7 were conducted through on-farm trials in western mandals of Chittoor district during 2012-13, 2013-14 and 2014-15 during Kharif season by ICAR-Krishi Vigyan Kendra, Kalikiri. Each OFT plot was in 0.2 ha. The assessment was conducted to study its performance in terms of tolerance to BPH, which is major pest during kharif and to assess yield potential and net returns. Existing farmers practice is growing of traditional variety BPT-5204. Trial was conducted in 05 locations every year during 2012 -13 to 2014-15. Apart from on farm trial, trainings also imparted to the farmers on improved variety and good agricultural practices in rice crop. During three years percentage of pest incidence (BPH) per sample was recorded apart from yield data and net returns from assessment plots and control plot separately.

Statistical Analysis

Collected data during three years is analyzed using appropriate statistical tools viz. mean, standard deviation, repeated measures mixed ANOVA for pooled analysis of three years data and the results were concluded at the respective levels of significances.

Results and Discussion

From the results of [Table-1] it was revealed that presence of BPH per sample was low in NDLR- 7 in all three successive years of observation compare to BPT 5204. During all three years BPH incidence was high in the months of October and November. In NDLR-7 mean per sample is low when compared to BPT 5204 in all the months of observation. This result are in agree with the findings of Prashanth et al (2012) who reported BPH incidence was high in October and November months.

Table-1 Year wise incidence of BPH between NDLR 7 and BPT 5204 varieties

Year	Month	BPH/hill	
		NDLR-7	BPT 5204
2012-13	August	3.0	5.0
	September	6.0	10.0
	October	13.0	26.0
	November	10.0	28.0
2013-14	August	--	--
	September	3.75	10.25
	October	8.00	15.00
	November	9.00	18.00
2014-15	August	2.25	3.50
	September	3.25	6.00
	October	8.00	13.25
	November	9.00	23.75

Table-2 Performance of NDLR-7 under OFTs of Krishi Vigyan Kendra, Kalikiri.

Year	No. of locations	Mean Yield (Kg/ha)		SD		% increase over check
		NDLR-7	BPT-5204	NDLR-7	BPT-5204	
2012-13	05	5650	5220	100	90.55	8.1
2013-14	05	6960	6645	185	251.84	4.7
2014-15	05	5825	5650	156.76	231.84	3.0
Average		6144	5839			5.2

From [Table-2] it was revealed that yield performance of NDLR-7 was 8.1 percent higher to farmers practice (5223 kg/ha) during 2012-13, which is high during all the three years and recorded 3.0 percent higher yield during 2014-15 compare to farmers practice (5650 kg/ha). Evaluation of economics clearly revealed that net return from the recommended variety was substantially higher than farmers practice in all the years. Net returns from recommended variety was observed to be Rs.79075 per ha in comparison to farmers variety (Rs.73385/-ha) during 2013-14 which is Rs.5690/-ha higher than farmers choice.

Pooled data analysis for yield using repeated measures of ANOVA

Source	F-Value	P- Value
Years	128.70**	0.000
Years x treatments	1.017NS	0.384
Treatments	41.644	0.000

** Significant at 1% level

Productivity of NDLR-7 under OFTs vis-à-vis Chittoor district average productivity of rice crop

Year	Yield (kg/ha)	
	OFTs	District Average
2012-13	5648	3125
2013-14	6960	3165
2014-15	5825	3399
	6144	3229

Source: O/o of Joint Director of Agriculture, Chittoor

Average net returns for three years were Rs.76808/-ha in recommended variety, which is Rs.8356/- higher than farmers practice. These benefits can be attributed owing to its tolerance to BPH and blast incidence, fine grain, cooking quality and higher market price in the market and technological interventions provided during on farm trials. The benefit cost ratio of NDLR-7 was higher (2.2) than traditional variety (2.06). Thus, favorable net returns and higher market price and tolerance to BPH of the assessed variety convinced many farmers in real time farming condition. Similar findings were reported by Mishra et al (2007 and 2012) in onion and cauliflower. Overall findings of the assessment study clearly stating that convincing of farmer in real time condition would result in faster adoption of technology. At present the variety is grown in 2000 ha of area in Chittoor district of Andhra Pradesh through horizontal spread. Seed spread of newly identified varieties through participatory approach has earlier been reported by Najeeb et al.2018 and Witcombe and Virk 2001.

Table-3 Year wise economic evaluation of rice varieties NDLR-7 and BPT-5204

Year	Net Income (Rs/ha)		B.C.Ratio	
	NDLR-7	BPT-5204	NDLR-7	BPT-5204
2012-13	72600	63673	2.21	2.0
2013-14	79075	73385	2.3	2.1
2014-15	78750	68300	2.1	1.9
Avg.	76808	68452	2.2	2.06

The assessment could convince on account of its yield, tolerance to pest and market price. These innovative practices showed solving the farmers' problems, decision making and ability to modify their farming practices.

Impact of on farm trial

Because of its high net returns fine grain, cooking quality, market price and tolerance to BPH it has wider acceptability among farming community. The area under NDLR-7 has been increased from 80 ha during 2013-14 to 2000 ha in 2016-17.

Conclusion

BPH is a major pest of rice growing areas in Chittoor district of Andhra Pradesh can be well managed by following improved tolerant variety with good management practices at farmers' field level. Before its release during 2016-17

more no. of farmers adopted this variety by observing the impact of variety during on farm trials and adoption of this variety is in increasing scenario. Further research can be done to make this variety resistant to BPH which help farmers to accrue benefits of this variety.

Application of research: Study of Popularization of Rice Variety NDLR-7

Research Category: Crop Science

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Study area / Sample Collection: Western mandals of Chittoor district

Cultivar / Variety name: Rice (*Oryza sativa* L.) - BPT-5204, NDLR-7

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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