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THE YIELD PERFORMANCE OF HYBRID RICE (DRRH-3) IN AGENCY AREA OF RAMPACHODAVARM, A.P.

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ABSTRACT
The Hybrid rice DRRH-3 recorded higher plant height (90 cm), effective tillers hill -1 (21.5), Length of panicle (24.1 cm), grains panicle -1 (248) and test weight (23.65 g) than the local check (MTU-1001). The same also recorded grain yield 59.5 q ha -1 which is 67 % higher yield than local check with harvest index of 36.2 % over the years of study. In spite of increase in yield of improved technology the technological gap, extension gap and technology index existed which was 8 q ha -1 , 12.3 q ha -1 and 23.76 % respectively. The improved technology of hybrid rice gave higher gross return of Rs. 74500 ha -1 with a benefit cost ratio of 3:1 and additional net return of Rs. 23000 ha -1 as compared to local check. Hence the existing MTU-1001 can be replaced by Hybrid rice DRRH-3 since it fits to the existing farming situation for higher productivity and income.

KEY WORDS: Extension gap, FLD, Hybrid rice, Technology gap, Technology index.

INTRODUCTION
Rice (Oryza sativa L.) is one of the world’s most important food crops and a primary source of food for more than half of the world population. More than 90% of rice produced and consumed in Asia. It is planted in about 163 million ha annually (FAO, 2013) of the worlds cultivated land (Degenkolbe et al., 2013). Among the rice growing countries in the world, India has the largest area under rice crop (about 42.5 million ha, FAO 2013) and ranks second in production next to China. Rice contributes 43 per cent of total food grain production and 46 percent of total cereal production in India. By conduction of on farm trails on farmer’s field there was significant increase in knowledge level of the farmers and majority of farmer’s showed high level of satisfaction about demonstrated technologies (Raj et al., 2014). Keeping in view such problems and after detailed survey the KVK, Pandirimamidi made an attempt with an objective to substitute existing variety in medium land situation with a newly released promising Paddy hybrid DRRH-3. Therefore, it was considered important to evaluate the impact of on farm trails on yield parameters and economics of rice variety for its suitability in the existing farming situation for higher productivity and income in the adopted villages of KVK, Pandirimamidi.

MATERIALS & METHODS
The study was carried out through on farm testing during kharif season of 2012 and 2013 in two adopted villages of East Godavari district in Andhra Pradesh. Twenty farmers each having 0.4 hectares of land cultivated the hybrid rice DRRH-3 with recommended package of practices. They were supplied with seed and fertilizers. Besides farmers practice of one old HYV MTU-1001 was selected as local check. The soil of the study area was moderately alkaline in reaction (pH:6.5-7.4), loam in texture with high organic carbon content (0.76-0.78 %), high in nitrogen (480-485 kg ha -1 ), low in phosphorus (9.0-10 kg ha -1 ) and medium in potassium (145-178 kg ha -1 ) content. The crops were transplanted during 2nd week of July and harvested during 4th week of November. Observations on different growth and yield parameters were taken and economic analysis was done by calculating cost of cultivation, gross return, net return and B:C ratio. Final crop yield (grain and straw) were recorded and the gross return were calculated on the basis of prevailing market price of the produce. Harvest index is the relationship between economic yield and biological yield (Gardner et al., 1985).

It was calculated by using the following formula

\[ \text{HI} = \frac{\text{Economic yield}}{\text{Biological yield}} \]

For the introduction of the technology, different extension approaches through regular field visit and interpersonal communication were made by the scientists of Krishi Vigyan Kendra, Pandirimamidi. Trainings on farmers and farm women were conducted for the awareness among the farmers and field days were celebrated for the horizontal spread of technology. Also leaflets and pamphlet on improved package of practices on rice cultivation were distributed among the farmers in the villages. Further study on technology gap, extension gap and technology index were calculated by the formula as suggested by Samui et al.(2000).

Technology gap = Potential yield - Demonstration yield
Extension gap = Demonstration yield - Farmers yield
Technology index (%) = \( \frac{\text{Technology gap}}{\text{Potential yield}} \times 100 \)

Tabular analysis involving simple statistical tools like mean was done by standard formula to analyze the data and draw conclusions and implications.

Details of technology
The hybrid rice “DRRH-3” was released from DRR in 2009, Hyderabad, by as a suitable for the States of Madhya Pradesh, Orissa, Uttar Pradesh, Gu¿arat and Andhra Pradesh under irrigated transplanted conditions. Medium duration - 131 days.

a) Plant height: Semi tall (98-102 cm), b) Distinguishing morphological Characters are Erect plant type, Erect, broad and long flag leaf with semi tall stature, strong culm, long panicles with medium slender grains and white apiculus colour. Plant type: Erect, No. of tillers/plants: 15-18, No. of panicles/sq.m: 280-295, Days to 50% flowering: 101-103. Resistant to neck blast and moderately resistant to Leaf blast, rice tungro, brown spot diseases and tolerance to white backed plant.
hopper. Keeping all these in view the hybrid “DRRH-3” has been recommended for cultivation in Andhra Pradesh

Technology transferred
For varietal introduction, different extension approaches were made. Interested farmers were supplied with truthful label seeds of DRRH-3 by KVK, Pandiripalem. The hybrid DRRH-3 could successfully out yield all other HYV varieties and recorded eye catching higher yield in medium lands. During kharif 2012 &13, the area under hybrid DRRH-3 expanded horizontally to 40 hectares from a mere 48 hectares during first year 2012 of introduction and adopted by 90 farmers in 20 villages. Due to efforts of KVK, scientists field visit, interpersonal communication and individual efforts of the farmers, the hybrid DRRH-3 could spread to 100 hectares of the district

RESULTS AND DISCUSSION

Yield: Results of 20 on farm trials conducted during kharif 2012 and 2013 in 8 hectares in farmers field of two villages indicated that the improved practice of hybrid hybrid DRRH-3 (Table 1) recorded grain yield 59.50 q ha⁻¹ which is 67.00 % higher yield than local check (MTU-1001). This might be due to the production of higher number of effective tillers plant⁻¹ and higher number of grains panicle⁻¹ which was in conformity with Mondal et al.(2003). This corroborates the findings of DRRH-3 are superior over MTU-1001. Thus the OFT might have a positive impact on farming community in the district over local check. Similar results were also reported by Mondal et al. (2005) in rice crops.

Table 1: Productivity, Technology gap, Extension gap and Technology index in Paddy (DRRH-3) under on farm trails

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>Area (ha)</th>
<th>No of farmers</th>
<th>Yield (q ha⁻¹)</th>
<th>Improved technology</th>
<th>Technology gap Local check (%)</th>
<th>Yield (q ha⁻¹)</th>
<th>Improved technology</th>
<th>Technology gap Local check (%)</th>
<th>Technology index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>4</td>
<td>10</td>
<td>65.00</td>
<td>60.00</td>
<td>35.50</td>
<td>69.01</td>
<td>05</td>
<td>65.00</td>
<td>36.00</td>
<td>11</td>
</tr>
<tr>
<td>2013</td>
<td>4</td>
<td>10</td>
<td>65.00</td>
<td>59.00</td>
<td>35.50</td>
<td>65.00</td>
<td>11</td>
<td>65.00</td>
<td>59.00</td>
<td>23.00</td>
</tr>
<tr>
<td>Mean</td>
<td>4</td>
<td>10</td>
<td>65.00</td>
<td>59.50</td>
<td>35.75</td>
<td>67.00</td>
<td>8</td>
<td>65.00</td>
<td>59.50</td>
<td>23.75</td>
</tr>
</tbody>
</table>

Table 2: Cost of cultivation, Gross return, Net return and B:C ratio as affected by on farm trials

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost of cultivation (Rs ha⁻¹)</th>
<th>Gross return (Rs ha⁻¹)</th>
<th>Net return (Rs ha⁻¹)</th>
<th>B:C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demo</td>
<td>Check</td>
<td>Demo</td>
<td>Check</td>
<td>Demo Check</td>
</tr>
<tr>
<td>2012</td>
<td>15000/-</td>
<td>20000/-</td>
<td>75300/-</td>
<td>60300/-</td>
</tr>
<tr>
<td>2013</td>
<td>15000/-</td>
<td>20000/-</td>
<td>73700/-</td>
<td>58700/-</td>
</tr>
<tr>
<td>Mean</td>
<td>15000/-</td>
<td>20000/-</td>
<td>74500/-</td>
<td>59500/-</td>
</tr>
</tbody>
</table>

CONCLUSION

Thus, the cultivation of hybrid rice (DRRH-3) with improved technologies has been found more productive and grain yield might be increased up to 67.00 per cent. Technology and extension gap extended which can be bridges by popularity package of practices with emphasis of hybrid. Replacement of MTU-1001 with newly released hybrid will increase the production and net income. The existing MTU-1001 can be replaced with hybrid DRRH-3 because of higher productivity and income. Hybrid rice DRRH-3 was found to be suitable since it fits well to the existing farming situation and also it had been appreciated by the farmers.

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