Reaping Higher Yields in Rice through Integrated Crop Management practices

Harish Shenoy*

Dept. of Agronomy, Livestock Research and Information Centre (Amrithmahal), (Karnataka Veterinary Animal and Fisheries Sciences University) Konehalli Tiptur, Karnataka state (572 201), India

How to cite this article?

Abstract

Adoption of integrated crop management practices in rice can improve the yields substantially. Demonstrations conducted in the farmers field of selected cluster villages of coastal Karnataka for a period of two years indicated that the adoption of integrated crop management practices in rice recorded an yield of 53.6 q/ha compared to farmers practice (40.95 q/ha) an increase by 31.6 % over a period of two years. There was additional net returns gain by Rs. 24316/- in demonstration plots compared to check.

Background Information

Rice is an important food crop of the Dakshina Kannada District of coastal Karnataka state grown on an area of 28000 ha (Net area, 2015-16) The average yield of paddy is 3500 kg/ha which is less compared to other districts of the state. Factors like acid soils, leaching of nutrients due to heavy rains, non-adoption of scientific crop management practices like pest management and nutrient management are major constraints for enhancing production and productivity of paddy. Decline in yield and high cost of inputs make paddy cultivation unviable. The soils of the district represented by cluster villages indicated that soils were mainly acidic with pH being 5.59. Among major nutrients, Nitrogen was deficient, while available phosphorus and Potassium were found to be medium. Both calcium and magnesium were deficient in the soils before interventions were planned and among micro nutrients Zn was limiting leading to poor crop health and higher incidence of pests and diseases resulting in low yield.

Intervention/Institution Involvement

CAR- Krishi Vigyan Kendra, Dakshina Kannada organized Front Line Demonstrations (FLDs) under farmer participatory mode in 04 cluster villages in the district on an area of 8.0 ha. The technologies demonstrated included Integrated crop management practices in rice comprising seed treatment, improved variety, soil test based fertilizer application, adoption of Integrated Pest Management, application of micronutrients like Zn and Boron, along with bio fertilizers like azotospirillum and phosphorus solubalising bacteria. For acid soil management soil ameliorants like lime were applied to the paddy field @ 5.0g/ha as basal dose at the time of land preparation. Organic sources like farmyard manure were applied @5.0 t/ha. Recommended dose of fertilizers were applied @ 60:30:60 NPK kg/ha. Micronutrients
like zinc sulphate was applied @ 20.0 kg/ha. Before implementation of the Frontline demonstrations, trainings were conducted for the farmers in the cluster villages on scientific crop management practices to highlight the potential of paddy as an income generating crop. Method demonstration of salt water treatment was done to highlight selection of good and bold seeds for sowing followed by seed treatment with fungicide to prevent diseases. Regular follow-up field visits were made by scientists. The demonstration concluded with celebration of Field day in the cluster villages with 50 farmer participants.

Yield and Output Details

The results indicated that the average yield recorded in demonstration plots over a period of two years was 53.6 q/ha compared to check plot which recorded 40.95 q/ha. The increase in the yield was 31.6% in demo plots compared to check plots over a period of two years. The yield increase was attributed effective adoption of improved technologies by farmers in demo plots. The average net returns in the demo plots was Rs. 54147/- per ha compared to control plot (Rs. 29831/- per ha) The farmers were benefitted with increase in monetary returns by Rs. 24316/- per ha.

Outcomes

The front-line demonstrations conducted in the farmers field revealed that integrated crop management practices adopted in rice performed better than traditional method of rice cultivation. Economic viability has potential for up-scaling of production. The results paved the way for large scale promotion of technologies for profitable and sustainable rice farming in the cluster and surrounding villages with the involvement of development departments during Krishi Abhiyana (kharif campaign) during 2016-17 and 2017-18.

Acknowledgement

Author is thankful to ICAR- Krishi Vigyan Kendra, Dakshina Kannada District, Mangaluru-575002 Karnataka State, Karnataka Veterinary Animal and Fisheries Sciences University, Bidar-575419, Karnataka, India and ICAR- Agricultural Technology Application Research Institute, Zone-XI, Bengaluru-560024, Karnataka. India.

Table 1: Economics of integrated crop management in rice

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2015-16</td>
<td>44.20</td>
<td>40625</td>
<td>66320</td>
<td>25695</td>
<td>1.63</td>
<td>36.70</td>
<td>36875</td>
<td>53936</td>
<td>17061</td>
<td>1.46</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2016-17</td>
<td>63.00</td>
<td>47750</td>
<td>115487</td>
<td>82600</td>
<td>2.41</td>
<td>45.20</td>
<td>40000</td>
<td>82600</td>
<td>42600</td>
<td>2.06</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>53.6</td>
<td>44187</td>
<td>90903</td>
<td>54147</td>
<td>2.02</td>
<td>40.95</td>
<td>38437</td>
<td>68268</td>
<td>29831</td>
<td>1.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Field day celebration in Tenkamijaru village of Mangaluru taluk kharif 2016

Figure 2: Author with farmer Wilfred Norohna at Rice Demonstration field at Tenkamijaru village during kharif 2016