CONSTRUCTNS PERCEIVED BY THE FARMERS IN ADOPTION OF PADDY STRAW MANAGEMENT TECHNIQUES IN HARYANA

PREETI SIHAN1, ASHOK KUMAR*, NEELAM KUMAR2, RAJESH KUMAR3 AND ANIL KUMAR4

1Department of Extension Education, 2Department of Agricultural Economics, 3Directorate of Extension Education, 4KVK Yamuna Nagar
CCS Haryana Agricultural University, Hisar-125 004 (Haryana), India
*(e-mail : growerashok@gmail.com)
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SUMMARY

Rice straw is a cheap source of fodder for animals like buffaloes, cattle, sheep and goats etc. Rice farming produces several by-products, such as rice straws and rice chaffs, which are suitable feed materials for dairy farming. Fodder plays an important role in economizing the cost of production of livestock products especially of milk. Feeds and fodder constitute about 60-70 percent of total cost in dairy farming. The present research was conducted in Sonipat and Karnal districts of Haryana state. Two blocks were selected randomly from each selected district i.e. Sonipat, Rai, Karnal and Nilokheri. Thirty farmers from each block were selected randomly for the research, possessing a total sample of 120 respondents. The research revealed that majority of the farmers were associated to middle age category and majority of the farmers were educated up to matriculation. Majority were engaged in farming used both submersible pump and canal as source of irrigation. Most of the farmers had medium socio-economic status, farm implements, mass media exposure, and extension contact. A high percentage of respondents expressed other constraints like high cost of labour about paddy straw management techniques and high transport cost. Among the technical guidance constraints, required machinery is not available in the village or on rent for PSMT was at the top followed by lack of demonstration and trial of latest implement for straw management. As regarding marketing constraints i.e. ‘low price of paddy straw’ were very serious with rank I and faced by 88.33 per cent of the respondents followed by lack of guidance for proper marketing’, ‘lack of transportation facility’ and ‘lack of storage facility’ with rank II, III and IV respectively.

Key words : Constraints, machinery, cost, straw management, labour cost

India is the second largest producer of rice after China and has an area of over about 43.78 million ha and production of 118.43 million tonnes with productivity of 2705 kg ha-1 and approximately 500 million tonnes of paddy straw is generated annually (Anonymous, 2019). West Bengal, Uttar Pradesh, Punjab, Andhra Pradesh, Odisha, Telangana, Tamil Nadu, Chhattisgarh, Bihar, Assam, Haryana, Madhya Pradesh are the major states in rice production (Agricultural statistics at a glance, 2020). Whereas in case of crop residue production, Uttar Pradesh (60 Mt) is ranked as highest producer of crop residue followed by Punjab (51 Mt) and Maharashtra (46 Mt) (Anonymous, 2019). Rice straw is a cheap source of fodder for animals like buffaloes, cattle, sheep and goats etc. Fodder plays an important role in economizing the cost of production of livestock products especially of milk. Feeds and fodder constitute about 60-70 percent of total cost in dairy farming (Grover & Kumar, 2012). Rice farming produces several by-products, such as rice straws and rice chaffs, which are suitable feed materials for dairy farming. Generally, crop residues are the materials which are left in an agricultural field after the crop harvested. These residues involve stalks, stems, leaves and seed pods. The huge quantity of paddy straw after the combine harvesting of paddy has to be managed in 15-20 days to plant next succeeding wheat crop (Bhuvaneshwari, 2019). Straw is the only organic material available in abundance after the harvest of the rice crop (Muliarta, 2019). Traditionally, straw was seen as a versatile by-product of rice cultivation because it was used in many ways including fodder for livestock and as a building material. However, the increase in productivity and area under cultivation of rice has led to a huge production of rice straw (Malik et al. 2015). Moreover, mechanization decreased the animal dependency and hence the feed requirement. Paddy straw can be managed by composting, straw as a ruminant fodder, incorporated in the soil, gasification, bailing, mushroom farming, production of bio-fuel, recycling in soil, packing material and bio-char production (Pathak et al., 2010). Conservation
agriculture also provides a good alternative in utilising these abundant paddy straw through the use of different implements e.g. rotavators, happy seeders, paddy straw chopper, zero-till-drills, etc. for better soil health, increasing productivity, reducing pollution and enhancing sustainability and resilience on agriculture (Haysa et al., 2005). Haryana is the leading paddy producing state of India. Paddy is being cultivated in an area of about 1.35 million ha and having a production of 4.14 million tonnes (Anonymous, 2019). Ambala, Yamunanagar, Kurukshetra, Karnal, Sonipat, Kaithal, Panipat, Jind and Bhiwani are the major paddy-growing districts of the state (State Statistical Abstract of Haryana, 2019). However, the cultivation of high yielding varieties of paddy has helped in ensuring food security in the state but at the same time has resulted in production of huge quantities of crop residues. It is also generating around 12 million tonnes of paddy straw in the state. Keeping in view the above facts, the study was conducted.

METHODOLOGY

The present study was conducted in Haryana state. Two districts viz. Sonipat and Karnal were selected purposively because both the districts were having large rice cultivated area and near to National Capital Region (NCR). Two blocks were selected randomly from these districts, namely, Sonipat and Rai blocks were selected from Sonipat district and Karnal and Nilokheri blocks were selected from Karnal district. Two villages were selected randomly from each selected block. Thus, four villages, namely, Chhatera, Bindrholi and Uldepur, Zahiri were selected from Rai and Sonipat blocks. Whereas, Sultanpur, Naraina and Kunjpura, Mohidinpur villages were selected from Nilokheri and Karnal blocks, respectively. From each selected village, 15 farmers were selected through simple random sampling technique. Thus, a total number of 120 farmers were interviewed for the present study (Fig. 1).

Constraints faced by farmers

Constraints can be described as any condition or situation which impede, restrict or limit the adoption of any practices or activity. Eleven important independent variables, namely, age, education, socio-economic status, land holding, farm Implements, mass media exposure, extension contact, irrigation facilities, risk orientation, cropping system, soil health card and dependent variables, namely, knowledge, adoption and constraints perceived by the farmers in adoption of paddy straw management techniques were selected for the research. A schedule was developed to measure the constraints. The responses of farmers were obtained on a three-point continuum scale as ‘very serious’ ‘serious’ and ‘not so serious’ and weightage were given as 3, 2 and 1, respectively. Aggregate total weightage score was calculated for each statement about constraint separately and on the basis of calculated score, total weighted score and weighted mean scores were obtained. Constraints were ranked from high to low based on weighted mean scores.

RESULTS AND DISCUSSION

In the light of the objectives of the study, it was imperative to determine the constraints encountered by respondents in using PSMT. To measure the constraints, a schedule of different observations was developed.

1. Constraints related to production
2. Constraints related to economics
3. Constraints related to technical guidance
4. Constraints related to marketing

1. Constraints related to paddy production

Table 1 illustrates that among the constraints related to production, namely ‘field preparation’ ranked as first constraint with weighted mean score (1.84) followed by ‘sowing of crops’ (1.78), ‘fertilizers application’ (1.54), ‘weed/insect/pest control’ (1.51), ‘reduced tillage greatly increases weed pressure’ (1.49), ‘irrigation application’ (1.48), ‘feeding of rice straw reduces milk yield’ (0.98), and ‘paddy straw is not palatable to milch animals’ (0.89) with ranks II, III, IV, V, VI, VII and VIII, respectively.

2. Constraints related to economics of paddy cultivation

It was revealed from Table 2 that among constraints related to economics, ‘high cost of machinery used in management practices’ ranked as major constraint with highest mean score of 1.89 (rank I), followed by ‘high cost of labour’ (1.72), ‘high transport cost’ (1.55), ‘more labour requirement’ (1.41), ‘unavailability of
economically viable solutions for crop straw management (1.38) and ‘ex-situ residue management is still not an economically viable option’ (1.22), ‘incorporation of straw is perceived to be too costly’ (1.12) with ranks II, III, IV, V and VI respectively.

3. Constraints related to technical guidance in paddy cultivation

The data in table 3 show that among the technical guidance constraints, ‘required machinery is not available in the village or on rent’ was very serious constraint perceived by the farmers ranked as first with mean score (1.84) followed by ‘lack of demonstration and trial of latest implement for straw management’ (1.72), ‘lack of knowledge about proper utilisation’ (1.69), ‘non availability of suitable straw management’ (1.70), ‘risks associated with new technologies (insurability, performance, rate of return)’ (1.55), ‘lack of technical guidance for insect/pest/weed control’ (0.67) and ‘lack of awareness about govt. scheme for paddy straw management’ (0.60) with ranks II, III, IV, V and VI respectively.

4. Constraints related to marketing of paddy

It was seen from Table 4 that constraints related to marketing, namely, ‘low price of paddy straw’ ranked first with 1.88 weighted mean score followed by ‘lack of guidance for proper marketing’ and ‘lack of transportation facility’ ranked II and III with 1.79 and 1.72 mean score followed by ‘lack of storage facility’, ‘distance location of industry from village for marketing’ were ranked IV and V with 1.45 and 1.32 mean score, respectively.

CONCLUSION

It was observed from the study that machinery used in management practices at local level is costly, further, majority of the respondents expressed the field preparation and sowing of crops a costly affair. A high percentage of respondents expressed other constraints like high cost of labour about paddy straw management techniques and high transport cost. Among the technical guidance constraints, required machinery is not available in the village or on rent for PSMT was at the top followed by lack of demonstration and trial of latest implements for straw management. Regarding marketing constraints i.e. ‘low price of paddy straw’ was very serious with rank I and faced by 88.33 percent of the respondents followed by lack of guidance for proper marketing, ‘lack of transportation facility’ and ‘lack of storage facility’ with rank II, III and IV respectively.

TABLE 1

Constraints related to Paddy Production (n=120)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Particulars</th>
<th>VS</th>
<th>S</th>
<th>NSS</th>
<th>Total score</th>
<th>Weighted mean score</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Field preparation</td>
<td>103(85.83)</td>
<td>15(12.5)</td>
<td>2(1.7)</td>
<td>221</td>
<td>1.84</td>
<td>I</td>
</tr>
<tr>
<td>2</td>
<td>Sowing of crops</td>
<td>97(80.83)</td>
<td>20(16.7)</td>
<td>3(2.5)</td>
<td>214</td>
<td>1.78</td>
<td>II</td>
</tr>
<tr>
<td>3</td>
<td>Fertilizers application</td>
<td>78(65.00)</td>
<td>29(24.2)</td>
<td>13(10.83)</td>
<td>185</td>
<td>1.54</td>
<td>III</td>
</tr>
<tr>
<td>4</td>
<td>Irrigation application</td>
<td>75(62.62)</td>
<td>28(23.33)</td>
<td>17(14.2)</td>
<td>178</td>
<td>1.48</td>
<td>VI</td>
</tr>
<tr>
<td>5</td>
<td>Reduced tillage greatly increases weed pressure</td>
<td>72(60.00)</td>
<td>35(29.2)</td>
<td>13(10.83)</td>
<td>179</td>
<td>1.49</td>
<td>V</td>
</tr>
<tr>
<td>6</td>
<td>Weed/insect/pest control</td>
<td>81(67.5)</td>
<td>20(16.7)</td>
<td>19(15.83)</td>
<td>182</td>
<td>1.51</td>
<td>IV</td>
</tr>
<tr>
<td>7</td>
<td>Paddy straw is not palatable to milch animals.</td>
<td>29(24.2)</td>
<td>49(40.83)</td>
<td>42(35.00)</td>
<td>107</td>
<td>0.89</td>
<td>VII</td>
</tr>
<tr>
<td>8</td>
<td>Feeding rice straw reduces milk yield</td>
<td>34(28.33)</td>
<td>50(41.7)</td>
<td>36(30)</td>
<td>118</td>
<td>0.98</td>
<td>VII</td>
</tr>
</tbody>
</table>

TABLE 2

Constraints related to economic of paddy cultivation (n=120)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Particulars</th>
<th>VS</th>
<th>S</th>
<th>NSS</th>
<th>Total score</th>
<th>Weighted mean score</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High cost of labour</td>
<td>94(78.33)</td>
<td>19(15.84)</td>
<td>7(5.83)</td>
<td>207</td>
<td>1.72</td>
<td>II</td>
</tr>
<tr>
<td>2</td>
<td>High cost of machinery used in management practices</td>
<td>107(89.2)</td>
<td>13(10.83)</td>
<td>0(0.00)</td>
<td>227</td>
<td>1.89</td>
<td>I</td>
</tr>
<tr>
<td>3</td>
<td>Unavailability of economically viable solutions for crop straw Management</td>
<td>63(52.5)</td>
<td>40(33.33)</td>
<td>17(14.2)</td>
<td>166</td>
<td>1.38</td>
<td>V</td>
</tr>
<tr>
<td>4</td>
<td>Ex-situ residue management is still not an economically viable option</td>
<td>48(40.0)</td>
<td>51(42.5)</td>
<td>21(17.5)</td>
<td>147</td>
<td>1.22</td>
<td>VI</td>
</tr>
<tr>
<td>5</td>
<td>Incorporation of straw is perceived to be too costly</td>
<td>43(35.84)</td>
<td>49(40.9)</td>
<td>28(23.33)</td>
<td>135</td>
<td>1.12</td>
<td>VII</td>
</tr>
<tr>
<td>6</td>
<td>High transport cost</td>
<td>75(62.5)</td>
<td>37(30.83)</td>
<td>8(6.7)</td>
<td>187</td>
<td>1.55</td>
<td>III</td>
</tr>
<tr>
<td>7</td>
<td>More labour requirement</td>
<td>61(50.83)</td>
<td>48(40.00)</td>
<td>11(9.2)</td>
<td>170</td>
<td>1.41</td>
<td>IV</td>
</tr>
</tbody>
</table>

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REFERENCES


