Research Note

Indian Journal of Extension Education
Vol. 58, No. 4 (October–December), 2022, (180-183)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Awareness of Paddy Residue Utilization in Karnal and Kurukshetra Districts of Haryana State

Ekta Rohilla[1] Binoo Sehgal[1], Anil Kumar Rohila[2]* and Joginder Singh Malik[2]

[1]Department of Family Resources Management, CCS HAU, Hisar, Haryana, India
[2]Department of Extension Education, CCS HAU, Hisar, Haryana, India
*Corresponding author email id: rohillaextension@gmail.com

ARTICLE INFO

Keywords: Agriculture, Harvesting, Pollution, Production and soil

http://doi.org/10.48165/IJEE.2022.58438

ABSTRACT

Study was conducted in 2021-22 to assess the awareness level of farmers regarding utilization of paddy residue in Karnal and Kurukshetra districts of Haryana state. A well structured and pre-tested interview schedule was developed according to the objective of the study. Two blocks were selected randomly from each district. Further, one village from each block was also selected randomly. So, four villages were selected to collect data. Further, from each selected village, 75 male paddy growing farmers having more than 5 acres of land were selected through snowball technique. Thus, total 300 respondents were interviewed. Present study concluded that all respondents (100.00%) were aware about straw baler machine and feeding the livestock, followed by making cattle shed roof (96.33%), hey rake (93.67) and mulching in the field (93.67). Study also concluded that sufficient time to sow next crop because it takes one and half months to decompose, paddy straw management delays wheat sowing and paddy residue burning is cheap option were major reasons for paddy residue burning.

INTRODUCTION

Increasing population spurt the food demand in across the world which leads increase the food production and for maintaining a sustainable agricultural production it is essential to recycle the nutrients from the crop residue after harvesting. (Hou et al., 2019 & Nagendran, 2011). India being an agriculture dominant country generates around 500-550 million tons (MT) of crop residues every year (IARI, 2012) and still a surplus of 140 MT out of which 92 MT burned each year. Traditional uses of crop residues are animal feed, fodder, fuel, roof thatching, packaging and composting. Residues of cereal crops are mainly used as cattle feed. While, paddy residue used as domestic fuel or in boilers for parboiling rice. Farmers use crop residues either themselves or sell it to landless households or intermediaries, who further sell them to industries however, a large portion of unused crop residues burnt in the fields which results the pollution in the atmosphere and also affects the soil productivity by burning the essential nutrients inside the soil. There are many management alternatives for crop residue management (Gadde et al., 2009 & Pathak et al., 2011). The Government of India is taking many lucrative and punitive approaches to mitigate residual crop burning for sustainable agriculture. So, keeping in view the importance, the present research was carried out to assess the awareness level of farmers regarding utilization of paddy residue in Karnal and Kurukshetra districts of Haryana state.

METHODOLOGY

To assess the awareness of farmers towards paddy residue burning, Karnal and Kurukshetra districts of Haryana state were selected purposively because these are paddy growing districts. Two blocks from each district were selected, randomly. Further, one village from each block was selected randomly. So, total 4 villages were selected to collect the research data. From each selected village, 75 male paddy growing farmers having more than

Received 02-08-2022; Accepted 20-09-2022

5 acres of land were selected through snowball technique. Thus, a total of 300 farmers were interviewed in 2021-22 to assess the awareness level of respondents. While, 15 farmers were also selected from the each village among the 75 to impart training so that training organized for the 60 farmers with the help of KVK Scientist by the interviewer and after that only 54 respondents found who practiced the crop residue burning and reasons were recorded accordingly. A well structured and pre-tested interview schedule was developed in accordance with the objectives of the study. Expert suggestions and available research based literature were also used for the preparation of the interview schedule. Collected data processed, tabulated and analyzed using frequency, percentages and weighted mean score.

RESULTS AND DISCUSSION

The source of general information of the respondents regarding paddy residue is TV (94.67%), followed by internet/ social media on mobile phone (84.67%), newspaper (rank 47.67%), While, relatives, friends and magazines found 11.00, 8.67 and 0.67, respectively as source of information regarding utilization and disadvantages of paddy residue. Timely and authentic information motivate the farmers about the innovations. Results are discord with the result of Choudhary et al., (2022a) who reported that only one-third respondents use TV and ICTs as source of information. It was found that majority of the respondents (56.34%) had more than 15 years farming experience. There is positive relationship between experience and adoption of technology. Pradhan et al., (2021) also concluded positive relation of experience with dependent traits.

Awareness regarding utilization of paddy residue

Data in Table 1 showed the awareness about utilization of paddy residue. In case of awareness of CRM machines all respondents (100.00%) were aware about Straw Baler, followed by Hey Rake machine (93.67%), Super Seeder (87.00%) and Straw Reaper (80.33%). While, only 79.67 per cent were about the Happy Seeder. Awareness level of farmers may be high due to campaigns and trainings etc. organized at village level under scheme of crop residue management. However, in case of awareness about utilization of paddy residue in any form at farm/home it was found that 100.00 per cent were aware about feeding the livestock, making cattle shed roof (96.33%), mulching in the field (93.67%), making cattle bed during winter season (92.67%). It was found that about fifty per cent respondents were aware about growing mushroom. Results are accordance of Roy & Kaur (2014) & Kumar et al., (2017) who concluded that majority of the farmers were aware about using paddy straw as animal feed in Punjab state of India. 53.67 per cent were aware about making cardboard in case of utilization of paddy residue in industries/factories, followed by packaging fruits, fuel in rice & liquor factory, making biogas and generating electricity i.e. 46.00, 41.33, 20.33 and 18.67, respectively. Results got support from the study of Roy and Kaur (2015) who reported that a few farmers used straw in other activities, while Muliarta (2019) reported that farmers did not knowledge about use of straw. 58.00% were aware about advantage i.e. increase soil fertility, followed by reduce environment pollution (52%), no fear of accidents (47%) and save time for sowing of the next crop (40.33%). Only, about one-fourth respondents i.e. 24.33 per cent found that it helps to increase yield of next crop. While, Choudhary et al., (2022b) reported that about fifty per cent farmers' perception was that stubble burning is the leading cause that results in a decline in soil fertility. However, Ramanjaneyulu et al., (2021) added that crop residue increase soil fertility, enhances crop productivity and conserves the environment also. Nain et al., (2017) & Rejulla et al., (2017) also described lack of awareness of development schemes among farmers.

Table 1. Awareness regarding utilization of paddy residue

Awareness about CRM machines to avoid paddy residue burning	Frequency (%)
Super Seeder	261 (87.00)
Happy Seeder	239 (79.67)
Straw Reaper	241 (80.33)
Hey Rake	281 (93.67)
Straw Baler	300(100.00)
Awareness about utilization of paddy residue in any form at farm/ home	
Feeding the livestock	300(100.00)
Making cattle shed roof	289 (96.33)
Making cattle bed during winter season	278 (92.67)
Mulching in the field	281 (93.67)
Growing mushroom	156 (52.00)
Awareness about utilization of paddy residue in industries/factories	
Making cardboard	161(53.67)
Generating electricity	56 (18.67)
Packaging fruits	138 (46.00)
Making biogas	61 (20.33)
As a fuel in rice & liquor factory	124 (41.33)
Awareness about advantages of utilization of paddy residue	
Reduce environment pollution	156 (52.00)
Save time for sowing of the next crop	121 (40.33)
Increase yield of next crop	73 (24.33)
No fear of accidents	141 (47.00)
Increase soil fertility	174 (58.00)

Reasons for paddy residue burning

Data presented in Table 2 showed the reasons for paddy residue burning and found that farmers don't have sufficient time to sow next crop because it takes one and half months to decompose major reason and ranked first with weighted mean score (WMS) 2.00, followed by paddy straw management delays wheat sowing (WMS 1.98), paddy residue burning is cheap option (WMS 1.96), paddy residue (except for Basmati variety) are harder to chew by animals (WMS 1.94), farmers are not satisfied with adoption of machines (WMS 1.92) and use of combine harvester machine leaves large straw after harvesting (WMS 1.90). Main reason of burning is not sufficient time for sowing next crop so it may be the major reason and study also got support from the study of Kumar (2017) & Anuradha et al., (2021). While, Rohilla et al., (2021) concluded that information on smart agricultural practices should be disseminated through effective means among farming households. While, rapid way of controlling weeds, insects and crop disease, labor shortage and high labor cost for manual

Table 2. Reasons for paddy residue burning by the respondents

Reasons for paddy residue burning	WMS	Rank
Framers don't have sufficient time to sow next crop because it takes one and half months to decompose	2.00	I
Paddy straw management delays wheat sowing	1.98	II
Paddy residue burning is cheap option	1.96	III
Paddy residue (except for Basmati variety) are harder to chew by animals	1.94	IV
Farmers are not satisfied with adoption of machines	1.92	V
Use of combine harvester machine leaves large straw after harvesting	1.90	VI
It is a rapid way of controlling weeds, insects and crop disease	1.88	VII
Labor shortage and high labor cost for manual harvesting	1.85	VIII
Lack of adequate space/ market for storage	1.75	IX
Difficulty in collection of crop residue from field as it is bulky to lift and load	1.74	X
High transportation cost due to more distance from field to storage yard	1.72	XI
Poor financial condition to buy or have machines on rent	1.68	XII
Lack of awareness about environmental issues among farmers	1.35	XIII
Foul smell of crop residue due to insects and pests	1.27	XIV
Not owning milch animals	1.20	XV

harvesting, lack of adequate space/ market for storage, difficulty in collection of crop residue from field as it is bulky to lift and load, and high transportation cost due to more distance from field to storage yard ranked in descending order. Poor financial condition to buy or have machines on rent, lack of awareness about environmental issues among farmers, foul smell of crop residue due to insects and pests and not owning milch animals were not serious reason to for paddy residue burning among the farmers. Low reason may be due to continuous awareness crop residue program and campaign by state agriculture departments and state agricultural university. Bhavana et al., (2021) concluded that there is a strong need for other innovative approaches for the effective substitution of crop residue burning.

CONCLUSION

Study concluded that majority of farmers are aware about crop residue management machines and utilization of crop residues at farm or home. There are various programmess, technologies, schemes, interventions, rules and regulations; however, crop residue management is still a major issue so, there is strong need to modification in all for the effective substitution of crop residue burning and it is time to make strategy and focus about awareness and utilization of crop residues in other fields also. So, researchers, extension workers and policy makers need to be engaged for management of crop residue management for sustainability and resilience of agriculture.

REFERENCES

Anuradha, Kadian, K. S., & Meena, M. S. (2021). Reasons and awareness levels of farmers on residue burning in indo-gangetic plain of India: An exploratory research. *Journal of AgriSearch, 8*(1), 62-66.

Bhavana, T., Sairam, M., Shankar, T., Maitra, S., & Praharaj, S. (2021). Crop residue burning in India: Causes, impacts and solutions. *Indian Journal of Natural Sciences, 12*(69), 37430-37437.

Choudhary A., Kadian, K. S., Meena, M. S., & Kambale, P. (2022a). Readiness of farmers to adopt crop residue management alternatives: A study from Haryana state. *Journal of Agri Search, 9*(1), 103-108.

Choudhary, A., Kadian, K. S., & Meena, M. S. (2022b). Assessment of farmers' perception about crop residue burning in Haryana. *Indian Journal of Extension Education, 58*(1), 85-88.

Gadde, B., Bonnet, S., Menke, C., & Garivait, S. (2009). Air pollutant emissions from rice straw open field burning in India, Thailand, and the Philippines. *Environmental Pollution, 157*(5), 1554–1558.

Hou, L., Chen, X., Kuhn, L., & Huang, J. (2019). The effectiveness of regulations and technologies on sustainable use of crop residue in Northeast China. *Energy Economics, 81*, 519-527.

Indian Agricultural Research Institute. (2012). Crop residues management with conservation agriculture: potential, constraints and policy needs, vii+32. New Delhi: Indian Agricultural Research Institute, 100.

Kumar, D. (2017) Causes of crop residue burning in Punjab: An evaluation of policy and legal mechanism. *Journal for Interdisciplinary Studies*, pp 6513-6525.

Muliarta, I. N. (2019). A study on rice field farmer implementation of rice straw composting. In *IOP Conference Series: Earth and Environmental Science, 343*(1), 012001.

Nagendran, R. (2011). Agricultural Waste and Pollution. *Waste*, pp 341–355.

Nain, M. S., Singh, R., & Mishra, J. R. (2017). A study of farmers' awareness on Agricultural Insurance Schemes in Southern Haryana. *Indian Journal of Extension Education, 53*(4), 75-79.

Pathak H., Saharawat, Y. S., Gathala, M., & Ladha, J. K. (2011). Impact of resource conserving technologies in the rice-wheat system. *Greenhouse Gas Science and Technology, 1*, 261-277

Pradhan, S., Naberia, S., Harikrishna, Y. K., & Jallaraph, V. (2021). Socio-economic correlates of livelihood security of small farmers in Jabalpur district of Madhya Pradesh. *Indian Journal of Extension Education, 57*(3), 57-59.

Ramanjaneyulu, A. V., Ramprasad, B., Sainath, N., Umarani, E., Pallavi, C., Vijay, K., & Jagadeeshwar, R. (2021). Crop residue management in cotton. *Chronicle of Bioresource Management, 5*(1), 1-8.

Rejula, K., Singh, R., & Nain, M. S. (2017). Rice farming for food security and ecological sustainability: An analysis of farmers' awareness in Kerala. *Indian Journal of Extension Education, 53*(4), 101-106.

Rohila, A. K., Ghanghas, B. S., Shehrawat, P. S., & Kumar, P. (2016). Socio economic profile of direct seeded rice (DSR) farmers of

Haryana. *Journal of Applied and Natural Science, 8*(1), 451-453.

Rohila, A. K., Kumar, A., Ghanghas, B. S., Mukteshawar, R., Kavita, & Kumar, R. (2021). Constraints in adoption of smart agricultural practices. *Indian Journal of Agricultural Sciences*, *91*(1), 142-145.

Roy, P., & Kaur, M. (2014). Awareness regarding alternative techniques of paddy straw management in Punjab and West Bengal- A comparative analysis. *Ecology, Environment and Conservation*, *22*(3), 1313-1316.

Roy, P., & Kaur, M. (2015). Status and problems of paddy straw management in West Bengal. *International Journal of Advances in Agricultural & Environmental Engineering, 2*(1), 44-48.

Singh, G., Singh, P., Sodhi, G. P. S., & Tiwari, D. (2020). Adoption status of rice residue management technologies in south western Punjab. *Indian Journal of Extension Education*, *56*(3), 76-82.