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Research Article

KNOWLEDGE AND ADOPTION OF RECOMMENDED GRAIN STORAGE PRACTICES BY THE FARMERS

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Abstract: Present study was conducted in Basmat taluka of Hingoli district. Ten villages having highest area under food grain crops were selected for the study. From each village, 12 respondents were selected randomly, who stored food grains to their home and godowns. Thus, a sample of 120 respondents was drown for the study. The data was collected through personal interview method with the help of structured schedule. The data was statistically analysed with the help of frequency and percentage. Through this study it was revealed that majority of the respondents (72.50 percent) had medium knowledge level. Whereas, about 16.16 percent of the respondents had high level of knowledge followed by 10.84 percent of the respondents who had low knowledge level about recommended grain storage practices. Also, most of respondents (60.84 percent) had medium level of adoption about recommended grain storage practices, while 22.50 percent and 16.66 percent had low and high level of adoption about recommended grain storage practices respectively.

Keywords: *Knowledge and Adoption, Grain Storage*

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Introduction

The area under food grain in India during 2016-17 was 128.03 million hectares and production reached to the level of 275.68 million tonnes. And area under food grains in Maharashtra during 2016-2017 was 12.16 million hectares and production was 15.79 million tonnes. (Agricultural Statistics 2017). According to Indian Grain Storage Management & Research Institute (IGMRI), Hapur(U.P), GOI in India, annual storage losses have been estimated14 -million tonnes worth of Rs. 7,000 crores in which insects alone account for nearly Rs. 1,300 crores. Post-harvest losses account for about 10% of total food grains due to unscientific storage, lack of technical knowledge of farmers to protect & preserve food grains with adequate handling and storage practices. Research in post-harvest technology was undertaken and various improved storage structures and practices were developed to reduce grain loss and were recommended for use. It is expected that farmers must use of preventive and control measures and improved storage structures which minimize the grain losses during storage [1]. In order to study what extent, the grain storage practices are used by the farmers, the investigation was undertaken with the following objectives,

1 To study the extent of knowledge of the respondents about recommended grain storage practices.

2 To study the extent of adoption of recommended grain storage practices by the respondents.

Material and Methods

Present study was conducted in Basmat taluka of Hingoli district, because this taluka occupies major area under food grains. Ten villages having highest area under food grain crops were selected for the study. From each village, 12 respondents were selected randomly, who stored food grains to their home and godowns. The sample of 120 respondents was drown for the study. The data was collected through personal interview method with the help of structured schedule. The data was statistically analysed with the help of frequency and percentage.

For determining knowledge level, a questionnaire was prepared as per recommended grain storage practices. There were 15 items included in the teacher made knowledge test. If the respondents answered the question correctly, one score was assigned to each item and zero score was assigned to wrong answered. The total score to each respondent was worked out and categorized on the basis of mean standard deviation.

The adoption of respondent in respect of recommended grain storage practices was studied by computing adoption score. Two score was assigned for full adoption, one score for partial adoption and zero score for no adoption. On the basis of total score obtained the adoption index was calculated for each farmer. In this way the scoring of each respondent was worked out and they were classified as per their adoption index on the basis of mean and standard deviation.

Result and Discussion

Knowledge about recommended grain storage practices of the respondents

From [Table-1] it is observed that the all of the respondents (100.00 percent) had knowledge about drying of grains before storage. It was further noticed that majority of the respondents (82.50 percent) had knowledge about atmospheric condition of godowns, followed by most of the respondents (72.50 percent) had knowledge about methods of reducing moisture from the grains as well as precautionary measures to be taken for retaining viability of grains for use as seed. Most of the respondents (71.66 percent) had knowledge about fumigants, followed by 67.5 percent of the respondents had knowledge about chemical for control of rats in grain storage places. Also, most of the respondents (65.83 percent) were knowing measures to check insect population, 65.00 percent knew stored grain pests and near about 62.5 percent of the respondents had knowledge about care to be taken before reuse of old gunny bags. And significant proportion of the respondents (57.50 percent) had knowledge about recommended pesticides for control of store grain pests.

Table-1 *Distribution of the respondents according to practice wise knowledge of grain storage*

SN	Practice	Knowledge of respondents			
		Correct reply		Wrong reply	
		Frequency	Percentage	Frequency	Percentage
1	Drying of food grains before storage	120	100.00	00	00.00
2	Moisture content in the grain before storage	45	37.50	75	62.50
3	Method of reducing moisture content of the grain	87	72.50	33	27.50
4	Atmospheric condition before and at the time storage of grains in the godowns.	99	82.50	21	17.50
5	Recommended scientific grain storage practices	51	42.50	69	57.50
6	Care to be taken of old gunny bags before its use	75	62.50	45	37.50
7	Care while staking the grain bags	42	35.00	78	65.00
8	Stored grain pests	78	65.00	42	35.00
9	Recommended pesticides for control of store pests	69	57.50	51	42.50
10	Recommended fumigants	86	71.67	34	28.33
11	Proper method of using fumigants	42	35.00	78	65.00
12	Measures to check insect population during storage	79	65.83	41	34.17
13	Recommended chemical for control of pests of grains stored for seed purpose.	54	45.00	66	55.00
14	Precautionary measures for maintaining viability of grains for use as seed	87	72.50	33	27.50
15	Chemicals for control of rats in grain storage places.	81	67.50	39	32.50

Table-3 *Distribution of the respondents according to practice wise adoption of grain storage*

SN	Practices	Complete adoption	Partial adoption	No Adoption
	Methods of drying			
1	Drying of food grains before storage	120(100.00)	0(0.00)	0(0.00)
2	Drying of grains in sunlight	120(100.00)	0(0.00)	0(0.00)
3	Drying of grains with the help of dryers	0(0.00)	0(0.00)	120(100.00)
	Precautionary measures for taking care of godowns			
4	Maintain cool atmosphere in gowdowns	24(20.00)	0(0.00)	96(80.00)
5	Removing of residual grains from gowdowns and clean it	76(63.33)	0(0.00)	44(36.67)
6	To seal all cracks of godowns	84(70.00)	0(0.00)	36(30.00)
7	Netting the windows for protections from birds	80(66.67)	0(0.00)	40(33.33)
8	Proofing of godowns with 25cm metal sheet	8(6.67)	0(0.00)	112(93.33)
9	Not allowing stagnant water around godown	104(86.67)	0(0.00)	16(13.33)
	Precautionary measures during reuse of old gunny bags			
10	Use of proper gunny bags only	112(93.33)	0(0.00)	8(6.67)
11	Removal of residual grains from bags	104(86.67)	0(0.00)	16(13.33)
12	Sundrying of wet gunny bags	100(83.33)	0(0.00)	20(16.67)
13	Use of recommended scientific grain storage structure	52(43.33)	0(0.00)	68(56.67)
14	Chemical control measures for control of stored grain pests.	0(0.00)	84(70.00)	36(30.00)
	Care to be taken while stacking bags			
15	Stacking of bags above 3 feet from floor	60(50.00)	0(0.00)	60(50.00)
16	Maintain side space from wall	84(70.00)	0(0.00)	36(30.00)
17	Stacking of bags in such way that, which facilitate better supervision	41(34.17)	0(0.00)	79(65.873)
18	Chemical control measures for control of pests of grain stored for seed purpose	0(0.00)	48(40.00)	72(60.00)
	Precautionary measures to be taken to retain viability of seed			
19	Drying of food grains in shadow which are used for seed purpose	96(80.00)	0(0.00)	24(20.00)
20	Protect grains from birds, insects, fungi, rats	112(93.33)	0(0.00)	8(6.67)
21	Maintain low humidity in godowns	37(30.83)	0(0.00)	83(69.17)
22	Use of fumigants	0(0.00)	44(36.67)	7663.33)
23	Use of chemicals for rat control	0(0.00)	56(46.67)	64(53.33)
24	Construction of godowns at higher level from that of ground level (Eleveted)	70(58.33)	0(0.00)	50(41.67)
25	Distance between floor and door is less than 0.6 cm	4(3.33)	0(0.00)	116(96.67)

It was observed that the most of the respondents (65.00) did not have any knowledge about care to be taken while stacking of bags as well as proper methods of using fumigants, followed by 62.50 percent of the respondents did not have knowledge about moisture content in the grains before storage. Also, significant percentage of the respondents (57.5 percent) did not know any recommended grain storage structures. Near about half of the respondents (55.00 percent) did not know the recommended chemicals for control of pests of grains stored for seed purpose.

Table-2 *Distribution of the respondents according to their knowledge level*

SN	Categories	Frequency	Percentage
1	Low	13	10.84
2	Medium	87	72.50
3	High	20	16.66
	Total	120	100

Level of knowledge

The [Table-2] shows that the majority of the respondents (72.50 percent) had medium knowledge level. Whereas, about 16.16 percent of the respondents had high level of knowledge followed by 10.84 percent of the respondents who had low knowledge level about recommended grain storage practices. These findings are supported by Grover *et al.* (2001) [2].

Practice wise adoption of recommended grain storage practices by the respondents

The data in [Table-3] revealed that all the respondents (100 %) dried food grains in sunlight before storage, but none of the respondents were using artificial drying method for drying grains with the help of dryer. Majority of the respondents (93.33 %) used proper gunny bags for storage, similarly 93.33 percent of the respondents adopted measures to protect grains from birds, insects and rats; followed by 86.67 percent of the respondents who did not allow stagnant water around godown, similar percentage *i.e.* 86.67 percent of the respondents were using the practice of removal residual grains from bags, while 83.33 percent and 80.00 percent of the respondents adopted practice of sundrying of wet gunny bags and drying of grains in shadow which are used for seed purposes respectively. It was also observed that the most of the respondents (70.00 percent) sealed all cracks of godowns as well as maintain side space from wall while stacking the bags.

Also, most of the respondents (66.67 percent) were netting windows for protection from birds in godowns, followed by 63.33 percent of the respondents use to remove residual grains from the godowns. Also, near about half of the respondents (58.33 percent) did not maintained elevated status of godowns.
Regarding partial adoption of recommended grain storage practices, most of the respondents (70.00 percent) used chemical control measures for control of store grain pests, followed by 46.67 percent of the respondents used chemicals for control of reodents, while 40.00 percent and 36.67 percent of the respondents used chemicals for control of pests of grains stored for seed purpose and used fumigants, respectively.
It is further apparent from relevant data that majority of the respondents (96.67 percent) not maintain suitable distance between floor and door of godown, followed by 93.33 percent of the respondents were not using metal sheet for rat proofing, while 80.00 percent of the respondents did not maintain suitable atmospheric condition in gowdowns. And also, most of the respondents (69.17 percent) not maintain low humidity in godowns, followed by 65.83 percent of the respondents did not stack bag in such way that it facilitates better supervision in the godowns. It was further reported that, significant percentage of the respondents (56.67 percent) not adopted recommended grain storage structures, followed by half of the respondents (50.00 percent) adopted the practice of stacking of bags above 3 feet from floor.

Level of adoption
The data in [Table-4] portrayed that the most of respondents (60.84 percent) had medium level of adoption about recommended grain storage practices, while 22.50 percent and 16.66 percent had low and high level of adoption about recommended grain storage practices respectively. Similar finding was obtained in the studies of Borkar and Rashekar (1999) [3], Sahu *et. al.* (2015) [4].
Table-4 *Distribution of the respondents according to level of adoption of recommended grain storage practices*

SN	Categories	Frequency	Percentage
1	Low	27	22.50
2	Medium	73	60.84
3	High	20	16.66
	Total	120	100

Conclusion
The findings of the present investigation revealed that majority of the respondents possessed medium level of knowledge and adoption about recommended grain storage practices. Hence the farmers need to be equipped with still higher knowledge about recommended and improved grain storage practices, through organization of the trainings and through radio, television programmes and also by conducting demonstrations, seminars and field days to educate farmers in recommended grain storage practices.

Application of research: This study is useful to indicate the area in which extension person should focus for organization of the trainings, radio, television programmes, demonstrations, seminars and field days to educate farmers in adoption of recommended grain storage practices.

Research Category: Extension Education

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Study area / Sample Collection: Basmat taluka of Hingoli district

Cultivar / Variety / Breed name: Nil

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References

[1] Pocket book of Agricultural Statistics (2017) Published by Government of India Ministry of Agriculture & Farmers Welfare Department of Agriculture, Cooperation & Farmers Welfare Directorate of Economics & Statistics New Delhi, Pp-25.
[2] Grover Minakshi, Svita Singhal, Shiv Singhal and Kusum Rana (2001) *J. Res. Haryana Agric. Univ*., 31, 127-133
[3] Borkar M.M. and Rashekhar A.K. (1999) *Maharashtra J. Extn. Edn*., 152-154.
[4] Sahu G., Shrivastava K.K. and Chaturvedi B.K. (2015) *Plant Archives* 15(2), 813-815.