



## Perceived Problem and Suggestion strategies of ITK and Improved Grain Storage System

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**ABSTRACT:** To preserve the quality of grain after harvest for its viability and consistent supply of grain in order to get advantage of higher prices, as practiced by farmers, government, and industry, storage system got the paramount importance. Keeping this in view, this study was made to explore the problem and suggested strategies of the ITK and improved grain storage system in Bihar in order to safeguard the losses of food grains. The total 320 farmers were participated in the study consisting (160) beneficiary and (160) non-beneficiary respondents selected from four district, eight blocks and eight villages of Bihar state through purposive sampling procedure. During the study, important suggestions were obtained by selected farmers regarding ITKs and improved storage systems. With regard to the ITKs storage system non-beneficiaries respondents were emphasized that there was an urgent need for creating awareness among the farming community regarding the advantages as well as disadvantages for different storage system (68.75%) and beneficiaries respondents were emphasized that effort should be made to provide adequate knowledge related to insect pest management in ITK storage system (77.50%). Training on rodent management was considered as one of the important issues indicating (64.37%) in beneficiaries followed by (61.25%) of non-beneficiaries farmers regarding the problem in storage system. The availability of low and subsidized cost for improved storage system as revealed by (50.62%) of beneficiaries as well as (62.50%) of non-beneficiaries farmers were the others important segment which had to be looked by the planner and policy makers in order to safeguard the losses of food grain.

**Keywords:** Grain storage, ITKs/ Improved storage system.

### INTRODUCTION

Grain storage systems are generally used by farmers, government, and industry to preserve the quality of grain after harvest in order to keep its viability for sowing the next season, to ensure a consistent supply of grain, and to take advantage of higher prices. Grain storage may be considered at the farm, trader, and commercial levels, as well as at the government level. Grain storage at the farm level is often inter-seasonal, assisting households with food and seed, while grain storage at the trade level is built for a relatively short period of time. Millers and co-operatives keep their product in commercial storage for a limited time to meet demand for people's requirements or for their urban clientele (Hall, 1980). However, due to a lack of adequate grain storage facilities and inappropriate food grain handling, a significant amount of the produced grain is lost, which is referred to as post-harvest losses. Every year, inadequate storage conditions result in the loss of 630 million tonnes of grain (Sawicka, 2019). Humidity, heat, pests, and aeration are all elements that affect storage conditions and, as a result, decide the

quality and amount of grain stored and shorten the storage time. In this context, effective grain storage procedures are one of the most critical parts in the food supply chain, and it is a major national concern.

In the developing nations almost all pre-harvest and post-harvest operations are conducted manually, therefore post-harvest loss accounts for 15% in the field, 13–20% during processing, and 15–25% during storage (Abass *et al.*, 2014). Small and marginal farmers generally use conventional grain storage facilities, which are not very effective against insects and mold. The replacement of this traditional storage structure with improved storage systems will maintain crop quality, reduce grain losses and food insecurity (Manandhar *et al.*, 2018). Up to 50–60% of cereal grains are lost during storage due to the traditional storage structures. Modern storage structures can reduce these losses up to 98%, thereby increasing food security (Kumar & Kalita 2017). Annual food losses in SSA are estimated to be roughly 14% of total crop production, according to the African Post Harvest

Losses Information Systems (APHLIS) (Sawicka, 2019).

Therefore, the present study has been conceptualized to assess problem and the management practices of food grains storage system in Bihar as perceived by the farmers.

## METHODOLOGY

The study was carried out in the state of Bihar in view of the suitability and accessibility of the research problem. Based on food grain losses and use of traditional grain storage system, the U.S. Government through University of Illinois Urban- Champaign has adopted four district *i.e.*, Samastipur, Begusarai, Bhagalpur and Banka districts of Bihar focusing mainly on wheat and maize crops. The project covers 25 villages from Samastipur and Begusari and equal villages from Bhagalpur and Banka district. The project introduced postharvest technologies as part of building resilience to climate changes and to know the significant efforts towards the empowering farmers in Bihar state by adopting climate change in their production activities. A repository of information on postharvest losses in wheat and maize at different unit operations was the main outcome of the project activities. The project results was based on 160

respondents who are the beneficiaries practicing improved storage methods and about 160 respondents who are the non-beneficiaries practicing traditional method of storage for cereal grains storage system. During the present study, all total 320 sample farmers were taken in order to examine their problem and also explore the suggested strategies for management of different storage system in Bihar.

## FINDINGS AND DISCUSSIONS

In order to suggest the suitable extension strategies for popularization of the improved storage system in the study area to safeguard the losses of different food grains, effort was made to explore the problem / constraint in storage system as perceived by different beneficiaries and non-beneficiaries farmers along with their suggested fir improved storage. For the purpose in the study area open ended questions were given the selected beneficiaries and non-beneficiaries farmers. The frequency related with their response was calculated and subsequently on the basis of percentage score ranking of different problems was also made.

The details of result, related with the perceived problems of selected beneficiaries across the ITK storage system and improved storage system were presented in Table 1.

**Table 1: Perceived Problem among the selected beneficiaries and non-beneficiaries farmers towards different storage system.**

Sr. No.	Perceived Problem	Beneficiaries			Non-beneficiaries		
		f	%	Ranking	f	%	Ranking
<b>ITK storage system</b>							
1.	Enhancing durability & maintaining quality	143	89.37	I	108	67.50	I
2.	Insect pest management	124	77.50	II	98	61.25	II
3.	Rodent control & management	112	70.00	III	65	40.62	IV
4.	More fragile problem of moisture & other environmental condition	108	67.50	IV	90	56.25	III
<b>Improved storage system</b>							
1.	High Cost	81	50.62	II	100	62.50	I
2.	Lack of proper training related with storage system	69	43.12	III	60	37.50	III
3.	Less and irregular availability of hermetic bag	87	54.37	I	98	61.25	II

From perusal of Table 1, it is evident that in view of enhancing durability and maintaining quality of storage system was the paramount importance in study area. Hence, enhancing the durability and maintaining of the quality of grain was perceived as foremost problems by about at 89.37% selected beneficiaries. This problem also ranked first in all selected respondents whether they are the beneficiaries or non-beneficiaries. Again insect and pests was found as a major issue in storage system and it ranked the second most important problems indicating their percentage score of 77.50 in beneficiaries and 61.25% among the non-beneficiaries farmers. The third most important problem which commonly perceived by all rural people in the villages was the rodent control and management. The issue of rodent control and management is very common in almost every rural area. Among the selected beneficiaries' respondents, 70% of them perceived rodents control and management as third important problem while in the case of non-beneficiaries farmers this issue was perceived at fourth rank indicating its

percentage score of 40.62. The more fragile problem of moisture and other environmental condition were considered also an important problem in case of both of the respondents as selected beneficiaries as well as non-beneficiaries farmers with respect to their indigenous storage system. In course of study, further effort was made to identify the problems of the selected respondents (beneficiaries and non-beneficiaries) with respect to improved storage system. In case of non-beneficiaries farmers high cost involved in storage system was considered as major problem while it has got the second ranking in case of beneficiaries farmers. Since, the selected beneficiaries and non-beneficiaries farmers were taken from the same area in which Hermetic bag along with training were given to the farmers for better and improved storage system hence, non-availability of Hermetic bag was considered as an most important problem after the high cost of storage system indicating its percentage score of 54.37 in case of beneficiaries farmers and 61.25% in the case of non-beneficiaries farmers with its second ranking. In each

group of farmers the lack of proper training and knowledge regarding improved storage system was considered as one of the most crucial problem. During the study selected beneficiaries and non-beneficiaries

were asked to give pertinent suggestions regarding the improvement of ITK storage and improved storage system in the study area. The details of results are being presented here in Table 2.

**Table 2: Suggestions given by selected respondents towards ITKs and Improved storage system.**

Sr. No.	Suggestion	Beneficiaries			Non- Beneficiaries		
		f	%	Ranking	f	%	Ranking
<b>ITKs storage system</b>							
1.	Training on rodent management	112	70.00	II	65	40.62	III
2.	Insect pest management in ITKs	124	77.50	I	98	61.25	II
3.	Awareness regarding new ITKs storage system	72	45.00	III	110	68.75	I
<b>Improved storage system</b>							
1.	Training on rodent management	103	64.37	I	98	61.25	II
2.	Availability of low and subsidized cost of Improved storage system	81	50.62	III	100	62.50	I
3.	Need for proper demonstration/training related with different storage system	69	43.12	IV	60	37.50	III
4.	Regular and sufficient availability of different suitable storage system	87	54.37	II	56	35.00	IV

The result contained in Table 2 reveals that with regard to the ITKs storage system non-beneficiaries' respondents were emphasized that there was an urgent need for creating awareness among the farming community regarding the advantages as well as disadvantages for different storage system indicating its percentage score of 68.75%. While, the beneficiaries farmers given this aspect as the 3<sup>rd</sup> rank. With regards to insect pest management again 77.50% of beneficiaries and 61.25% of non-beneficiaries expressed their concern that there was an urgent need to provide adequate knowledge related to insect pest management in ITK storage system. The rodent management issue was considered as one of the most important issue in both of the groups.

Therefore, training on rodent management was considered as one of the important issue indicating 64.37% in beneficiaries followed by 61.25% of non-beneficiaries farmers. During the study important suggestion given by selected respondent was availability of storage materials on low and subsidized cost as revealed by 50.62% of beneficiaries as well as 62.50% of non-beneficiaries farmers. Thus, need for proper demonstration and training related with different storage system was considered as an important concern during the study by both group of the selected farmers related with improved storage system. Similarly, regular and sufficient availability of different improved storage system was also recognized as a one of the important suggestion among the selected farmers in order to have better adoption of improved storage system leading to minimum losses of food grain.

## CONCLUSION

Every year, million tons of grain losses are caused due to improper storage conditions. The main factors behind humidity, heat, pests and aeration which are effective on storage conditions affect the quality and quantity of grain and shorten the storage period. Therefore, aspect, proper storage practices are recognized the most important elements in food supply chain of grain. In developing countries, grain storage losses are very high, along with the growth in population leading to high food demand. Unfortunately very little attention has been paid to reduce storage losses. Now it is high time to use new technologies for preservation, of stored grain in order to increase grains availability for consumption.

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