



Research Article

POST HARVEST LOSSES OF OIL SEEDS, PULSES AND CEREALS

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Abstract: The total loss owing to poor post-harvest processing of agricultural products in India when valued in conditions of financial reflects a remarkable loss in the economy. Post-harvest losses of rice, wheat, sugarcane, pulses, oil seed, vegetables fruits and root crops due to insufficient processing and preservation reached to 4.96 MMT in 1989-2001. These losses were valued in US\$ 503 million. Post harvest losses of food grains refer to different losses produced by a variety of factors. These losses include harvesting, collection, threshing, cleaning, drying, packing, transportation and storage losses. Food grains include cereals, pulses and oilseeds. It is estimated that total losses in post harvested rice operation range between 6-24% even through agricultural technology is claimed to have substantial development. Ministry of food processing estimated that Rs 23,000 crores has been lost by estimating of minimum 10% post harvest losses in cereals, pulses and oilseeds. The study in post harvest losses of food grains in Etawah district of Uttar Pradesh was conducted enquiry and observation method. The study also covered the prediction of perception gap of post harvest losses. Two villages were selected purposely in all eight blocks for study. The crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were identified as per survey of blocks. Detailed information and data of post harvest losses were collected in prescribed performs generated by Central Institute of Post Harvest Engineering and Technology, Ludhiana. The recorded data of all prescribed performs of enquiry and observation method were analyzed. Post harvest losses of various operations like harvesting, collection, threshing/sieving, cleaning/winnowing, drying, packing, transportation and storage of all fifteen crops were obtained. Post harvest total losses of different crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were found 14.95%, 10.08%, 8.99%, 11.77%, 11.61%, 8.6%, 14.55%, 17.18%, 14.08%, 13.43%, 9.79%, 8.71%, 7.98%, 11.21% and 11.62% respectively in observation method. Maximum 15.80 % and minimum 8.41% post harvest losses were found in crops Sesame and paddy respectively in enquiry method whereas in observation method, maximum 17.18% and minimum 7.98% losses were found in crops wheat and mustard respectively. Perception gap was obtained maximum (7.11%) in wheat crop whereas minimum perception gap was found 0.38% in Black gram.

Keywords: Food grains, Harvesting, Post harvest losses, Substantial and Oilseeds

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Introduction

Post-harvest system encompasses the delivery of crop from the time and place of harvest to the time and place of consumption with minimum loss and maximum efficiency and return for all involved [1]. The quantitative and qualitative losses happen in horticultural crops between harvest and consumption. Qualitative losses, such as loss inedibility, nutritional quality, caloric value, and consumer adequacy of the products, are much more complicated to assess than quantitative losses. Standards of quality and consumer preferences and purchasing power fluctuate significantly among countries and cultures. For example, elimination of defects from a given commodity before marketing is much less rigorous in developing countries than in developed countries. Agriculture contributes 25% to annual gross domestic products and provides livelihoods to more than 76% of the people. Majority of the rural people earn their livelihood through agriculture [2]. Post harvest losses of food grains (Cereals, Pulses and oilseeds) include harvesting, collection, threshing, cleaning drying, packing, transportation and storage losses. Due to using old and outdated method of these operations of food grains, we lose a more amount of production. It is estimated that 10% of food grains produced in India are lost in processing and storage [3],

Insects-pests are one of the most important factors responsible for losses in agricultural production at various stages. Living organism and the environment interact to bring about spoilage of stored products. It is estimated that 5-10% of the world production is damaged by insects during storage. Post harvest losses in durable commodities are around 10% whereas in perishable it is to around 40% which result in economic losses to the tune of Rs. 50,000 crores a year [4].

The post harvest losses are enormous for the farm wealth. About 10% food grains and 25-40% fruits and vegetables are wasted as the food produced is not processed in the catchment areas. This happens due to huge shortage of processing facilities in catchment areas. In the agricultural produce about 33% is edible portion and 67% is the by product or waste, which has greater value for feed and industry uses.

The better post harvest management as well as value addition can reduce these enormous losses [5]. Therefore, the study was undertaken to find out the post harvest losses of food grains in Etawah district by enquiry and observation method. The study also covered the prediction of perception gap of post harvest losses.

Table-1 Post Harvest losses of different crops by Enquiry Method (%)

Operation Crops	Harvesting	Collection	Sorting/ Threshing/Sieving	Cleaning / Winnowing	Drying	Packing	Transportation	Storage (Producer level)	Storage (Market level)	Total
Paddy	1.18	0.89	0.78	0.58	0.49	0.65	0.20	0.54	3.10	8.41
Millet	1.01	0.39	2.42	1.95	2.79	0.41	0.31	0.56	3.05	12.89
Sorghum	1.03	0.41	3.40	1.94	3.34	0.21	1.08	0.51	2.68	14.60
Maize	1.00	0.59	2.93	1.42	2.18	2.12	0.16	0.58	2.37	13.35
Groundnut	2.42	0.78	1.08	1.15	0.89	0.26	0.18	0.71	2.54	10.01
Pigeon pea	2.34	0.17	2.26	2.26	0.61	0.18	0.34	0.74	3.96	12.86
Sesame	3.61	2.39	2.13	2.04	0.41	0.19	0.33	2.07	2.63	15.80
Wheat	1.42	1.13	0.95	0.58	0.34	0.25	0.31	0.71	4.38	10.07
Gram	1.71	1.30	1.99	1.58	0.61	0.51	0.28	0.48	3.12	11.58
Pea	2.44	1.11	0.83	2.26	0.36	0.26	0.24	0.78	3.71	11.99
Lentil	1.51	0.65	1.71	1.08	1.23	0.27	0.42	0.50	3.67	11.04
Toriya (Lahi)	1.90	1.42	1.12	0.82	0.57	0.21	0.42	0.90	3.92	11.28
Mustard	2.98	1.98	1.90	1.34	0.78	0.14	0.52	1.01	3.45	14.10
Black gram	1.41	1.19	2.09	1.19	1.17	0.16	0.39	1.62	2.37	11.59
Green gram	1.44	1.01	1.78	1.38	0.99	0.27	0.40	0.60	2.96	10.84

Table-2 Post Harvest losses of different crops by Observation Method (%)

Operation Crops	Harvesting (including Collection)	Threshing (including Sieving)	Cleaning (including Winnowing)	Storage	Total
Paddy	0.76	4.99	5.50	3.70	14.95
Millet	0.10	4.10	3.46	2.42	10.08
Sorghum	0.42	2.58	3.48	2.51	8.99
Maize	0.27	4.11	4.37	3.02	11.77
Groundnut	0.30	4.22	3.88	3.21	11.61
Pigeon pea	0.26	2.46	3.07	2.81	8.60
Sesame	0.33	4.70	4.45	5.07	14.55
Wheat	0.30	4.78	4.50	7.60	17.18
Gram	0.29	4.22	4.70	4.87	14.08
Pea	0.31	4.27	4.77	4.08	13.43
Lentil	0.40	2.79	3.84	2.76	9.79
Toriya (Lahi)	0.74	2.53	3.65	1.79	8.71
Mustard	0.60	2.20	3.42	1.76	7.98
Black gram	0.27	2.67	3.47	4.80	11.21
Green gram	0.29	2.88	3.57	4.88	11.62

Materials and Methods

Two villages were selected for study of post harvest losses of food grains purposely in all blocks named as Mahewa, Basrehar, Saifai, Barpura, Jaswantnagar, Chakkamnagar, Bharthana, and Takha. The fifteen crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were identified as per survey of blocks. Detailed information and data of post harvest losses were collected in prescribed performs generated by Central Institute of Post Harvest Engineering and Technology, Ludhiana. The data of Post harvest losses of all food grains were obtained by enquiry and observation method. The perception gap was obtained between enquiry method and observation method of post harvest losses of all the crops [6-12].

Results and Discussion

Post harvest losses studies by enquiry method

The recorded data of all prescribed performs of enquiry method were analyzed. Post harvest losses of various operations like harvesting, collection, threshing, cleaning, drying, packing, transportation and storage of all fifteen crops like Paddy, Millet Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were obtained as 8.41%, 12.89%, 14.60%, 13.35%, 10.0%, 12.86%, 15.80 %, 10.07%, 11.58%, 11.99 %, 11.04%, 11.28%, 14.10%, 11.59% and 10.84% respectively [Table-1]. Maximum 15.80% and minimum 8.41% post harvest losses were found in crops Sesame and Paddy respectively.

Post harvest losses studies by observation method

The data of Post harvest losses of food grains obtained by observation method were analyzed. Post harvest total losses of various operations were found as 14.95% (Paddy), 10.08% (Millet), 8.99% (Sorghum), 11.77% (Maize), 11.61% (Groundnut), 8.6% (Pigeon pea), 14.55% (Sesame), 17.18% (Wheat), 14.08 %

(Gram), 13.43% (Pea), 9.79 % (Lentil), 8.7 (Toriya), 7.98% (Mustard), 11.21% (Black gram) and 11.62% in green gram [Table-2]. A highest loss (17.18%) was found in wheat crop whereas lowest loss (7.98%) was obtained in mustard crop.

Prediction of Perception gap

The perception gap between the enquired and observed data of different crops as Paddy, Millet Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were found 6.54%, 2.81%, 5.61%, 1.58%, 1.60%, 4.20 %, 1.35%, 7.11%, 2.50 %, 1.44%, 1.25%, 2.57%, 6.02%, 0.38% and 0.78% respectively [Table-3]. Maximum perception gap was found 7.11% in wheat and minimum perception gap was found 0.38% in Black gram. Figure-1 shows comparison of post harvest losses among enquired data, observed data and perception gap of different crops.

Table-3 Perception gap between Enquiry and Observation Method of Post Harvest losses (%)

Crops	Post Harvest losses		Perception gap
	Enquiry Method	Observation Method	
Paddy	8.41	14.95	6.54
Millet	12.89	10.08	2.81
Sorghum	14.60	8.99	5.61
Maize	13.35	11.77	1.58
Groundnut	10.01	11.61	1.60
Pigeon pea	12.86	8.60	4.20
Sesame	15.80	14.55	1.35
Wheat	10.07	17.18	7.11
Gram	11.58	14.08	2.50
Pea	11.99	13.43	1.44
Lentil	11.04	9.79	1.25
Toriya (Lahi)	11.28	8.71	2.57
Mustard	14.10	7.98	6.02
Black gram	11.59	11.21	0.38
Green gram	10.84	11.62	0.78

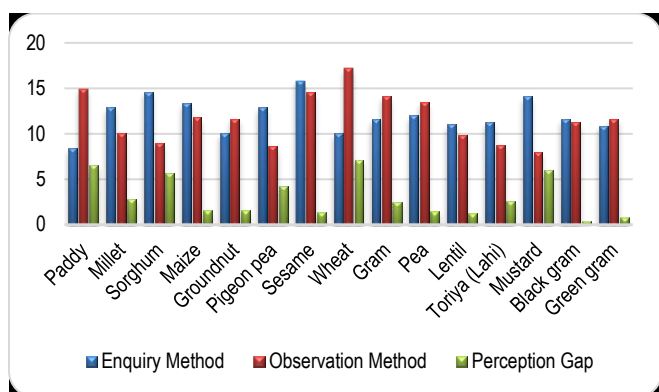


Fig-1 Comparison between Enquiry and Observation Method of Post Harvest losses

Summary and Conclusion

Cereals have almost doubled since 1970 but in case of other crops, no such improvements have been achieved. On the other hand, population growth rate has not been reduced substantially. The post-harvest losses of different food items especially fruits and vegetables are a great concern to us. Post-harvest losses due to inadequate facilities of processing and preservation must be given due importance to ensure the food security at macro and micro levels. In India, rice is an economic and political crop. It has gained more government support in terms of credit facility, research and extension services, price support programmes, storage facilities at public and private sector levels, etc. However, fruits and vegetables have lagged behind. There have been perennially burdened by the problem of high post-harvest losses and extremely low prices due to inadequate post harvest facilities.

Application of research: This experiment is applicable in the better post harvest management as well as value addition can reduce these enormous losses.

Research Category: Post-harvest processing

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Study area / Sample Collection: Mahewa, Basrehar, Saifai, Barpura, Jaswantnagar, Chakkamnagar, Bharthana, and Takha of Etawah District

Cultivar / Variety / Breed name: Paddy, Millet Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram

Conflict of Interest: None declared

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