J Krishi Vigyan 2023, 11 (Supple) : 91-95 DOI : 10.5958/2349-4433.2023.00092.2

Factors Affecting Adoption of Post-Harvest Management Practices by Vegetable Growers

Jashleen Kaur Sidhu[1] and Lopamudra Mohapatra[2]
Department of Extension Education,
Punjab Agricultural University, Ludhiana-141001, Punjab

ABSTRACT

The post-harvest losses accrue not only to the economic depreciation of the vegetables but also generate a quantum of waste which further leads to various environmental hazards. Proper post-harvest handling is important in maintaining quality and insuring safety of the vegetables while being brought to the consumer. Post-harvest losses in vegetables can be attributed to poor harvesting method, rough handling, improper packaging and poor transport conditions. In the present study, factors affecting the adoption of post-harvest management practices were studied for major vegetables grown in the Punjab state.The study was conducted in vegetable growing clusters namely; Baba Bakala Sahib, Malerkotla and Nakodar and vegetables selected were potato, pea, tomato, okra and cauliflower. Snowball sampling technique was employed for selection of respondents from every cluster to get respondents for all selected vegetables. This technique was used to select 80 farmers from three clusters, making up a total of 240 farmers. Major factors affecting adoption of post-harvest management practices by vegetable growers were inadequate storage and infrastructural facilities and high cost involved in following recommended practices. It was suggested that there is need to popularize field level trainings and low cost storage technologies, so that post-harvest losses could be minimized.

Key Words: Post-harvest losses, Factors affecting adoption, Socio-economic status.

INTRODUCTION

The extremely perishable nature of vegetables prevents producers from controlling the supply on the processing markets. Further, the causes of this loss vary, depending on microbiological, mechanical and physiological factors. In addition, the large gap between the production and the sub-optimal management of post-harvest technology which include harvesting, gathering, sorting, packaging, storage and transportation processes result in the loss of a large amount of vegetables at different stages (Selvakumar, 2014). In India, the vegetable cultivation is mostly practiced by small farmers with lack of organized back up for post-harvest management techniques viz; packaging, storage transport and marketing (Sharma and Singh, 2011). Because of highly perishable nature of horticultural crops, approximately one third of these valuable produce goes waste annually during postharvest operations due to lack of adequate postharvest infrastructure (DoH, 2018). It was divulged that about 30 per cent of total harvest of annual vegetable production is lost due to poor management (Sharma and Singh, 2011). In Punjab state total production of vegetables is about 61.09 lac tonnes and almost 20-40 per cent of the produce goes waste annually during post-harvest operations (Thind, 2022).

There are ample number of reasons for the occurrence of these postharvest losses and constraints faced by farmers in adopting post-harvest management practices. Production is

Corresponding Author's Email: jashleen-ee@pau.edu
[1]Ph.D. Scholar, [2] Assistant Professor, Department of Extension Education, Punjab Agricultural University, Ludhiana-141001, Punjab (India).
lopalopapa83@pau.edu

not associated with marketing. Also practically negligible storage, packaging, transport and handling technologies are available for perishable crops like fruits and vegetables. Thus, large quantity of produce is wasted during these operations (Kumar *et al,* 2006). Nearly no grading is followed at produce's level (Mitranavar, 2012). Isa (2016) indicated the major constraints like shortage of labour for grading and harvest, lack of sufficient farm produce for processing and value addition at commercial level, reduction in quality and quantity of fruits and vegetables due to fluctuating weather condition, spoilage due to disease and pest attack during storage and lack of valid information about various market conditions. In Punjab cold storage is meant only for potato crop (DoH, 2018).

Increasing agricultural productivity is critical for ensuring global food security, but this may not be sufficient. To sustainably achieve the goals of food security, food availability needs to be also increased through reductions in the post-harvest process at farm, retail and consumer levels. Considering the post-harvest losses, huge quantity of vegetable production is reduced from the food chain. Therefore it becomes inevitable to identify the factors affecting the adoption of post-harvest management practices.

MATERIALS AND METHODS

The present study was conducted purposively in the state of Punjab, India. A pre-tested semi-structure interview schedule was used for collection of data. Survey method was used at the time of investigation. Cluster sampling design was followed for the selection of three clusters i.e. Malerkotla (Sangrur), Nakodar (Jalandhar) and Baba Bakala (Amritsar) in Punjab. Clusters were grouped according to the five selected vegetables (Potato, Tomato, Okra, Cauliflower and Pea) that ensure their comparability in terms of post-harvest practices. Further, snowball technique was followed for the selection of respondents from each cluster. From each cluster 80 vegetable growers were selected, thus making total sample of 240vegetable growers

RESULTS AND DISCUSSION

Age influences the behaviour of an individual by exposing him/her to varied situations a number of times. It also shows maturity and rationality of an individual in decision making. The data (Table 1) indicate that about 57.8 per cent of them aged between 34-51 years. It was observed that majority of the vegetable growers were young and such trend is an indicator that young vegetable growers tend to be progressive. The data revealed that 30.42 per cent of the vegetable growers were educated up to matric level. Further data indicates that cent per cent of the vegetable grower's main occupation was farming.

About half (55.83%) of the vegetable growers fall under the category of large farmers (>10 ha). The data pertaining to annual income showed that half (50 %) of the vegetable growers had annual income 1-13 lakh. Experience is the important factor in influencing the farming in terms of behavior of vegetable growers. The result clearly illustrates that more than half **(**62.50%) per cent of the vegetable growers had 11-34 years of farming experience. About half (56.67%) of the vegetable growers had low level of participation in extension activities. The study revealed that majority (87.92%) of the vegetable growers had low level of participation in social organizations. Farmer's low and medium level of participation in extension activities and social organization depicts that level of interest of vegetable growers is low in getting aware about latest technologies. Nearly half (48.75%) of the vegetable growers had medium level of extension contacts.On the basis of exposure of the farmers to different modes of mass media, the different sources of mass media were divided into three categories *viz*. print media, electronic media and interactive media. The print media included the newspaper and magazine, PAU literature whereas the electronic and interactive media included exposure to television, radio, internet and mobile apps. The data revealed that 45.83 per cent of the farmers had low and

Table 1. Distribution of the respondents according to their socio-personal characteristics.

Socio-personal characteristics	Category	Frequency (f*)	Percentage (%)	Mean ±SD
Age (years)	Young(17-34)	36	15	44.10±11.40
	Middle(34-51)	137	57.8	
	Old(51-68)	67	27.92	
Education	Illiterate	2	0.83	3.43±1.17
	Primary	60	25.00	
	Secondary	64	26.67	
	Matric	73	30.42	
	Senior Secondary	15	6.25	
	Graduation and above	17	7.08	
Size of family	Up to 5	208	86.67	4.71±1.34
	> 5	32	13.33	
Occupation followed *	Farming	240	100.00	
	Dairy	45	18.75	
	Other	24	10.00	
Operational land holding (ha.)	Marginal(<1.0)	4	1.67	27.94±18.20
	Small(1.0-2.0)	8	3.33	
	Semi-Medium(2-4)	13	5.42	
	Medium(4-10)	80	33.33	
	Large(>10)	134	55.83	
Annual gross income of the family (in lakh)	1-13	120	50	15.36±7.01
	13-27	103	42.92	
	27-40	17	7.08	
Farming Experience (years)	<11	87	36.25	22.90±11.21
	11-34	150	62.50	
	>34	3	1.25	
Participation level in Extension activities	Low(0-5)	136	56.67	5.91±4.50
	Medium(5-10)	44	18.33	
	High(10-15)	60	25	
Level of Social participation	Low(0-4)	211	87.92	2.60±1.95
	Medium(4-8)	27	11.25	
	High(8-12)	2	0.83	
Level of extension contacts	Low(0-11)	114	47.5	12.48±7.32
	Medium(11-22)	117	48.75	
	High(22-33)	9	3.75	
Mass media exposure				
Print Media	Low(0-2)	156	65	2.16±1.25
	Medium(2-4)	80	33.33	
	High(4-6)	4	1.67	
Electronic media	Low(0-2)	207	86.25	1.11±1.19
	Medium(2-4)	31	12.92	
	High(4-6)	2	0.83	
Interactive media (ICT tools)	Low(0-7)	118	49.17	7.08±5.67
	Medium(7-14)	108	45	
	High(14-21)	14	5.83	
Overall mass media exposure	Low(0-9)	110	45.83	10.40±6.28
	Medium(9-18)	110	45.83	
	High(18-27)	20	8.33	

medium mass media exposure.

Factors affecting adoption of post-harvest management practices.

The data (Table 2) reveal that fluctuating weather conditions was the problem faced by cent per cent of the vegetable growers. Due to vegetable growers unawareness about weather conditions and lack of sufficient storage capacity, they could not store vegetables for even single day to carry out post-harvest management practices such as grading, cleaning etc. inadequate storage and infrastructural facilities as the major constraint faced in adoption of post-harvest management practices. Since there are no cold stores available for storage of vegetables other than potato and they do not have facility of storage of at their farms. Problem of high cost involved in following recommended practices was the next constraint faced by farmers. For instance farmers found machinery required for grading of potato which is costly and the cost of labour required to carry out post-harvest practices, like grading, cleaning was quite high.Further farmers reported that applicability of all post-harvest management practices was not feasible due to insufficient funds .Next to this, other major constraint faced by farmers was the lack of training and demonstration activities for fostering post-harvest management practices. Farmers said that they have not undertaken any training regarding post-harvest management practices to be followed.

High cost and shortage of labour required to carry out post-harvest management operations was the next constraint faced by them since labour has started working in the nearby cities. Due to shortage of labour rate of wages are hiked to carry out various operations. Further, 36.67 per cent of the vegetable growers stated that cost of transportation of harvested vegetables to market is high. Non-availability of labour at the time of harvest was the other constraint by 24.17 per cent of the farmers. Due to unavailability of labour picking of vegetables like okra and pea was delayed and

Table 2. Factors affecting adoption of post-harvest management practices.

Sr. No.	Aspect	Frequency (f)*	Percentage (%)
1.	Highly fluctuating weather conditions	240	100
2.	Lack of training and demonstration activities for fostering post-harvest management practices	132	55
3.	Inadequate storage and infrastructural facilities in the entire supply chain	189	78.75
4	Non-availability of labor during harvesting period	58	24.17
5	High cost of labor required for various post-harvest operations	124	51.67
6	High cost involved in following recommended management practices	170	70.83
7	Being a small farmer the applicability of all the post-harvest management operations is not feasible	142	59.17
8	Cost of transportation to market is high	88	36.67
9	Lack of network to local markets and poor access to market information.	36	15
10	Lack of community awareness about various practices	111	46.25

*Multiple response

resulted in over-maturity of crops. About 15 per cent of the vegetable growers faced the problem of lack of network to local market and poor access to market information about prices. Findings were partially in line with Barua *et al* (2017).

CONCLUSION

It could be concluded from the investigation that inadequate storage and infrastructural facilities, high cost involved in following recommended practices, being a small farmer the applicability of all the post-harvest management operations was not feasible, lack of training and demonstration activities for fostering post-harvest management practices were other factors affecting the adoption of post-harvest management practices. Therefore field level trainings regarding post-harvest management techniques should be organized for vegetable growers. Extension approach from production to market must be shifted for sensitizing the vegetable growers regarding post-harvest management techniques. Further farmer organisation at block level can be formed to strengthen storage and marketing facilities and farmers training should be organized to sensitize them regarding the harvesting operations and value addition in the various post-harvest stages of the vegetables, in order to fetch better price.

REFERENCES

Barua S, Singh P, Mridiula D, Gupta R K, Satyapriya and Tomar B S (2017). Attitude assessment of farmers towards postharvest technologies and value addition of horticultural crops in Punjab. *J Hum Ecol* **59**: 164-6

Department of Horticulture, Punjab (DoH) (2018) Status report (horticulture) Retrieved from https://punjabhorticulture.com/Documents/Events/Horticulture_Status_Report.pdf

Isa P R (2016). *Attitude of farm women towards post-harvest management of fruits and vegetables.* M.Sc. thesis. Junagadh agricultural university, Junagadh, India.

Kumar D K, Basavaraja H and Mahajanshetti S B (2006). An economic analysis of postharvest losses in vegetables in Karnataka. *Indian J Agric Econ* **61**: 134-46.

Mitrannavar D H (2012). *Estimation of post harvest losses of major fruits and vegetables in Karnataka – A management appraisal.* M.Sc. Thesis, Dharwad University of Agricultural Sciences, Dharwad, India.

Selvakumar R (2014). *Glaustas Olericulture*. pp. 944-45. New Vishal Publications West Patel Nagar, New Delhi.

Sharma G and Singh S P (2011). An economic analysis of post-harvest losses in marketing of vegetables in Uttarakhand. *Agric Econ Res Rev* **24**:309-315.

Thind S K (2021). *Package of Practices*. pp. 1-198. Punjab Agricultural University, Ludhiana.

Received on 27/7/2023 *Accepted on 5/11/2023*