



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; 7(3): 3122-3124
Received: 23-03-2018
Accepted: 28-04-2018

Ashish Raghuvanshi
Department of Agricultural
Economics, College of
Agriculture, Indira Gandhi
Krishi Vishwavidyalaya Raipur,
Chhattisgarh, India

Dr. AK Gauraha
Department of Agricultural
Economics, College of
Agriculture, Indira Gandhi
Krishi Vishwavidyalaya Raipur,
Chhattisgarh, India

Dr. MR Chandrakar
Department of Agricultural
Economics, College of
Agriculture, Indira Gandhi
Krishi Vishwavidyalaya Raipur,
Chhattisgarh, India

Post harvest losses in potato and factors affecting post harvest losses at farm level in Chhattisgarh

Ashish Raghuvanshi, Dr. AK Gauraha and Dr. MR Chandrakar

Abstract

The present study has examined post harvest losses in potato, factors affecting post harvest losses at farm level and constraints in the post harvest management of potato. Multi-stage sampling design was adopted for the ultimate selection of potato growing farmers and market functionaries. Bilaspur district was selected purposively based on maximum area of potato under Chhattisgarh plain region. 100 farmers were sampled from ten villages of Bilha and Masturi block (5 Villages each) of Bilaspur district. 20 retailers and 5 wholesalers were also sampled from the district to estimate post harvest losses at market level. Post harvest losses at farm level were estimated to be 9.40 quintals per hectare. It has been reported that total post harvest losses at market level was found 5.95 kg/q out of which contribution of losses at wholesaler and retailer level was 3.27 and 2.68 kg/q respectively. Weather, timely labour availability and storage facility was found significant factors affecting post harvest losses at farm level negatively.

Keywords: post harvest losses, potato, factors affecting post harvest losses, constraints

Introduction

Losses of horticultural produce are a major problem in the post-harvest chain. They can be caused by a wide variety of factors, ranging from growing conditions to handling at retail level. During the process of distribution and marketing, substantial losses are incurred which range from a slight loss of quality to total spoilage. Postharvest losses may occur at any point in the marketing process, from the initial harvest through assembly and distribution to the final consumer. The causes of losses are many: physical damage during handling and transport, physiological decay, water loss, or sometimes simply because there is a surplus in the marketplace and no buyer can be found. Not only are losses clearly a waste of food, but they also represent a similar waste of human efforts, farm inputs, livelihoods, investments and scarce resources such as water.

Potato (*Solanum tuberosum* L.) popularly known as 'The king of vegetables', is the staple food for most of the population of India after cereals. Being a major vegetable, it has the huge importance to the processing industry as well. Due to its perishable nature, certain quantity of produce is lost at different levels of marketing as well as on the farm. These post harvest losses are the sum of all the losses occurs during different operations like harvesting, packaging, transport, loading-unloading, storage, selling etc.

The reduction of post-harvest loss of vegetables is a complementary means for increasing production. It may not be necessary to considerably step up the production of vegetables with the growing demand if the post-harvest loss is reduced to a great extent. From the standpoint of economy and food safety for the population of the country there is a need to reduce such losses. Therefore the present study is a comprehensive attempt to estimate the dimensions of losses occurs during the post harvest stages of potato with the following objectives.

1. To estimate the post harvest losses in potato at farm level and at market level.
2. To study the socio-economic factors affecting the post harvest losses at farm level.
3. To identify the constraints in the post harvest management of potato and suggest some suitable measures to overcome them.

Methodology

A multi-stage sampling design was adopted for the ultimate selection of potato growing farmers and market functionaries. As Chhattisgarh plain zone with 304453 ha area under vegetables contributing 69.69 percentages to total area of vegetables in Chhattisgarh. Chhattisgarh plains have 16 districts, amongst which Bilaspur has highest area under potato contributing 23.43 percentages to the total area under vegetables in Chhattisgarh plains. So, Bilaspur district was selected purposively for the study. Bilaspur districts has seven blocks, amongst which Bilha and Masturi blocks contributing 16.15 and 15.49 area of potato in the

Correspondence

Ashish Raghuvanshi
Department of Agricultural
Economics, College of
Agriculture, Indira Gandhi
Krishi Vishwavidyalaya Raipur,
Chhattisgarh, India

district; ranks first and second in the area of potato respectively. So, five villages were selected from each block and ten farmers were interviewed from each village. In all, hundred farmers were interviewed from ten villages. Twenty retailers and five wholesalers were interviewed from the vegetable market of the district.

Factors affecting post harvest losses at farm level

Functional analysis was carried out to examine the socio-economic factors affecting post-harvest losses at farm level in vegetables. The following multiple linear regression function was used in the study.

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + \dots + a_9X_9 + e$$

Where,

Y: Post-harvest loss at farm level in quintals per hectare,

X₁: Area under crop

X₂: Age of the respondents in years,

X₃: Education of the respondents in years,

X₄: Production of crop in quintals per ha,

X₅: Distance of market from village.

X₆: Weather condition (dummy variable).

X₇: Timely labour availability (dummy variable).

X₈: Storage availability (dummy variable).

X₉: Transportation availability (dummy variable).

e: Random error.

In the above regression model four variables were used as dummy variables to study the qualitative information. Values of dummy variable were taken as 0 or 1. If the weather condition was good, labour was available on time, storage facility was adequate and transportation facilities were good then value 1 was assigned to the variable and value 0 was assigned in case the above facilities was found inadequate.

Results and Discussion

Post-harvest losses in potato at farm level

The estimated post-harvest losses per quintal of potato produced or handled at different stages at farm level are presented in table 1. These were estimated to be 8.07 kg/q in potato at the farm level. Losses in q/hectare were also worked out which was found to be 9.40 q per hectare. Losses were found maximum in harvesting (72.31 percent to the total loss at farm level) followed by grading and packaging being 11.65 percent to the total losses in potato at farm level. Farmer's perception about the losses during harvesting was that most of the produce gets harvesting injuries due to which it is either fully wasted or sold out at very less price.

Table 1: Post harvest losses of potato at farm level

S. No	Stage	Losses (Kg/q)	Losses (q/ha)	Percentage to the total loss
1	Harvesting	5.84	6.80	72.31
2	Grading & packaging	0.94	1.10	11.65
3	Handling & Transportation	0.54	0.63	6.73
4	Marketing	0.75	0.88	9.31
	Total	8.07	9.40	100.00

Post harvest losses in potato at market level

The estimated post-harvest losses per quintal of potato handled at different stages at market level are presented in table 2. Post harvest losses in potato at market level were estimated at wholesaler and retailer level. It have been

reported that total post harvest losses at market level was found 5.95 kg/q out of which contribution of losses at wholesaler and retailer level was 3.27 and 2.68 kg/q respectively. Maximum share of losses among different operations of marketing was found in storage being 19.79 per cent to the total losses at market level. Contribution of losses in sorting and grading was found maximum among different operations at retailer level being 19.07 per cent to the total losses at market level.

Table 2: Post harvest losses of potato at market level

S. No	Stage	Losses (Kg/qrtl)	Percentage
1	Losses at wholesaler level		
	1a.) Loading-unloading	-	-
	1b.) Sorting & grading	0.98	16.50
	1c.) Packaging	0.45	7.49
	1d.) Storage	1.18	19.79
	1e.) Transportation	0.67	11.23
	Sub total	3.27	55.02
2	Losses at retailer level		
	2a.) Loading-unloading	-	-
	2b.) Transportation	0.65	10.86
	2c.) Sorting Grading	1.14	19.07
	2d.) Selling	0.90	15.06
	Sub total	2.68	44.98
	Total	5.95	100.00

Factors affecting post harvest losses in potato at farm level

Factors affecting post harvest losses in potato at farms level has been presented in table 3. Weather, timely labour availability and storage facility was found negatively significant while all the other variables were found non-significant. So it can be suggested that if labour will be made available on the required time and infrastructure with adequate storage facilities will be provided to the farmers then it may reduce post harvest losses in potato considerably.

Table 3: Factors affecting post harvest losses in potato at farm level

S. No	Explanatory variables	Coefficients/ Values	Standard error
1	Intercept	5.9931	0.8913
2	Area of the crop	0.0209	0.0598
3	Yield of the crop	0.0332	0.0065
4	Age of the respondent	-0.0062	0.0110
5	Education of the respondent	-0.3375	0.0626
6	Distance from the market	0.0148	0.0335
7	Weather (dummy)	-0.3250*	0.1356
8	Timely labor availability (dummy)	-0.3083*	0.1378
9	Storage facility (dummy)	-0.5217**	0.1462
10	Transportation Facility (dummy)	-0.0140	0.1375
11	R ²	0.70	-
12	F - Value	23.20	-
13	Adjusted R ²	0.67	-

** Level of significance p<0.01

* Level of significance p<0.05

Constraints in the post harvest management of potato

Constraints faced by farmers in post harvest management of potato have been presented in table 4. Mainly eight major constraints were found responsible for the mismanagement of post harvest operations. Capital unavailability was found to be the major constraint followed by inadequate storage facilities and shortage of labour experienced by 93, 92 and 88 respondents respectively.

Table 4: Constraints in the post harvest management of potato

S. No	Constraints	No. of respondents
1	Shortage of labour	88
2	Inadequate transportation facilities	73
3	Inadequate storage facilities	92
4	Capital unavailability	93
5	Insect pest and disease	84
6	Distant market	63
7	Lack of knowledge about post harvest technologies	78
8	Adverse weather condition	82

Thus, the post harvest losses during harvesting and handling can be overcome by providing better financial facilities to the farmers so that they do not face problems regarding storage charges and using required equipments. Along with the capital requirements, better storage facilities and policies which resolve the labour shortage issues can reduce the post harvest losses considerably.

References

1. Abimbola O, Adepoju. Post-harvest losses and welfare of tomato farmers in Ogbomoso, Osun state, Nigeria. *Journal of stored products and post harvest research*. 2014; 5(2):8-13
2. Aidoo R, Danfoku RA, Mensah JO. Determinants of post harvest losses in tomato production in the offinso north district of Ghana. *Journal of development and agricultural economics*. 2014; 6(8):338-344
3. Ayub MA. An economic analysis and post harvest losses of major cereals in northern hills of Chhattisgarh state. M.Sc. Thesis. Indira Gandhi Krishi Vishwavidyala, Raipur, 2015, 80-123
4. Basavaraja H, Mahajanashetti SB, Udagatti Naveen C. Economic Analysis of Post-harvest Losses in Food Grains in India: A Case Study of Karnataka. *Agricultural Economics Research Review*. 2007; 20:117-126.
5. Devkota AR, Dhakal DD, Gautam DM, Dutta JP. Assessment of fruit and vegetable losses at major wholesale markets in Nepal. *International journal of applied science and biotechnology*. 2014; 2(4):559-562
6. Kumar DK, Basavaraja H, Mahajanshetti SB. An economic analysis of post-harvest losses in vegetables in Karnataka. *Indian Journal of Agricultural economics*. 2006; 61(1):134-146
7. Kumar NR, Pandey NK, Dahiya PS, Rana RK, Pandit A. Post harvest losses of potato in West Bengal: An economic analysis. *Potato journal*. 2004; 31(4):213-216
8. Mitrannavar DH, Yeledalli RA. Estimation of post-harvest losses of major vegetables in Karnataka- A management appraisal. *International Journal of Commerce and Business Management*. 2014; 7(2):349-353.
9. Ramchandra Paliwal HB, James A, Kumar H, Daniel S, Umrao R. Economic analysis of post-harvest losses in marketing of major vegetables in Allahabad district of Uttar Pradesh. *Journal of international academic research for multidisciplinary*. 2015; 3(2):203-211
10. Sharma Gaurav, Singh SP. Economic analysis of post-harvest Losses in marketing of vegetables in Uttarakhand. *Agricultural Economics Research Review*. 2011; 24(2):309-315.
11. Sharma, Swati. Economic analysis of post harvest losses in onion in Jodhpur district of Rajasthan. *International Journal of Research in Business Management*. 2010; 4(2):119-124.
12. Wadhvani MK, Bhogol TS. Economics of Production, Post Harvest Management and Price Behaviour of Cole Crop in Western U.P – An Empirical Analysis. *Agricultural Marketing*. 2003; 41(2):10-19.