Marketing and post harvest loss assessment of vegetables in Varanasi district (U.P.)

AVANISH KUMAR SINGH, NEERAJ SINGH AND B.B. SINGH

ABSTRACT: Post harvest loss assessment in marketing and the methods of estimation are important areas of research in post-harvest management. A study was taken up in Varanasi distt. of Uttar Pradesh. This study were conducted with three major contributors in vegetable production and marketing in farmers, wholesalers and retailers, therefore a multistage sampling procedure were adopted for selecting villages, whole sale markets and retailers. As a result of which five vegetable growing village and two wholesale markets were selected from each of two major dominants block of the distt. i.e. Araziline and Kashividyapeeth. Hence, for the present study were selected randomly 100 vegetable growers, 40 whole sellers and 80 retailers. Seeing the area and production of crops in Varanasi distt, five major vegetables viz, Tomato Brinjal, Chilli, Cabbage and Cauliflower were selected. Data were collected by using a well designed pre-tested questionnaire by personal interview method. Finding of this study the post harvest losses in vegetables crop vary from 9.47% to 26.57% at different stage of marketing. The maximum post harvest loss occur in tomato, followed by brinjal, cauliflower, cabbage and chilies. This findings of the present study draw the attention that the vegetable growers, wholesalers and retailers must be educated in field of post harvest management of vegetables to reduce the losses. Different mean of education and training on Post harvest management of vegetables must be studied and their impact of analysis show be done to see the effect on farmer, wholesalers and retailers.

KEY WORDS: Post harvest loss, Assessment, Marketing of vegetables


INTRODUCTION

Vegetables are important source of food and income. They can play a significant role in food and nutritional security as well as the poverty amelioration. They contribute largely to solve the food and nutritional problems of the country. India is the second largest vegetable producer in the world, sharing 12 per cent of total world vegetable production. But still it fails to fulfill the basic requirement of ever increasing population of the country because of low productivity and huge post-harvest losses from farmer’s field to market and finally to consumers. The considerable gap between the gross production and net availability of vegetables has been felt due to heavy post harvest losses.

Post harvest losses of perishables are more serious in a developing country like India. Mangal and Siddiqui (1996) studied that the post harvest losses of vegetables ranged 8 to 40 per cent varying from one crop to another varieties, packing, infrastructure and from season to season. Assuming an average loss of around 25 per cent there is a loss of Rs. 8000 crores per annum to our country (Anonymous, 1998). Thus, there is a dire need to minimize the post harvest losses of vegetables, for which it is essential to understand control of various factors which contribute to such losses.

The development of any vegetable crop depends on its net income, which is solely based that how efficiently the produce is marketed. The marketing system in Varanasi district by and large, operates under the normal forms of supply and demand. The trade of vegetables is still mainly in the hands of private enterprises. The price of vegetables varies from one zone to another according to the season, production and marketing. Rapid price fluctuation in vegetables shows how vegetables growers are suffering in getting the fair price for their produce.
In India two aspects relating to the movement of vegetables from the farm to the consumers require consideration. The first concerns the channel through which the produce moves, the agencies participating and the costs. The second concerns the patterns, the volume of such flows and the seasonality of such movements.

In this context, present study shows a path on various marketing methods and losses due to post-harvest activities of their produce in the Varanasi district of Uttar Pradesh. The present study has been taken up with the objectives –
- To assess the post harvest losses in selected vegetables both in physical and monetary terms at different stages of handling of the produce at wholesale markets.
- To estimate the losses in vegetables on account of storage, packaging handling and distribution at different stages of marketing.
- To examine the marketing practices for vegetables in Varanasi markets.
- To suggest measure to improve the marketing and that help reduce post harvest losses in vegetables.

**Materials and Methods**

**Sampling procedure and estimation:**
A multi-stage sampling design was adopted to select sample for data collection under this study. The following diagrammatic representation of selection of block, village and markets.

**Varanasi Distt.**

- Village
  - Araziline block
  - Kashvidyapeeth block

- Vegetable markets
  - Chanda (10*)
  - Sundarpur (10**)(20***)
  - Vegetable markets
  - Akheri (10*)
  - Ramna (10*)
  - Village
  - Mehdiyane (10)
  - Haraos (10*)
  - Jaiapur (10*)
  - Beerbhanpur (10*)
  - Darehni (10*)

**Vegetable crops for study:**
Vegetables include a large number of crops grown both in summer and in winter. However, for the present study, vegetables grown in winter-season were selected, keeping in view that during winter attack of diseases pests on vegetable is less and the losses occur mostly due to improper handling of crops. Therefore, seeing the area of production of crops in Varanasi district five major vegetables viz., tomato, brinjal, chilli, cabbage and cauliflower were selected for the present study.

**Estimation of post harvest loss:**
It is the loss that occurs from the point of harvest of vegetables in the field till it reaches the ultimate consumers. Care was taken to assess and record the physical loss at the time of harvest and after, at the field level and also at wholesale and retail levels. Economic loss was estimated by valuing the PHL at the average price realized by growers in sale of vegetables. Simple averages, mean score and percentages were used for the estimation of post-harvest loss at these stages of marketing.

**Results and Data Analysis**

The results and their interpretation are presented under the following heads:

**Post harvest losses of vegetables at different stages:**
Vegetables harvested, pass through various stages of marketing before reaching the consumer. The losses at different stages of handling viz., field, wholesale and retail market have been estimated and presented in Table 1. It is evident from Table 1 that the overall post harvest losses for vegetable crops towards the consumption end of the post harvest distribution system was around 10-27 per cent of the harvested quantity. The maximum losses occurred in tomato (26.57 %) followed by brinjal (16.64 %), cauliflower (14.76 %), cabbage (11.92 %) and chilli (9.47 %). Interpreting the data for this result it revealed that at retail, level the losses in tomato were more due to sorting (4.59 %), rotting and mechanical injury while retailers selling their produce (5.02 %). Tomato is a very sensitive crop and cannot be stored for even short period if it is fully ripe. In tomato the losses followed after retailers is at wholesale level and at farm level.

Chilli is the only crop of vegetables where the losses were less (farm level 2.79 %), wholesale level 3.37 per cent and retail level 3.31 per cent. In cabbage, however the losses at farm level were very less (1.27 %) but at wholesale level the losses were 7.75 per cent which was due to the losses occurred during the storage (4.21 %) and mechanical injury during transportation (1.06 %). Since the cabbage is stored for a durable period, losses occurred during sorting by the retailer increase the price of vegetable. A look at the overall losses due to transportation revealed that the losses due to transportation at any level was less and varied from 0.25 per cent to 1.62 per cent of marketing. At farm level the losses is brinjal was 3.15 per cent which was next to tomato. Similar was the trends of losses in brinjal at the wholesale and retail level.

**Post harvest losses of vegetables (%) in physical and monetary terms in wholesale markets:**
Time and money are required to cultivate vegetable produce and unless the farmers is providing vegetables only for his own household, he automatically becomes part of the
market economy. Therefore, to see the physical and monetary losses of vegetables in wholesale markets, the data were analyzed and reported in Table 2. The table reveals that the physical loss in vegetables was due to tomato (1045.64 q) and was worked out the monetary value of Rs. 14.89 per quintal. From monetary point of view the losses in vegetables was more in tomato followed by cauliflower, brinjal, chilli and cabbage.

The overall picture of these losses indicated that the post harvest losses in vegetables not only reduce the availability of vegetables per capita but also reduce the farmers and producers share in consumers rupees.

### Marketing practices and channels:

The marketing of produce is as important as the production itself. The critical factor, which decides the decision of the farmers is the price prevailing/offered to the farmers during the season.

The vegetable marketing channel commonly observed in Varanasi district (U.P.) market are –

- Farmer – wholesalers-cum-commission agent (local/distant) – retailer (local/distant) – consumers and more than 75 per cent of vegetables is marketed through this channel in Varanasi market, through farmers-retailers- consumer, Farmers – local seller- consumers and farmers – consumers channel also in practice but with little quantity. Farmers – wholesalers – (local/distant) – consumers is the major marketing channel in distant market Delhi, Patna, W. Bengal, Ranchi etc.

As reported in Table 3, only 5-10 per cent of the growers were doing self marketing and the same proportion of growers were selling their produce directly from the fields. Due to the price fluctuation in the market, some times farmers have to hold back their produce and wait for 1 to 3 days depending upon the nature of produce. So that they can get a good reasonable price of their produce. Average marketing cost bear by the farmers vary from Rs. 31-41/quintal of their produce.
Suggestion or possible strategies to reduce the post harvest losses and improve marketing process in vegetables:

The ability of a vegetable grower to plan and act on an efficient marketing strategy for vegetable will be greatly added by access to accurate, adequate and timely information. Efficient market information system can be used to derive positive benefits for farmers, traders and policy makers. The most important objective of marketing strategy is to sell their produce at time and location that bring the highest possible return. The immediate aim of marketing to improvement programme is generally to generate a higher income for farmers through:

- Reduced post harvest losses by the introduction of better handling method.
- Achievement of higher market price because of improved quality of produce.
- Proper training in marketing strategies.
- Transportation and packaging material can be sorted out by proper educating the whole salers for effective packaging storage and transportation of produce along with other aspect of post harvest management in vegetables. Sharma et al. (1999) made observations on post harvest losses of major vegetable crops in Himachal Pradesh and Gajanana et al. (2002) worked on the post harvest losses in case of tomato.

Conclusions:

The marketing and post harvest losses of vegetables, an evident in distribution system as the final produce moves down the pipeline from harvesting to its consumption. Based on the results, the following conclusions and policy implications are:

A number of marketing channels were observed in this area for the sale and purchase of vegetables, but the most common channels observed were farmers wholesalers – consumers; which is the major marketing practice of vegetables in Varanasi district. The post harvest losses in vegetables varied from 9.47 per cent to 26.57 per cent at different stages of marketing. Maximum losses in different vegetables were observed at wholesale level of marketing followed by retail market and that farmer’s field. After harvesting of vegetables, marketing practices like, storage, packaging and sorting were observed at all the three levels of marketing i.e. farm, wholesale and retail levels. Transportation is an important aspect and due to improper handling process and improper selection of transportation means, losses in vegetables are observed at all the levels of marketing process.

The assessment of post harvest losses of vegetables at various stage of handling would help in identifying the factors responsible for such losses and their extent. This in turn would help in developing proper measures required at different stages to prevent/reduce such losses which would help to improve the availability of selected vegetables both for domestic consumption and also for export purposes.

Authors’ affiliations:
NEERAJ SINGH, NRM Division, Indian Institute of Vegetable Research (ICAR), VARANASI (U.P.) INDIA
B.B. SINGH, U.P. Autonomous College, VARANASI (U.P.) INDIA

LITERATURE CITED

Anonymous (1998). Presidential address by DDG (Hort), ICAR, at group meeting of PHT workers of all Indian Coordinated Research Project on post harvest technology of horticultural crops. Jan 9-11, SKN College of Agriculture, Jobner (RAJASTHAN) INDIA.

