Progressive Research – An International Journal
Vol. 5 (Special Issue) : 447-451 (2010), ISSN : 0973-6417

Society for Scientific Development in Agriculture and Technology, Meerut (U.P.) INDIA

POST-HARVEST LOSSES OF FRUITS AND VEGETABLE IN BIHAR

Meera Kumari[1]* and Anita Kumari[2]

[1]*Bihar Agricultural College, Sabour–813210 Bihar*

[2]*Krishi Vigyan Kendra, Sabour–813210 Bihar*

[*]***Corresponding author*** *(Meera Kumari)* ***Email :*** *rakshitakshit@gmail.com*

ABSTRACT

In India, average household consumption of fruit and vegetable are 182–362gm/day/capita. When we compared it Bihar it was estimated as below. Table 4 shows per capita availability of fruits in India was estimated for the year 2009 is 182.0 gm/day whereas for Bihar it was only 112 gm which is lower than the amount recommended by the F.A.O. However availability of vegetables is comparatively more than that of recommended amounts as well as availability of vegetables to our nation as a whole. i.e 430 gm/.day/ person.

Key words : *Fruit, vegetable, post harvest.*

Horticultural crops constitute a significant component of total agricultural production of the country and cover nearly 11.6 million ha area with a total production of over 91 million tonnes per year. Production of fruits and vegetables play an important role in generating employment, income and meeting household nutritional security. Currently over 77 MT fruits and about 150 MT vegetables are produced in India and their production is growing at a compounded annual growth rate ranging between 5-6 per cent respectively (ASSOCHAM, 2009). The post-harvest losses of fruits and vegetable in India is worth over Rs. two lakh crore each year largely due to the absence of cold chain facilities and lack of proper processing units. It is very high in fruit, vegetables and root crops as they are much less hardy and are quickly perishable, and if care is not taken in their harvesting, handling and transport, they soon decay and become unfit for human consumption (Singh, 1995). The highest losses was observed in case of Mango (29.73%) followed by Banana (28.84%) until the storage facilities or marketing is inefficient the economic condition of the farmer cannot improve (MOA, 2006). Bihar produces 4249.19 thousand MT of fruits and 162325.68 thousand MT vegetables which accounting for 5 per cent and 10 per cent of India's production during respectively and the productivity of fruits in Bihar is 14.09t/ha while all India average is only 11.64t/ha (Directorate of Horticulture, 2009). State has not been able to make significant contribution in the export to other countries due to absence of practice of grading, poor quality, low yield level export marketing are not well integrated in our state. Therefore, future strategy for development would require a remarkable change in post-harvest handling of highly perishable fruits to increase the availability and create infrastructure for the trade of major fruits and vegetables in Bihar.

Present status of fruits and vegetables in Bihar : Survey conducted by Central Statistical Organisation and National Sample Survey Organisation, reported that Bihar saw 14.80 per cent growth in factory output in 2007-08, which was slightly less than the Indian rate of 15.24 per cent..Losses during post-harvest operations due to improper storage and handling are enormous and can range from 5-35 per cent (Planning commission, 2003). It can occur in the field, in packing areas, in storage, during transportation and in the wholesale and retail market. Severe losses occur due to poor facilities, lack of know-how, poor management, market dysfunction or simply the carelessness of farmers (Planning Commission and Govt. of India, 2003). This process has resultant in capital drain from rural to urban areas and mismatch growth in economy and standard of living between the rural and urban people.

Trend in Area, Production and Productivity of Fruits in Bihar : Bihar rank third with respect to area and production of mango in the country. Next to mango is the litchi, a fruit having immense production and export potentiality in Bihar. In litchi production, Bihar holds a monopoly in both quantity and quality amongst different litchi growing states. Bihar ranks first with respect to area production and yield. Banana is another important fruit grown in the state. Bihar ranks 7th in area and yield and 6th in production with respect to Banana in country (Govt. of Bihar 2009).

Trend in Area, Production and Productivity of Vegetables in Bihar : The area, production and productivity of major vegetables in Bihar shown a

positive growth in area, production and productivity except potato, whose area, production and productivity has been declined over period .However other selected vegetable like tomato, cauliflower and okra shown positive and significant growth in production and productivity but area under vegetables has been tagnated over the same period. For tomato it was estimated about 0.44 per cent and for cabbage (1.37 per cent), cauliflower (0.94 per cent) respectively in the state. Highest growth in area under cauliflower and okra was observed in Nalanda (3.03%). Trend in area, production and productivity over the period i.e. 1991-1992 to 2009-10 indicated that increase in area under vegetable was only 9.30 thousand hectare however productivity has been increase from 10.2to 18.1 MT/ha. With increase in availability a shift in consumption pattern in favour of fruits and vegetables was observed for all the socio-economic groups living in rural and urban area (Kumar and Mathur 1996, Kumar' 1998). It is hypothesized that the urbanization shift in dietary pattern economic and population growth will enhance the fruit consumption per person and national demand in future. However with respect to vegetables Nalanda has recorded higher productivity (20 Mt/ha) than that of state average its productivity is about 20mt/ha.

Estimation of wastage of fruits and vegetables in Bihar : It was found that sometimes fruits and vegetables are being sold below the cost of its production. Estimated, total loss of fruits in selected districts under study varied between 19 –30 per cent for fruits and 19 to 32 per cent of total production for vegetables due to improper handling and post-harvest management techniques resulting in a loss of thousands of crore every year. It may further revealed that in Banka total estimated losses of major vegetables was 55046 MT while for fruits it was 16539 MT causes decline in availability of major fruits and vegetables in study district of Bihar, however in Bhagalpur it was 34223 MT and 78588 MT for fruits and vegetables respectively. According to www.hindustan times.com survey the estimated losses in value term was approximately Rs 10700 croreto which Bhagalpur and Banka alone accounted nearly 10-15 per cent of total losses due to poor management practices ,market dysfunction and lack of proper storage facilities. Though, post–harvest handling of horticulture produce is better in zone 1 of Bihar still a lot of scope for value addition and processing exist. As far as status of fruits and vegetables in other and comparatively developed districts of Bihar is concerned, over the years losses have been reduced sharply because of phenomenal increase in total number of cold storage and processing units as well. Though, barring few, most of the processing units are of small size. GOI (2003) also found same trend in the socio-economic research on estimation loss of horticulture produce due to non-availability of post-harvest and food processing facilities in Bihar and UP. The estimated post-harvest losses of fruits in Bihar as a whole was about 22 to 30 per cent of gross production, however for vegetables it was about 39 per cent for tomato, 18 to 22 % for cauliflower of gross production respectively.. Due to post-harvest losses its availability would likely be declined from 5481thousand metric tonnes to 5386 thousand metric tonnes up to 2031. The post-harvest losses in value term was estimated around Rs 10700 crore annually in which study districts alone contributed 7 to 10% of total estimated losses. Severe losses occur due to poor facilities, lack of know-how, poor management, market dysfunction or simply the carelessness of farmers. Bihar is third leading state of country in this regards. Postharvest losses for tomatoes were estimated to be 24% to 35% in the wet season and dry seasons respectively and the losses have been attributed to the cultivar, the market type and the seasonality of production. This calls for greater role on the part of researcher to develop high yielding varieties and to involve better management practices. Efficient post-harvest management through promotion of infrastructure development is another way to increase availability of vegetables and fruits. It has been estimated that the state would have a trade surplus in both fruits (Mango and Litchi) and vegetables. The policy makers could promote processing of these vegetables and fruits for value addition and also explore export avenues. However, in the long run the emphasis has to be on increasing the productivity of vegetable and fruits in Bihar.

Comparative analysis of availability of fruits and vegetables in Bihar and India : In India, average household consumption of fruit and vegetable are 182–362gm/day/capita. When we compared it Bihar it was estimated as below. Table 4 shows per capita availability of fruits in India was estimated for the year 2009 is 182.0 gm/day whereas for Bihar it was only 112 gm which is lower than the amount recommended by the F.A.O. However availability of vegetables is comparatively more than that of recommended amounts as well as availability of vegetables to our nation as a whole. i.e 430 gm/.day/ person. It clearly indicates that there is huge potentiality of this crop in Bihar. According to national nutrition guidelines these amount of vegetable should take as Green leafy vegetable 50gm, roots and tubers 50 gm and other vegetable 200 gm by an average of 7-9 servings per

Table-1 : Area, production and productivity of fruits in Bihar.

YEAR	Area (000 ha)	Production (000 tones)	Productivity (MT/Ha)
1991-92	266.9	2799.2	10.5
2001-02	272.3	2877.0	10.6
2008-09	290.7	3722.8	12.8
2009-10	293.6	3464.9	11.8

Source : Compiled from Directorate of Horticulture, Govt. of Bihar.

Table-2 : Trend in area, production and productivity of vegetables in Bihar.

Year	Area (000 ha)	Production (000 tones)	Productivity (MT/ha)
1991-92	843.3	8643.1	10.2
2001-02	578.9	8022.9	10.3
2008-09	826.9	13385.7	16.2
2009-10	836.0	13906.8	16.6

Source : Compiled from Directorate of Horticulture, Govt. of Bihar.

Table-3 : Estimation of wastage of fruits and vegetables in Bihar during 2009-10.

Districts	Crop	Estimated production in MT (2009-12)	Total estimated wastage (%)	Total estimated wastage in MT
Bhagalpur	**Fruits**			
	Mango	64288	30	19286
	Litchi	4303	30	1291
	Banana	62027	22	13646
	Vegetables			
	Potato	159071	32	50903
	Tomato	39736	39	15497
	Cauliflower	28916	19	5494
	Okra	30427	22	6694
	Fruits			
Banka	Mango	48325	28	13531
	Litchi	270	30	81
	Banana	15405	19	2927
	Vegetables			
	Potato	131562	32	43000
	Tomato	16634	37	6155
	Cauliflower	13814	22	3039
	Okra	15008	19	2852

day. However regional office for Asia and pacific, FAO recommend that leafy vegetable per day for adult man 40 gm and 100gm for adult women while other vegetable should be 60 – 80 gm and 40 – 100 gm for adult man and women respectively. FAO and WHO recommended that adults consume at least 400 gm fruit and vegetable per capita per day, while 420 gm recommended by ICMR, New Delhi.

CONCLUSION AND SUGGESTIONS

With trade liberalization and increase in investment in horticultural development the prospects of export as well as for the processing industries of fruits have brightened but due to absence of practice of grading, poor quality, low yield level export marketing are not well integrated in the state. State has not been able to

Table-4 : Per capita availability of fruits and vegetables in Bihar versus India during 2009.

Particulars	India	Bihar
Projected population of India (million)	1223.6	104.25
Fruits production (thousand tonnes)	81285.3	4249.19
Vegetables production (thousand tonnes)	162186.6	16325.68
ri0Per capita availability of fruits (in gms/person/day)	182.0	112
Per capita availability of vegetables (in gms/person/day)	363.2	430

Source : Government of India, 2009.

make significant contribution in the export to other states or countries. Therefore future strategy for development would require a remarkable change in supply and demand and scope for trade of major fruits from Bihar.Vegetable and fruit are now being viewed at market of national importance owing to the fact that these have large export potential, thus, it can be said that efficient domestic marketing system can only promote the export of these crop. The availability of mango has been declined by 30% of gross production and it is expected to be increased by 155726 MT and 140413 MT for litchi and banana respectively up to 2020. It needs greater emphasis on post-harvest management to consolidate the benefits of large potential of vegetables and to nurture a healthy, competitive and vibrant horticulture in Bihar. Despite of such strong area, production and productivity base of fruits and vegetables Bihar still not reach up to satisfactory level to export in other state/country due to the whole orientation of farmers in both districts was towards production. Their negligence attitude towards post-harvest losses, lack of quality consciousness and absence of food processing units and unavailability of modern cold storages are responsible of huge post-harvest losses. In Banka, total estimated losses was 55046 MT and 16539 MT for vegetable and fruits respectively causes decline in availability of major fruits and vegetables in study district of Bihar, however for Bhagalpur it was 34223 MT and 78588 MT for fruits and vegetables respectively. Efficient post-harvest management through promotion of infrastructure development is another way to increase availability of vegetables and fruits. It was estimated that the state would have a trade surplus in both fruits (Mango and litchi) and vegetables. The policy makers could promote processing of these vegetables and fruits for value addition and also explore export avenues. However, in the long run the emphasis would be on increasing the productivity of vegetable and fruits in the state. Since the horticulture producers are heavily dependent on the domestic market, many times over production lead to low price and ultimately results in a loss of farmers. To avoid over production of selected varieties in a particular district, development of a mixed cropping pattern is needed as well as the linkage of production with processing and organized marketing is also needed in order to eliminate flooding of the local market and falling prices during peak seasons.

There is a need to establish adequate transportation facility and post-harvest management particularly at village level to create time and place utility of crop.

The farmers may be encouraged to bring their produce to the market to get economic return of produce, as they appear to be family oriented than market oriented because only 40 percent of their produce came into the market for sale. Therefore effort should be made to establish processing plant near to the villages to get adequate price of their product without any losses.

The study suggested that vegetable and fruits are now being viewed at market of national importance owing to the fact that these have large export potential. Thus, it can be said that efficient domestic marketing system can only promote the export of these crop. New strategies need to be decided to promote adoption of post-harvest technology by the fruit and vegetable growers while preparing them for marketing.

The creation of market infrastructure from export point of view such as creation of pre- cooling, cold storage, air cargo, packinghouse etc. may be taken up by the concerted efforts of the central and state government.

REFERENCES

1. ASSOCHAM (2009). The Associated Chambers of Commerce and Industry of India, www.assocham.org.
2. BAU (2009). Post-harvest losses need to be minimized, *Newsletter* April–June, BAU, Ranchi, 11(**2**). www.bauranchi.org.
3. GOI (2003). Estimation Loss of Horticulture Produce due to Non-availability of Post-Harvest & Food Processing

Facilities in Bihar and UP, Socio-Economic Research ASET, Government of India, New Delhi.

4. GOI (2009). Agricultural Statistics at a Glance, 2009, Ministry of Agriculture, Government of India
5. GOI (2009). Hand book on horticulture statistics. Ministry of Agriculture, Department of Agriculture and Cooperation, New Delhi, pp.48.
6. Kumar, Praduman (1998). Food Demand and supply projection for India, Agricultural Economics policy paper, 98-01, Indian Agricultural Research Institute, New Delhi
7. Kumar, Praduman and Kumar, Promod (2003). Demand, supply and trade prospective of vegetables and fruits in India, *Indian journal of Agricultural Marketing*, 17(**3**) conference special, pp. 121-130.
8. Kumar, Praduman and Mathur, V.C. (1996). Structural changes in the Demand for Food in India.*Indian Journal of Agricultural Economics*, 51(4): 664-773.
9. MOA, (2006). Mission for integrated development of horticulture operational guidelines, Horticulture Division, Department of Agriculture & Cooperation, Ministry of Agriculture, Krishi-Bhavan, New Delhi www.midh.gov.in.
10. Planning commission (2003). Government of Bihar, retrieved from www.planningcommission.nic.in/report
11. Singh, Subash (1995). Problems ad prospects of export of Fruits and vegetables. *Indian Journal of Agricultural Marketing, 9 (2):* 127-136. www.hindustantimes.com/post-harvest-biharlossesfruitsvegetables.