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Impact of Post-Harvest Management Techniques on Price of Onion in Madhya Pradesh

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Abstract

The post harvest management techniques play a crucial role on the market value of onion. By checking losses through reducing multiple handling of fresh producing and adding value at producer's end by sorting, grading, pre-cooling and improving storage, packaging and transportation system, better economic return to the growers can be ensured. The handling of onion during and after harvesting, transport and storage is often so rough that despite relatively good resistance of this crop, serious bruising and subsequent decay frequently occurs. Onion harvesting processing viz. cleaning, pre-cooling, drying grading and transportation greatly influences the marketing value of onion. If post-harvest management practices are adopted at farm level can give an incremental net income of 24.20%. The present study was confined to Rewa district in MP. The district has nine blocks viz., Rewa, Raipur Karchuliyan, Mauganj, Hanumana, Naigarhi, Teonthar, Jawa, Sirmour and Gangeo. Out of these Rewa block was purposively selected because in this particular block the area and production of onion were found highest in the district. In Rewa block five villages namely Khajuha, Laxmanpure, Khaur, Amva, Amiliki were selected on the basis of maximum number of onion growers. A list of all onion growers of each village were prepared and grouped them into adopted (30) and non-adopted (30) post-harvest management techniques. Results of the study indicate that the sorting and grading technique was adopted completely (100%) by the respondents and was put in rank first, followed by the other post-harvest management techniques as precaution during handling in grading, packing and marketing (96.67%), cured prior to storage (93.33%), bagging before transportation (90.00%), washing and cleaning (28.33%), pre-cooling (25.00%) and curing (16.67%). Hence, it may be stated here that the important post-harvest management techniques identified by the respondents were sorting and grading, precautions during handling in grading, packing and marketing, pre-cooling before transportation and cured prior to storage. The *t*-test indicated that there was significant difference between the onion price means of the two groups adopted and non-adopted. It may be interpreted that the adoption of post harvest management techniques positively affected the price of onion produce. Therefore, it may be concluded that there was positive impact of adoption of post harvest management techniques in the study area.

Key words : Post-harvest management techniques, Onion, Price, Madhya Pradesh.

Agriculture occupies an important position in India. It contributes nearly 20% to the Gross Domestic Product (GDP) and provides employment to around two-thirds of nation's population. Agricultural commodity exports account for nearly 20% of the total export earnings of the country. Among fresh vegetables, onion, tomato and mushroom are reported to be highly export competitive. India ranks first in the world accounting for around 21% of the world area, planted to onion. Globally, the country occupies the second position, after China, in onion production with a production share of around 14% (Table 1). Productivity of onion is at around 11.4 metric ton/ha, which is significantly lower than the world average of 17.3 metric ton/ha. Besides India and China, the other major onion-producing countries are Turkey, Pakistan, Iran, Japan, Brazil, United States of America and Spain. It is produced for both domestic consumption as well as exports. India produces all varieties of onion—pink, red, yellow and white, big and small.

The post-harvest management techniques play a crucial role on the market value of onion. By checking losses through reducing multiple handling of fresh producing and adding value at producer's end by sorting grading pre-cooling and improving storage, packaging and transportation system, better economic return to the growers can be ensured. The handling of onion during and after harvesting, transport

Table 1. Area, production and productivity of onion in India and MP (year 2009-2010). Data Source : Directorate of Economics and Statistics, New Delhi. NHRDF, Nashik (Estimates - From 2000-01 to till date).

	State	Area ('000 ha)	Production ('000 MT)	Productivity (tons/ha)
1	Madhya Pradesh	39.55	517.35	13.08
2	India	755.2	10237.73	13.545

and storage is often so rough that despite relatively good resistance of this crop, serious bruising and subsequent decay frequently occurs (1—4). Onion harvesting processing viz. cleaning, pre-cooling, drying grading and transportation greatly influences the marketing value of onion. Keeping these reasons in mind the present study has been undertaken to identify the post-harvest management techniques and the impact of adoption of post-harvest management techniques.

Methods

The study was confined to Rewa district of Madhya Pradesh. The district has nine blocks viz., Rewa, Raipur Karchuliyan, Mauganj, Hanumana, Naigarhi, Teonthar, Jawa, Sirmour and Gangeo. Out of which Rewa block was purposively selected because in this particular block the area and production of Onion were found highest in the District. In Rewa block five villages namely Khajuha, Laxmanpure, Khaur, Amva, Amiliki were selected on the basis of maximum number of onion growers. A list of all onion growers of each village were prepared and grouped them into adopted (30) and non-adopted (30) post harvest management techniques. Thus the total numbers of respondents were 60. Both primary and secondary data were collected for the study. The primary data were collected from selected respondents of the selected villages with the help of pre-tested interview schedule through personal contact. The secondary data were collected from the different sources i.e. from agricultural statistics of M. P. and unpublished records of village Patwari and Rural

Table 2. Adoption of post-harvest management techniques.

	Post-harvest management techniques	Respondents (n = 60) Number	Percentage	Rank
1	Cured prior to storage	56	93.33	III
2	Bagging before transportation	54	90.00	IV
3	Precooling	15	25.00	VI
4	Sorting and grading	60	100.00	I
5	Washing and cleaning	17	28.33	V
6	Precaution during handling in grading, packing and marketing	58	96.67	II
7	Curing	10	16.67	VII

Table 3. Onion price (Rs/q) of the two groups A and B post-harvest management techniques in onion. Calculation was made to test the significance of the difference between two group means. $t_{cal.}$ = 34.12**, $t_{tab.}$ at 29 d.f. =2.05.

	XA (Not Adopt PHM)	XB (Adopt PHM)
1	550	750
2	550	850
3	450	900
4	650	800
5	650	750
6	450	850
7	650	800
8	450	850
9	650	750
10	550	800
11	600	750
12	550	800
13	600	800
14	450	900
15	550	750
16	550	850
17	400	850
18	550	750
19	550	850
20	650	750
21	450	800
22	650	850
23	550	750
24	650	950
25	650	800
26	650	750
27	650	800
28	650	750
29	550	850
30	650	900

Table 4. Marketing and production constraints of onion as perceived by the respondents.

	Constraint	Respondents (n = 60) Numbers	Percentage	Rank
Production Constraints				
1	Non-availability of desirable improved varieties	32	53.33	V
2	High price of inputs	47	78.33	II
3	High wage rate of labor	41	68.33	IV
4	Ignorance of severe infestation of insect-pest disease control	26	43.33	VII
5	Low productivity	28	46.67	VI
6	Non-availability of credit from institutional sources	45	75.00	III
7	Low Price at peak period	58	96.67	I

Extension Agricultural Officer. The present study is related to agricultural year 2009–10.

Classification and tabulation of data were done in light of stated objectives. Suitable statistical tools such as weighted average and percentage were used.

Results and Discussion

Post-harvest Management Techniques

The adoption of post-harvest management techniques are indicate that the sorting and grading technique was adopted completely (100%) by the respondents and was put in rank first, followed by the other post-harvest management techniques as precaution during handling in grading, packing and marketing (96.67%), cured prior to storage (93.33%), bagging before transportation (90.00%), washing and cleaning (28.33%), pre-cooling (25.00%) and curing (16.67%). Hence, it may be stated here that the important post-harvest management techniques identified by the respondents were sorting and grading, precautions during handling in grading, packing and marketing, pre-cooling before transportation and cured prior to storage (Table 2).

Impact of Adoption of Post-harvest Management Techniques

The adoption of post harvest management techniques influences the quality and price of onion. Hence, it may be stated that price of onion produce is affected with the adoption of post-harvest management techniques. While estimating the impact of adoption of post-harvest management techniques, it was found that there were respondents who either adopted or did not adopt post-harvest management techniques. The group A included the respondents who did not adopt post-harvest management techniques and the group B included the respondents who adopted post-harvest management techniques in onion. The onion price per quintal for each respondents of group A and B have been presented in Table 3. The data were statistically analyzed. The *t*-test was employed to find out the impact of post-harvest management techniques. The *t*-test indicated that there was significant difference ($t = 34.12^{**}$) between the onion price means of the two groups A and B. It may be interpreted that the adoption of post -harvest management techniques positively affected the price of onion produce. Therefore, it may be concluded that there was positive impact of adoption of post harvest management techniques in the study area.

Constraints in Onion Production and Marketing

The various problems attached with the production of onion in Rewa district were mostly concerned with the production constraints and marketing constraints. The production constraints and marketing constraints of onion as perceived by the respondents are presented in Table 4. Data indicate that the most serious constraints in onion production were high price of inputs (seed fertilizers pesticides and fungicides) (78.33%), followed by non-availability of credit from institutional sources (75%), high wage rate of labor (68.33%), non-availability

of desirable improved varieties (53.33%), low productivity (46.67%) and ignorance of severe infestation of insect-pest disease control (43.33%). The most serious constraints as perceived by the respondent in onion marketing were the low price at peak period (96.67%).

On the basis of the findings the following major points are suggested. Onion is an economically viable crop. It has a vital potential in increasing the income and employment so the area should be increased and should find adequate place in the cropping pattern of the farmers. The value addition in onion should be promoted as it fetches high market price and has high export potential. State government should provide up-to-date regulated market and price information, to the farmers, so that they can regulate the supply of their produce for sale. About 65% of the arrivals were concentrated in the peak season when price was low. If adequate storage facility is provided to farmers, they can get better price. There should be regular supervision of the administrative authorities to check malpractices in the market. To reduce the transportation cost, the villages should be connected with all weather roads. It is suggested that farmers may be provided with up to date advance market price information so that they can regulated the supply of their produce help in minimizing onion price fluctuation and also avoid distress sale. For remunerative price, grading of produce should be done in the market on the basis of the characteristics like size, color, quality. Many of the producers were ignorant about market news. Those must be communicated to them at village level so that farmers sell their produce when they get attractive remunerative price. Minimum support price should be declared well in advance so that cultivators may divert the area under onion. Efforts should be made to popularize the advantages of state ware-house regarding cheap marketing credit facilities. The Krishi Upaj Mandi should be made more vigilant and equipped with more power to check unauthorized deduction, cheating and delay payment in Mandi.

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