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Price Behaviour, Market Integration and Price Volatility in Tomato Market in North India

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ABSTRACT

This paper analysed the transmission and spatial integration between tomato producing (Solan and Ludhiana) and consuming (Chandigarh and Delhi) markets using monthly price data from April 2005 to March 2019. Correlation analysis, Johansen co-integration test, Vector Error Correction Model and Granger causality were used for the analysis. Instability in the price series was measured by Cudda Della-Valle index. The maximum instability in tomato prices was in November month (50 to 59 per cent) and seasonality index showed that farmer received more than average price between August to November. Johansen co-integration test revealed that all the selected markets were well integrated in the long run. The speed of adjustment was highest in Delhi market (30 per cent) followed by Chandigarh (9 per cent) and Solan (6 per cent). In the short run, however, all markets were integrated, i.e., they were influenced by their own lagged prices as well as current and lagged prices of other markets. Delhi market was found to be the key market which influenced the price of all other markets by Granger Causality test. Further, ARCH model was found to be best fitted for estimating price volatility in the key market. The low root mean square error (RMSE) and the mean absolute percentage error (MAPE) reinforce high forecasting ability of the fitted model.

Keywords: ARCH, co-integration, granger causality, instability, volatility

India, with diverse soil and climate comprising several agro-ecological regions, provide ample opportunity to grow a variety of horticulture crops. In economic terms, horticulture sector contributes 30 per cent of agricultural GDP with an area of about 14 per cent and nearly 37 per cent in the total agricultural export (GoI, 2018). Keeping in view the importance of horticulture crops in the Indian economy, a new scheme called "Operation Greens" was announced in the Union budget 2018-19 for integrated development of Tomato, Onion and Potato (TOP) value chain. As price volatility in these vegetables can have harmful consequences in the economy, the major objective of the scheme is to stabilize their prices (GoI, 2019).

Among these three crops, tomato has the highest productivity and comes second next to potato in terms of area of cultivation (GoI, 2017). In addition, it is an important commercial and dietary vegetable crop. From a commercial point of view, it is a short duration, high-yielding, remunerative crop at the same time highly perishable in nature. The behaviour of tomatoes market in various part of the country in the past has shown that the vegetable remains the trouble spot for both growers and government.

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Although there is geographical dispersion of markets, prices across different market centres exhibit long-run spatial linkages, suggesting that all the exchange locations are integrated and that prices provide relevant market signals (Ghosh, 2010). The accuracy and speed at which price change in one market gets transmitted to other markets is taken as an indicator of integration among the markets. The extent of integration gives signals for efficient resource allocation, which is considered essential for ensuring greater market efficiency, price stability and food security (Muhammad and Mirza, 2014).Test of integration also plays a key role in determining the geographical level at which agricultural price policy should be targeted, at least in the short-run to ensure regular availability of food and price stability (Jha *et al.* 2005; Acharya, 2001). Therefore, the present paper attempts to understand the co-movement of prices among different domestic markets for tomato crop in north India. It also aims to estimate the volatility exhibited by the prices in the selected markets to provide suitable policy suggestions for pricing policy.

MATERIALS AND METHODS

The monthly time series data on prices and arrivals of tomato for the period April 2005 to March 2019 were used for the present study. The data was obtained from Agmarknet portal of Ministry of Agriculture and Farmers Welfare, GoI. The study investigated market integration across four major wholesale markets, Solan (Himachal Pradesh), Ludhiana (Punjab), Chandigarh (Punjab/Haryana) and Azadpur (Delhi). These markets were selected on the basis of location as well volume of produce handled. Solan and Ludhiana are located in tomato producing area (Babu 2016; Nasir 2017; Singh 2017) whereas Chandigarh and Delhi are located in the consuming area.

Analytical framework

Different analytical tools such as seasonality analysis, unit root test, Johansen co-integration test, Granger's causality analysis, vector error correction model and ARCH family model were used to examine the market behaviour. The analysis of data was performed by using Eviews 9 and R softwares.

Instability analysis

The coefficient of variation (C.V.) is usually employed to estimate instability in time series data. However, a limitation of C.V. is that it over-estimates the level of instability in the time series data characterised by long term trends (Nimbrayan and Bhatia 2019; Paul *et al.* 2013). This limitation is overcome by the Cuddy-Della Valle index (CDVI) suggested by Cuddy and Della Valle (1978) which corrects the coefficient of variation.

$$CDVI = CV\sqrt{1-R^2}$$

where, r^2 = coefficient of determination

Seasonality Index

The range in seasonality was estimated by using the method suggested by Ali (2000):

$$S_i = (I_h - I_l)$$

S_i = Seasonal indices

I_h = Highest value of seasonal index

I_l = lowest value of seasonal index

Test for Stationarity

The first step in the time series analysis, before testing for co-integration and Granger causality, is to examine the stationarity of each individual time series selected for the analysis. Augmented Dickey-Fuller (ADF) unit root test (Dickey and Fuller, 1979) was considered to examine the stationarity. The test was applied to check the order of integration by using the model:

$$\Delta P_t = \alpha_0 + \delta_1 t + \beta_1 P_{t-1} + \sum_{j=0}^{q} \beta_1 \Delta P_{t-j} + \varepsilon_t$$

Where,

P = the price in each market,

Δ = difference parameter (i.e., $\Delta P_1 = P_t - P_{t-1}$, $\Delta P_{t-1} = P_{t-1}) - P_{t-2}$, and $\Delta P_{n-1} = P_{n-1} - P_{n-2}$)

α_0 = constant or drift

t = time trend variable

q = number of lag length and

ε_t = pure white error term, The null hypothesis is that β_1 (the coefficient of P_{t-1}) is zero. The alternative hypothesis is: $\beta_1 < 0$. A non-rejection of the null hypothesis suggests that the time series under consideration is non-stationary (Gujarati, 2010).

Johansen's Co-integration method

Co-integration explains the extent of deviation from the long run equilibrium relationship by the non-stationary series. Once it was confirmed that all of the price-series were stationary at the level or at same order of differences, the maximum likelihood (ML) method of co-integration was applied to check long run wholesale price relation between the selected markets (Johansen, 1988; Johansen and Juselius, 1990). Maximum likelihood ratio test statistic is proposed to test number of co-integrating vectors. The null hypothesis of atmost '*r*' co-integrating vectors against a general alternative hypothesis of more than '*r*' co-integrating vectors is tested by trace statistics. The number of co-integrating vectors indicated by the tests is an important indicator of the extent of co-movement of prices. An increase in the number of co-integrating vectors implies an increase in the strength and stability of price linkages.

Vector Error Correction Model

The co-integration analysis reflects the long-run movement of two or more series, although in the short-run they may drift apart. Once the series are found to be co-integrated, then the next step is to find out the short run relationship along with the speed of adjustment towards equilibrium using error correction model, represented by equations:

$$\Delta lnX_t = \propto_0 + \sum \beta_{1i}\,\Delta lnY_{t-i} + \sum \beta_{2i}\,\Delta lnX_{t-i} + \gamma ECT_{t-1}$$

$$\Delta lnY_t = \beta_0 + \sum \propto_{1i}\,\Delta lnX_{t-i} + \sum \alpha_{2i}\,\Delta lnY_{t-i} + \gamma ECT_{t-1}$$

where, ECT_{t-1} is the lagged error correction term; X_t and Y_t are the variables under consideration transformed through natural logarithm; and X_{t-i} and Y_{t-i} are the lagged values of variables X and Y. The parameter γ is the error correction coefficient that measures the response of the regressor in each period to departures from equilibrium. The negative and statistically significant values of γ depict the speed of adjustment in restoring equilibrium after disequilibria and if it is positive ad zero, the series diverges from equilibrium.

Granger causality test

After undertaking co-integration analysis of the long run linkages of the various variables, and having identified they are linked, an analysis of statistical causation was conducted. The Granger causality test conducted within the framework of a VAR model is used to test the existence and the direction of long run causal price relationship between the markets (Granger, 1969). F-test is used to check the significance of changes in one price series affect another price series (Gujarati, 2010). Also, this test identifies the key market, i.e., the market which influences the price of all other markets.

Measuring Price Volatility: The ARCH family Model

Once the key market is identified, volatility of price series of that market is checked by testing the presence of heteroskedasticity through ARCH test. If heteroskedasticity has found in price series, than to deal with this, the popular and non-linear model is the autoregressive conditional heteroscedastic (ARCH) model, proposed by Engle (1982). The model was generalized by Bollerslev (1986) in the form of Generalized ARCH (GARCH) model for parsimonious representation of ARCH. In the GARCH model, the conditional variance is also a linear function of its own lags. As in ARCH, this model is also a weighted average of past squared residuals, but it has declining weights that never go completely to zero. Apart from these two models, there are other models such as TARCH, EGARCH and PARCH. The best fit model was selected out of these models based on AIC and SIC values. The forecasting performance of fitted models is assessed with respect to two traditional accuracy measures, viz., the root mean square error (RMSE) and the mean absolute percentage error (MAPE).

RESULTS

Seasonality and instability analysis

Instability in the tomato prices in the selected markets is examined in Table 1. Maximum value of

Table 1: Instability and seasonality in Tomato price in selected markets

Month	Solan			Ludhiana			Chandigarh			Delhi		
	CV	CDVI	SI	CV	CDVI	SI	CV	CDVI	SI	CV	CDVI	SI
January	47.43	30.58	0.91	34.33	28.73	0.83	40.81	34.97	0.90	45.38	42.70	0.84
February	40.61	27.64	0.97	38.44	32.44	0.71	42.35	35.82	0.72	35.95	31.00	0.80
March	40.38	28.10	1.00	37.27	29.69	0.72	45.14	40.82	0.79	36.54	31.58	0.70
April	36.66	32.01	1.12	41.17	40.19	0.72	28.93	25.36	0.79	32.53	31.49	0.76
May	55.28	53.67	0.71	41.93	39.02	0.50	63.36	63.53	0.55	55.65	55.73	0.72
June	45.95	42.81	0.87	46.92	42.55	0.75	43.69	46.05	0.78	51.62	45.86	0.49
July	56.73	41.27	1.21	41.83	32.46	1.38	56.43	52.12	1.38	46.22	32.23	0.82
August	52.78	43.45	1.07	53.93	47.84	1.38	53.73	42.23	1.30	49.93	43.05	1.50
September	34.83	29.81	1.02	37.05	35.80	1.15	42.30	34.84	1.24	36.04	33.00	1.43
October	35.41	27.57	1.13	24.07	19.32	1.37	33.56	27.02	1.24	33.84	28.64	1.34
November	65.77	59.00	1.15	56.80	51.75	1.44	56.32	50.22	1.37	62.51	59.00	1.37
December	62.29	44.11	0.84	42.20	36.89	1.06	42.84	32.90	0.98	50.99	46.77	1.23

CV-Coefficient of Variation (%), CDVI- *Cuddy-Della Valle* index and SI-Seasonality Index.

Table 2: Correlation Coefficients of Monthly Tomato prices between selected markets

Markets	Solan	Chandigarh	Ludhiana	Delhi
Solan	1.000			
Chandigarh	0.795*	1.000		
Ludhiana	0.803*	0.814*	1.000	
Delhi	0.808*	0.887*	0.870*	1.000

*indicates $p<0.05$.

CDVI has been found in the month of November and minimum in October in all the markets. Seasonality index greater than one was found between August to November for all the markets indicating that farmer received more than the average price during this period. Shrestha and Huang (2014) also found that High price fluctuation in the tomato price series; particularly price level was high during June-October and low during January-April in each year.

Correlation analysis

The results pertaining to correlation analysis of monthly prices of tomato in the selected markets are presented in table 2. The correlation coefficients between the markets were highly significant and ranged from 0.795 to 0.887. This showed that tomato prices in these markets moved together and were well integrated. This also implies that price differential in the markets is not more than transportation cost and hence, the markets are said to be efficient.

Augmented Dickey-Fullar test (ADF)

As correlation analysis provides only rough estimates on price movements, the integration of markets is further analysed using advanced econometric techniques *viz.*, Johansen Co-integration test, Granger causality test and vector error correction model. To avoid spurious results there is a need to check whether the variables are stationary or not. Further to establish the long-run equilibrium relation among the price series, it is necessary to co-integrate them. Co-integration among the variables in turn requires checking the order of integration among the variables and variables cannot be integrated in the presence of unit root, the same can be examined through conducting a stationarity test.

The ADF based unit root test procedure was applied to check whether the price series is stationary at their level, followed by their differences. The results presented in Table 2 indicate that t-statistic value for all the markets are significant implying that these series were stationary and free from consequences of unit root. Therefore, we can proceed with co-integration.

Table 3: ADF test to check the stationary of the data

Markets	At level		
	t-Statistic	**p value**	**Stationarity**
Solan	-3.497	0.009	Stationary
Ludhiana	-5.044	0.000	Stationary
Chandigarh	-4.474	0.000	Stationary
Delhi	-5.235	0.000	Stationary

Johansen co-integration test

The integration among selected tomato markets was analysed through the Johansen co-integration test and the estimated results are presented in table 3. Unrestricted co-integration rank test (Eigen value and trace statistic) indicated the presence of at least four co-integrating equations at 5 per cent level of significance. This indicated that tomato prices in the selected market were having long run equilibrium and also implies strength and stability of price linkages between selected markets.

Table 4: Johansen co-integration test of wholesale price variation- four regional tomato markets

Null hypotheses	Eigen value	Trace Statistic	p value
None *	0.361	124.234	0.000
At most 1 *	0.182	51.131	0.000
At most 2 *	0.064	18.474	0.017
At most 3 *	0.046	7.624	0.006

*denotes rejection of the hypothesis at 0.05 level.

Vector Error Correction Model

Since the selected tomato markets are integrated in the long run, it is important to study the short run and long run equilibrium among the markets. Vector Error Correction Model (VECM) was employed to know the speed of adjustments among the markets for long run equilibrium among the selected markets. The number of lags in the VECM was taken to be two as the Akaike Information Criterion (AIC) was lowest at this order (2) in the system for all the selected markets i.e., Solan, Ludhiana, Chandigarh and Delhi. The error correction term indicates the speed of adjustment among the variable before converging to equilibrium in the dynamic model. The results of error correction terms were interpreted in order to study the nature of market (stable/unstable/random), endogeneity and the movement towards the long run equilibrium, i.e., efficiency of the market. Thereafter, the short-term causality in the prices of selected markets included in the system, i.e., which market impacts the price of other market was also explained.

It has been observed that when Ludhiana and Solan markets are considered to be dependent on the other markets, the speed of adjustment is very low in general i.e. 4 per cent and 6 per cent respectively. This is probably due to the reason that only one way transaction exists between the markets and said to be producing markets which supplies the produce to the other markets. However, in the Chandigarh and Delhi markets, the speed of adjustment is found to be higher i.e. 8 per cent and 30 per cent, respectively. As Delhi market is found to be consuming market the stored quantity might be released due to faster error correction mechanism takes place. Similar results have found by Saxcena and Chand (2017) in Lasalgaon and Solapur market of onion has been found to be producing and consuming market.

The result indicated that tomato prices in Ludhiana market were affected by the prices in Delhi market with lag of one month as well as that of Solan prices with one and two lags. Solan and Delhi markets also affect the price of Chandigarh at lag one and two. However, prices in Delhi market were only affected by the Solan prices with one and two lags. In case of Solan, Wald test indicated the existence of short run equilibrium among Chandigarh at lag two and Delhi at lag one.

Granger Causality test

The result of casual relationship between the prices series of selected markets approached through Granger Causality technique is presented in Fig. 1. Among the selected tomato markets, the tomato price of Solan market showed bidirectional causality transmission with tomato price of Delhi market. The Delhi market itself influenced the price of Chandigarh and Ludhiana markets which shows the unidirectional relationship between them. While Chandigarh market uni-directionally influenced the price of Ludhiana market. Delhi market has been found to be a key market which influenced the price of tomato crop in all other selected markets.

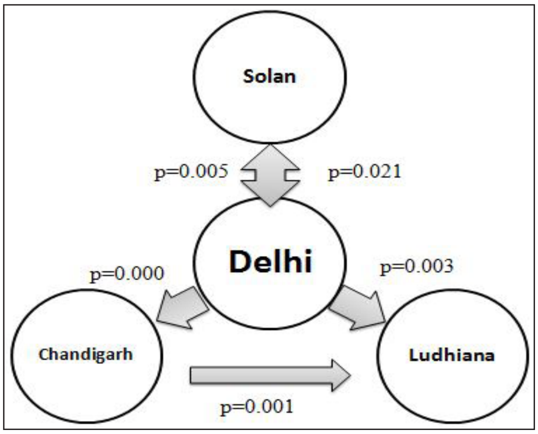

Fig. 1: Granger causality test of selected tomato markets

Testing the ARCH effect in the key market

The Box-Jenkins approach has a basic assumption that the residuals remain constant over time. Thus, the ARCH – Lagrange multiplier (LM) test was carried out on the square of the residuals and to test whether residuals do in fact remain constant. The results of the test given in table 5 revealed the presence of ARCH effect in price series of Delhi (key) market.

Table 5: ARCH - LM test for price series of Delhi market

Lags	F-statistic	P value
1	16.145	p<0.001
2	8.170	p<0.001
3	5.524	p<0.001
4	4.644	p<0.001
5	4.929	p<0.001
6	4.064	p<0.001

Fitting of ARCH model

The ARCH model was fitted on the Delhi market priceseries and then forecasting ability was tested. From all ARCH family models, the ARCH model was identified to be the best fit on the basis of minimum value of AIC and SIC as given in Table 6.

Table 6: Selection of best fit model

ARCH family model	Akaike information criterion (AIC)	Schwarz information criterion (SIC)
ARCH	-0.124*	-0.068*
GARCH	-0.113	-0.038
TARCH	-0.104	-0.011
EGARCH	-0.112	-0.019
PARCH	-0.105	0.006

*indicates model selected for estimating price volatility.

Table 7: Mean and Variance equation for ARCH Model

Variable	Coefficient	Std. Error	z-Statistic	p value
Mean equation				
Intercept	2.957*	0.019	155.232	0.000
Variance equation				
Intercept	0.031*	0.005	6.120	0.000
	0.456*	0.211	2.156	0.031
R-squared	-0.007	Sum squared residuals		9.243
Adjusted R-squared	-0.007	Log likelihood		13.429
RMSE	0.235	MAPE		6.314

*p<0.05.

The estimates of the parameters of the ARCH model along with their standard errors for Delhi market price series are given in Table 6. Fitted ARCH model has also been presented in the table 7, which capture volatility present in the tomato price series quite well as evident from the significant value of coefficient of squared of residual term at lag one in the variance equation. The average price of tomato in each month will be around ₹ 905 per quintal (antilog of 2.957). Forecasting ability of the model was judged on the basis of low value of root mean square error (RMSE) and mean absolute per cent error (MAPE). In the present study, the value of RMSE and MAPE has been found to be 0.235 and 6.314. Low value of MAPE has been assured the high forecasting ability of the fitted model (Gabriel, 2012).

DISCUSSION

The study revealed that tomato price in the selected markets was unstable especially in the month of

November. Farmers were found to receive more price than the average during the months of August to November. The correlation analysis showed that prices in the markets moved together and were well integrated which implied that price differential in the selected markets was not more than the transportation cost. This signalled that the markets are efficient. The price series in the selected markets were stationary and unrestricted co-integration test indicated that tomato prices in the selected markets had long run relationship. Out of the four markets, three markets were found to have long run equilibrium and in most markets, the tomato prices were being influenced by their own lagged prices as well as current and lagged prices of other selected markets. The speed of adjustment was highest in Delhi market (30 per cent) followed by Chandigarh (9 per cent) and Solan (6 per cent). Granger causality revealed that Delhi market was the key market which influenced the price of the other selected markets. Among different ARCH family models, ARCH model was found to be the best fitted model to assess price volatility of tomato price series in the key market (Delhi). Further, a minimum value of RMSE and MAPE assured high forecasting ability of the ARCH model. Priority should be given to Ludhiana and Solan market where lower chance of correction of any disequilibrium. More farmers should be encouraged to participate in future trading and contract farming so as to reduce the variation in arrivals and prices.

REFERENCES

Acharya, S.S. 2001. Domestic Agricultural Marketing Policies, Incentives and Integration. *In*: Indian Agricultural Policy at the Crossroads (S.S. Acharya, S.S. and D.P. Chaudhri, eds.). Rawat Publications, Jaipur.

Ali, M. 2000. Dynamics of vegetables in Asia, a synthesis. *In:* Dynamics of vegetable distribution and consumption in Asia. (Mubarik Ali, ed.). Asian Vegetable Reasearch and Development Centre, Shanhua, Taiwan.

Annonymous. 2019. Agmarknet portal of Ministry of Agriculture and Farmers Welfare, GoI.

Babu, G. 2016. Price Behavior and Farmer Assessment in Functioning of Regulated Markets of APMC Solan district of Himachal Pradesh. M.Sc. Thesis. Department of Social Sciences. Dr. Y.S. Parmar UHF, Nauni, India, pp. 71.

Bollerslev, T. 1986. Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics*, **31**(3): 307-327.

Cuddy, J.D. and Valle, P.D. 1978. Measuring the instability of time series data. *Oxford bulletin of Economics and Statistics*, **40**(1): 79-85.

Dickey, D.A. and Fuller, W.A. 1981. Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, pp. 1057-1072.

Engle, R. 1982. ARCH with estimates of variance of United Kingdom inflation. *Econometrica*, **50**(4): 987-1007.

Gabriel, A.S. 2012. Evaluating the Forecasting Performance of GARCH Models. Evidence from Romania. *Procedia-Social and Behavioral Sciences*, **62**: 1006-1010.

Ghosh, M. 2010. Spatial price linkages in regional food grain markets in India. *The Journal of Applied Economic Research*, **4**(4): 495-516.

Government of India. 2018. Annual report, 2017-18. Ministry of Agriculture and Farmers Welfare, New Delhi. http://agricoop.gov.in/sites/default/files/Krishi%20AR%202017-18-1%20for%20web.pdf.

Government of India. 2019. Ministry of Food Processing Industries issues guidelines for operation greens,Press Information Bureau, Ministry of Food Processing Industries, NewDelhi. http://www.pib.nic.in/Pressreleaseshare.aspx?PRID=1551889.

Granger, C.W.J. 1969. Investigating causal relations by econometric models and cross- spectral methods. *Econometrica*, **37**: 424-438.

Gujarati, D. 2010. Econometrics by Example. *Macmillan Publishers*, London.

Jha, R.K.V., Murthy, K.V.B. and Sharma, A. 2005. Market Integration in Wholesale Rice Markets in India, ASARC Working Paper 03, *Australian National University, Canberra, Australia*.

Johansen, S. and Juselius, K. 1990. Maximum likelihood estimation and inference on cointegration: with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, **52**: 169-210.

Johansen, S. 1988. Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics and Control*, **12**(2-3): 231–254.

Kirchgassner, G., Wolters, J. and Hassler, U. 2012. Introduction to modern time series analysis. Springer Science and Business Media.

Muhammad, A. and Mirza, T. 2014. The Effects of Market Integration on Rice Market Performance and it's Implication on National Food Security in Indonesia. *Journal of Economics and Sustainable Development*, **5**(23): 107-111.

Nasir, A. 2017. Comparative Profitability Analysis of Mushroom and Vegetable Cultivation in Solan district of Himachal Pradesh. M.Sc. Thesis. Department of Social Sciences. Dr. Y.S.Parmar UHF, Nauni, India, pp. 66.

Nimbrayan, P.K. and Bhatia, J.K. 2019. Growth and Instability in Area, Production and Productivity of Barley in Haryana vis-à-vis India. *Current Journal of Applied Science and Technology*, **1**: 1-8.

Paul, K.S.R., Farukh, M. and Rambabu, V.S. 2013. Trends, growth and variability of ground nut crop in Andhra Pradesh. *Arts and Education,* **2**(6): 74-78.

Saxena, R. and Chand, R.2017. Understanding the recurring onion price shocks: revelations from production-trade-price linkages. Policy Paper No. 33, National Centre for Agricultural Economics and Policy Research, New Delhi.

Shrestha, R.B., Huang, W.C. and Ghimire, R. 2014. Market price cointegration of tomato: effects to Nepalese farmers. *International Journal of Food and Agricultural Economics,* **2**: 86-87.

Singh, N. 2017. Comparative Economics of Vegetable Cultivation Under Open and Protected Conditions in Solan district of Himachal Pradesh. M.Sc. Thesis. Department of Social Sciences. Dr. Y.S. Parmar UHF, Nauni, India, pp. 80.