SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

ANALYSIS OF SUPPLY CHAIN OF MANGO & POSSIBILITY IN VALUE ADDITION IN MEERUT, ALIGARH & SAHARANPUR DISTRICTS OF UTTER PRADESH

Dr. ChhatraPal Singh
Assistant Professor, Depatrment of Economics, R. J . Mahavidhalya Raipur, Aligarh, Utter Pradesh, India

Dr. Nem Chand Gautam
Lecturer in GSSS Guhla, Kaithal, Haryana India

Abstract:
The advantage of being an agricultural state with lots of fertile land in Uttar Pradesh is that because of this, it makes up a significant portion of the national grain supply. The State serves as a conduit for the transit of fruit from J & K, Himachal Pradesh, and Haryana in addition to being a basis for the production of fruits and vegetables (F&V). The study focused on the market dynamics of the mango value chains in Uttar Pradesh's Pratapgarh district. The investigation's findings demonstrated that growing mangoes is a lucrative endeavour for farmers (BC Ratio = 4.16), with an average cost of production of Rs. 15100/ha and a net return of Rs. 420880/ha. Despite the fact that Uttar Pradesh is known for its high levels of mango production, customers must bear the burden of the purchase price (Rs. 32.74/kg) without doing much to increase the income of the producer (the producer's share in the consumer price is 52.05%). The strategy used to collect exploratory data in the study area revealed the existence of a monopoly mango marketing channel (C1: Producer-Whole Sellers-Retailers-Consumers). According to estimated costs in the mango value chain, producers incurred the largest portion of costs (81%), followed by entire sellers (10.60 %) and retailers (8.40%). The results of the study showed the need for the implementation of creative market policies and pricing methods for a significant increase in farmers' income and a significant decrease in consumers' prices, which would otherwise be seized as a massive market margin by retailers and wholesaler.

Keywords: Value Chain Analysis, Cost of Production, Profitability, Marketing Channel, Market Margin.

1.Introduction: Being an agrarian state with an abundance of fertile land, Uttar Pradesh (UP) enjoys this advantage. That is why it makes a significant contribution to the national supply of food grains. In addition to serving as a basis for producing fruits and vegetables, the State also serves as a conduit for the shipment of produce from J&K, Himachal Pradesh, and Haryana. Providing farmers with fair pricing for their goods and consumers with no additional financial burden from subsidies is one of the most significant difficulties the nation faces. In (UP), there is a similar issue to India. However, at the same time aound 35% of F&V of total production are wastageing due to traditional supply chainin India, which is more than the total consumption of U.K. (Kulshrestha Dhiresh and ChhatraPal (2013). If row produce's processing and value addition can be improved to match the rising demand for processed foods, this difficulty may be overcome. The Food Processing Industry (FPI) is crucial in connecting Indian

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

farmers with consumers on both the domestic and global markets. Studying the connections between India's FPI and agricultural sectors is crucial. so that rising positive growth impulses between these two industries might be found and encouraged to support the agriculture sector's development. In comparison to developed nations, India plainly wastes a lot of resources and adds very little value, which results in lost commercial opportunities and decreased farm revenue. Profits from agricultural products have significantly decreased. Since the 1990s, agricultural input costs have risen more quickly than the market price of products. Consequently, even after accounting for the increases in productivity, farmers still see a 15-20% decline in their situation. FPI and post harvest management of F&V provides remunerative prices to farmers generate employment opportunities and provides convenience to consumers(ChhatraPal and Lalit Sharma 2013).

By the year 2040, there will be 1.6 billion people on the planet, and to meet our own food needs, we will require about 400 metric tons of grains. There should be an increase in agricultural productivity in order to meet the target of 400 mt, but there are many obstacles in India to achieving this goal because some areas of agricultural land have reached saturation points and the same areas show a decline in production, and agricultural land is shrinking daily due to multiple use of land. Therefore, given this situation, it is important to understand the function that FPI plays in India's agricultural growth and food security.

2. Objectives of the Study:

1. To study acreage, production and productivity of F&V in the state.
2. To estimate the cost of mango production in the study areas.
3. To identify the supply chain of mango marketing in the study areas.
4. To explore the possibility of processing/value addition of mango in the state.

3. Research Methodology:

3.1. Sample Techniques and Coverage

The study will be based on secondary and primary data. The primary data will be obtained by following stratified random sampling technique. The three districts has selected such as special reference of Meerut, Aligarh and Saharanpur. The criteria for selection of the district will be nearby markets and urbanization. The sample size will be 300 mango growing farmers household, taking 100 each from the sample districts for the analysis of value chain and cost of cultivation. The sample will be broadly drawn on probability proportion method in four standard farm size classes viz., marginal, (<1 ha), (1-2 ha), medium (2-4 ha) and large (above 4 ha). While selecting the respondents, due care will be given to existing social composition. The 300 farmers mango 30 intermediaries, 60 retailer 180 consumers and 90 processing units were selected for the study.

3.2 Selection of Blocks

In Meerut**, Rohta and Saroorpur block** in **Aligarh, Tappal** and **Chandaus** block, in Saharanpur, **Rampur Maniharan** and **Nanauta block** have been selected for research studies.

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430
The respondents will be selected by simple random sampling method and 50 respondents from each block will be taken to make a total sample size of 300. The primary data will be collected from the wholesalers, retailers (spencer), consumers and food processing units available in each district from the respondents with the help of pre-tested interview schedule.

4. Socio-economic Status of the Selected Area :

UP is one of the major producers of horticultural crops and food grains in India, which serves as a lucrative base for the FPI. It is a largest producer of F&V in India - Rank 1 in production of food grains, milk, sugarcane, potato, okra, brinjal peas, mango, guava gooseberry, and watermelon. With strong supply side advantages, local demand, rising export potential and policy support, processing of products offer immense potential in the state. Considering the abundance of naturally existing agro-resources, mango, aonla, citrus fruits, carrot, garlic, chilli and major vegetables processing and value addition are promising a large opportunities for the income and employment generation for the household in the selected study area. In this context a brief status of presently on-going farm activities of the study area are given as below: Meerut district of the Indo-Gangetic Plain is predominantly Rice–wheat and sugarcane–wheat farming systems. Households also keeps livestock (dairy cow and buffalo), which is an integral part of the farming system. In the Rohta and Saroorpur block farmers grows mango and guava mainly in fruits crops. While potato, carrot, cauliflower, cabbage, okra, brinjal are the vegetables which are mainly growing by the farmers in the selected blocks of Meerut district.

Aligarh is one of the developed districts located in the north western part of Uttar Pradesh. District comprises the southernmost portion of Meerut division and lies in the upper Ganga and Yamuna. It extends from 27º29′ to 28º11′ North latitudes and 77º29′ to 78º38′ East longitudes. Farmers grow in Rabi wheat, barley, peas, gram, mustard etc. Kharif (paddy, maize, jowar, bajra, urad, tur, moong, cotton etc.) and Zaid the monsoonal crops (watermelon, muskmelon, cucumber, vegetables, sugarcane etc.) It is not uniform in all the blocks of district). In Tappal and Chandaus area under agriculture is 25215 Sq. Km and in 12729 Sq.Km. as per the census of 2011.

Saharanpur economy is a burgeoning commercial hub and a leading regional canter for wholesale and retail trade, agro-based industries, and industrial products. Saharanpur is well known for its agricultural products such as rice sugarcane, mangoes, litchi, and lemon. Rampur Maniharan and Nanauta are the major mango producing hub of Saharanpur District.

5 . Status of F&Vs Production in U P :

A wide variety of fruits, vegetables, and herbs may be produced in UP due to its diverse agroclimatic conditions. The majority of vegetable crops may be cultivated effectively in a broad variety of agroecological environments, from humid tropics to alpine regions. Vegetable growing is mostly practised by landowners who live close to metropolitan areas.

Most rural private peasant holders do not regularly engage in F&V, which accounts for the low level of production noted as well as supported by the survey data (Statistical Abstract of UP 2021). In recent years, the commercial production of horticulture products, especially vegetables, has also increased due to the growth of state farms (such as the UP Horticulture Development Corporation) and rising private investment in the industry by domestic and

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

foreign businesspeople. Both irrigation and rainfed systems are used to grow vegetables. A growing number of food processing facilities, cold storage facilities, and new technologies are driving up the utilization of irrigated vegetable production systems. Small farmers in UP mostly make their living from growing a range of vegetables in various agro-ecological zones. Vegetable production ranges from small-scale production for domestic and home markets to large-scale production for growing a few plants in the garden for personal use. To improve output in general and export volume in particular, productivity must be increased.

Production of fresh F&V is a priority. The seasons of production are compatible with many neighboring states like New Dehli NCR and much of the land is suitable for organic certification . According to our first objective of this project, to study acreage, production and productivity of F&V in the UP state (Table 2.1) shows the acreage under fruits 504.15 (000 Ha) of UP which is 7.28 % of India and acreage under vegetables 1307.22 (000 Ha) is 12.04 % of India's total acreage under vegetables which is very significant figure from single state .

Table: 1: Acreage, Production and Productivity of F&V in the UP state. (Area in '000 Ha,Production in '000 MT)

	FRUITS			VEGETABLES		
	Area	Production	Productivity	Area	Production	Productivity
UP	504.15	11231.46	22.28	1307.22	29160.91	22.308
Share of UP at National Level	7.28	10.96	150.64	12.04	14.55	120.85
All India	6929.73	102481.17	14.79	10859.42	200445.23	18.458

(Table 2.1) shows the production of fruits 11231.46 (000 MT) of UP which is 10.96 % of India and production of vegetables 29160.91 (000 MT) which is 14.55 % of India's total production vegetables. The productivity of F&V also very significance at National level, the share of fruits productivity around 11 % and productivity of vegetables 22.308 (000 MT) which is around 15 % (14.79 %) share at National level also very significant figure UP state, because the population of UP also around 17 % of India total population. So it is also good for food security point of view and a strong reason of the existence of large potential demand for fresh fruit and vegetable crops in the state. The share of production and productivity of F&V at National level also indicate strong supply chain of F&V in UP.

6.RESULTS AND DISCUSSION:

The result of the study, that descriptive analysis is employed to describe the socio-demographic characteristics of sampled farmers household, traders and consumers. For value chain analysis of mango in the select districts, role of actors and their roles, in value chain governance, challenges and opportunities along value chain, marketing channels, marketing costs, margins, and benefit shares of actors in the value chain are discussed.

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

7. Socio-Demographic Characteristics of Respondents :

It starts out by going through research on the sex, education, and age distribution of households who grow vegetables. It also discusses data on the state of F&V production, the land use system, and service accessibility.

7.1. Socio-economic characteristics of sampled farm households

In terms of age, sex, family size and experience, level of education, dependency ratio, access to extension services, access to market information, distance from nearest market, and development agent, this subsection describes the profile of the sampled respondents.

7.2 Sex of household respondents

By counting the number of homes with male and female heads, gender was examined. The survey's sample population of farmers included 300 respondents. Out of all the homes whose heads were contacted, 88.8% had male heads and 21.2% had female heads.

7.3 Education level of respondents

The survey's findings indicate that the average household head who was illiterate was 13.33%. However, just 4.33% of people have a certificate or higher, compared to 67.33% and 15% who went to primary and secondary school, respectively (Table:2). Education level is crucial in ensuring that households have access to necessities like food, shelter, and clothing, both in theory and in practice. Education and training improve working efficiency, which increases income and food security. Additionally, education is crucial for decision-making and corporate management (Kadigi, 2013).

Table: 2: Demographic characteristics of sampled farmers

Indicators		total	
		Number	%
Sex	Male	154	77
	Female	46	23
	Total	200	100
Education	Illiterate	40	20
	Primary School	102	51
	Secondary school	45	22.5
	Certificate and above	13	6.5

Source: Based on survey result, 2021

8 Value chain of Mango:

Identifying value chains of a commodity like mango and its analysis, is not as straightforward as it might seems due to the large number of players involved in it, starting from the point of sampling collection, cultivation, production and post production including marketing. Hence we planned to have a robust research design to capture all the aspects with a precision as we anticipated. **Reference to Kerlinger and Rint (1986)** and Landman (1988), we executed the research activities with an expost-facto research design of descriptive and diagnostic nature with special emphasis to reveal possible relationships of all value creating activities by observing existing condition or state of affairs and searching back in time for plausible

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

contributing or supporting factors with complete description. The next step to do the research work was the sampling methodology. To get a holistic view regarding the mango value chains, we decided to have a representative sample from UP.

The three districts of UP such as **Meerut, Aligarh and Saharanpur** were selected logically and purposively as this state ranks first in mango production with a share of 23.47 per cent and highest productivity of 19.2 MT/ha (APEDA, 2021), which is even much higher than the national productivity (8.7 MT/ha) recorded. We followed a multistage random sampling procedure to select the final respondents. Thus the randomly selected 300 mango growers from selected villages (Bariyawan, Tewaripur, Kiyanwan and Priyawan from block Kalakankar and Jamethi, Barai, Gotani and Bhadri from block Kunda) and 30 whole sellers and 60 retailers (from Kalakankar and Kunda blocks) constituted the sampling frame for the study.

The fluent data collection methods like structured and semi structured interviews, group meetings and purposive focus group discussions were carried out to elicit the meaningful data. Conscientious analysis of the value chain identified in the area with respect to the variables like cost of production, marketing efficiency, market cost and price spread, cost incurred and margin obtained in the marketing channel, producers' share in consumers' price etc. were carried out in a systematic method (with the prevailing price as observed at the time of data collection as base). The quantitative analytical methods used in this study also comprised of the Incremental Benefit-Cost ratio analysis (INCBEN) (Mc Farland *et al.,* 1983; Kuo-Lung Yang *et al.,* 2004) and Marketing Efficiency index (MEI) (Acharya and Agarwal 1987). Illustrative methodology of value chain mapping (FAO 2005) was also used in the description of the analysis results.

9. Estimate of Cost of Production of Mango:

Estimation of the production cost is the first step in obtaining profitability approximation of any crop production practice and also the necessary prerequisite for the value chain analysis. Production cost estimate revealed in the table 3, that average cost of production of mango in the study area (Rs/ha) is Rs. 107700/ha with minimum share of expenditure on labour (1.02 %) and maximum expenditure on land rent (46.43%) followed by harvesting cost (26%.56), irrigation (7.43%), fertilizer (6.50 %), machinery (3.71%) and pesticide (6.50 %). Similarly, a study by Shantanu Kumar Dubey et al. (2019) also observed Rs. 93100/ha as the production cost and land rent were (43 %) , harvesting cost (24%). One other study by Bhosale *et al.* (2016) also observed Rs. 81,831/ha as the production cost of mango.

Table 3 : Average cost of production of Mango (N=300)

Cost Component	**Amount (Rs/ha)**	**%**
Labour	1100	1.02
Machinery	4000	3.71
Fertilizer	7000	6.50
Pesticide	7000	6.50
Land rent	50000	46.43
Harvesting and marketing cost	28600	26.56

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

Irrigation cost	8000	7.43
Mislenious	2000	1.86
Total cost of production Rs/ha	107700	100.00

In UP, majority of the mango farmers are not having their own land to cultivate the mango, they used to lease in the land for cultivation or taking mango orchards with premature mango tree plants for which they need to pay major portion of the production cost (Rs. 50000/ha) in the present study.

10. Return and Profitability of the Mango Cultivation:

Returns were assessed with the ratio of the average yield and the market price as observed by the respondent of the study. According to them the average yield of the mango in the study area was 247 qt/ha (Table 4.) which was higher than the state average yield reported (APEDA, 2019). Average price obtained by the farmers for the mango fruits was Rs. 2140/kg. BC ratio which shows the profitability of mango cultivation was observed as 4.16 (Table 4,3) which highlighted that high economic viability nature of the venture in the study area. The two other studies by Kerutagi and Deshetti (2018) on two system of mango planting like traditional and high density planting came out with a BC ratio estimate of 1.49 and 2.00, respectively.

Table 4: Yield, returns and benefit cost analysis of mango cultivation

Mango (300 Farmers)	**Yield (qt./ha)**	**Price (Rs./qt)**	**Gross Income (Rs/ha)**	**Net Income (Rs/ha)**	**B:C Ratio**
	247	2140	528580	420880	4.16

Profitability analysis done by Luhach *et al.* (2007) showed a very high BC ratio of 5.8:1 for the mango cultivation in Haryana. In a study by Bhosale *et al.* (2016) on economics of the mango cultivation estimated an average price of Rs. 32/kg of mango with BC ratio of 1.60:1 in Kesar mango in plain zone of western Maharashtra. Datarkar *et al.* (2014), in their study observed an average income of Rs. 1,48,956.00/ ha for the mango cultivation with a BC ratio of 2.57:1 in Gadchiroli district of Maharashtra.

Comparative analysis of the present study results with similar studies done previously in different region showed that, though the cost of cultivation or gross income may show variation in spatio-temporal regime, all had normalness in the profitability estimation (all results were with BC ratio more than 1). Sah et al (2010) also did the similar analysis of potato in north eastern states of India.

11. Cost Estimation, Economic Return and Marketing Margin through the Mango Value Chain:

In the identified marketing channel, component-wise marketing cost was computed and presented in Table 3. Results show that on an average cost, producer incurred Rs 480/qt of sold Mango as the production cum marketing cost. Whereas whole seller incurred marketing cost of Rs. 62.80/q with maximum share on transportation cost (35.03%) because of high price of petrolium products and followed by (11.15%) cost incurred on grading and sorting and mandi charges (12.74%). The least proportion of marketing cost was for handling charges around

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

(4 %) for the wholesalers. Further, from the same the table, it is evident that marketing cost incurred by the mango retailers were of relatively lesser order i.e. Rs 49.80/q with its relative proportion on different components in the same order as that for whole sellers. In the study area the retailers were selling the mango along the wayside using their own pulled carts and not using the market space. Hence they are devoid of the mandi charges. Thus, from the table 3, it is well clear that producers bore maximum share (81 %) of total cost incurred in the mango value chain followed by whole sellers (10.60 %) and retailers (8.40 %). Similarly, Datarkar *et al.* (2014), in their study identified that total marketing cost incurred by mango grower in transportation and market fees contributed higher in all among the cost components.

Table 5: Return earned by the different market functionaries in Mango value chains

Particulars	C1: Producer-Whole Sellers – etailers-Consumers Amount (Rs/qt) Proportion (%)	
Producers Cost (Production cum marketing cost	**480.00**	**81.00**
Expenditure incurred by Whole Seller/Total processing charge	**62.80**	**10.60**
a) Grading and sorting	13.30	21.18
b) Weighing cost	7.00	11.15
c) Transportation charges	22.00	**35.03**
d) Handling charges	2.50	3.98
e) Loading & unloading charges	8.00	12.74
f) Commission/Mandi charges	10.00	15.92
total (a+b+c+d+e+f)	**62.80**	
Expenditure incurred by retailers	**49.80**	8.40
a) Grading and sorting	12.30	24.70
b) Weighing cost	7.00	14.06
c) Transportation charges	22.00	44.18
d) Handling charges	2.50	5.02
e) Loading & unloading charges	6.00	12.05
total (a+b+c+d+e)	**49.80**	
Total cost	**592.60**	

The results showed that the consumer used to purchase mango in the study area at the rate of Rs 3274/q. But, mango producers were selling it at Rs 2140/q to the whole sellers with a margin of Rs 1704/q. The wholesalers were used to get an average net margin of Rs 824/q in the mango marketing chain. In that only Rs. 45.80/q was incurred to the marketing cost and a huge proportion of Rs 708.2/q is the profit to them. Retailers, were purchasing the mango at the price of Rs 2964 /q and they had the net margin to the extent of Rs. 310/q see in Table 6.

Table 6: Return earned by the different market functionaries in Mango value chains

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

Particulars	C1: Producer-Whole Sellers – etailers-Consumers
Net price received by Farmar/ Producer	1704
Whole seller purchase price	2140
Net margin received by whole seller	824
Retailer purchase price	2964
Net margin received by retailer	310
Consumer purchase price	3274

Likewise, the magnitude and relative shares of net return to various marketing partners were also worked out. As indicated in Table:6, in terms of net margin, producers' share was found to be highest (52.05%) in consumer price followed by whole sellers (25.17%) and retailers (9.47 %). In absolute terms however, this trends was reverse and producer had the lowest share (65.36 %) and retailers had highest (100.00%). Wholesaler was identified with a share of (90.53 %) in consumer price in the absolute terms. In order to get a deeper insight in to the cost benefit relationship of the value addition practices at the wholesaler and retailer level an economic analytical tool called incremental benefit cost ratio which is mathematically equivalent and powerful to Net Present Value (NPV) was employed. For the estimation and computation of the proper ratio the cost component and benefit component of main group of value addition activities were grouped.

Table 7: Differential proportion of net return for various marketing elements in consumer price paid in mango value chain

Particulars	Channel 1 (C1)	
	In terms of net margin	In absolute value terms
Retailer share in consumer price	9.47	100.00
Wholesaler cost in consumer price	25.17	90.53
Producer share in consumer price	52.05	65.36

in to two i.e. grading, sorting and weighing (GSW) and transportation, loading/ unloading and handling (TLH) was worked out objectively and presented in Table 7.

CONCLUSION :

Value chains analysis is gaining an increased interest from all the sectors of agriculture as it exerts the thrust in the development process. It is quiet dynamic and surprising to see the changes in it for a single commodity from time to time at particular territorial boundary and place to place at a particular temporal framework. Hence the in-depth analysis of the value chain starting from the pre production stage to post selling stage is very important to suggest

DOI: 10.5281/zenodo.7223430

market policies and implement suitable marketing strategies. As mango being a potentially important fruit crop for profit making, the present study results are assuming significance. It showed the need of creating more market facilities in the study area for utilizing better competitiveness in marketing by the producers to reach the final consumer by overcoming the persistent monopolistic marketing channel. The burden of the consumers to bear the high cost for the mangos without reflecting on the farm gate price can be reduced substantially by devising proper marketing strategies and policies. Study results indicated the huge market margin taken up by the retailers and wholesaler which can be subtracted from the consumer's price if the farmers are empowered for the creation of direct marketing strategies through capacity development and training complimented with infrastructure support from the government.

BIBLIOGRAPHY:

- AhluwaliaI.J and Rangarajan C., "Agriculture Industry: A study of linkages the Indian experience," .Mimeo, World Economic Congress of International Association. (1986)
- Ali Jabir et al., "Efficiency and Productivity Changes in the Indian Food Processing Industry Determinants and Policy Implications,"
- Devadasan K., "Diversification and Value Addition are the key words," Survey of Indian

Agriculture.TheHindu, (2008): http://hindu.com/books/sia/2008/agri08e.htm .

- Goyal S. K., "Potential in Agribusiness- Fruit and Vegetable Processing Industry in India,"

Journal of International Farm Management, Vol. 3, No. 2, (2006)

- Saraswat S.P. and M.L. Sharma, "Problems of Post-Harvest Management of Plum Fruit,"

Glimpses of Indian Agriculture, 2 Volume Set: Macro and Micro Aspects, Editor Academic Foundation, (01 sep, 2007)

- Sharma K. D. et. al., (2010) "Value Chain Analysis and Financial Viability of Agro-Processin Industries in Himachal Pradesh," Agricultural Economics Research Review, Vol. 23 (Conference Number), (2010): 515-522.
- ChhatraPal and Lalit Sharma (2013) "Post-harvest Management of Fruits &Vegetables through Food Processing Industry in India", RIJEB, Volume 2, Issue 8, ISSN: 2277-1018-Radix
- Kumar Kuldeep . et. al. (2010), Value addition of potatoes and chillies by farmers of Jalandhar district of Punjab International Journal of Agricultural Sciences, June, 2010, Vol. 6 Issue 2 : 620-624
- Kulshrestha Dhiresh and **ChhatraPal** (2013) "Impact of Post harvest Wastage on Per Capita Availability of Fruits and Vegetables in India" Pezzottaite Journals Volume 2, Number 4, October – December' 2013 ISSN (P):2319-9059, (O):2319-9067
- Gulati Ashok Gulati . et. al., (2018), Agricultural Value Chains in India Ensuring ompetitiveness, Inclusiveness, Sustainability, Scalability, and Improved Finance

SEYBOLD Report
ISSN: 1533 - 9211
DOI: 10.5281/zenodo.7223430

- Dubey S.K. (2019), An Assessment on Value Chain Dynamics of Mango in Pratapgarh District of Uttar Pradesh, Journal of Community Mobilization and Sustainable Development Vol. 14(2), 355-362, May-August, 2019.
- Annual Report (2020-21), "Ministry of Food Processing Industries", Government of India.