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## CONTENTS

<b>Effect of tillage, fertilizer placement and nitrogen levels on green foliage, brix, sucrose, juice and ethanol production of sweet sorghum (<i>Sorghum bicolor</i> L.) in Mollisols of Uttarakhand</b> MANOJ KUMAR, MAHENDRA SINGH PAL and KEWALANAND	<b>1</b>
<b>Status and distribution of soil available micronutrients along a hill slope in Ekpoma, Edo State, Nigeria</b> AGBOGUN, LUCKY, EDOSOMWAN, N.L. and AGABI, E.J.	<b>7</b>
<b>Foliar nutrition for higher soybean productivity in north western plain zone of India</b> AJAY KUMAR, D. K. SHUKLA, AMIT BHATNAGAR and R. K. SHARMA	<b>15</b>
<b>Soil suitability assessment of a humid tropical soil for pineapple (<i>Ananas comosus</i>) and plantain (<i>musa spp</i>) cultivation in Port Harcourt, Nigeria</b> PETER, K.D., ORJI, O.A. and ORIAKPONO, I.O.	<b>19</b>
<b>Land suitability evaluation for avocado pear (<i>Persea americana</i> Mill.) and pineapple (<i>Ananas comosus</i> L. Merr) in rain forest zone of Edo State, Nigeria</b> OKUNSEBOR F. E., UMWENI A. S., ONAIFO W. and OSAGIE D.	<b>30</b>
<b>Population studies on various coccinellid beetles from different crop ecosystems of Pantnagar, Uttarakhand</b> M. SREEDHAR, R. P. MAURYA, PARUL DOBHAL and RIYA	<b>39</b>
<b>Occurrence of leaf feeder <i>Podontia quatuordecimpunctata</i> (Linnaeus, 1767) in <i>Spondias pinnata</i> (L.f.) Kurz at Kamrup district of Assam, India</b> S. PATHAK and B. DEKA	<b>44</b>
<b>Morphological characterization of F<sub>1</sub> guava hybrids and varieties</b> SHIKHA JAIN, RAJESH KUMAR, NARENDRA KUMAR SINGH, VIJAY PRATAP SINGH and SATISH CHAND	<b>47</b>
<b>Report on severe infestation of root-knot nematode, <i>Meloidogyne incognita</i> on tuberous <i>Vigna vexillata</i> (L.)</b> ZAKAULLAH KHAN, KULDEEP TRIPATHI, BHARAT H. GAWADE and V. CELIA CHALAM	<b>53</b>
<b>Selection of exotic germplasm of bread wheat against <i>Puccinia triticina</i> resistance with analysis of Area Under Disease Progress Curve</b> WAGHAMARE MINAL BHUJANGRAO and DEEPSHIKHA	<b>58</b>
<b>Land suitability assessment for okra (<i>Abelmoscus esculentus</i> L.) and fluted pumpkin (<i>Telferia occidentalis</i>, L.) cultivation in Khana Local Government Area of Rivers State, Southern Nigeria</b> PETER, K.D., UMWENI, A.S. and ORJI, A.O.	<b>62</b>
<b>A comprehensive study of changed training in SAMETI Uttarakhand mode during Covid-19 pandemic</b> JYOTI KANWAL, B. D. SINGH, ANURADHA DUTTA and ANIL KUMAR SHARMA	<b>71</b>

<b>Initiation of Farmers University and Farmers Bank in India</b> AVINASH SHARMA, CHOWLANI MANPOONG, SANGEETA SHARMA and MEGHA RAGHAVAN	<b>76</b>
<b>Reformation of ration shop for below poverty line people in India</b> AVINASH SHARMA, CHOWLANI MANPOONG, SANGEETA SHARMA and MEGHA RAGHAVAN	<b>83</b>
<b>An empirical analysis of factors influencing agricultural employment intensity of migrant farm households at Almora district of Uttarakhand</b> BHUMIKA GIRI GOSWAMI and ANIL KUMAR	<b>90</b>
<b>Consumer attitude and behavior towards purchasing agri food: A case study of tomato crop</b> TAMANNA JOSHI and ASHUTOSH SINGH	<b>95</b>
<b>Checklist and conservation status of freshwater finfishes of KoleWetlands a Ramsar Site in Kerala, India</b> KITTY FRANCIS C. and M. K. SAJEEVAN	<b>103</b>
<b>Freshwater fish fauna of Peechi-Vazhani Wildlife Sanctuary, Western Ghats of Kerala, India</b> ELDHO. P. S. and M. K. SAJEEVAN	<b>110</b>
<b>Study of subclinical mastitis in milch breeds of cattle in Western India</b> BEENU JAIN, ANUJ TEWARI, BHARAT BHANDERI and MAYURDHWAJ JHALA	<b>117</b>
<b>Prevalent mutations in the Delta variants of SARS CoV2 circulating in India</b> BEENU JAIN, ANUJ TEWARI, ALOK KUMAR and PREMA S GODI	<b>122</b>
<b>An analysis of selective pressure on Delta variants of SARS CoV2 circulating in India</b> BEENU JAIN, ANUJ TEWARI, ALOK KUMAR, PREMA S GODI and SHRADDHA DWIVEDI	<b>126</b>
<b>AMR status in Uttarakhand</b> NAWAL KISHOR SINGH, A. K. UPADHYAY, T. K. AMBWANI, MAANSI, HIMANI SHARMA, SOURABH SWAMI and AJAY KUMAR	<b>131</b>
<b>Awareness of the aspects of sun protection among college going girls</b> BEENU SINGH and MANISHA GAHLOT	<b>142</b>
<b>Development and evaluation of power weeder for narrow row crops</b> T. SENTHILKUMAR, N.S.CHANDEL, P.S.TIWARI, SYED IMRAN S. and G. MANIKANDAN	<b>148</b>
<b>Data prediction for calibration of seed drill using multiple linear regression</b> SIMRAN TIWARI, PRAMOD MOHNOT and K.B. JHALA	<b>156</b>
<b>Mapping of ground water potential zone in complex hydrological system of Suyal basin in the Mid-Himalayan Region using Analytic Hierarchical Process</b> RITESH JOSHI, H.J SHIVA PRASAD, JYOTHI PRASAD, P. S. MAHAR, DEEPAK KUMAR and PANKAJ KUMAR	<b>166</b>
<b>Water quality assessment of Bageshwar Block Springs using Weighted Arithmetic Water Quality Index (WAWQI) method, Bageshwar District, Uttarakhand, India</b> MOHD AZAM, JYOTHI PRASAD and H. J. SHIVA PRASAD	<b>173</b>

## Consumer attitude and behavior towards purchasing agri food: A case study of tomato crop

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**ABSTRACT:** Agri food market is very challenging in India and developing rapidly. Consumers have raised great interest to healthy and tasty diet with high nutritional compounds, confidence in food safety, environmental and animal welfare concern and also sustainability. This paper presents attitude and consumption pattern for agri food of consumers. Quantitative data is collected by survey method consisting of structured questions which are only targeted to Agri produces and consumers. Agri food market in India suffers from various challenges. These challenges are mainly due to poor supply chain practices. In the recent years Agri supply has raised the attention of many researchers. An efficient supply chain is the need of Agri market and this can add value to the delivery of final product. Inefficiency in the Agri supply chain network causes poor delivery of Agri product and this directly affect the attitude and behavior of consumer. This paper also focuses on constraints faced by consumer while purchasing Agri produce. This study aims to identify and rank a number of attributes, focusing on how their statistical significance across the consumers of fresh produce buying decisions. The study suggests that the farmers need to enhance the nutritive value of tomato by limiting the use of chemical and pesticides. The consumers have given more priority to the organic and healthy crop of tomato.

**Key words:** Agri Produce, consumer attitude, consumption, preference, supply chain efficiency

The world food industry is operating in an explicitly dynamic environment which demands constant changes and responses. The entities operating on global market gain competitive advantages and are result of numerous changes and responses to the changing demand of market (Vukasovic, 2013). Last few decades have witnessed dramatic change in agri-food marketing system. The market system is becoming more organized and customer-centric, is facilitating growth of organized food retailing (Chen *et al.*, 2005). In the saturated market environment, distribution channels, marketing activities, diversification strategies and food quality are increasingly important. In addition, consumers have become more concerned about the nutrition, health, and quality of food they eat (Gil *et al.*, 2000). Therefore, Agri products have become very popular in recent years. There has been a rising trend in the consumption of Agri products for several reasons. Some consumers buy them because they seek to purchase environmentally-friendly products while others want to become more health-conscious about what they eat. The market for agri as well as organic products has increased considerably over the last decade due to consumer's increasing awareness of

both health and environmental issues. This growth in demand is expected to continue in the coming years, even though the situation differs from one country to another in term of type and quantities of production (Vindigni *et al.*, 2002). The future of agri product will, to a large extent, depend on consumer demand. Thus, a consumer oriented approach to understanding agriculture is important not only in its own right, but also in terms of a response to shifting market dynamics (Bonti-Ankomah and Yiridoe, 2006). Nevertheless, to increase the consumption of agri farm products, many efforts needed to communicate the benefits of fresh farm products and farming to get potential consumers.

Market of fruits and vegetables has many challenges because the products are easily perishable and they represent an important component for the consumer diet (Nicolae and Corina, 2011). Throughout the world, major shift in dietary patterns is occurring towards more diversified and high value products like, milk and milk products, fruits and vegetables and meat (Huang and Bouis, 1996; Meenakshi 1996). A change in dietary preferences, Socio-demographic factors, increased awareness about health benefits

of fruits and vegetables, food industry's marketing policies, have been driving the fruits and vegetables market in Europe. However, it has also been reported that the growth in sales by supermarkets of fresh fruits and vegetables tends to lag behind the growth in sales of processed food products as most of the household continue to buy fruits and vegetables from traditional retailers even though they may shop at supermarkets for other products (Chen *et al.*, 2005). Tomato is one of the most widely grown vegetable crops in all over world because of its high nutritive value, higher production and wide ecological amplitude. Tomato fruits are used for different food preparations such as soups, salads, pickles, chutney, paste, puree and ketchups apart from being consumed in raw form. Tomato is an important vegetable crop and ranks third next to potato and onion in the production of vegetables in India. Tomato is the world's largest vegetable after potato and sweet potato. On the basis of area under the crop, China stands first followed by India, U.S.A, Turkey, Egypt, Iran, Italy, Spain, Brazil and others. In terms of production also China is the leading producer followed by India, U.S.A, Turkey, Egypt, Italy and others. It constitutes a major proportion of agri products people from all over the word consume tomato in variety of ways in raw form as well as in processed form. With the change in the dietary pattern and consumption pattern of consumers the demand for fresh, organic vegetables with low use of pesticides has been increased.

## MATERIALS AND METHODS

### *Review of literature*

Noureddin *et al.* (2013) explored the consumer perceptions and the extent to which the consumer is aware of AFPEV attributes and features. Through his study it was analyzed that the people from the study area are well aware about Agri food products and ethical values. He has also identified in his study that consumer also relate ethical values with organic and environmentally friendly food products. The reason behind purchasing Agri food product is its high quality and nutritious value. According to Vukasovic (2013) an important task

for the producers i.e., for farmers will be to increase consumers' awareness of what an organic product is and how to differentiate it in the market place. Along with knowledgeable and educated consumers, consumption could be raised on another level. This study also focuses on the buying behavior and attitudes of organic fruits and vegetables consumers. The results of the research explains that to develop organic market in EU states few key factors are need to be consider like education and information to consumers about organic agriculture and products adequate marketing activities especially point-of-sale promotional activities and clear labeling of organic products.

Purchase and consumption behavior for Agri food of consumers have undergone considerable change in last few years (Boone and Kurtz, 1998; Crawford, 1997). In this study it has been reported that besides exogenous factors like, culture, reference group, family and socio-economic situations; endogenous factors like, needs and motives, learning, self-concept, personalities and attitudes affected consumers' buying behavior (Fox *et al.*, 2004; Van Waterschoot *et al.*, 2008; Akpinar *et al.*; 2009, Gupta, 2009; Vukasovic, 2013). These studies have indicated that in addition of socio-demographic and socio-cultural factors like, product quality, price, place of sale, ambience, country of origin and convenience in purchasing affect purchase decisions of food consumers (Fox *et al.*, 2004; Van Waterschoot *et al.*, 2008; Akpinar *et al.*, 2009, Gupta, 2009; Vukasovic, 2013, Squires *et al.*, 2001) organic products are very seasonal and their availability, assortment and price can vary between seasons. All of these factors influence marketing activities and make it difficult to establish appropriate retail outlets for organic products. Most people visit to the supermarket and have usual day and time of day to shop (East *et al.*, 1994; Singh and Powell, 2002). About 50% of consumers bought fewer perishable vegetables (like potato) on weekly basis and more perishable vegetables (like cabbage) twice a week and overall quantity-wise fewer perishable vegetables were bought in more quantity during a given period of time (Mahaliyanaarachchi, 2007). Several studies have concluded that consumers' of



fruits and vegetables are willing to pay premium price for quality products (Boccaletti and Nardella, 2000; Moser *et al.*, 2011).

According to one of the reports published by FAO (2005) that in Agri products the effects of longer food chains, longer storage and transport routes has higher risk of deterioration of produce (even if most of this may be bacterial and hence not a factor in chronic diseases), and the use and misuse of conserving agents and contaminants. The report also focuses over the effects of changes in varietal composition and diversity of consumption patterns for example, the loss of traditional crop varieties and perhaps even more significantly. As per the report trade aspects need to be considered in the context of improving diet, nutrition and the prevention of chronic diseases. Trade has an important role to play in improving food and nutrition security. On the import side, lower trade barriers reduce domestic food prices, increase the purchasing power of consumers and afford them a greater variety of food products. Freer trade can thus help enhance the availability and affordability of food and contribute to a better-balanced diet. On the export side, access to markets abroad creates new income opportunities for domestic farmers and food processors. Farmers in developing countries in particular stand to benefit from the removal of trade barriers for commodities such as sugar, fruits and vegetables, as well as tropical beverages, all these being products for which they have a comparative advantage.

Moser *et al.* (2011) confirms that the choice to buy fresh fruits and vegetables are primarily driven by privately-oriented attributes such as personal health or experiential eating quality. By analyzing differences across countries, the researcher found that only health related aspects are similarly valued across regions while the importance of other attributes varies considerably by consumers' place. Further the researcher also highlighted the areas to enhance marketing activities by targeting motivated consumers, positioning brands and communication strategies for organic and low environmental impact food that should focus on convincing consumers that

these attributes confer a value added to the consumer.

## MATERIALS AND METHODS

In the present investigation, multistage sampling technique has been used for the selection of blocks of Nainital district of the State of Uttarakhand. The four blocks of Nainital district i.e., Haldwani, Dhari, Kotabagh and Ramgarh have been selected purposely as they are the top four tomato producing blocks in Nainital district. On the other hand, convenience sampling has been used to select consumers from the selected blocks. Consumers are included in the sample to know consumer satisfaction and their opinion about the performance of tomato supply chain. This paper is also based on secondary data, from the literature, and primary data collected through an online self-administered questionnaire conducted with 120 consumers.

Secondary data include published research papers, journals, magazines, newspapers and data published by various government agencies like District Horticulture Offices, National Horticulture board, Directorate of Agriculture and FAO.

The survey questionnaire developed for the study had questions representing four different components of the study, namely, socio-economic profile of consumers, their buying behavior of fruits and vegetables, and the various products and market attributes and constraints faced by consumer. The first component included questions related to socio-economic information of the respondents such as gender, age, education level and number of members in the household. The second component related to buying behavior of consumers and consisted of questions related to consumers' purchase frequency, quantity of fruits and vegetables purchased in one transaction, most preferable place to purchase vegetables (tomatoes) and preferred market place. To understand the Product attributes (the third component of the study), questions were asked related to Various product attributes such as quality, nutrition value, freshness, variety, size, color, and taste. In order to analyze the relative importance of these product attributes, the consumers' perception

on these attributes was taken on a Likert scale (1- Not a priority, 2- Low priority, 3- Medium priority, 4- High priority and 5-Essential). The fourth component related to constraints faced by consumer and questions were asked such as Availability in highly perishable condition, High price volatility, Inadequate availability of preferred variety, Low quality of tomatoes, Unhygienic market condition, High level of pesticides, Lack of availability of organic tomatoes, High price of organic tomatoes. Participation was on a voluntary basis and the majority of respondents were female (54.2%) and most of them were single (45.8%). As for education, 30% of the sample has university education, 15% has secondary school level and only 54% has post-graduate level. The range of age was from 20 to 50 years and above (Table 1).

The questionnaire was designed and made available in English and Hindi languages. The survey aimed at collecting data on: (i) consumer attitude and consumption pattern for fresh vegetables; (ii) attributes of these products that are important in choosing them; (iii) the level of confidence as in different sources of information.

## RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads

The survey examined various factors and determinants that influence the attitudes, perceptions, knowledge and consumption of fresh

vegetable (Tomato) in Nainital district, Uttarakhand. The questions also include 5 point likert scale to know the level of agreement and disagreement with the factors. The first component included questions related to socio-economic information of the respondents such as gender, age, education level.

The Table 3.1 represents the consumers' buying pattern it shows from the table both male and female consumers are involved in purchasing. The majority of people involved in purchasing of fresh produce are of the age group of 20 years to 40 years.

Concerning the tomatoes buying pattern and attitude of consumers, various questions were asked to consumers about their best place to buy tomatoes, buying frequency, availability of tomatoes in the market, months when paying more for tomatoes, varying tomato consumption depending upon the season, preserving tomatoes for few times and paying reasonable price for tomatoes according to quality. The responses were recorded and analyzed by using per cent to get an idea of consumer buying pattern of tomatoes.

### *Consumers' buying preference*

The Table 3.2 represents consumers' concerns when shopping for fresh vegetables (tomatoes), comparison of farmers' market produces to supermarket, and reasons consumers shop at farmers' markets. The result represents neighborhood vendors are the most preferred place to buy tomatoes and fresh vegetables by consumer. Total 53.3 per cent

**Table 3.1: Demographic Structure of the sample respondents (N=120)**

Items	Specification	Number	Percentage
Respondents Gender	Male	55	45.8
	Female	65	54.2
Respondents Age groups	20-30	45	36%
	31-40	50	42%
	41-50	16	13.96%
	51 and over	9	8.04%
Level of education of households' heads	Primary school	10	8.3 %
	Secondary school	15	12.5%
	College/university	30	25%
	Post –graduate(master, Ph.D.)	65	54.2%

**Table 3.2: Places where consumers prefer to buy fresh vegetables.**

Sl. No.	Place	Percentage of respondent
1.	Supermarket/Retail outlet	10
2.	Neighborhood vendors	53.3
3.	Haat (direct from farmers)	17.5
4.	Mobile cart vendors	19.2

consumer prefers to buy from vendors. The second most preferable place is mobile cart vendors which represent 19.2% (Table 3.2).

The reasons for preferring neighborhood vendors for purchasing tomatoes are easy accessibility, good relationship with as regular customers, bargaining opportunity and enough opportunity to return and complaint against bad quality.

### ***Buying frequency***

The purchase behavior of consumer was accessed through their buying frequency and quantity purchased. This reflects consumer's consumption pattern. According to Table 3.3, 48.3 per cent consumer prefers to purchase fresh tomato so they purchase twice in a week. Consumer's frequency of purchase shows their attitude towards consumption of fresh vegetable, 47.5 percent consumer's purchase once in a week but the results show very few consumers (3%) purchase tomatoes daily. The consumers mostly purchase 1-2 kg tomatoes in one time. This is also due to regular availability of fresh tomatoes in the market and high perishable nature of produce.

### ***Availability of best quality tomatoes***

The place/market/vendor/haat, consumer chooses to purchase fresh produce also reflect their behavior towards consumption and preferred quality. Among all 44.2 per cent consumers agreed that they get best quality tomatoes and fresh vegetables from neighborhood vendors. Haat is another preferred place opted by 23.3 per cent consumers as a best place to get good quality tomatoes (Table 3.4). The reasons for preferring neighborhood vendors for purchasing tomatoes are easy accessibility, good

relation with regular customers, bargaining opportunity and able to return and complaint against bad quality.

**Availability of tomatoes in the market:** The consumers responded when asked about the availability of tomatoes in the market, 51.7% (62) consumers opined those tomatoes are always available in the market while 29.2% (35) consumer opined that availability of tomatoes in the market is most of the occasions (Table 3.5). Majority of the consumers opined that the tomatoes are available in the market throughout the year.

Product attributes play a major role in purchase choices of the buyers and are crucial determinants of success/failure of product and its marketing strategies. The product can be defined in terms of its different attributes like search, experience and credence. The buying decisions for different products mainly depend on a combination of these attributes. To assess the quality attributes of tomatoes which are concerned by the consumers in the Nainital district, a rating scale was prepared by the

**Table 3.3: Consumers' purchase behavior for vegetables (tomatoes)**

S. No.	Frequency of Purchase	Percentage of respondent
1.	Daily	3
2.	Once in a week	47.5
3.	Once on a fortnight	1.2
4.	Twice in a Week	48.3

**Table 3.4: Places where consumer gets best quality tomatoes**

S. No.	Place	Percentage of respondent
1.	Supermarket/Retail outlet	20
2.	Neighborhood vendors	44.2
3.	Haat ( direct from farmers)	23.3
4.	Mobile cart vendors	20

**Table 3.5: Availability of tomatoes in the markets**

S. No.	Availability of Tomatoes in the Markets	Percentage of respondent
1.	Always	51.7
2.	Most of the Occasions	29.2
3.	Half of the Occasions	12.5
4.	Seldom	3.3



researcher where few important quality attributes were included for rating by consumers. The rating scale consist of five-point Likert scale with options 'Not a priority', 'Low priority', 'Medium priority', 'High priority' and 'Essential' having rating from 1 to 5 respectively.

The score of consumers' responses on various product attributes indicate that consumers attach more importance to credence attributes (like freshness, nutrition, safety, quality, organically grown) and the search (size, color and variety) over experience attributes (like taste and odour). Consumers' responses on product attributes were 50 per cent on color and freshness for cooking, 47.5 per cent on organically grown products and 44.3% for salad. The score of credence attributes is 47.5 %, and it loads high on quality, nutrition value, organically grown, safety and freshness. Search attributes explain 41.7 %, 32.4 % variation and are loaded on sorting, variety, and size. The score shown by experience attributes turned out to be 35 % and taste and odour have been loaded high. Based on these results it has been analyzed that consumer give priority to more nutritive and organic products rather than more tasty and attractive produce for both

cooking and salad purpose (Table 3.6).

It can be noticed from Table 5 that for cooking purpose, consumers give priority to color and freshness of tomatoes, absence of pesticides in tomatoes and sweetness and visual appearance of tomatoes, since these attributes got ranks 1, 2 and 3 respectively. Consumers are getting more health conscious and preferring to purchase organic Agri produce only. On the other hand, regarding the salad purpose, consumer gives priority to color and freshness of tomatoes, size and shape of tomatoes and absence of pesticides in tomatoes as these attributes got ranks 1, 2 and 3 respectively.

**Constraints faced by the consumers:** The Table 3.7 exhibits the percentage of five-point-Likert scale concerning the constraints faced by the consumers during their shopping of tomatoes. The scale which consisted of questions/statements regarding the constraints faced by consumers had five options *viz.*, not a problem at all, minor problem, moderate problem, major problem, and very major problem.

The ranking reveals that the consumers are heavily against the use of pesticides since the statement

**Table 3.6: Ranking as per the degree of priority about the following attributes related to decision of buying tomato by consumers (Tomato Quality Attributes)**

For cooking purpose			For table/salad purpose		
S.No.	Quality Attributes	Rank Percentage	S.No.	Quality Attributes	Rank Percentage
1.	Size and shape	5 32.5	1.	Size and shape	3 33.3
2.	Color & Freshness	1 50	2.	Color & Freshness	1 44.3
3.	Juiciness & ripeness	3 41.7	3.	Juiciness & ripeness	5 28.3
4.	Sweetness & visual appearance	4 35	4.	Sweetness & visual appearance	4 33.3
5.	absence of pesticide	2 47.5	5.	absence of pesticide	2 44.2

**Table 3.7: Ranking as per the constraints faced by the consumers**

S.No.	Constraints	Percentage of respondent	Rank
1.	Availability in highly perishable condition	33	7
2.	High price volatility	43	3
3.	Inadequate availability of preferred variety	41	5
4.	Low quality of tomatoes	39	6
5.	Unhygienic market condition	42	4
6.	High level of pesticides	52	1
7.	Lack of availability of organic tomatoes	47	2
8.	High price of organic tomatoes	47	2
9.	Permission to sort tomatoes as per the choice of the consumer is not allowed	30	8
10.	Poor display of produce	28	9

“high level of pesticides” got a percentage (52%) and ranked number 1. High price volatility and lack of availability of organic tomatoes has second position in constraints faced by the consumer with a percentage (47%) and (47%) respectively. Another major constraint faced by the consumers is the low quality of tomatoes as the statement got 3<sup>rd</sup> position. The other constraints faced by consumers are unhygienic market condition, inadequate availability of preferred variety, low quality of tomatoes etc.

## CONCLUSION

In this paper, the attitude and behavior of consumer is examined with the help of questionnaires directed to tomato buyers in Nainital district. This research gives an overview about consumer's criteria for preference towards fresh products. Socio Demographic analysis represents almost all economic group people prefer to consume tomato on regular basis. Mostly 35-41 age group people go for purchasing fresh produce. Furthermore, neighborhood vendors are the most preferred place for consumer in the study area, due to proximity and availability of fresh tomatoes consumer prefer to purchase from neighborhood vendors. The research also suggests that the farmers need to enhance the nutritive value of tomato by limiting the use of pesticides and chemicals. The consumers have given more priority to the organic and healthy crop of tomato. The study also presents the upcoming scenario that reflects the people would prefer to go to hygiene places to buy fresh vegetables, the healthy habits adopted through the consumers raised the expectation level on the nutritive value and availability of organic and fresh produce. Due to awareness among the people more preference has been given to fresh produce rather than processed agri products. Consumers are more concerned for their healthy food habits.

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