



Buyers Attitudes towards “Hmarchate” (Bird’s Eye Chilli) grown in Mizoram

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Abstract

India is the largest producer, consumer and exporter of chilli, contributing about 40% of the world’s chilli production. India exported chilli for the year 2020-21, 6,01,500 tonnes with a value of Rupees 8,42,975 lakhs. Bird’s eye chilli is a wild form of chilli and usually used to denote any small sized pointed chilli of high pungency due to its resemblance to an avian pupil. The botanical name of bird’s eye chilli is *Capsicum frutescens*, belonging to the family solanaceae. The present study is based on primary data collected from 100 respondents based on their preferences of the attributes of the birds eye chilli displayed in the Mizo Stall in the BIOFACH India 2016 with INDIA ORGANIC held at National Small Industries Corporation(NSIC) Exhibition Grounds, Okhla New Delhi in November 2016. The researcher observed that organic (32%) emerged as the most significant attribute followed by pungency(25%), followed by price(19%), followed by distinct appearance(14%) and geographical indications(10%). Thus it can be concluded that ‘organic’ should be projected as the most significant attribute for ‘formulating marketing strategies for birds eye chilli’ cultivated in Mizoram.

Keywords: chilli, exports, production, attributes, attitudes score.

Introduction

Chillies are herbaceous or semi-woody annual and the chilli plants are erect, profusely branched with a leaves that are variable in size and simple. Chillies can be grown in both tropical and subtropical areas. Bird’s eye chilli is a wild form of chilli and usually used to denote any small sized pointed chilli of high pungency due to its resemblance to an avian pupil. The botanical name of bird’s eye chilli is *Capsicum frutescens*, belonging to the family solanaceae. “Hmarchate”(known as bird’s eye chilli) is widely grown in Mizoram due to suitable climatic condition prevailing in the State. The total production in Mizoram during the year 2020-21 was 10,918 metric tonnes. Notably, the Mizo hmarcha acquired the Geographic Indications(GI)in the recent years.

The present study is based on primary data collected from 100 respondents based on their preferences of the attributes of the birds eye chilli displayed in the Mizo Stall. The study is based on interviews with the respondents conducted by the researcher on her visits to the exhibition in November 2016. Mizo Hmarchate (Bird’s eye chilli) was displayed in the BIOFACH India 2016 with INDIA ORGANIC held at National Small Industries Corporation(NSIC) Exhibition Grounds, Okhla New Delhi in November 2016 by the farmers sponsored by Horticulture Department, Govt of Mizoram. With a view to understand the buyers attitudes, the researchers visited this Exhibition. Interestingly, among the five attributes namely, distinct appearance, price, organic, pungency and geographical indication, organic emerged as the most significant attribute which affected the buying attitudes of the customer.

Bird’s eye chilli : An Overview

Capsicum frutescens is one among the five cultivated species of the genus solanaceae and is closely related to *Capsicum chinense* Jacq(Heiser and Smith,1953). There are various varieties and forms of *Capsicum*, which belongs to the family Solanaceae(Smith et al.,1987 and Bosland,1992). The genus *Capsicum* consists of about thirty-seven species composing of wild, semi-domesticated and the five well-known domesticated species, namely, *Capsicum annum* L., *Capsicum baccatum* L., *Capsicum chinense* Jacq., *Capsicum frutescens* L., and *Capsicum pubescens* Ruiz and Pav with more than 200 varieties(Bosland et al.,2012). Almost all *Capsicum* species are diploid with 12 chromosome pairs(Moscone et al.,1996).

C. annuum, *C. chinense* and *C. frutescens* are phylogenetically close sister species and are sometimes mentioned as “*annuum-chinense – frutescens*” complex for their overlapping morphological features (Melendez et al., 2009). The identification of *Capsicum* species is based on flower morphology where anther colour is the main character in this. *C. baccatum* accessions possess yellow anther while *C. annuum* have purple anthers. The species *C. annuum*, *C. chinense* and *C. frutescens* have flowers with greenish to white coloured petals and yellow seeds (Zonneveld et al., 2015 and Sudre et al., 2010).

The quality of *Capsicum* fruits is determined by its colour, pungency and flavor attributes, which are imparted by its pigments, especially carotenoids mixture, pungent capsinoids and volatile compounds profiles, respectively (Rodriguez et al., 2014 and Koeda et al., 2014). The fruit is perceived as a carotenoids – rich non-leafy vegetable. The diverse carotenoids are present in the sacrocarps and can be grouped into yellow, orange and red carotenoids, which impart pale yellow to dark red colours to the fruits (Norazian et al., 2019).

Bird's eye chilli is called by numerous other synonyms like African pepper, chilli pepper, goat's pod, Mexican chilli, red pepper, Tabasco pepper, Zanjibar pepper and Cayenne pepper. Bird's eye chilli was originated in South America and was introduced in India during 16th century and has been grown as a neglected crop in a small area all over the world (Baruah and Barua, 2004). The genus *Capsicum* consists of twenty-five distinct species (Baral and Bosland, 2002), from these five species are domesticated (Pickersgill, 1977).

It is believed that Chillies have originated in the northern Amazon basin and by natural geographic spread are indigenous throughout Central America, South America, the west Indies and the most southerly states of the U.S.A. Chilli was introduced to the rest of the world by Christopher Columbus who discovered America in 1492 (Madala and Nutakki, 2020). It is also believed that the monks of the Royal Monastery of Santa Maria de Gaudalupe, in Estremadura, Spain were the first European to come across the taste of hot pepper introduced the chilli to their kitchen. The seeds of the chilli which was first cultivated in the monasteries were spread throughout Spain and Europe by traveler monks (Kenneth et al., 2000). In 1600 the Portuguese and Spanish traders through trade routes from South America introduced the chilli pepper in Africa and in India (Rai et al., 2004). Chilli was spread in Asian countries by the Portuguese and Arab traders. At present chilli have an important place in South Asian and South East Asian cuisine. Chilli which is name as wonder spice is regarded as one of the most important commercial spice crop is popularly used universal spice (Wilson et al., 1991).

Chilli was first introduced in India by the Portuguese at the end of the 15th century and gained popularity in the 17th century (Indira et al., 2007). The main cultivated species are *Capsicum annuum*, *Capsicum frutescens* and *Capsicum chinense*. Naga King Chilli which belongs to *Capsicum chinense* is regarded as the world's hottest chilli with a 8,55,000 scoville units (Shetalu, 2010). In India bird's eye chilli is cultivated as homestead crop and consumed extensively across mainland regions of South Karnataka, Kerala, Tamil Nadu and North-Eastern India, especially in the states of Mizoram and Manipur. Among the north-eastern states of India, Mizoram is famous for the habitation of wonderful diversity of bird's eye chilli, with respect to fruit shape, size, colour, pungency, plant type, physiological characteristics, reactions to diseases and pests, adaptability and distribution (Ozgur et al., 2011). According to Dutta et al., 2015, the north-eastern hill region of India is one of the hot-spots of biodiversity in the Indian gene centre and is also noted for its richness in ethnic diversity and traditional culture.

Chillies are herbaceous or semi-woody annual and the chilli plants are erect, profusely branched with a leaves that are variable in size and simple. The flowers of chilli are usually borne single, are terminal and are bisexual and their colour varies from white to blue. The fruits of chilli are borne singly at nodes, variable in size, shape, colour, and degree of pungency. The colour of the unripe fruit of chilli is green or purplish, ripening to red or orange, yellow, brown, cream or purplish and the seed is pale yellow. Chillies can be grown in both tropical and subtropical areas. For growth a warm humid climate is most suitable while warm and dry climate increases fruit maturity. Chillies can grow in different types of soils on condition that they are deep, well drained, well aerated and fertile (Farooqi et al., 2005). Bird's eye chilli is a wild form of chilli and usually used to denote any small sized pointed chilli of high pungency due to its resemblance to an avian pupil (Chatterjee et al., 2012). In 1912, Wilbur Scoville developed a scale to measure the heat levels of chilli peppers. According to the scale one part per million of heat is equivalent to 1.5 Scoville units (Bellringer, 2001).

Relevance of Chilli to the Indian Economy

As mentioned earlier, India is the largest producer, consumer and exporter of chilli, contributing about 40% of the world's chilli production. Chilli is considered as one of the commercial spice crop of India. It is the most widely used universal spice, named as wonder spice. Indian chilli is considered to be world famous for two important commercial qualities namely, its colour and pungency levels. Some varieties are famous for

the red colour because of the pigment and other quality parameters in chilli are length, width and skin thickness.

Table 1. State wise Total Area and Production of Chilli from 2017 - 2021

(Area in Hectare, Production in Tons)

STATES	2017 - 18		2018 - 19		2019 - 20(*)		2020 - 21(Final)		2021 -22(adv.est)	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
Andhra Pradesh	1,19,920	6,18,350	1,58,428	5,01,410	1,53,082	8,05,026	1,77,456	7,96,653	1,60,000	7,00,000
Telangana	73,780	3,40,800	82,521	3,69,020	80,579	4,36,380	89,156	5,36,541	85,000	4,33,122
Madhya Pradesh	94,410	2,32,700	87,839	2,17,550	88,675	2,08,634	1,22,198	3,15,598	1,18,295	3,03,069
Karnataka	1,00,340	1,91,480	1,57,587	1,94,760	74,078	1,29,238	85,598	1,47,049	1,00,000	1,84,533
Orissa	71,700	69,280	71,700	69,280	71,700	69,280	71,700	69,280	71,699	69,257
Tamil Nadu	44,120	18,100	45,950	14,000	47,991	29,618	55,716	25,648	53,518	24,117
Gujarat	11,350	22,070	11,335	21,444	11,299	18,905	11,930	23,345	11,990	22,359
Assam	20,240	18,990	19,847	18,980	2,196	4,713	20,459	20,189	20,691	19,648
Maharashtra	7,050	14,140	5,698	14,030	6,508	22,434	5,605	24,484	5,648	18,546
Punjab	7,500	14,080	8,770	16,656	8,776	16,955	8,777	17,630	8,265	15,882
Rajasthan	7,990	13,280	8,480	14,356	9,832	20,033	6,603	10,925	7,598	12,915
Uttar Pradesh	13,640	12,580	13,763	12,716	13,547	11,808	13,600	12,065	13,619	11,885
West Bengal	65,550	1,05,750	5,292	8,300	5,450	8,576	4,930	7,821	4,507	7,781
Nagaland	180	810	1,372	1,798	1,379	1,754	1,980	4,328	1,377	1,748
Total	6,37,770	16,72,410	6,78,582	14,74,300	5,75,092	17,83,354	6,75,708	20,11,556	6,62,207	18,24,462

Source: State Agri/Horti Departments/DASD Kozhikkode

Figures from 2018- 19 onwards are subject to revision

(Est): Estimate; (*) Provisional

Table 1 gives the state wise data of the total area and production of chilli from 2017 – 2021. It is evident from the table that Andhra Pradesh is the highest producer of chilli for the last five years, followed by Telangana. The third position is secured by Madhya Pradesh and fourth is Karnataka. For the year 2021-22 , it is estimated the state Andhra Pradesh will produced 7,00,000 tons which is 38.35% of the total production of the top fourteen states of India while, the state Telangana is estimated to produce 4,33,122 tons that is 23.73% of the total production. The top five states viz; Andhra Pradesh, Telangana, Madhya Pradesh, Karnataka and Orissa shared 92.58% of the total production of the top fourteen states for the year 2020-21. This shows that the other nine states, Tamil Nadu, Gujarat, Assam, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, West Bengal and Nagaland have a small margin share of only 7.42%. It can also be seen that production decline in some states because of the Pandemic COVID 2020.

Export of spices from India

India is the world's largest spice producer and is also the largest consumer and exporter of spices. The production of different spices has been growing rapidly over the last few years. Production in 2021-22 stood at 10.87 million tones and for the year 2020-21, the export of spices reached both in terms of value and volume by registering a growth of 17% in US\$ value terms and 30% in volume terms. During 2021-22, the single largest spice exported from India was chilli followed by spice oils and oleoresins, mint products, cumin and turmeric. In February 2023, the exports of spices from India increased by 44.12% to US\$ 379.51 million. In 2021-22, India exported 1.53 million tonnes of spices. From 2017-18 to 2021-22, the total exported quantity from India grew at a CAGR of 10.47%.

Table 2. Item-wise export of spices from India

(Quantity:tonnes, Value: Rs in Lakhs)

SPICES	2016-17		2017-18		2018-19		2019-20		2020-21	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Pepper	17,600	1,14,313	16,840	82,078	13,540	56,868	17,000	57,371	16,300	54,446
Cardamom (small)	3,850	42,150	5,680	60,908	2,850	35,625	1,850	42,537	6,500	1,10,675
Cardamom (large)	780	8,264	760	5,647	860	6,106	1,310	7090	1,325	9,126
Chilli	4,00,250	5,07,076	4,43,900	4,25,633	4,68,500	5,41,118	4,96,000	6,71,040	6,01,500	8,42,975
Ginger	24,950	25,705	22,605	21,607	18,150	19,602	60,410	52,905	1,25,700	75,665
Turmeric	1,16,500	1,24,191	1,07,300	1,03,568	1,33,600	1,41,616	1,37,650	1,28,691	1,83,000	1,67,660
Coriander	30,300	29,208	35,185	27,275	48,900	35,208	47,135	39,831	57,000	48,983
Cumin	1,19,000	1,96,320	1,43,670	2,41,799	1,80,300	2,88,480	2,14,190	3,32,806	2,99,000	4,25,310
Celery	6,250	6,246	6,480	5,950	6,100	6,649	6,230	6,904	7,650	9,984
Fennel	35,150	30,876	34,550	25,906	26,250	24,413	24,220	23,162	31,800	27,630
Fenugreek	34,680	18,277	29,280	12,689	27,150	13,847	26,570	15,690	38,300	24,642
Other seeds(1)	18,100	15,456	22,175	16,046	29,740	18,736	37,580	22,081	48,800	30,008
Garlic	32,200	30,712	46,980	30,936	29,500	17,110	22,280	17,183	17,950	15,630
Nutmeg & Mace	5,070	23,642	5,500	22,094	3,300	15,015	2,900	13,280	3,875	19,000
Other Spices(2)	40,210	50,595	38,305	65,253	43,300	61,486	37,235	66,546	44,000	70,943
Curry Powder/ Paste	28,500	59,910	30,150	61,620	33,850	74,470	38,370	81,279	38,450	89,145
Mint Products(3)	22,300	2,52,750	21,500	3,22,835	21,610	3,74,934	24,470	3,83,202	27,400	3,66,825
Spice Oils and Oleoresins	12,100	2,45,533	17,200	2,66,172	12,750	2,19,300	13,000	2,44,683	16,450	3,30,675
Total	9,47,790	17,81,224	10,28,060	17,98,016	11,00,250	19,50,581	12,08,400	22,06,280	15,65,000	27,19,320

(1) Include Ajwan seed, Dill seed, Poppy seed, Aniseed, Mustard etc.

(2) Include Asafoetida, Cinnamon, Cassia, Cambodege, Saffron, Vanilla, Spices(NES) etc.

(3) Include menthol, menthol crystals and mint oils.

Source: Spices Statistics at a Glance 2021, Directorate of Arecanut and Spices Development

Table 2 shows the export for the different spices for the year 2016 to 2020 was 58,49,500 tonnes in quantity and Rupees 1,04,55,421 lakhs in values. It can be also seen from the table 2 that the three spices namely turmeric, ginger and chilli have a large share in the export of spices from India. As India is the largest producer, consumer and exporter of chilli, the table 2 depicted that during the year 2016 to 2020, 24,10,150 tonnes with a value of Rupees 29,87,842(in lakhs) were exported. In the case of turmeric 6,78,050 tonnes with a value of Rupees 6,65,726(in lakhs) were exported and for ginger 2,51,815 tonnes with a value of Rupees 1,95,484(in lakhs) were also exported.

For the year 2020-21, chilli secured first position among the spices exported with a share of 38.43%. Cumin ranked second with a share of 19.10%, followed by turmeric(11.69%). The fourth position is obtained by ginger with a share of 8.03%. Comparing the year 2016 and 2020, these spices have registered an increase, chilli(50.28% in volume,66.24% in value), ginger(403% in volume,194.35% in value),turmeric(53.54% in volume,35% in value), cumin(151.26% in volume and 116.64% in value), cardamom(small)(68.83% in volume,162% in value), cardamom(large)(69.87% in volume,10.43% in value),coriander(88.11% in volume,67.70%),celery(22.4% in volume,59.8% in value), fenugreek(10.43% in volume,34.82%), other seeds(169.61% in volume, 94.15% in value),other spices(9.42% in volume,40.21%

in value), curry powder and paste(34.91% in volume and 48.79% in value), mint products(22.86% in volume,45.13% in value) and spice oils and oleoresins(35.95% in volume,34.67% in value). The following spices have shown a decrease, pepper(7.38% in volume, 52.37% in value), fennel(22.45 in volume, 59.8% in value), garlic(44.25% in volume, 49.10% in value) and nutmeg and mace(23.57% in volume,19.65% in value).

It is interesting to know that during 2020-21, the export of spices reached an all-time high both in terms of value and volume by registering a growth of 17% in value and 30% in volume. India produces about 75 of the 109 varieties listed by the International Organization for Standardization(ISO). The most produced and exported spices are pepper, cardamom, chilli, ginger, turmeric, coriander, cumin, celery, fennel, fenugreek, garlic, nutmeg & mace, curry powder, spice oils and oleoresins. Out of these spices, chilli, cumin, turmeric, ginger and coriander make up about 76% of the total production.

Production of Bird's eye chilli in Mizoram:

Mizoram has obtained Geographical Identification (GI) for the bird's eye chilli or Mizo chilli. The chilli has successfully passed an organic confirmation test in Bangalore recently. The state is also taking efforts to improve Jhum cultivation. It has been recognized as a Geographical indication by the Government of India on 23rd March,2015. Mizo chilli has three grades. Grade A is only about one centimeter in length - smallest, thinnest, but the most pungent, and the most in-demand. Next is Grade B, slightly thicker and longer. Grade C is similar to Grade B in thickness but a bit longer. It is grown in the hilly slopes of the North Eastern States mainly during shifting cultivation. Harvesting time is between Novembers to March.

According to Horticulture Department, Government of Mizoram, Mizoramhas exported locally grown bird's eye chilli', a Mizo organic chilli, to the United States for the first time as part of an initiative to expand the market and boost farmers' income. State Agriculture Minister C. Lalrinsanga flagged off 7.5 metric ton of typical Mizo chilli to the US from south Mizoram's Lunglei district in March 2023.The organic chilli was harvested by farmers from the three southern districts of Lunglei, Siahia and Lawngtlai. The initiative was taken jointly by International Competence Centre for Organic Agriculture (ICCOA) under Mission Organic Value Chain Development for North Eastern Region (MOVCD-NER) and Mission Organic Mizoram (MOM) of the agriculture department.

Table 3. PRODUCTION OF BIRD'S EYE CHILLI IN MIZORAM FOR THE YEARS 2011-2021

Sl. No	Year	BIRD'S EYE CHILLI		
		Area (Ha)	Area (Ha)	Production (MT)
1	2011-12	5,580	8,900	9,790
2	2012-13	6,050	9,025	8,210
3	2013-14	6,250	9,040	9,100
4	2014-15	6,350	9,140	9,330
5	2015-16	5,950	9,140	9,330
6	2016-17	7,480	11,170	10,730
7	2017-18	7,738	11,195	10,918
8	2018-19	7,738	11,196	10,918
9	2019-20	7,738	11,196	10,198
10	2020-21	7,738	11,196	10,918

Source:Mizoram Statistical Abstract (2021), Directorate of Economics&Statistics,

Govt. of Mizoram.

Table 3 shows the area and production of bird's eye chilli for the last ten years that is from 2011 to 2020. It can be observed that as the area of cultivation increases, production also increases. The area and production of bird's eye chilli is more or less the same from the year 2017 to 2020. The highest production can be seen during the year 2017-18 and 2018-19 with a production of 10,918 metric tonnes.

Table 4. District-Wise Production of Bird's Eye Chilli in Mizoram for 2020-21

Districts	Bird's Eye Chilli	
	Area (Ha)	Prod. (MT)
Mamit	689	1,291
Kolasib	1,344	1,000
Aizawl	2,218	2,246
Champhai	1,474	1,586
Serchhip	1,700	1,282
Lunglei	1,902	1,597
Lawngtlai	1,194	963
Siaha	675	953
Saitual	-	-
Khawzawl	-	-
Hnahthial	-	-
Total	11,196	10,918

(-) Data not available

Source – Directorate of Horticulture

In Mizoram, there are eleven districts namely, Mamit, Kolasib, Aizawl, Champhai, Serchhip, Lunglei, Lawngtlai, Siaha, Saitual, Khawzawl and Hnahthial. Table 4 shows the production of bird's eye chilli in the eleven districts of Mizoram for the year 2020-21. The highest production for bird's eye chilli is in Aizawl district. The Govt. of Mizoram has implemented Fostering Climate Resilient Upland Farming System in the Northeast (FOCUS) is being implemented in six districts under an Externally Aided Project (EAP) for the improvement of Jhum cultivation. Mizoram will also implement a three-tier Integrated Farming System (IFS) in 20 villages to improve jhum or slash-and-burn cultivation. Mizo Chilli' or 'Mizoram's Bird Eye Chilli', a Geographical Indication (GI), is grown under completely organic cultivation on Jhum land. It is small, about half an inch in length greenish in color before ripening and become bright red when ripe.

Methodology and Objectives:

The study focuses on the analysis of buyers attitudes towards "Hmarchate" (bird's eye chilli), the horticulture product in Mizoram.

The researcher relies on secondary data as well as primary data as detailed below:

The secondary data was collected by consulting relevant reports, journal, magazines, books, newspapers and websites.

Purposive sampling technique was adopted to collect primary data from 100 customers. Purposive sampling implies collecting information from members of the population who are available at the point of purchase in the Mizo spice stalls in exhibitions organised in New Delhi. Sample consisted of all trade visitors and customers who show interest in buying this spice.

The objectives of the study were:

To assess the buying attitudes, preferences and perceptions of the 100 customers bird's eye chilli of Mizoram at the national level, the researchers administered a structured questionnaire at the point of purchase in the Mizo spices stalls in the BIOFACH India 2016 with INDIA ORGANIC held at National Small Industries Corporation (NSIC) Exhibition Grounds, Okhla New Delhi during 10th – 12th November 2016 by the farmers sponsored by Horticulture Department, Govt of Mizoram.

Questionnaires was designed to assess the customer attitudes towards Mizo spice products, on bird's eye chilli, based on its attributes and benefits. The product attributes include appearance, colour, flavour, organic, smell, pungency, price and place of origin. For this purpose, the multi-attribute model developed by Fishbein(1985) is applied. The model measures three components of attitudes :

- (a) Salient beliefs people have about an object A_o ,
- (b) Object-attribute linkages, or the probability that a particular object has an important attribute and
- (c) Evaluation of each of the important attributes.

Attributes such as Pungency, distinctiveness, organic, spiciness and appearance for bird's eye chilli were examined

The basic formula is:

$$A_{ijk} = \sum B_{ijk} I_{ik} \text{ Where:}$$

i=attribute

j=product

k=consumer

I=the importance weight given attribute i by consumer k.

B=consumer k's belief regarding the extent to which product j possesses attribute i.

A=a particular consumer's (k's) attitude score for product j.

The attitude scores were further analysed using appropriate statistical tools. An overall attitude score for each product is computed by summing scores on each attribute, after weighing each by its relative importance.

Buyers Attitudes Scores

In a consumer behavior context, an attitude is a learned predisposition to behave in a consistently favourable or unfavourable way with respect to a given object. (Leon & Leslie, 2007)An attitude is lasting because it tends to endure over time. Consumers have attitudes toward a wide range of attitude objects, from very product-specific behaviors to more general, consumption related behaviors. Five types of enterprises viz Export and Import, Food Manufacturing, Retail Business, Service Company and Specialised Organic were interviewed to find out which attributes were significant.

Table 5 Attitudes Scores of Enterprises Towards Birds Eye Chilli

Attributes	Export & Import No of Enterprises 33 nos	Food Manu- facturing No of Enterprises 34 nos	Retail Business No of Enterprise s 13nos	Service Company No of Enterprise s 8 nos	Specialised Organic No of Enterprises 12 nos	Total	Percenta ge of Attitudes Sores
Distinct Appearance	591 (15)	537 (12)	289 (17)	84 (8)	204 (14)	1705	14
Price	729 (18)	825 (19)	321 (19)	227 (22)	297 (20)	2399	19
Organic	1272 (31)	1489(34)	465 (28)	372 (36)	502 (33)	4100	32
Pungency	1000(25)	1163(26)	441 (26)	278 (27)	314(21)	3196	25
Geographical Indications	467 (11)	394(9)	161 (10)	74 (7)	186(12)	1282	10
Total	4059(100)	4408(100)	1677(100)	1035(100)	1503(100)	12682	100

Source: Primary Data

Parenthesis shows percentage of Attitude Score

A glimpse at table 5 shows that the attribute organic has scored the highest with a score of 32 percent. Further it can be observed that the highest 'organic' followed by pungency with a score of 25 percent, the third highest was price with a score of 19 percent followed by distinct appearance with a score of 14 percent and the least geographical indications, with a score of 10 percent.

Bird's eye chilli (*Capsicum frutescens* L) is given a number of synonym's name like African pepper, chili pepper, goat's pod, Mexican chili, red pepper, Tabasco pepper, Zanibar pepper and Cayenne pepper whose small, very pungent fruits separate easily from calyx and are dispersed by bird's. Bird's eye chilli has whitish green flower and their upward directed pedicel and the fruits are in upright position till maturity which appears above the foliage(Chatterjee et al.,2012). Geographical Indications(GI) has given a chance to producers to determine quality standards and protect their food products' reputation, while showing their geographical origin(Xiomara et al.,2016). Thomas(2013) observed that marketing, distribution, branding and promotion are important tools of the Indian Geographical Indication products to acknowledge profitable prospective in the international market(Divya and Anoop,2018).

Conclusion

It can be concluded from the study that organic (32%) emerged as the most significant attribute followed by pungency(25%), followed by price(19%), followed by distinct appearance(14%) and geographical indications(10%). Thus it can be concluded that 'organic' should be projected as the most significant attribute for 'formulating marketing strategies for birds eye chilli' cultivated in Mizoram. Organic farming is gaining importance in the world and hence this attribute of 'Organic' should be pronounced and magnified in branding Mizo Hmarcha.

All around the world organic farming has become a trend for the farmers. 'Organic agriculture is a holistic production management system that avoids use of synthetic fertilizers, pesticides and generally modified organisms, minimizes pollution of air, soil and water and optimizes the health and productivity of interdependent communities of plants, animals and people'(Chand and wani,2016). Pungency in chilli is because of the chemical compounds known as capsaicinoids(Prasati and Ponnuswami,2008). Capsaicinoids are not destroyed in the mouth as the body masks their presence. It is interesting to note that no other plant part produces capsaicinoids as it is produced in glands on the placenta of the fruit (Bosland,1993). Price includes all the resources(financial costs, time and social costs) that a customer has to pay in order to obtain the product(Mihai,2013). Price is the amount that a customer has to pay in return for a product and services(Jain,2009).

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