

# PRODUCTION AND MARKETING PRACTICES OF GROWERS OF BIRD'S EYE CHILLI IN MIZORAM

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**Abstract:** Chilli is one of the most important commercial spice crops of India. There are various uses of chilli, it is used as spice, condiment, culinary supplement, medicine, vegetable and ornamental plant. Chilli is an essential spice because of its pungency, taste, appealing colour and flavor. Bird's eye chilli are small, thin, pointy peppers that are red when mature. India produces about 75 of the 109 varieties which are listed by the International Organization for Standardization (ISO). The most produced and exported spices from India 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 makeup about 76% of the total production. In the present study, the researcher interviewed the farmers from Champhai, Reiek and West Phaileng in Mizoram growing bird's eye chilli. Bird's eye chilli is a promising spice of Mizoram and has the potential to be widely exported globally. However, marketing practices are still conventional and hence need support from government agencies to enhance markets beyond local and regional level.

**Keywords:** bird's eye chilli, export, production, marketing practices, Mizoram.

## I. INTRODUCTION

Chillies play a significant role in exports of spices from India. The botanical name of bird's eye chilli is *Capsicum frutescens*, belonging to the family solanaceae (Vaishnavi et al., 2018). *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 annuum* 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).

*Capsicum* species are native to the Central and Southern America, while Brazil is the centre for most wild peppers while Peru and Bolivia are the primary centre of cultivated *Capsicum* diversity (Zonneveld et al., 2015). The five well known domesticated *Capsicum* species concentrated areas in different parts of the world are as follows (Bosland et al., 2012): *Capsicum annuum* is mainly centred in Mexico, it is also grown mainly worldwide. *Capsicum chinense*, it is the most widespread species in tropical America. *Capsicum frutescens* is popular in Asia and Africa. *Capsicum baccatum* and *Capsicum pubescens* mostly grown within South America and the Andean region.

In 1498 the Portuguese explorer Vasco-da-Gama brought with him the pungent spice, chilli to India for the first time. Chilli became popular and found its way in ayurveda and according to ayurveda, chilli has many medicinal properties as a stimulating good digestion and as an endorphins and also as a pain killer (Madala and Nutakki, 2020). *Capsicum* fruits in various forms are used in many parts of the world as additives in food for their strong pungency and aroma and for their pharmacological

### Exports of Chilli from India:

India is the world's largest spice producer and 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 tonnes. 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 US\$ value terms and 30% in volume terms. India is the world's largest producer, consumer and

exporter of chilli peppers. Guntur in Andhra Pradesh produces 38% of all the chillies produces in India and the state of Andhra Pradesh as a whole contributes 75% of India’s chilli exports(Mathur et al.,2000). It is interesting to note that during 2021-22, the single largest spice exported from India was chilli followed by spice oils and oleoresins, mint products, cumin and turmeric.

**Table no 1. Exports of Chilli in 2020-2021**

Countries	Amount (in crores)
China	₹ 3144.53
Thailand	₹ 992.26
Bangladesh	₹ 932.85
USA	₹ 706.95
Sri Lanka	₹ 679.64
Indonesia	₹ 552.64
UAE	₹ 481.04
Malaysia	₹ 448.85
UK	₹ 140.05
Vietnam	₹ 139.32
Total	₹ 8218.15

Source : Spice Board

Indian Spices.Com

Table no 1. shows the top ten importing countries of chilli from India. It is observed that China is the highest importing country with an amount of ₹ 3144.53 crores and a share of 38.26 per cent of the total import. Followed by Thailand with an amount ₹ 992.26 crores(12.07 percent), the third highest is Bangladesh with an amount of ₹ 932.85(11.35percent).

**Production of Bird’s eye chilli in Mizoram**

Bird’s eye chilli is one of the major spices cultivated in Mizoram state and it is smaller in size and spicier than the normal Indian red chillies. Mizoram chilli gained recognition of geographical indication (GI) tag in March 2015. The production of bird’s eye chilli in Mizoram has increased due to the initiative called FOCUS. FOCUS means Fostering Climate Resilient Upland Farming System, which is aided by the International Fund for Agriculture Development the UN. According to Horticulture Department, Government of Mizoram, Mizoram has exported locally grown bird’s eye chilli to the United States for the first time as part of an initiative to expand the market and boost farmer’s income in March, 2023.

**Table 2. 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 2. presents the area and production of bird's eye chilli for the last ten years that is from 2011 to 2020. The highest production can be seen for the three years viz 2017-18, 2018-19 and 2020-21 with a production of 10,918 metric tonnes. The production of bird's eye chilli for the year 2011-12 was 9,790 metric tonnes, while in 2020-21 it was 10,918 metric tonnes registering an increase of 10.33 percent.

## II. METHODOLOGY AND OBJECTIVES

The researcher conducted interviews and FGDs with 50 farmers in Reiek village located in the district of Mamit, 50 farmers in West Phaileng which is also in Mamit district and 50 farmers in Champhai located in Champhai district, the main centres of organised farming practices in bird's eye chilli production in Mizoram.

The objectives of the study were:

The researchers have examined the production practices of bird's eye chilli agripreneurs and identified the 4Ps of marketing viz; product, price, place and promotion of bird's eye chilli.

### Champhai

Champhai is a headquarter of Champhai district which is one of the eleven districts of Mizoram state in India and is 194 kilometres from Aizawl, the capital of Mizoram. The third largest in Mizoram, with an area of 3168 sq.km and is divided into three blocks and also accounts for 15.10% of the total geographical area of the state. It is located on the Indo-Myanmar border and is situated in a strategically important location. It is located in the north-eastern part of Mizoram, India between 24 degree 05'03.99" and 23degree 00'03.25" N latitudes and 93 degree 00' 31.29" and 93degree 26' 17.66" E longitudes(MIRSAC,2006).

Champhai is a beautiful place with its colourful tribal traditions, orchids and butterflies and it boasts a breathtaking view of the Myanmar hills. According to 2011 census Champhai has a population of 1,27,660. This frontier district has a special place in the history of the tiny north-eastern state and its people. It is said that the history of Mizo starts from Champhai and ends in Champhai. Champhai has a background of rich heritage and is a storehouse of ancient relics, monuments and memorials connected with legends and folklores. Major towns are Ngopa, Khawhai and Khawzawl. Champhai District has a healthy climate and a number of tourist attractions and a chain of green hills encircle luxuriant rice fields, which add to the beauty of this place.

Champhai District has a pleasant climate and the temperature during the winter varies from 10°C to 20°C and during the summer the average temperature lies between 15°C and 30°C. The district received pre-monsoon rains from March to May while regular south-west monsoon starts from June till October. The averages monthly rainfall is 254cms, while the average annual rainfall here is 1,814 millimeters(Department of Information and Communication Technology, Government of Mizoram). Crops are grown mostly rain-fed depending upon the monsoon rainfall.

### Reiek

Reiek is a beautiful village in Mamit district, which is one of the eleven districts of Mizoram and was established in 1998 with an area of 3025.75 sq.km. Reiek is located at a distance of 29 km from the state capital, Aizawl and also located at 23-41'17.36" N longitude and 92degree36'07.79" E latitude. The village lies within the Indo-Myanmar Biodiversity hotspot. Reiek is a mountainous and tourist spot which rests at an elevation of 1,465 metres and it offers a view of the surrounding valleys and hills. On a clear day, the plains of Bangladesh can be seen from the top of the hill.

Reiek has a typical Mizo village consisting of the distinctive traditional huts of the different Mizo sub-tribes, Mizo chieftain's house, a bachelor's dormitory and that of a widow has been created and maintained by Tourism Department of Mizoram. Reiek is one of the most popular places of tourist attraction in Mizoram. Reiek Hill is surrounded by thick lush green temperate trees and bushes and is home to exotic varieties of flora, fauna and wildlife.

Reiek plays host to Anthurium Festival every year which is one of the biggest cultural events of Mizoram. The festival is celebrated for a dual purpose, which is to boost the cultivation of this stunning marvel of a flower and also to attract tourists to the beautiful bounties of nature in this state and is organized by Tourism Department and the Horticultural Department with a financial support from the central government. There are 504 household with a population of 1851 and 70 are pursuing Jhum Cultivation for their livelihood. Reiek(Village Profile &Development Indicators 2017-2018, Directorate of Economic & Statistics,Mizoram).

The Temperature of Mamit district ranges from 9C to 24C and from 24C to 36C during winter and summer respectively. It experiences Monsoon during summer receiving abundant rainfall and is neither too hot nor too cold throughout the year. All Rivers flow in South-North direction, except Khawthlangtuipui. The five main big rivers are Tlawng, Tut, Teirei, Langkaih and Khawthlangtuipui. The economy of the District is basically Agro-based. Jhum type cultivation is the most popular type of cultivation and comprises the main source of agricultural products(NIC,2022).

### **West Phaileng**

West Phaileng is a village panchayat located in the Mamit district, which is one of the eleven districts of Mizoram. The latitude 23.700589 and longitude 92.4846640000001 are the geo-coordinate of the West Phaileng. West Phaileng is located around 25.5 kilometers away from its district head quarter Mamit. Mamit district is bounded on the north by Hailakandi district of Assam state, on the west by North Tripura district of Tripura state and Bangladesh, on the south by Lunglei district and on the east by Kolasib and Aizawl districts. Mamit district occupies an area of 3025.75 km and has 4 R.D. Blocks, Mamit, Reiek, West Phaileng and Zawlnuam. The Mamit district has 3 legislative assembly constituencies namely Hachhek, Dampa and Mamit(Dept. of Information & Communication Technology, GOM).

Mamit District with its headquarters at Mamit was etched out from the erstwhile Aizawl District under Mizoram Govt. Notification No.A.600III2II95-GAD dated 11.3.98. It started functioning from the 24th April, 1998 which was the date when the new Deputy. Commissioner assumed office. Mamit is the least urbanised Districts of Mizoram with 17.25 % of Total Population i.e out of 86364 only 14,899 person is living in Urban areas. Against the State level Sex Ratio of 976, Mamit district comprises of 927 sex ratio. West Phaileng village is the most populated Village with population of 2,1,309 while Saitlaw with a population of Only 59 persons is the smallest village in the district(NIC,2022).

### **Bird's eye chilli**

The botanical name of bird's eye chilli is *Capsicum frutescens*, belonging to the family solanaceae(Vaishnavi et al.,2018).The genus *Capsicum* consists of about thirty-seven species composing of wild, semi-domesticated and the five well-known domesticated species, namely, *Capsicum annuum* 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)

Chilli plants are perennial and short-lived and can grow up to 1.5 m in height. Their stems are woody at the base, fleshy and either erect or semi-prostrate and consists of a main tap root with many lateral roots. Its flowers occur singly or in small groups of two to three flowers and they are small and bisexual with five to six petals each. Flowers of *Capsicum annuum* are white-green, while those of *Capsicum frutescens* are yellow or white-green.

*Capsicum frutescens* is a perennial chilli with small tapering fruits, often two or three, at a node and the fruits are very pungent. Capsaicin is the substance that produces all of the heat sensation and this capsaicin is made by a specialized gland cells found in the cross- walls or the ribs of the pepper and is composed of several different alkaloids which vary in amounts depending on the species(Rowland et al.,1983)Capsaicin is the predominant spicy component of chili peppers, the pungency of which is often measured in Scoville Heat Units (SHU). This was first developed by Wilbur Scoville in 1912, which is a scale to measure the heat levels of chilli peppers. Bird's eye chilli measures 50,000 – 100,000 Scoville units.

Bird's eye chilli is called by numerous other synonyms viz African pepper, chilli pepper, goat's pod, Mexican chilli, red pepper, Tabasco pepper, Zanibar pepper and Cayenne pepper. Bird's eye chilli was originated in South America and was introduced in India during 16<sup>th</sup> 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).

Capsaicin is the substance that produces all of the heat sensation and this capsaicin is made by a specialized gland cells found in the cross- walls or the ribs of the pepper and is composed of several different alkaloids which vary in amounts depending on the species(Rowland et al.,1983). The pungency in chilli is because of the presence of a crystalline, acrid, volatile alkaloid, capsaicin which is present in placenta and pericarp of the fruit. Capsaicin has high diverse prophylactic and therapeutic uses in allopathic and Ayurvedic medicine(Sumathy and Mathew,1984). Chilli is used all over the world as spice because of its pungency and distinct flavour. It is a main ingredient in curry powder for culinary preparations. Chilli is used in pickle preparations and as avegetables(Farooqi et al.,2005).

**Production Practices/Pre- harvest management practices**

The production practices followed by the farmers of Champhai, Reiek and West Phaileng are mentioned below:

- Cultivation- Cultivation practices for bird's eye chilli in the three villages that is Champhai, Reiek and West Phaileng is almost the same as in different parts of Mizoram. The land is prepared by burning the debris which is present in the land, cleaning the land and repeated ploughing. Seeds are planted in the month of April and May with onset of pre-monsoon showers.
- Weeding and Irrigation: Weeding is done three times before harvesting. The first weeding is done after one month of planting and the next is done as and when the need arises, depending upon the weed formation. Irrigation is not done as rain water is enough for bird's eye chilli crop in almost all the area of Mizoram.
- Mixed cropping: Bird's eye chilli is grown as an intercrop with maize, gourd, bitter tomato, brinjal, chillies, ladies finger, yum etc.
- Harvesting- When the fruits of the plant is matured that is when it is red in colour, harvesting is done usually in the month of December and January. Sometimes when the fruit is not matured it is also harvested.
- Drying – Solar panel is used for drying the fruit of bird's eye chilli. Almost in all parts of Mizoram drying of bird's eye chilli is done under the sun as most of the farmers do not have solar panel.

**Product**

A product is a good, service or idea consisting of a bundle of tangible and intangible attributes that satisfies consumers and is received in exchange for money or some other unit value. Product is characterized by quality, design, features, brand name and sizes (Borden, 1984). Product is the first element of the marketing mix, which is the goods and services available for target customers and it also contains attributes like services, quality and guarantees (Jain, 2009).

Burnett (2003) stated that product is everything that can be offered on the market to be noticed, obtained and used for consumption which may satisfy the desire or need. According to Cutler et al. (2000), 'a product is anything that is marketed to draw attention, ownership, use or consumption and meets a requirement or demand.'

According to Kotler, Adam, Brown and Armstrong (2003), 'anything that can be offered to a market for attention, acquisition, use or consumption that might satisfy a want or need. It includes physical objects, services, persons, places, organizations or ideas'. The bird's eye chilli of Mizoram has Geographical Indications which was pursued by Horticulture Department, Govt. of Mizoram. Fresh and dried bird's eye chilli is sold in the market. In West Phaileng village the fresh chilli is made into pickle, packed as 200gm.

Bird eye chilli is a slow-growing short-term perennial or perennial sub-shrub. The flowers of bird eye chilli are in clusters of 2 or more, waxy greenish white and are usually erect. The fruits of bird eye chilli are elongate, upright, small and narrow and the colour is green to cream and yellow when immature, orange to red when mature and are extremely pungent. Bird eye chilli is considered as a spice or condiment for seasoning and stimulating appetite as well as used in local medicine (Srinivas and Thomas, 2018).

**Price**

Price of a product or service plays an important role in its marketability. Price is an important component of the marketing mix as it is the only element in that fetches revenue. Mihai (2013) stated that 'Price includes all the resources (financial costs, time and social costs) that a customer has to pay in order to obtain the product.'

Kotler and Armstrong (2012) stated that 'Price is the various costs that customers incur for the benefits of a product (service) and includes financial costs and other non-financial costs.' Zeithami (1998) is of the view that 'Monetary cost is of the factors that influence consumers' perception of a product value. Price can be stated as the actual or total rated value of a product which is up for exchange.'

The price of fresh bird's eye chilli in the three village is as follows, in Reiek it is Rs.150 per kg, in Champhai it is Rs.130-150 per kg and in West Phaileng it is Rs.120-150 per kg. While the dried chilli is mostly sold in the three villages at Rs.400-450 per kg. It is interesting to note that the farmers of West Phaileng village do not have any problem in selling their product as they exported their product outside the state. In the year 2019, they send their product to Delhi and Kolkata in collaboration with Mizofed, but could not continue it because of the many issues like price, refrigerated packing and time limit.

### **Distribution**

Goi(2009), defines the place as ‘The mechanism through which goods and services are moved from the provider or manufacturer to the consumer.’ Place includes distribution channels, warehousing facilities, mode of transportation, location, assortment, convergence, logistics and inventory control management(Singh,2012).

According to Kotler and Armstrong(2012), ‘The distribution comprise all those activities that contribute to the delivery of the product or service to the customer. These channels help the organization to promote, sell and distribute its good to final buyers, such as resellers, physical distribution firms, marketing services agencies and financial intermediaries.’ Szopa and Pekala(2012) stated that ‘There are many advantages associated with distribution channels such as moving the goods from the place of production to the demand areas, providing information for the customers about the products and services, and promoting products and services.’

In both the villages, i.e Reiek and Champhai the bird’s eye chilli which is cultivated by the farmers is sold at the local market only. While in the case of West Phaileng village, it is exported to Tripura the neighbouring state of Mizoram. The buyers from Tripura state are mostly from Kanchanpur village in Dasda which is about 153 kms from West Phaileng through NH 108. The buyers come to West Phaileng to purchase and sometimes the farmers hire a pickup for exporting the bird’s eye chilli. The pickup is usually hired for Rs.13,000 and around 10 quintals are carried by the pickup.

### **Promotion**

In the words of Lovelock and Wright(2002), ‘Marketing communication mix(promotion) consists of the blend of advertising, personal selling, sales promotion, public relations and direct marketing tools, A communication program plays three vital roles such as provide information, persuade target customers, and encourage them to take action.’

Kotler(2003) stated, ‘The essence of promotion is a form of marketing communication, which is a marketing activity to disseminate information, influence, persuade and remind target markets about the organization and its products to be willing to accept, buy and be loyal to the products offered by the organization.’ Kotler,(2003) also discovers that Promotions have become a critical factor in the product marketing mix which consists of the specific blend of advertising, personal selling, sales promotion, public relations and direct marketing tools that the company uses to pursue its advertising and marketing objectives.

Promotion is not done by Reiek and Champhai village, while in West phaileng promotion is done by Bird Eye chilli Grower Society. Bird Eye Chilli Grower Society was established in the year 2016 and was registered under firms and society in 2017. This society is under Farmer Producer Organization (FPO) and also under Mission Organic Mizoram(MOM).As per MOVCD-NER guidelines, on 18th February, 2016, State Level Executive Committee (SLEC) was formed.

As a result of the SLEC meeting, the State Lead Agency Mission Organic Mizoram (MOM) was formed on 29th February, 2016. The full form of MOVCD-NER is Mission Organic Value Chain Development for North Eastern Region which is under National Mission for Sustainable Agriculture (NMSA) and it is a scheme of Government of India for promoting organic farming(Mission Organic Farming,2022).

Bird Eye chilli Grower Society received Organic Certificate from Ecocert India Pvt. Ltd., Gurgaon, Haryana which is an Organic Certifying Agency in the year 2020. The society has taken part in state and national level exhibitions and have advertised in local television channels and newspaper.

### **III. CONCLUSION**

Bird’s eye chilli is a promising spice of Mizoram and has the potential to be widely exported globally. However, marketing practices are still conventional and hence need support from government agencies to enhance markets beyond local and regional level.

Bird’s eye chillies produced in Mizoram are organically cultivated and can fetch premium prices in national and international markets. There is a need to brand, package and promote this product beyond Mizoram and its neighbouring states.

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