

## **The Study of Production and Growth of Selected Fruits under the Horticulture Department in Mizoram**

**Rosie Lalrampuii**

*Research Scholar, Department of Economics, Mizoram University*

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**Abstract:** Being an agrarian economy, Mizoram is rich in fruit and vegetable productions. Of late, the horticulture and floriculture has gained momentum and has shown immense improvement in their production. In this study we have selected five fruits, namely Orange, Grapes, Passion Fruits, Banana and Pineapple. Using secondary data obtained from the economic survey of Mizoram for a time period of 10 years from 2008 to 2018, we will study the growth of its area and production. We will also look into the possibilities of further analysis on the existing state of marketing structures.

**Keywords:** Agriculture, Fruits, Mizoram, Horticulture, Growth, Production

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### **I. INTRODUCTION**

Mizoram is one of the seven sisters of North East India which also has an agrarian economy. The Gross State Domestic Product (GSDP) of Mizoram has been continuously growing over the years in which the Primary Sector comprising agriculture & allied activities contributed 31.72% (2016-17) to the GSVA (Government of Mizoram, 2017-18). Since more than 70% of the State population depends on land based activities for their livelihood, it is but essential for the Government to promote livelihood based on this. Horticulture and floriculture has recently gained momentum and has shown marked improvement in their production. Until 1993, Horticulture Department was under Agriculture Department when it was bifurcated. It became a full-fledge Department in the year 1997 with a vision to achieve self-sufficiency in fruits, vegetables, flowers, spices and plantation crops in the state. A Central Government sponsored scheme in the year 2001 known as 'Technology Mission for Integrated Development of Horticulture in N.E. States' came, which was a major benefit for the new department. Crops with large market potential which were initially identified were passion fruit and mandarin orange. Large scale cultivation of passion fruit was introduced which incorporated latest technology and improved package of practices. This increased the production manifold. A banana variety known as 'Grandnaine' was introduced in Mizoram in 2005. Papaya variety 'Red lady' was also introduced for local consumption. A papaya variety known as 'Hawaiian Solo' was introduced, which is suitable for export because of its convenient size, long shelf life and good keeping quality. Likewise, many other crops other than fruits were introduced. Floriculture being a part of horticultural crop also picked up its pace (Government of Mizoram, 2007-08).

### **Research Methodology**

This research paper is mainly constructed using secondary data obtained from the Government of Mizoram documents and data, as well as literatures. Using tools like arithmetic average and percentage, we will study the growth in the area of cultivation and production.

The secondary data consists of data collected from online statistics website as well as literatures comprising of books, journals and online articles. These are studied for better understanding of the various government schemes and for further analysing the research gap.

### **Schemes and Projects under the Horticulture Department**

The following is a brief write-up on Schemes/Projects being implemented by Horticulture Department as seen from the Economic Survey, 2017-18:

#### **1. MIDH (Mission for Integrated Development of Horticulture):**

MIDH is a Centrally Sponsored Scheme for the universal growth of the horticulture sector which covers fruits, vegetables, root & tuber crops, mushroom, flowers, plants and spices along with components essential for Horticulture development and growth in the country. While Government of India (GOI) contributes 85% of total outlay for developmental programmes in all the states except the states in North East and

Himalayas, 15% share is contributed by the State Governments. In case of North Eastern States and Himalayan States, GOI contribution is 90% and another 10% by the state.

2. RashtryaKrishiVikanYojana (RKVY):

RKVY was launched from 2007-2008 by the Department of Agriculture & Cooperation (DAC), Ministry of Agriculture, Govt. of India in consultation with the Planning Commission. Horticulture Department implements this scheme from the year 2010-2011.

3. PMKSY (PradhanMantriKrishiSinchaiYojana): This is one of the sub-schemes of National Mission for Sustainable Agriculture (NMSA) being implemented recently. To overcome irrigation problem in dry season, Government of India layout this scheme so as to manage on farm water in meaningful and judicious way.

4. New Economic Development Policy (NEDP):

A. Programmes under New Economic Development Policy (NEDP 2016 -17)

1. Intensive cultivation of Off-season Cabbage

2. Intensive cultivation of Turmeric

B. PROGRAMME IMPLEMENTATION

1. Intensive cultivation of Off-season Cabbage.

C. Achievement/success story under NEDP

5. Programme under Article 275 (1) during 2016-17: Under the provisions of Article 275 (1), grant amounting to Rs. 170.55 (Rupees one crore seventy lakhs fifty thousand) only have been received during 2016-2017 through Social Welfare Department, Govt. of Mizoram for implementation of the following programmes:

a) Cultivation of Dragonfruit

b) Cultivation of Off-Season Cabbage

6. NEC

Currently, there are four on-going projects funded by NEC under Horticulture Department as below: On-going NEC Scheme is as follows:

1. Cultivation of Grapes on Commercial scale in Cluster Area at Hnahlan, Champhai District.

2. Scion Bank & Root Stock Bank for Citrus at Maudarh, Lunglei District & Rootstock Bank for Grapes at Mualkawi, Champhai District.

3. Plantation of Black Pepper at Sairum, Siphphir, Mizoram.

4. Improvement of M.Orange Orchards at Leng Village, Serchhip District.

5. Programme under Coconut Development Board.

To change the existing jhuming practices to permanent settlement of farming, horticulture is the one and only option. With this, although no specific programmes are taken, the DOA is taking active role by implementing the mitigation of shifting cultivation through NLUP and CSS like HMNEH, RKVY, NMMI and NMMP.

### **Production of Horticulture Crops (under DOH)**

Rice remains the largest crop grown in Mizoram by gross value of output, while fruits have grown to become the second largest category, followed by condiments and spices. The JICA study team acquired production data of horticulture crops for the last five year period from the related government agencies. Of the cultivation area of horticulture crops in 2012 - 2013 in Mizoram, fruits occupy the largest area at 49,684 ha, 45% of the total, followed by 37,738 ha for vegetables (34%), and 22,532 ha for spices (20%). Of the cultivation area of fruits in the state, banana occupies the largest area, 21%, followed by local fruits such as mandarin orange, lime/ lemon, pineapple, grape, hatkora, sweet orange, papaya and mango. The sum of cultivation area of mandarin orange, lime/ lemon, hatkora and sweet orange occupies about 40% of the total, therefore it can be said that Mizoram is richly cultivated with citrus.

According to the Economic Survey Mizoram 2014-15, the total fruit production is 3,91,530 MT out of which the more than 70 percent are contributed by banana (37.05 percent), Orange (14.29 percent), Papaya (9.51 percent) and Pineapple (9.41 percent) to name a few. The areas and production of major fruits are presented in Table-1.

**Table-1: Area and Production of Major Fruit Items in Mizoram**  
Area = 000' Ha & Production = 000' MT

Items	2012-2013		2013-2014		2014-2015	
	Area	Production	Area	Production	Area	Production
Banana	10.54	127.53	10.84	140.92	11.16	145.08
Lime / Lemon	7.93	25.14	8.00	25.60	8.07	25.82
Mandarin Orange	8.96	24.10	13.51	40.43	18.59	55.96
Others (Hatkora)	2.12	6.78	2.12	6.80	2.14	6.87
Mango	0.75	3.47	0.78	3.68	0.99	4.67
Papaya	1.00	23.10	1.05	24.60	1.59	37.25
Grapes	2.38	20.8	2.45	23.87	2.52	24.54
Passion fruit	0.70	1.47	0.84	1.94	0.99	2.29
Pineapple	3.00	21.96	4.09	30.14	5.00	36.86
Total	37.38	254.35	43.68	297.98	51.05	339.34

Source: Economic Survey of Mizoram 2014-15, Planning Dept., Govt. of Mizoram

It is observed from Table-1 there has been significant growth in the production of fruits in Mizoram. At the same time, a further increase in the production is expected following the implementation of New Land Use Policy (NLUP) since 2011 in which cultivation of fruits were among the adopted activities under the scheme. This can be seen from table 2 below.

<b>Table-2: Distribution of NLUP Beneficiaries undertaking fruit cultivation in Mizoram</b>						
Sl. No	Trade/Crops	No. of Beneficiaries				
		1st Phase	2nd Phase	3rd Phase	4th Phase	Total
1	Grape	324	231	45	19	619
2	Passion Fruit	166	133	78	40	417
3	Mandarin Orange	4396	4142	2007	922	11467
4	Arecanut	2753	2515	1087	567	6922
5	Pineapple	1217	1023	585	181	3006
6	Mango			17	2	19
	Total	8856	8044	3819	1731	22450

Source: NLUP Implementing Board dated 1.7.2014 (Concept Note)  
Note: 1st Phase (2010-11), 2nd Phase (2011-12), 3rd Phase (2012-13) and 4th Phase (2013-14)

### Implementation and Progress of NLUP

Under Horticulture Department, 3 programmes are undertaken under NLUP as under -

- NLUP Programme: There are 10 trades under NLUP-Horticulture totalling 23,842 beneficiaries till 2017-18. Horticulture covers the 2nd largest number of beneficiaries which is covered in four phases.
- Captive Plantation: Apart from NLUP Programme, Captive Plantation Programme is also taken up covering two crops, viz., Passion fruit and Pineapple.
- NLUP – NEDP Convergence: Under this programme, there are 7 trades (crops) where assistance was given Rs. 1.00 lakh per beneficiary per Hectare.

**Harvest and Yield:** Some of the NLUP crops with short gestation/ juvenile periods have already reached their potential economic yields such as Aloe vera, Chayote, Passionfruit, Pineapple and Tea. On the other hand, perennial crops like Arecanut, Grape, Mandarin Orange, Tung and Mango have long juvenile stage with a minimum of a least 8-10 years to reach their commercial productivity even though there have been production in these crops since the last 2 years. NLUP programme is carried out in phase manner and is completed in 4 phases.

## II. ANALYSIS AND RESULTS

Now, let us look at the time series (10 years) of area under cultivation and production for the selected fruits under study, which are Orange, Grapes, Passion Fruits, Banana and Pineapple. The secondary data has been obtained from the Economic Survey of Mizoram. This is given in Table 3 below.

**Table-3: Area and Production of the selected fruits over the time period 2008-2018**

Area = 000' Ha										
Fruits	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Orange	8.27	5.34	6.51	8.36	8.96	13.508	14.2	14.37	16.03	16.37
Grapes	1.17	1.23	1.57	1.88	2.38	2.54	2.45	2.45	2.45	2.45
Passion Fruits	4.08	3.15	1.52	0.45	0.7	0.838	0.98	0.98	0.98	0.98
Banana	7.2	8.6	10.04	10.09	10.54	10.84	10.87	10.91	11	11.21
Pineapple	0.43	0.43	1.53	2.72	3	4.091	4.867	4.867	4.97	5.027
Production = 000' MT										
Fruits	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Orange	10.75	13.26	19.7	22.2	24.1	40.43	41.2	41.34	80.15	44.02
Grapes	9.96	13.73	19.6	24.3	20.8	23.87	22.55	22.55	18	18
Passion Fruits	13.53	16.41	6.22	0.9	1.47	1.94	2.11	2.11	2.11	2.11
Banana	66.42	84.81	115.36	119.06	127.53	140.92	141	141.05	141.04	143.84
Pineapple	2.39	2.8	13.59	19.65	21.96	30.14	32.87	32.87	32.98	27.64

Source: Economic Survey of Mizoram 2017-18, Planning Dept., Govt. of Mizoram

Growth of area under production of pineapples and grapes over the last 10 years have shown tremendous increase at 1069% and 117% respectively while their growth rate of production over 10 years stands at 1056% and 80.72% respectively. The growth rate of production of orange for the 10 year period is also quite high for orange at 309% while that of banana is 116%. It should be noted that the growth rate of area under cultivation as well as its production is negative in the case of passion fruit at -75.9% and -84.4% respectively.

We have calculated the annual growth rate of the selected individual fruits for the time period of 2008-2018, as seen in table 4 and we can see that there have been changes in the different years and some are even in negative digits especially over the last few years. But we also have to keep in mind that a Comparative Statement of performance in Horticulture sector between 2004-05 and 2015-16 according to recorded Base line data may show that growth rate of fruit productions show an increase from 53.25% to 350.91%.(Horticulture, 2016).

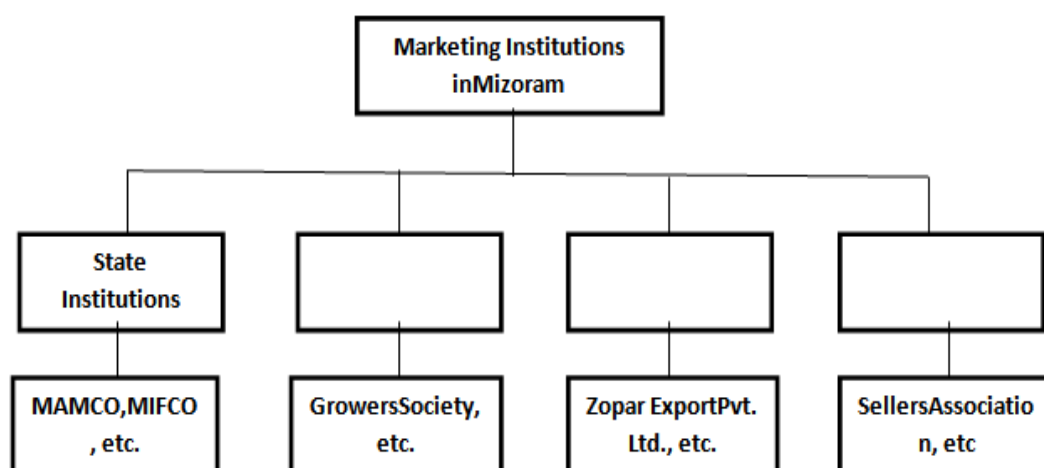
Table 4: Annual growth rate of production over 2008-2018					
Year	Orange	Grapes	Passion Fruit	Banana	Pineapple
2008-09 to 2009-10	23.34	23.24	21.28	27.68	17.15
2009-10 to 2010-11	48.56	42.75	-62.09	36.02	385.35
2010-11 to 2011-12	12.69	23.97	-85.53	3.2	44.59
2011-12 to 2012-13	8.55	-14.4	63.33	7.11	11.75
2012-13 to 2013-14	67.75	14.75	31.97	10.49	37.24
2013-14 to 2014-15	1.9	-5.5	8.76	0.05	9.05
2014-15 to 2015-16	0.33	0	0	0.03	0
2015-16 to 2016-17	93.88	-20.17	0	-0.01	0.33
2016-17 to 2017-18	-45.07	0	0	1.98	-16.19

Source: Economic Survey of Mizoram

### Overview of Marketing Institutional set up in Mizoram

It should be noted that the Trade and Commerce Department (TCD) of the state government is responsible for managing and regulating the trade and commerce activities which concerns marketing and distribution of agricultural products. According to the study by JICA (2016), TCD directly manages 22 major markets and 198 markets indirectly through the local councils of Mizoram districts and village councils in other districts. These markets not only provide venues for selling agricultural produce within the state but also employment to a number of people, especially women.

Marketing Institutions include a wide range of organizations like associations of producers, farmers, traders, and sellers and others within the distribution channel. It also includes agencies in the cooperatives and government structure and financial set ups. These institutions help in the channels of fruit and other food product marketing. The following is an organisational outline of these institutions as presented by JICA study team (JICA, 2016).



Source: Market Survey, JICA Study Team

**(a) State Institutions**

The protection of the interest of various sections of the society especially within the agriculture sector is mandated by the intervention of public institutions to protect them from exploitation. Trade and Commerce Department (TCD) was established in 1987 with the responsibilities of promoting and regulating various activities like agricultural marketing, border trade, regulation of trade and commerce etc. The Government of Mizoram has also set up the Mizoram Agriculture Marketing Corporation (MAMCO) Ltd. as a state undertaking on 26 February 1993. Another government set up is Mizoram Food and Allied Industries Corporation (MIFCO) Ltd. It helps promote the food processing industries in Mizoram and deals with processed food, plant/machinery, and implement accessories.

**(b) Cooperative Institutions**

The cooperative societies also make immense contribution in the production of agricultural products. Under the cooperative society, there is state level cooperative society, such as the Mizoram State Cooperative Marketing and Consumers Federation (MIZOFED), the Mizoram Multi-commodity Producer Cooperative Union Ltd. (MULCO), the Mizoram Cooperative Fish Farming Marketing and Processing Federation Ltd. (ZOFISFED), pig for the Mizoram Pig Producers' Cooperative Federation Ltd. (PIGFED) etc. According to the study of JICA, there are 1,389 societies. Out of these, many are involved in the marketing of agriculture produce directly or indirectly.

**(c) Private Institutions**

There are various private institutions and NGOs that play an important part in marketing of agricultural produce in the state. Examples of such organisations are Hnamchhantu Pawl (HCP) which is involved in the purchase, processing, and marketing of brooms in Mizoram; Zopar Export Private Limited (ZEP) is involved in the marketing of Anthurium flowers; All Mizoram Farmers Union (AMFU) and Mizoram Cultivator and Labour Union (MICALUN) which is a farmers' organisations that work for the development and improvement of farming practices.

**(d) Associations**

Producers and traders usually form an association which are very persuasive in their individual areas in terms of control of prices and prevention of the entry. These associations are broadly classified into three major groups as farmers/producers/growers, wholesalers/commission agents, and retailers associations. Some examples of growers associations are Mizoram Iskut (Squash) Growers Association (MIGA), Brooms Cultivators Association of Mizoram (BCAM) etc. Under the associations of wholesalers or agents, we have associations such as MahniThlaiZuar Association (MTZA) and Mizo PanhnahZuar Association (MPZA, Mizo Betel Leaf Sellers Association). Thirdly, retailers associations include the Vegetables Sellers Association, New Market, Aizawl, and Bazaar Thu Association (Bazaar Vendors Association).

### **III. CONCLUSION AND EMERGING AREAS FOR FUTURE RESEARCH AND RECOMMENDATIONS**

There has been significant growth of fruit production in Mizoram following the effort shown by the state government through various schemes like New Land Use Policy (NLUP), Horticulture Mission, etc. There would be substantial addition to the existing production in the near future keeping in view the success of NLUP beneficiaries. A serious challenge for the government is the formulation of effective marketing policy to accommodate the existing and additional market arrival which is likely to come by in the near future. At the same time, the existing system of fruit marketing in Mizoram is unorganized in nature frequented by unnecessary middlemen (L.T.Thanga, 2016). In the absence of adequate technology for post-harvest management and value addition, bulk of the produce are sold in raw form through various local markets, periodical markets, roadside markets, etc. where stakeholders like middlemen, association of vendors, etc. distort the prices which is usually disadvantageous for the consumers and producer farmers. Further, the market for export oriented items are also at the hands of commission agents hailing from neighbouring states who control the procurement prices due to which producers/farmers do not have real bargaining power.

It is, thus, necessary to conduct systematic analysis on the existing state of marketing structures to enable better academic understanding on the nature and weaknesses for the emergence of effective policy mechanism reorganizing the fruit market. A study covering the examination of existing practices, infrastructural and institutional conditions, identification of distribution channels, market agents and stakeholders, price spread across the distribution channels, efficiency of markets, and identification of alternative system with better returns to the producers and consumers will be of immense use for this sector.

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