

Horticultural Management in Kolasib District under the Mission for Integrated Development of Horticulture (MIDH) since Statehood

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Abstract

Horticulture (Latin hortus = garden; cultura = cultivation), is the science and art of growing fruits, vegetables, flowers, shrubs and trees². It originally meant the practice of gardening and, by extension, now means the cultivation of plants once grown in gardens. It includes the growing of fruits (especially tree fruits), production of vegetable crops, production of flowers, and ornamental horticulture, known as landscaping gardening, which includes the maintenance and design of home grounds, public gardens and parks, private estates, botanical gardens, and recreational areas such as golf courses, football fields and baseball diamonds. Based on commercial aspects, horticulture is divided into three specialized areas: the nursery industry, the plant-growing industry and the seed-production industry. The nursery industry deals with the production of fruit trees. The plant-growing industry supplies annual, biennial and perennial plants to the vegetable and flower grower as well as to the ornamental horticulturists. The seed-growing industry produces the seed required for flower and vegetable growing.

Keywords: horticulture, Nursery, Crops, Feasibility, development, farmers, Jhum, cultivation, environment, garden.

Even before the introduction of various Central and State horticulture programs and projects, horticulture occupied a very important place in the lives of the people of Mizoram. The Mizos used to be self-sufficient in foodgrains, fruits and vegetables. They grew most of the horticulture crops that are grown today but at a rather less commercial level. Most crops they grew were for their consumption alone. They hardly thought of making profits. However, during those days, they gave more emphasis on cereals particularly rice which is the staple food item of the Mizos since time immemorial.

The formation of the Department of Agriculture since the inception of Union Territory (UT) in 1972 was an important milestone for the development of agriculture and its allied activities including horticulture. Another important milestone was achieved with the formation of Horticulture Department as a full-fledged department on 2nd September 1997. Since its inception in 1993, the Department has been implementing various horticulture schemes of the Central and State governments till today. Schemes such as Technology Mission for North-Eastern States (TMNE), National Mission on Medicinal Plants (NMMP), Mission for Integrated Development of Horticulture (MIDH), Rashtriya Krishi Vikas Yojana (RKVY), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) etc., are some horticulture schemes being implemented in Mizoram. The State Government has also been undertaking many horticultural activities through programs such as New Land Used Policy (NLUP), New Economic Development Policy (NEDP) and State Economic Development Policy (SEDP) as drawn up under various governments formed by different political parties.

Horticulture development programmes currently implemented in the state may be discussed as follows:

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²Singh, Bijender, (2009), *Horticulture at a glance*, New Delhi: Kalyani Publishers, pp.1.

Mission for Integrated Development of Horticulture (MIDH)

MIDH can be regarded as the most important horticulture scheme which is being implemented for the development of horticulture in Mizoram. It is a Centrally Sponsored Scheme (CSS) implemented in Mizoram, formulated purely for the holistic growth of horticulture alone throughout the country covering horticulture sectors such as fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo. Under the scheme the Central Government contributes 100 percent of the fund from the total outlay of the scheme (Operational Guidelines of MIDH, 2014. P.6). Other states in the Northeast also enjoy similar funding pattern, where they do not need to have contribution to the total outlay of the scheme. However, the matching share between the Centre and states other than the Northeast States has been 85:15. In case of the National Horticulture Board (NHB), Coconut Development Board (CDB), Central Institute for Horticulture (CIH) and the National Level Agencies (NLA), the Central Government contributes 100 percent. Technical advice and administrative support to State Governments/State Horticulture Missions (SHMs) for the Saffron Mission and other horticulture-related activities like the Rashtriya Krishi Vikas Yojana (RKVY) are also provided by the Mission.

The MIDH was formulated in 2014-2015 and became operational in the same year. It integrated various on-going horticulture schemes in different parts of the country. The schemes which were subsumed by the Mission to be its sub-missions are:

1. *National Horticulture Mission (NHM)*: It was launched in 2005-2006. This mission has been implemented in all States and Union Territories except the Northeastern States and states in the Himalayan region.
2. *Horticulture Mission for Northeast & Himalayan States (HMNEH)*: It was launched in 2010-2011 and became a part of MIDH since 2014-2015 when MIDH was launched to subsume the existing schemes implemented in the country. Previously, it was known as 'Technology Mission for North-Eastern States (TMNE)'. This Mission covers all the Northeast States including Sikkim and the Himalayan regions such as Jammu & Kashmir, Himachal Pradesh and Uttarakhand.
3. *National Bamboo Mission (NBM)*: This Mission was started in 2006-2007. It was subsumed by MIDH to be one of its sub-missions in 2011-2012. NBM has been implemented in all the States and Union Territories.
4. *National Horticulture Board (NHB)*: It was set up in April 1984 to improve integrated development of horticulture-based industries and to help in coordinating and sustaining the production and processing of fruits and vegetables. All States and Union Territories have been placed under its purview since its inception.
5. *Coconut Development Board (CDB)*: It was established in January 1981 with a focus to increase productivity and product diversification. The Board covers all States and Union Territories where coconut is grown.
6. *Central Institute for Horticulture (CIH)*: It was set up by the Government of India on March 2006. It is located at Medziphema, Nagaland. The institute was set up to provide technical support on various aspects of horticulture for the holistic development in the North East Region through human resource development and capacity building.

MIDH is so structured to be implemented through various levels from national to district or different levels of Panchayati Raj Institution. At the national level, a General Council was established to be chaired by the Union Minister of Agriculture. The General Council has an Executive Committee (EC) headed by the Secretary, Department of Agriculture & Cooperation. The Executive Committee is to oversee the activities of the Mission and approve Action Plans of State Horticulture Missions and national level agencies. At the State level, there is a State Level Executive Committee (SLEC) chaired by the Agricultural Production Commissioner or Principal Secretary Horticulture/ Agriculture/ Environment & Forests. It was set up to oversee the implementation of programmes of the respective States. The Committee is also entrusted with multiple functions such as preparation of Strategic/Perspective and Annual State Level Action Plan, organize base-line survey, clear project-

based proposals, receive funds from National Mission Authority, State Government and other sources for carrying on the Mission's activities, release funds to implementing agencies etc. At the district level, a District Mission Committee (DMC) is formed to be responsible for carrying forward the objectives of the Mission for project formulation, implementation and monitoring. In the case of HMNEH states like Mizoram, the Committee is headed by the Deputy Commissioner/District Collector. The Guidelines also provides some provisions for Panchayati Raj Institutions to be an important body for the smooth implementation of the Mission. They are expected to have a role in crop identification, training and awareness creation and giving feedback to the concerned government functionaries. The formation of Technical Support Group (TSG) is also an important aspect of MIDH. As per the Guidelines, National Horticulture Mission (NHM) and National Bamboo Mission (NBM) are being supported by National Horticulture Board (NHB) and Horticulture Mission for Northeast and Himalayans (HMNEH) and Vegetable Initiative for Urban Clusters (VIUC) by Small Farmers Agribusiness Consortium (SFAC). For post-harvest management and cold chain projects across NHM and HMNEH, technical support is provided by the National Centre for Cold-chain Development (NCCD). Service providers can also be engaged for providing technical services in accordance with the Terms of Reference laid for the purpose and approved by the Executive Committee (Operational Guidelines of MIDH, 2014).

MIDH in Mizoram

MIDH has been implemented in Mizoram since the inception of the programme in 2014. As a matter of fact, it is merely a continuation of the on-going scheme of Horticulture Mission for Northeast and Himalayan (HMNEH) which had commenced from 2010-2011 (formerly known as Technology Mission for Northeast (TMNE)). It is regarded as the most important horticulture scheme being implemented in the state as it is formulated solely for the development of horticulture throughout the country. As Horticulture Department was assigned to be the agency for formulation of the Mission's components and their implementation, it has worked out various areas of horticulture activity from the very start of the mission.

Fund Allocation and Areas of Implementation under MIDH in Mizoram for 2014-2015

SI No	Component	Physical Target	Target Covered	Financial Allocation (in Lakhs)
I	Production of Planting Materials			100
II	Establishment of New Garden			
	1. Fruits	1492 Ha	1492 Ha	690.70
	2. Vegetables	140 Ha	140 Ha	35
	3. Flowers	52 Ha	52 Ha	26
	4. Spices	480 Ha	480 Ha	72
	5. Aromatic Plants	10 Ha	10 Ha	4
	6. 1 st Year of Maintenance	825 Ha	825 Ha	87.56
	7. 2 nd Year Maintenance	1000 Ha	1000 Ha	87
III	Rejuvenation/Replacement of Senile Plantation, Canopy Management	2000 Ha	2000 Ha	400
IV	Creation of Water Sources	596 No.	596 No.	681
V	Protected Cultivation	279995 Sqm	279995 Sqm	692.59
VI	Integrated Pest/Nutrient Management (IPM/INM)	8740	8740	104.88
VII	Establishment of Centre of Excellence for Horticulture	1 No	1 No	500
VIII	Pollination Support through beekeeping	2655 No.	2655 No.	21.24
IX	Horticulture Mechanization	650 No.	650 No.	97.50
X	Human Resource Development			175.17
XI	Integrated Post Harvest Management			36.4
XII	Special Intervention			10
XIII	Mission Management			278

Source: Directorate, Department of Horticulture, Government of Mizoram.

During 2014-2015, fund allocated to Mizoram for the implementation of different horticulture activities under the scheme was Rs. 4100 lakhs. The details of fund allocation against each component were as given in Table No. 4.1.1. During this first year of the implementation, 13 areas of activities/components were carried out. The concerned department could successfully cover its target areas of land by utilizing all funds allocated.

Fund: Allocation and Areas of Activity under MIDH to Mizoram during 2015-2016

Sl. No	Component	Physical Target	Target Covered	Financial Allocation (Rs in Lakh)
I	Research & Development	1 No	1 No	23
II	Production of Planting Materials	6 Ha	6 Ha	130
III	Establishment of New Garden			
	1. Fruits	1190 Ha	1190 Ha	634.87
	2. Vegetable	110 Ha	110 Ha	27.50
	3. Mushroom			20
	4. Flowers	0.50 Ha	0.50 Ha	35
	5. Spices	130 Ha	130 Ha	19.50
	6. Aromatic Plants	40 Ha	40 Ha	16
	7. 1 st Year Maintenance for Fruits	490 Ha	490 Ha	34.00
	8. 2 nd Year Maintenance	315 Ha	315 Ha	31.90
IV	Rejuvenation/Replacement of Senile Plantation, Canopy Management	2158 Ha	2158 Ha	431.60
V	Creation of Water Sources	572 No.	572 No.	659.4
VI	Protected Cultivation	236667 Sqm	236667 Sqm	458.24
VII	Integrated Pest/Nutrient Management	6600 Ha	6600 Ha	79.2
VIII	Organic Farming (Vermicompost Unit)	25	25	12.50
IX	Centre of Excellence	2 No	2 No	400
X	Pollination Support through Beekeeping (Honey bee colony and Beehives)	1680 No	1680 No	13.44
XI	Horticulture Mechanization	777	777	116.55
XII	Human Resource Development (Training, Exposure Visits etc.)			161.55
XIII	Integrated Post Harvest Management (Pack House, Cool Chamber (Low energy/zero energy)	1186 No	1186 No	158.92
XIV	Mission Management			190.83
XV	Establishment of Marketing Infrastructure for Horticulture Crops	1 No.	1 No.	25

Source: Directorate, Department of Horticulture, Government of Mizoram.

For the year 2015-2016, fund amounting to Rs. 3833.33 lakhs was allocated to the State. New areas of activities such as Research and Development, Organic Farming and Establishment of Marketing Infrastructure for Horticulture Crops were added to be the component of the Mission and implemented as per action plan. The funding pattern for the North East States has also been made as 90:10 between Government of India and the States Government since this year.

Table showing Fund Allocation and Areas of Implementation under MIDH in Mizoram for 2016-2017

Sl. No.	Component	Physical Target	Target Achieved	Financial Allocation (in Lakh)
I	Production of Planting Materials			50
II	Establishment of New Garden			
	1. Fruits			523.325
	2. Vegetables	400 Ha	400 Ha	100
	3. Mushroom (Production Unit)	1 No	1 No	20
	4. Flowers	50 Ha	50 Ha	25
	5. Spices	340 Ha	340 Ha	51
	6. 1 st Year of Maintenance for Fruits	270 Ha	270 Ha	45
III	Rejuvenation/ Replacement of Senile Plantation, Canopy Management	1600 Ha	1600 Ha	320
IV	Creation of Water Resources	162 No.	162 No.	266.3
V	Protected Cultivation			481.8
VI	Integrated Pest/Nutrient Management	15000 Ha	15000 Ha	180
VII	Horticulture Mechanization	888 No.	888 No.	186
VIII	Human Resource Development			110.77
IX	Technology Dissemination through Demonstration/Front Line Demonstration	4 No.	4 No.	100
X	Integrated Post Harvest Management	203 No.	203 No.	723
XI	Mission Management			286.9
XII	Establishment of Marketing Infrastructure for Horticulture Crops	200 No.	200 No.	30

Source: Directorate, Department of Horticulture, Government of Mizoram.

As can be seen in the below table, the total fund allocated for different components of the scheme during 2016-2017 was approximately 3400 lakhs. During this year of implementation, emphasis was given to Integrated Post Harvest Management by allocating more than Rs. 700 lakhs. Setting up of cold storage facilities, sorting and grading facilities etc., in different horticulture centres were the initiatives taken under this component.

Table showing Fund Allocation and Areas of Implementation under MIDH in Mizoram for 2017-2018

Sl No.	Component	Physical Target	Target Achieved	Financial Allocation (in Lakh)
I	Production of Planting Materials	5 Ha	5 Ha	50
II	Establishment of New Garden			
	1. Fruits	1070 Ha	1070 Ha	1014
	2. Vegetables	560 Ha	560 Ha	140
	3. Mushroom (Production Unit)	1 No	1 No	20
	4. Flowers	20 Ha	20 Ha	10
	5. Spices	61.66 Ha	61.66 Ha	9.25
	6. 1 st Year Maintenance for Fruits	380 Ha	380 Ha	62
III	Rejuvenation/Replacement of Senile Plantation, Canopy Management	500 Ha	500 Ha	100
IV	Creation of Water Sources	690 No.	690 No.	862
V	Protected Cultivation			620
VI	Integrated Pest/Nutrient Management	19867 Ha	19867 Ha	238.4
VII	Horticulture Mechanization			186
VIII	Human Resource Development			136
IX	Technology Dissemination through Demonstration/Frontline Demonstration			225
X	Integrated Post Harvest Management			140
XI	Mission Management			798.46

Source: Directorate, Department of Horticulture, Government of Mizoram

For the implementation of eleven sub components of the scheme during 2017-2018, an allocation of Rs 4600 lakhs (approx) was assigned and utilized as per the plan. Among the horticulture crops, cultivation of fruits continued to be the activity that acquired largest fund allocation that is more than 1000 lakhs rupees. Construction of community water tanks, individual water tank etc., under the component of Creation of Water Sources and construction of different types of greenhouse under the component of Protected Cultivation are other areas of the scheme where emphasis was given.

Table showing Fund Allocation and Areas of Implementation under MIDH in Mizoram for 2018-2019

SI No	Component	Physical Target	Target Achieved	Financial Allocation (in Lakh)
I	Production of Planting Materials			20
II	Establishment Of New Garden			
	1. Fruits	600 Ha	600 Ha	348
	2. Vegetables	500 Ha	500 Ha	125
	3. Flowers	80 Ha	80 Ha	40
	4. Spices	300 Ha	300 Ha	45
	5. 1 st Year Management for Fruits	730 Ha	730 Ha	202
III	Rejuvenation/Replacement of Senile Plantation, Canopy Management	400 Ha	400 Ha	80
IV	Creation of Water Sources			450
V	Protected Cultivation			470.85
VI	Integrated Pest/Nutrient Management	13000	13000	156
VII	Horticulture Mechanization			140
VIII	Human Resource Development			174.52
IX	Integrated Post Harvest Management			50
X	Special Intervention			110
XI	Mission Management			268.4

Source: Directorate, Department of Horticulture, Government of Mizoram

As enumerated in the above Table during 2018-2019, a new component that is *Special Intervention* was introduced for tackling any issues that may come up in the process of the implementation of the scheme. For this component, Rs. 110 lakhs were allocated and utilized. For all the components listed in the plan, Rs. 2500 lakhs (approx) were allocated and utilized. The area of land to be covered during this period was also successfully covered.

Table showing Fund Allocation and Areas of Implementation under MIDH in Mizoram for 2019-2020

SI No.	Component	Physical Target	Target Achieved	Financial Allocation (in Lakh)
I	Establishment of New Garden			
	1. Fruits	980 Ha	980 Ha	639.95
	2. Vegetables	708 Ha	708 Ha	177
	3. Spices	550 Ha	550 Ha	82.50
II	1 st Year Maintenance	500 Ha	500 Ha	110
III	Rejuvenation/Replacement of Senile Plantation, Canopy Management	500 Ha	500 Ha	100
IV	Creation of Water Sources			415
V	Protected Cultivation			244.95
VI	Human Resource Development			93
VII	Integrated Post Harvest Management			128.5
VIII	Mission Management			262.405
IX	Establishment of Marketing Infrastructure for Horticulture Crops			82.50

Source: Directorate, Department of Horticulture, Government of Mizoram

As seen in the 4.1.6, only nine components of the scheme were implemented during 2019-2020. The components in the previous year's such as Production of Planting Materials, Integrated Pest/Nutrient Management, Horticulture Mechanization, Special Intervention, Mission Management were not included in implementation during this year. Cultivation of flowers was also not implemented. However, the component named Establishment of Marketing Infrastructure for Horticulture Crops to assist horticulture farmers in selling off their produces was introduced once again to be an important component of the scheme.

Table No. 4.1.7: Fund Allocation and Areas of Implementation under MIDH in Mizoram for 2020-2021

Sl No	Component	Physical Target	Target Achieved	Financial Allocation (in Lakh)
I	Establishment of New Garden			
	1. Fruits	1550 Ha	1550 Ha	905.05
	2. Vegetables	700 Ha	700 Ha	175
	3. Spices	500 Ha	500 Ha	75
II	1 st Year Maintenance for Fruits	500 Ha	500 Ha	140
III	Rejuvenation/Replacement of Senile Plantation, Canopy Management	600 Ha	600 Ha	120
IV	Creation of Water Sources			550
V	Protected Cultivation			431.84
VI	Integrated Pest/Nutrient Management	10000 Ha	10000 Ha	120
VII	Horticulture Mechanization			112.5
VIII	Human Resource Development			77
IX	Integrated Post Harvest Management			244.2
X	Mission Management			258.99
XI	Establishment of Market Infrastructure for Horticulture Crops	9 No.	9 No.	123.75

Source: Directorate, Department of Horticulture, Government of Mizoram

In the year 2020-2021, the scheme was once again implemented under the eleven components listed in the plan. The components which were excluded in the last year of implementation were brought back to be the area of activities. The total amount of fund allocated during this period was Rs. 3300 lakhs (approx). The target area of land was also successfully covered with the utilization of allocated fund.

Implementation of the Scheme

Mizoram is fortunate enough to be able to continue the implementation of Horticulture Mission for Northeast and Himalayas (HMNEH) even after it was subsumed by MIDH in 2014. As a matter of fact, MIDH was inspired by the result of the successful implementation of HMNEH by the concerned states including Mizoram. For the first year of implementation, Mizoram and other Northeast States, received 100% funding from the Central Government. However, from the second year of implementation (2015-2016) till date, the scheme was modified by the Government of India to be funded by both the Central Government and the State Government in the ratio of 90:10.

In Mizoram, HMNEH/MIDH has been implemented in all districts covering the length and breadth of the states. So far, thousands of farmers have been assisted since the inception of the scheme. The role being played by the District Horticulture Offices, Sub Divisional Offices and the technical staff (field staff such as Demonstrator, Circle Officer etc.) in the process of implementation of the scheme is worth mentioning. In fact, they have been the backbone of the scheme as they carry out the work of monitoring, inspecting and guiding the farmers by visiting the farmers' field even in the remotest area. As highlighted, HMNEH/MIDH has been implemented in different areas of activity, some important horticulture crops/activities which have been undertaken under the scheme since its inception are:

1. Production of Planting Material: Good quality planting material is necessary to have better plant capable of producing more fruits with better quality and number. Even in the case of other crops bearing no fruits, better planting materials leads to more produces with better quality. Due to global climate change, rising number and threat of pests which can cause even total failure of the cultivation of some crops, increasing demand of horticulture fruits, vegetables etc., production of more tolerant horticulture crops has become the biggest challenge of the horticulture experts. Keeping this situation in view, the Horticulture Department has been undertaking the subcomponents of work such as High-Tech Nursery, Import of Planting Materials, Upgradation of Nursery Infrastructure to meet accreditation norms, Import of seeds etc. So far, about Rupees 35 (Thirty-Five) lakhs has been spent covering around 38 (Thirty-Eiht) hectare of land under the scheme since its introduction in 2014-2015.



High Tech Nursery is nursery equipped with advanced technology having controlled temperature, advanced vending system, computerized drip irrigation etc. Since the inception of the scheme, High Tech Nurseries have been set up in three Horticulture Centres of Excellence such as Lunglei Centre of Excellence, Thiak Centre of Excellence, Thingdawl Centre of Excellence and Chite Horticulture Centre. However, as of today, nurseries under Lunglei Centre of Excellence alone can continue working as a High-Tech Nursery.

Import of planting materials is also sometimes necessary to have better products as the local grown crops sometimes fail to produce desirable result. Crops like Dragon Fruit, Anthurium (Flower) etc., were imported from other states and foreign countries at the initial stage of mission implementation. These crops were not known to many in the State before they were introduced by the Horticulture Department. Apart from the contributions made by indigenous crops, the imported crops also made a tremendous contribution in the development of planting materials in Mizoram.

Development of nurseries owned and managed by the Department to be able to get accreditation has also been an important task under the scheme. The Department is has established nurseries in every district, division and subdivision to meet the demands of the farmers. All the Department-owned nurseries could successfully get accreditation but subject to revision after every 5 years. This accreditation is given by Central Institute of Horticulture, Nagaland.

2. Fruits: Since the inception of the mission, development of the cultivation of fruits has been given special emphasis to be an important component of the scheme. Dragon Fruit, Kiwi, Papaya, Banana, Mandarin Orange, Strawberry, Grape, Mango, citrus fruits etc., are the fruits covered under the scheme. Four subcomponents of the scheme such as Establishment of New Gardens, First Year of Maintenance, Second Year of Maintenance and Rejuvenation/Replacement of Senile Plantation, Canopy Management have been implemented for the development of fruits. Since the introduction of the Mission, about Rs. 7116 lakhs have been spent covering about 22130 hectares of land.

Photoplate No. 3: Farms of Lalzarliana, Kolasib District, where Dragon Fruits are cultivated under MIDH



3. **Vegetable:** Vegetable has been an important part of the scheme since the first year of its implementation. About Rs. 1551 lakhs have been spent covering more than 5881 hectares of land to produce vegetables for the entire State under the scheme. Production of different vegetables such as Tomato (Greenhouse and Open), Off-season Cabbage, Chinese Cabbage, Broccoli, Lady's finger, Bean, Capsicum etc., are undertaken. To produce more vegetables, the Department has imported hybrid seeds of different vegetables from other states.



4. **Flower:** Cultivation of Anthurium, Rose etc., was undertaken under one of the components, *Flower*, from the start of the scheme till 2018-2019. About 272 hectares of land had been covered by spending more than Rupees 454 lakh. Anthurium has now become one of the most popular flowers in the State since it was imported from Holland in 2006. This flower has been exported to other states and foreign countries as well. The intervention of MIDH has greatly boosted the production. It is in high demand for many occasions and events such as funeral, wedding, government events etc.



5. **Spice:** Cultivation of Spices have been an integral part of MIDH and undertaken every year since its inception. Turmeric, Chilli (Seed Spice), Ginger etc., have been chosen as the spices for implementation. So far, about 2812 hectare of land has been covered with an expenditure of approximately Rs. 454 lakhs.

6. **Mushroom:** Under MIDH, mushroom cultivation was undertaken only for three years between 2015-16, 2016-2017 and 2017-18. During the implementation, Oyster Mushroom alone had been taken up. To promote mushroom cultivation, the Department had set up nurseries for mushroom at Chite Horticulture Centre (Aizawl District), Lunglei, Tuidam (Mamit District), Champhai, and Thingdawl (Kolasib District) where farmers can collect planting material (Spawn) on subsidized price.

7. **Aromatic Plant:** Realizing the necessity of essential oils for the wellbeing of man, cultivation of aromatic plants was included to be a part of the scheme. However, it was included only for two years, that is, 2014-2015 and 2015-2016. Aloe Vera and Citronella cultivation were undertaken under this component. About Rs. 20 lakhs were spent to cover 50 hectares of land during the period of implementation.

8. **Creation of Water sources:** Abundant supply of water is a prerequisite for the successful cultivation of any crop. Though Mizoram is receiving abundant supply of rainfall during monsoon season, practicing cultivation of fruits and vegetables during the dry season has always been a tedious task except for those who have farms on the riverbanks. Keeping in view this difficult situation, the sub-component 'Creation of Water Sources' under MIDH has been carried out every year to make water available for farmers particularly those who are dealing with winter crops/Rabi crops. So far, 44 community water tanks in different villages have been constructed with an expenditure of Rs. 1100 lakhs, water harvesting system for individuals has also been carried out under which about 3093 individual water tanks were constructed with an expenditure of more than Rs. 2783 lakhs. At the initial stage of implementation of the scheme, individual water tanks were of Reinforced Cement Concrete (RCC). Later, prefabricated and Geomembrane tanks have been provided to farmers. The capacity of individual water tank provided to farmers under MIDH is 15000-20000 litre.

9. **Protected Cultivation:** Cultivation of horticulture crops under protected area (Greenhouse and Shade House) has become popular in Mizoram especially after the introduction of the Centrally Sponsored Schemes like MIDH/HMNEH, RKVY etc., as these schemes provide more funds for the purpose. Greenhouses and Shade Houses (Protected Cultivation) are used to cultivate crops mostly to protect them from extreme climate and weather such as intense heat, cold, storm, excessive rainfall etc. They are also used to grow crops during off-season. Tomatoes, Beans, Anthuriums, Roses etc., are some crops cultivated under protected environment in the state. Production of quality planting material of vegetables, fruits and flowers is also carried out in protected cultivation. Since the inception of the scheme, several Greenhouses (Tubular Structure), Shade Net Houses (Wooden Structure) covering more than 12,91,882 sq.m have been constructed with an expenditure of Rs. 2,263 lakhs. The funds available under this Protected Cultivation are also being utilized for the cost of planting materials of high value vegetables grown in poly houses.



10. **Promotion of Integrated Pest Management (IPM):** Most horticulture crops need special care to produce more. However, these crops have many enemies which can adversely affect their productivity and cause even their death. Pests of different kinds have been the worst enemy of fruits and vegetables since time immemorial. To meet this challenge, Pest Management has been an integral part of the scheme since the first year of implementation. So far, an amount of Rs. 304 lakhs have been spent to cover more than 25,396 hectares of land. Under Integrated Pest Management, distribution of pesticides alone has not been the activity, but imparting knowledge through trainings, demonstrations, monitoring and inspections on how to handle these chemicals have also been given special attention.

11. **Promotion of Integrated Nutrient Management (INM):** Another measure which has been taken up for special care of the horticulture crops is to provide abundant supply of fertilizers and other nutrients. Soil loses its fertility after two or three years of cultivation. To ensure better growth and better productivity of crops, soil fertility must be maintained. Under MIDH, Promotion of Integrated Nutrient Management has been undertaken every year from the start of the implementation of the

scheme. So far, more than 62,235 hectares of land has been covered by spending more than Rs. 746 lakhs for this purpose.

12. Pollination Support through Beekeeping: Bees are known as great pollinators since long time back. Their contribution to the growth of horticulture has also been acknowledged. Honeybee Colony and Bee Hives were undertaken under MIDH in 2014-2015 and 2015-2016. More than Rs. 30 lakh was spent to distribute about 4,335 ready-made boxes (beehives) to the Apiarists.

13. Horticulture Mechanization: The application of machines could bring desirable changes in respect of land preparation, weeding and even in the process of harvesting. The use of machine means faster work within lesser time, quality product, lesser demand for manpower etc. Thus, mechanization of horticulture has become an important aspect of MIDH/HMNEH in Mizoram. So far, funds amounting to more than 838 lakhs rupees has been spent to purchase more than 4800 machines and equipment such as Power Tillers (8 bhp and above), Power Tillers (below 20 bhp) for land development - tillage and equipment for seed bed preparation, digging, planting and sowing. These purchased machines were later distributed to the farmers at subsidized rate.



14. Human Resource Development: Development of manpower has always been the most noticeable feature of government initiatives as their success or failure very much depends on the personnel who are in-charge. In the case of MIDH as well, various necessary steps have been taken to develop human resources both officials and farmers of the state. The fund utilized against each activity for Human Resource Development under the scheme are as below:

a)	Training of farmer (within the state)	Rs. 270 Lakhs
b)	Training of farmers (outside the state)	Rs.107 Lakhs
c)	Exposure visit of farmers (outside the country)	Rs. 56 Lakhs
d)	Training/Study tour of technical staff/field staff (within the state)	Rs 49.26 Lakhs
e)	Study tour of technical staff/field staff to progressive states.	Rs.177 Lakhs
f)	Training/Study tour of technical staff/field staff (Outside India)	Rs. 186 Lakhs
g)	HRD for Gardener/Skill Development	Rs. 81 Lakhs



15. Integrated Post Harvest Management: Post harvest management has been one of the most challenging tasks in both agriculture and horticulture. Once crops are harvested, some need further treatments before reaching the consumers. This is necessary for maintaining value, value addition, availability of supplies during the off season, etc., since most horticulture crops are highly perishable if left untreated. So far, more than Rs. 1678 lakhs have been spent to undertake the following activities under the component -Integrated Post Harvest Management.

- a) Construction of 169 Pack Houses (9mx6m) at the expense of Rupees 338 lakhs.
- b) Construction of 1741 Pusa Zero energy cool chambers (100kg) by spending Rupees 34 lakhs (approx).
- c) Construction of 73 Evaporated/low energy cool chambers (8mt) with the expenditure of more than Rupees 180 lakhs.
- d) Setting up of 10 Integrated Pack Houses with facilities for conveyer belt, sorting, grading units, washing, drying and weighing by spending Rupees 250 lakhs (approx).
- e) Purchase of 13 Refrigerated Vans/Transport vehicles with an expenditure of Rupees 149 lakhs (approx).
- f) Setting up of 25 Cold Rooms (Solar based storage facilities) with an expenditure of Rupees 187.5 lakhs (approx.).
- g) Setting up of 36 Primary Processing Unit (Solar based drier) with an expenditure of Rupees 79 lakhs (approx).
- h) 399 Ripening Chambers with an expenditure of Rupees 199 lakhs (approx).

16. **Mission Management:** Efficient management is essential for the successful implementation of any scheme whether it is of a Central or State government. Mismanagement may lead to the failure of the scheme even if a huge amount of fund is allocated. To ensure effective and efficient management of the scheme, the following activities have been undertaken under MIDH in Mizoram.

- a) Administrative expenses for State & District Mission Offices and implementing agencies, project preparation, computerization of offices, contingency etc.
- b) Institutional strengthening, hire and purchase of vehicle, purchase of computers.
- c) Seminar, workshops, exhibitions, Kisan Mela, Horticulture Show, Honey festival at District, State and National level.
- d) Information dissemination through publicity, literature in a printed form, advertisement etc.
- e) Development of technology packages in electronic form to be shared through IT network.
- f) Baseline survey and strengthening horticultural statistical data base.



17. **Establishment of Market Infrastructure for Horticulture Crops:** MIDH/HMNEH has been formulated and implemented not only to increase productivity and expansion of areas under cultivation alone but improving the economic status of horticulture farmers as well. Thus, establishment of market infrastructure, where farmers can sell off their products, has been an important component of the scheme since the first year of implementation. So far, Rs. 370 lakhs (approx.) has been spent to undertake the following activities-

- a) Purchase of Mobile Vending Cart: 400 vending carts were purchased and distributed to the fruits and vegetables vendors free of cost.
- b) Construction of Rural Market/Apni Mandies/Direct Market: 20 markets were constructed at roadsides, mostly along the national highways in different villages where rural farmers can sell their produces.
- c) Retail Outlet: 4 (four) retail outlets were constructed under the scheme where horticulture crops such as fruits, vegetables are sold at retail price.



18. **Research and Development:** This component of work had been carried out in 2015-2016 only. Rs. 23 lakhs were spent for the purpose.
19. **Organic Farming:** Under the scheme, the component - Organic Farming was carried out in 2015-2016 only. For this purpose, Rs. 12 lakhs were spent to set up 25 Vermicomposting units.
20. **Special Intervention:** Under this component of the scheme, some portion of fund was reserved for emergent and unforeseen circumstances. However, this component of the scheme was carried out in 2014-2015 and 2018-2019 only with an expenditure of Rs. 120 lakhs.
21. **Formation of Farmer Interest Groups (FIGs)/Farmer Producer Organisations (FPOs):** As the need for formation of FIGs and FPOs in the guidelines of the scheme was highlighted, the Department took initiatives to set up societies/associations for the smooth implementation of the scheme and to ensure the welfare of the farmers. Mizoram Dragon Fruit Association, Mizoram Anthurium Growers Association at village, district and state level etc., are important associations formed with the assistance received under the scheme. These associations have been playing many important roles for promoting the welfare of their members since their formation. The cooperation and collaboration with the Department has contributed to the promotion of horticulture within the state.

RESULTS AND DISCUSSION

As mentioned in the above various schemes have been implemented in Mizoram for the development of horticulture. Even during the time when Horticulture was a Wing under the umbrella of the Department of Agriculture many horticultural development activities were carried out for uplifting horticulture farmers and increasing horticultural produces thereby contributing to the economy of the state. These horticultural activities of the government, whether Centrally Sponsored Schemes or State Schemes, seemed to have had numerous positive results on many aspects of the lives of the people especially that of the horticulture farmers. As a result, most of the people in the rural areas and some in urban areas have taken up horticulture as a means of livelihood or at least as a source additional income.

In this paper an attempt has been made to find out socio-economic profile of the beneficiaries, different aspects of the implementation of the schemes including problems and issues, impact of the schemes, future-plan of the beneficiaries and implementing agency with and without the schemes, etc. To conduct this research, three districts such as Kolasib, Serchhip and Mamit were selected as sample districts. Regarding the number of respondents under MIDH, 159 farmer respondents and 8 official respondents were selected. Kolasib district contributed the largest number of farmer respondents at 57 whereas Serchhip and Mamit contributed 51 and 48 respectively. The number of farmer respondents under RKVY is 124 and official respondents are 8. Out of the total number of farmer respondents, Kolasib, Serchhip and Mamit contributed 60, 28 and 36 respondents respectively. In respect of PMKSY, 48 farmer respondents and 8 official respondents were selected from sample districts. Under this scheme, 12 farmer respondents were selected from Serchhip district whereas Kolasib and Mamit contributed 10 each.

Among the various horticulture schemes/programme, Mission for Integrated Development of Horticulture (MIDH) formerly known as Horticulture Mission for Northeast and Himalayas (HMNEH) has been one of the most important schemes in Mizoram in terms of area coverage and fund allocation. MIDH has been formulated and implemented to cover all districts in the state. So far, more than 80 thousand hectares of land has been covered by different activities under MIDH by spending 26 thousand lakhs rupees (approx). However, it may be brought to light here that the area

coverage often encompasses the same area for consecutive years due to repetitive funding of the same beneficiaries under some components of the scheme such as Integrated Pest/Nutrient Management, Rejuvenation/Replacement of Senile Plantation, Canopy Management etc.

Gender Distribution

Table shows the gender distribution of respondents under MIDH. In Kolasib district, there are 57 respondents with 33 (57.89 percent) males and 24 (42.11 percent) females.

Gender of the Respondents under MIDH

Trade	Kolasib		Percentage	
	M	F	M	F
Fruits	9	6	27.27	25
Vegetables	9	3	27.27	12.5
Flowers	-	12	-	50
Infrastructure	15	3	45.45	12.5
Total	33	24	100	100

Out of the total number of male respondents, 27.27% respondents are under fruits crops, with females being 25 percent. As can be seen in the above Table, the number female beneficiaries undertaking fruit cultivation are half and less than half of the total respondents in Kolasib respectively.

The number of respondents under vegetable component of the scheme is 42 (26.42 percent), with a wide disparity between the genders. The male respondents were 9 in number (27.27 percent) while there were 3 (12.5 percent) females.

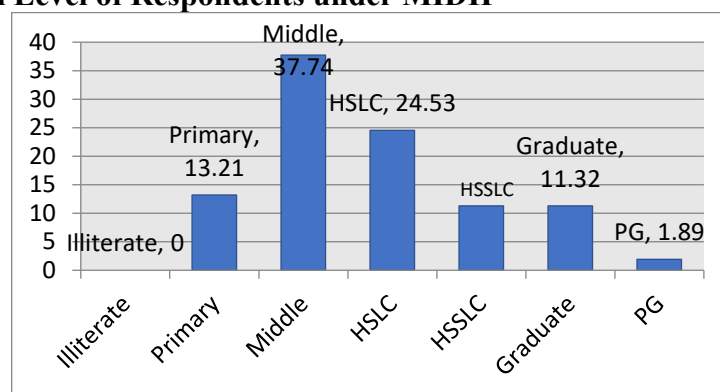
Under the flower component there are 24 respondents. It is found notable that there are no males undertaking the component and all respondents were females.

In contrast to the flower component the infrastructure component is dominated by the males with the number of male beneficiaries undertaking the scheme being 15 (45.45 percent) and there were only 3 females (12.5 percent) out of the total respondents under the component. There were 3 females in Kolasib district out of the 18 that were interviewed, accounting for 12.5 percent as can be seen in the table above.

Educational Qualification

The chart below shows the educational level acquired by the respondents in Kolasib district. Among the total number of 159 respondents, there is no respondent who can neither read nor write. Respondents who have passed Middle School standard are highest in number contributing 37.73 percent of the total number of respondents. They are followed by respondents who have passed their Matriculation or High School Leaving Certificate (HSLC) at 24.54 percent, 13 percent having studied up to Primary School and 11.32 percent each for both Higher Secondary School Leaving Certificate and Graduate. There are three Post Graduate Degree holders among the respondent as well contributing only 1.88 percent.

Overall Educational Level of Respondents under MIDH



As shown in the chart below, in Kolasib district has the number of respondents possessing up to Middle School education were the highest in number at 24 accounting for 42.11 percent of the total respondents of the district. There were neither illiterates nor Post Graduate degree holders.

Marital Status of Respondents under MIDH

Sl No	District	Married	Unmarried	Total
1	Kolasib	57	Nil	57

The marital status of respondents in the district is shown in the above table. Of the total respondents, no respondents are single. All respondents- in Kolasib district are married accounting for 35.84 percent of the total number of respondents respectively.

Age Group of Respondents under MIDH

Sl.No	Category	Kolasib District	Percentage
1	Below 18	-	-
2	18-30	-	-
3	31-40	-	-
4	41-50	21	36.84
5	51-60	18	31.57
6	61-70	18	31.57
7	71-80	-	-
8	Total	57	100

The above table depicts the age group of respondents in the districts. Respondents belonging to the age group of 41-50 are highest in number forming 36.84 percent of the total respondents while there is no respondent in the age group below 18 years. Respondents in the age group of 51-60 and 61-70 stood second in terms of the number of respondents which constitute 31.57 percent. Age group such as below 18, 18-30, 31-40 and 71-80 have no respondents.

The differences in the age distributed may be attributed to the fact that the lower age groups are still undergoing their academic pursuits or venturing out of their villages in search of greener pastures in terms of jobs. Meanwhile the upper age group of 71 – 80 years contributed no number due to health deterioration and lack of stamina caused by age.

Trades Undertaken

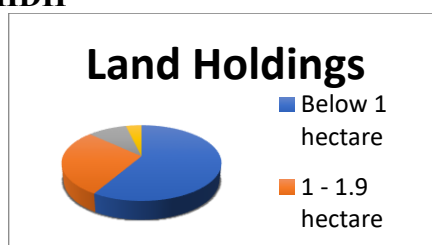
The number of respondents based on the activity carried out under the scheme is shown in below Table. Respondents who are dealing with infrastructure within the area under study are highest in number with 31.57 percent. They are followed by respondents under fruits who constituted 26.31 percent. Vegetables and Flowers growers stood third in terms of the number of respondents with 21.05 percent. All respondents under flower are women only.

Sl.No	Trade	Kolasib District	Percentage
1	Fruits	15	26.32
2	Vegetables	12	21.05
3	Flowers	12	21.05
4	Infrastructure	18	31.57
	Total	57	100

Land Holding

The pie chart below shows the land holding status of respondents in terms of area. Respondents having less than 1 hectare of land contributed the highest number among the respondents with 58.49 percent while respondents having 3 or more hectares of land contributed the least number constituting 3.77 percent only. Respondents having 1-1.9 hectares of land stood second in terms of area of land owned with 28.30 percent followed by 9.43 percent of respondents with 2-2.9 hectares of land.

Land Holdings Status under MIDH



As can be seen in the Table among the respondents having less than 1 hectare of land, there maximum number of respondents is with flower, constituting 100 percent followed by vegetable cultivation having the maximum of 9, that is, 60 percent. In this category of land holding the least number of respondents are those under fruit component at, that is, 20 percent. Those under infrastructure components account for 6 (33.33 percent) of the total number of people with less than 1 hectare landholding.

With regards to landholding of 1-1.9 hectare of land, there are 12 fruit growers at 80 percent, 3 vegetable growers contributing 20 percent and 3 under the infrastructure component at 16.67 percent out of the total respondents with similar land holdings. None of the respondents were involved in the flower component. In respect of the number of respondents having 2-2.9 hectare of land, there are 9 respondents undertaking infrastructural component constituting 50 percent while none of those engaged in the other trades has similar landholding. The larger landholding of 3 hectares is not seen in all components from Kolasib district.

Trade-wise Land Holding Status (Area) under MIDH

SN	District	Crop/Trade	Area				Total
			Below 1 Hectare	1 – 1.9 Hectare	2 – 2.9 Hectare	3 or more Hectare	
1	Kolasib	Fruits	3	12	-	-	15
		Vegetables	9	3	-	-	12
		Flower	12	-	-	-	12
		Infrastructure	6	3	9	-	18
4	Grand Total		30	18	9	-	57
5	Percentage		52.63	31.57	15.78		100

In Mizoram, horticulture is getting more recognition and appreciation due to the contributions of its produces for the survival and wellbeing of the people in respect of nutrition for better health and income generation. Its ability to achieve sustainability of small land holdings, employment generation, environment protection, more export potential etc., has added to its significance. However, importance

of horticulture is said to be recognised during the 1980s only after the leaders of the country and the experts realised the said ability of horticulture for achieving the goals of the nation in some respects. As of today, horticulture has become one of the most important sectors which the Government of India has undertaken with the investment of more than 2000 crore³. Due to the increasing investment and various initiatives in horticulture sector, India became the biggest producer of fruits and vegetables in the world. Only China is ahead of India in this regard.

Among the UTs and states in the country, Mizoram is also doing well for promotion of horticulture in the state. As a matter of fact, Mizoram has been very much closely associated with horticulture since time immemorial. Even before the coming of the British, Mizoram used to be self-sufficient in agriculture and its allied activities including horticulture. The focus was on the cultivation of rice and vegetables. All their agriculture and horticulture were carried out on Jhum land, and no permanent farming was heard during those days. Their produces were also for their consumption alone without any attempt to utilise the produces for generation of additional income. Even during the time of British, the government did not make any remarkable development in terms of fund allocation and intervention of technical expertise.

Horticulture began to take a new shape when Mizoram was upgraded from the status of District Council to Union Territory in 1972. During those days, the government of Mizoram took initiatives for horticulture development by placing horticulture as one of the wings under the Department of Agriculture. The Horticulture Wing was assigned to look after 12 subjects including Fruit Development, Vegetable Development, Spices Development, Floriculture Development etc. It was headed by a Joint Director. Horticulture once again took a new shape when Horticulture Department was carved out of the Department of Agriculture to become a full-fledged department in 1993. Since then, the Department of Horticulture continues to be one of the most important departments which have close link with the general masses of the state.

In Mizoram, much effort has been made by both the Government of India and the State Government for the development of horticulture in the state by formulating and implementing various Centrally Sponsored Schemes (CSS) and State schemes. Under these schemes, thousands of lakhs have been spent to help the horticulture farmers as well as to take various steps for horticulture development in the state. Among the CSS which are meant to develop horticulture in the state, MIDH, RKVY, PMKSY are some noticeable schemes making some remarkable progress in the state. Due to the efforts of the Department of Horticulture under the said schemes along with the state-initiated schemes like NLUP etc., and other CSS, Mizoram was awarded 'Best Horticulture State' in 2019. As per the record of the Department of Horticulture, about 13200 ha. of land has been covered so far under the horticulture sector. However, it should be kept in mind that horticulture covers only 11.96 per cent of the area identified as horticulture potential area which reflects that there still is much to be done for the further development of horticulture in the state.

Development Programme in Horticulture, discusses about the three important horticulture schemes implemented in Mizoram. These schemes are sponsored by the Central Government in 90:10 funding pattern. Among the various schemes being undertaken in Mizoram, three schemes namely, Mission for Integrated Development of Horticulture (MIDH), Rashtriya Krishi Vikas Yojana (RKVY) and *Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) along with their origin, fund allocation and utilization, area coverage are discussed in this chapter.*

Major Findings

1. The Department of Horticulture, Government of Mizoram has been the most important institution available for administration of horticulture in the state since 1993 when it became a full-fledged department. The functions and responsibilities assigned to the Department are carried out by the Directorate, offices at district, sub-division and circle level. Currently, the Department is the

³ <https://prsindia.org/budgets/parliament/demand-for-grants-2022-23-analysis-agriculture-and-farmers-welfare>, accessed on 15.10.1022

implementing agency of CSS such as MIDH, RKVY, PMKSY etc., and some state horticulture policies.

2. Regarding the age of horticulture farmers under the schemes, farmers belonging to the age group of 51-60 are largest in number whereas number of farmers belonging to age group of 18-30 and 31-41 are the least. This indicates that the most effective workforces are engaged in other activities which, further compels most farmers to employ additional labour. At the same time requirement of additional labour has created employment avenues for several people.
3. In respect of the educational qualifications obtained by farmers under the schemes, those who have passed Middle School standard are highest in number whereas those who possessed master's degree are the least. There are no illiterate farmers who have undertaken horticultural activities under the schemes.
4. There is a wide gender disparity among the horticulture farmers. Under the three schemes, the number of male beneficiary farmers constituted approximately 70 percent of the total number of farmers while females contributed only 30 percent.
5. More than half of the farmers are carrying out their activities in - areas less than 1 hectare of land while about 3 percent of the farmers could utilise 3 or more hectares of land for their horticulture activities. It is found that land holding of the farmers is not vast enough to undertake large scale production.
6. Training to impart knowledge and expertise has been an important component of each scheme. 78.87 percent of respondents have undergone at least one or two training(s) organised by the implementing agency. Amongst the respondents who have attended trainings, 93.08 percent of them found that their training have been helpful in the course of their work.
7. After organisation of training, follow up programme in terms of technical guidance, inspection and monitoring were also given due emphasis to ensure that beneficiaries utilized their assistance in the most effective manner in their activities. 80.93 percent of respondents under the schemes have received such kind of care from the implementing agency.
8. The study discovered that most of the farmers are facing one or more problems in the course of their work. Plant diseases, pest, scarcity of water etc., are common problems encountered by the farmers.
9. Regarding marketing of the produces, farmers sold off their produces in different ways. Those who sold to the intermediaries are highest in number which accounted for 39.06 percent of the total number of respondents. Some sold directly in the market while some utilized arrangements made by the concerned Department. At the same time, there are some farmers who have not sold any of their produces. About half of the beneficiaries of the schemes encountered marketing problems. Covid-19 pandemic, unstable market, competition with imported commodities etc., are some common marketing problems faced by the beneficiaries of the schemes in relation to marketing of their produces.
10. Respondents who could make profit amounting to Rupees 50000-99000/year are the largest in number comprising about 40 percent of the total respondents while respondents who could make more than Rupees 1 lakh/year are only 9 percent. 8 percent of respondents still fail to make profit from their horticulture activities
11. The study also revealed that most respondents could not utilize the available post- harvest management facilities like cold storage facilities, sorting facilities, grading facilities etc. Value addition activities were also not undertaken by most beneficiaries.
12. The implementation of MIDH, RKVY and PMKSY has brought significant progress in increasing horticulture coverage as well. Since the target areas to be covered under the schemes were successfully achieved in every year of implementation for almost a decade, about 13 percent of the identified horticulture potential area in the state has now been utilized for undertaking cultivation of different kinds of horticulture crops.

Problems & Challenges:

It is no doubt that horticulture in Mizoram has seen some progress with the implementation of MIDH, RKVY and PMKSY. Area covered, production and productivity are comparatively much higher with the coming of these schemes. In the meantime, many issues and problems are identified in the implementation process which further affected and at times almost led to total failure in some activities. The problems and issues which are discovered during the conduct of the study are as follows:

1. Delay in Release of Funds: The success of every scheme depends on timely release of funds whether it is under the central or state scheme. In the case of centrally sponsored horticulture schemes implemented in Mizoram as well, timely release of fund from both Government of India and the State Government is vital as activities under these schemes very much depends on season, rainfall, climate etc., In the case of MIDH, RKVY and PMKSY, the government of India could usually release its share on time when the implementing agency in the state could provide all the necessary documents such as Utilization Report etc., to the Central government within the stipulated time. However, late release of fund had occurred twice or thrice on the part of the Government of India due to the failure of the implementing agency to provide the required documents on time.

In respect of the State Matching Share (SMS), the state government has been always late to release fund. This problem has not been specific to horticulture schemes alone, but common to all the schemes where State Government is required to contribute its share of funding. Late release of State Matching Share has created several problems such as lapsing of fund, deduction of Central share, untimely receipt of fund by beneficiaries etc., which hampers the smooth flow of the implementation process. During the interviews with the concerned officials, it was found that sometimes the implementing agency is required to adjust in the amount disbursed and materials supplied to beneficiaries. Often the state government needs to be pressurised to release its share.

2. Shortage of Staff (Technical/Non-Technical): One of the biggest problems that the concerned officials reiterated while discussing problems in the implementation process regarding MIDH is the shortage of staff. As these schemes are being implemented to cover even the remote areas, the problem is enhanced when there is a need to carry out the monitoring and inspecting activities. Though a few employees are recruited (mostly on contract basis) under the sub-component such as Management Cost etc., the implementing agency that is the Department of Horticulture is very much in need of more personnel especially technical experts to look after the schemes. The failure of the state government to fill the regular vacant posts due to the death and retirement of personnel on superannuation pension also added to the problem. In addition to this problem, many farmers need technical expertise throughout the year as they are lacking in knowledge in many respects, such as, pest control, application of fertilizers and manures etc.

3. Political Interference in the selection of beneficiaries: The implementing agency is entrusted with the task of selection of farmers to be assisted under the schemes. They are to perform this task without fear or favour on any ground. However, political parties especially those in power have been said to interfere in the selection process of the beneficiaries in most districts either directly or indirectly. It has been stated during the interview that interference of political parties occurs the most when assistances were given in cash. Such situations often lead to undeserving farmers receiving assistance at the expense of the deserving ones.

4. Topography: Mizoram is a hilly terrain with rough hills of irregular height. There is hardly any area which can be called as plain. The rough topography of Mizoram rendered various impediments to horticulture activities. The implementation of MIDH also sometimes fails to produce the desired results due to the difficulties brought in by the unfavourable landscape of the state. The concerned officials are required to keep in mind such hurdles while working out plans and estimates for the state. Some difficulties caused by the rough topography of the state are:

- i) Difficulties in utilizing heavy farm machineries and equipment necessary for large scale production.
- ii) Construction and improvement of roads which would expedite and ease transportation of raw materials and produces is difficult in the hilly terrains.

iii) Working on the rough hilly terrain is tedious and exhausting as compared to working in the plain areas with or without improved farming tools and implements.

iv) The above issues caused by the topography have led to the condition wherein the area that can be taken care of by an individual in hilly areas is comparatively less than that in the plains. This further impedes large scale production.

Supply of Poor-Quality Planting Materials: In the implementation of MIDH, supply of poor-quality planting materials to the horticulture farmers has been found to take place several times which in turn adversely affect the quality and quantity of the produces and often lead to total failure leaving the farmers in despair. Such was the case of the farmers dealing with the cultivation of different varieties of orange, the planting materials of which were imported from other countries. The trees could bear many fruits but, it was reported that most of the farmers dealing with these varieties of orange are unable to sell their produces as the fruits were void of juice. The situation has been found to lead to wastage of energy and time of the farmers which further left them perplexed, discouraged and hesitant to undertake new initiatives in their farms. Cultivation of poor quality of planting materials adversely affected the government as well. The investment it made in the form of money and human resources/capital became wasted and drained without fruitful results. Some cultivators of other horticulture crops, such as, dragon fruit and spices also have reported experiencing similar situations. Instances have further been cited where the situation has led to misunderstandings between farmers and officials of the implementing agency which were compensated on certain occasions.

1. **Selection of Uncommitted Beneficiaries:** Thousands of beneficiaries have been given assistance under MIDH since their inception. The amount that has been disbursed under the schemes to help the farmers appears to be sufficient to make remarkable changes. However, several farmers selected as beneficiaries are stated to be half-hearted in their commitment to the schemes. They rather wish to receive assistance without any commitment to progress in their horticulture activities. From the interview with leaders of some farmers' associations, it is discovered that there are some beneficiaries who misused assistance and spent the cash they received for other purposes such as purchase of household appliances like television, refrigerator, mobile phone etc. In the meantime, there are several deserving farmers who have undertaken their horticulture activities on their own for a long time but had either not received any assistance or had received miniscule assistance, more often in kind. In the district, it is found that there still exists an attitude among the people towards the government schemes that assistances given are considered as a gift which can be spent in any manner they wish.

2. **Insufficiency of Assistance:** From the discussions and interviews with officials and farmers, it is found that the assistances given under the schemes are often less than the expectation of the farmers to undertake meaningful activities. The area which can be covered with the assistance provided appears to be insufficient in terms of productivity and production. In some cases, farmers are expected to take initiative in advance on their own expense before the government can hand over assistance to them.

In order to ensure that the farm materials such as planting materials, fertilizers, pesticides etc., are available at the time of need, farmers must spend a fairly large amount of money from their own pockets.

There are times when the concerned department outlets are out of stock in respect of the horticulture farming inputs and materials. At times the local markets as well are in shortage of supply that farmers do not have access to their needs even if willing to procure from their own pocket. Because of the said situation, the productivity and the production of the horticulture farmers are always less than the anticipated results.

3. **Unstable Market:** In the district, markets have not been stable in relation to prices as well as quantity of sale of horticulture produces since long time back. As this kind of situation has been experienced several times, many farmers were discouraged and sometimes compelled to give up their activities. Some reasons attributed for instability of market in Mizoram are:

a) Shortage of consumers: The population of Mizoram have not been large enough to consume all the products of horticulture farmers.

- b) Absence of proper channel for export of the produces: Though some horticulture produces such as Anthurium (Flower), Dragon Fruit etc., are sold to other states and foreign countries through the arrangement made by the concerned department and some societies, many produces are still unable to reach beyond the state.
- c) Too much reliance on intermediaries: Most of the horticulture farmers do not sell their products directly in the market. Their products are sold on-farm to the intermediaries who collect them from their fields and later sold to the retailers/vendors. The prices at the time of the collection are decided through bargaining and compromising between the farmer and the intermediaries which mostly turns out in favour of the latter.
- d) High cost of production: The cost of production is higher than other places in India. This is due to the rough topography of the state, high cost of labour, high cost of horticulture materials, high cost of transportation etc. As the cost of production is high, farmers do not have a choice but to sell their produces at higher prices to make profit.

Limitations of the Study

The study was confined to one district only. Other horticulture schemes in collaboration with National Bank for Agriculture and Rural Development (NABARD), Japan, NLUP, SEDP, Article 275 (1), National Bamboo Mission (NBM) etc., have been implemented in the state with the allocation of considerable amount of fund. These schemes seem to have some impacts on the horticulture context in the district. Therefore, it is thought that further research on these schemes would be very helpful to understand the status of Horticulture in the district.

Suggestion

As mentioned above, the implementing agency as well as the stakeholders of the scheme has encountered many obstacles in the process of the implementation of the scheme. The following are some possible measures which can be taken both by the government and the beneficiaries.

1. **Timely Release of Fund:** As found out during the study, the state government was stated to be always late in releasing its share of funding, concerted and untiring efforts of the officials of the government at all levels is the need of the day. As most horticultural activities depend on the season, climate etc., one delay can adversely affect the whole year's activities. To ensure the efficient implementation of the schemes, fund allocated should be released on time at any level whether it is central, state or district. The beneficiaries should be able to take all necessary steps to commence their activities on time.
2. **Appointment of more staff:** More staff (technical or non-technical) need to be recruited and appointed by the Government of Mizoram. Even if the creation of new posts is difficult, the vacant posts due to the death and superannuation of the personnel should be filled as early as possible to ensure the availability of the required manpower and skill for successful implementation of schemes.
3. **Awareness among the politician:** Politicians (at all levels) especially those in power should be aware of the importance of the schemes and the possible damages that can be caused due to the selection of those who do not deserve assistance.
4. **Thorough study on the suitability of land:** Careful analysis on the suitability of land is a must before undertaking any horticultural activities. Though the topography of the state might not be comparatively conducive for the cultivation of all horticulture crops, but understanding the kind of crops for a particular type of soil can greatly enhance the working of horticulture.
5. **Exploration and subsidisation of suitable machineries:** Thorough study on the available small machineries suitable for use in the rugged topography of Mizoram would help in reducing the onus of farmers as well as in expediting their works. Further, provisions for subsidisation for the farmers may be explored to enable them to have access to such machineries.
6. **Provision of connectivity:** The sites selected for carrying out horticulture activities should be easily approachable for easy transportation of planting materials and farm materials as well as the farm produces.

7. **Supply of quality planting material:** Productivity and production of horticulture crops largely depends on the quality of planting materials supplied. Good quality planting materials means more productivity and production. In the same way, cultivation of poor-quality planting materials can adversely affect the quality and quantity of the produces which may further lead to the total failure. The concerned department should take all necessary steps to ensure that only quality planting materials are disbursed to the beneficiaries.
8. **Sufficient Assistance:** To make farmers successful in the activities undertaken under the schemes, assistance given to them should be sufficient to meet at least their basic needs. Emphasis should be given on the sufficiency of funds and availability of farm materials such as fertilizers, pesticides etc., for each farmer rather than the number of farmers to be assisted.
9. **Stable Market:** Stable market where the farmers can sell off their produces at reasonable and regular prices are necessary for successful working of agriculture and its allied sectors including horticulture. Government can make meaningful effort for this task. Farmers' societies/associations as well as individuals with expertise also can have remarkable contribution.
10. **Utilization of Post Harvest Management Facilities/Activities:** More accessible cold storage facilities should be set up by the government to preserve the products of the farmers. This is necessary for making the horticulture crop available in the market during the off season at profitable prices for farmers.
11. **Setting up of horticulture-based industries:** More agro/horticulture-based industries in the state should be set up to take up the activities of *value addition*. The provision for regulating such industries should be simplified and more user friendly so that more industry will come up where farmers can sell their produces at lucrative prices. The Government can make huge contribution in this regard.
12. **More irrigation facilities:** Rivers and streams in our state can solve water problems of farmers to a great extent if there are more irrigation facilities. About irrigation, government intervention is a must to have a better system. Farmers also should keep in mind that while they are about to undertake any horticultural activities, their farm should not be far from water sources like rivers, stream etc., otherwise their activities are likely to become wasted during the dry season.

Conclusion

Regarding the implementation of MIDH in Kolasib District, much effort has been put by both Government of India and the State Government in terms of fund allocation, dissemination of expertise through training, technical guidance, market arrangement etc. However, desirable results have not been achieved so far due to several problems such as cultivation of poor-quality planting materials, shortage of technical and non-technical staff to look after the schemes, selection of undeserving beneficiaries, absence of stable market etc.

Much effort has been made by both the Government of India and State Government for the development of horticulture in the state by formulating and implementing various Centrally Sponsored Schemes (CSS) and State Schemes. Under these schemes, thousands of lakhs have been spent to help the horticulture farmers as well as for taking various steps for horticulture development in the state. Due to the efforts of the Department of Horticulture under CSS schemes along with the state-initiated schemes like NLUP, SEDP etc., and other CSS, Mizoram was awarded 'Best Horticulture State' in 2019. As per the record of the Department of Horticulture, about 13200 hectares of land has been covered so far under the horticulture sector. However, it should be kept in mind that horticulture covered only 11.96 per cent of the area identified as horticulture potential area which shows that there is still much to be done for further development of horticulture in the state.

Horticulture is getting more recognition and appreciation due to the contributions of its produces towards the wellbeing of the people in respect of nutrition for better health and income generation. Its ability to achieve sustainability of small land holdings, employment generation, environment protection, more export potential etc., has added its significance. However, the importance of horticulture is said to be recognised since the 1980s only after the leaders of the country and the

experts realised the said ability of horticulture for achieving the goals of the nation in some respects. As of today, horticulture has become one of the most important sectors which the Government of India has undertaken with the investment of more than 2000 crores. Due to the increasing investment and various initiatives in horticulture sector, India became the biggest producer of fruits and vegetables in the world. Only China is ahead of India in this regard.

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