An e-book publication
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IMPORTANT ACHIEVEMENTS OF HORTICULTURE DEPARTMENT DURING 2019-2020

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MESSAGE

I would like to congratulate the Horticulture Department for its notable achievements over the past few years. The various activities taken up by the Department have paved a way for farmers to build a solid foundation for sustainable development and shall continue to do so in the days to come.

The success of Horticulture in Mizoram is crucial for the overall economic growth of the State and in this regard, I am glad to note that the performance of the Horticulture Department is the best amongst the various departments through which SEDP is being implemented by the State Government. I maintain that Bamboo Development through SEDP and other Horticultural activities through available CSS schemes like MIDH, NBM, PMKSY etc. shall play a significant role in uplifting the economy of our State.

It is indispensible to point out the vital role played by the Horticulture Department in the supply of essential food commodities such as vegetables and fruits through 'Covid-19 Vegetables and Fruits Supply Chain' co-operated by Commerce & Industries Department and MIZOFED, in the interest of public service amidst the national lockdown due to Covid-19.

I hope that acquired experiences will be translated into more vigorous, dedicated and focussed achievements in the future and that the Department and Farmers shall continue to work together hand in hand. I am confident that this e-book will help enlighten all readers as to what the Horticulture Department actually does for citizens.

Dated Aizawl,
the 13th May, 2020

Zoramthanga
(ZORAMTHANGA)

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I. Brief Profile of Horticulture in Mizoram

Horticulture is intertwined with the culture of the Mizos living in the hilly tracks of the Patkai range of the Himalaya. Although rice cultivation on jhum land was the ancestral livelihood, the introduction of permanent cultivation has rapidly changed the course of events in shaping the livelihood on the hills and in the utilization of natural landscape, its narrow streams and rugged terrain. Horticulture has grown close to the heart of the people in different ways and in different means as a livelihood, a hobby, reclamation of deforestation, aesthetics and as entrepreneurship etc. while in all activities horticulture nurtures the cultural know-how in more ways than one.

Mizoram covers the geographical area of 21,081 Sq. km., out of which 11.56 lakh hectares (55%) is identified as potential area for horticulture crops. However, only 11.96 % of the total potential area is covered so far which proves that there is still a vast scope for further development of horticulture in the State. Implementation of Central Sponsored Schemes such as MIDH, RKVY, PMKSY, etc. has brought about remarkable progress in increasing area, production and productivity. Successful implementation of SEDP (Socio-Economic Development Policy), the current State Flagship Programme in co-ordination with other schemes is expected to help uplift the state economy to far more extent.

Harnessing the benefit of the schemes implemented and extension services provided by Horticulture Department, horticulture farmers in the state now practiced settled farming by abandoning age-old practice of jhum farming with Government assistance provided to beneficiary farmers through Direct Benefit Transfer or other convenient means, there have been considerable achievements in increasing area and production of horticulture crops in the past few years. In fact, the development to all extents is contributed not only by the implementing department but also by the hard working farmers who are the top priority of Horticulture Department. Needless to mention that the Department gives tremendous efforts to create sustainable livelihood and satisfactory impact to the well-being of the citizen farmers through various means.

Area, Production and Productivity of Major Horticulture Crops in Mizoram during 2018-19

Crops	Area/Production/Productivity	Year
		2018-2019
Fruits	Area	62.93
	Production	347.02
	Productivity	5.51
Vegetables	Area	34.65
	Production	200.37
	Productivity	5.78
Spices	Area	27.58
	Production	100.89
	Productivity	3.66
Flowers	Area	0.178
	Production	372.00nos
	Productivity	2.09 Nos

(Area in thousandth hectare, Production in thousandth MT)

(Productivity in thousandth MT/Ha, no. in lakh)

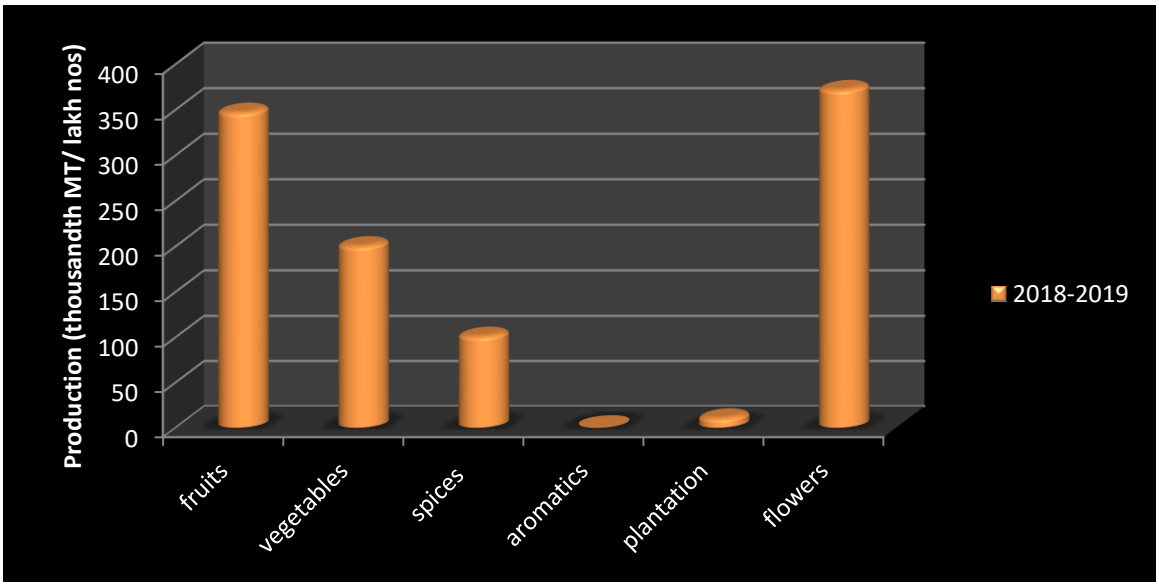


Fig 1: Production of Major Horticulture Crops Production during 2018-19 in Mizoram

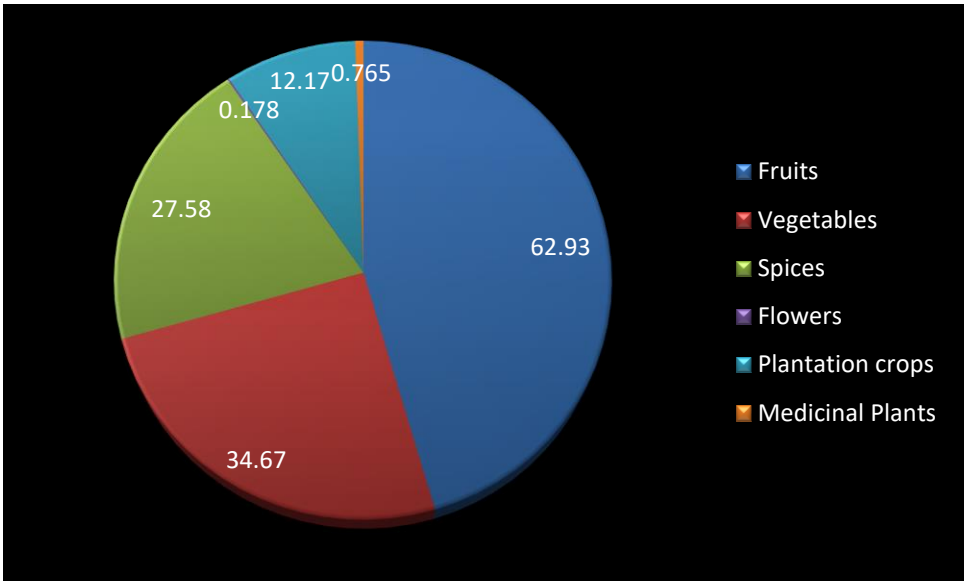


Fig 2: Pie Chart showing area ('000 Ha) occupied by various horticulture crops in Mizoram(Base year 2019-2020)

II. Schemes/Projects implemented by Horticulture Department

Horticulture in Mizoram was transformed with the introduction of Central Sponsored Schemes such as Technology Mission followed by schemes with a blue print for holistic development of horticulture. Such schemes implemented by Horticulture Department are Mission for Integrated Development of Horticulture (MIDH), Pradhan Mantri Krishi Sinchai Yojana (PMKSY), Rashtriya Krishi Vikas Yojana- Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR), National Bank for Agriculture and Rural Development (NABARD), Technical Cooperation under Japan International Cooperation Agency (JICA), Article 275(1), National Bamboo Mission (NBM), North Eastern Council (NEC), State Flagship programme- Socio – Economic Development Policy (SEDP), and other interventions made by the government for the interest of the farming communities. Apart from these, efforts are made and achieved in working with international organizations on establishing a correlation that addresses the concern of modern farming in the ever changing climate that has steered the course of orthodox systems in forecasting and farming to events out of the ordinary.

Horticulture Department, Government of Mizoram is implementing various important projects /schemes for increasing area, production and productivity of Horticultural Crops in the State such as:

1. Mission for Integrated Development of Horticulture (MIDH/HMNEH):

The most important Centrally Sponsored Scheme being implemented by Horticulture Department is Mission for Integrated Development of Horticulture. Previously, it was known as 'Technology Mission for North-Eastern States (TMNE)', which was later changed to HMNEH in 2010-2011, and is now under the umbrella of Mission for Integrated Development of Horticulture (MIDH) since the year 2014-2015.

Major activities under this scheme includes establishment of new garden of fruits, Vegetables, Mushroom, Flowers, Spice crops and Aromatic plants, Rejuvenation/ replacement of senile plantation and canopy management on fruit crops, creation of water sources for irrigation of crops etc.

During 2019 – 2020, out of the financial target amount of Rs. 2,508.89lakhs , only Rs. 1,441.30 lakhs have been achieved so far . Out of the total target area of 1,680 Ha, an area of 1,513 Ha. has been covered under Area Expansion Scheme of fruits, vegetables, flowers and spices till date. Protected cultivation covered 50,000 sqm. area till date enabling cultivation of flowers and vegetables throughout the season. For provision of Irrigation to the cultivated crops, 4Nos of community water tanks and 350Nos. of individual water tanks have been targeted, out of which 200 Nos. of individual water tanks have been constructed. Rejuvenation of 500 Ha of existing orchards was also successfully completed during the same year. So far, 1,800 Ha and 2,500 Ha have been covered under Integrated Pest Management (IPM) and Integrated Nutrient Management (INM) respectively.

Detail Physical and Financial Achievements under MIDH 2019-2020 may be seen as follows:-

Rs.in lakh

Sl. No	Component	Unit	Rate of Assistance	Target		Achievement	
				Phy.	Fin.	Phy.	Fin.
I	Establishment of new Garden						
	1. Fruits						
	I. Cost intensive crops						
	(i) Fruit Crops (Dragon fruit)	Ha.	1.2	300	360.00	300	360.00
	(ii) High Density planting-M. Orange (without integration)	Ha.	0.3	200	60.00	200	60.00

	(iii)Banana sucker (without integration)	Ha.	0.3281	213	69.89	213	69.89
	(iv) Fruit crop other than cost intensive crops using normal spacing	Ha.	0.18	167	30.06		
	2. VEGETABLES						
	(a) Hybrid (Off season Cabbage, Tomato etc)	Ha.	0.25	100	25.00	100	25.00
	(b) Other vegetables	Ha.	0.25	100	25.00	100	25.00
	3. FLOWERS	Ha.	0.5	50	25.00	50	25.00
	4. SPICES	Ha.	0.15	550	82.50	550	82.50
II	1st Year maintenance						
	1. Fruits						
	(i) Dragon fruit (Integrated package with drip irrigation and trellis)	Ha.	0.4	200	80.00		
	(ii) High Density planting (citrus)	Ha.	0.1	300	30.00		
III	Rejuvenation/ Replacement of senile plantation, canopy management	Ha.	0.2	500	100.00	500	100.00
IV	Creation of Water Sources						
	(a) Community water tanks	No.	25	4	100.00		
	(b) Water harvesting system for individuals	No.	0.9	350	315.00	200	180.00
V	Protected cultivation						
	1. Green House Structure						
	i. Tabular structure	Sqm	0.00610	30000	182.85		
	ii.Wooden structure	Sqm	0.00124	50000	62.10		
	2. Cost of planting material & cultivation of Anthurium etc. under poly house/shade net house	Sqm	0.0035	50000	175.00	50000	175.00
VI	Integrated Pest/ Nutrient Management (IPM/ INM)						
	(a) Promotion of IPM	Ha.	0.012	4340	52.08	1800	21.61
	(b) Promotion of INM	Ha.	0.012	5500	66.00	2500	30.00
VIII	Human Resource Development (HRD)						
	(a) Training of farmers						

	i. Within the State	day	0.003	15000	45.00	9000	27.00
	ii. Outside State		Project base		12.00		
	(b) Training / study tour of technical staff/ field functionaries						
	i. Study tour to progressive States/ units (group of minimum 5 participants)	day	0.008	6000	48.00	3100	24.80
	ii. Outside India	No.	6	6	36.00		
VIII	Integrated Post Harvest Management						
	(a) Preservation Unit (low cost)	No.	1	35	35.00	14	13.50
	(b)Pack house	No.	2	30	60.00	15	30.00
	(c)Ripening chamber	No.	0.5	101	50.50	101	50.50
	(d)Refrigerated transport vehicle	No.	13	1	13.00		
IX	Mission Management						
	(a) State & District Mission Offices and implementing agencies for administrative expenses, project, preparation, computerization, contingency etc. (5% of total annual expenditure on the basis of appraised needs to state Horticulture mission/Implementing Agencies)		100% assistance	1	166.405		81.50
	(b) Seminars conferences, workshops, exhibitions, Kishan Mela, horticulture shows, honey festivals etc.						
	i. National level	event	5	5	25.00	3	15.00
	ii. State level	event	3	5	15.00	3	9.00
	iii. District level	event	2	16	32.00	12	24.00
	(c) Information dissemination through publicity, printed literatures etc. and local advertisements.	Block	0.4	100	40.00	30	12.00

	(d) Development of technology packages in electronic form to be shared through IT network	District	1	8	8.00		
X	Establishment of marketing Infrastructure for Horticulture crops						
	(a) Rural Markets/Apni Mandis	No.	13.75	6	82.50		
	TOTAL				2508.89		1441.30

2. National Bamboo Mission (NBM)

With a view to harness parts of the dynamic potentials of bamboo crop, Department of Agriculture & Cooperation (DAC), Ministry of Agriculture & Farmers Welfare is implementing a 100% Centrally Sponsored Scheme called Mission for Integrated Development of Horticulture (MIDH) in which National Bamboo Mission (NBM) is being implemented as a sub scheme by Horticulture Department.

The Mission envisages promoting holistic growth of bamboo sector by adopting area-based, regionally differentiated strategy and to increase the area under bamboo cultivation, post-harvest management and marketing. Under the Mission, steps have been taken to increase the availability of quality planting material by supporting the setting up of new nurseries and strengthening of the existing ones. To address forward integration, the Mission is taking steps to strengthen marketing of bamboo products, especially those of handicraft items. The Mission focuses on development of bamboo in limited numbers of State wherein it does have social, commercial and economical advantages, particularly in the North Eastern region.

The total approved project outlay for Mizoram under NBM for the year 2019-2020 is Rs. 926.15 lakhs. Out of which, Rs. 350.00lakhs have been received as 1st installment from GoI and Rs, 38.89 lakhs from the State Government as SMS. Mention may be made that action is being taken up with the fund received. The annual action plan under NBM 2019-2020 (1st installment) and proposal for utilization with a financial target of Rs. 388.89 lakhs is briefly highlighted in the table below.

PROPOSED PLAN FOR UTILIZATION OF 1st INSTALLMENTRELEASE OF FUND BYGOVERNMENT OF INDIA AND STATE MATCHING SHARE UNDER NBM 2019-2020

Rs. in lakh

Sl. No.	Activity	Rate/ Unit	Govt./ Pvt.	Approved Target 2019-2020		Proposal for 1st Installment			
				Phy.	Fin.	Phy.	GOI (90%)	SMS (10%)	Total
A.	Propagation and cultivation 1) High Density bamboo Plantation on Govt./Panchayat/community land including waste lands	0.30	Pvt.	1180.00	354.00	66.00	17.82	1.98	19.80
	2) Block plantation on farmers field	0.30	Pvt.	500.00	150.00	500.00	135.00	15.00	150.00
B.	Promotion of bamboo treatment and preservation. 1) Establishment of bamboo treatment and seasoning plants.	10.00	Pvt.	1.00	10.00	-	-	-	-
C.	Production development and Processing 1) Establishment of processing units for value addition of Bamboo (in nos.)	18.00	Pvt.	2.00	36.00	-	-	-	-
	2) Bamboo shoots processing	12.00	Pvt.	3.00	36.00	-	-	-	-
D.	Promotion and Development of infrastructure for Bamboo market. 1) Establishment of bamboo depots and go down	50.00	Govt.	4.00	200.00	2.00	90.00	10.00	100.00
E.	Development of tools, equipment and machinery 1) Technological enhancement of indigenous tools, equipment and machineries	2.00	Govt.	10.00	20.00	10.00	18.00	2.00	20.00
F.	Skill Development and awareness campaign (upto 50% of allocation) 1) Training of farmers/ artisans	0.01	Govt.	750.00	7.50	750.00	6.75	0.75	7.50

	2) Training of field functionaries.	0.009	Govt.	150.00	1.35	150.00	1.22	0.135	1.35
	3)International training / visit for exposure of NBM staff/ field functionaries including farmers and entrepreneur	4.00	Govt.	4.00	16.00	4.00	14.40	1.60	16.00
	4)Organizing workshop/ seminars at State	3.00	Govt.	1.00	3.00	1.00	2.70	0.30	3.00
	5)Organizing workshop/ seminars at District	2.00	Govt.	2.00	4.00	2.00	3.60	0.40	4.00
	6) Participation in domestic trade fairs	8.00	Govt.	1.00	8.00	1.00	7.20	0.80	8.00
G.	Research & Development (upto 10% of allocation) for pvt. Sector up to Rs. 10 lakh. 1) Demonstration plots to exhibit best practice to farmers.	10.00	Govt.	4.00	40.00	4.00	36.00	4.00	40.00
H.	Project Management	5%	-	-	40.30	-	17.315	1.924	19.239
	TOTAL				**926.15**		**350.00**	**38.889**	**388.889**
							Say	**38.89**	**388.89**

(Rupees three crore eighty eight lakh and eighty nine thousand) only

3. Pradhan Mantri Krishi Sinchai Yojana (PMKSY)

Substantial dependency on rainfall renders cultivation in un-irrigated areas a high risk affair. Lack of sufficient water or prolonged dry period have been a serious constraint to crop production under rain-fed condition resulting in significant reduction in yields and cultivated area, in turn leading to undesirable impact on rural livelihood and food security.

The vision of Pradhan Mantri Krishi SinchayeeYojana (PMKSY) is to ensure access to some means of protective irrigation to all agricultural farms in the country, to produce 'per drop more crop', thus bringing about the much desired rural prosperity .This new programme was introduced and implemented since 2015-16. Micro Irrigation under 'Per Drop More Crop' component of PMKSY aims at round the year production of vegetables and flowers through provision of Sprinkler & Drip Irrigation systems etc. to provide water supply to the crops during the dry spell period as lifesaving irrigation. It ensures sufficient supply of water to short duration crops during drought and unpredictable climate. One of the main objectives being improvement of on farm water use efficiency to reduce wastage and increase availability both in duration and extent.

During 2019-2020, 2nd installment of fund for 2018-2019 amounting to Rs. 373.33 lakhs (Rs. 330.00 lakhs from GoI and Rs. 43.33 lakhs from Government of Mizoram as SMS) was received and the fund was fully utilized during 2019-2020 as mentioned below in the table –

Rs in lakh

Sl. No	Name of Component and Spacing	Amount (Rs)
1.	**Drip Irrigation (wide spaced) under open field**	
	a) Dragon fruit	**97.33**
	b) Vegetable (Close spaced)	**13.15**
	c) Strawberry	**47.12**
2.	**Micro Sprinkler Irrigation**	**73.52**
3.	**Drip Irrigation Under Protected Cultivation**	
	a) Vegetables	**28.69**
	b) Flowers	**17.10**
4.	**Drip Irrigation open fields**	
	a) Oil Palm	**94.26**
5	**Administrative cost**	**2.16**
	Grand Total	**373.33**

During 2019-2020 the total financial target for 1st instalment is Rs. 1800 lakhs , ***the details of proposed work plan for which is as given below –***

Rs. in lakh

Sl. No	Name of Component and Spacing	(Ha)	Amount (Rs)	Sharing of amount among Central Govt. and State Govt.	
				Central Share 90%	State Share 10%
1.	**Drip Irrigation**				
	a)2m x 2m (1Ha)	276	485.21	436.69	48.52
	b) 4m x 4m (1Ha)	180	145.93	131.34	14.59
	c) 1.2 x 0.6m (1Ha)	50	115.31	103.78	11.53
	d)1.2 x 0.6m(0.4Ha)	120	295.62	266.05	29.56
2.	**Sprinkler Irrigation**				
	a) Portable Sprinkler 63mm (1Ha)	85	35.82	32.24	3.58
	b) Micro Sprinkler 3m x 3m (1Ha)	78	113.27	101.94	11.33
	c) Mini Sprinkler 8m x 8m (1Ha)	40	74.91	67.42	7.49
	d) Semi permanent sprinkler (1Ha)	50	39.96	35.96	4.00
	e) Large volume sprinkler irrigation system (Rain gun) 63mm (1Ha)	275	164.12	147.71	16.41
Work Component Total		**1154**	**1470.15**	**1323.13**	**147.02**

3.	**Human Resource Development & Media**				
	a) Training of Stakeholders i) Within the State (rate/day/farmer)	-	56.22	50.60	5.62
	b) Exposure Visit of Stakeholders i) Outside the State (Project based as per actual)		24.00	21.60	2.40
	ii) Outside India (rate/participants)		44.44	40.00	4.44
	c) Study tour of Technical Staff/field functionaries				
	i) Within the State (rate/day/farmer)		36.67	33.00	3.66
	ii) Study tour to Progressive States/units (group of 5 participants) (rate/day/farmer)		38.67	34.80	3.86
	iii) Outside India (rate/participants)		39.84	35.97	3.98
	Sub Total:		**239.84**	**215.97**	**23.96**
4.	**Administrative Cost (5%)**		**90.01**	**81.00**	**9.02**
	Grand Total		**1800.00**	**1620.00**	**180.00**

4. Rashtrya Krishi Vikas Yojana (RKVY)

RKVY was started in Mizoram State since 2011-2012. An important component under RKVY is the National Vegetable Initiative for Urban Clusters (NVIUC) under which stress is given to vegetable crop production. The use of high yielding hybrid seeds and adoption of latest scientific technology have greatly increased the production of vegetables due to higher productivity per unit area. Under RKVY 2019-2020, the total approved outlay is Rs 107.93, out of which Rs 60.04 has been received as 1st installment fund however, 2nd installment fund amounting to Rs 47.89 is being awaited. Out of Rs 60.04 of 1st installment fund, Rs 15.04 has been utilized for various activities such as earth cutting and leveling for site development of Community Water Tank, Technical support (Group management, stationery, survey, investigation, hiring of vehicles, evaluation etc), Training of farmers within the state.

ABSTRACT OF SHELF OF PROJECT UNDER RKVY 2019-2020

Rs. in lakh

Sl No	Particulars	Unit	Rate of Assistance	Phy	1st Installment			2nd Installment			
					GOI	SMS	Total	GOI	SMS	Total	Grand Total
A.	**PRE – HARVEST**										
1.	Cultivation of Turmeric	Ha.	0.30	50	15.00	-	15.00	-	-	-	15.00
2.	Productivity enhancement of plantation and fruit crops	Ha.	0.20	75	15.00	-	15.00	-	-	-	15.00
	TOTAL OF A				**30.00**	**-**	**30.00**	**-**	**-**	**-**	**30.00**
B.	**POST HARVEST**										
3.	Construction of solar tunnel dryers (1.30 m×10 m) per dryer for turmeric	No.	0.025 per dryer	200	5.00	5.00	10.00	-	-	-	10.00
4.	Plastic crates for handling of turmeric rhizomes/ fingers	No.	L.S	L.S	5.00	-	5.00	-	-	-	5.00
5.	Garden Tool Kit for turmeric	No.	L.S	L.S	-	-	-	3.43	-	3.43	3.43
	TOTAL OF B				**10.00**	**5.00**	**15.00**	**3.43**	**-**	**3.43**	**18.43**
C.	**VALUE ADDITION**										
6.	Construction of community water tank cum fermentation tank for plantation and fruit crops at Tuidam village	No.	21.50	2	-	-	-	43.00	-	43.00	43.00
	TOTAL OF C				**-**	**-**	**-**	**43.00**	**-**	**43.00**	**43.00**
D.	**FLEXI FUND**										
1.	Earth cutting and leveling for site development of Community Water Tank	L.S	L.S	L.S	2.04	-	2.04	1.46	-	1.46	3.50
2.	Technical support (Group management, stationery, survey, investigation, hiring of vehicles, evaluation etc)	L.S	L.S	L.S	12.00	-	12.00	-	-	-	12.00
3.	Training of farmers within the state	Day	0.01	400	-	1.00	1.00	-	-	-	1.00
	TOTAL OF D				**14.04**	**1.00**	**15.04**	**1.46**	**-**	**1.46**	**16.50**
	GRAND TOTAL (A+ B+C+D)				**54.04**	**6.00**	**60.04**	**47.89**	**-**	**47.89**	**107.93**

Department of Horticulture

5. National Bank for Agriculture and Rural Development (NABARD)

Under NABARD, 2(two) Transit Go downs of capacity 1,606 MT each at Sairang and at CoE, Thingdawl with fund amount of Rs. 600.00 lakhs @ Rs. 300.00 lakhs per unit, and 9 (nine) Rural Go downs of capacity 547 MT each are being constructed at CoE, Lunglei, Serchhip, Thenzawl, Khawzawl, Ngopa, Tuidam, Mamit, Lawngtlai and Siaha with target fund amount of Rs. 900.00 lakhs @ Rs. 100.00 lakhs per unit.

A total fund amount of Rs. 11.60crore has been received during 2019-2020 for the construction of 29 nos. of Collection Centres cum manager quarter @Rs.40.00 lakhs per unit at various locations of different Districts to address the much needed infrastructural requirement for collection of different horticultural crop produces. It is expected that with the construction of these collection centres, post-harvest damage/ loss would be greatly reduced and market chain of commercially viable crops will be enhanced. The work is in progress and is almost completed in some locations.

The locations of collection centres cum manager quarter are shown in the table below–

Sl No.	District	Location	Nos.
1	Champhai	Kawlkulh	1
		Khawhai	1
		Champhai –I	1
		Champhai-II	1
		Samthang	1
2	Mamit	Zawlnuam	1
		Zamuang	1
		Rawpuichhip	1
		Reiek	1
		West Phaileng	1
3	Kolasib	Bukpui	1
		Lungdai	1
		Bilkhawthlir	1
4	Aizawl	Thingsulthliah	1
		Saitual	1
		Melriat	1
		Khanpui	1
5	Lunglei	Mualthuam	1
		Hnahthial	1
		Thingfal	1
		Tlabung	1
6	Serchhip	North Vanlaiphai	1
		East Lungdar	1
		Chhingchhip	1
		Chamdur	1
		Serchhip	1
		Chawmkai	1

7	Lawngtlai	Chawngte	1
8	Siaha	Siaha	1
	TOTAL		29

Per unit estimated cost for Construction of Collection Centres

Sl. No.	Particulars	Qnty (No)	Rate (Rs in lakhs)	Amount (Rs in lakhs)
1	Collection Centres	1	25.00	25.00
2	Manager Quarter	1	15.00	15.00
			Total	**40.00**

Total Cost of Project = 29 units × Rs. 40.00 lakh= **Rs. 1160.00 lakh**
(Rupees One thousand one hundred sixty lakh) only

6. SEDP (Socio-Economic Development Policy)

The SEDP is envisaged to promote and yield sustainable development – short term vision and long term vision. The Policy has been divided into two components, Political & Administrative Policy and Socio-Economic Development Policy which has two sub-components such as Economic Development Policy and Social Development Policy. The main vision is to develop our state into a peaceful, harmonious, self-sufficient and progressive state. The total fund allocation and achievement till date under SEDP 2019-2020 is as given under:

Progress Report for Projects Implemented under SEDP

Rs in lakh

Sl No	Name of Scheme/ project	Total cost	Allocation			Achievement			
			Year	Amount	Total (Cummulative)	Year	Phy	Fin	Total (Cummulative)
1	Establishment of Model Bamboo Plantation under SEDP	535.00	2019-2020	131.00	131.00	2019-2020	30%	39.30	39.30
2	Procurement of 16mm HDPE pipes and 25mm LLDPE Pipes under SEDP	200.00	2019 -2020	200.00	200.00	2019 -2020	100%	200.00	200.00
3	Pilot Project on Passion fruit cultivation under SEDP	51.39	2019-2020	51.39	51.39	2019-2020	-	-	-

4	Cultivation of Anthurium flower under SEDP	119.00	2019-2020	119.00	119.00	2019-2020	-	-	-
5	Construction of Circle office at Samthang under SEDP	15.00	2019-2020	15.00	15.00	2019-2020	-	-	-

Bamboo development is one of the most important State Flagship programmes under SEDP. For Model Bamboo Plantation, 250 Nos of beneficiaries are targeted to be selected. However, 113 Nos of beneficiaries from Lengpui Village and 97 Nos of beneficiaries from Hmunpui Village have so far been selected and given assistance @ Rs. 12,500/- per beneficiary being the cost of jungle clearance , clearing of debris and pit digging. For the development of Bamboo in Mizoram, the approved allocation under SEDP is Rs. 131.00 lakhs. Apart from this, pipe is also being distributed to needy farmers at 75% subsidy.

7. North Eastern Council (NEC)

The Department has an on-going NEC funded project "Establishment of Scion Bank & Root Stock Bank for Citrus at Lunglei District & Scion and Rootstock Bank for Grapes at Champhai District", the total approved outlay for which is Rs. 647.14 lakhs. The aim of the project is large scale production of quality planting materials for Grapes at Champhai and Citrus at Lunglei. Fund amounting to Rs. 201.56 lakhs (i.e Rs. 181.40 lakhs as NEC's share and Rs. 20.16 lakhs as SMS) has been received as 2nd installment for utilization at Lunglei and Champhai . Infrastructure Development for Hi-Tech cultivation for citrus and civil works has been accomplished at Lunglei with 1st installment. Necessary works like electricity, water distribution, propagating materials & other essential inputs are being carried out with 2nd installment. For Scion Bank for grapes at Champhai, Tunnel type green house, shade net house, etc have been constructed with the 1st installment. Work for utilization for 2nd installment is being executed which includes infrastructure development for Hi-Tech Greenhouse, Energy, Water distribution, Irrigation & fertigation systems, machinery & Equipments.

8. Programme under Article 275 (1)

Under the provision of Article 275 (1), grant amounting to Rs. 66.13lakhs (Rupees sixty six lakhs thirteen thousand) only have been received during 2019-2020 through Social Welfare Department, Govt. of Mizoram for implementation of the following programmes:-

Sl. No	*Activity/Project*	*Location of Project*	*No of beneficiaries*	*Rate per unit (Rs in lakh)*	*Approved cost of Project (Rs in lakh)*
1	Protected cultivation of Tomato (1 unit = 100 sqm)	i)Keifang(Ramlaitui)	20	0.25	5.00
		ii) Edenthar, Aizawl North	16	0.25	4.00
2	Cultivation of Dragon Fruit	Darlawn	10	0.60	6.00
3	Cultivation of Cabbage (1unit=I Ha)	i) Samthang	5	0.25	1.25
		ii) Khuangleng	5	0.25	1.25
		iii) Khawzawl	5	0.25	1.25
	Sub Total		**15**	**0.25**	**3.75**
4	Cultivation of Tomato (1unit=I Ha)	i) Tuipui	5	0.25	1.25
		ii) Champhai	5	0.25	1.25
		iii) Khawzawl	5	0.25	1.25
	Sub Total		**15**	**0.25**	**3.75**
5	Construction of RCC Bridge over River Darlak	Darlak	300	-	25.00
6	Distribution of Bee hives under Pollination Support through Bee keeping	Mamit	15	0.042	0.63
7	Mushroom Production unit	Kolasib, Thingdawl, Kawnpui, Bilkhawthlir, Vairengte	20	0.25	5.00
8	Establishment of Small Scale Mushroom production Units	Serchhip	5	0.60	3.00
9	Creation of Community Water Sources 2 units @ Rs 12.5 lakh per unit	i) Ngengpuikai	50	5.00	5.00
		ii) Lungzarhtum	50	5.00	5.00
	Sub Total		**100**	**10.00**	**10.00**
	TOTAL		**516**		**66.13**

These programmes will be implemented as soon as the fund is received from competent authority.

9. Japan International Cooperation Agency (JICA)

Under the Technical Cooperation of four State Govt. Departments – Horticulture, Agriculture, Minor Irrigation and Soil & Water Conservation Department with *Japan International Cooperation Agency* (JICA) project on capacity enhancement for sustainable Agriculture and Irrigation Development in 3 (three) pilot project has been implemented during the year 2019-2020 at the following villages as 1st Pilot villages-

i) Sailam Village, Aizawl District
ii) Buhchangphai Village, Kolasib District
iii) Hnahlan Village, Champhai District

Activity :-

i) ***Sailam Pilot Project*** :- Improvement of Orange productivity (4 farmers) by providing training on INM and IPM, Input (Fertilizers, pesticides), constructing half-moon terrace, monitoring, yield & profitability survey, pruning, training, data analysis and harvest report. The Programme is implemented by BAIDC members at District/ Block level.

ii) ***Buhchangphai Pilot Project***: - Improvement of Arecanut productivity by selecting pilot farmers (10 Nos), conducting awareness meeting with pilot farmers, conducting training (intercropping, nursery raising, soil conservation measures, weed control etc.) monitoring and data collection, evaluation and reporting. The Programme is implemented by BAIDC members at District/ Block level.

iii) ***Hnahlan Pilot Project*** :- Improvement of Jhum cultivation by having orientation meeting with village council members, and set approach, select six (6) pilot farmers, training and demonstration on Changkham in jhum field, provide inputs (seeds, fertilizers, pesticides), monitoring , field day, yield survey & data analysis, report to PMT, discuss and prepare next year programme. The programme is implemented by BAIDC members at District/ Block level.

III. Important projects recently achieved under Horticulture sector includes:

- ***Introduction of Dragon Fruit in Mizoram:***

A fruit commonly known in English as **"Dragon Fruit"** reflecting its vernacular Asian names. The names **Pitahiya** and **Pitaya** derives from Mexico, and Pitaya Roja in Central America and Northern South America, possibly relating to pitahaya for names of tall Cacti species with flowering fruit. The fruit grown in Mizoram is not indigenous to the State but is an introduction to the State from the growing countries of south East Asia. Area Expansion Scheme of Dragon fruit cultivation has been taken up by Mizoram Horticulture Department since the year 2014-2015, and is one of the 1st states in India with large scale cultivation with good adaptation to the region enhancing production and productivity.

The area under Dragon fruit cultivation has been increasing with farmers showing more interest for its cultivation. A number of entrepreneurs are coming forward for market of Dragon fruit in Mizoram which has benefitted the growers tremendously with assured market and sustainable livelihood. Prior to introduction and adaptation in Mizoram, the fruit is being imported from neighboring South East Asian countries to India and are sold in the market but within the near future Mizoram is expected to feed the country and slowly stops the import from foreign countries and establish a sustained supply of home grown Dragon fruits to market. The harvesting season extends from June to December with about 5 pickings / harvest after every 45-50 days. The fruit weight ranges from 150-700g, the average weight of ripen fruit is 250-300g. Dragon fruit cultivation is one of the best practices where farmers could fetch better prices and would enable them to double their income with adoption of improved technology.

In spite of its recent introduction to the state, success in its cultivation is however being achieved. The production of Dragon fruit was around 1,500qtls within a year thereby generating farmers' earnings of about Rs.300.00 lakhs only during the last season. The Department tied up with MIZOFED in Collection and Marketing of Dragon Fruit from some clusters of Aizawl Division which are being sold at Local Market of Aizawl City at better prices.

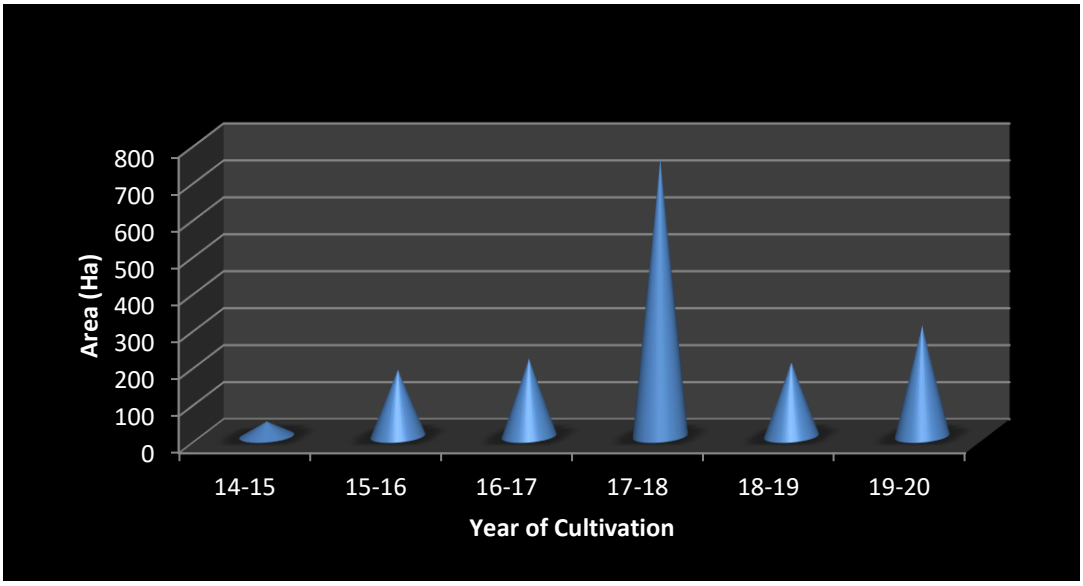
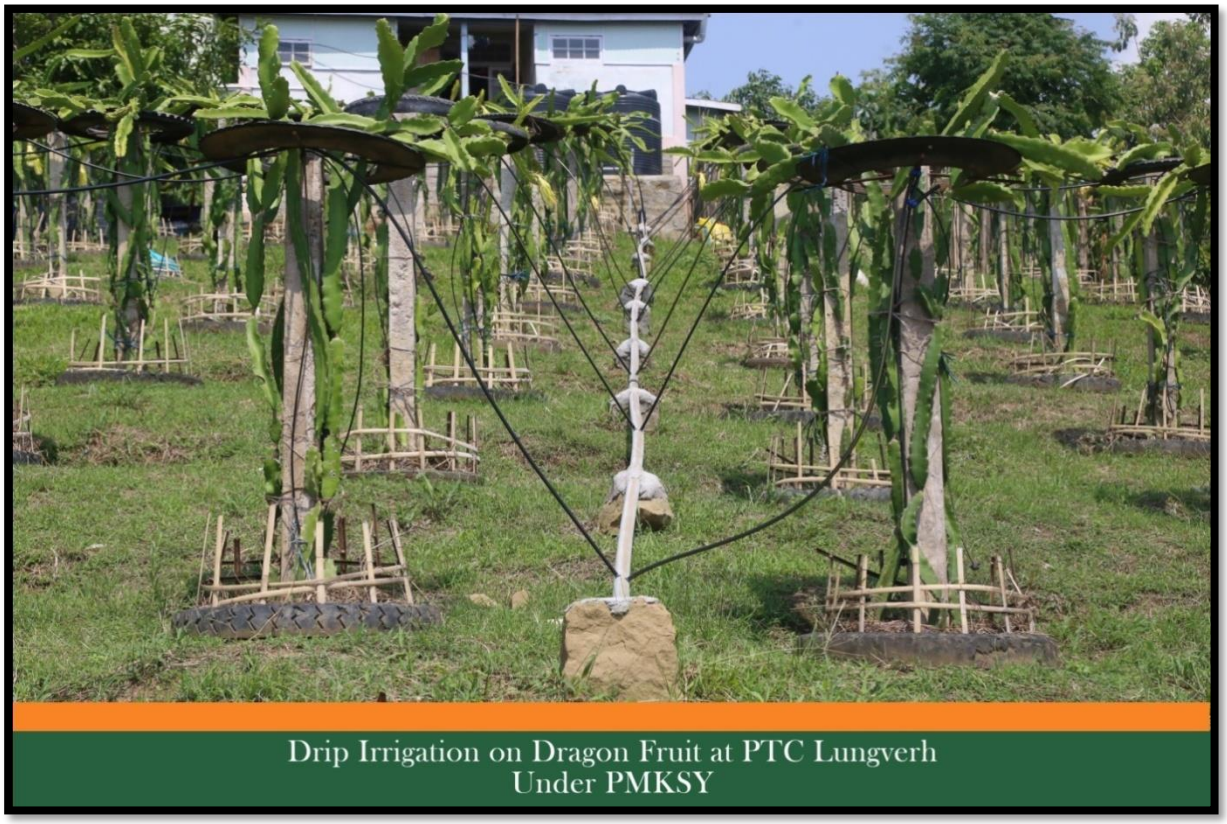


Fig 3: The growth and development of dragon fruit cultivation in Mizoram

Fresh harvested Dragon fruit at Vaipuanpho, Tuidam Divison

Dragon fruit Farmer harvesting his hard work



- ***Mandarin Orange:***

Mandarin orange is one of the most widely cultivated fruit crops in the state since long. However, during the late 80's and early 90's orange production in the state, especially in the southern belt was crippled by citrus decline, bringing down a large area under Orange orchard to be unproductive. In a bid to revamp the Mandarin Orange cultivation and production scenario in the state, Horticulture Department took up several steps such as implementation of rejuvenation of senile orchards, canopy management, and human resource development of both technical staff and farmers including infrastructure development for production of quality planting materials. Horticulture Centre equipped with state of the art scion bank was established to boost the production of quality disease free planting materials. With these efforts, the declined orchards become productive once again, and new productive orchards are also established. Owing to the use of quality planting materials budded on resistant rootstocks with short gestation period coupled with the intervention of the aforesaid schemes, the level of production and productivity has increased considerably over the years, and cultivation of Mandarin orange is now serving as a means of livelihood to many farmers. Mandarin orange production recorded till the last season (2019) was 53,984 MT which earns an approximate income of more than Rs. 1,537.00 lakh.

Trees of Mandarin Orange treated at Leng, Serchhip Division

Mandarin Orange orchard ready for harvesting at Leng, Serchhip Division

- ***Commercial Production of Cabbage and Tomato during off season in Mizoram***

Vegetables are mostly seasonal crops, and most commercial vegetables can only be grown after monsoon in the state due to high rainfall which cannot be tolerated by delicate crops. Though vegetable crops need water, it could not tolerate heavy rainfall and water logging which caused various infections. Rainfall is a climatic factor which cannot be controlled but its dependency on crop cultivation for livelihood has made tremendous efforts to utilize these periods in a year to make harvest same as the period of normal cultivation season. Efforts were made to identify a crop variety that is best fitted in the time period for cultivation so that farmers can continue to earn in the off-season of crops and this more likely to be higher return than that of normal season.

1) ***Off-Season Tomato*** :

Cultivation of Tomato during off-season period is introduced by the Department. The varieties of Arka Rakshak and Arka Samrat produced by Indian Institute of Horticulture Research, Bangalore, varieties resistant to leaf curl, bacterial wilt and early blight diseases were introduced for cultivation in open field as well as under partial shade (shade net) with great adaptability and high production. This is an immense success considering the number of times the Department have tried to introduce the best variety for off- season. The introduction

of these varieties has resulted to bumper harvest during the off-season (Kharif) months which tremendously benefited the farmers by creating a chance to double their income with cultivation two times in a year. More than Rs.200.00 lakhs was earned from off-season cultivation of Tomato this year with a production of 4,050qtls approx..generating considerable number of employment. Large scale cultivation of tomato in Tuipui cluster of Khawzawl Horticulture Division is one of the showpieces of recent Horticulture development in the state. The production report of Tomato taken up by around 60 families in Tuipui cluster alone was 3,260qtls approximately during 2019 with an income generated from it amounting to Rs.163.00 lakhs approx. Due to this success in production, Tomato Kut was organized and celebrated on 07.11.2019. It may also be worth mentioning that 10 beneficiaries from Leng Greenhouse Cluster of 2000 sqm area only could earned an income of around Rs. 8.00 lakhs only during 5 months period i.e during Kharif season.

Greenhouse Tomato production at Leng, Serchhip Division

2) ***Off-season Cabbage***:

Off-season Cabbage was introduced by the Department utilizing a variety named Ryozeki, a Japanese heat tolerant variety which is successfully grown in the state during summer months of monsoon periods enabling the farmers to fetch higher prices of cabbage, higher than that of their normal produce. In the short period of off-season cultivation of Cabbage this year, it is estimated that farmers earned a return of more than Rs.238 lakhs approximately from an area of 190 Ha which otherwise, without the intervention of a hybrid seed variety, could have never been achieved.

Sprinkler irrigation on Commercial Cabbage cultivation at Zawlpui Zau,Serchhip Division

- ***Best Horticulture State Award, 2019***

The state of Mizoram was awarded **Best Horticulture State,2019 in the 9th Agriculture Leadership Award held on 11th July,2019 at Hotel Taj Palace, New Delhi** organized by Agriculture Today for its outstanding contribution towards Horticulture Development. Nestled in the north-eastern part of India, Mizoram is known for cultivating a wide variety of Horticulture crops, which provide livelihood support to 70% of the population. Mizoram is one of the first states in India with large scale cultivation of Dragon fruits. Off-season Cabbage and Tomato introduced by the Department utilizing Ryozeki, a Japanese heat tolerant variety and Tomato varieties such as Arka Samrat and Arka Rakshak produced by Indian Institute of Horticulture Research, Bangalore varieties which are resistant to leaf curl virus, bacterial wilt and early blight diseases cultivable in open as well as under protected cultivation with great adaptability and high production has enabled the farmers to fetch prices higher than that of their normal prices leading to enhanced incomes and overall rural prosperity. Further, it is worth mentioning that Mizoram is the first State to take up the commercial cultivation of Tomato varieties such as Arka Samrat and Arka Rakshak produced by IIHR, Bangalore. Seeing the successful achievement of its cultivation, other States also started cultivation of these two varieties of Tomato. Accordingly, Mizoram Horticulture Department became the first and model State in popularizing the two varieties of Tomato produced by IIHR, Bangalore.

Director of Horticulture received Best Horticulture State Award, 2019

- ***Horticulture Fair 2019:***

The Department of Horticulture organizes Horticulture Fair annually. The fair usually provides chances for horticulture farmers, nursery men, florists, gardeners, entrepreneurs, etc. all over the state to sell their flowers, planting materials, farm inputs, and farm produces etc. This mega event is always highly valued by the general public as it gives them the opportunity to buy items of their choice in one place. Horticulture Fair is usually organized in such a time that suits most the ensuing planting season. Floriculture Fair 2019 and Horticulture Fair 2019 were successfully organized during 4th -7th and 11th -14th June 2019 respectively at Aizawl City Park which provided suitable platform for farmers to exhibit and sale their farm produces at profitable price. Participation of farmers / firms / Private Entrepreneur / Self Help Groups was satisfactory with 219 stalls in all. The sales record during Floriculture Fair as well as Horticulture Fair comes to the tune of Rs 66,41,330/- which exceeded the previous year's (2018) sales record by Rs 21,47,270/-. Best Farmer's Awards were distributed to best horticulture farmers from each District of the State.

Tuidam Division Horticulture stall displaying their produce at Horticulture fair

Plant Health Clinic during Horticulture fair

Best Horticulture Farmer Awardees from each Division at Horticulture Fair, 2019

- ***Infrastructure Development***

1) Cold Storage

Under Post Harvest Development programme, construction of 1 (one) Unit of Integrated Pack House of 80 MT capacity at Sairang Main Hub and 2(two) satellite units of Integrated Pack House of 24 MT capacity at Khawzawl and Serchhip Districts have been completed. With the extensive help from UD & PA and Power & Electricity Department, the Department of Horticulture is able to run the Cold storage unit at Khawzawl District for storing vegetables and fruits during total lockdown period, and is being benefitted by farmers for earning a better income .

The Cold storage and Pack house are successfully being utilized enabling a value chain for earning maximum benefit by farmers which enables the fresh fruit / vegetable produces to be stored for a longer period of time even in the midst of the total lockdown period through the *vegetable and fruit supply chain* in which the nodal department is Horticulture department which worked in line with MIZOFED and Commerce & Industry Department.

Cold storage unit at Sairang, Aizawl Division (80MT capacity)

2)Rural and Transit Godown

Under warehouse infrastructure fund (WIF) of NABARD, 2 (two) Transit Go downs with 1606 MT capacity each at Sairang and Centre of Excellence (CoE), Thingdawl under NABARD @ Rs. 300.00 lakhs per unit and 9 (Nine) Rural Go downs with capacity of 547 MT each are being constructed at different locations @Rs. 100.00 lakhs per unit which are expected to be completed soon. Under NABARD, the Department is also taking up construction of29 Collection Centres with Manager Quarters @ *Rs. 40.00 lakh* per unit.

Transit Godown construction at Sairang, Aizawl District under NABARD

3) Ripening Chamber

2(two) Nos. of Ripening Chamber of 50 MT Capacity each are also established at Baktawng and Sesawng for ripening of harvested fruits. This ripening chamber not only helps farmers in ripening of their harvested fruits at short period of time but also stops the use of calcium carbide which is considered harmful for human consumption. The Ripening chamber unit at Baktawng was handed over to Horticulture Development Committee, Baktawng for fruitful utilization of the unit.

Banana Ripening Chamber, Baktawng

Inauguration of Banana Ripening Chamber, Baktawng
6th December, 2019

- ***Bamboo Development:***

Bamboo is a versatile group of plants which is capable of providing ecological, economic and livelihood security to the people. Till recently, it has remained confined to the forests (12.8% of forest cover); two third of the growing stocks located in the North-Eastern States. Importance of the crop as a source of raw material for industrial and domestic use with its growing demand all over the country necessitated its cultivation in farm lands as well.

Bamboo development is one of the most important State Flagship programmes under SEDP. For Model Bamboo Plantation, 250 Nos of beneficiaries are targeted to be selected. However, 113 Nos of beneficiaries from Lengpui Village and 97 Nos of beneficiaries from Hmunpui Village have so far been selected and given assistance @ Rs. 12500 per beneficiary being the cost of jungle clearance , clearing of debris and pit digging. For the development of Bamboo in Mizoram, the approved allocation under SEDP is Rs. 131.00 lakhs. However, under National Bamboo Mission(NBM)out of the approved project outlay of Rs 926.15lakhs for the year 2019-2020, a total of Rs. 388.89 lakhs i.e, Rs. 350.00 lakhs from GoI and Rs. 38.89 lakhs as SMS have been received as 1st installment . The proposal for 1st installment release of fund utilization is for propagation and cultivation of high density Bamboo plantation and block plantation , promotion and development of infrastructure for Bamboo market, development of tools, equipments , machineries, skill development and awareness campaign, research and development and for project management. For area expansion scheme in cluster mode, two species namely *Dendrocalamus latiflorus* and *Dendrocalamus brandisii* are selected for cultivation.

Distribution of Cash Assistance to Model Bamboo Plantation beneficiaries under Lengpui and Hmunpui Villages

- ***Vegetables and Fruits Supply Chain***

To ensure supply of essential fruit and vegetables to the public and sale of crops produced by the rural farmers during the nation-wide lockdown/curfew due to the pandemic COVID-19, the Government of Mizoram under the initiative of the Hon'ble Chief Minister has formulated the ***COVID-19 Vegetables and Fruits Supply Chain***. The Vegetables and Fruits supply chain was constituted on 26.03.2020 in which Horticulture Department is the Nodal Department, and Commerce & Industries Department and Mizoram State Cooperative Marketing & Consumers Federation Ltd. (MIZOFED) participated as Members.

Horticulture Department being the Nodal Department, its main role is over-all coordination of all activities of the constituent department/agencies under COVID-19 Vegetables and Fruits Supply Chain, Organizing meetings as and when required, Survey, assessment and preparation of report of fruit and vegetable availability, collection of fruits and vegetables from farms. Receipt and down-payment of crop produce upon arrival is done by MIZOFED. However, fixing of rate and supervision of market is done by Commerce & Industries Department. The good coordination among them has resulted in the efficient and systematic execution of the Covid-19 Vegetables and Fruits Supply Chain and greatly benefits the farmers in earning a better income.

Disbursement of fruits and vegetables to different local level task force/localities from the disbursement centers is made in different time slots up to the furthest extent possible to maintain social distancing and to avoid over-crowding.

Since most of the people kept indoors due to lockdown, the Fruits and Vegetables Supply Chain plays vital role in supply of Fruits and vegetables to the people thus helping people in fighting Covid-19.

To avoid post harvest damage and unnecessary wastage of perishable fruits /vegetables at this crucial time of crisis, the Cold Chain System created by the Department under the ***Mission for Integrated Development of Horticulture (MIDH)***has been put to very good use for storage of fruits and vegetables. Perusal is in progress to utilize the cold storage facility in the nearby town of Sairang under Aizawl District as the main hub for the Cold Chain System in the State. The Refrigerated Vans purchased by Horticulture Department under ***Mission for Integrated Development of Horticulture (MIDH)***also play a crucial role in ensuring safety with minimal quality-loss of fruits and vegetables. They also play a crucial role

From the first day (28.03.2020) till date (09.05.2020) of the total lockdown, a total of 174Nos of truck trips of vegetables and fruits were collected in Aizawl, where 165 trips were collected from within the state, while the remaining 9 trips were imported from outside the state. The purchased value of crops from 28.03.2020 till 09.05.2020 is Rs. 1.076 crore. Out of which, the purchased value of items only from local sources is Rs. 97.75 lakhs for 165 Nos of trips. Vegetables and Fruits were also given to 15 orphanage/ rehabilitation homes and four (4) localities free of cost under Covid – 19 Vegetables and Fruit supply Chain. The trust and faith between the Government and the different NGOs in the State has resulted in the efficient and systematic execution of the ***COVID-19 Vegetables and Fruits Supply Chain***. The close coordination of various agencies had resulted to the uniform distribution of essential food items to the public.

Approximate Value of Vegetables and Fruits sold/consumed/distributed during total lockdown due to Pandemic Covid-19 through Horticulture Department / Task Force and Direct distribution by farmers to the consumers.

(As on 18.05.2020)

Sl. No.	Division/ Sub Division	Vegetable		Fruits		Total	
		Qnty. (Qtl.)	Value (Rs.)	Qnty. (Qtl.)	Value (Rs.)	Qnty. (Qtl.)	Value (Rs.)
1	Tuidam	220.00	9,67,000.00	-	-	220.00	9,67,000.00
2	Siaha	120.00	21,89,000.00	29.00	4,35,000	149.00	26,24,000.00
3	Hnahthial	133.22	3,55,150.00	-	-	133.22	3,55,150.00
4	Kolasib	624.16	47,76,185.00	43.20	2,16,000	667.36	49,92,185.00
5	Aizawl	2121.00	1,63,86,683.00	146.00	3,29,894	2267.00	1,67,16,577.00
6	Lawngtlai	489.00	24,91,000.00	20.70	1,35,000	509.70	26,26,000.00
7	Champhai	L.S	40,00,000.00	L.S	40,000	L.S	40,40,000.00
8	Serchhip	12349.72	3,08,45,480.00	220.00	5,50,000	12569.72	3,13,95,480.00
9	Khawzawl	27.00	1,64,500.00	146.00	1,10,000	173.00	2,74,500.00
10	Lunglei	L.S	24,76,433.00	L.S	86,430	L.S	25,62,863.00
	Total	**16084.10**	**6,46,51,431.00**	**604.90**	**19,02,324.00**	**16689**	**6,65,53,755.00**

- **Seeds**

Apart from all these activities, in order to face the challenge on seed requirement in the upcoming sowing time of kharif vegetables, the Department of Horticulture has taken timely action for procurement of local and high yielding vegetable seeds in the most practical and convenient way amidst the current lockdown period that the 1st phase of disbursement of kharif vegetable seed is completed in all districts of the state. Divisional Horticulture Officers in all districts have been advised from Directorate of Horticulture to co-ordinate with the Local Level task Force to ensure that seeds are received by the needy farmers. It is expected that the distribution of seed will ensure in providing the public much needed vegetables in the days to come with an increasing production and productivity.

A glimpse of photographic presentation on various activities under Covid19

Collected vegetables for distribution during total lockdown caused by pandemic Covid-19

Selling of vegetables & fruits during total lockdown caused by pandemic Covid-19 under Vegetables & Fruits supply Chain

Fruits and vegetables shared out to Zoram Medical College during total lockdown caused by pandemic Covid19

An e-book publication
Department of Horticulture