



# MAMIT DISTRICT

## Inventory of Agriculture 2015



ICAR - Agricultural Technology Application Research Institute, Umiam (Barapani)  
Ri- Bhoi District, Meghalaya - 793103



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ICAR-Agricultural Technology Application Research  
Institute, Umiam (Barapani), Meghalaya-793103  
Email: [icarzcu3@gmail.com](mailto:icarzcu3@gmail.com)  
Website: <http://icarzcu3.gov.in>  
Phone no. 0364-2570081

**Compiled By:**  
Dr. Samuel Lalliansanga  
Henry Saplalrinliana  
Dr. Rohit Shukla  
Md Mintul Ali  
Dr. C. Rinawma  
Rinsangi  
Vanlalhrauaia

**Edited by:** Amol K. Bhalerao, Scientist (AE)  
Bagish Kumar, Scientist (AE)  
A. K. Singha, Pr. Scientist (AE)  
P. C. Jat, Sr. Scientist (Agro)  
R. Bordoloi, Pr. Scientist (AE)  
Bidyut C. Deka, Director, ATARI Umiam

**Contact:** Dr. Samuel Lalliansanga  
Krishi Vigyan Kendra, Mamit district ,  
Lengpui – 796421, Mizoram  
Telephone Number: 0389 257352  
Mobile Number: +91 9436147625  
Website of KVK: [www.kvkmamit.nic.in](http://www.kvkmamit.nic.in)

**Word Processing:** Synshai Jana

**Cover Design:** Johannes Wahlang

**Layout and Printing:** Technical Cell, ICAR-ATARI, Umiam

## FOREWORD

The ICAR-Agricultural Technology Application Research institute, Zone-III with its headquarters at Umiam, Meghalaya is primarily responsible for monitoring and reviewing of technology assessment, refinement, demonstrations, training programmes and other extension activities conducted by the *Krishi Vigyan Kendras* (KVKs) in North East Region, which comprises of eight states, namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The directorate also serves as feedback mechanism to research and extension systems while maintaining a very close liaison with ICAR headquarters and has made significant progress in research, capacity building and other extension activities which ultimately contributes for the planned growth and development of North Eastern Region of India.

Through this District Agriculture Inventory publication, an attempt has been made to compile and publish information about KVK district and agriculture in district, in a meaningful and comprehensive manner. It will be very useful for all stakeholders of agriculture in district. The inventory encompasses the information regarding geography of district; basic data about agriculture and district population, crops, institutional resources, agriculture relates schemes in district which also covers agriculture, fishery and livestock sector. The district inventory in the form of e-publication will surely increase the digital presence and penetration of KVKs. The inventory will also serve the communication needs of farmers and youth in district as it contains contact numbers and address related information to access various developmental agencies in district.

I congratulate the efforts of staff of KVK for collecting and compiling such a large volume of information in systematic manner. I also acknowledge the efforts of editors and other staff members of this institute for publishing this document on our website.

Umiam  
18-03-2016

(Dr. Bidyut C. Deka)  
Director,  
ICAR-ATARI-Umiam,  
Meghalaya-793103

## PREFACE

The synthesized compilation in the form of informative publication is of much value for decision making. The compiled information in this publication will immensely help farmers and other stakeholders of agriculture and allied sector of a district such as line departments, research organizations, planners, policy makers, input providers etc. Through this document, we are trying to provide entire gamut of information related to district and its agriculture setting for the benefit of farming community of the North Eastern Region. The connectivity related issues in the North Eastern region makes the information inaccessible to most of stakeholders. Therefore, the *Krishi Vigyan Kendras* in each district of North East region undertook this cumbersome task to compile the district Agricultural Inventory. This publication provides the latest information about district, agriculture and other essential constituents.

We, the editors of this publication, earnestly thank and acknowledge the contribution of all compilers i.e. Programme coordinator, Subject Matter Specialists and Programme Assistants of KVK Mamit for taking part in compiling the huge information to shape up Mamit District Inventory of Agriculture-2015. We also thank all officers of ICAR H.Q. for guiding us time to time and motivating us to complete this publication.

We, the editors, dedicate this publication to the farming community of Mamit District and we look forward to contribute more for the betterment of farming community in entire North East Region. We also welcome the suggestions for further improvement.

Umiam  
18-03-2016

Editors

*From the Desk of Programme Coordinator, KVK Mamit*



*The secret of success in Agriculture is linked closely to wide scale adoption of improved technologies by the farmers. Farmers want technologies tailored to their particular need in respect of productivity, profitability and risk aversion. Various schemes and programmes are being implemented both by the State and Central Government through various agencies for the overall development of the farming community in the State. However, many farmers are unaware of such development schemes in many villages leading to poor implementation and failure of such programmes. In spite of the efforts given by the State Government to enhance production in Agriculture to improve State Agriculture economy, the number of farmers who adopted Modern Agriculture technology is still less which could be due to poor sharing of information.*

*Krishi Vigyan Kendra, Mamit District was established in the year 2008 at Lengpui village, which is 78 km away from Mamit District headquarters. It is a matter of great satisfaction that during the last 7 years, KVK, Mamit have maintained a steady flow of knowledge and output necessary for facilitating evolution of new technologies to the farmers of Mamit District. KVK, Mamit has been assigned to prepare District Inventory under several limitations. Lack of reliable / authentic data has been one of the major lacunae in preparation of this inventory. However, KVK, Mamit have tried its best to prepare the District inventory by incorporating basic information on the present state of Agriculture in the District, details of various research and development organizations, Agriculture and Allied Departments relevant to the farming community and different schemes that are being implemented in the district and also the contact addresses of various Departments engaged in agriculture and Allied sector including the names of concerned officers and phone numbers.*

*We would like to gratefully acknowledge the support of District Agriculture Officer, and staff, Mamit District and other line Departments like Horticulture, Sericulture, Soil & Water Conservation, Animal Husbandry and Veterinary Department, Fisheries Department, Government of Mizoram etc. all who have contributed their inputs for the preparation of this inventory.*

*I sincerely thank all the staff of KVK, Mamit District for their valuable contribution for preparation of District Inventory of Mamit District within a short period and firmly believe that this will benefit the farming community of Mamit District.*

*(Samuel Lalliansanga)*

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# CHAPTER- I. DISTRICT IN GENERAL

## CLIMATE

The climate of Mizoram as a whole is Tropical Monsoon type of climate. So, Mamit district, the north-western part of the state enjoys a moderate climate owing to its tropical location. It is neither very hot nor too cold throughout the year. Mamit district falls under the direct influence of the south west monsoon. As such the area receives an adequate amount of rainfall which is responsible for a humid tropical climate characterized by short winter and long summer with heavy rainfall.

Winter season starts from the month of December to first half of February. This is the coldest season of the year. During this period rainfall is much less as compare to other seasons, and whatever amount rainfall received is originated from North East Monsoon, generally known as the retreating monsoon.

Spring season is the shortest season of the year. It starts from the second half of the February to the first half of March. Temperature is mild during this period and the sky is clear and the Mizo people accustomed to build new houses during this season as there are no weather disturbances during the period.

Summer season or rainy season is the longest season covering about seven months starting from the second half of March till the first half of October. The early part of this season i.e. from second half of March till First half of May is characterized by bright sunshine and clear sky with little or no cloud till it is disrupted by the coming of Monsoon showers. The warmest months, i.e. July and August, prevails during this period and maximum sunlight is received during the early part of this season.

Autumn season covers for a period generally starting from the second part of October to November. The season is very pleasant and the summer rain already diminished.

The salient thermo-characteristics of Mamit district is that temperature do not fluctuate much throughout the year. The highest temperature observed during the last four years was 35.6°C recorded on the day of 6<sup>th</sup> May, 2014. July and August are the warmest months with mean daily maximum at about 27.5°C and the mean daily minimum temperature for the same months is about 20.4°C. The temperature

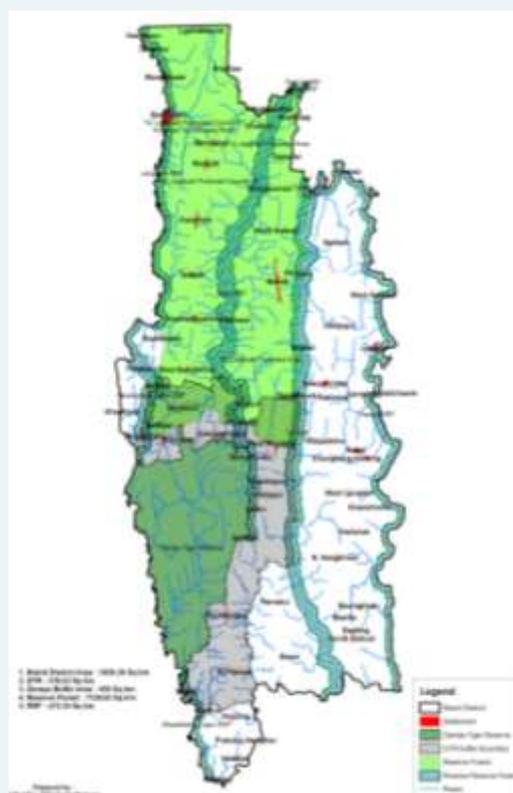
remains high, however, the happening of Monsoon (Fur) brings down the temperature and hence we do not feel the hotness as much as it has been.

The temperature started to fall down sharply from the month of November and it is minimized in December and January. January is the coldest month with the mean daily maximum temperature at 27.1°C and the mean daily minimum of 6.1°C. However, the lowest minimum temperature was recorded on 28<sup>th</sup> December, 2014 at 5.3°C.

## TOPOGRAPHY

Mamit District is situated in the north-western part of Mizoram between 23°15' 21.25" and 24° 15' 16.80" N latitudes and 92° 15' 44.54" and 92° 40' 39.63" E longitudes .It is bounded on the north by Cachar District of Assam and Kolasib District, on the south by Lunglei District, on the east by Aizawl District and on the west by Tripura and Bangladesh. The total geographical area of Mamit District is 3025.75 sq. km, and accounts for 14.35% of the total geographical area of the State. Mamit District has high parallel mountain ridges running from North to South. It has steep hills and mountains in the north while tapering down gradually and ends in more or less plain areas in the south.

Mamit district has a good road networks and the whole length of the district is traversed by various road networks. In the western part of the district, starting from Kanhmun village the state highway run along the western ridges passing through various villages like Zawlnuam, Zamuang, Kawrthah, Kawrtethawveng, Serhmun, West Phaileng, Phuldungsei etc joining Marpara village in the southern most part of the district and this road serves inter-state road network with neighbouring states of Tripura and Assam. In the eastern side of the district, starting from South Sabual village, the district road runs along the ridges passing through Darlung, Bawlte,



N.Kanghmun, Hreichuk, West Lungdar, Chungtlang, Rulpuihlim, Tuahzawl villages and the joins the National Highway 44A at Rawpuichhip village. The NH 44A starts from Sairang village in Aizawl district and it passes across the Mamit district in the middle passing through various villages like Dapchhuah, N Dampui, Mamit, Bawngva, Darlak, Tuidam, and Tumpang lui villages before it joins the Zampui hill ranges of Tripura state. Besides these road networks, a good number of agricultural/horticultural link roads have been constructed which serve for transportation of agricultural/horticultural products from the interior parts of the district. Lengpui Airport, the only airport in Mizoram is located near Lengpui village.

## FORESTS

The forest cover type of Mamit district is mainly tropical wet evergreen forest associated with moist deciduous forests and semi evergreen forest. Semi evergreen forests are found in small pockets on the hill slopes. The vegetation consists of a mixture of several species. Depending on the density of the canopy cover, the forests have been divided into Dense, Medium Dense and Less Dense forests.

Forests and forestry constitute dominant feature of the area's landscape, economy and environment. According to the Environment and Forests department, Mizoram Statistical report 2015, Mamit district covers an area of 3026.26 sq.km. Out of this 1126.63 sq. km is Reserve forest, 472.50 sq. km is Riverine reserve forest, 2059.07 sq. km is Open forest, 649.47sq. km is Moderate dense forest , 42.88 sq.km is Very dense forest and Water covers 14.73 sq.km.

### Dense

This class includes natural forests, which are not disturbed by any biotic factors like shifting cultivation and other human activities. The crown density of this class is very thick. Evergreen and semi-evergreen forests covers major portion of this area. It covers an area of 273.16 Sq. km, which accounts for 9.03% of the total area of the district. Vast dense forests are found near Kawrtethawveng, W.Bunghmun, Serhmun, Phuldungsei, West Phulpui, Saithah, Lallen, N.Chhippui, Damparengpui, Dampui, N.Sabual, Saitlaw, Hmunpui, Rulpuihlim, Chungtlang, Reiek, Ailawng, West Lungdar, Hreichuk, Lungphun, N.Kanghmun, Parvatui and

Zopui villages. The well-noted Dampa Tiger reserve is located within the district and constitutes most of the dense forest of the district. The district is also endowed with another well-known reserve forest, *Zo-ngaw*. It is home to a variety of plant species and wildlife. The forest department has also taken up a part of the forest for cultivation and conservation of medicinal plants.

The dominant species in the upper storey are *Macaranga indica*, *Anthocephalus chinensis*, *Quercus dealbata*, *Phoebe lanceolata*, *Leea indica*, *Maniltoa polyandra*, *Dillenia indica*, *Leea compactiflora*, *Callicarpa arborea*, *Colona floribunda*, *Deris robusta*, *Schefflera venulosa*, *Sterculia versicolor*, *Syzygium claviflorum*, *Baccaurea ramiflora*, *Syzygium kurzii*, *Macropanax dispermus*, *Mitragyna diversifolia*, *Magnifera sylvatica*, *Terminalia chebula*, *Dysoxylum binectariferum*, *Flacourtia jangomas*, *Castanopsis indica*, *Callophyllum polyanthum*, *Artocarpus chama*, *Spondias pinnata*, *Carallia brachiata*, *Vitex penducularis*, *Acer laevigatum*, *Diospyros stricta*, *Sapium baccatum*, *Diospyros toposia*, *Premna bengalensis*, *Heritiera acuminata*, *Dysoxylum alliardii*, *Castanopsis tribuloides*, *Olea salicifolia*, *Magnolia hodgsonii*, *Glochidion arborescens*, *Drymycarpus racemosus*, *Stereospermum chelonoides* etc. In the middle storey, the dominant species are *Alpina bracteata*, *Lepionurus sylvestris*, *Oroxylum indicum*, *Murraya koenigii*, *Croton roxburghii*, *Trema orientalis*, *Ostodes paniculate*, *Garcinia anomala*, *Ziziphus incurva*, *Phrynum capitatum*, *Calamus erectus*, *Tinospora cordifolia*, *Acacia pennata*, *Arenga nana*, *Calamus acanthospathus*, *Tabernaemontana divaricata*, *Ulmus lancifolia*, *Macropanax dispermus*, *Clerodendrum viscosum*, *Pygeum glaberrimum*, *Daemonoropsis jenkinsianus*, *Pandanus fascicularis*, *Millettia pachycarpa*, *Aglaia hiernii*, *Randia wallichii*, *Ficus rigida*, *Borassus flabellifer*, *Pterospermum acerifolium*, *Arenga pinnata*, *Ficus fistulosa*, *Prunus undulata*, *Calamus guruba*, *Picrasma javanica*, *Diospyros stricta*, *Knema linifolia*, *Saurauia nepalensis*, *Terminalia tomentosa*, *Caryota urens*, *Micromelum minutum*, *Merremia umbellate*, *Garcinia sopsopia*, *Chukrasia velutina*, *Macaranga identiculata*, *Oreocnide integrifolia*, *Lepisanthes senegalensis* etc. And in the undergrowth, *Heydychium ellipticum*, *Heydychium villosum*, *Amomum dealbatum*, *Homalomena aromatica*, *Oroxylum indicum*, *Nyssa javanica*, *Caesalpinia cucullata*, *Calamus spp*, *Cissampelos pareita*, *Microlepia strigosa*, *Entada pursaetha*, *Psychotria calocarpa*, *Premna coriacea*, *Lonicera japonica*, *Millettia pachycarpa*, *Lithocarpus elegans*, *Vitex heterophylla*, *Eupatorium odoratum*, *Antidesma acidium*, *Raphidophora decursiva*, *Leucas mollissima*, *Bauhinia scandens*, *Ferns spp.* are the dominant species.

## Medium Dense Forest

The forests that have a crown cover neither too thick nor too thin are classed under this category. It covers an area of 428.28 sq. km, which accounts for 14.15% of the total area of the district. It is distributed throughout the district and found in close association with dense forests. The vegetation of this forest is more or less similar with those species found in dense forests. The only difference lies in the crown density of these forests.

## Less Dense Forest

As the name of this class implies, the forest under this category has a thin crown cover. This type of forest includes forest, which were once disturbed and affected by biotic factors like shifting cultivation and human activities. These forests are characterized by those lands where shifting cultivation had been practiced and then left fallow for over a year; the resultant new vegetation of which, regenerated to form new forests. It covers an area of 670.04 Sq. km, which accounts for 22.14% of the total area of the district. Forests of this class are distributed throughout the district in small patches usually associated with bamboo forests and adjoining abandoned *jhum* lands. However, notable large patches are found near Zawlnuam, Pukzing, Kanhmun, Lushaicherra, Kawrthah, Saikhawthlir, West Phaileng, Rawpuichhip, Khawrihnim, Darlung, S.Sabual, Bawngthah, Hruiduk and Marpara villages. The dominant species in the upper storey are *Croton hookeri*, *Phoebe hainesiana*, *Terminalia myriocarpa*, *Erythrina Variegata*, *Mesua ferrae*, *Ficus religiosa*, *Macaranga indica*, *Albizzia procera*, *Leea indica*, *Schima wallichii*, *Bischofia javanica*, *Michelia oblonga*, *Macropanax dispermus*, *Artocarpus lacucha*, *Cinnamomum tamala*, *Amoora chittagonga*, *Tetrameles nudiflora*, *Glochidion khasicum*, *Castanopsis tribuloides*, *Sterculia alata*, *Lagerstroemia speciosa*, *Gmelina arborea*, *Saurauia punduana*, *Terminalia tomentosa*, *Albizzia chinensis*, *Castanopsis lanceaefolia*, *Anogeisus acuminata*, *Duabanga grandiflora*, *Ficus semicordata*, *Ficus prostrata*, *Embllica officinalis*, *Protium serratum* etc. In the middle storey, the dominant species are *Alpinia bracteata*, *Heydychium coccinium*, *Amomum dealbatum*, *Aegle marmelos*, *Pilea symeria*, *Musa paradisiacal var. sylvestris*, *Garcinia lanceaefolia*, *Aporusa octandra*, *Syzigium cumini*, *Thysanolaena maxima*, *Cissampelos maxima*, *Phrymum capitatum*, *Albizzia procera*, *Trevesia palmate*, *Hodgsonia macrocarpa*, *Hydnocarpus kurzii*, *Pilea symeria*, *Caryota mitis*, *Saraca asoca*, *Bombax insigna*, *Clerodendrum viscosum*, *Anacardium occidentale*, *Cassia*

*timoriensis*, *Toona ciliata*, *Dendronite sinuate*, *Cinnamomum verum*, *Ficus fistulosa*, *Syzigium fruticosum*, *Camellia sinensis*, *Aquilaria malaccensis*, *Premna racemosa*, *Leucas mollissima*, *Polyanthia jenkinsii*, *Polyanthia simiarum*, *Alphonsea ventricosa*, *Pandanus minor*, *Macaranga identiculate*, *Oreocnide integrifolia* etc. And in the undergrowth, *Hedychium ellipticum*, *Hedychium villosum*, *Maesa montana*, *Conyza stricta*, *Osbeckia sikkimensis*, *Caesalpinia cucullata*, *Mimosa pudica*, *Mikania micrantha*, *Microlepia strigosa*, *Tabernaemontana divaricata*, *Premna coriacea*, *Lonicera japonica*, *Lantana camara*, *Litsea monopetala*, *Ficus hipsida*, *Curculigo crassifolia*, *Macropanax dispermus*, *Clerodendrum glandulosa*, *Clerodendrum viscosum*, *Buettneria pilosa*, *Carallia brachiata*, *Tacca integrefolia*, *Calamus tenuis*, *Scleria levis*, *Vitex heterophylla*, *Eupatorium odoratum*, *Garcinia xanthochymus*, *Raphidophora decursiva*, *Ageratum conyzoides*, *Bidens biternata*, *Ipomea spp.*, *Polygonum spp.* etc.

## Bamboo

Moist deciduous bamboo forests are found to be distributed throughout Mamit district. It is mostly found in low-lying areas near streams and rivers. It constitutes the largest cover among the land use classes. In some places it is also found on hill slopes. The bamboo forests found near and within Dampa Tiger Reserve are mostly primary bamboo forest i.e. which are not disturbed by any biotic factors. They are densely populated and even when intermingled with other tree species, they dominate the vegetation community. It covers an area of 987.76 sq.km, which accounts for 32.64% of the total area of the district. The dominant bamboo species found in this area are *Dendrocalamus hamiltonii*, *Bambusa tulda*, *D. longispathus*, *D. sikkimensis*, *D. strictus*, *Melocana bambusoides* (syn. *M. baccifera*) and *Dinochloa compactiflora* (syn. *Melocalamus compactiflora*).

## Forest Plantation

Forest plantations are distributed throughout the district. Some has large coverage while most of them have area below the minimum mapable unit. The prominent forest plantations are given below.

### Teak (*Tectona grandis*)

Teak plantation is the most predominant forest plantation found in the district. It has replaced primary forest in many places. They are usually planted along the roadside and are found abundantly near Moraicherra, Bungthuum, Zawlnuam,

Zamuang, Bawngva, Darlak, Tutphai (Dapchhuah), Rawpuichhip, Marpara etc. The largest coverage of teak plantations are found extending from Zamuang to Zawlnuam. The low-lying valley of Tutphai (Dapchhuah) is also a home to vast Teak plantations.

Teak plantation covers an area of 5.20 Sq. km, which accounts for 0.17% of the total area of the district.

### Miscellaneous plantation

Miscellaneous plantation includes any other forest plantations other than Teak eg. *Michelia* (*Michelia champaca*), *Gamari* (*Gmelina arborea*), *Toona* (*Cedrela toona*) etc. *Michelia* plantation is found near Saithah village in small patches. A mixed plantation of *Michelia*, *Gamari* and *Toona* (among the dominant species) is found along the hill ranges of Tutphai (Dapchhuah). This plantation named as “VFDC Dapchhuah Plantation”, covering an area of 100 Ha. was initiated during the year 2003-2004 by the Forest Department under the scheme of *Jhum Project*. The plantation area is bounded by Dap lui to the south, R.Tut to the east, Saituk lui to the north and Khamrang lui to the west. These miscellaneous plantations cover an area of 0.17 Sq. km, which accounts for 0.01% of the total area of the district.

### Protected Areas –

#### Dampa Tiger reserve:

It is situated on the western part of Mizoram along the international border with Bangladesh at a distance of 127 Km from the capital Aizawl. It is situated at 92° 13'12"-92°27"E longitude and 23°32'42"-23°41'36"N latitude at an altitude of 200m-2100m above msl. It covers an area of 376.03sq.km. The Tiger Reserve consists of moist deciduous forest at lower reaches and evergreen and semi evergreen forests with natural grassland at higher altitudes. It is the largest sanctuary of the state, notified during 1985 and was declared as Tiger Reserve under Project Tiger during 1994. The important animals found in the area are Tiger, Leopard, Clouded Leopard, Black bear, Sun bear, Wild dog, Elephants, Gaur, Sambar, Barking deer, as many as 8 species of monkey including Hoolock gibbon, Phayre's leaf monkey, Pig tailed and Stump tailed macaques, Giant squirrel, Flying squirrel, Wild boar, Crestless and Brush tailed porcupines, and many species of small cats. Around 18,000 people live in 15 villages around this Protected Area.

## Timber Resources:

The Common indigenous timber yielding species are as follows:

### *Michelia champaca* ( Ngiau)

It is a big evergreen tree with high quality timber. Its timber is graded as A-II class which is the highest grade among the indigenous species in Mizoram. It is a fast growing species with a long, clean and cylindrical bole. Artificial Regeneration of the species are found to be quite successful and widely tried in the state. Natural regeneration of the species is available in various locations. The timbers of *M. champaca* are found to be twisted grain, a hard and refractive. *Michelia* timbers are durable and widely used for construction as well as furniture making.

### *Terminalia myriocarpa* (Char):

It is the second highest graded timber in the state, next to *Michelia* species. It is a big tree found in almost all parts of Mizoram. Its timber is widely used and is moderately hard and moderately refractory and durable. Artificial regeneration is not widely tried due to the minute size of seeds and exacting nature for germination.

### *Artocarpus chaplasha* (Tatkawng):

It is one of the best timbers for construction of vehicle bodies and country boats. It is indigenous to the state and graded as A-II class. Artificial regeneration has been largely tried with good success.

### *Gmelina arborea* (Thlanvawng):

It is one of the well known timbers of the area. Due to its branching nature clean bole are usually not long causing limitation to its use for furniture and for house constructions. Artificial regeneration has been largely tried and found successful. There are plenty of pure plantations of *Gmelina arborea* and it is the species tried right from the beginning of Forest Department in Mizoram.

### *Tectona grandis* (Teak):

It is exotic to Mizoram, but due to its high quality timber in furniture making it is widely planted both by private and government agencies. Majority of the government plantations in pure form as well as mixed with *Gmelina arborea*.

Most of the timber demands are being met from the natural forests and only a small fraction of the demands are met from government as well as private plantations. Timbers are utilized mainly for house construction and furniture. No wood-based industry has been established. Small timbers are consumed in a large scale for fire wood in most of the areas.

### Existing Livelihood:

Shifting cultivation is an agriculture practice widely prevalent and significantly practiced and is also known as *jhum* cultivation. Under this practice basically involved are selection of a piece of land, cutting down of trees or bushes partially or fully, burning of the cut down growth after allowing it to dry and there after sowing seeds in drills manually. The land is abandoned after one or two years of cultivation and shifting cultivators move to new patch and repeat the same process.

About 77.52% of the population involve in shifting cultivation which is till today common in the District and is becoming less sustainable as cultivation cycles are shortened due to population pressures.

As shifting cultivation is one of the most important causes of deforestation and degradation concern about the environment and the need to stem the tide of deforestation and degradation has renewed focus on ameliorating the ill effects of shifting cultivation. Agro-forestry has a potential in these areas. It may well prove to be the land use option which harmonizes the ecological considerations with the Socio-economic imperatives of the situation.

## WATER RESOURCES

### Drainage System

Mamit district is drained by important rivers like Tlawng, Tut, Teirei, Langkaih, Khawthlangtuipui and Mar rivers. About three fourth of the area of the district is drained by the north flowing rivers such as Tlawng, Tut, Teirei, and Langkaih rivers



where as one fourth of the area is drained by the south flowing rivers of Khawthlangtuipui and Mar rivers. Besides these, there are a good number of streams and rivulets of various patterns and length. Most of these streams and rivulets are ephemeral in nature. Since the drainage system for a particular area is governed mainly by the natural drainage course and topography, therefore, the drainage system of Mamit district has been studied with the help of satellite imageries and the Survey of India topographical maps.

As mentioned above the drainage system can be divided into two parts according to the directions in which they flow *viz* north flowing and south flowing drainage systems.

### **North Flowing Drainage System**

Tlawng river is one of the most important rivers of Mizoram and it is the longest river in Mizoram and it passes through five districts of the state forming district boundary lines while running along its course. Here also it formed a district boundary line between Mamit and Kolasib districts as well as with the Aizawl district in the eastern side of the study area. It is navigable by small boat throughout the year and hence it provides water transport route with neighbouring state of Assam. A number of streams and rivulets join along this course and the important ones are Saiphah lui, Dialdawk lui, Tan lui, Phun lui, Reiek lui, Tuisen lui, Tuichhun lui etc. Dendritic to Sub-dendritic drainage patterns are common in the area.

Tut river originates from Thorang tlang near South Kawnpui village in Lunglei district. It flows northwards paralleling with Tlawng river until it confluents to the later in the west of Hortoki village. It is an important river for the district as well for the state of Mizoram since it is navigable by small boat during monsoon season for a considerable distance. Important perennial streams joining river Tut are Tlubing lui, Tuidam lui, Bankalh lui, Lungal lui, Chhuanthum lui, Kheldelh lui etc in the south. Uinak lui, Bawngva lui, Zawngkek lui, Chhundurh lui, Mualkawi lui in the middle part of the river and Raiseh lui, Saitlan lui, Vaak lui in the northern part of the river. The drainage patterns found in this system is Dendritic to Sub-dendritic drainage patterns. Angulated drainage patterns are also seen in some places e.g. Uinak lui etc.

Teirei lui originates near Saithah village in the south western part of the district and flow northwards parallel to Tut river and then it confluents to Tlawng river

near Bairabi village in Kolasib district. The river is less voluminous in comparison with the above two rivers, yet it is the most important single river within the Mamit district from the agricultural point of view. It has a vast fluvial plain along its course giving a fertile agricultural land for the region and it has many incoming tributaries of which the important ones are Sengmatawk lui, Kawrnu lui, Pidari lui, Hawrhup lui, Lotha lui, Sihthiang lui, Sakei lui etc. These tributaries highlighted dendritic to sub-dendritic drainage patterns.

Langkaih lui is another important river of the study area. It originates from Sabual tlang near Sabual village (of Tripura) where it is called Sailut lui. From there on it flows northwards forming the state boundary line between Mizoram and Tripura states. The river provides a fertile flat land and the river valley can be developed for agricultural and Horticultural aspects. But the local climate is warm and humid that only Brus and Chakma occupied the interior areas. Some of the important tributaries of Langkaih river within Mizoram are Dil lui, Saduh lui and Kawrtelian lui in the upstream side. Tumpang lui and Borai lui in the middle part and Momchhara lui and Gobai Chhara are the important ones in the northern part of the drainage system. The drainage system as a whole is elongated in south to North direction showing angulated, dendritic to sub-dendritic drainage patterns.

### **South Flowing Drainage System**

Khawthlangtuipui river is originating from Sabual tlang near Sabual village (of Tripura) adjacent to the origin of Langkaih river in the western part of the district and thereby it is known as Tuilianpui or Sazai lui. Only after entering Lunglei district, the name changes to Khawthlangtuipui meaning 'a main river of the west'. It is one of the important rivers of Mizoram as it not only forms an international boundary between India and Bangladesh for a certain distance, it also provide a water transport route with the neighbouring country of Bangladesh Republic. A number of streams and rivulets joined the main river along its course and the important ones are Thaidawr lui, Belkhai lui, Sakhi lui, Saihlam lui, Khuaichang lui, etc in the northern part and Seling lui and Keisalam lui are the big streams joining in the middle part of the river. In the southern part Aivapui lui, Hnahva lui and Aiva lui are the important ones. Dendritic drainage patterns are common in this system.

Mar lui is another south flowing river in the study area which is originating from Saithah tlang near Saithah village. It flows southwards and before joining the Khawthlangtuipui river it is joined by a number stream such as Marte lui, Tuivam lui,

Meidum lui, Keisih lui Vawngzawl lui, Zawlpuoi lui, Tangkabo lui etc. Mar lui watershed is elongated in shape with north to south direction and it exhibits dendritic to sub-dendritic drainage patterns.

The drainage system of Mamit district as a whole is said to be dendritic in nature and the streams are youthful stage with deep courses. The topography is young and its soils do not show much diversity, they are highly erosional in character. The total length of perennial streams and non-perennial streams are 3985.64 km and 8704.11 km respectively.

## SPRINGS/WATERHOLES

A good number of springs/waterholes are identified at various places of the district especially near the settlements. The locations of these springs/waterholes are studied aspect-wise and it is identified that the eastern aspects yield more springs as



compare to the western flanks for the whole hill ranges. This is due to the fact that eastern aspects are generally dip slopes of the hill ranges. Generally the springs located within or near the periphery of settlement area are utilized for tapping drinking water.

## WATERSHED CLASSIFICATION

According to Watershed Atlas of India of All India Soil and Land Use Survey Organization, Mizoram state falls into region 3 (Brahmaputra & northeastern state river) comprising the basins of 3C (Brahmaputra tributaries that flow upto Bangladesh, Kalni Myanmar ) and 3D (Eastern part of Manipur & Mizoram draining into Chindwin, Myanmar ). These two basins have three catchments which fall under Mizoram states – 3C2 (Mostly Barak), 3C3 (Partial drainage of Tripura & Mizoram flowing into Bangladesh) and 3D1 (Eastern part of Mizoram and Ngengpui lui). These are sub-divided into 6 sub-catchments and 34 watersheds. These watersheds

are further sub-divided into sub-watersheds, Mini-watersheds and Micro-watershed units. The whole district of Mamit falls into Sub-catchments of 3C2A and 3C3B.

## DEMOGRAPHY

According to 2011 census the total population of Mamit District is 85757, out of which 44567 are males and 41190 are females.

Out of the total Mamit population for 2011 census, 17.25 percent lives in urban regions of district. In total 14,899 people live in urban areas of which males are 7,693 and females are 7,206. Sex Ratio in urban region of Mamit district is 937 as per 2011 census data. Similarly child sex ratio in Mamit district was 955 in 2011 census. Child population (0-6) in urban region was 2,303 of which males and females were 1,178 and 1,125. This child population figure of Mamit district is 15.31 % of total urban population. Average literacy rate in Mamit district as per census 2011 is 95.40 % of which males and females are 95.86 % and 94.92 % literates respectively. In actual number 12,017 people are literate in urban region of which males and females are 6,245 and 5,772 respectively.

As per 2011 census, 82.75 % population of Mamit districts lives in rural areas of villages. The total Mamit district population living in rural areas is 71,465 of which males and females are 37,135 and 34,330 respectively. In rural areas of Mamit district, sex ratio is 924 females per 1000 males. If child sex ratio data of Mamit district is considered, figure is 984 girls per 1000 boys. Child population in the age 0-6 is 13,192 in rural areas of which males were 6,650 and females were 6,542. The child population comprises 17.91 % of total rural population of Mamit district. Literacy rate in rural areas of Mamit district is 82.67 % as per census data 2011. Gender wise, male and female literacy stood at 87.69 and 77.16 percent respectively. In total, 48,174 people were literate of which males and females were 26,732 and 21,442 respectively.

Some of the significant demographic trends, revealed are –

1. Mizo (Lushai) tribes comprise the majority, constituting 77 per cent of the total ST population. Their decadal growth during 2001-2011 Census has been 29.2 per cent. Chakma is the next largest ST in the district; they constitute 8.5 per cent of total ST population.

2. Mamit have almost 82.75 per cent of its population in the rural areas. The percentage of ST population in semi-urban areas is 17.25 per cent.
3. In Mamit, majority of the ST population are Christian. As per 2001-2011 Census, 90.5 per cent of the ST population is Christian. Buddhists, at 8.3 per cent, constitute the second largest religious group of STs. Chakmas are the main followers of Buddhism.
4. Approximately 51.7% of the ST populations are workers, against a national average of 49.1% of ST workers. 55.3% males and 48.1% females are workers, thus showing equitable participation of both males and females in workforce. Three fourth of the tribal workers are main workers in the district. 67.2% ST females are main workers, which is significantly higher than 53.3% recorded at the national level for ST female workers.

## CULTURE AND EDUCATION

The people of Mizoram are popularly known as Mizo. The historical origin of the people of Mizoram is from the Mongolian race and distributed in the north-eastern part of the country centuries ago. During the 7th century these people had a temporary stay in Western Burma and China. Then in the 9th century at the time of the entry of the British Missionaries, the Mizos entered into India and got influenced by the Britishers and got themselves following Christianity. Various activities of the British Missionaries resulted in educating the people, influencing the Mizo language with Roman Script. It soon became a formal way of education. Kuki were the first set of Mizo people who migrated to India and were followed by the second batch of immigrants who were called New Kuki. During the ninth century under the influence of the British Missionaries the last set of Mizo people namely the Lushai came into the country and settled in the hilly area of Mizoram. The cultural boundary of the people of Mizoram is mainly based on the tribal community who are popularly referred to as the Mizo. Though the Mizo people have lot of influences by the foreign intrusions they still strictly try to maintain their lifestyle and traditional culture without causing any harm to it. As a result of their rich cultural heritage the Mizo people celebrate lot of fairs and festivals. The fact that the Mizo people are so referred came from the term Mizo which can be bifurcated into 'Mi' meaning people and 'Zo' that signifies the hill meaning they hail from the highland. The Mizo people take pride in their cultural diversity for though now Mizoram too is moving towards modernization

but the state government has ensured that every bucolic hamlet in the state, irrespective of its remote location, is endowed with an YMA (Young Mizo Association). The people belonging to the Young Mizo association take care in maintaining the traditional values and customs to be followed and kept alive by the upcoming generations. As in the matter of religion, many religions exist in Mamit district as under -

<b>Description</b>	<b>Total</b>	<b>Percentage</b>
Hindu	2,989	3.46%
Muslims	1,782	2.06%
Christian	69,104	80.01%
Sikh	13	0.02%
Buddhist	12,328	14.27%
Jain	25	0.03%
Others	19	0.02%
Not Stated	104	0.12%

Average literacy rate of Mamit in 2011 were 84.93 compared to 79.14 of 2001. If things are looked out at gender wise, male and female literacy were 89.13 and 80.35 respectively. For 2001 census, same figures stood at 82.98 and 74.81 in Mamit District. Total literate in Mamit District were 60,191 of which male and female were 32,977 and 27,214 respectively. In 2001, Mamit District had 40,849 in its district.

The statistical break-up of educational facility in the District is as follows:

College : 2 Nos.  
 High Sec. School : 4 Nos.  
 High School : 37 Nos.  
 Mid. School : 100 Nos  
 Prim. School : 142 Nos.

## HEALTH CARE SECTOR

There is 1 Hospital at Mamit, 3 Community Health Centre exists at Kawrthah, West Phaileng and Lengpui villages, 1 Subsidiary Health Centre, 7 Primary Health Centres and also 35 Health Sub-Centres exist in various parts of the district.

Availability of health care services		
Type	Percent village having facility	Distance (km)
PHCs	13.3	11.7
Primary Health Sub Centre	40.0	4.0
CHCs	3.3	39.5
Hospital/Dispensary	10.0	38.3
Private Qualified Allopathic Doctors	6.7	38.0
Maternity Child care Centre	16.7	36.8
Ayurvedic Hospitals	0.0	50.9
Ayurvedic Doctors	3.3	43.4
Homeopathic Hospitals	0.0	68.5
Homeopathic Doctors	6.7	57.9
Quacks	13.3	49.1
Family Planning Clinics	3.3	60.6
Chemists/ Medicine Shops	43.3	10

Nearly three-fourths of the households use drinking water from public sources, while 4.38 per cent and 20 per cent of the households

depend upon private source and other sources, which include natural water points, respectively. The drinking water facilities are not at all satisfactory in the district. The dependence on private sources and other sources of drinking water of the rural poor households is a matter of concern, which needs to be rectified by providing tap water facilities by the government.

## **BANKING AND ALLIED SECTORS**

The banking facilities exist in the district are 3 branches of State Bank of India located at Lengpui, Mamit and Zawlnuam and 6 branches Mizoram Rural Bank.

The district economy is pre-dominantly agricultural with more than 80% of the total work force engaged either directly or indirectly in agriculture. However, agriculture still remains under-developed and the primitive *Jhum* (shifting cultivation) predominates. Both production and productivity are relatively low. Though more than 80% of the population is engaged in agriculture and allied activities, the share of agriculture in the Gross State Domestic Product (GSDP) is merely 16% at current prices during 2012-2013. It is therefore, imperative to substantially improve upon agriculture and allied sectors to raise GSDP and hence, there is an urgent need for aggressive developmental intervention to enhance productivity and income of the cultivator.

## **LOCAL BODIES AND RURAL DEVELOPMENT**

'Village Council' is a democratic institution of decentralised governance at the grassroots' level in Mizoram initiated in the post- independent period. It is, in fact, a democratic innovation of an indigenous institution of village administration in pursuance of the political demand made by the newly politically conscious Mizo commoners from time to time for the fulfilment of their democratic aspirations for power positions which was not possible in the erstwhile powersharing system in the Mizo society.

The financial position of the people is generally poor. The density of the population in the area is thinner as compared with adjacent areas of Mizoram. There is no important industry in the area. Economy is based wholly on Agriculture and the latter closely knit the fragile society too.

## CHAPTER- II. AGRICULTURAL SCENARIO OF THE DISTRICT

### CROPS

Agriculture land comprises those areas which are permanently used for crop cultivation. This class of land has been divided into Kharif crop land and Agricultural/Horticultural Plantation. Though Rabi crops are also grown in small areas in a scattered manner they are not given separate class because they are less in area.

#### **Kharif Crop Land**

Kharif crop land refers mainly to the wet land rice cultivation areas located in the low lying plains. The terrain features greatly predict the practice of this form of farming. A bulk of the kharif crop lands is found in the northern part of the district. The wet land rice cultivation areas are usually located at the banks of rivers, streams and sometimes close to settlement areas, where soil and water supply is suitable for its establishment and growth. Prominent wet land rice cultivation areas are found in Lushaicherra, Moraicherra, Bungthuam, Zawlnuam (north-western part of the district), and tapering towards the center of the district at Bawngva, Darlak, Nalzawl and Tuirum respectively. From the studies and field verifications, it can be said that most of the wet land rice cultivation areas are found at the banks of the north-flowing R. Teirei and R. Langkaih (flowing at the border of Mizoram and Tripura), which eventually irrigates the paddy fields either directly or through its tributaries. It covers an area of 12.99 Sq. km, which accounts for 0.43% of the total area of the district. There are also small pockets of wet land rice cultivation in other parts of the district.

#### **Agricultural/Horticultural Plantation**

This class includes areas, which is being utilized for plantation of cash crops. The district also houses a variety of agricultural/horticultural plantations, of which the prominent ones includes Arecanut, Citrus woodlands and Banana plantation.

#### **Arecanut**

Arecanut (*Areca catechu*) plantations are found in abundance to the northern part of the district, near villages like Bawngva, Tuidam, Kawrthah, Rengdil, Zamuang and Zawlnuam. These areas with low altitudinal range and warm climate favors the

cultivation of the crop, especially in and around Rengdil and Zamuang villages where majority of the plantations are found. Few patches of the plantations are also found near Rawpuichhip and Tutphai (Dapchhuah) villages. The plantation covers an area of 0.72 Sq. km, which accounts for 0.02% of the total area of the district.

### **Citrus woodland**

Citrus woodland includes Orange (*Citrus reticulata*) plantation and Hatkora (*Citrus macroptera*) plantation. Citrus plantations are found in abundance to the eastern and south-central part of the district. The occurrence however, diminishes towards the northern part where they are found only in few patches. Majority of the cultivated Citrus species are of the variety *Citrus reticulata*. Such plantations are more concentrated near Saithah, Lallen, N.Chhippui, Kawnmawi, W.Phaileng, Rulpuihlum, Tuahzawl, Tutphai (Dapchhuah), Rawpuichhip and Tuidam villages. Few scattered patches of the plantations are also found along roadsides and settlement areas of Dampui, Bawngva, Mamit, Darlak, Kawrthah, Rengdil and Moraicherra. The other variety known as *Hatkora (Citrus macroptera)* is found between Kawrthah and Zamuang villages, where the environment is a bit warmer. It covers an area of 2.28 Sq. km, which accounts for 0.08% of the total area of the district.

### **Banana**

Banana (*Musa paradisiaca*) plantations are commonly found as secondary cash crops cultivated along with other field crops. In some cases, they are intercropped with other cash crops. Pure banana plantations are found near Tuidam, Bawngva, Mamit, Dampui, Rawpuichhip, Tutphai (Dapchhuah), Ailawng (near R.Tlawng) etc. They are found in abundance on the way to Dampui, starting from Tutphai (Dapchhuah). Most of the plantations found near Bawngva and its environs are undertaken by local farmers, which were initiated by the Horticulture Department. Banana plantation covers an area of 0.46 Sq. Km, accounting for 0.02% of the total district area.

## **SHIFTING CULTIVATION**

Shifting cultivation area can be classified into current shifting cultivation and abandoned shifting cultivation.

## Current Shifting Cultivation

Shifting cultivation commonly known as *Jhumming* is still a prominent farming system practiced by farmers in the study area, mostly in small patches/land holdings near forests and settlements. The *jhum* plots are small in size and irregular in shape. The current *jhum* are always associated with young abandoned *jhum* and secondary forests. The location of *jhum* is related both to altitude and slope. Sites above 1200 mts are thus seldom *jhumed*. The percentage of *jhumming* is found to be highest on the gentler slopes and progressively decreases on steeper slopes. It covers an area of 170.71 Sq.km, which accounts for 5.64% of the total area of the district.

## Abandoned Shifting Cultivation

In the present study, young abandoned *jhum* of approximately up to three years are considered. It covers an area of 434.23 Sq.km, which accounts for 14.35% of the total area of the district.

Patches of young abandoned *jhum* are found to be distributed all over the district, closely associated with current *jhum*, settlement areas and forest blanks. Depending on how long the land is left fallow and phyto-geography, there can be vegetative variations among young abandoned *jhum* consisting of young bamboo shoots, tree seedlings and saplings. However, in general, the dominant species in young abandoned *jhum* areas are *Eupatorium odoratum*, *Thysonalaena maxima*, *Erianthus longisetosus*, *Cyperus kylinga*, *Cynodon dactylon*, *Plantago major*, *Osbeckia chinensis*, *Imperata cylindrical*, *Mikania micrantha*, *Ageratum conyzoides* etc.

## LIVESTOCK

The district of Mamit poses a challenge in animal husbandry, but restrains like protectionism policies of the state or the country handicaps the true want towards animal husbandry. Good governance, sustainable development in conjunction with environmental friendly methods is perhaps the only practical answer in order to correct the issues at hand. Scientific methods improving the products of animals i.e. use of biotechnology may perhaps be helpful but unfortunately will not increase productivity so as to claim animal husbandry as part of our GDP. On the other hand challenges are met and yes, the future holds a promise in all fields as long as we put our heads together and pave the green fields Mamit and its people have to offer.

## Statistics

Comparative graphs and tables are shown below highlighting the present situation of Mizoram and then would follow Mamit with animal husbandry.

**Table. Livestock population of Mizoram (2014)**

S. No.	Livestock Nos.)	Population (Million		Annual Growth Rate (%)	
		Livestock Census		2003 1997	over Annual (compounded)
		1997	2014		
1	2	3	4	5	6
1	Cattle	198.88	185.18	-6.89	-1.18
2	Buffalo	89.92	97.92	8.90	1.43
3	Yaks	0.06	0.07	16.67	2.60
4	Mithuns	0.18	0.28	55.56	7.64
<b>Total Bovines</b>		<b>289.03</b>	<b>283.45</b>	<b>-1.93</b>	<b>-0.32</b>
5	Sheep	57.49	61.47	6.92	1.12
6	Goat	122.72	124.36	1.34	0.22
7	Pigs	13.29	13.52	1.73	0.29
8	Other animals	2.85	2.21	-22.46	-4.15
<b>Total Livestock</b>		<b>485.39</b>	<b>485.00</b>	<b>-0.08</b>	<b>-0.01</b>
9	Poultry	347.61	489.01	40.68	5.85

(Department of Animal Husbandry and Ministry of Agriculture, 2014)

**Table. Percentage of Livestock in respect to NE Total (in '000)**

State	Cattle	Sheep	Goat	Pig	Mithun
Mizoram	36	11	17	218	2
NE Total	11488	227	4866	3816	254
% of Mizoram	0.31	4.85	0.35	5.71	0.79

(Livestock Census, 2011)

**Table. Livestock population of Mamit district and Mizoram (2014)**

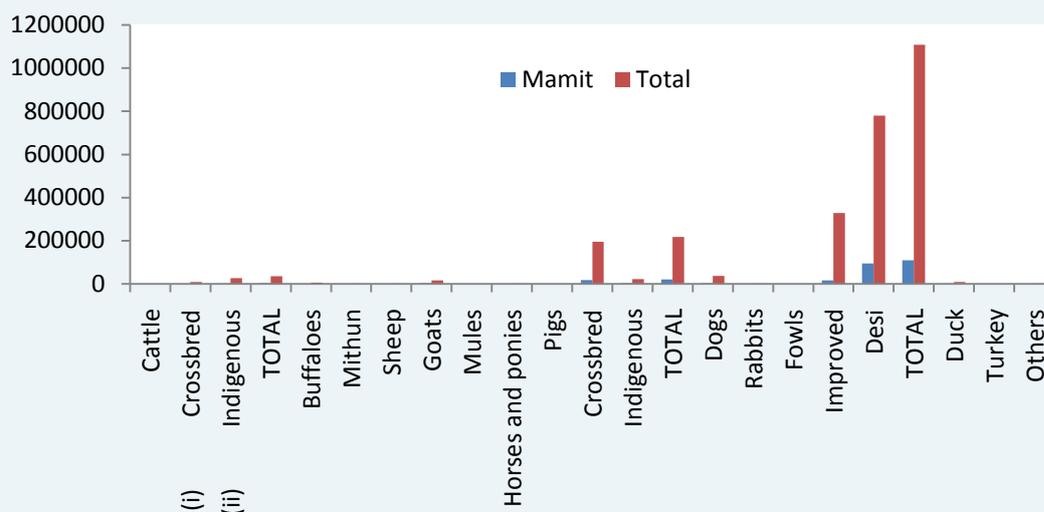
Sl. No.	Species	Mamit	Mizoram total
1	Cattle		
	(i) Crossbred	114	8803
	(ii) Indigenous	2188	26767
	Total	2302	35570
2	Buffaloes	214	5732
3	Mithun	-	1738
4	Sheep	-	1058
5	Goats	2277	16979
6	Mules	-	4
7	Horses and ponies	33	2023
8	Pigs		21263
	(i) Crossbred	18318	195477
	(ii) Indigenous	2945	21707
	Total	21263	217184
9	Dogs	2778	37020
10	Rabbits	17	946
11	Fowls		
	(i) Improved	15552	328019
	(ii) Desi	94410	779875
	Total	109962	1107894
12	Duck	892	8502
13	Turkey	2	27
14	Others	-	2123

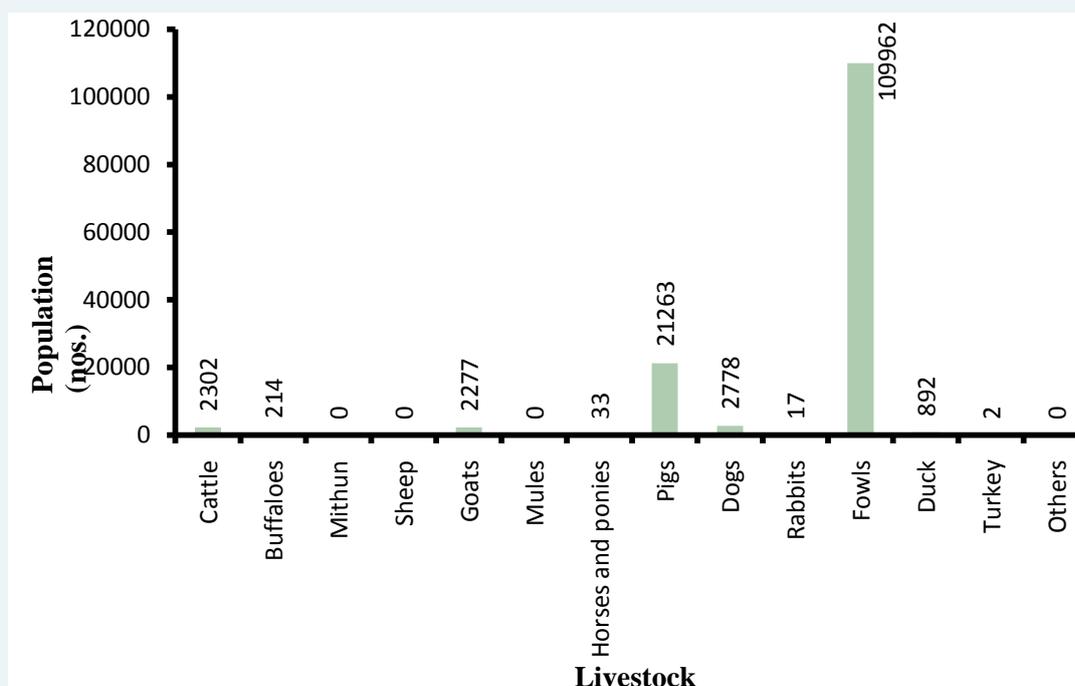
(Veterinary and Mizoram, 2014)

**Table. Productivity of animals in Mamit district (2014)**

Sl. No	Animal	Product	Total
1	Crossbred cows	Milk	203 MT/year
	Indigenous cows		246 MT/year
	Buffaloes		23 MT/year
2	Poultry layers (Desi and improved)	Eggs	29 lakhs/year
3	Cattle	Meat	66 tonnes/year
4	Buffalo	Meat	6 tonnes/year
5	Goat	Meat	6 tonnes/year
6	Pig	Meat	287 tonnes/year
7	Poultry	Meat	67 tonnes/year

*(Veterinary and Mizoram, 2014)*





**Fig. Livestock population of Mamit district (2014)**

### **Meat consumption and their pricing**

Animal based protein is the most consumed nutrient in Mizoram and Mamit is no different. Endogenous population of Mamit i.e. the Chakma have a special dietary preparation called “*dangpuithu*” which typically consist of mashed up and traditionally processed fish, prawns, shrimps etc. This concoction has the typical dried fish smell and is traditionally packed as a paste and used for flavoring kitchen preparation i.e. with meat, vegetables etc.

Pork is the choice of meat followed by poultry, beef, and goat. In spite of the traditional methods maintained towards animal rearing; almost if not all family rear one particular species of animal. Yet, sustainability is not reached.

**Table. The average price of meat in Mamit district**

Sl. No	Meat	Price (Rs./ Kg)
1	Pork	150
2	Beef	160
3	Poultry	140
4	Fish	120 – 130
5	Goat	140
6	Eggs	Rs. 10 for 3 – 5 eggs

## **Adaptation, mitigation and a vision**

Adaptation required is not a rocket science technology but an anthropological awareness that as Mongolians animal rearing has been a part of our survival kit and should remain even if we can goggle the best practices made available in the market today.

Mitigation required is accepting that climate change is affecting our day to day lives and may not reverse during our life time. This climate change has allowed hibernating diseases like H1N1, H5N1 etc to evolve again and its mutation will cost us dearly. Whatever technology or methodologies we encompass towards the betterment of the masses in animal husbandry, we'll have to make sure it does not harm the environment. Our vision is to play an active participation in maintaining our country's GDP in animal production as well as enhancing internationally improved animal based product.

The conclusion to be gathered from the data made available is that India with due thanks to our leaders has jumped from being labelled as a third world country to a promising developing country. It is with hope that KVK for Mamit District will adapt and mitigate to a vision that will participate in creating a more powerful India.

## **FISHERIES**

Mizoram is a hilly state and it is known for rich in floral and faunal diversity. Agriculture, horticulture and animal husbandry is the mainstay of economy in the region. The fisheries sector plays a vital role towards production of food protein from aquatic base teleostom (fishes) in the state of Mizoram. Besides providing livelihood and uplifting socio-economic status of the poor farmers connected with Agriculture and Allied Sector since a long time. The present annual fish production level of the state is 5940 M.T both from culture and capture sector at the end of 2013-2014. The present production could offer a 5.18kg per capita against the targeted per capita consumption at 11kg. Thus there is a per capita dearth of 5.82kg to be made up to achieve the target of 11kg. So far only 4510 hectare (2013-2014) of ponds and tanks has been developed for fish farm in the state out of the potential available land of 2400 hectare. The state has further 6000 hectare of water area in the form of rivers and streams spread over 1100km of riverine stretches besides recently develop 4000 hectare of Hydro-Electricity impoundment in the form of reservoir fisheries.

The present production of the state is 5940 ton with a shortfall of 7910 ton (57.11%). The present average fish productivity is estimated to be 1.23 ton /ha /year. For this reason fishes is being imported from outside. The important challenge for aquaculture for the state in the 21<sup>st</sup> century is to ensure sustainability and profitability. Sustainability has to be achieved by adopting environmentally non-degradable, technical appropriate, economically viable and socially acceptable best farming practices. In the recent times the concept of fisheries has changed to a multidisciplinary approach which incorporates the soil and water conservation measures especially for the hills. Due to this concept the scope of increasing fish production and fisheries resources in terms of watershed ponds, silt retention ponds, wasteland ponds etc. have increased. Retention of water in agricultural waste land, damming of valley as soil conservation and water conservation measures in these high rainfall areas, together with the existing lake/beels, give us a fairly breadth perspective to look into the prospects of aquaculturally developing the state.

The fishery resources of the district are varied ranging from rivers-1700km, reservoirs-32ha, ponds/ mini barrages-1795 ha and potential paddy fields is about 1440ha. Out of the total 274 fish species found in North East, only 89 fish species is so far documented in Mizoram. Due to high rainfall there is tremendous potential for fish production in the state to fulfill the fish meat requirement from the available resources. Mamit district of the state covers an area of 3025.75 km<sup>2</sup> with its population of 85,547 nos. (2008) and its average altitude is 500 m. The district is divided into 3 RD Blocks and it has got 123 villages. With its undulating landscape, it gives little scope for digging ponds. So, the district has to emphasis on creating more mini barrages to increase the culturable area. The main rivers of the district are Tlawng, Tut, Teirei, Langkaih, Khawthlangtuipui, and Mar. They are mostly ephemeral and are governed by season and topography. The area under pond fish culture is 700 ha and there are 100 ha of derelict water bodies. Another important resource of the district is low land paddy area. At present there are 80ha of paddy cum fish culture area and there are more than 90 ha potential paddy area where fish can be cultured. The present fish production level of the district is very low (753 MT, 2006-07) and the average price of locally available Indian Major Carps is Rs.180-250 per kg depending on seasonal abundance, locality and size. Hence, the fisheries sector should be developed utilizing the natural land, water and fish resources for augmenting food production of the state and to reach a stage of self-dependency in meeting the fish requirement of the population.

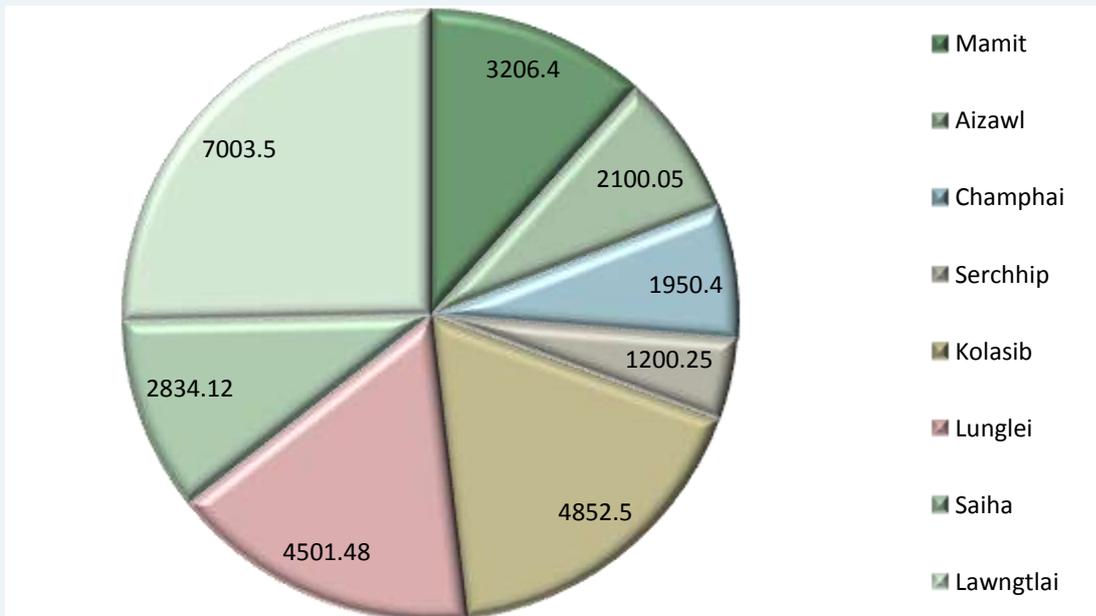
## Fish Species of the district

The Fisheries Department of the district is in a growing state and it was established in 2008. The data available, so far, is the first step in the improvement of fishery of the district. The detailed fishery survey of the district is going on. The most commonly cultivated fish species of the district are Catla (*Catla catla*), Rohu (*Labeo rohita*), Mrigal (*Cirrhinus mrigala*), Silver Carp (*Hypophthalmichthys molitrix*), Grass Carp (*Ctenopharyngodon idella*) and Common Carp (*Cyprinus carpio*). The other cultivated fish species of the district are Calbasu (*Labeo calbasu*), Bighead Carp (*Hypophthalmichthys nobilis*), Goniuis (*Labeo goniuis*), Bata (*Labeo bata*), Java Puthi (*Puntius javanicus*), Mola (*Amblypharyngodon mola*), Magur (*Clarius batrachus*) etc.

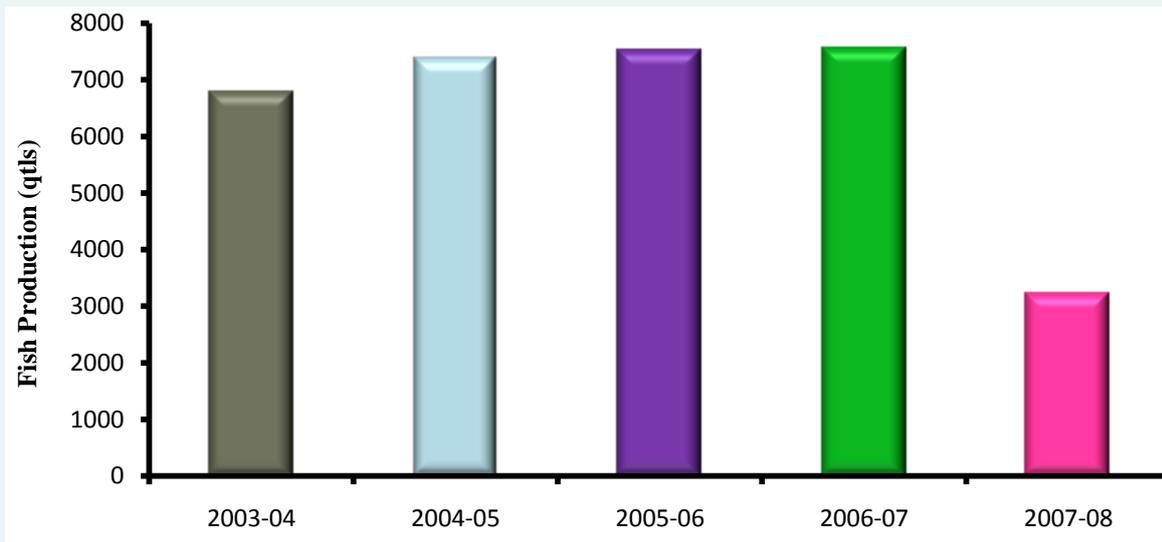
Besides, IMC and exotic carps, the other most commonly available fish species in the mini barrages, rivers, streams, beels/waste lands etc. are Mahseer (*Tor sp.*), Tengra (*Mystus bleekeri*, *M. vittatus*), Pabda (*Ompok pabda*) Gangetic mystus (*Mystus cavasius*), Bacha (*Eutropiichthys vacha*), Singhi (*Heteropneustes fossilis*), Bami (*Mastacembellus armatus*)sp., Cheng (*Channa orientalis*), Goroi (*Ch. punctatus*), Shol (*Ch. striatus*), Kuchia (*Monopterus cuchia*), Chepta chanda (*Chanda nama*), Taka chanda (*Pseudambassis ranga*), Phul chanda (*Pseudambassis baculis*), Dora baicha (*Polyacanthus lalius*), Rosybarb (*Puntius conchoniuis*), Sarputi (*Puntius sarana*), Titputi (*Puntius sophore*), Two spot barb (*P. ticto*), Kanla (*Notopterus notopterus*), Dorikona (*Danio dangila*), Dorkene (*Danio devario*) etc.

## Fish Production

The state has to go a long way to increase the fish productivity in respect of demand of fish. During the year 2007-08 the overall fish production in the state was 2764.65MT and the average fish productivity was 10.5 qtls/ha. In the year 2007-08 the highest fish producing district was Lawngtlai and Mamit was in the 4<sup>th</sup> rank (Fig 1). But if we see the comparison of fish production in the Mamit district for last five years, the lowest production was obtained during the year 2007-08. This may be because of devastating flood during the same year. Whereas fish production from the year 2003-04 to 2006-07, is in increasing trend and the highest production was found during the year 2006-07 (7532.5 MT).



**Fig. District-wise comparison of fish production (qtls) in the year 2007-08**



**Fig. Fish production in Mamit district**

## CHAPTER- III. CONSTRAINTS IN AGRICULTURAL PRODUCTION

### Crops

1. Shifting cultivation.
2. Low rate of adoption of new agriculture technologies.
3. Poor communication and transportation system.
4. Lack of irrigation facilities.
5. Lack of proper marketing channels.
6. Lack of knowledge on post harvest technologies.
7. Lack of good storage facilities.
8. Inadequate extension services.
9. Gap in knowledge of improved technologies on
  - a) Balanced use of chemical fertilizers.
  - b) IPM, INM, and IWM technologies.
  - c) Adoption of high yielding and improved varieties.
  - d) Practice of crop rotation.

### LIVESTOCK

1. Communication constraints (road, telecommunication) in the district hinder growth in livestock sector.
2. Animal feed production ratio compared with feed produced for human consumption is very low.
3. Non-availability of sufficient superior germplasm for replacement.
4. Weak Veterinary healthcare services and no facilities for vaccine production.
5. Inadequate credit system.
6. Poor involvement of corporate sectors in the livestock industries.

## FISHERIES

Lack of proper technology dissemination and awareness about fish culture, non availability of quality fish fingerlings and absence of proper marketing channels are other root causes of non adoption of the technology by farmers largely and low productivity of fishery in the district. Apart from these, other constraints are-

1. Irrational fishing (bleaching powder, poison, blasting etc.) destruction of breeders and juvenile fish
2. Financial constraints at both government and private sector
3. Inadequate documentation and conservation of fish genetic resources of Mamit district

# CHAPTER- IV. INSTITUTIONAL SUPPORT FOR AGRICULTURAL DEVELOPMENT OF THE DISTRICT

## CROPS

### 1. Department of agriculture:

The basic role, activities, functions and responsibilities of the department are.

1. Formulation and implementation of policies and programmes aimed at achieving rapid agricultural growth through optimum utilization of land, water, soil and plant resources.
2. Establishing farmer-department coordination in implementing and providing technological know-how to the farming community through agricultural extension services.
3. Undertaking all possible measures to ensure timely and adequate supply of quality inputs and services such as fertilizers, seeds, pesticides, agricultural implements, etc.
4. Motivating farmers to minimize the use of pesticides and to control the environmental population with the adoption of Integrated Pest Management.
5. Motivating farmers to diversify from traditional crops to commercial crops.
6. Monitoring soil health and testing of nutrient level of soil samples collected from farmers' fields within the district.
7. Educating farmers on soil and water conservation technologies through implementation of Watershed Projects.
8. Undertaking measures to provide agricultural credit, crop insurance and help the farmers in getting remunerative returns for their produce.
9. Conducting surveys for collection and maintenance of a wide range of statistical and economic data relating to agriculture, required for development planning.
10. Removal of rural poverty, Improvement of nutritional standards and quality of life of the rural people.

### 2. Krishi Vigyan Kendra (KVK):

KVK is a grass root level institution designed and devoted to impart need-based and skill-oriented vocational training to the practicing farmers, in-service

extension personnel and to those who wish to go in for self-employment through “learning by doing”. It aims at making the poor one good so as to raise the living conditions of the poorest of thepoor.

Krishi Vigyan Kendra (KVK), Mamit District, Lengpui was inaugurated by Hon’ble Home Minister of Mizoram, Shri. Tawnluia on 31<sup>st</sup> May’2008. KVK, Lengpui was inaugurated keeping in mind to improve the socio-economic condition of the farming community and to accelerate the agricultural production within Mamit district. Since the inauguration, Officers & staff of KVK, Lengpui moved to action to bring forth changes to the community of Mamit district. Different activities like on and off-campus trainings, farm demonstrations (on-farm trials & frontline demonstrations), animal health camps, detail survey of Mamit districts, other extension activities, etc had been taken up.

### **3. Agricultural Technology Management Agency (ATMA) :**

The ATMA at district level would be increasingly responsible for all the technology dissemination activities at the district level. It would have linkage with all the line departments, research organizations, non-governmental organizations and agencies associated with agricultural development in the district. Research and Extension units within the project districts such as ZRS or substations. KVKs and the key line Departments of Agriculture, Animal Husbandry, Horticulture and Fisheries etc. would become constituent members of ATMA. Each Research Extension(R-E) unit would retain its institutional identity and affiliation but programmes and procedures concerning district-wise R-E activities would be determined by ATMA Governing Board to be implemented by its Management Committee (MC).

#### **Aims and Objectives:**

The aims and objectives for which the ATMA is formed are:

1. To identify location specific needs of farming community for farming system based agricultural development.

2. To set up priorities for sustainable agricultural development with a Farming Systems Approach.
3. To draw plans for production based system activities to be undertaken by farmers/ultimate users.
4. To execute plans through line departments, training institutions, NGOs, farmers organizations and allied institutions.
5. To coordinate efforts being made by various line departments, NGOs, farmers organizations and allied institutions to strengthen research extension-farmers linkages in the district and to promote collaboration and coordination between various State funded technical departments.
6. To facilitate the empowerment of farmers/products through assistance for mobilization, organization into associations, cooperatives etc. for their increased participation in planning, marketing, technology dissemination and agro-processing etc.
7. To facilitate market interventions for value addition to farm produce.

#### **4. Lead Bank:**

The Lead Bank Scheme provides leadership in initiating, streamlining and accelerating the process of development of the respective district by enlisting the co-operation of other banks and by maintaining continuous liaison with Government and quasi Government agencies. The State bank of India functions as the lead bank in the district and presently, Mamit District is under the control of the Chief Manager, Lead Bank Office, Kolasib District, State Bank of India.

#### **5. Other banking institutions:**

Except State Bank of India, there is no Nationalised Bank operating in the District. However, Mizoram Rural Bank (MRS) , a cooperative financial institution, Government of Mizoram undertaking is operating in 6 different locations namely West Phaileng, Reiek, Rawpuichhip, Mamit, Kanhmun and Kawrthah villages and many schemes are being availed by the farmers through this Bank.

## **6. Farmers clubs and voluntary organizations:**

There are some voluntary organizations and farmers groups very active in the district with the aim of overall development of the farming community.

## **7. Polytechnic colleges and vocational higher secondary schools:**

There is no Polytechnic college in Mamit District but one vocational higher secondary school at Mamit.

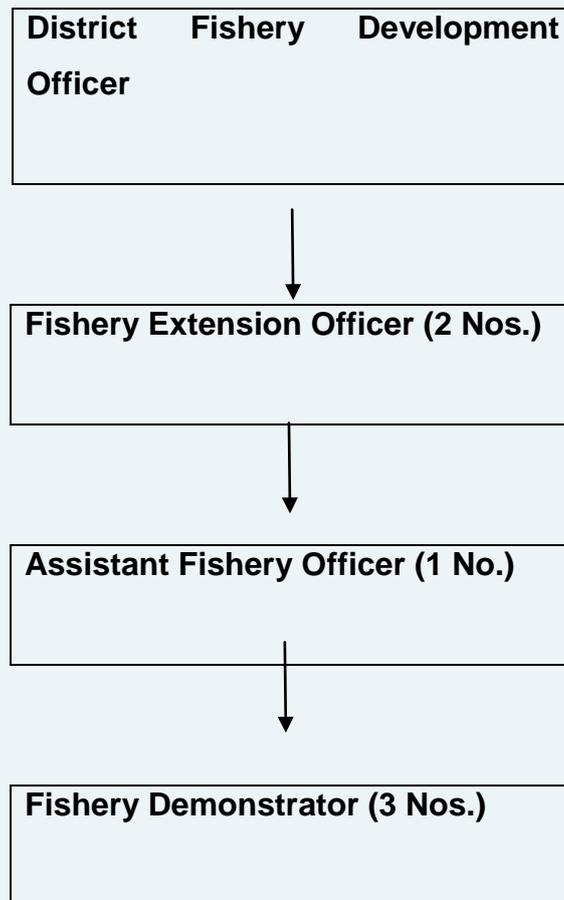
## **LIVESTOCK**

Data not available

## **FISHERIES**

### **1. Department of Fisheries:**

The Fisheries Department in Mizoram started setting up during the erstwhile Union Territory of Mizoram in 1972 which was functioning as a wing under Agriculture Department. As the time rolled by the Fisheries Department was trifurcated from the parent Department during the year 1993 and the development activities could accelerate its momentum.



**Fig: Organisation chart of fisheries department**

The Department of Fisheries is an important productive sector under the Government of Mizoram. The department implements all the development and management programmes envisaged by the Government in the fisheries sector. The Department has a major role to play in the economy of the State by improving the total production in the fisheries sector. In addition, the Department carries out a number of programmes and projects for the welfare of fisher folk.

### **Address for communication**

Director

Directorate of Fisheries

Aizawl, Mizoram

Phone: 0389-2327319

## CHAPTER- V. RESEARCH AND DEVELOPMENT ORGANIZATIONS RELEVANT TO DISTRICT'S AGRICULTURE

### Crops

Besides the efforts of KVK in the district, there are no specific research activities in the field of agriculture. Few pilot projects are taken up at Rulpuihlim for development of mandarin orange by the Horticulture department under Indo-Israel project on sweet orange.

### Livestock

List of Government organizations, NGOs and farmers organizations of the concerned district related to livestock may be included.

### Fisheries

#### Mizoram Fisheries Federation Limited (ZOFISFED LTD.):

ZOFISFED LTD. Is State Cooperative Fisheries Development and Marketing Federation registered under State Cooperative Act Vide No.A-1/98-99 dated 29<sup>th</sup> October, 1998. There are 6 Nos Elected Board of Management Members from the members of Primary Fisheries Cooperative Societies and 4 Nos Govt. Nominated Board of Directors for management of the Society.

### Objectives

- i. To facilitate, Co-ordinate, promote the fishing industry in the State through Cooperative and to ameliorate the economic conditions of the fish farmers.
- ii. To undertake, organize, promote and develop production, processing, storage and marketing of fish and products and manufacture and distribute machinery, implements and other inputs required by the fishing industry.
- iii. To undertake or promote on its own or on behalf of its member institution inter- state, intrastate trade and commerce and undertake wherever

necessary, sale, purchase, import, export and distribution of fish and fish products and other articles and goods from various sources for pursuing its business activities and to act as the agency or canalization of export and import and inter-state trade of fish and to facilitate these activities wherever necessary and to open Branches/Sub- Offices and appoint agents at any place within the State or outside with prior permission of the Registrar of Cooperatives Societies.

- iv. To undertake purchase, sale and supply of fish and fish projects, marketing and processing requisites, such as machinery, spare parts and other fisheries requisites.
- v. To act as an insurance agent and undertake all such work which is incidental to the same.
- vi. To take-up steps for development of the fisheries and pisciculture and to explore possibilities for removing unemployment among the people in Mizoram in general and for the members in particular.
- vii. To set up storage in plants and fishmeal plants and units for storing various commodities and goods by itself or in collaboration with any other agency in the State or outside.
- viii. To maintain transport units of its own in collaboration with any other 38ulfil38e38zat in Mizoram or outside for movement of goods on land, river, air etc.
- ix. To subscribe to the share capital of other cooperative institutions as well as other Public, Joint and Private sector enterprises if and when considered necessary for fulfilling the objectives of the ZOFISFED.
- x. To take up works relating to improvement of fish ponds and nurseries to develop Pisciculture in development sectors and also riverine fishing in capture sector in coordination with concerned authorities, to arrange for the training of employees and of the employees of the affiliated Societies.
- xi. To establish processing units for the processing of fish and fish products.
- xii. To undertake grading, purchasing and 38ulfil38e38zation of fish and fish products.
- xiii. To acquire, take on lease or hire lands, buildings, fixture and vehicles and to sell, give on lease or hire to them for the business of ZOFISFED.
- xiv. To advance loans to its members and other Cooperative institutions on this security of goods and otherwise.
- xv. To 38ulfil38e technical training course for the office-bearers and employees.

- xvi. To raise Funds by way of borrowings from Bank, National Cooperative Development Corporation, and other Financial institution for purpose of business operation.

**Address for communication**

Chairman

ZOFISHFED LTD.

Zarkawt, Aizawl,

Mizoram

## CHAPTER- VI. PLANS AND SCHEMES FOR PROMOTION OF AGRICULTURE

### CROPS

As per the plans laid out by the government.

### LIVESTOCK

As per the plans laid out by the government.

### FISHERIES

#### Plans and Schemes of Fisheries Department

At present 7 schemes is running under the District Fishery Development Office, Mamit to upgrade the fisheries sector in the district. A brief description of the schemes undertaken in the district is given below:

#### 1. Fish Farmers Development Agency (CSS)

Fish Farmers Development Agency (FFDA) in Mizoram is operating at district level throughout the state. It is providing a package of technical, financial and extension support to the fish farmers. Under the scheme assistance in the form of subsidy is given to fish farmers for a number of developmental activities, such as, construction of new ponds, reclamation/renovation of ponds and tanks, inputs for first year fish culture (fish seed, feed, manures, fertilizers etc.), running water fish culture, integrated fish farming, fish seed hatcheries, fish feed units, training etc. The Centre and the states share expenditure on the developmental activities on the basis of 75:25. The main objectives of the FFDA Programme are

1. To utilize the potential inland resources for fish production.
2. To meet the demand of protein rich diet by augmenting production of table fish.
3. To generate employment opportunities for rural educated unemployed youths.
4. To generate income to improve the livelihood and transform the socio-economic condition of the fisher folk.

## **2. National Fisheries Development Board Programme (CSS)**

The NFDB programme covers the whole district. It is a new concept in the development of fisheries. The scheme started during the current fiscal year (2008-09). The main objective of this programme is to augment fish production in the state through fish farming by expansion/ renovation of water areas, training etc. The components of assistance under this programme are elucidated below:

- i. Intensive aquaculture in existing ponds and tanks
- ii. Intensive aquaculture in new ponds and tanks
- iii. Inputs
- iv. Establishment of hatcheries for production of fish seeds
- v. Establishment of fish seed rearing units for production of fish fingerlings
- vi. Establishment of fish seed rearing units for production of fish fingerlings
- vii. Domestic marketing
- viii. Training and demonstration

## **3. Fish Seed Production cum Farming**

This project is undergoing in the departmental farms at Lengpui, Zowbawk and Tamdil. The main objective of this programme is to increase the availability of cultivable fish seeds and production of table fish in the district. Under this programme fish seeds are produced in the said areas and distributed to the fish farmers.

## **4. Information Extension and Training (CSS)**

The main objective of the programme is to disseminate modern method of fish farming technology to the farmers. It is being implemented in the entire district. The scheme is implemented as per pattern of assistance of Govt. of India for various components for which expenditure is shared on 80:20 basis by the center and state.

## 5. Development of Riverine Fisheries (CSS)

This programme is implemented in the entire state for increasing the fish production from the riverine resources of the district. The rivers of the district are mainly fast flowing and seasonal in nature. Under this programme it is tried to evolve newer types of craft and gears to exploit the riverine resources and at the same time to see the efficiency of the existing craft and gears. The expenditure in the scheme will be shared on 75:25 basis by the center and state.

## 6. Development of Cold Water Fisheries (CSS)

The middle and high altitude region of the district are suitable for cold water fisheries. The most important cold water fish species available in the district are Common Carp and *Mahseer*. Besides this it is tried to document the availability of other important cold water fishes and prospect of their cultivation in the area. Under this programme it is tried to augment the fish production by increasing the production of cold water fishes in the district. The expenditure for the programme is shared on 75:25 basis by the center and state.

## 7. Marketing

Fish is a perishable commodity and its market price depends on its physical condition. So, proper marketing facility is of utmost importance for the farmers to get better remunerative price of their production. Initially the scheme is implemented under the state plan outlay and the central assistance will be also availed for infrastructure development from time to time. The main objective of this programme is to improve the fishery marketing network in the state by providing marketing infrastructure facilities to the fish farmers.

Apart from these, the Fisheries Department is under taking various programmes under Rashtriya Krishi Vikas Yojna (RKVY). Under RKVY it is propose to undertake strategic development of the fisheries sector in line with the strategic plan and resorting to the activities as envisaged in the enclose format for the state and including Mamit district during 12th Five Year Plan.

## **District Plan of Fishery:**

Fishery development is still in nascent stage in Aizawl district in comparison with its neighboring district of Kolasib. Fish seed being the vital input for development of fisheries, there is major set back to gather required momentum towards fishery development. The total water spread area (WSA) in departmental tanks is found to be only 5.5 Ha. as reported by the District Fishery Officer, Aizawl. However, it does not include the private ponds and community tanks, river and riverine sector.

The fisheries sector plays a vital role towards production of food protein from Aquatic base teleostom (fishes) in the state of Mizoram. Besides providing livelihood and uplifting socio-economic status of the poor farmers connected with Agriculture and Allied Sector since a long time.

## **Plans and schemes under ZOFISFED LTD.**

### **1. PRODUCTION OF FISH SEED AND FISH FLESH IN GOVT. FARM**

Department of Fisheries, Govt. of Mizoram has handed over 8 (Eight) Demonstration cum Fish Seed Farms to ZOFISFED during 2008 and since then Farms are maintained by ZOFISFED.

Out of Eight Fish Seed Farm only 3 Fish Seed Farm are utilised for production of Fish Seed and Fish Flash and remaining 5 Fish Farms has to be improved for proper demonstration and Fish Seed production.

- A. Thenzawl, Saikhawthlir and Zawlnuam Fish Seed Farms are under utilisation by ZOFISFED for production of Fish Seed and Fish flash. These farms are also being renovated and extended from the fund released by Govt. of India under CSS Scheme Project Proposal for Construction, Renovation, Extension for remodelling of existing fish seed farm in Mizoram during 2014-15.
- B. Darlak, Chemphai, Rungdil, Tawipui and Phairuang Fish Seed and Demonstration farm which was damaged due to heavy rain during 1995 are being taken for renovation and construction from the fund sanction by Govt. of India under CSS Scheme Project Proposal for Construction, Renovation, Extension for remodelling of existing fish seed farm in Mizoram during 2014-15.

## **POST HARVEST INFRASTRUCTURE DEVELOPMENT SCHEME FOR FISHERIES DEVELOPMENT IN MIZORAM (CSS)**

Govt. of India has sanctioned the following infrastructure facilities under development of Fisheries Post Harvest Infrastructure facilities in the State of Mizoram under the Centrally Sponsored Scheme on Development of Marine Fisheries, Infrastructure and Post Harvest operations vide letter No.31012-06/2012-Fy (P&M) dt.28th March, 2012.

- a. Development of Fish Processing, Preservation and storage Infrastructure like construction of Ice plants at different 10 places.
- b. Procurement of Fish transport infrastructure facilities like Refrigerated trucks of 3 ton Capacity 5Nos, Insulated truck for 3 ton Capacity 5Nos., Autorickshaw with Ice Box 10Nos, Motor Cycle with Ice Box 10 Nos. and Construction and Establishment of Fish Vending Kiosk with accessories 20 Nos.

Total amount sanction for above Project is 301.25 lakhs and so far Rs.73.60653 lakhs has been utilised for construction of 3 Ice Plants, Procurement of 2 Refrigerated truck, 2 Autorickshaw, and 2 motor cycles for preservation and marketing purpose. Rs.25 lakhs released by Govt. of India is still in pipe line to release to ZOFISFED. It is proposed to utilise for construction of one number Ice Plant at Mamit and construction of 4 Nos. of Vending Kiosk at Aizawl for marketing purpose.

### **3. PADDY-CUM-FISH CULTURE SCHEME (CSS)**

Integrated Paddy-cum-Fish Culture Scheme was Sanctioned by Govt. of India amounting to Rs.270 lakhs and ZOFISFED implemented the Scheme covering 800 Ha WRC area involving 781 beneficiaries of 16 Primary Fishery Cooperative Societies under the scheme beneficiaries were provided for Land Development for raising bunds of WRC including digging of trenches, providing lime, manures, fish seed, fish feed and also training was conducted for awareness. The Scheme is already completed during 2013.

#### **4. SCHEME FOR WELFARE OF FISHERMAN-SAVING -CUM RELIEF SCHEME FOR FISHERMAN OF MIZORAM STATE**

Under the Scheme Rs.161.10 lakhs were sanctioned and released by Govt. of India for distribution of Rs.900/- To each fisherman for the period of 2012-13 covering 17,900 fishermen. The amount is still in pipe line for release to ZOFISFED by Govt. of Mizoram.

#### **PROJECT PROPOSAL UNDER ZOFISFED Ltd.**

##### **a. Aquaculture Development through Integrated approach**

After the introduction of a new component viz Integrated approach of aquaculture system which seeks to incorporate the support and forward linkages such as (i) Hatchery (ii) Nursery (iii) Rearing (iv) Ponds (v) Inputs (vi) Feed Mill (vii) Infrastructure and Marketing and to expand the coverage of the scheme to all states wherever feasible. For better growth rate and development of fisheries sector, there is a need for integration of various production oriented activities such as production of quality fish seeds feed, availability of technology, post harvest and processing and marketing facilities in close vicinity where commercial aquaculture is undertaken. The concept of integration of various essential activities encourages people interested in fisheries development besides making it easy for accessing various inputs for aquaculture, post harvest processing, value addition and marketing. Cluster approach by forming groups among entrepreneurs and farmers be encouraged to adopt good and advanced aquaculture practice in hatchery and farming by entrepreneurs of fisheries of Cooperative sector affiliated with ZOFISFED Ltd, Mizoram, Aizawl.

Aquaculture Development through Integrated approach under RKVY (NMPS) scheme a cluster area of 40Ha will be taken within Darlak, Zawlnuam and Thinghlun Primary Fisheries Cooperative Society under the supervision of ZOFISFED Ltd, Mizoram in Cooperative sector. To fulfill the objective the following plans have been planned for implementation in meaningful way to meet the target of integrated aquaculture through Fisheries Cooperative Societies.

1. Construction of one no. Hatchery 10 million fry capacity and production of spawn for raising in nursery ponds up to fry stage.

2. Construction of Nursery pond, Rearing ponds, stocking ponds in 10 Ha area at 3 places and also to provide inputs for rearing of fingerlings to meet the requirement of quality fish seed.
3. Constructions of ponds for integrated fish farming with Pig, Poultry and Cattle integration and provide inputs for fish production to increase per capita consumption.
4. Establishment and construction of feed mills to meet the requirement of feed of cluster area as well as other area for production of Fish.
5. Establishment of Infrastructure like cold room, Ice Plant, Insulated Van and Marketing outlets at Mamit for sale of Hygienic Table Fish for better economic returns.

#### **b. Location of the Project :**

Project will be taken in Mamit District covering Primary Fisheries Cooperative Society at Darlak, Zawlnuam and Thinghlun under the Supervision of ZOFISFED Ltd as these Societies are affiliated with ZOFISFED Ltd in cluster area of 40 Ha and also construction of Nurseries and rearing ponds at above Society area covering 10Ha of area.

#### **Proposed Strategy:**

Activities and Financial implication during 12th Five Year Plan period under A<sup>qu</sup>a-culture Development through integrated approach under RKVY (NMPS) Scheme under – Cooperative Sector (ZOFISFED Ltd.) Mizoram are enclosed for reference.

#### **Development Plan of ZOFISFED**

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Out of Eight Fish Seed Farm only 3 Fish Seed Farm are utilised for production of Fish Seed and Fish Flash and remaining 5 Fish Farms has to be improved for proper demonstration and Fish Seed production.

## CHAPTER- VII. FARM MACHINERY SUITABLE TO THE DISTRICT

1. Tractor with Rotavator : These can be used for tilling and puddling the soil in WRC areas.
2. Power tiller: This machine can be used for land preparation in WRC areas as well as in upland terraces.
3. Paddy thresher
4. Wooden Desi-Plough
5. Spade and shovel: Use in variety of work in the farm
6. Tuthlawhte : It is a smaller hoe used for weeding in jhum areas.
7. Chempui : A hand dao is used for cutting trees and shrubs and even used for weeding.
8. Em (traditional basket): It is used for carrying firewood, paddy, vegetables, etc. from the farms.
9. Motor operated steel blade/ nylon whip grass cutter: A very efficient tool for weeding in Mamit District.

## CHAPTER- VIII. ANNEXURE

### 1. Telephone directory of important agriculture and related departments /

offices in Mamit KVK District

Sl. No.	Designation	Address	Office Telephone Number
1	Deputy Commissioner	Mamit	0389-2565220
2	District Agriculture Officer & ATMA Project Director	Mamit	0389-2565465
3	District Horticultural Officer	Tuidam	0389- 2565308
4	District Fishery Development Officer	Mamit	0389-2565710
5	District Veterinary Officer	Mamit	0389-2565225
6	District officer, soil & water conservation	Mamit	0389-2323357
7	Director of Agriculture (R&E)	Aizawl, Mizoram	0389-2319025
8	Programme Coordinator, KVK, Mamit District	KVK, Lengpui	0389-2573352, 2573337

### Departmental farms:

Sl no	Departments	Farm name	Location
1	Fishery	Laldenga Fish Farm	Lengpui
2	Forestry	Mizoram Bamboo Centre	Lengpui
3	Forestry	Dampa Tiger Reserve	South-west of Mamit district
	Horticulture	Demonstration Farm	Zawlnuam
4	Horticulture	Demonstration Farm	Tuidam
	Sericulture	Mulberry silk worm demonstration farm	Mamit
5	Sericulture	Sericulture farm	Lengpui

### Soil Testing Laboratories :

At present there is no established Soil Testing Laboratory in Mamit district. Few rapid soil testing kits have been issued and utilised by the Agriculture Department. Till date, soil samples collected are examined in the Directorate of Agriculture (Crop Husbandry), Government of Mizoram, Aizawl. Soil testing vans have also been employed in critical areas of Mamit district since 2009.

Mamit district KVK has a limited facility to test soil samples (Soil Organic carbon and pH) and about 70 samples were tested till date. Rapid testing kit is available for about 120 samples. Full fledge soil testing laboratory is in the process of establishment and is expected to be completed by December 2015.

### AGMARK Grading Laboratories :

AGMARK Grading laboratory for different crops and produces is not present in Mamit district.

### . Livestock farms:

As per table-10







## Staff information

Sr. No	Name of Staff	Designation	Area & Discipline of Work	CORRECT & Valid Contact Number	Email address
1	Dr. Samuel Lalliansanga	Sr. Scientist & Head	Plant Pathology	9436147625	samuelpachau@gmail.com
2	Dr. C. Rinawma	Scientist	Animal Science	9436140777	dr_rinawma@lycos.com
3	Dr. Rohit Shukla	Scientist	Horticulture	8794148738	roshu_hort@rediffmail.com
4	Lalrinsangi	Scientist	Agroforestry	9436151851	rsi.zote@gmail.com
5	Vanlalhruaia	Scientist	Plant Protection	9436365247	hruaia2@rediffmail.com
6	Henry Saplalrinliana	Scientist	Soil Science	9436190701	henry_sapa@yahoo.com
7	Md Mintul Ali	Scientist	Fishery	9436554409	mintuamin2003@yahoo.in
8	Lalrinchhana Sailo	Assistant	Administration	9862340535	tateasailo35@gmail.com
9	C. Ramdinsanga	Programme Assistant	Computer	9863088264	lusei4mz@gmail.com
10	K.Zohminglianai	Programme Assistant	Farm Manager	9862538057	mimizohmingi@gmail.com
11	Biakhlupuii Chenkual	Programme Assistant	Home Science	9436195860	chenkual48@gmail.com
12	B.Laldinpuii	Jr. Stenocum-Computer Operator		8257093425	madinikvk@gmail.com
13	Lalchungnunga	Driver-cum-Mechanic		8575951683	
14	Lalchuilova	Driver-cum-Mechanic		9774239293	
15	Lallawmkima	Supporting Staff		8731878204	
16	P.C.Lalthanpuii	Supporting Staff		8974844397	



**Group photo of staff,kvk Mamit**

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