



Under the nation wide project of climate change risk assessment, supported by the Department of Science and Technology, Government of India and the Swiss Agency for Development and Cooperation, Embassy of Switzerland, a collaboration of organizations and institutions such as Indian Institute of Technology(IIT)- Mandi, Indian Institute of Technology(IIT)-Guwahati, CSTEP Bengaluru and Indian Institute of Science - Bengaluru together have been working on developing a Common Framework, Methodology and Guidelines for Climate Change Risk Assessment.

They have been building the capacity of DST's NMSHE State Climate Change Cells in India since 2017 and have completed compilation of Vulnerability Assessment of different states in India where SCCCs are conducting assessment of their own state.

Following this activity, they have organized hands on training to carry out climate risk assessment for PAN India. The DST's NMSHE Mizoram State Climate Change Cell under Mizoram Science, Technology & Innovation Council (MISTIC) also participated through the whole series and recently undergone risk assessment training as well as climate modelling (current and future projections) during October 2022 at IIT-Guwahati and March 2023 at Bengaluru.

The Mizoram SCCC have conducted Mizoram state specific risk assessment and reports are sent to IIT Mandi on the first week of April 2023 for compilation with all the states in India.



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## OBITUARY



**Dr. JAMES LALNUNZIRA HRAHSEL**  
(3.6.1983 – 5.2.2023)

**With profound grief we inform of the sad demise of our colleague Dr. James Lalnunzira Hrahse, Project Scientist-II, State Climate Change Cell on 5<sup>th</sup> February 2023.**

**Dr. James Lalnunzira Hrahse was born on 3<sup>rd</sup> June 1983 at Halfong, Assam. He completed his schooling from Assam, B.Sc (Forestry) from NERIST (Arunachal Pradesh) and M.Sc as well as Ph. D in Environmental Science from Mizoram University. He published several research papers, presented several papers and acted as a resource person in seminars, symposiums and workshops. He attended various capacity building programmes and workshops, the most recent being the Capacity Building Workshop on Risk Assessment with respect to Climate Change for the states in the Indian Himalayan Region (IHR) during 9-10, October 2022 at IIT Guwahati. He was also an active member in Biodiversity & Nature Conservation Network (BIOCON).**

**He joined State Climate Change Cell, Mizoram Science Technology and Innovation Council (MISTIC) in the year 2015 and held the post of Project Scientist-II till his demise. He was a man of few words but contributed greatly to the field of science especially in climate change. He was a brilliant man and his areas of expertise are a great loss to MISTIC as well as to the scientific community.**



## CLIMATE CHANGE AND MITIGATION STRATEGIES UNDER HORTICULTURE DEPARTMENT

Studies around the world reported that during 1900-2020, the world's surface air temperature increased an average of 1.1°C due to burning of fossil fuels and deforestation, creating a negative impact in most agriculture/ horticulture crops and its production. As mitigation strategies for the negative impact of climate change, Department of Horticulture, Government of Mizoram has taken up various steps in Bamboo plantation, planting of off-season crops, fruit trees, practicing terrace farming, contour farming promote protected cultivation.

### Bamboo plantation

Bamboo plantation is carried out in 10 districts of Mizoram and area expansion is highly prioritized. The area has also increased by 1089 sq km from 2019-2021 data of India State of Forest Report (2021). Bamboo plantation helps stabilize slopes, prevent soil erosion, absorbs carbon dioxide quickly thus helps in mitigating global warming. Furniture, flooring, handicrafts, making normal and fine quality paper, jewellery, bamboo plates etc., have also been produced from bamboo, generating income and employment besides contributing efficiently to the climate change mitigation strategies.

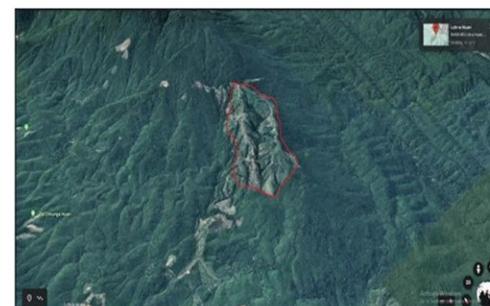


Fig 1a. Bamboo Cluster at Saiphah Zau, Hmunpui Village



Fig 1b. Bamboo Plantation at Saiphah Zau, Hmunpui Village

### Planting of Off-Season Vegetable Crops



Fig. 2a. Off- Season Cabbage grown in Hmunmeltha, Champhai District



Fig.2b. Off- Season Tomato grown in Tuipui, Champhai District

Due to climate crisis there is a decline in farmers income, to solve the problem Department of Horticulture instruct farmers to grow off-season horticulture crops to ensure food scarcity and income throughout the year. To achieve this, the Department introduced climate tolerant cabbage variety i.e., Ryozeke and also three varieties of tomato which are multiple resistant varieties viz. Arka Rakshak, Arka Samrat and Arka Abhed.

### Planting of Fruit Trees



Fig. 3a. Cultivation of M. Orange in Khawhri, Hnahthial District



Fig. 3b. Cultivation of Citrus in Lunglei District

Tree planting is one of the simplest and most effective ways of mitigating the negative impact of climate change. The negative green house gases in the atmosphere are absorbed through cultivation of fruit trees like M. Orange, Arecanut, Gooseberry, Citrus, mango, etc. under Mission for Integrated Development of Horticulture (MIDH) schemes taken up by the Department.

## Adoption of Systematic Farming System

Under the Department, systemic farming has been practiced by adoption of systemic spacing, terracing and adopting the latest production packages of crops. This ensure surface run-off soil erosion, wastage of farm inputs and maximize production and improved productivity.



Fig. 4a. Cultivation of Tomato in Mualpheng, Saitual District



Fig. 4b. Cultivation of Dragon Fruit in Khawhri, Hnahthial District

## Protected Cultivation- Green House



Fig. 5a. ). Infrastructure for Protected Cultivation at Lunglei District



Fig. 5b. Insect proved shade net against stink bug for Citrus Tree

Protected Cultivation is one of the prioritized area undertaken by the Department in increasing production, off-season vegetable/ fruit production without deteriorating the quality of crops grown. Under Protected Cultivation, the crops escaped the harsh condition of unprecedented rainfall, fluctuation in temperature, etc. which are detrimental for the plant growth and development.

Protected cultivation also promotes permanent farming system thereby indirectly reducing the practice of shifting cultivation which is one of the most important factor contributing to climate change. As such, the Department with an aim to promote permanent farming, year round crop production and quality improvement and also towards contributing to the mitigation strategies of climate change highly advocated protected cultivation. In doing this, Green houses, Shade net houses, crop cover, etc. has been allotted to farmers in all the 11 districts of Mizoram.

## Climate Change and Human Health under NPCCHH, Mizoram.

National Program on Climate Change and Human Health (NPCCHH) was launched by MoHFW, with an objective to create awareness, capacity building, health sector preparedness and response and partnerships related activities on the climate sensitive health issues in the country since 2019. The Programme has expanded in all the State/UTs and activities are conducted in the form of training on Climate Sensitive Diseases, Surveillance on Acute Respiratory illnesses and Heat related illnesses, generation & dissemination of IEC on Air Pollution & Heat and its impacts on health.

Following the nation wide programme, a Sensitization Workshop of State Programme Officers (S-POs)/State Nodal Officers (SNOs) on Climate Change and Human Health was organised by NPCCHH Mizoram on 23<sup>rd</sup> March, 2023 at the Office Chamber of Mission Director, National Health Mission (NHM), Dintnar, Aizawl.



## Swachhotsav 2023: A 3-week Women led Swachhata Campaign launched by MoHUA

UD&PA Department, Govt. of Mizoram



On the eve of International Women's Day 2023, Union Minister Shri Hardeep Singh Puri launched the first of its kind Swachhotsav 2023, a 3-week long women led Swachhata campaign, under Swachh Bharat Mission Urban 2.0. the campaign aims to recognize and celebrate the transition from women in sanitation to women-led sanitation. A series of events and activities have been organized across cities to celebrate women who will provide leadership in making the mission of garbage free cities (GFC) a success.

One of the activities under Swachhotsav being Swachhata Yatra- a joint initiative between SBM-U 2.0 and DAY-NLUM to promote inter-state peer learning to promote capacity building, cross learning, & sharing of best practices to scale up waste management and 'waste to wealth' initiatives among women SHGs. To participate in this campaign, 7 (seven) SHGs/ALF members aka Swachhata Doots from different towns of Mizoram were flagged off by Smt. Chuauzikpuii, Councillor, Aizawl Municipal Corporation on 20th March, 2023 to visit Ambikapur Municipal Corporation in Chhattisgarh.

Following are some interesting Best practices of Ambikapur Municipal Corporation (AMC) observed and shared by Swachhata Doots that are practicable for a small state like Mizoram to adopt and make a change for a better future:-

**1. Cow Dung Paint:** Cow dungs are collected and cleaned so that no garbage or waste materials are in it. After cleaning, it is left in the open for a day.

Later on, a thin paste is prepared from the cow dung by putting it in a machine. Equal amounts of water and cow dung are put in the machine for the paste preparation. After making a paste, it is transferred to another machine,



where it is processed and the fibre is separated from the paste. This paste is further transferred into a machine where it is turned into fine powder and further sent to the bleaching tank. Here it is heated up to 100 degrees and hydrogen peroxide and caustic soda are added to it, which turns its colour from brown to white and removes all its impurities. Different coloured paints are prepared by adding colours in it and are sold for Rs. 225 per litres.

**2. Dumping ground to Sanitary Park:** The legacy waste on the dumpsite was fully stabilized. For aeration, it was moved in six-inch layers to the boundary of the site, and inoculated with a natural bio-culture of cow dung, cow urine and jaggery, before adding and inoculating another layer, up to a total height of nine meters. The boundary wall was thus replaced by a 900 metre long bund with a 15 meter wide base, 7.5 meter wide top and stable 45 degrees slope. The area was seeded with 100-kg of ragi seeds mixed with 100 kg sand, then fully covered with porous jute netting.

This prevented birds from eating the seeds and retained the moisture from sprinklers. The heap has naturally shrunk to half of its original height, and



is a wonderful green hillock of dense self seeded ragi grass covering an area of 1.2 hectares. The remaining area is now a popular Sunday picnic park that replaced a stinking landmark beside the highway into town.

**3. Cow dung Logs:** Cow dungs are sun dried for 5 days to eliminate every trace of water from it. It is then poured into the inlet for being pressed into a cylindrical wooded log-like structure. Depending on the requirement, adjustments can be made on the size and shape of the log coming out of the machine.

Once extruded out of the machine, the cow dung logs are then kept out to dry under the sun to eliminate any remaining moisture or dour. The drying process ensures strength and sturdiness of the logs. These logs are used in place of woods to reduce deforestation.

