
SUSTAINABLE AGRICULTURE DEVELOPMENT IN MIZORAM:

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Abstract

The hill slopes in Mizoram is much steeper as compared to other hill states in the North East, thereby causing constraints to cultivation of crops. The physiography of Mizoram can be broadly divided into Hills, Valleys and Flat lands. Agriculture is the mainstay of the people of Mizoram. About 70% of the people depend on Agriculture. The primitive method of shifting cultivation known as 'jhuming' is still practised in Mizoram. Due to the ever-increasing population with no simultaneous increase in the available land it has become impossible to have a long cycle. Jhum is cut for the ensuing year and the following year it has to be abandoned and fresh areas are cut for the next year's cultivation. In jhum only annual and seasonal crops are raised as it is shifted every year. A number of agricultural development programmes have been implemented in the State in an attempt to attain self-sufficiency in food grains and other requirements of day-to-day life connected with agricultural practices.

Keywords: agriculture, development, jhumming, new land use.

I Introduction:

Mizoram is a hilly terrain lying in the easternmost corner of India, with a geographical area of 21,087 sq. km. out of which 5,509 sq. km is Reserved Forest Area which account to 26.23 % of the area¹. The broken hills run from North to South. The altitude ranges from 21 meters at Tlabung to 2,175 meters at Phawngpui (Blue Mountain)². There are innumerable rivers, streams, brooks and waterfalls, which flow to the brim in monsoon. Mizoram enjoys a pleasant climate and the temperature ranges from 8°C to 34°C. The climate is characterised by monsoon rains from May to October, winter from December to the end of February, and summer without rainfall, except few showers, from first part of March to the end of April.³ The annual rainfall ranging from 2,000 -2,500mm is fairly heavy. The average annual rainfall was 2,546 mm; it is also unevenly distributed and the intensity at times is so high that it causes landslides and landslips. During monsoon period, heavy rainfall occurs, and the humidity is fairly high, with an approximate of 60%. The rivers are in spate and landslides disrupt the road communication. The hill slopes in Mizoram is much steeper as compared to other hill states in the North East, thereby causing constraints to cultivation of crops.

¹ Directorate of Economics and Statistics, Government of Mizoram, Statistical Handbook, 2004, p.1

² Department of Agriculture, Government of Mizoram Agricultural Handbook of Mizoram, p.4

³ R. Thansanga , Agriculture in Mizoram, p.1

The tropical forest of Mizoram abounds in a wide variety of flora and fauna. The thick bamboo grooves strewn with wild plantains dominate the lower altitude slowly giving way to dense woods festooned with creepers and vines as the hills rise higher. The physiography of Mizoram can be broadly divided into Hills, Valleys and Flat lands. Hills consisting of high hills (above 1,300m above MSL), medium hills (between 500m to 1,300m above MSL) and low hills (below 500m above MSL).⁴

Agriculture is the mainstay of the people of Mizoram. About 70% of the people depend on Agriculture.⁵ Important crops grown are paddy, ginger, banana, pineapple, sugarcane, tung, coffee and vegetables. There are no major industries in the state but about 3087 small scale and cottage industries of which bakery, tailoring, knitting, handloom, furniture, rice mill are common.⁶ There are 89,454 cultivator families within the State, which means 57.85 % of the population are cultivators (as of 2003-2004).

II. Agricultural Practice in Mizoram.

Though an agricultural state, the primitive method of shifting cultivation known as 'jhuming' is still practised in Mizoram. Jhuming is called 'the slash and burn method' of cultivation for crop production. In the pre-independence days the jhum cycle was 15 years, whereas at present it has narrowed down to 5-10 years.⁷ Due to the ever-increasing population with no simultaneous increase in the available land it has become impossible to have a long cycle. Jhum is cut for the ensuing year and the following year it has to be abandoned and fresh areas are cut for the next year's cultivation. In jhum only annual and seasonal crops are raised as it is shifted every year.

Till the grouping of the villages in 1967, each village had a village-reserved forest of about 2/3 kilometres in diameter around it for protection from fire, collection of building materials and fuels etc. The area beyond this was open for jhuming. The average jhum land is estimated at 1 to 3 hectares.⁸

For preparation of jhum the natural vegetation in the demarcated areas-trees, bamboos, shrubs and weeds are cleared by cutting, usually with the help of axes and daos. Tree trunks and bamboo clumps are cut as low as possible, almost to the ground level so as to ensure the consummate burning of the felled tree trunks, bamboos, twigs and leaves. In the past it was calculated that 10-12 men-days were sufficient to cut one acre (0.40 hectares) of tree forests and 6-8 men days for bamboo forests.⁹

While men folks are the main force to cut thick forests for jhuming, womenfolk are also not spared, especially the widows as circumstances compelled them. The successive jhum activity consists of cutting and felling of trees, bamboos etc., burning, dribbling of paddy seeds, weeding, harvesting, threshing and transportation to the villages. Jhum cutting starts in the early part of September and is completed in

⁴ Department of Agriculture, Government of Mizoram Agriculture Handbook, p.26

⁵ M.S.Swaminathan Research Foundation, Blue Print for Sustainable Agricultural and Rural Development, p.2

⁶ ibid, p.6

⁷ R.Thansanga, Article on Jhumming in Mizoram, p.1

⁸ Director of Art & Culture, Education and Human Resources Department, Government of Mizoram Mizoram District Gazeteers, p.104

⁹ R.Thansanga, op cit . P.2

mid-November in the eastern and southern belts of Mizoram, while it is done from early January to the end of February in the North and North West. Different timings are observed in view of the relative duration required for drying of the felled trees and bamboos. Being cooler in climate, the eastern and southern belt require longer periods for exposure to the sun to dry for complete burning.

The burning of Jhum normally takes place before 15th March, when the felled trees, branches, twigs, bamboos and leaves remain dry. These days, broad guidelines are issued by the Local Administration Department of the State Government fixing a deadline for burning jhum, which is normally fixed at the 15th March, well before the onset of South West monsoon rains, which may cause the process of Jhum burning abortive. The order of the Local Administration Department is carried out by the Village Councils in the entire Mizoram. The timing is decided by the movement of clouds and downpour of rain. The critical point is that there should be no rain just before burning.¹⁰

After burning the plots of land are called 'Kangvar' as white potash appears on the surface. The next step is to remove the left over ballies and unburnt debris lying on the plot by stacking and re-burning it known as 'Mangkhawh'. Thus, the plot of land is prepared and ready for sowing.

Sowing of paddy seeds is done by dibbling with the help of a small hand hoe at appropriate intervals. Mixed cropping is practised in jhum cultivation. The spacing from crop to crop is decided on the spot by thumb rule.

The Mizo traditional paddy seed sowing is done together with the neighbours following the system of 'Lawmrui', which means joining hands to sow seeds so as to finish in a few days time. Ten to twelve persons can approximately sow paddy seeds in one-acre plot in a day. The traditional Mizo farmer usually go by the date of 'Good Friday' for sowing paddy seeds, as it always coincides with the full moon night around which it was found that the insect pests are keeping lull and inactive

There are seeds to be sown before and after the first shower of monsoon rain. Single multiple cropping is practised in jhum and double cropping is not prevalent for want of sufficient moisture for the second crop. This has necessitated a search for a system of cropping twice a year, which would involve different varieties of seeds requiring lesser quantity of moisture.

Usually three to four weedings, that is, clearing of the undergrowth of weeds, are done in one year from the time of sowing the paddy seeds to harvesting. By this process all the noxious weeds are removed with the help of small hand hoes by the womenfolk and curved daos by the men. The first weeding is done after a month of dibbling paddy seeds which is sometime in the first part of May. Second weeding is done in June, third in July/August and last weeding in early part of September. The weeds, which harbour harmful insects should be removed by hand and stacked in a safe place. While cutting off the weeds the soil around paddy tillers should be mulched to preserve moisture. Care should be taken not to injure the crop during weeding operations. Weeds interfering with the young crops should be pulled out by hand scrupulously with the roots intact.

¹⁰R.Thansanga, op cit, p.3

With winter setting in comes the harvesting season in late November and December. The paddy ears have ripened with full-grown grains. During the harvest season, if the Jhum is far from the village all the grownups would move to the jhum for work. Two or more families camp together from one plot to another. They rise at dawn to work and come back to the jhum huts at dusk to retire.

Harvesting is normally done by cutting the paddy with the dao or sickle. The yield is calculated at about 9 -15 quintals of paddy per acre (0.40 hectare).¹¹ While cutting the ears are thrown into the cone shaped baskets weaved from bamboo (em-pai), which are strapped onto a persons back. The paddy is carried home in two or more stages by storing in successive temporary huts called 'Chhekin'. On occasions when the location of the jhums are too far from the village, a subsidiary jhum called 'Leipui' is resorted to near the village where the principal subsidiary food crops like maize, arum, sweet potato and other vegetables of daily necessity are grown. The rice grains collected from the plot are heaped up in one place, from which it is transported with a larger bamboo basket called 'tlam', by the stronger men-folk to the jhum hut for threshing. There are two ways of threshing paddy among the Mizo, one is on the growing land 'Hruih' where the paddy grain is removed from the stalk either by beating with a stick or by beating the paddy stalk bundle themselves, after the sheaves are left to dry in the fields for some days. Another is a structure in open space 'Fasuar'. The 'Fasuar' is a platform made of bamboo with rough bamboo mat flooring with provisions that the paddy grains can pass down, six to eight feet high, for the purpose of separating the grains from the ear/straws. This is done by stamping over it with the swift movement of the feet till the grains are separated from the straw. The grains drop and fall onto the floor beneath in a pyramidal shape, the lightweight husk is blown away by the wind and the grain gets collected underneath, while the chopped husk and straw are thrown beyond the thrashing floor. From the threshing floor the collected grains are measured in tins (empty kerosene oil tin) and stored in a temporary round shaped barn - 'zem' made of bamboo. This temporary storage is for onward transportation to their homes.

¹¹R.Thansanga, op cit ,p.6



“Fasuar” A typical Mizo paddy threshing floor

If the distance from a village is far they erect makeshift barn on the roadside mid-way for transshipment. From there it is transported to the village by head load. Usually a man carries a load of 30-40 kgs, while a woman carries 20-30 kgs. As per village calculations, it is estimated that 10 ‘*phur*’ of paddy (3 tins = 1 *phur*) is sufficient to meet an individual’s requirement for one year.¹² On an average a Mizo family is estimated to consist of five members, thus, 50 *phur* is estimated to be sufficient for a small family for one year.

Jhuming as already mentioned is a way of life for the tribal in the North-East and the Mizo are no exception to it. Even with the advent of applied scientific cultivation jhuming cannot be stopped overnight. It remains conspicuously, as a means to their survival till today.

Practically jhuming can be divided into three categories- Main jhum, where crops of all kinds are grown mixed with paddy as the principal crop. Secondly, diversified jhum is the one where mono- cropping is practised in different plots such as sugarcane, plantation, ginger, soyabean, chilli cultivation etc. The main objective of cultivation of these crops is to earn cash by the jhumia families. Thirdly, the vegetable jhum where only vegetables are grown.

According to this method of cultivation, the fertility of the soil could not produce more than a single crop in a year. After harvesting, the jhum had to be left out for a number of years to recuperate. Thus, the Mizo were always in search of suitable land for cultivation every year within the jurisdictional area of

their respective villages. Due to this unstable economy their lives were spent shifting from place to place in search of suitable agricultural land for the next year. The Mizo settlement in the past was, therefore, determined primarily by the availability of suitable land for cultivation. The traditional economy was a subsistence economy where crops were grown just to meet the needs of the family for the next year and the products were consumed by the producers themselves.

III. Different experiments for settled cultivation

The population of Mizoram has been increasing, due to which there has been more pressure on agricultural land and the individual holdings. In addition to that the daily needs of the people have gone up on health grounds and to cope with the style of living.

Accordingly, accelerated development programmes were also taken up by the State Government. A number of agricultural development programmes have been implemented in the State in an attempt to attain self-sufficiency in food grains and other requirements of day-to-day life connected with agricultural practices.

New Land Use Policy

With a view to do away with shifting cultivation, to provide alternate permanent land-based occupation and stable income to the jhumia families in rural areas, conserve natural forests and environment, restoring ecological balance and attainment of socio-economic self-sufficiency and to raise the standard of living, the Government of Mizoram introduced New Land Use Policy (NLUP) in 1984. Assistance under this programme was given to 6,086 families for plantation of Teak, Orange, Rubber and other species.¹³ In 1987, the New Land Use Policy (NLUP) was replaced by the Centrally Sponsored Jhum Control Project and was implemented in Aibawk Rural Development Block between 1987 - 1988 and 1991 - 1992. The Agriculture Department was the Nodal Agency for implementation for this project. Under this programme the target family was allowed to select only one scheme. It was later found that the project suffered from many drawbacks and the cultivators hesitated to take up the schemes as a means of their livelihood as it was difficult for them to tide over the gestation period (5-7 years)

In 1989, New Land Use Policy (NLUP) was revived and the Rural Development Department was entrusted with the implementation of the programme from 1990 - 1991. The duration of the programme had been fixed at 4 years. During the gestation period of the main occupation, subsidiary schemes like vegetable gardening, pig rearing and poultry were introduced to supplement the family income and to meet the needs of the families. It was envisaged to cover all the Rural Development Blocks (20) during the 8th Five Year Plan (1992-1997). The target group under the programme includes jhumia families who solely depend on shifting cultivation for their livelihood and also those families other than jhumia families who do not have permanent means of livelihood. The selection of trade by beneficiaries is based on their respective option suited to their aptitude, skill and viability. The programme was implemented on the pattern adopted under Aibawk Jhum Control Project with

¹³ Dr. E. Saipari., D.C(T) Agriculture, Commissionariat of Rural Development., Implementation of NLUP in Mizoram.,p.1

modification in the Schemes.¹⁴ Instead of mono scheme under the Jhum Control Project, a composite scheme which can provide suitable subsidiary trades for the beneficiaries was introduced. The subsidiary trades were offered to the beneficiaries for generation of substantial income during the long gestation period of the main trades.

Different trades under the New Land Use Policy (NLUP) can be broadly divided into 3 (three) sectors:

1. Agriculture and Allied Sector
2. AH & Veterinary Sector
3. Industry Sector.

Agriculture and Allied Sector consists of plantation of Betelvine, Hatkora, Orange, Tung, Pineapple, Banana, Assam Lemon, Apple, Passion Fruit, Valencia and Sugarcane, Wet Rice Cultivation and Wet Terracing, Cultivation of Grapes and Squash, Sericulture and Pisciculture.

Animal Husbandry and Veterinary Sector includes Dairying, Hill Cattle rearing, Mithun rearing, Piggery, Goat rearing, Sheep rearing, Poultry farming, Duckery and Rabbitry.

Industry sector consists of Bakery, Chow making, Handloom, Tailoring, Knitting, Radio and Watch repairing, Tinsmithy, Blacksmithy, Shoe repairing, Art Painting, Cane and Bamboo works, Motor Workshop, Steel Fabrication, Hair Dressing/ cutting, Rice Huller and Carpentry.

The quantum of assistance for each beneficiary varies from trade to trade, ranging from Rs. 31,240 /- to Rs. 46,500 /-. The period of implementation of various schemes also ranges from 2 to 4 years.¹⁵ Assistance is given to the beneficiaries both in cash and in kind for successful implementation of their respective trades.

For effective implementation of the programme, the State Government felt necessary that various sectors in the concerned development Departments had to be streamlined. As a result, Rural Development Department has been re-organised and enlarged into a Commissionariat under a Commissioner and other Officers. Staff from ten Departments directly concerned in the implementation of NLUP, that is Agriculture, Horticulture, Animal Husbandry and Veterinary, Sericulture, Industries, Finance and Accounts, Fisheries, Forest and Environment, Information and Public Relations have been induced into the Commissionariat which started functioning immediately (1990-1991) with vigour.

Evaluation of the programme may be done through a case study of one of the blocks –Thingsulthliah Block. Under this block there are 26 villages, with 25 of them coming under rural area and 1 under urban area. The NLUP covered all the villages of this Block. 4,319 beneficiaries were given assistance under various trades during 1990-94 as per the beneficiary list of the Rural Development Department. But when survey was conducted by the Technical staff of Economics and Statistics Department to evaluate

¹⁴ Dr. E. Saipari., *ibid.*, p.2

¹⁵ Dr. E.Saipari., *ibid.*, p.2

the impact of the benefits given to the beneficiary households and to evaluate trade-wise success and failure of the Scheme in 1994-95, it was found that only 4,267 beneficiaries had received assistance and 52 of the beneficiaries of the Rural Development Department were unknown and could not be found. 390 beneficiaries had been dropped from the Scheme as they were found to be government employees. 115 beneficiaries had migrated to other villages without implementing the Scheme. After analysis it was found that only 473 beneficiaries succeeded in their trade, thus, the success percentage was only 11.08 %. Moreover, it was found that most of the beneficiaries had continued jhum cultivation even after receiving assistance. The total amount sanctioned to the different trades within the Block was calculated at Rs. 12,27,25,161.00 (1990-94) only from the Report of the Rural Development Department. However, when the total amount received by the beneficiaries was calculated after the survey, it was found amounting to only Rs. 9,41,58,384/- leaving a difference of Rs.2, 85,66,777/-, which could not be accounted for. This observation highlights the failure of NLUP.¹⁶

The Department had also taken up Sloping Agriculture Land Technology (SALT) on experimental basis at Sakawrtuichhun. Though the project is framed in accordance with SALT, modification is made by construction of contour trench instead of contour hedges. In addition, compost pits are also made which is also called as 'New Mizo Method of Farming'. As such, the project is named as Sloping Agriculture Land Farming (SALF). The experiment is directly conducted from the headquarters. Twenty beneficiaries were selected for this trial as per NLUP guidelines. Out of 20 (twenty) Rural Development Blocks and 2 (two) Additional Blocks in Mizoram, 12 (twelve) Blocks have been covered under New Land Use Policy (NLUP) and the programme was taken up by 54,932 families. Out of this more than 50 % beneficiaries were under Agriculture and Allied Sector.¹⁷ Though the NLUP was brought out with much ado, however, it ultimately did not bring about much improvement in agriculture, due to various loopholes in its implementation.

CONTOUR FARMING:

To improve hillside cultivation, Contour Farming System has been introduced in Mizoram since 1995, on the farmers' plot of land which is ultimately expected to wean away shifting cultivation. This system helps conserve the soil by collecting the soil lost and weeds removed in the course of weeding operations and run-off of water in the trenches. It also acts as a compost pit like a soak-pit in sanitary latrines.

The present system of shifting cultivation/ jhuming is considered one of the most destructive system to the environment, soil health, climate, ecology etc., which has to be stopped before the ecological balance is disturbed and the environment becomes unhealthy and unfriendly. Therefore, the need for transformation into permanent and profitable farming arises. In order to do so, organic farming coupled with Contour Trench Farming was thought of as one of the answers at the that juncture. The Department of Agriculture has evolved the new contour farming technology to replace the jhuming system practised in Mizoram. This system has been so evolved keeping in view the fast degradation of

¹⁶ Economics and Statistics., Evaluation Report on New Land Use Policy in Thingsulthliah Block.,p.4

¹⁷ Dr.E.Saipari., *ibid.*, p.3

land due to jhuming and the need for permanent farming system with the ever-increasing population and other environment unfriendly onslaught of men and the floating population in Mizoram.

In the new Contour Farming System trenches are dug along the contour, across the slope about one foot deep and half feet wide. The interval of trench lines varies according to steepness on higher slopes. The interval is longer in the lower slopes and shorter in the higher slopes. On the earth spoil, at the lower edge of the trench line, grasses preferably fodder with strong root formation are planted, which in turn is supported by a row of hedges of various species preferably leguminous ones. Plantain trees or sugarcane or pineapple may also be used.

In order to avoid hydraulic pressure, the trenches are broken at certain intervals by plugging with soil or leaving uncut spaces. Contour farming system is practised on the lower ridge of the slope leaving a scope for horticultural activities and forestry on the higher slopes.

The function of a contour trench is to break the slope, convert surface water into sub-surface water and act like a soak pit. In the trenches the topsoil removed due to cultural operations like weeding etc. will get accumulated with decayed biomass, which are removed at the time of weeding operations and stacked in heaps at convenient places, which decomposed after a period of time and becomes manure. The farmer occasionally scoops out the deposits in the trenches and utilise it as compost manure to the crops.

The objective is to wean away shifting cultivation and switch over to permanent cultivation on the hill slopes by conserving soil and water, and recycling and conserving the top soil loss so as to attain sustainable agriculture.

In contour bunding, there is a head from where the run-off water falls down with higher velocity than that on the normal slope acting as a hydraulic hammer, thereby causing loss of more top soil which does not occur in the case of contour trenching as it has no head. This new farming system conforms to the soil and water conservation principle to stop rainwater where it falls (in-situ).

The modern technology of agriculture is leaning towards the consciousness of health care by switching over from chemical pesticides to organic pesticides and chemical fertilizers to bio-fertilizers. Therefore, new method of permanent farming is the answer, as manure will be deposited in the contour trenches for recycling topsoil fertility.

There will be no soil loss whatsoever as the top-soil removed at the time of cultural operation will be deposited in the contour trenches. Erosive crops like tapioca, sweet potatoes, ginger etc., could be safely cultivated in the new farming system without loss of topsoil.

The new farming system was expected to provide sustainable agriculture on the hill slopes in the hilly terrain of Mizoram, where there is no sufficient potential flat land to sustain the population in food production but to resort to hill slopes cultivation permanently.

However, contour trench system also has its drawbacks in that, it is very expensive to cut trenches in the hill slopes. Many farmers, therefore, could not afford to cut the trenches without assistance from the Government. Around 4,000 families had taken up permanent jhum cultivation in the form of Contour Trench Farming System.

ORGANIC FARMING:

'The Mizoram Organic Bill, 2004' was introduced in the Mizoram Legislative Assembly and passed unanimously on the 12th July 2004. The Bill had already been introduced in the Mizoram Gazette vide No. H.12018/135/04-1 JD dt. 21.7.2004.¹⁸ The Bill was based on the National Programme for Organic Production (NPOP), which was introduced in 2000 A.D with the initiation of the Ministry of Commerce and Industries, Government of India and in regards to the adoption of areas for the promotion and regulation of Organic farming in consonance with the National Organic Programme. The main objective was to replace the synthetic chemical pesticides by organic and bio-pesticides for use by the targeted farmers for selected crops and at the same time to do away with synthetic chemical fertilizers by switching over to organic manures, bio-fertilizers and vermi-compost. Basically, the bill aims at improving the general health condition of people and to make use of the local waste organic matters, coupled with animal waste like cowdung, urine, bones etc.- bio-fertilizers with the help of beneficial living organisms like bacteria and rearing earthworms for vermicompost. The Bill is in regards to the adoption of areas for the promotion and regulation of organic farming in consonance with the National Organic Programme.

This transition into an organic state has been realized since many years ago, as the cultivators follow time-tested indigenous farming system with the use of indigenous technical knowledge in agriculture and the allied sector.

In fact, the fertilizer and pesticide consumption in Mizoram may be considered to be one of the least among all the states in the country. Thus, it is essentially organic in nature. This is because the systemic agro-chemicals are used only in some areas / pockets which is less than 25% while in the rest of the area of about 75%, especially under shifting cultivation, synthetic agro-chemical inputs is not used at all. The region could be placed on the world organic map by institutionalising production, certification and marketing of the organic produce. In the year 1994, the Department of Agriculture had started implementation of Organic Farming Programme making every effort to create awareness and convince the farmers to take up organic farming. Great efforts have been taken to popularise organic farming through extension activities. In 1996, demonstration on efficacy of organic farming was carried out in a farmer's plot at Lungmuat, which practices organic farming till date.

The traditional practice of organic farming, which was continued by default, has been transformed into scientific organic farming with improved organic design for higher production and productivity.

Under the Mizoram Organic Farming Bill, as an incentive to encourage organic farming in the State, in allotment of agricultural land and farm equipments or materials including seeds, preference was given

¹⁸ The Mizoram Gazette No.H.12018/135/04-1 JD dated 21.7.2004.

to those farmers who expressed an intention in the prescribed form to take up and continue organic farming exclusively on such land for minimum as maybe prescribed. To promote organic farming in the notified areas the State Government had drawn up incentive schemes, which forms part of the rules under this Act. The State Government facilitated in obtaining the license to use the certification mark, namely, 'India Organic' for such exporters, manufacturers and processors whose organic crops or products were duly certified by the accredited inspection and certification agencies from the Government of India. The Mizoram Government also facilitated in tapping and securing every viable and available market - regional, national and international-for all organic crops and products produced in the State. The National Programme for Organic Production (NPOP) launched in the year 2000 by the Ministry of Commerce and Industry on which the Mizoram Organic Bill is based, has 3 basic components namely - production, certification and marketing. Production and marketing are within the competence of the State Government in so far as the regulating of these aspects is concerned, while the certification is within the jurisdiction of the National and International Agencies.

A good number of chemical pesticides have been banned for health reasons e.g. Dichlorodophenyltrichloroathane (DDT) from 31st December, 1992, by the Government of India, Ministry of Agriculture, Directorate of Plant Production, Quarantine and Storage. Some others are allowed for use with certain restrictions eg. Alluminium phosphate etc.¹⁹

The production of organic manures is still less and inadequate. Farm Yard Manures (FYM) easy to compost is not available with the farmers as per requirement. Vermi-composting has been taken up by a number of farmers. Production and supply of animal waste like cow-dung, poultry and pig manure have not been harnessed and fully utilized till date.

If chemical fertilizers are banned over-night, there will be a disaster in crop production particularly in paddy fields, selected horticulture fruit crops like oranges, squash (iskut), passion fruits and seasonal vegetables particularly cole crops. There will be drastic decline in the volume of production and productivity without fertilizers. Switching over to organic farming could not be done all of a sudden. Application of chemical fertilizers has to be continued till self-sufficiency in foodstuff is attained. Till then, we have to depend upon rice, edible oils and pulses coming from Punjab, Haryana and Uttar Pradesh where fertilizers consumption is in the order of 173.88 kgs / hec. 155.08 kgs /hec. and 130.44 kgshec. respectively.)²⁰

¹⁹²⁰R.Thansanga., Article 'Organic Farming in the context of N.E. states with special reference to Mizoram', 1.6.2004., p.9

The objectives of Organic Farming:

1. To utilize the provisions that are available locally such as seeds, soil, water etc., to the optimum while farming.
2. To maintain the soil fertility using the available resources.
3. To prevent the contamination of air, water and soil by synthetic chemical fertilizers, pesticides, herbicides etc.
4. To produce healthy crops which can be sold at better prices.
5. To feed the animals that are reared with poison-free feeds.
6. To preserve the forests and its inhabitants.
7. To help the farmers have permanent cultivation.

Many of the measures taken in the developed countries cannot be adopted over-night. So long as we depend on fertilizer consuming states for the supply of essential foodstuff like rice, edible oil and pulses, it may not be so meaningful to enforce total ban on the use of chemical fertilizers in our State. In respect of chemical pesticides and insecticides, we may go stringent by banning and replacing them with organic ones.

The New land Use Policy was re-introduced with some changes in 1993 – 1998, after which the Congress party lost in the election, and the programme was discontinued by the new Ministry.

MIZORAM INTODELHNA PROJECT / PROGRAMME (MIZORAM SELF-SUFFICIENCY PROGRAMME)

With the coming of the Mizo National Front (MNF) government it evolved the idea of a New Economic Policy in 2001, implemented by Agriculture and Horticulture Departments, which were the nodal agencies.

The new project so evolved was called the Mizoram Intodelhna Project (MIP), under which, short term, medium and long term projects were made. The concept of watershed management was utilised, giving importance to Jhumias. Medium and long-term projects include developing of paddy fields, agriculture link roads, minor irrigation and marketing infrastructure under Agriculture, Horticulture and Soil Department, which was supervised by the state level monitoring body.

Mizoram Intodelh Project was evolved in 2001 by the Mizoram Government with the actual work started in 2002 under the supervision of the MIP Task Force. For the first phase of the programme 30,393 families from 125 villages of the 8 (eight) Districts of Mizoram were handed over the first installment of Rs.4000/- each. A total of Rs. 12,15,72,000 /- was distributed through out the state. After the first installment 881 families were removed from the programme as they have availed aid from the Central Sector Scheme IWDP. Therefore, the second installment of Rs. 3500/- was given to 29,512 families. A total of Rs. 10,39,92,000/- was distributed as the second installment.

For the second phase of the programme, 20,154 families from 111 villages, which were not included in the first phase, were given a first installment of Rs.4000/- each resulting in the distribution of a total of Rs. 8,06,16,000/-. Finally a grand total of Rs. 30,54,80,000 /- was disbursed to 50,547 families in the first and second phase.

Though it is targeted to continue the aid to these families, there was a stop-gap due to the revealing and revising of the MIP guidelines.

Other than the above mentioned aid, other programmes taken up under MIP were: -

1. Link Roads: -

i) An amount of Rs.27, 00,000 /- was spent to construct 9.5 kms of link road from the piggery village at Sairang to Sairum. This link road was utilised by ITI Veng Farming Cooperative Society formed by 25 families.

ii) Another link road of 6 kms from Tuitun to Pachhiat (Khamrang) had been constructed with an expenditure of Rs. 27,00,000 /- This link road connects the farms of the Tuikual South Farmers Association consisting of 36 families.

iii) Rs. 50,000 /- was spent for repairing the road of Kawrthindeng Zau of the Kanan Multi Farming Cooperative Society to Rangvamual.

2. Land Development:- An expenditure of Rs. 40,00,000/- was incurred for the development of 45 hectares of WRC area at Saihapui (Kolasib) utilising machineries.

3. A cold storage unit of 3500 MT capacity was constructed at Vairengte.

4. A number of families at Champhai and its vicinity who are growing Passion Fruits were given 1329 GI Wire Coil worth Rs.45, 86,420 /-. An additional amount of Rs. 81,000 /- was used for development of the cultivating area.

5. Hortoki, Sairang, Khamrang and Kawnpui villages which were found suitable for Hatkora cultivation were given 47,070 Hatkora saplings and grafted seedlings costing Rs. 9,39,169 /-

6. An expenditure of Rs.3, 73,604 /- was incurred to purchase 53,372 Banana suckers which was distributed to the villagers selected for the purpose from Kawnpui, Haulawng, Mualthum, Pangzawl and Rawpui villages.

7. Turmeric rhizomes of 411 quintals were distributed at Reiek costing Rs. 2,87,700 /-.

8. Seedlings of Patchouli, an aromatic plant used for perfume preparation was imported from Mumbai. Rs.82, 000 /- was spent for the import of 10,000 seedlings and were multiplied at Thingdawl Agriculture Farm for further distribution to the farmers.

9. 6,00,000 Stevia seedlings were imported from Pune at an expenditure of Rs.30, 35,000 /-. These seedlings had been distributed to 20 families from Kolasib and Aizawl District for cultivation.
10. Rs. 24,149 /- was utilised for procurement of pesticides and insecticides.
11. Fibre Extraction Machine for extraction of Banana and Pineapple fibre was purchased at a cost of Rs. 9,83,438 /-
12. Gas Fired Dryer Trolley worth Rs.1, 40,350 /- was been purchased.
13. Intensive measure was taken for the cultivation of Red Palm Oil. Rs.12, 00,000 /- was utilised for purchasing poly-bags, Rs.15, 00,000 /- for purchase of sprouts and Rs. 3,00,000 /- for its transportation. Thus, a total of Rs.30, 00,000 /- was spent for Red Palm Oil alone.
14. An amount of Rs.1, 63,812 /- was been spent for the establishment of Ginger Pack House.
15. Chicken Hatchery Unit was established at an expenditure of Rs.3, 77,895 /-

The other areas where expenditure has been incurred for the implementation of MIP were: -

1. An office expenses / Administrative cost of Rs.1, 26,54,662 /- spent by the MIP Executive Authority.
2. Rs. 25,20,130 /- utilised for the office expenses of the various farmers associations formed under the programme.
3. For the office expenses of the entire programme implementing Agency (Project Officer and Assistant Project Officer) Rs. 10,26,150 /- was spent.
4. District Programme Committee Office expenses amounted to Rs.4, 96,900 /-
5. Rs.57, 74,536 /- was utilised for the salary of the Secretaries of the Farmers Associations.
6. The Consultant, Mr.J.PJaiswal, was paid Rs. 8,67,000 /- as consultancy and evaluation fee. (Source: Department of Agriculture, Govt. of Mizoram.)

The minimum land requirement was increased from 1.5 hectares to 2 hectares. The beneficiaries were not allowed to shift from the village where they stayed before the completion of the project without the prior permission of the Government or the Project Authorities has been omitted.

However, the programme met with certain failures. Out of the 1239 piglets distributed by the Rural Development Department at Lunglei and Hnahthial RD Block, under the MIP it was found that only eight survived. These piglets were purchased by the Government at the rate of Rs. 2500 per piglet. Thus, the death rate is 94.46% due to which the Government has incurred a loss of Rs. 30 lakhs. Moreover, triple the price of each piglet was spent for transporting them from Shillong to the distribution points. These piglets were said to be of superior breed and were said to have been examined by the Veterinarians

before distribution. If such was the case, there appears to be some fault in the entire process. With such types of implementation of the programmes meant for the development of the farmers, the very notion of development was very difficult to achieve. This programme ended with the change of political party in power in the state.

New Land Use Policy

The New Land Use Policy, with certain changes and adaptations was introduced for the third time on 14th Jan 2011, when the Congress regained power. In fact, the day of its introduction is declared as 'Farmers' Day'. Two of the most important objectives of the project are as follows. The first objective is to mainstream the *Jhumia* families into a profitable settled agricultural practices. The state has potentials in the agriculture and allied services development sectors and considers that this would create enough opportunities for the *Jhumia* community's development in particular and integrated development of other people in general. The second objective is to initiate allied policies that are vital for the state's reform programme. One such policy intervention is in the 'land ownership' sector for which the current project holds crucial future directions.

The overall objective of the project is to ensure that the livelihoods and food security of the poor *Jhumia* households are sustainably improved through promotion of a more efficient, equitable, self-managed and sustainable agriculture practices, off farm and non-farm enterprise development²¹.

The Union government has sanctioned Rs. 2,800 crores (\$43 million), and the government is to bear 90% of the expenditure, while the beneficiaries have to bear 10% of the cost in terms of labour. Nine (9) Departments of the Government of Mizoram, namely, Agriculture, Industries, Soil & Water Conservation, Horticulture, Environment & Forest, Sericulture, Fisheries, Animal Husbandry & Veterinary and Urban Development & Poverty Alleviation are the line departments and 2 Departments, viz, Rural Development Department, Land Revenue & Settlement Department and the District Administration Department are facilitators of the implementing to help provide infrastructure and expertise in the demarcation of lands allotted to beneficiaries.

Under NLUP aid is given through material and monetary distribution to the beneficiaries. 1,20,000 families have been selected in three phases. Recently 15,000 more were added to the list. The target is to distribute Rs. 1,00,000 in installments to each selected families. 52 Trades have been identified under the scheme. A number of Central Sector Schemes allotted to various departments under the Government of Mizoram, have been merged together with this scheme.

The selection of different farm and non-farm activities and selection of households under the scheme depend on the land use type, land holding size, economic stratus of the household among many others. The district wise major trades implemented in selected clusters are given in the Table below. The designated line departments assist the farmers in the proper implementation and are also appointed as nodal agency to monitor the tasks.

²¹ NABARD Consultancy Services Ltd (NABCONS), Mid Term Assessment (MTA) Report on New Land Use Policy of Government of Mizoram (2012-2013)

Table 1 : District-wise Cluster of Activities and Trades

Sl.No.	District	Major Trades
1	Mamit	i) AH & Veterinary, ii) Agriculture, iii) Industries
2	Kolasib	i) Horticulture, ii) Soil & Water Conservation, iii) AH &Vety,
3	Aizawl	i) Industries, ii) AH &Vety, iii) Soil & Water Conservation
4	Champhai	i) Horticulture, ii) AH &Vety, iii) Agriculture
5	Serchhip	i) Horticulture, ii) Agriculture, iii) Industries
6	Lunglei	i) Horticulture, ii) Industries, iii) Agriculture
7	Lawngtlai	i) Horticulture, ii) Agriculture, iii) AH &Vet
8	Saiha	i) Horticulture, ii) AH &Vety,

Source: Mid-term Assessment Report on NLUP of Government of Mizoram (2012-13)

In some localities, the prevailing land use were slightly modified to suit to the requirement of the farmers and to fulfill the objective set in NLUP. For an example, in Aibawk Jhum Control program only one scheme (Mono scheme) was made for one family where the gestation period to obtain product from the activity was nearly five years. To avoid a long gestation period and continual dependence of the household during the lean period, composite schemes as envisaged under NLUP provide subsidiary trade/activities in addition to main activities so that the sustenance in livelihood is ensured.

Unlike the previous NLUP, all land based activities are located within one compact area in respect of one village and on occasions, 2-3 compact areas within a village to monitor the work smoothly and in the cluster, a household is allotted land not exceeding 2 ha to be managed with the family labor. Beneficiaries having their own land which is suitable for NLUP activities; however, are not allotted separate land. In cases, where a land is allotted for NLUP purpose, the beneficiaries are not given permanent right to ownership of land and in the event of failure of the farmer to utilize the land as per NLUP directive, are bound to be transferred back to the revenue department which is responsible for such land allotment.

During 2010-2013, more than 40000 ha of land were brought under various interventions under NLUP. A massive reduction in jhum cultivation at least to an extent of about 50000 ha, averaging a little over 1 ha of land by each jhumia. Non-farm activities too had been one of the important achievements by the

government during this 3-years period through which the beneficiaries especially the landless were provided interventions to take up small scale industries.²²

Table- 2. Cumulative physical achievement during 2010-2013

Department/Sector	2010-11		2011-12		2012-13	
	Beneficiary	Area (ha)	Beneficiary	Area (ha)	Beneficiary	Area (ha)
Agriculture	6004	2069.5	6004	2069.5	13643	4845.26
Horticulture	9305	7879	9305	7879	18167	18072.16
Fisheries	1445	722.5	1445	722.5	2578	1322.5
Sericulture	826	826	826	826	1932	2826
Soil & Water Conservation	4556	4556	4556	4556	8958	10917
AH & Vet	9827	-	9919	-	22745	-
Industries	10723	-	10723	-	19508	-
Environment & Forest	1409	2818	1409	4227	2608	3972
Total	44095	18871	44187	20280	90139	41954.92

Source: Draft annual plan NLUP for 2013-2014, Govt. of Mizoram

IV. Conclusion

As discussed, agriculture and in particular jhumming, is the mainstay of majority of the people in Mizoram. The life of the Mizo people is closely entwined with the system of cultivation. Many of the festivals too, are related to agriculture and the various agricultural activities. Though the State Government has come up with a number of programmes, to wean away the cultivators from jhumming, till date many farmers still practice this primitive system of cultivation. Doing away with the predominant age-old system is a challenge for the government. Thus, what seem to be the requirement of the day is a new improved system without totally doing away with the prevalent practices. However, the various efforts to change over to permanent cultivation has not been totally futile as the number of

²² Singha, R.K.P.G and Sahoo, U.K. (2014),. New Land Use Policy:An Approach for Household Livelihood Security and Sustainable rural development , in J.K.Patnaik et al(Eds). Proceedings on National Seminar on Socio-Economic Development and Governance in North Eastern Region of India. pp. 483.

jhumias have been found to reduce as compared to the past. In fact many of the farmers who practice shifting cultivation also maintain permanent farms side by side with the jhums.

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