

Jhum cultivation:

The way of livelihood security for Mizoram

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Shifting cultivation, generally known as Jhumming, is one of the most ancient systems of farming believed to have originated in the Neolithic period around 7000 BC. It is also known as Slash and Burn method of cultivation. This method of cultivation is viewed as the first step in transition from food gathering and hunting to food production. In India, Jhumming is practiced mainly in the north eastern hilly region. Mizoram state lies in the extreme east part of India and its hills are characterized as 'the rolling hills'. Jhum cultivation is the principal method of agricultural practice among the Mizo people which consists of clearing of plot of forest land by burning the vegetation and cultivating the plot of land for one or two years. After this, the old cultivated land is left fallow so as to regain the vegetation cover.

Key words: Jhum cultivation, Livelihood security, Mizoram

ECONOMY in north eastern hilly region is based upon the production of biomass based agriculture. Further, most of the agricultural practices are carried out through Jhum cultivation. It is characterized by the dominance of subsistence crops. Crops are mostly grown during the monsoon season on the gentle to steep slopes without terracing of fields. Vegetables and fruits are also grown and consumed domestically. Commercial uses of these crops are largely negligible. Some small proportion of agricultural land is spread in the lowlands, where permanent agriculture is practised. Mostly, wet rice is cultivated in these lands. Shifting cultivation has a tremendous impact on the socio-economic aspects and on the environment.

Jhum cultivation in Mizoram

Jhum cultivation is a land tenure system of tribal farmers described as “an economy” of which main characteristics are rotation of fields rather than crops; clearing by means

of fire; absence of draught animals and manuring; use of human labour only; employment of dibbling stick or hoe; short period of soil occupancy alternating with long fallow periods. It encompasses mixed cropping, viz. horticulture and annual cropping, perennial tree crops, animal husbandry and management of forest and fallows in sequential or rotational cycles.

Although it is both a labour intensive and land extensive method of cultivation, it occupies a distinct place in the tribal economy and constitutes a vital part of the life-style and socio-economic set-up of hills. Most researchers opine that the causes of continuity of this prehistoric system are largely linked up with the ecological, economic and cultural aspects of the communities practising shifting cultivation. In 2010, as per Indian Council of Forestry Research and Education, published in the Statistical Year Book 2014 by the Ministry of Statistics and Programme Implementation (MoSPI), jhum area in India was 10,306.84 km², where

Mizoram comprises 2,617.56 km² which is 12.5% total geographical area of Mizoram.

It is the most complex and multifaceted form of agriculture. Jhum cultivation is cyclic in nature and jhumming cycle in Mizoram is presented in the figure.

After clearing the forest and burning the vegetation, Mizo people celebrate “Chapchar Kut” festival during March after which sowing operation begins.

Usually mixed cropping is followed in jhum system. The principal crop is mostly paddy. Other crops grown include maize, cucumber, beans, arum, ginger, mustard, sesame and cotton. Some pulses like cowpea, rice beans and French beans are cultivated under shifting cultivation. Percentage share of agricultural crops in Mizoram are presented in the figure.

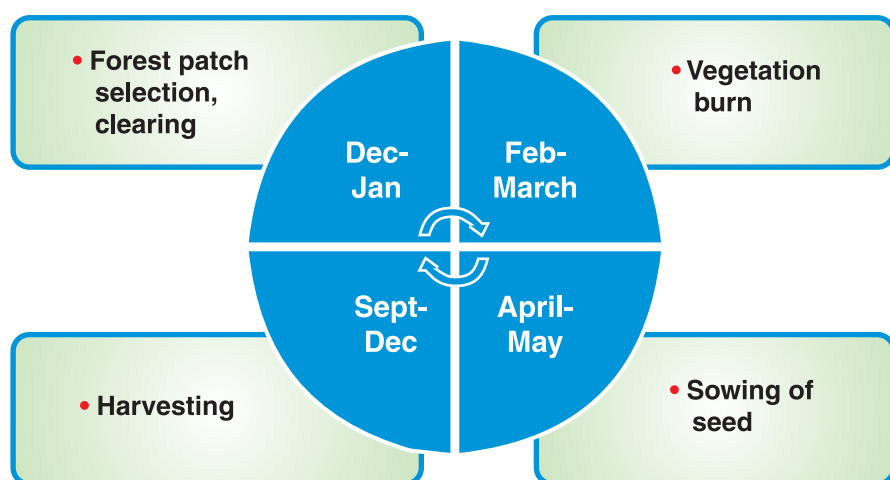
Generally, each family grows 15-20 crop species in a plot of 1 to 4 ha in area as mixed crops. Their harvested produces are very small in quantity and part of that is kept for next year of cropping.



Image showing the different activities carried out in Jhum cultivation by Mizo farmers viz. (a) forest clearing; (b) burning of dried vegetation; (c) post burn Jhum field; (d) Sowing of crop; (e) Storage of post-harvest produce; (f) Small tools and implements used in Jhum land.

The farmers continue the practice of jhum cultivation on a particular site for a few years and then that site is abandoned. They shift their agricultural fields to the other forest area.

After few years gap, they again come back to the previous fields. This cycle goes on. The economics of the Mizo people has always been centred on jhum cultivation. It is their way of life.



Cyclic pattern of shifting cultivation in Mizoram

Importance of fallowing in shifting cultivation

Fallowing facilitates weed suppression and build-up of ecosystem fertility. The fallowing phase is essential to help restore soil fertility lost during the preceding cropping phase. Many studies have demonstrated that weeds become more problematic when the fallow is short. When the fallow period goes below 3 to 4 years, soil fertility is not renewed, and erosion and weed competition increase dramatically. Yield levels in shifting cultivation are influenced by a wide range of biophysical, socio-economic, and cultural factors and it is difficult to isolate fallow length as a single determining factor. Yields decline in shifting cultivation systems when fields are cropped successively in two, three or more years. The causes of yield-decline with continuous cultivation are attributed to weed infestation and soil nutrient deficiencies and depend very much on the specific area studied.

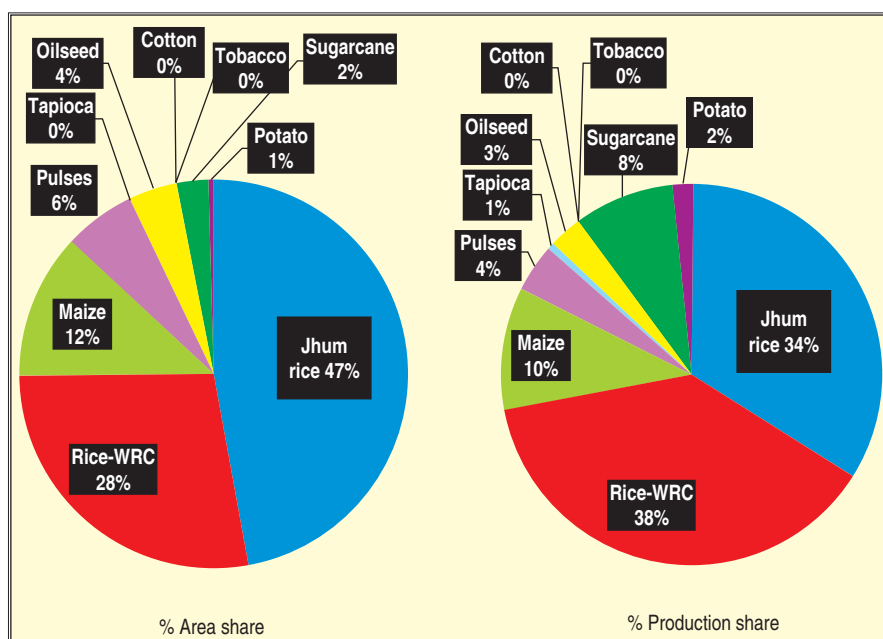
Jhumming and ecosystem

Contrary to common modern belief, tribal people believe that Jhumming acts as carbon sink, maintains soil health, preserve biological diversity and sustain local climate. Studies showed that forest clearing during Jhum is not deforestation but forest modification, allowing forest re-growth during sufficiently long fallow. Fundamentally, Jhum as a system is an integrated approach to establish agro-ecosystem in the difficult terrains of tropical hill regions that involve forest, soil, biodiversity and livestock management through their culture, tradition and rituals that coevolved with associated ecosystem.

The indigenous *Jhumias* (Jhum cultivators) are very reluctant in adopting foreign crops and varieties. They have their own varieties of paddy, maize and vegetables that they have preserved from generations. Depending on the weather, site and soil, different varieties are sown. Preservation of seed for future crop is considered to be their spiritual responsibility and women folks are mainly responsible for the task. They



Celebration of "Chapchar Kut" festival in Mizoram during March



Percentage area and production of important crops in Mizoram state

generally have huge repository of germplasm of each crop.

Indigenous technical knowledge followed in Mizoram

- Mizo Indigenous calendar, chiefly associated with agriculture practice system; their knowledge on weather, climate and surrounding environments has been clearly revealed in Table 1.
- Under acidic soils of Mizoram, some farmers are using common salt for controlling broad leaf weeds in jhum field.
- Field cricket (*Gryllus pensylvanicus*): If a cricket brings new soil particles out of its hole during the dry season, it is believed that rain is coming soon. If the same activity occurs during the rainy season, a heavy rain is expected during the season.
- To protect the grains from insects, the farmers add wood ash or some ash from burnt goat dung. Once the grain is placed inside the basket or packed in airtight packet of clothes, it is placed near the fireplace.
- For controlling the insect damage in crops, Mizo farmers are producing fire with the help of sticks and crop residue near the field in evening time so that all the flying insects get attracted towards the fire and get killed. It is repeated at nearly seven days interval. Same was observed recently during incidence of fall armyworm attack in maize (Fig. 6).

Conclusion

In Mizoram, jhum cultivation is



Storing of harvested produces for the next season by Mizo farmers.

Table 1. Mizo months indicating its meaning and associated activities

Mizo Month	English Month	Meaning	Activity associated
Pawlkutthla	January	'Pawl' means 'straw'; 'kut' means 'festival' and 'thla' means 'month'	Celebration of new year
Ramtukthla	February	'Ram' means 'Forest/Jungle'; 'tuk' means cut/felling of tree' for new year	Selection of new plot for jhum and start felling of trees
Vauthla	March	Vau is the name of one flower (<i>Bauhinia variegata</i>) indicating new season	Appearance of new flowers particularly Vaube (<i>Bauhinia variegata</i>)/Time for burning of slash dry trees
Tau thla	April	Tau (<i>Rubus ellipticus</i>) is a local variety of wild berry, which starts ripening in this particular season	Start clearing the remnants of slash burned logs, stumps and prepares the jhum lands to sow the seeds
Tomirthla	May	'Tomir' means 'rain or rainfall'	Starting of monsoon season means time to start sowing of seed
Nikirthla	June	'Nikir' literally means 'returning of the sun' from its existing position	Returning of the sun from its peak position. Cultivation in the jhum land
Vawkhniak-zawnthla	July	'Vawkhniakzawn' literally means 'footsteps of pigs'	Heaviest rainfall season
Thi tin thla	August	'Thi' means 'die', 'tin' means 'leaving or left'	Forbidden of marriage and Merry making
Mimkutthla	September	'Mim' means 'corn'; 'kut' means 'festival'	Harvesting of corn
Khuangcha-withla	October	Agriculture/ Festival with brightest moonlight season	Ideal festive season
Sahmulphahthla	November	'Sahmul' means 'fur' and 'phah' means 'lay or lay down'	Starting of winter season
Pawltlakthla	December	'Pawl' means 'straw'; 'tlak' means 'complete' or 'finish'	End of the year and harvesting of rice



Firing in evening for controlling 'Fall Armyworm' in Maize at Thingdawl, Mizoram.

predominant system of cultivation by Mizo people and main source of livelihood security. It is a part of their lifestyle. It is cyclic in nature and associated with ecological, economical and cultural aspects of the Mizo people that starts in January and ends in December month. It is closely associated with the traditional Mizo calendar. The major crop is rice followed by maize and growing the crop in mixed farming with 15 to 20 crops in a given area. This type of farming is subsistence one and depends on rainfall for irrigation. However, in recent times due to reduced fallow period in jhum system, the soils have become more prone to erosion and degradation. Hence it is important to judiciously utilize the natural resources before the fertile soils become permanently degraded.

SUMMARY

Jhum or slash and burn cultivation, a form of traditional land-use practice carried out on the slopes of a hill, is known as shifting cultivation due to periodical changing of land rather than changing of crop. Mizoram is the extreme east part of India, in which jhum system of cultivation is the major method of cultivation. It is the way of life which provides subsistence to the dependent community in the form of food, fuel wood and fodder. This system is cyclic in nature and closely associated with the ecological, economical and cultural values of the local people. Jhum cultivation mainly involves selection and removal of forests by slash and burn techniques followed by mixed cropping, harvesting, and fallowing for a short period before abandoning the site. During the fallow period, trees replenish the soil organic matter and above ground vegetation, thereby improving soil structure and prevent soil erosion and excessive water runoff. Thus, ideally, Jhum cultivation is ecologically stable at a very low density of human population and can be operated successfully for subsistence.

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