

Assignment ON Environmental Studies

Topic: Agricultural practices and its impact on the environment in Kohima village (Jhum/terrace cultivation)

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Introduction

A thick smog and haze eclipses the sun all through the day when jhum areas are burnt. Jhum known as shifting cultivation a practice involving the slash-and-burn of felled trees in a forest patch followed by farming, is home to india's northeast. These lands usually lie on the slopes of hills in thickly forested landscapes. Burning the felled trees helps release nutrients for farming. The patch is subsequently left fallow once the land loses fertility. Then the Jhum farmers shift to another forest patch and return to the same site for another cropping phase only after a few years.

The practice is on its last legs under the pressure of modern systems of land tenure, which discourage it. With the advent of the unique agricultural system, intriguing traditions and practices in which Jhum considered by many to be a "Remarkable form of organic farming" that was self-sustaining and offered economic security to farmers.

Jhum farmers normally grow multiple crops such as decided by the community. Agriculture is the main ~~stay~~ of economy and rice is their staple food. This type of farming is practice by our people

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Since time of immemorial. In this process they have developed skills and ideas on how best to grow their crops and enhance its productivity.

Terrace and jhum cultivation of paddy are widely practiced by the tribal communities in the hill regions of Nagaland, Jhum cultivation is the traditional farming system in the Nagaland terrace cultivation of paddy wherever water is available for irrigation.

There are also soil degradation causes due to excessive jhumming and many people in the region have today started embracing terrace cultivation as an alternative due to its efficiency in terms of water management. Paddy cultivation in Nagaland can be further categorised into wet terrace paddy cultivation, wet cultivation are confined mostly in the valley areas and the wet terrace as well as jhum paddy cultivation are widely practiced in the hill areas of Nagaland. Thus this paper would look into the various practices developed and adopted in paddy cultivation in the hill areas over the years based on their actual experience and knowledge system.

Prospects

Shifting cultivation is an integral part of the Nagas as their socio-culture is closely associated with different activities of the agricultural practices. The traditional way of shifting cultivation is community participation where traditional knowledge is disseminated for the continuity of culture and managing the resources. The Jhum cultivators don't use any chemical pesticides or fertilizers nor weedicides. The Jhumias of Nagaland have rich traditional knowledge of keeping the pest away, increasing soil fertility, storage of food grains and seeds. The only weedicide used is salt, which, however is discouraged by the village chiefs and councils because of its deleterious effect. Hence, the producer of the Jhum cultivation is organic. But getting certificate for organic agriculture is difficult since Jhum entails cutting down of forests. Out of the 722,464 ha total cultivated areas, only 3000 ha of land is under certified organic farming benefiting 3,575 farmers growing crops like maize, soybean, french bean, ginger, large cardamom, passion fruit and chilli. Agro forestry is gaining popularity among the shifting cultivators in Nagalands.

Planting of fruits and timber yielding trees in the Jhum areas is kind of new trend among the farmers. This not only helps in improving the livelihood of the farmers but also protects the environment of the fallow lands. Alder has been planted in the Jhum fields as it grows quickly and helps in land recovery. It fixes nitrogen, and therefore increases the yield of the Jhum crops. Angami, Chakrany tribes practice Alder based agro-forestry at large. Fallow lands are the traditional means of in situ conservation of mushrooms, herbs, tubers and deepy vegetable, which has supplemented the household food requirement. The rise in demand for these wild vegetables and plants has led to cultivation to meet the local market demands, which have also sustained the resources as well as boost their economic condition. For instance some villages in Mokokchung district have started cultivating clouded-jwm cordatum etc. After harvesting the summer crops the land is left barren which is waste for the rest of the year. So as to make use the land throughout the year the cultivators have started ~~cultivating~~ winter crops such as Cabbage, potato, peas, mustard, carrot etc. They have also adopted sowing and harvesting of certain beans twice a year. One in summer and other in winter. These crops not only help them to

Sustain during winter but also help them in improving their livelihood because of their economic viability.

The farmers in Jhum system practice mixed cropping, cultivating 20-40 varieties of crops. Some of the common crops are rice, maize, pumpkin, colocasia, chilli, sesamum, millet, cucumber, tomato, ginger, bottle gourd, bitter gourd and different varieties of legumes. Varieties of rice are cultivated in a single Jhum field. Mixed cropping is also practiced according to the sustainability of the hilly terrain conditions. It balances the nitrogen demands of the crops. Non-legume crops as they help in fixing nitrogen in the soil, also act as an assurance of crops in case of failure of some crops.

* Climate Change: The climate is subalpine type of climate all the year round. The climate is controlled by its terrain features varying from tropical to temperate conditions. Nagaland also records a heavy rainfall. The heavy monsoon rain normally occurs from May to August with occasional dry spells during September to October. Dry season begins from November and continues till April. The temperature of the district varies from 28°C to 32°C in summer

and in winter it varies from 10°C to 15°C

Shifting cultivation, mining quarrying, logging have been identified as the causal factors for climate change widening in temperature range along with deforestation maybe detrimental to thermo sensitive crops like paddy in the district. In short the climate change scenario in Kottawa district maybe summarized as

- Excessive Rainfall
- Landslide
- Decline in forest area
- Rice likely to be under threat

* Positive aspects of shifting or Jhum cultivation

With the existence of shifting cultivation in the tropic is a very diverse system of agriculture practiced in various slope, topography, tools and implements population density, ecological zones cropping pattern etc. it is a farming system based on labor intensive and low subsidy which provides sustainable food production and security of the farmers living in the mountainous area and in the most saturated hilly ~~to~~ topography. There exists mixed cropping where the farmers can cultivate multiple crops for

their sustenance almost 8-10 varieties of items
 in a specific growing land which is planted according
 to the best adoption of the relaty conditions. this
 type of farming provides increase in output, produce
 less soil erosion uses up the available water, light
 & nutrients. Shifting cultivation is most widely practiced
 in the hilly rural areas having less advantage, advance-
 ment and infrastructure so people practice it using
 traditional method of cultivation avoiding chemical fertili-
 zers, pesticides and advanced tools and so there is less
 demands of environment and also benefits the health.
 this practice was essentially started to be an ideal
 key to agriculture in the humid as long as the
 population concentration is not too high and the
 fallow period is long enough to regain its
 fertility. this system of agriculture is ecologically
 sound and meet a lot of human needs with
 immense effectiveness, mainly with the regard to
 manual labor and other farming inputs.

* Negative aspect of shifting cultivation

In present years there are increasing indicators of the impacts of shifting cultivation for depleting forest on the environment such as loss of biodiversity, change of climate, degradation of watersheds, deforestation. The FAO in 1957, declared shifting cultivation as the most severe land use crisis in the tropical world. Some studies claim that almost 30% of the world's valuable soils is exposed to shifting cultivation. It forms a significant part of about 950 million hectares of resulting forest management in humid tropical areas. It is a very diverse land use system. Because of the growing population pressure, uncultivated periods are significantly decreased and the method degrades resulting in soil erosion and decline of soil fertility and its productivity. In Amazon shifting cultivation account to have about one third of deforestation and at least half of its forest is responsible for cattle.

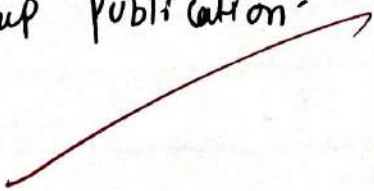
Conclusion

Shifting cultivation as an agriculture system that has always been labelled as 'a thing of the past' with not much scope for growth and development. With the introduction of money culture farmers are willing to completely trade their abundant agro-biodiversity for a few commercial crops.

Shifting cultivation practices are linked with the ecological, socio economic, and cultural life of the people and are closely connected to their rituals and festivals. Shifting cultivation in the region is not only the way to earn livelihood of rural tribes but also contributes to the state domestic product substantially of the respective states. But due to its evil effects on environment and ecological balance in the region, the time comes to think about the alternative of this traditional system. Thus to control deforestation completely. It will require huge investment and many years. Under this situation short term measures should be undertaken to improve productivity and also to check soil erosion. Considering the physiographic characters of land, climate conditions, social customs, food habits etc. alternative system

A farming like diversified farming should be introduced this would require a system which includes agriculture, horticulture along with animal husbandry, fishery and poultry farming etc. Success of this alternative farming depends upon the gaining of confidence of the masses over this alternative system through persuasion demonstration and applied fundamental research to be conducted very slowly without any haste.

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