

## Jhum Cultivation Practices and Its Negative Impact on Environment

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ARTICLE ID: 38

### Abstract

Jhum cultivation is still prevails in different districts of Arunachal Pradesh. It has different names in different parts of world. In Jhum cultivation, farmers cultivate mixed crops- paddy, chilli, cucumber, ash gourd, cassava, yams, leafy vegetables, millets, maize etc. It has so many harmful factors e.g. soil erosion, nutrients loss, ecological imbalance, loss of natural habitat etc. So many factors- e.g. cultural & religious, cheapest method of farming, lack of land ownership etc. are the major reasons of its prevailing. Through the proper education and training, providing other livelihood options- animal husbandry, horticulture etc. Jhuming can be stopped/minimized. The Jhum cultivation is dominantly prevailing in Arunachal Pradesh. This is also known as 'Slash and burn' cultivation. Eastern and middle parts of the state - Longding, Tirap, Changlang, Lower Dibang Valley, Namsai, Upper Subansiri, Lower Subansiri, Upper Siang, Siang, Shi- Yomi, Anini etc. are the major area; where Jhum cultivation practices is prevailing. In this system of cultivation hill slopes are cleared by cutting down and burning of forests and crops are then grown for 2-3 years in suitable seasons, after that the land is left fallow for another 5-6 years or more to regenerate soil fertility. Term Jhuming is known as Kumari in Western Ghats, Bringa in Orissa, Watra in Rajasthan, Masole in Central African countries, Caingin in Philippines, Roca in Brazil and Milpa in Central America.

Actually, the Jhum cultivation is a type of crop rotation where farmers rotate the cropping field for 2-3 years; in which the field regenerates the soil fertility level after leaving vacant. During the vacant period, plants, trees grow, their organic matter fall at top level of soil, rot and ultimately enrich the soil. Shifting cultivation is an age-old practice which is carried out on hilly terrain and slopes. Often the practice has been criticized by environmentalists, foresters, and developmental practitioners and policy makers as being

wasteful”, and as a “Primitive, backward, destructive or mere precursor to more “modern, sustainable” and sedentary forms of agriculture.

The operation of Jhum cultivation is starts by cutting of forests during December to January. After the forest is cut down and cleared the debris is left to dry in the open. From the month of February to March setting of fire to the dried debris is carried out. This operation is done with care so as to avoid forest fires from spreading across to other hills.

The sowing and planting of crops is done by dibbling in an intimate mixture of varied crops. Upland paddy is the main crop grown in mixture with maize, millet, sorghum, tapioca, chillies, turmeric, pumpkin, etc. Cropping is done with minimum tillage: No animals or large implements are used for preparing land. The only implements used are the chopping knife, sickle, dibbling stick, spade and hoe. After the harvest the land is abandoned for 3 to 5 years to rejuvenate itself and Jhuming is shifted to another site and repeated the same process.

#### **Positive aspect of Jhum cultivation**

It is a labour-intensive cropping system; which provides sustainable food production and food security for the tribal community of Arunachal Pradesh. In this mixed cropping concept. There exists mixed cropping where the farmers can cultivate multiple crops for their sustenance almost 8-10 varieties of items in a specific jhumming land which is planted according to the best adaptation of the relief condition. In this type of farming the following benefits found- minimal soil erosion, optimum uses of water, solar radiation and nutrients, ecological balance, increase in output. This system of agriculture is ecologically sound and meets a lot of human needs with immense effectiveness, mainly with regard to manual labor and other farming inputs.

#### **Negative aspect of shifting cultivation**

In the recent years it has proven that of Jhum Cultivation for depleting forest on the environment such as loss of biodiversity, change of climate, degradation of watershed, 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 vulnerable soils is exposed to Jhum cultivation. Due to 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. The loss of biodiversity, habitat, landslide, soil erosion, loss of nutrients from soil, low productivity of crops etc are the major causes of Jhum cultivation;

which have been found. Due to the shifting agricultural practices it results in felling of vegetation, and burning speeds up the course of the impact of global warming as a direct effect. Continuous felling of trees for fuel and firewood together with forest burning has given rise to the problem of increase in temperature and shortage of water. Thus, it has proved that Jhum cultivation is extremely wasteful and an irrational method of cultivation, which results in reckless reduction of forests and unfavorably affects the environment. Similarly, crop productivity is also a big issue in Jhum cultivation system because it yields very poorly as a sole cropping.



**Fig 1. Awareness Prog. to Stop Jhum by KVK Tirap**



### Factors contributing to the persistency of *Jhum* cultivation in Arunachal Pradesh

- ✚ **Cultural and Religious factor:** In Arunachal Pradesh 100 % population belongs to tribal community. These people still practicing *Jhum* cultivation as part of their tradition, their ancestors had practiced it from centuries, when there was no scientific knowledge of agriculture. They celebrate their important festival celebrated after the *Jhum* fields are sown. There are some who connect this festival to the fertility of the earth and expect a rich plant growth. It is observed that *Jhum* is not only an economic activity but also inseparable from certain elements of spiritual ethos of the community as well.
- ✚ **Simple and cheapest method:** The method involves minimal land preparation, insignificant capital investment, no manures or fertilizer requirement and manual labour involving only family members.
- ✚ **Absence of land ownership:** In Arunachal Pradesh; the land belongs to the community and in the absence of a secure tenure, the *jhumias* are unwilling to invest in land development activities. This lack of ownership makes the *jhumia* unable to have access to bank facilities. However, with increasing communication of life and with certain community land being released for sale, there is also every likelihood of the danger of usurpation of land by the affluent of society and consequential marginalisation of poor farmers of *jhumias* in rural areas.
- ✚ **Mixed cropping:** The *jhumias* are self-sufficient in a way because they consume the crops from their own *jhum* fields, like rice, millet, maize, fruits and vegetables so that their requirement for their daily consumption is fully met. Also, the presence of different crops in the same plot is conducive to pest management due to genetic diversity and the sequential harvesting of crops is an effective way of managing many species over both space and time and contributes to agro-ecosystem stability, besides showing better orientation of nutrient use efficiency.
- ✚ **Lack of improved technology awareness:** In a State where ethnicity is prominent and there is general aversion to bring labour from outside, the continuance of shifting cultivation practice would largely depend on the kind of developmental activity that is being offered. The lack of creating awareness and non-introduction of improved



technology that are location specific and need based would only strengthen the farmers resolve to resist change and persist with Jhum.

✚ **Lack of Financial Support:** Besides the bottlenecks of development highlighted above, one of the biggest constraints in livelihood matters relating to *jhum* control, poverty alienation, conservation oriented and other income generating programmes is the lack of extension of credit facilities. Traditional land tenure is blessed as constraining security for the credit. However, this appears to be only an excuse for non-performance and reluctance for credit extension. Therefore, with this in mind, the *jhumias* have no alternative but to continue with his age-old practice of *jhum*.

### Conclusion

Jhum cultivation is a traditional agriculture which is practice in most part of the rural area of Arunachal Pradesh and the people are sustained by it. Though people have aware about its draw back but it is not so easy for them to stop with this cultivation since it has been a cultural tradition for them and they are depended on it. The best way they can do is to use the land sustainably by using advance techniques to accumulate soil productivity and lengthen the period of jhum cycle. However, so many negative effects of Jhum cultivation on environment have proven. It can be suggested that the locals in order to do a sustainable agriculture: -

- They should keep the jhum cycle period long enough for soil to regenerate its nutrients.
- Proper education and trainings should be given to the current farmers and the young generation engaged in agricultural activities.
- People should opt for other activities other than Jhum cultivation like animal husbandry, horticulture, tree plantation, etc.
- Enterprises, policies and laws should be provided for better socio-economic condition and also to improve environmental impacts.

This will help maintain the land use in more proper way without degrading it.