



# Traditional Tools and Implements Used in *Jhum* Agriculture in Nagaland

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## ABSTRACT

The mainstay of the Nagaland economy is agriculture, with about 59.76 percent of the population directly or indirectly depending on agriculture for employment and livelihood. The farmers in Nagaland mostly use traditional tools and implements for all operations in the field and follow traditional cultivation methods. Nagaland has adequate land, and water resources and rainfall is more than sufficient. Farmers belonging to medium landholding (2-4 ha) is highest with 67 percent of the cultivated area, which is the major dependent on human energy. The man-days for land-clearing requirements, land development, weeding, harvesting, and threshing required for *Jhum* areas of Nagaland using traditional tools and implements were estimated as 1.196 crore man-days, 95.68, 54.36, 47.84 and 53.56 lakh man-days, respectively of *Jhum* area of 95,680 ha.

**Key Words:** *Jhum* cultivation, Human energy, Man-days, Traditional tools, and implements.

## INTRODUCTION

Nagaland, the 16<sup>th</sup> state of union India, is one of the smallest northeastern states of the country situated between 25° 60' to 27° 40' north latitude and 93° 20' to 95 ° 15' east longitude. The state is bordered on the west and north by Assam state, on the east by Myanmar, on the north Arunachal Pradesh, and on the south by Manipur state (**Figure 1**). The topography is very severe full of hilly ranges, and the altitude varies between 194 m to 3048 m above MSL. The state falls under one agro-climatic zone of mild tropical hill zone. It receives southwest monsoon rain in summer and northeast monsoon rain in winter with an average annual rainfall of 2000-2500 mm, with the peak rainfall received during the month from May to October. The state is inhabited by 16 tribes, namely *Angami, Ao, Konyak, Lotha, Phom, Pochury, Rengma, Sangtam, Sumi, Yimchunger, Chakhesang, Chang, Kachari, Khiamniungan, Kuki and Zeliang*. Each tribe is unique, which links with their distinct customs, language, and dresses (<https://en.wikipedia.org/wiki/Nagaland>).

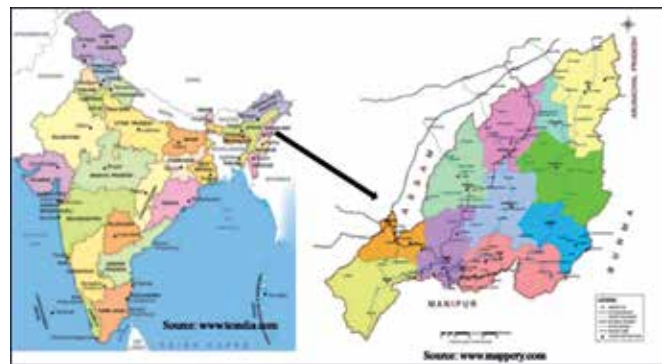


Figure 1. Location of the study area.

## MATERIALS AND METHODS

### Landholding and right of ownership

Ownership of lands and individual right is governed by tradition and customary law of Naga people. Various issues, disputes, and other issues arise, the village council interfered all the matters based on their traditional law. In Naga society, most of the lands are owned by individual farmers. In Nagaland, four categories of farmers are identified according to the landholding capacity (Anon, 2008).

The details of the landholding categories of farmers are given in **Figure 2**. Farmers belonging to the marginal group having landholding (< 1 ha) is lowest with only 3 percent followed by small landholding (1 -2 ha) with 6 percent, large landholding (> 4 ha) with 24 percent and farmers belonging to medium landholding (2 - 4 ha) is highest with 67 percent.

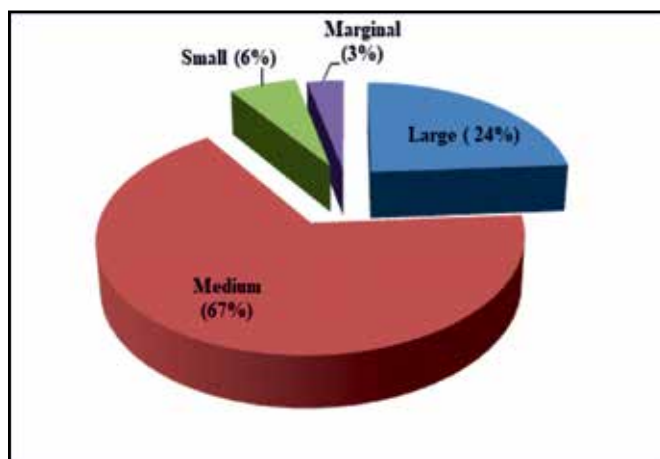


Figure 2. Land Holding Pattern of Nagaland.

### Jhum cultivation in Nagaland

The mainstay of the state economy is agriculture, with about 59.76 percent of the population directly or indirectly depending on agriculture for employment and livelihood (Anon, 2014). People in the state mainly depend on shifting cultivation or *Jhum*, but horticulture plantation and other non-agricultural resources are also being practiced at a minor scale. *Jhum* cultivation has been devised over generations through the innate experience and knowledge gained by the rural people over the land, labour, environment resources available, and the cropping requirements. The main crop is rice, and various other crops like maize, millets, and pulses are also grown in the same field as the rice. The three-year average annual *Jhum* cultivated area from the year 2010-11 to 2012-13 was estimated at 95680 ha, and the average *Jhum* area was used to determine the field capacity of various traditional tools and implements. The detail of the year-wise *Jhum* cultivated area of Nagaland is given in **Figure 3**.

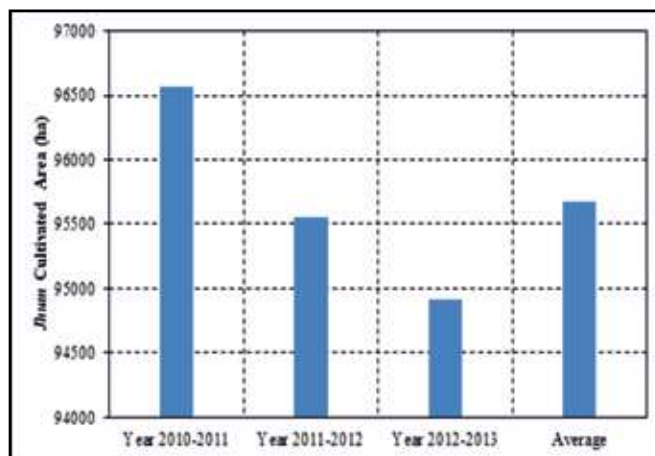


Figure 3. Year-wise *Jhum* cultivated area of Nagaland.

### Sources of farm power

Farm powers available in Nagaland are human, tractor, power tiller, and engine. Human power is the main source of farm power available in Nagaland. Mountainous terrains are the predominant geographical condition in Nagaland. Because of these geographical conditions, Nagaland is unfavorable for uses of modern developed farm implements and machinery. So, state by default, farm power sources mainly depend on human power. The human powers available were 271608 numbers in the case of males and 272825 numbers in the case of females in the year 2008. Mechanical sources of power through available numbers of the tractor are 36; power tiller numbers are 2622, and the numbers of the engine are 2150 (**Table 1**).

**Table 1. Farm Power available in Nagaland (Source: Anonymous, 2008)**

Sl. No.	Types of Power		Numbers
	Human	Male	271608
		Female	272825
	Mechanical	Tractor	36
		Power Tiller	2622
		Engine	2150

## Traditional Tools and Implements

### Manufacturing of traditional farm tools and implements in Nagaland

The farmers in Nagaland still predominantly used conventional hand tools and implements for all operations in the *Jhum* field as well as wet terrace rice cultivation (WRC). They follow the traditional method of cultivation. These traditional tools and implements may be inefficient and higher energy consumption as compared to the new technology but have served well in the farming community in the prevailing farming system for centuries. All these tools/implements are made locally by the village blacksmiths, carpenter, handicrafts, or farmers themselves. The district-wise numbers of traditional blacksmith available in the Nagaland are given in **Table 2**. Modern industries for the manufacturing of tools and implements are yet to be established in the state.

**Table 2. District wise farm tools manufacturing units in Nagaland (Source: Anonymous, 2008)**

Sr. No.	Name of district	Numbers of traditional blacksmith
	Kohima	120
	Makokchung	61
	Phek	66
	Wokha	86
	Zunheboto	125
	Tuensang	162
	Mon	74
	Dimapur	70

### Different steps involved in various *Jhum* farm operations using traditional tools and implements used.

The different traditional tools and implements used across Nagaland have similarities from one community to another community. However, the names of the traditional tools and implements differ from one tribe to another because of the difference in their local dialect. *Lotha* dialect of Wokha

district, Nagaland, is used for naming for different traditional tools and implements. The field capacity of various traditional tools and implements was used to estimate man-days requirements (Singh *et al.*, 2015). Man-days requirement of every traditional tools and implement were for various agricultural operations were estimated. The three-year average annual *Jhum* cultivated area from the year 2010-11 to 2012-13 was used to estimate man-days required for various agricultural operations. One man-day was considered eight working hours per day per person.

## RESULTS AND DISCUSSION

### Land clearing

Cutting of vegetation for clearing the landmarks is necessary for the beginning of agricultural operations in shifting cultivation. Naga-*Dao* (*Lepok*) is used for cutting of the vegetation. A total of 11960000 man-days are required to cut plant/vegetation annually for 95680 ha of *Jhum* land using Naga-*Dao*. Clearing of dry biomass for firewood from the *Jhum* area is necessary after land clearing. *Kheya* made of bamboo or wood is generally used for removing the weeds and other unwanted particles in the *Jhum* field. Using *Kheya* 6834286 man-days is necessary to remove unwanted plants from 95680 ha of *Jhum* areas of Nagaland.

### Land development

*Choktchü* (Spade) is predominantly used for land development of *Jhum* land, like digging of land for seedbed preparation. A total of 9568000 man-days are required for land preparation for 95680 ha of *Jhum* areas using *Choktchü* annually.

### Dibbling of seeds

After land preparation, seeds are planted using manual dibbler. Dibblers are made of locally available wood or bamboo. Annually 5980000 man-days are required for dibbling seed materials for 95680 ha of *Jhum* areas in Nagaland.

### Weeding of crops

*Ehe* (Hand weeder) made of bamboo or wood is having a blade made of mild steel. About 5436364 man-days are required for weeding of crops using *Ehe* in *Jhum* areas of Nagaland annually.

### Harvesting of Crops

Local made *Vekhiuro* (Sickle) are used for harvesting of various crops in the *Jhum* fields. Annually about 4784000 man-days are required to harvest crops in the *Jhum* fields using *Vekhiuro* in *Jhum* areas of Nagaland.

### Threshing of crops

*Kholo* (wooden stick) is generally used for threshing of paddy crops. *Kholo* is made of locally available materials like bamboo or wood. It is used as a threshing device for removing of paddy from the straw. About 531556 man-days are required for threshing of crops using *Kholo* in *Jhum* areas of Nagaland annually.

### Winnowing of threshed crop

*Moro* is generally used for a winnowing of the threshed crop for separating grains from unwanted materials. *Moro* is made of cane and bamboo. Using *Moro*, a total of 265778 man-days is required for a winnowing of total *Jhum* areas of Nagaland annually.

## CONCLUSION

Nagaland has huge natural resources. It has adequate land and water resources. Rain is more than sufficient. The non-agricultural area is also in some kind of agricultural use. The farmers still use very primitive farming practices. Some of the agricultural systems still practiced in Nagaland are given in Figure 4 (Singh et al., 2015). The farmers of Nagaland, by and large, still follow the traditional agriculture, grow indigenous crops, except a few sections, use no or fewer fertilizers to enhance crop yield. Land preparations are performed in the traditional method. There is the use of primitive/

indigenous tools and implements. Farmers followed traditional soil and water conservation measures.



Figure 4a. *Naga-Dao* (Lepok)  
Field Capacity: 8 m<sup>2</sup> h<sup>-1</sup> to 12 m<sup>2</sup> h<sup>-1</sup>



Figure 4b. *Choktchü* (Spade)  
Field Capacity: 10 m<sup>2</sup> h<sup>-1</sup> to 15 m<sup>2</sup> h<sup>-1</sup>



Figure 4c. *Kheya* (Bamboo and Wooden)  
Field Capacity: 15 m<sup>2</sup> h<sup>-1</sup> to 20 m<sup>2</sup> h<sup>-1</sup>



Figure 4d. *Ehe* (Hand Weeder)  
Field Capacity: 10 m<sup>2</sup> h<sup>-1</sup> to 12 m<sup>2</sup> h<sup>-1</sup>



Figure 4e. *Vekhiuro* (Sickle)  
Field Capacity: 20 m<sup>2</sup> h<sup>-1</sup> to 30 m<sup>2</sup> h<sup>-1</sup>



Figure 4f. *Kholo*  
Field Capacity: 40 m<sup>2</sup> h<sup>-1</sup> to 45 m<sup>2</sup> h<sup>-1</sup>

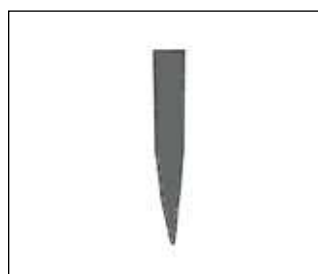


Figure 4g. *Dibbler* (Wood or Bamboo)  
Field Capacity: 10 m<sup>2</sup> h<sup>-1</sup> to 15 m<sup>2</sup> h<sup>-1</sup>



Figure 4h. *Moro*  
Field Capacity: 420 m<sup>2</sup> h<sup>-1</sup> to 480 m<sup>2</sup> h<sup>-1</sup>

**Figure 4.** Traditional tools and implements used in *Jhum* agriculture in Nagaland (Singh et al., 2015).

## Traditional Tools and Implements

### REFERENCES

- Anonymous (2008). Directorate of Agriculture, Government of Nagaland.  
<http://www.mappery.com/maps/Nagaland-Tourist-Map.jpg> (assessed on 23 October, 2015).
- Anonymous (2014). Statistical Hand Book of Nagaland 2013. Directorate of Economics and Statistics, Government of Nagaland, Kohima.  
<http://www.census2011.co.in/census/state/nagaland.html> (assessed on 23 October, 2015).
- <http://www.tcindia.com/images/map.gif> (assessed on 12 October, 2015).
- Singh LK, Devi SR and Singh M H (2015). Traditional agricultural tools and implements used in Wokha, Nagaland. *Indian J Hill Farming* **28**(1):50-55.

*Received on 28/11/2019      Accepted on 15/03/2020*