

## Traditional agricultural tools and implements used in Wokha, Nagaland

L Kanta Singh\* • S. Roma Devi<sup>†</sup> • Meitram Hemerjit Singh<sup>‡</sup>

\* KVK Imphal West, ICAR Research Complex for NEH Region, Manipur Centre -795004

<sup>†</sup> KVK Churachandpur, ICAR Research Complex for NEH Region, Manipur Centre

<sup>‡</sup> Division of Agricultural Engineering, ICAR Research Complex for NEH Region, Umroi Road, Umiam, Meghalaya

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### ABSTRACT

Wokha district has population of 166,343 with geographical area of 1628 sq. km and main occupation of the people in the district is cultivation. People in the district mainly depend on shifting cultivation or *Jhum* but horticulture plantation and other non-agricultural resources are also being practiced at 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. Average annual area under *Jhum* cultivation of Wokha district is 13900 ha and total area under agricultural crops in the district ranges from 38680 ha to 48150 ha. Traditional tools and implements dominated over the modern equipments in all agricultural activities in Wokha district. About 93842 agricultural farmers out of total population involved in all the agricultural activities in the district. Because of the geographical condition like steep slope, small terrace size, undulating terrain, etc. area is not suitable for modern power and machinery and the only alternatives left to solve such problems are through traditional tools and implements. Traditional tools and implements are locally developed and cost of manufacturing is less due to use of locally available raw materials and these implements and tools may be further improved through local artesian and farmers for achieving self-reliant in the district.

### 1. Introduction

Wokha district is one of the districts, out of 11 districts of Nagaland, it became separate district in December 1973<sup>1</sup> and earlier to it was one of the sub-division under Mokokchung District. Wokha district has population of 166,343<sup>2</sup> with geographical area of 1628 sq. km. Wokha town, the district head quarter is situated 80 km east of Kohima at an altitude of 1313.69 MSL; the district shares its borders with Zunheboto on the East, Kohima on the South, Assam on the West and Mokokchung on the North. Out of the total population, 78.96% of the populations live in rural areas consisting of 135 villages and rest 21.04 % live in towns. The district has literacy rate of 87.69%. The district is divided into five blocks namely, Wokha Sadar, Chukitong, Sanis, Wozhuro-Ralan and Bhandari blocks. Brief information on demographic and geographical area of Wokha are given in Table 1a and Table 1b.

**Table 1a.** Profile of Wokha district

Description	Numbers/area/percent/ ratio/rate
Actual Population	166,343
Male	84,505
Female	81,838
Area Sq. Km	1,628
Density/km <sup>2</sup>	102
Proportion to Nagaland	8.41%
Population	
Sex Ratio (Per 1000)	968
Literacy rate	87.69%
Male Literates	67,385
Female Literates	60,823
Total Geographical area (sq. km.)	1628
Irrigated area (Ha) <sup>3</sup>	9960
<i>Jhum</i> area (Ha) <sup>3</sup>	13900
Forest Area (Ha) <sup>3</sup>	25372

Corresponding author: [tondonba@gmail.com](mailto:tondonba@gmail.com)

**Table 1b.** Profile of rural and urban areas of Wokha District

Description	Rural	Urban
Population (%)	78.96 %	21.04 %
Total Population	131,339	35,004
Male Population	66,435	18,070
Female Population	64,904	16,934
Sex Ratio	977	937
Average Literacy	85.48 %	95.79 %

**Farming system of the Wokha district**

The main occupation of the people in the district is cultivation. People in the district mainly depend on shifting cultivation or *Jhum* but horticulture plantation and other non-agricultural resources are also being practiced at 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 grown in the same field with the rice. Vegetables like cabbage, chilies, okra, etc. are grown along with rice. The people practice backyard poultry farming and some of the people practice piggy and dairy farming in a small scale. Peach, plums, pineapple and citrus also do well in the district and their productions are sold to local market. The other vegetables such as chow-chow, colocasia, tapioca, radish, leafy vegetables are commonly planted near homestead and ridge boundary of the *Jhum* field. Till date agriculture continues to be the main source of livelihood however, the district is not self-sufficient in production of food grains. Year wise agricultural crop cover area in Wokha district is given in Table 2.

**Table 2.** Year wise agricultural crop cover area of Wokha district

Year	Area under agricultural crops (Hectares)
2000-2001	38680
2001-2002	48150
2002-2003	42750
2006-2007	40420
2007-2008	43810

**Traditional tools and implements in Wokha District**

Traditional tools and implements dominated over the modern equipments in all agricultural activities in Wokha district. Still power source available from animal and mechanical in the district is very low and most of farm works are depend on human labour. About 93842<sup>4</sup> agricultural farmers out of total population involved in all the agricultural activities in the district. Modern agricultural tools and implements are still lagging in the district. The reason behind the lagged of modern agricultural mechanization is due to its geographical condition like steep slope, small terrace size, undulating terrain, etc. which make unfavourable for running the modern implements and machinery. The only alternatives left to solve such problems are through traditional tools and implements and machinery. The only alternatives left to solve such problems are through traditional tools and implements. Traditional tools and implements are locally developed and cost of manufacturing is less due to use of locally available raw materials.

Most of the traditional tools and implements are manufacture by famers themselves, so it also solves the problems of maintenance and repairing, which generally major issues to the modern equipment's. These traditional tools and implements are use in various agricultural operation rights from the cutting of bushes to land preparation to post harvest management. Traditional tools and implements used in various farm operations are shown in the Table 3.

**Table 3.** Traditional tools and implements used in various farm operation

Operation	Activities	Traditional tools and implements used in various operations
Land clearing	Cutting of trees, bushes and grass	<i>Naga Dao-Lepok</i> (Small, Medium, Large), <i>Vekhüro</i> (Sickle), <i>Kheya</i> (Bamboo and Wooden), <i>Choktchü</i> (Large Spade), <i>Lirhon choktchü</i> (Medium Spade), <i>Choktchü</i> (Small Spade)
Land development	Burning and clearing of trees, bushes and grasses	<i>Kheya</i> (Bamboo and Wooden), <i>Choktchü</i> (Large Spade), <i>Lirhon Choktchü</i> (Medium Spade)
Land preparation	Ploughing, Seed bed preparation, etc.	<i>Choktchü</i> (Large Spade), <i>Choktchü</i> (Large Spade), <i>Lirhon choktchü</i> (Medium Spade), <i>Choktchü</i> (Small Spade), <i>Litaphen</i> , <i>Kholo</i>
Planting or seeding	Seed distribution, dibbling, drilling, etc.	<i>Choktchü</i> (Small Spade), <i>Loksa</i> , <i>Sopuk</i>
Transplanting	Establishment of seedlings, uprooting and moving the plant to a new location	<i>Choktchü</i> (Small Spade), <i>Bharii</i> , <i>Okhyak</i> ,
Crop husbandry	Irrigation, Weeding, spraying of manure etc.	<i>Ehe</i> (Hand weeder), <i>Choktchü</i> (Small Spade), <i>Bharii</i> and <i>Okhyak</i> for carrying water can and manure
Harvesting	Gathering of a ripened crop	<i>Vekhüro</i> (Sickle), <i>Naga Dao-Lepok</i>
Threshing	Separation of grain or seeds from the husks and straw	<i>Kholo</i> (Wooden Stick), <i>Litaphen</i> , <i>Ophuk</i> , <i>Sopuk</i>
Winnowing	Separation grain from chaff and other unwanted particles	<i>Moro</i> , <i>Okhyak</i> , <i>Ophuk</i>
Handling	Carrying farm produce	<i>Bharii</i> , <i>Sopuk</i> , <i>Loksa</i> , <i>Okhyak</i>
Storage	Depository for grains	<i>Chaba</i> , <i>Oson</i>
Milling	Removal of husk from paddy	<i>Jenkok</i> and <i>Mhenki</i> (Hand operated rice ponder)

## Traditional tools, implements and other equipments uses in various agricultural activities in Wokha district, Nagaland

### Naga Dao-Lepok

*Lepok* are the common Naga Dao used in Wokha district, Nagaland. The size ranges from small, medium to large. They are generally made of mild steel. The length of large *Lepok* generally ranges from 25 to 30 cm without handle portion. The length of medium dao ranges from 22 to 25 cm and small *Lepok* ranges from 15 to 20 cm. Handle of the *Lepoks* are made of bamboo, winded with steel wire or mild steel sheet. Thicknesses of *Lepoks* are generally ranges from 5 to 7 mm. *Lepoks* are multipurpose tools generally used for wood cutting, clearing of jungle, bushes, butchering of meat, etc. *Lepoks* are generally use by male farmer member and field capacity of *Lepok* generally ranges from 8 m<sup>2</sup> to 12 m<sup>2</sup> per hour for clearing bushes in *Jhum* field.



Figure 1. Naga Dao-Lepok (Small, Medium, Large)

### Choktchü

It is resembled to modern spade; there are generally three categories of *Choktchü*, i.e. small, medium and large *Choktchü*. *Choktchüs* are made mild steel sheet. Average weight of large *Choktchü* generally ranges from 1.4 to 1.6 kg, medium weight ranges from 0.8 to 1.0 kg and small weight ranges from 0.3 to 0.5 kg. Large and medium *Choktchü* are used in field for land preparation like clearing of jungle and digging of land or seed bed preparation while small *Choktchüs* are used for planting of seeds and other seedling in the field. Field capacity of *Choktchü* measured for land preparation ranges from 10 m<sup>2</sup> to 15 m<sup>2</sup> per hour.



Figure 2. (a) *Choktchü* (Large Spade) (b) *Lirhon Choktchü* (Medium Spade) (c) *Choktchü* (Small Spade)

### Litaphen

*Litaphen* is made of wood. The length of handle ranges from 80 to 100 cm and length of head portion ranges from 25 to 30 cm. The diameter of *Litaphen* ranges from 4 to 6 cm. It is multipurpose tool uses in various operations like breaking of soil blocks during land preparation and it also used as threshing device for removing paddy from the straw.

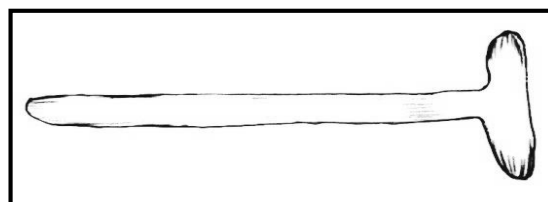


Figure 3. *Litaphen*

### Vekhüro (Sickle)

Sickle is locally known as *Vekhüro* and it is made of mild steel. It is available through local blacksmith and design locally. The length of sickle ranges from 25 to 30 cm including the wooden handle and thickness ranges from 1 to 2 mm. It is a harvesting device used for cutting of paddy straw during harvesting and other crops as well and also used for cutting of fodder for animals. The field capacity of *Vekhüro* measured in hourly basis ranges from 20 m<sup>2</sup> to 30 m<sup>2</sup> depending upon the experience and healthiness of the farmer.



Figure 4. *Vekhüro* (Sickle)

### Ehe (Hand weeder)

Blade of *Ehe* is made of mild steel and handle is made of bamboo or made of wood. The average length of the *Ehe* is 25 to 30 cm. *Ehe* is generally used for hand weeding and all type weeding in field. The weight of the *Ehe* ranges from 0.3 kg to 0.5 kg and the field capacity ranges from 10 m<sup>2</sup> to 12 m<sup>2</sup> per hour depending upon the types of weeding. *Ehe* sometime used for cleaning poultry and pig droplets.



Figure 5. *Ehe* (Hand weeder)



### ***Kheya***

*Kheya* are generally made of wooden or bamboo. The length of handle of *Kheya* ranges from 80 to 100 cm and diameter of handle generally ranges from 4 to 5 cm. It is generally light in weight ranges from 0.5 to 1 kg. During the jungle clearing *Kheya* are used for removing the weeds and other unwanted particles in the field and is also used as weeder in *Jhum* field. Because of its light in weight it can be use both by male as well as female member. Field capacity of *Kheya* generally ranges from 15 m<sup>2</sup> to 20 m<sup>2</sup> per hour depending upon the types of weeding.



**Figure 6.** *Kheya* (Bamboo and Wooden)

### ***Kholo* (Wooden Stick)**

*Kholo* is wooden stick, made from locally available wood. The length of *Kholo* ranges from 80 to 100 cm and diameter ranges from 4 to 6 cm. It is used as threshing device for removing paddy from the straw. *Kholos* are generally made by farmers themselves and materials for making *Kholo* can be easily available in the farmers' field. A farmer can threshed from 15 to 20 bundles of paddy straw in an hour.



**Figure 7.** *Kholo* (Wooden Stick)

### ***Jenkok and Mhenki* (Hand operated rice ponder)**

It is post-harvest device for removal of husk from paddy. It is hand operated rice ponder. Ponder (*Jenkok*) is made of wood and handle (*Mhenki*) is also made of wood and cover with mild steel sheet at its head portion. Such rice ponders are very common in Wokha and post-harvest machinery for processing of rice and other crops are still lag in the district.



**Figure 8.** *Jenkok and Mhenki* (Hand operated rice ponder)

### ***Okhyak***

It is made of bamboo and cane, used for carrying of paddy, and also used as winnowing device for pouring the paddy during winnowing, capacity ranges from 20 to 30 kg. It is use both by male as well as female member. Capacity *Okhyak* uses by male member are generally more than the *Okhyak* uses by female member. *Okhyak* sometime use as temporary grainery for storage of grain when is not in use in other purposes. Generally *Okhyak* are also use for carrying food item to the field and carrying back firewood while returning from the field to home.



**Figure 9.** *Okhyak*

### ***Chaba***

*Chaba* is used for storing of dehusk rice and has storage capacity ranges from 30 to 40 kg. It is made bamboo and cane. It is generally kept at kitchen place. *Chaba* has a cap on the top in order to protect from insects and rodents.



**Figure 10.** *Chaba*

### ***Ophuk***

*Ophuk* is a mat made of bamboo. It is multipurpose mat used in threshing, drying of grains etc. The size of *Ophuk* ranges from 3 to 4 m in length and width ranges from 1.5 to 2 m. Most of the household in the Wokha district generally own an *Ophuk*. It is an essential post-harvest material for every household. *Ophuk* generally weight from 7 kg to 12 kg and can be easily carry by a person to the farm or any other places depend on requirements. About 40 to 60 kg of rice can be dried over the *Ophuk* at a time and it is also use drying of other materials like vegetables, fruits, medicinal herbs, etc.



**Figure 11.** *Ophuk*

### ***Bharü***

*Bharü* is made of bamboo or cane or both. It is generally used for carrying various agricultural commodities or even carries water by putting container inside the *Bharü*. It can carry weight ranges from 20 to 30 kg depending upon its size.



**Figure 12.** *Bharü*

### ***Oson (Granary)***

*Oson* is the granary for storing of paddy. It is made of wooden plank or bamboo and in some cases granary are plaster with mud clay on the floor. The size generally varies from one *Oson* to other, but on an average *Osons* are constructed at capacity ranging from 30 jute bags (70 kg) to 70 jute bags. Earlier it used to be roofed with thatch grasses, but now days many of roofs are used of tin sheets.



**Figure 13.** *Oson (Granary)*

### ***Moro***

*Moro* is made of bamboo and cane. It is a winnowing device for cleaning the grain. Generally *Moro* are used by the female member of the family. The weight of *Moro* generally ranges from 0.7 to 1.2 kg, so it is very light in weight and work can be easily carried for long without much tiredness.



**Figure 14.** *Moro*

### ***Sopuk***

*Sopuk* is a basket made of bamboo; it is generally used for carrying seed materials in field and also used for other domestic purposes. The capacity ranges from 15 to 20 kg.



**Figure 15.** *Sopuk*

### ***Loksa***

*Loksa* is also another form of basket made of bamboo and cane. It also used for carrying seed and other materials in the field and also used for other domestic purposes. The capacity ranges from 10 to 15 kg.



**Figure 16.** *Loksa*

## **2. Conclusion**

The productivity of farms depends greatly on the availability and judicious use of farm power by the farmers. Agricultural tools, implements and machines enable the farmers to employ the power judiciously for production purposes. Agricultural development aiming at higher production would require mechanization and supply of sufficient energy is a prerequisite for mechanized agriculture. The geographical constraints of Wokha, Nagaland prevents from using modern power and machinery. Traditional implements and tools will play the lead role in developing the agricultural sector of Wokha and these implements and tools may be further improved through local artesian and famers for achieving self-reliant in the district.

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