CHAPTER - FIVE

FINANCE, TOOLS AND TECHNIQUES

In peasant economy the role of capital is not all that significant. Capital never emerges as a distinct pre-condition of production in tribal economy and where the need of capital is found somewhat negligible and supplied mainly by the land owner. Tribes commonly use their indigenous tools and techniques in production in general and in agriculture in particular. They do not like to deviate much from their traditional methods and techniques of production.

Instead of presenting capital as a means of production, which is not possible in any tribal economy, the present chapter deals with the state of finance and some relevant aspects associated with it. They are - source of supply of finance, variety of tools and techniques, manure and fertiliser, source of water, management of animal labour, exchange of animal labour and change in cultivation.

5.1 SOURCE OF FINANCE

The requirement of finance in Lepcha agriculture is minimum. Agriculture among the Lepchas is basically household based. They use either household or exchange labour. Particularly for traditional crops like paddy, maize and millet, Lepchas use domestic seeds which they usually keep separately after harvest. They use cow-dung as manure which is also available domestically. Although, few Lepchas have bullocks, but most of them rear milch cow, goat, pig. Their wastages are used as manure in the fields.

For non-traditional crops like vegetables, gladioli, ginger, cardamom, the picture is a somewhat different. In the cultivation of cash crops, exchange of labour

(*teaolmaatheong*) is not all that prevalent. Lepchas need to hire wage labour and buy seeds at higher cost particularly for ginger and potato. Modern crops need chemical fertiliser, pesticides for proper growth. Lepchas, thus, need fund to produce modern crops and which they invest on wage labour, seed, fertiliser and even for marketing.

Lepchas mostly meet their requirements of finance in agriculture from their own sources. They on their own manage the small amount of fund required for the traditional crops, but often face problem in the case of modern cash crops. Lack of institutional source of credit compel them to manage cash from local personal sources. The share croppers only get the paddy seeds for next cultivation from their land owners at the time of harvest.

In case of any shortage of paddy or millet seedlings of small quantity, it is available in mutual terms from the neighbours without involving any cost or others in return. The neighbours however, supply cow-dung manure in exchange of either straw or cash. In Mani Gumpa some exchange gladioli bulb for cormlets. In Pochaok few farmers take ginger seed from the shopkeepers on the condition that they will sell their produce to them. Sometimes local grocers allow the Lepchas to take their daily necessities throughout the year and ask to repay the entire amount by selling the crops to them. The grocers thus play the role of middlemen and also purchase the agricultural crops. Some Lepchas supply to them milk daily and in exchange receive daily necessities. Some shopkeepers of Bihar origin in Pochaok are well versed in Lepcha language and can attract the innocent Lepchas as their customers. The same practice is also observed in other two villages where the shopkeepers are not the purchaser of crops but allow the Lepchas to receive the grocery articles throughout the year.

Lepchas of Mani Gumpa are facing difficulty in selling gladioli which is a perishable commodity. They cannot even wait for two days with the gladioli sticks. Two individuals are the main purchasers of gladioli – one individual Dhan Narayan Chettri and the other is a sort of co-operative run by the members of the co-operative. The payment and standardisation are better in case of Sirbandi club than that of the private one. Unlike Pochaok, the Lepchas of Mani Gumpa face problems of getting any financial support as and when it requires for agricultural operation. Although the middlemen belonging to the business community exploit the Lepchas by paying low price, low grade or weight but do supply cash or other requirement at times of need. The Lepchas found them essential in the absence of any alternative institutional sources of finance.

Beside the above noted negligible and irregular kind of non-institutional financial support, the Lepchas sometime received the meager amount of institutional credit as may be illustrated in the following cases :

In Mani Gumpa, two households received loan for poultry farm from State Bank of India in early 80's. In 2000 another two households received subsidised fishery loan of Rs.5000/- each. It was sanctioned by the Department of Fishery, Govt. of West Bengal and was disbursed through the Union Bank of India, Kalimpong Branch. But the recipients complain that they are yet to receive the last installment of the loan. Once all the villagers about 20 years back received HYV maize seed and some fertiliser from the Comprehensive Area Development Project, a Govt. of West Bengal organisation. But there was no follow up of the scheme and the villagers had to rely on their less productive traditional variety.

Bidhan Chandra Krishi Vishwavidyalaya (presently renamed as Uttar Banga Krishi Vishwavidyalaya, U.B.K.V) has selected the 5th Mile Lepcha Gaon for their experiment and research for adoption of different high yielding variety crops. They periodically supply different variety of seeds or seedlings at free of cost to the villagers and find the effect on their soil. But this is a short term benefit extended by the university for their experiment purpose only without any follow up for the long term. Recently, three young Lepchas of the village visited the university centre at Kalyani for agricultural training. "But as far as our agricultural pattern is concerned, we are not getting any practical benefit from such training", said Subhas Lepcha, a trainee.

Lepchas of Pochaok received some credit from the banks located at Budhabare. With the subsidised loan some purchased milch cow, goat but most of them could not repay the amount due to inappropriate use of the money. These defaulters cannot approach the bank for further loan nor the bank takes the risk of advancing fresh loan to them.

For institutional finance, the role of two non-governmental agencies are important to note :

GUMPA

The monastery in Mani Gumpa village is an important source of credit for the Lepchas at the time of their emergency. All the member households (near 68 households including from those of the neighbouring villages) received loan from the Gumpa in the initial period of establishment of the village. The present Lepchas have no idea about how much money they received but all are paying Rs.5/- as a sort

of interest twice a year during *chu-chu* function in the Gumpa. It is a non-refundable type of loan where the households need not to pay the principal amount but are liable to clear the interest.

Fertile and comparatively flat land of the village is in the possession of the Gumpa. All the lands are rent free. It helps the Lepchas by leasing them out on share cropping. The highest percentage (31.81) of share cropping are recorded in Mani Gumpa because of availability of Gumpa land.

At times of requirement, particularly during bad harvest, Gumpa came forward to help uniformly to all its members as per requirement. Many Lepchas take crops particularly paddy and maize as loan during off harvest period to meet up their daily consumption needs from the Gumpa and return the same after harvest. No interest is charged against such crop loan. Gumpa also extends loan to meet some urgent requirements like medical or educational purposes.

WORLD VISION

World vision, a USA based NGO helped nine Lepchas by sanctioning loans for animal husbandry particularly in purchasing pig, goat, hen or cow. No interest is charged on the loan but the debtor needs to return the principal amount to the village level committee and the recovered money thus accumulated may create a self-supporting fund for the village.

Very recently, World Vision constructed eleven water tanks of 2000 litre capacity and connected them with the uphill stream by iron pipe. This water is mainly used for agricultural purposes and every households in the village are benefitted by the system. This has changed the dimension of agriculture in the

village and the Lepchas now-a-days are showing more interest in cultivating vegetables which need comparatively more water.

It is, thus, clear that in the case of Lepchas the household fund like household labour remains as the main source of capital for the agricultural use. The little bit of support which the Lepchas received at different times from different institutions are neither sufficient nor stable. For all practical purposes no Lepchas depend on outside financial help for agriculture. The amount of money required is also low and the Lepcha agriculture remains as traditional one. Their higher dependence on rain water, traditional seed, household labour, village bullocks, plough, indigenous manure possibly do not compel the Lepchas to go beyond their household finance for agriculture. In the cultivation of cash crops like gladioli, vegetables, ginger, potato the picture is slightly different but still the Lepchas manage the required capital either from household or other sources available within the village.

5.2 TYPES OF IMPLEMENTS AND TOOLS

Agriculture of the Lepchas requires small number of implements and tools. The implements are normally owned personally by the users and where ever they go for work, they carry those along with them. The owners of bullock usually possess implements of ploughing and levelling. Modern tools like sprayer machines are possessed by fifteen households. But they are extensively used by all other Lepchas with or without paying anything to their owners.

The traditional Lepcha cultivation is known as *zomaal* which means sowing of paddy in the dry land. In this cultivation, the males generally dig the earth with

pointed bamboo rods while the females follow them by pushing some seeds inside the holes or loosed earth. In early days, the Lepchas had no plough and the implements used by them were mainly meant for scraping and softening the soil for reception of seeds. The traditional implement used for loosening the earth and cleaning of seeds was the hoe. In addition there were two or three types of pronged hoes used for loosening the earth and removing the weeds. But now-a-days the implements used by the Lepchas are of the similar type as used by the others in the region. The following implements are used by the Lepchas in different agricultural operations.

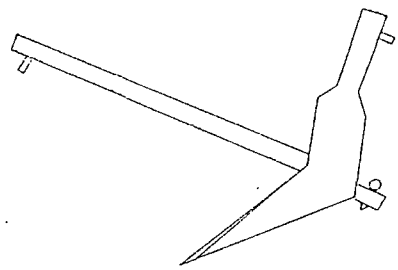
5.2.1 PLOUGHING IMPLEMENTS

Plough (*longkung* or *halkung*) is used by the Lepchas for tilling the land. Ploughing is not suitable for small patch of land and which is cultivated by the Lepchas with the help of spade (*tackchoo*). Before ploughing with bullocks, spade is extensively used for cutting the earth on the ridge side of the terrace or rebuilding the boundaries with new earth for the field.

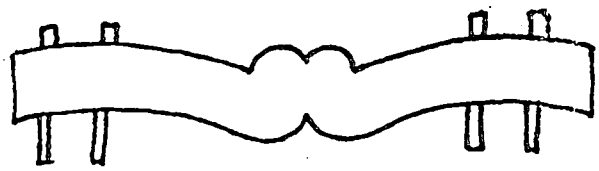
The plough used in the hills is heavier (nearly 20 to 25 kg. along with the plough share) than that of the plains. Lepchas use two types of plough – heavier one for the dry field and comparatively lighter one for the wet field. The height of the plough depends on the height of the ploughman.

A plough (Figure 1.a) consists of different parts and are identified with particular Lepcha names. The horn shaped piece of wood (*kung*) with a length of 2-2½ feet is tipped by nearly 10-12 inch iron plough share (*pansing*). Two or three iron hooks are used to fix the share with the plough. The share need to be sharpened

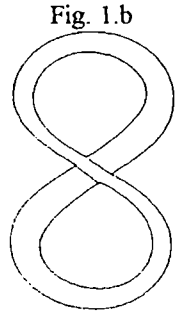
every three to four years from the blacksmith (*karvomoo*). On the upper end a round shaped wood preferably straight branch of tree is fixed whose other end is connected with the handle (*acham*) to steer the plough. At the middle of the *kung* where it takes kink shape a beam (*pathing*) of 6-7 feet length is fixed by creating holes and using wooden cork. The wooden yoke (Figure 1.b) (*thokabiyal*) is fixed on the other end of the beam with hooks to rest on the shoulders of the pair of bullock. A leather rope (Figure 2) (*thong*) is used to tie the beam at the middle of the yoke where it is comparatively curved shaped. The yoke is 3-4 feet length and on its both sides two bamboo rods are fixed vertically so that the bullocks can be tied with rope.



Plough *(long kung)*
Fig. 1.a



Yoke (*thokbiyal*)
Fig. 1.b

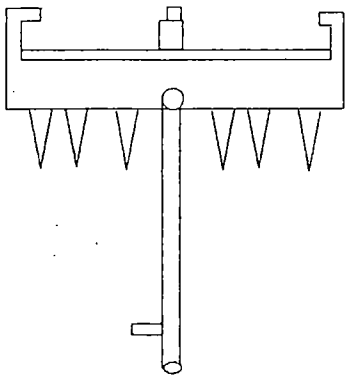


Rope made of leather (*thong*)
Fig. 2

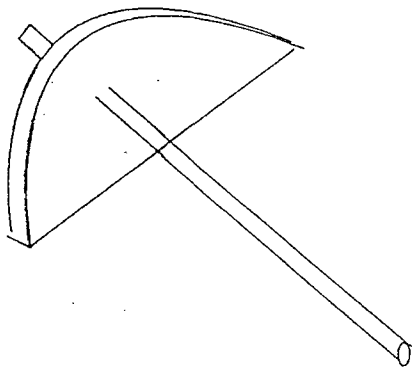
Most parts of plough are prepared by the Lepchas themselves out of best variety of wood available locally except the plough share which they purchase from the market. Two blacksmiths (*karvomoo*) are found only in Pochaok. But their principal occupation is cultivation and both of them fall in the category of owner cultivator (Table 3.3). The owners of the bullocks generally function as ploughmen who usually carry both the plough and bullocks where ever they visit for their service. The bullock which is fixed at the left side of yoke is known as left bullock and that at the right side is right bullock. Left bullock generally cannot be shifted to the right side. Left and right bullocks are fixed to the left and right sides of yoke. Bullocks can understand and obey the orders of their master only.

5.2.2 HARROWING IMPLEMENTS

After ploughing the next operation is harrowing and levelling for which two types of harrow are used by the Lepchas – pointed harrow (Figure 3) (*tset*) drawn by the bullocks and the ordinary wooden harrow or the leveller (Figure 4) operated manually.



Pointed harrow (*Tset*)
Fig. 3



Wooden levellor
Fig. 4

For harrowing, the same yoke used for ploughing is fixed by the leather rope (*thong*) with the beam (*pathing*) of the pointed harrow. Lepchas generally use 3-4 feet long thick wooden plank to fix 5-8 wooden or bamboo points on one side and two round shaped woods on the two extreme corners of the other side of the plank. Two handles are fixed at the end of these round shaped wood so that two children who sit on the two ends of the plank can hold themselves tightly. *Tset* is also used for harrowing the soil and collecting the roots and other wastage articles with the pointed parts of the harrow.

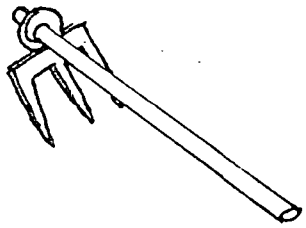
After harrowing the wet field with the pointed harrow, Lepchas use hand driven spade like wooden leveller. A half circle wooden plank with 1-1½ feet length is fixed with wooden or bamboo handle at the middle of the plank. After harrowing the soft clay, the field needs to be levelled so that water can be stored equally at all parts of the field. The leveller can be used for both pulling and pushing clay by an adult male labour.

5.2.3 SOWING AND TRANSPLANTING IMPLEMENTS

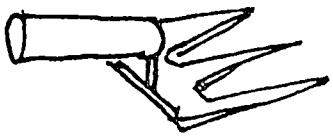
Next agricultural operation is the transplantation of seedlings from nursery bed to the field. In case of dry farming like maize, millet or vegetables, the seeds need to be sown either in row or scattered over the field. It is manually done by hands and for such operation no seed drills or any other implements are used. In case seeds are sown in row, plough is used to make row and after placing seeds on the rows, spade is used to cover seeds with earth.

5.2.4 WEEDING IMPLEMENTS

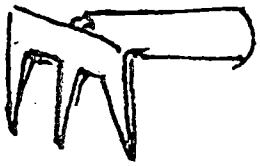
Three types of implements are generally used for weeding – pointed forked hoe with big handle (Figure 5) (*foat-krut*), two types of pointed forked hoe with small handle (Figure 6 & 7)and spade (Figure 8a and 8b) (*thakchu*). The iron hoe with three iron points are connected with 2½-3 feet bamboo or wooden handle through a ring holder. It has three iron points but is connected with 6-8 inches wooden handle by a pin sharped iron connector. In one case, the handle is facing the worker like spade while in other case, the small handle is facing against the worker like shovel. Spade is a 6-8 inch iron plate sharped on the lower side and got a ring holder on the upper end to fix the 2½-3 feet bamboo or wooden handle. The iron parts of all the three implements are purchased from the market while the wooden parts are domestically prepared and fixed by the Lepchas. The paddy and millet field get less weeds and are normally weeded by hands without using much of appliances. The dry farming needs weeding and where pointed fork is widely used.



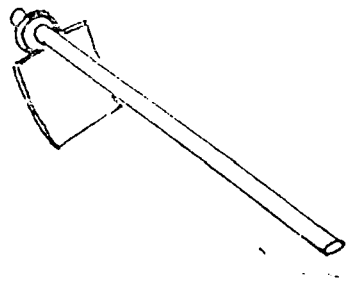
Pointed forked hoe (*Faat Krut*)
Fig.5



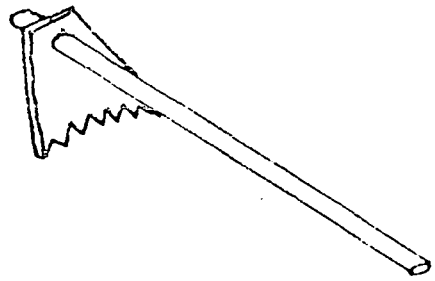
Pointed fork (*Kakchu*)
Fig.6



Pointed fork
Fig.7



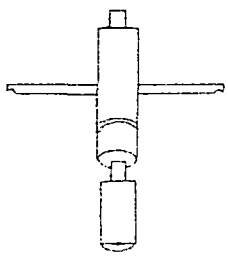
Spade (*Thakchu*)
Fig.8.a



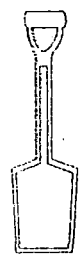
Pointed Spade
Fig.8.b

5.2.5 IRRIGATING IMPLEMENTS

No part of the study area enjoys the facility of assured irrigation. Lepchas use their traditional device in irrigating the fields. The rivulets or streams are diverted through canals by blocking the stream water with stones, earth and sand. Often half inch diameter polythene pipes are used for connecting the field with the source of water. Spade (Figure 8a) and shovel (Figure 10) are mainly used for making canals or blocking water at the source. For spraying water in the dry field particularly for vegetable cultivation, Lepchas use home made sprinklers which are connected by polythene pipes with the water source at the higher heights. The sprinkler is shown in Figure 9.



Sprinkler
Fig.9



Shovel (*Faat-Ghuram*)
Fig.10

The sprinkler is the unique example of indigenous technology which is prepared domestically with the simple things available locally. No parts except the polythene pipe need to be purchased, neither they are available in the market. Some Lepchas are more expert in preparing them and make them available for the others. The Lepchas lend sprinklers without charging anything in return.

5.2.6. SPRAYING EQUIPMENTS

Lepchas use modern sprayer for spraying insecticides, pesticides, fungicides and hormone for the cash crops like ginger, gladioli, vegetables. The sprayer is not required for traditional crops like paddy, maize and millet. The price of sprayer varies from Rs.800/- to Rs.1200/-. One young Lepcha of Mani Gumpa who brought some parts from Siliguri and assemble them at home could complete the sprayer for Rs.250/- only. The sprayer available in the three villages is shown in Table 5.1. The Lepchas also use others machine without paying them in return. One sprayer has been purchased out of sponsored money of World Vision, the USA based NGO, and is kept at its office at 5th Mile Lepcha Gaon. The Lepchas at times of requirement can borrow the machine against the payment of Rs.10/- per week. One machine is sufficient to cater the need of the entire village but in many cases, one household takes the machines for a week but it is used by the others without paying anything either to the World Vision or the household who borrow on rent. These machines are used at the time of cultivation of gladioli in Mani Gumpa, vegetable in 5th Mile Lepcha Gaon and ginger or cardamom in Pochaok.

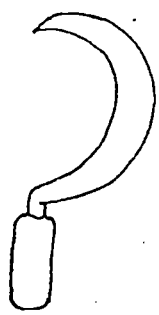
Table 5.1

Spraying machines available in the three villages

Name of the village	No. of machines availabic	Ownership category	Type of Primary Corps
Mani Gumpa	3	Individuals	Gladioli
5th Mile Lepcha Gaon	1	World Vision, U.S.A. Based NGO	-
Pochaok	11	Individuals	Ginger, Cardamom
Total	15	-	-

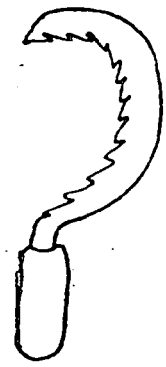
5.2.7 HARVESTING IMPLEMENTS

The sickle or reaping hook is used by the Lepchas for harvesting. The iron blade of the sickle varies in terms of its arc and length. The sickle used for harvesting paddy (Figure 11a & 11b) is generally smaller than those used for cutting the jungles in cardamom field (Figure 11c). Lepchas use spade and pointed hoe for digging earth to collect the underground products like potato, ginger, radish. Harvesting of maize is done manually without any tool.



Sickle used in paddy
Fig.11.a

Sickle used for cutting jungle
Fig.11.b



Sickle used in Cardamom
Fig.11.c

5.2.8 THRESHING IMPLEMENTS

Stalks of harvested paddy or wheat in a form of small bundles are carried to the threshing ground (*zo-laam*) for threshing and winnowing. Lepchas normally use log of wood or wooden plank or seating bench for threshing purposes. A bamboo stick is also used for beating and separating corn from straw. A big oven is used to dry the cardamom and make ready for sale. After plucking, the millet is dried up in sunshine and beated by wooden rod to get the crop.

5.2.9 MEASURING DEVICE

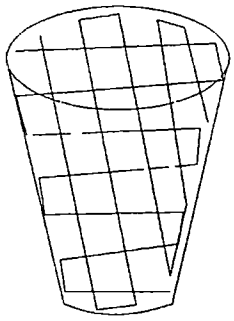
Lepchas use two types of measurement for agricultural products – *taphu-tungfri* system and the standard metric units. After harvest Lepchas take an account of their products in terms of *taphu-tungfri* system. But they follow metric measurement when they send the product to the market for sale. *Taphu-tungfri* system is used in case of any domestic use of product or any intra-community transaction including loan, payment of wage, measurement of seed for land. It is also used to measure the quantity and quality of land. Traditionally, lands were measured in terms of seed used or quantity of crops cultivated. The units of measurement as followed by the Lepchas and their metric equivalent is shown below :

TABLE 5.2

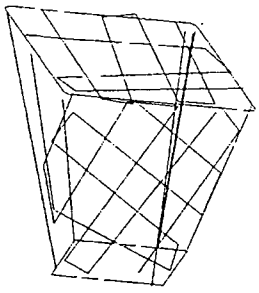
INDIGENOUS AND METRIC MEASURING UNITS

Indigenous Unit	Metric Unit
1 *Taphu*	½ kg.
1 *Tungfri* = 8 *Taphu*	4 kg.
1 *Tungfri* – *khaa-kaat*= 20 *Tungfri*	80 kg.
1 *Tungfri* – *khaa-kaat* = 5 *tin*	80 kg. (1 *tin* = 16 kg.)
1 *Tungfri* – *khaa-kaat* = 1 Sack	80 kg.
1 *Tungfri* – *khaa-kaat* = 2 *Tunggaar*	80 kg. (1 *Tunggaar* = 40 kg.)
1 *Tunggaar*= 10 *Tungfri*	40 kg.

Lepcha *taphu* and *tungfri* are the small vessels made up of bamboo, cane, iron copper, bell-metal or brass. There is no separate vessel for *Tungfri khaa-kaat*. *Tunggaar* (Figure 17b) is a bamboo or cane made basket which can be carried on the back after tightening it with the carrier's head by a jute belt. Lepchas also widely use *tung-jyaang* (Figure 17a) for measuring and carrying vegetables, maize, manures. The shape and size of *tung-jyaang* is the same to *tunggaar* excepting that holes are there all around the body of *tung-jyaang* and is less costly and inferior in quality. Lepchas are good in handicrafts. They themselves prepare *tunggaar* and *tung-jyaang* with bamboo which are locally available. The *taphu* and *tungfri* are purchased from the market and their cost varies as per the weight of the metal. Most of the Lepchas have their personal *taphu* and *tungfri*.



Basket (Tung-jyaang)
Fig.17.a



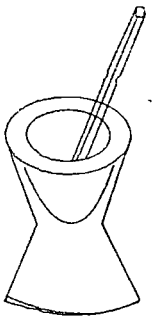
Basket (Tunggaar)
Fig.17.b

For the commercial crop like ginger, cardamom and vegetable, Lepchas use standard steelyard scale and standard metric weights for measurement. Few households have personal scale but others can get it easily from them. The measuring scale is often domestically made from bamboo, cane or wood. In place of the standard weights, the Lepchas use stone or piece of iron or any weighty metals

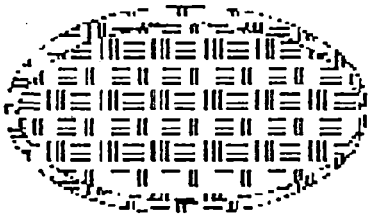
approximately equal to the standard weights for any measurement. The middleman who purchase the product always blame on the Lepcha method of measurement. Suk Tshering Lepcha of Pochaok alleged that "our product always gets reduced by the middlemen and whatever we purchase from them are always under weighted". It has been noted that, some middlemen has opened their temporarily shelter beside the main road during the harvest of ginger and cardamom. They use wooden balance with two flat square wooden plank which is rested on a bamboo tripod. They often use local stones as weights in place of the standard weights.

5.2.10 TECHNIQUE OF HUSKING AND GRINDING

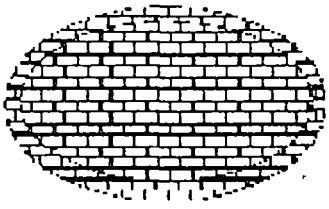
Lepchas use both traditional and modern technique of husking and grinding for paddy, maize, turmeric. The wooden morter and pestle (Figure 12) (*tuk-tsaam-taaling*) is widely used by the Lepchas for husking paddy, pesting maize, powdering turmeric, chili, wheat or maize. For carrying out the work of husking or grinding or cleaning any grains, Lepchas extensively use the bamboo made winnowing tray (Figure 14.a & 14.b) (*taa-lyoong*).



Morter and Pestle (*Tuk-tsaam-Taaling*)
Fig. 12



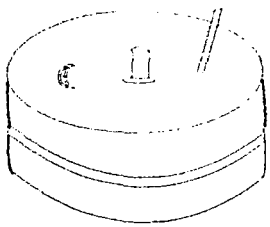
Winnowing Tray(*Taa-lyoong*)
Fig. 14.a



Winnowing Tray(*Taa-lyoong*)
Fig. 14.b

The morter and pestle has two parts – (i) the morter (*tuk-tsaam*) is approximately three feet wooden stem with a bowl shaped cavity vessel in which grains are to be pounded with, and (ii) a pestle (*taaling*) of six feet long wooden rod with an iron socket in one end to heat the corn placed in the holes of *tuk-tsaam*. Both the morter and pestle are prepared by the respective village carpenters or domestically made from the wood available locally. *Tuk-tsaam* is wicker stool shaped wooden stem with a diameter of 12-15 inch at both the ends but only 8-12 inch in the middle. At the middle of the *taaling* the diameter of the wooden rod has been reduced in such a way that one can grip it tightly. The miniature form of *tuk-tsaam* and *taaling* is used for pesting and powdering articles particularly spices for the kitchen. Recently, Lepchas have begun to use the power driven machine for husking paddy or grinding wheat. As there is no such machine in their village, the Lepchas need to carry paddy at least two kilometers from their villages to avail this facility.

Tukvaar (Figure 13) is a pair of circular stones between which grains or other substance is ground. After pouring grains through small holes at the upper plate, *tukvaar* need to be moved thoroughly with the help of a vertically fixed wooden handle. Thus grains enter in between the two stone plates and due to the movement of upper one the grains start grinding or crushing and ultimately comes out from all sides of the round shaped bottom stone. The process need to be repeated so long required quality of grinding is not available. Lepchas use *tukvaar* for grinding dal, maize and wheat.



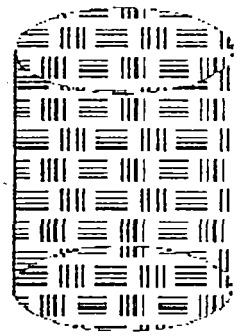
Grinder (*Tuk-vaar*)
Fig.13

Taa-lyoong (Figure 14.a, 14.b) is a square or round shaped winnowing tray made up of bamboo used for winnowing chaff from cereals or grains. Beside day to day use in the kitchen, it is also used in the threshing ground (*zo-laam*). It is flat round shaped finely woven mat with bamboo split of 15 inch diameter and whose square boundary is bordered with one inch comparatively thick bamboo split.

5.2.11 STORING DEVICE

Lepchas preserve their grains particularly paddy in the granary (*zo-baa-hao*). It is a square sized wood or bamboo made store. Lepchas prefer wooden *zo-baa-hao* which reduces westages of grains from insects. Almost each household keeps pet cats to keep the rats away. A corner under the main *Ronglee*, Lepcha indigenous house, is selected for the granary whose upper portion is kept open as air passage and that keep paddy dry throughout the year. For other crosps like millet, dal and wheat, Lepchas use bamboo basket (Figure 15) *tuk-braam*. It is also extensively used both for carrying and keeping the grains inside the house. *Tuk-braam* is made up of both bamboo and cane. But the bamboo made one is widely

used by the Lepchas for storing purposes. Now-a-days gunny bags are getting popularity for storing paddy and other grains.

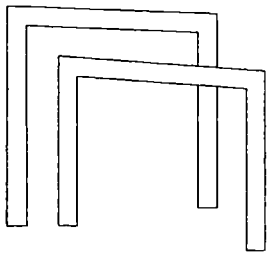


Basket (*Tuk-braam*)
Fig.15

Each household takes special care in storing grains for the purpose of seed. Best quality paddy, after drying sufficiently, are kept separately in gunny bags as seed (*zo-le*) for the next year. Lepchas of Pochaok keep ginger (*heng*) as seed *heng-le* by digging the earth and making it air-tight. They construct a rectangular shaped chamber as per their requirement. All sides including the bottom of the chamber are carefully covered with banana leaves and paddy straw in such a way that water cannot enter inside. After placing ginger seeds the upper part of the chamber is first covered with wooden plank and then polythene sheet and earth.

Maize (*kun-tsoong*) is a seasonal crop. But Lepchas through their traditional method of preservation made it available for consumption round the year. The matured corn (*kung-tsoong-le*) usually hanged in a hanger made of bamboo (Figure 16) in the open air. Lepchas often hang them above the fire place in the kitchen. The smoke of the hearth helps to keep the insects away. The traditional hanger is made by fixing three bamboo poles on each side vertically on the ground. The middle post

is about 6-8 inch more in height than the other two which are 6-7 feet high. Each of three poles are connected both sides with bamboo resting parallaly on their top. After preparing the hanger a number of maize cobs hold together in a cluster with their leaves and made them rest on the shelf after slanting on both the sides. One can notice an usual picture of hanging the maize cobs under the cornice in those sides of the house where it receives sufficient sun rays. They are under the shade of the cornice and can be protected from rain water. Good quality of maize are separated and preserved carefully as seed for the next year.



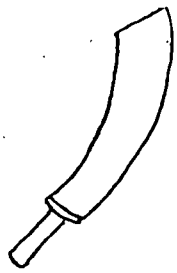
Bamboo hanger
Fig.16

5.2.12 CARRYING METHOD

Tung-jyaang (Figure 17.a) and *tun-ggaar* (Figure 17.b) are the two bamboo and cane made baskets used for carrying agricultural products at different occassions. *Tung-jyaang* is used for maize and vegetable while for paddy or grains *tun-ggaar* is suitable. Both can be prepared at home by thin bamboo splits. *Tun-ggaar* is a product of artistic nature and is prepared from upper portion of bamboo split or cane. In the market their cost varies between Rs.15/- and Rs.20/- for *tung-jyaang* and Rs.90/- and Rs.125/- for *tun-ggaar*.

Tung-jyaang is used for carrying manure (*pachyo*) or cow-dung (*biyet*) to the field. For other carrying purposes *tung-jyaang* is widely used. It is carried by resting it on the back and holding it with a jute belt on the forehead. Lepchas are presently using gunny bags for carrying agricultural produce to the market. These bags like *tung-jyaang* are also carried on the back by holding them on the forehead with jute belt. As carrier, male labour is always preferred. For transportation, jeep or truck are available, but their use in the study area is extremely limited.

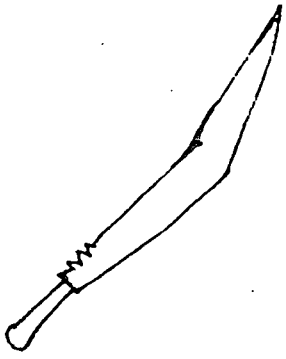
Beside all the implements and tools mentioned above, the most important one which was traditionally carried by all male members and is a symbol for the Lepchas is a small knife known as *baan-paok* (Figure 18.a, 18.b and 18.c). Recently, instead of *baan-paok*, *khukri* (Figure 19), a Nepali knife, become popular among the Lepchas. No households in the 5th Mile Lepchas Gaon is possessing *baan-paok*, while few in Mani Gumpa and some in Pochaok are still having it. It is used for making and repairing all types of wooden or bamboo made agricultural implements. While ploughing, the ploughmen carry it for any emergency repairing work and to keep the bullocks under control.



Lepcha Knife (*Baan-paok*)
Fig. 18.a

Lepcha Knife (*Baan-paok*)
Fig. 18.b

Lepcha Knife (*Baan-paok*)
Fig.18.c



Lepcha Knife (*Khukri*)
Fig.19

Agricultural implements used by the Lepchas in the study area conform to the specification of local need and regional culture. The Lepchas are still using the traditional types of plough, yoke, harrow, sickle. This implies that Lepchas have not been much attracted by the modern tools and techniques of agriculture. Rate of mechanisation in Lepchas agriculture is extremely low and still they are mostly guided by traditional outlook and orientation.

5.3 USE OF MANURE AND FERTILISER

It is said, black soil (*farnuk*) is most fertile than either red soil (*farliang*) or white soil (*faryear*). Lepchas normally use black soil for cultivation. They also use different types of manure and fertiliser for different crops. For Lepchas the cheapest and domestically available manure is cow-dung (*biyet*). They deposit it in a

rectangular pit throughout the year near the cow shed (*polek*). Lepchas without cattle purchase manure mostly from within the village @ Rs.10/- per *tung-jgaang* (approximately 15 kg.) in Mani Gumpa and Rs.6/- in 5th Mile Lepcha Gaon. The households who do not have cattle normally exchange millet straw against manure. Unlike plains, no part of cow-dung is used for fuel. Lepchas prefer cow-dung as manure than any other chemical fertiliser. They believe that fertiliser helps improving productivity temporarily but left long term negative effect on the soil. "Land is our mother and we cannot take any measure which destroys our land in the long term", opined Sankit Lepcha of Mani Gumpa. An opposite view has been expressed by Choden Tshering Lepcha, a young graduate who introduced gladioli cultivation in the village. He said, "Agriculture is our means of livelihood and modern method of farming is impossible without chemical fertiliser. Economic condition of Lepchas can be changed only by adopting the modern method of agriculture".

Lepchas of all the three study villages, use different chemical fertiliser (Urea, Sufola, Single Super Phosphate, Potash), pesticides (Metacide, Thioden, Basathin etc), fungicides (Indofil, Bavistin, Blitox), plant hormone (Planofix, Thashal,Suptnik, Miracullen etc.) at a limited scale for the cultivation of ginger, cardamom and gladioli. For traditional crops like paddy, millet and maize, Lepchas use only cow-dung. In the bi-cropping plant cycle system, Lepchas use manure once a year, normally for vegetables during the winter season and the second crop that is paddy grows out of the remaining fertility of the soil.

5.4 SOURCE OF WATER

Water is one of the most important inputs in agriculture. While all crops do not need equal quantity of water, but some cannot grow without water. The availability of water in field and the actual requirement of water influence the Lepcha cultivators to select the specific crop for growing. Assured irrigation is not at all available to the Lepchas in the study area. They largely depend on rain for cultivation. In some areas, Lepchas make the water available to the field by diverting the hilly streams through indigenous method of canals. Often water is also brought from streams or rivulets (*ómkeong*), or from perennial sources of water from a particular spot (*jharong*) through polythene pipes. The World Vision helped in supplying water in 5th Mile Lepcha Gaon and which is used by the Lepchas in cultivation of some crops.

While selecting the terrace for paddy, the Lepchas keep in mind the availability of water and its sources. Areas mostly in close proximity to rivulets or comparatively flat (*taam*) and capable of retaining rain water are selected for paddy cultivation. Ploughing and levelling paddy fields need plenty of water and the Lepchas wait till the monsoon. Sometimes, diverted water is used in preparing the field for re-plantation of paddy seedlings. Sufficient water is required for cardamom cultivation. So, by diverting water through canals or pipes the Lepchas keep the cardamom field marshy throughout the year. Recently, Lepchas have started cultivating vegetables and gladioli during the winter. These two crops need timely supply of water and for which they fetch water from small streams through pipe. Cardamom fields in the upper Pochaok are normally drained either by perennial rivulets or diverting water through canals. Lands in lower Pochaok are

comparatively flat and can store water for paddy cultivation. Lepchas depend on monsoon for paddy cultivation.

5.5 MANAGEMENT OF ANIMAL LABOUR

In Lepcha agriculture, bullock (*biklong*) are widely used for ploughing and levelling. In the small terraces where the bullocks cannot move, the said operations are done manually. Beside their work during the sowing periods normally twice a year, the bullocks are kept idle for the rest of the year. But in season, they need to work continuously in the field for both their owners and neighbours and sometimes they work on rent basis.

Bullocks are inevitable for agriculture. But the proportion of Lepchas having bullocks is only 27.73 per cent. Table 5.3 shows village wise distribution of bullocks and its ratio with household and land.

TABLE 5.3

Village wise statement of Bullocks

Village	Bullocks		Total household	Total landholding	Bullock per	
	No.	%			Household	Land
1	2	3	4	5	6	7
Mani Gumpa	3	9.09	22	22.20	7.33	7.4
5th Mile Lepcha Gaon	3	9.09	21	41.07	7.00	13.69
Pochaok	27	81.82	76	329.96	2.82	12.22
Total	33	100	119	393.23	3.61	11.92

Bullock per household is the highest in Mani Gumpa followed by 5th Mile Lepcha Gaon and Pochaok. Bullocks are mostly busy in 5th Mile Lepcha Gaon while they are least busy in Mani Gumpa. Although the number of bullocks are highest in Pochaok, but they need to cultivate largest quantity of land (329.96 acres) and hence

they remain busy in cultivating 12.22 acre of land per pair. Bullocks were ever found to much busy during the survey period of C.A.Bell (1901-03). He observed that on the "average Lepcha uses only one pair of bullock to each 20 acres and the Bhutia one pair to 25 acres, while the Nepali uses one pair to every 15 acres" [1905 : 25]. The proportion of land per pair of bullock has decreased drastically from 20 acres to 11 acres over the last hundred years. But there is no reason to believe that bullocks have been replaced by machines. Bell discussed the reason behind the wide variation in the ratio between land cultivated and bullocks used. He wrote :

> A Nepali will attempt to cultivate every available portion of his holding and will keep his bullocks engaged as much as he can; a Bhutia, as a rule, keeps a portion of his holding uncultivated either to give a land a few years rest or to allow jungle to grow for firewood etc.; a Lepcha will not only leave a part of his holding out of cultivation like the Bhutia (though not as much as the latter) but will also cultivate a portion of land with a small spade and spike [1905 : 25-26].

Bell's observation faded away with the passage of time when land become much scarce a factor so that no Lepcha can ever think of keeping his holding out of cultivation rather cultivate each portion of his land with a small spade and spike.

A Lepcha village may be considered as a unit as far as the use of bullocks is concerned. A household can easily cultivate land without personal bullock. Matrices of reciprocal exchange of bullocks are shown in Appendices IX and X for Mani Gumpa and 5th Mile Lepcha Gaon respectively. The matrices show how the bullocks remain busy in cultivating land of the entire village. Reciprocal exchange of

bullocks takes place mainly among the Lepcha households. In case, bullocks visit non- Lepcha household, they ask for cash payment. Aspects like genealogy, kinship, *moo* are not so important in the case of reciprocal exchange of bullocks. A kind of community consideration and a collective feeling of live together, work together, share together in the society is the basis of such exchange. A kind of Lepcha solidarity has been maintained through the reciprocal exchange of bullocks. Village Mani Gumpa is more compact in the sense that as much as twelve households receive all the bullock in spite of the fact that their average land holding is much less than the other two villages. Sometime all the three pairs of bullocks work together on small patch of terrace.

It has been observed that the medium and large sized land holders, and share croppers are keeping bullocks of their own. These households need additional labour for cultivating their land. A system of exchange of bullocks against labour prevails in the villages. A ploughman with a pair of bullock is exchanged against three labour days of any sex and age. Interestingly, bullock and human labour are considered equally in the Lepcha society. A ploughman gets tea or *chi* and snacks in tiffin and rice, meat, vegetables, *chi* in lunch while bullocks get grass, salted rice water, maize water as food for a work.

Timings for bullock is different from that of human labour. The usual time for ploughing is 6 a.m. to 12 noon while human labour works from 8 a.m. to 5 p.m. Deforestation creates scarcity of fodder and the villagers are facing difficulty in tending their cattle.

Cost of a pair of bullock varies between Rs.4000/- to Rs.6000/-. Veterinary facilities are available locally only for Mani Gumpa and 5th Mile Lepcha Gaon. On

an average, the Lepchas use their experience for the treatment of minor diseases of the cattle. Tshering Lepcha of Mani Gumpa informed, "now-a-days, it is hard to get herbs from the local area as medicinal use for both cattle and human beings. Earlier we used to cultivate buckwheat (*kaonthao*) of two varieties – sweet (*aaklem*) and bitter (*aactin*). The bitter variety can be used as medicine and is sure to cure any sort of throat problem of the cattle by applying externally on the affected area. At the time of need we can get buckwheat only from Dip Sing Lepcha in our village who still cultivates it for his cattle". Lepchas take special care for the health and food of their cattle particularly during ploughing season. Bullocks are fed four times a day. The feeding chamber and the floor of the shed are normally cemented and cleaned regularly. To keep the insects particularly mosquito away, Lepchas arrange smoke near the shed with locally available branches of trees and plants.

5.6 CHANGES IN CULTIVATION

In addition to food crops Lepchas are presently cultivating cash crops. Along with the traditional implements and tools a few of them have added sprayer as shown in Table 5.1.

No significant change has taken place in the agricultural tools or implements used by the Lepchas.

Some changes have been noticed in the methods of agricultural operation. Broadcasting of seeds particularly in the case of maize has been replaced by a new system of planting seeds in the row. This method minimises the need of seeds required for a particular plot of land, and also helps growing simultaneously some other crops like vegetables on the same plot. It has been further observed that potato

is cultivated in row and at the time of its harvest maize seeds are sown in between rows of potato and thereby helps saving labour and cost of production as well. Monocrop has been replaced by multicropping.

The Lepchas have changed their cropping pattern. Some traditional crops have been replaced by new crops. The Lepchas now no more cultivate dry paddy, large variety of maize and buckwheat. In the list of vanishing crops there are also millet, ginger, orange and cardamom. The newly adopted crops include gladioli, potato and variety of vegetables.

On the whole, no significant change has been taken place in the method and pattern of cultivation of the Lepchas and they mostly adhered to their traditional agricultural practices.