

Duhumbi agricultural practices

Date of recording: various

Location of recording: Chug valley, Dirang circle, West Kameng district, Arunachal Pradesh, India.

Participants: various.

Languages: Duhumbi.

Short description: This collection of videos, audio and photo files displays Duhumbi agricultural practices as they were conducted between 2012 and 2017. Accompanying video and picture files illustrating the text files can be found at the end of this document.

Traditionally, the people of the Chug valley depended on a mix of agriculture and animal husbandry for their livelihoods, supplemented by hunting and collection of forest produce. The Chug valley and the Sangthi valley are the only places in West Kameng district where relatively large-scale wetland rice cultivation takes place. This rice has for long been the main item in the barter trade, as well as the main item collected as tax by the erstwhile Tibetan administration and raided by the Miji.

Agriculture has always been the main-stay of the local economy, not just in terms of self-sufficiency, but also in terms of barter trade. The agricultural produce, mainly the rice, was bartered for other food and other items, a practice that, despite increasing monetisation of the economic system, continues till date.

Grain crops

The Chug valley, like the Sangthi valley, is well known in the region for the wide, flat valley floor that supports a large acreage of fertile paddy fields. The paddy fields in the Chug valley have been there since time immemorial. Production, though sufficient for local consumption and barter trade, was, however, never particularly high. The names of local rice varieties suggest that rice cultivation was introduced by Tshangla speaking migrants, but the name of rice and paddy itself does not have a Tshangla cognate. This perhaps indicates that before the introduction of wetland/irrigated paddy cultivation, the people of the valley used to engage in dryland rice cultivation. Even at present there are a few labour- and wetland deficient households that rely on *pangbara* dryland paddy cultivation in shifting cultivation

land. Various varieties of wetland rice are planted. These include indigenous, highly nutritious but low yielding varieties of red and white rice called by their Tshangla names *sungsunghara* and *thongghara*, old varieties of Assamese rice, and more recently introduced varieties with higher yields, approximately double the amount by area. The *sungsunghara* and *thongghara* varieties have black ears and white or red grains after husking. The old varieties of Assamese rice were introduced long ago, but their seeds were almost lost because during the 20th century, the people became lazy and transplanted the seedlings later and later, sometimes not before mid-august, because of which the rice did not ripen at all or only resulted in very poor harvests. In the 1970s, cultivation of these varieties was resumed, resulting in increasing yields and since then a shift can be observed from the traditional varieties to the Assamese varieties of local rice. These varieties are all called *garbi nimdi* 'our rice'. The younger generation increasingly prefers *bicha nimdi* 'Indian rice' obtained from the cooperative and stores.

With an increased rice harvest and cheap availability of subsidised imported rice, combined with reduced labour availability in the households, other food grains, such as *meskong* 'sorghum', *nyingkhag* 'foxtail millet', *phoksar* 'wheat', *zhama* 'bitter buckwheat' and *nyingchak* 'broom corn millet' have completely disappeared. Wheat flour is now bought from the market. Similarly, *guntsun* 'sweet buckwheat' and *phok* 'barley' are no longer cultivated but bartered for rice with people from Dirang and Yewang, the latter as it is required in religious rituals and the former as it is used to make *takto* 'noodles'. The cultivation of other food grains, such as *bumtang* 'amaranth' and *kongpu* 'finger millet', has drastically declined. Wheat and barley cultivation traditionally take place during the agricultural off season, after the maize and rice harvest, at the time when the cattle are also left to roam freely. Decreased labour availability has meant that the fields of these crops can no longer be protected from foraging by cattle, making their cultivation not profitable anymore. The only grain besides rice that is still widely cultivated is *meysing* maize, which is mainly used to produce alcohol.

Although until 2013, the availability of cheap, subsidised rice under the government of India BLP (Below Poverty Line) allocations combined with lack of available labour force due to education of children and outmigration reduced the local rice cultivation, with many paddy fields being kept barren, new policies reducing the allocated quantity and increasing the price of the cooperative rice re-encouraged the cultivation since 2014.

Traditionally also considered among the food grains are various beans and pulses. These are *korsha* ‘beans’, *jamphopling* ‘peas’, and *shibi* and *shakpu* ‘pulses’. Finally, the ubiquitous *shajok* ‘soybean’ remains of outmost importance as the main ingredient in *gripchura* ‘fermented soybean paste’, a condiment used in basically every Duhumbi dish (SBDC, [CHUK230512A1A]).

Vegetables, tubers and fruits and nuts

Unlike the wide range of grain crops that was once cultivated in the Chug valley, there has always been a relative paucity of vegetables under cultivation. More traditional vegetable crops include *mang* or *rashu* ‘garlic’, *narang* ‘spring onion’, *brumsha* ‘pumpkin’, *dang* ‘mustard leaves’, *banthow* ‘eggplant (aubergine)’ and *khalangzi* ‘Ethiopian eggplant’, and *mula* ‘radish’. The recent years have seen an increase in the production of *solu* ‘chilies’, which could be attributed to the decrease in the barter trade with villages traditionally supplying dried red chilies in exchange for rice and the good price that the chilies fetch in the market. Relatively recently introduced crops with increasing production, mainly for sale, include *tometo* ‘tomato’, *iskus* ‘chayote’, *kopidang* ‘cabbage’ and *mento kopi* ‘cauliflower’. One of the great absentees in the local vegetable production is *tsong* ‘onion’: this is almost invariably bought in the market, but often does not even form part of the traditional dishes.

The *joktang* ‘potato’ and *ja okhyak/yangkar* ‘sweet potato’ are the only tuber crops exclusively cultivated, with *ja* ‘yam’ and *chak* ‘taro’ both cultivated and collected from the wild, with the dried leaves and stems of the latter also consumed.

Besides soybeans, only a few spices and condiments are used in Duhumbi cooking: these include *ha* ‘salt’, *saga* ‘ginger’, *solu phoy* ‘chili powder’, and *shajur* ‘Sichuan pepper’. Rock salt was traditionally obtained in trade with Tibet but is now bought from the market. Ginger is cultivated in limited amounts. Chilies are dried and ground into powder which forms the basis of every *chamin* ‘chili paste’. Both dried red chilies and Sichuan pepper were brought by people from Phudung village to trade for rice, but since 2016 this barter trade has basically come to an end. Rice is also bartered for dried red chilies from Thembang, Namshu and Dirang villages.

Because it is not used for cooking but eaten raw, *memphong* ‘cucumber’ is often considered a fruit rather than a vegetable. The same holds for *chula meyju* ‘sugarcane’. Since a few

decades, basically every household has grown at least one *tshalu ama* ‘mandarin tree’ and *mangkha ama* ‘walnut tree’, particularly the soft-shelled variety called *lhasa mangkha*, and other recently introduced fruits that have seen an increase in cultivation, mainly for sale, include apple and kiwi.

The cropping calendar

The Duhumbi agricultural calendar starts after the *losar* new year celebrations are over, i.e. after the 15th day of the 1st month. The first activity is usually the ploughing of the dry land fields and moulding them. Sowing of maize and potatoes takes place in kitchen gardens in the first month, and the sowing of maize and finger millet is done in the permanent fields in the 4th month. As soon as the maize reaches a certain height, leaf litter, collected in the 12th month, is spread over the field to prevent weeds from growing, and to provide additional nutrients. Vegetables are sown in the kitchen gardens and continuously weeded.

In the past, when shifting cultivation was still widely practiced, the plots would be prepared in the mid of 2nd month by cutting large trees, burning bushes, hoeing the soil and fencing the area with bamboo fences. At present, small shifting cultivation plots are mainly used for *nishili phusta* ‘sowing rice seeds’ in the beginning of the 3rd month. After three days *jamu lupda* ‘weeding’ takes place. Paddy cultivation in the Chug valley is markedly different from other places due to the specific hydrological conditions of the valley bottom where it takes place. Even in the absence of rain, this area is almost permanently waterlogged, making tilling of the land by ox plough or power tiller impossible. Instead, the paddy fields are hoed by hand, a very laborious job due to the heavy wet black clayish mud. *Nishilek jokda* ‘hoeing the paddy field’ takes place in the fourth month, usu. before the 15th day. Largely depending on the rain, *nishili hayda* ‘transplanting paddy seedlings’ to the paddy fields happens at the end of the 4th month, usually before the summer solstice, and depending on the number and size of fields and number of available work force this can take between 5 and 20 days. On alternate days, rice seedlings are uprooted from the fenced nurseries and transplanted the next day in the paddy fields by hand one by one. Those participating in transplantation sometimes sink waist-deep into the mud, and getting out can be difficult. Stomach problems and colds are common illnesses related to the rice transplantation season.

After transplantation, the 5th month usually seems more intermittent dry periods. In the 6th month the paddyfield must be weeded twice or thrice. The 6th, 7th and 8th month witness daily

monsoon rains disrupting communication, infrastructure and electricity supply. There is little work in these months besides herding cattle in the forest and harvesting vegetables and weeding the fields.

The first food grain that can be harvested is the maize that was sowed in the 1st or 2nd month. The earliest varieties of maize can be harvested from the start of the 5th month (usu. mid July) onwards and is often eaten roasted in open fire. The maize harvest continues until the end of the 8th month. By that time the maize plants have become completely dried. The dried cobs are broken from the plant and stored in the attic, or immediately husked and hulled. Part of the maize is made into *kakung*, part is ground into flour, part is stored as kernels for making thukpa or alcohol or *kakung* or flour later in the year. In the past sweet buckwheat and barley was sown in the maize fields after the maize and soybean harvest but this practice has been largely discontinued because of the inability to control the access of cattle to these fields. Despite the high demand for these grains for consumption and religious functions (*torma*) the production is negligible. *Torma* are now often made from maize, like is also the practice in villages that rely only on maize like Thembang. By the end of the 8th month the soybeans, pulses and beans also dry and they are harvested with the mother plant, kept for drying in the field, husked and hulled there and stored. Also, by the end of the 8th month the finger millet and amaranth is harvested, kept to dry for a few days, threshed and winnowed and stored. There is usually great pressure to quickly harvest and process the millet, soybeans and maize because the cow herders bring the cattle down by the end of the 8th month and usually do not prevent these from entering the dry land fields. The last cucumbers are harvested during the 8th month, whereas beans and *iskus* continue to bear fruit till the end of the 8th month. Vegetables like chili, *khalangzi*, cabbage and eggplant continue to provide fruit well into the 9th and sometimes early 10th month.

Rice is harvested immediately after the *kakung torda* festival takes place, between the 15th and 20th day of the 9th month. Rice is harvested by cutting approximately 20 cm of the stalks and kept drying on the cut stalks in the field. The stalks are then beaten with 1 ½ meter long sticks of *mintus show* also used for beating soybean plants. This separates the grains from the stalks. The wind is used to blow away the stalks, and this threshing the rice usually takes several days. Rice harvest and threshing is usually completed by the end of the 9th month. The 10th, 11th and 12th months usually see little agricultural activity: during the 12th month usually leaf litter is collected. Women weave bags, blankets and other items, men usually go

for labour outside the valley, houses are constructed during that time. By the end of the 12th month preparations for the losar commence, which is celebrated for 15 days.

Sowing seeds is done according to a daily horoscope in repetitive cycles of the 12 animals of the Tibetan zodiac, with certain days being particularly unfavourable because sowing on those days would surely attract crop depredation. For example, sowing on the *phak nyima* ‘pig day’, *priu nyima* ‘monkey day’ or *jiwa nyima* ‘rat day’ would invite loss of crops to wild boar, macaques or rats and mice. Similarly, any important activities related to livestock undertaken on the *bruk nyima* ‘dragon day’ or *bruy nyima* ‘snake day’ would invite attacks by snakes, and on the *khi nyima* ‘dog day’ by wild dogs.

Animal husbandry

The exonym Chuk may well be derived from Tibetan *phyugs* [tʰuk] ‘cattle’, and incidentally, phonologically identical Tibetan *phyug* [tʰuk] means ‘wealth’. Similarly, whereas *nor* means ‘livestock’, which includes all cattle species and horses, *nor-bu* means ‘jewel’. These similarities may be more than incidental.

Indeed, cattle is one of the mainstays of the subsistence economy in the Chug valley. In the past, most households used to own at least a few heads of cattle, even those households with plentiful agricultural land. Those households that had sufficient male members would be able to take care of the cattle themselves, whereas those households with less male members would give their cattle in the custody of other households, clubbing together several smaller herds into larger herds. This was and still is a necessity, because the cattle in the Chug valley is traditionally kept in a transhumance system. From the moment of maize sowing in spring (the second month) onwards, the cattle are taken to the alpine meadows at higher altitudes where they spent the entire summer until the paddy harvest is finished in the 9th month. This effectively means that for over half of the year the cattle have to be looked after by *sha brokpa* ‘cattle herders’ who spent most of these months at alpine meadows and in the surroundings forests at least a day’s walk from the villages. Brokpas from Lubrang village bring their yak, cattle and yak-cattle crossbreeds to the alpine pastures in Chug valley during winters. This way, there is no competition between local cattle, kept in the alpine pastures and forests during summer and in the valley during winter, and the cattle and sheep kept by the outside herders in the alpine pastures and forests during winter. *Shakey* ‘sheep’ are reared only by a

few *shakey brokpa* ‘sheep herders’ who are all from Zhang and Zhangdak in Tawang and bring their sheep to the Chug valley in winters.

For the use of the grazing areas both the *shakey brokpa* and the Lubrangpa *sha brokpa* pay a yearly *tsherin* ‘pasture tax’, previously in kind, now in cash, to the Chug community. They also used to barter wool, meat, cheese and other livestock products with the Duhumbi, although in recent years they have rather taken to selling these products for cash.

The main cattle species reared include *duymu* ‘purebred local cow’, often crossbred with *shama* ‘mithun’ bulls to obtain the *jatsha* (male) and *jatshamu* (female) crossbreeds. A *jatshamu* crossbred with a *shama* bull results in a *menchalang* (male) and *menchalang uma* (female). A *menchalang uma* crossbred with a *shama* bull is said to obtain purebred mithuns again. A *jatshamu* crossbred with a local bull produces a *jangku* (male) and *jangkumu* (female), a *jangkumu* crossbred with a local bull is thought to obtain purebred local offspring again. Both *jatsha*, *menchalang* and *jangku* are mainly used for ploughing the permanent agricultural fields; they may be *sha hatda/nya phapda* ‘neutered’ to increase the docility of their character although this also decreases their strength and stamina. More recent introductions are the *jawa* ‘purebred Indian siri cow’, which do not thrive well in the valley, and *belata* ‘local cow and Assamese siri cow crossbreed’, which has a higher milk production but also a higher nutrient requirement. Other improved breeds such as brown Swiss cows are absent in the area. A *yak* would be used to breed with a *duymu* to obtain *zo* and *zomu* crossbreeds; the offspring of a *zomu* and a *yak* is called a *kot*.

Cattle are mostly kept for dairy products. The first-generation crossbreeds, i.e. the *zomu* and the *jatshamu*, are considered the most productive milk producers. Dairy products include *mar* ‘butter’, *nu* ‘milk’, *shanyu* ‘paneer’, *churku* ‘whey’, *dara* ‘buttermilk’ and *chura* ‘cheese’. Cheese is also stichted into the skin of young calves and left to ferment to *chura obek* ‘ripened cheese’, used as a condiment similar to *gripchura* ‘fermented soybeans’ and *meychi chura* ‘fermented bamboo shoots’.

Cattle are not commonly slaughtered, and even when it is (most commonly bulls), it is usually said to have ‘accidentally’ fallen off a cliff. When slaughtered on purpose, cattle used to be tied to a rope and pushed off a cliff, although more recently heavy hammers are used to crush the skull. Cattle that die of natural causes, including old age and disease, are eaten without

reservation. Every part of the animal is eaten: the entire skull including the brain is hacked into pieces and thoroughly cooked together with the lower legs, after which the bones are removed and the resulting *phrikphrikma* 'gelatine' is left to stiffen and eaten as snack. The intestines are cleaned and filled with a mixture of blood, dough, Sichuan pepper, chili powder, salt and chopped organs and then boiled. All the organs, including liver, heart, lungs and stomach are eaten. The meat is either consumed directly or cut into strips and dried, either in the sun and wind or above the fire. The cow hide is usually dried, roast in fire, cleaned, boiled and eaten: making traditional boots or other leather products is not commonly done anymore. Bones are dried, cut open and used to make soup from the marrow.

In addition to cattle, most Duhumbi households own a *hoki toka* 'rooster' and a few *hoki ama* 'chickens'. The crow of the rooster is used as a wake-up alarm, whereas the *hoyjong* 'eggs' of chickens are eaten. On special occasions, young roosters and unproductive chickens are slaughtered and eaten or sold for cash. Poultry can freely roam through the village and usually sleeps and lays the eggs in the attic of the house. Recent attempts by the government to introduce *gelendi* 'ducks' have been largely unsuccessful, as most people do not appreciate their meat. Most Duhumbi households also own a few *shara* 'goats', and goats are considered a source of cash income in times of need, as they can be sold to Nepalis and Indians. Like poultry, goats roam freely around the village.

Shitaq 'horses' used to be very common in the Chug valley as pack animal: every household would own at least one horse used to transport food grains etc. The construction of the road and the availability of motorised transport has greatly reduced the need for horses, and they are now usually left to roam free and no longer tended. Only *sha brokpa* and *shakey brokpa* still use horses to transport their belongings to the higher pastures. Neither *bongbu* 'donkeys' nor *gre* 'mules' were very common in the valley and have now completely disappeared.

The government has tried to encourage fish rearing with people receiving subsidies to construct fish ponds and receiving fish hatchlings and feed. Some villagers have quite enthusiastically taken to this but since it depends on the availability of suitable land only a few households have been able to benefit from it.

The only common livestock animal not reared in the Chug valley is the *shabak* 'pig'. There is a religious ban on rearing pigs which is strictly followed. Previous attempts to rear pigs

somehow always resulted in untimely death of the animals. This in stark contrast to Lish village, where pig rearing is one of the main sources of meat and income.

There are plenty stray *wathi* ‘dogs’ roaming around the Duhumbi villages, feeding off waste including human excrements. Some households keep a dog on purpose, either as a companion when hunting or as a guard dog. The *brokpa* herders also commonly own guard dogs. Some houses have a resident female *nyangbu* ‘cat’ and tomcats also roam the village, both keep the mouse and rat population under control. Neither dogs nor cats are considered as pet animals and neither are treated with particular affection.

Recently, there has been a popular movement in the Dirang area, following similar movements in Bhutan and Tawang, that prohibit the slaughter of animals and the sale of meat in the area. There has been official notification to this effect, but illegal slaughter and sale of meat continues to take place.

Content of zip files:

<i>file name</i>	<i>file size (MB)</i>	<i>file duration (hh:mm:ss)</i>	<i>file type</i>	<i>description</i>
LIVESTOCK.ZIP				
video files				
C00001	38.3	00:00:26	.mp4	Twin calves drinking milk
C00002	17.3	00:00:12	.mp4	Twin calves drinking milk
C00003	70.1	00:00:35	.mts	A chicken feeds on bugs on a cow
C00004	34.4	00:00:17	.mts	Twin calves licking anus
C00006	120	00:01:01	.mts	After maize harvest, cattle are herded within the village limits. One of the herders is a deaf-mute.
picture files				
1, 2			.jpg	Twin calves drinking
4, 5, 7			.jpg	Twin calves 1 year 2 months old
bisaiba			.jpg	The <i>biseyba</i> or pancreas of a slaughtered calf
DSC_0991, 0992			.jpg	<i>Paten tshungthangshing</i> , a tree on which dried rice straw is kept

				during the dry winter as fodder for cattle
DSC00195, 00196			.jpg	Cows with calves.
DSC00203, 00217			.jpg	Cows
DSC00198, 00201, 00206, 00210, 00276, 00279, 00280			.jpg	Bulls. Bulls are often not neutered to enable them to mate and so they remain stronger for ploughing.
SAM3770			.jpg	Oxen. Very few bulls are neutered to oxen. It makes them more docile but also less strong. This one is in <i>Samtu</i> village.
DSC00216, 00274, 00275			.jpg	Cattle grazing after maize and before paddy harvest, under watchful eye of herders.
DSC02258, 02259			.jpg	Twin bull calves (1 month old).
DSC02337, 02339			.jpg	One of the twin bull calves 'released' as <i>tshethar</i> (saving the life of an animal destined to be killed or put to hard work).
DSC02382, 02383, 02384			.jpg	Calves
sha tangku khris kraybu			.jpg	The <i>khris</i> (gall bladder, yellow, first from left), <i>sha tangku</i> (liver, dark red, second from left), <i>kraybu</i> (kidneys, second and third from left) of a slaughtered calf.
sha tangku khris			.jpg	The <i>khris</i> (gall bladder) and <i>sha tangku</i> (liver) of a slaughtered calf.
lungzapzer brok			.jpg	The summer pasture area of <i>Lungzapzer</i> (high altitude)
namkang3			.jpg	The summer pasture area of <i>Namkang</i> (low altitude)
SAM_0836, 0837, 0838			.jpg	Horse and foal.
SAM_1911			.jpg	Chicken and duckling.
SAM_3067, 3068			.jpg	A young calf was killed because it was too late in the season and the food availability for the mother

				would not be enough, and also to keep all the milk for the herder.
SAM_1875			.jpg	Training a young <i>jatsha</i> (mithun/cow crossbreed) to plough by using a <i>korshing</i> .
MAIZE.ZIP				
video files				
00004	203	00:01:43	.mts	<i>MeysHING getda</i> 'breaking the maize': breaking maize cobs from the stems.
00005	53.5	00:00:27	.mts	<i>MeysHING getda</i> 'breaking the maize': breaking maize cobs from the stems.
00007	149	00:01:16	.mts	<i>MeysHING hakda</i> 'peeling the maize': removing the cover of the maize cobs.
00015	154	00:01:19	.mts	<i>MeysHING khroyda</i> 'shelling the maize': removing the maize grains from the cobs by beating with a stick.
picture files				
DSC00135, 00138			.jpg	<i>MeysHING getda</i> 'breaking the maize': breaking maize cobs from the stems.
DSC00143, 00145, 00146, 00148, 00150, 00151, 00153			.jpg	<i>MeysHING hakda</i> 'peeling the maize': removing the cover of the maize cobs.
DSC00161			.jpg	<i>MeysHING khropda</i> 'collecting the maize': collecting the peeled maize cobs in jute bags and carrying them home.
DSC00286, 00287, 00288, 00290, 00291			.jpg	<i>MeysHING khroyda</i> 'shelling the maize': removing the maize grains from the cobs by beating with a stick.

DSC02165			.jpg	<i>Meyshing kakung</i> 'flattened parched maize'
DSC02295			.jpg	Local maize cobs.
MILLET.ZIP				
video files				
00008	88.2	00:00:45	.mts	<i>Bumtang/kongpu makda</i> 'beating the amaranth/finger millet'. For threshing amaranth, a straight stick is used, for threshing finger millet the <i>yarjung</i> 'millet beater'.
00009	75.0	00:00:38	.mts	<i>Bumtang gadar leda</i> 'winnowing the amaranth'. The wind is called by whistling, and the amaranth is slowly dropped down from the <i>shangkor</i> 'winnowing tray' to separate the waste and the grains.
00010	29.3	00:00:15	.mts	<i>Bumtang yapda</i> 'winnowing the amaranth'. The amaranth is winnowed by shaking the <i>shangkor</i> and removing the finest dirt, waste and <i>hop</i> 'chaff'. It is then collected in a bag and taken home.
00020	119	00:01:00	.mts	<i>Kongpu makda</i> 'beating the finger millet'. Threshing finger millet with a <i>yarjung</i> .
00021	46	00:00:23	.mts	<i>Kongpu makda</i> 'beating the finger millet'. Threshing finger millet with a <i>yarjung</i> .
00022	296	00:02:31	.mts	<i>Kongpu makda</i> 'beating the finger millet'. Threshing finger millet with a <i>yarjung</i> . Note how the old man sings a song to keep the rhythm while beating.
00024	177	00:01:30	.mts	<i>Kongpu gadar leda</i> 'winnowing the finger millet' The millet is slowly dropped down from the <i>shangkor</i>

				'winnowing tray' to separate the waste and the grains.
picture files				
DSC00231, 00232, 00233, 00234, 00235, 00236			.jpg	Field with ripening finger millet and red and yellow plumes of amaranth. Both kinds of amaranth give the same white seeds.
DSC01143, 01144, 01146			.jpg	<i>Nyingchak</i> 'broomcorn millet', seeds were brought and reintroduced from Bhutan as it was lost in Chug.
DSC01138, 01139, 01140, 01142			.jpg	<i>Kongpo tsikda</i> 'pinching the finger millet'. To harvest the finger millet by cutting the stalks just below the ear with a <i>bariong</i> 'small smooth sickle'.
DSC01136, 01137			.jpg	Field with harvested finger millet but amaranth still standing.
DSC01164			.jpg	Finger millet and amaranth kept drying in the field.
DSC00192			.jpg	<i>Mekpashong</i> 'produce basket' filled with <i>kongpu</i> 'finger millet' brought to the <i>yangchong</i> 'veranda' to dry on a rainy day.
DSC00314, 00315			.jpg	Ears of finger millet.
DSC00303, 00306, 00307, 00308, 00310, 00311, 00313, 00316			.jpg	<i>Kongpu makda</i> 'beating the amaranth/finger millet'. For threshing finger millet, the <i>yarjung</i> 'millet beater' is used.
DSC00321			.jpg	<i>Yarjung</i> 'finger millet beater'. Two sticks connected by a hinge. One stick is held in the hand, the other stick rotates and hits the finger millet to thresh it.

DSC01166, 01167, 01170, 01171, 01172, 01173, 01175, 01177, 01183, 01184, 01185, 01186, 01187, 01188,			.jpg	<i>Bumtang/kongpu makda</i> 'beating the amaranth/finger millet'.
DSC00322			.jpg	<i>Kongpu jada</i> 'sifting the finger millet'. The finger millet grains are sifted through a <i>phachi</i> 'sieve' to remove stalks and other dirt before winnowing it.
DSC00317, 00318, 00319			.jpg	<i>Kongpu gadar leda</i> 'winnowing the finger millet'.
DSC01189, 01190, 01192, 01193, 01194, 01195, 01196, 01197, 01198, 01199, 01200, 01201			.jpg	<i>Bumtang gadar leda</i> 'winnowing the amaranth'. The wind is called by whistling, and the amaranth is slowly dropped down from the <i>shangkor</i> 'winnowing tray' to separate the waste and the grains.
PADDY.ZIP				
video files				
ASAM_3940	50.9	00:00:45	.mp4	<i>Nishili hayda</i> 'planting paddy seed(lings)': to transplant the paddy seedlings from the nursery to the paddy field at the start of the monsoon season.
A00021	70.5	00:00:36	.mts	<i>Nishi ramda</i> 'tearing the paddy': to cut the stalks of the paddy with a <i>bari</i> 'small dented sickle'.
A00022	39.1	00:00:20	.mts	<i>Nishi ramda</i> 'tearing the paddy': to cut the stalks of the paddy with a <i>bari</i> 'small dented sickle'.
A00023	28.3	00:00:14	.mts	<i>Nishi ramda</i> 'tearing the paddy': to cut the stalks of the paddy with a <i>bari</i> 'small dented sickle'.
AH00000	158	00:01:21	.mts	<i>Nishi makda</i> 'beating the paddy': to thresh the paddy stalks with a <i>khey</i>

				'stick' to remove the grains from the stalks.
B00000	42	00:00:21	.mts	<i>Nishi makda</i> : threshing paddy.
B00001	36.3	00:00:18	.mts	<i>Nishi makda</i> : threshing paddy.
AH00001	65.9	00:00:33	.mts	<i>Nishi gadar leda</i> 'winnowing the paddy': to winnow the paddy by calling the wind with a whistle and letting the paddy fall slowly from a <i>shangkor</i> 'winnowing tray', separating the <i>shukpa</i> 'unripe grains and' stalks, <i>hop</i> 'chaff' and dirt from the paddy grains.
B00002	60.8	00:00:31	.mts	<i>Nishi makda dang gadar leda</i> : threshing and winnowing paddy.
AH00002	40.4	00:00:20	.mts	Eating <i>khazi</i> for lunch: mixing boiled rice with the leaves of <i>dangngoma</i> (<i>Nasturtium officinale</i>), a green leaf occurring in swampy places close to the paddy fields and eating this with dried fish and <i>chamin</i> 'chili paste'.
picture files				
SAM_1969			.jpg	Nursery for paddy seedlings: the paddy seeds are broadcast sown here at the end of winter and transplanted to the paddy fields after the start of the monsoon.
SAM_3916, 3917			.jpg	Paddy fields after having been <i>bakta</i> 'tilled' with a <i>koda</i> 'hoe' row by row after the first monsoon rains have filled the fields. These fields cannot be <i>woyda</i> 'ploughed' by a bull/ox plough.
SAM_3941, 3942, 3943, 3944			.jpg	<i>Nishili hayda</i> : transplanting the paddy seedlings from the nursery

				to the paddy fields at the onset of monsoon.
DSC01230, 01288			.jpg	Irrigation of paddy field.
DSC00128			.jpg	'Ranjeet': government-introduced variety of white rice with short stalks. Not very popular as the beard of the paddy spike/ear causes cattle to choke.
DSC00130, 01231, 01233			.jpg	Local red rice, tall variety.
DSC00133, 01234			.jpg	Local white rice, tall variety.
DSC00357, 02214, 02215, 02291, SAM_2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936,			.jpg	View of Chug valley just before and during paddy harvest.
DSC02149			.jpg	Varieties of local red and white rice.
DSC02158			.jpg	Local red rice, sticky, round grain variety.
DSC02161			.jpg	Local white rice.
DSC02163			.jpg	Local red rice, dry, pointed variety.
DSC02216, 02224, 02234, 02235, 02238, 02239, 02240, 02241, 02243, 02245, 02246, 02248			.jpg	<i>Nishi ramda</i> 'tearing the paddy': to cut the stalks of the paddy with a <i>bari</i> 'small dented sickle'.
DSC02287, 02289, 02290, 02303			.jpg	<i>Nishi zhap loyda</i> : to collect the bundles of cut paddy from the paddy field to a central threshing point.
DSC02249, 02250, 02251, 02252, 02253, 02254, 02255, 02256, 02292, 02304, 02305, 02306, 02307, 02308, 02309, 02310, 02311, 02312, 02313			.jpg	<i>Nishi makda</i> 'beating the paddy': to thresh the paddy stalks with a <i>khey</i> 'stick' to remove the grains from the stalks.
DSC02293			.jpg	<i>Nishi gadar leda</i> : winnowing the paddy.
DSC02300			.jpg	Eating <i>khazi</i> for lunch.
DSC00664			.jpg	View of empty maize and paddy fields at the onset of winter.

DSC_0991			.jpg	<i>Paten tshungthangshing</i> , a tree on which <i>paten</i> 'dried rice straw' is kept during the dry winter as fodder for cattle
SAM_0829			.jpg	Paddy fields at the end of winter, after the first rain.
SAM_1967			.jpg	Cattle kept in the empty paddy fields at the end of winter, the dung being fertiliser for the fields.
SAM_1264			.jpg	<i>Paten tshungthangshing</i> at the end of winter, when all the straw has been fed to the cattle.
PULSES.ZIP				
video files				
00011	67.8	00:00:34	.mts	<i>Shakpu makda</i> 'beating the pulses': beating the pulse beans with a <i>khey</i> 'stick' to remove the pulses from the pods.
00014	47.5	00:00:24	.mts	<i>Shakpu makda</i> 'beating the pulses': beating the pulse beans with a <i>khey</i> 'stick' to remove the pulses from the pods.
picture files				
DSC01151, 01153, 01154, 01155, 01156, 01157, 01210, 01211, 01212			.jpg	Three different types of <i>shakpu</i> 'pulses', all presumed indigenous.
DSC01203, 01204, 01205, 01206, 01207			.jpg	<i>Shakpu makda</i> 'beating the pulses': beating the pulse beans with a <i>khey</i> 'stick' to remove the pulses from the pods.
SOYBEAN.ZIP				
video files				
00000	100	00:00:51		<i>Shajok makda</i> 'beating the soybeans': threshing the soybeans by beating them with a <i>khey</i> 'stick'

				to open the dried pods and remove the beans.
00002	120	00:01:01		<i>Shajok gadar leda</i> 'winnowing the soybeans' by calling the wind with a whistle and letting the soybeans slowly fall from a <i>shangkor</i> 'winnowing tray' to remove the heavier husks, dirt, stalks etc. from the lighter beans.
00003	118	00:01:00		<i>Shajok gadar leda</i> 'winnowing the soybeans'.
00008	137	00:01:10		<i>Shajok makda</i> 'beating the soybeans'.
00009	104	00:00:53		<i>Shajok makda</i> 'beating the soybeans'.
00010	20.1	00:00:10		<i>Shajok gadar leda</i> 'winnowing the soybeans'.
00011	79.9	00:00:41		<i>Shajok jada</i> 'sifting the soybeans': to sift the soybeans by removing dirt, stalks, pods etc. by hand or by moving the <i>shangkor</i> 'winnowing tray' after winnowing them.
picture files				
DSC00160			.jpg	Dried <i>shajok</i> 'soybeans'.
DSC00162, 00164, 00169			.jpg	<i>Shajok makda</i> 'beating the soybeans'.
DSC00171, 00172, 00173, 00174, 00175, 00176, 00177			.jpg	<i>Shajok gadar leda</i> 'winnowing the soybeans'.
DSC00178			.jpg	The soybeans and the dirt, stalks, pods etc. after winnowing them.
DSC00179			.jpg	<i>Shajok jada</i> 'sifting the soybeans'.
other files				
[CHUK230512A1A].pdf			.pdf	transcribed, parsed, glosses, translated sound file CHUK230512A1A, SBD.

CHUK230512A1A.trs			.trs	transcriber file with the transcription of sound file CHUK230512A1A.
CHUK230512A1A.txt			.txt	text file with the transcription of CHUK230512A1A.
CHUK230512A1A.wav	16.9	00:01:40	.wav	sound file 'making fermented soy beans', CHUK230512A1A, SBD.
VEGETABLE.ZIP				
picture files				
DSC00183, 00184, 00185, 00186, 00191, 00227, 00229, 00230, 00239, 00662			.jpg	<i>Banthow</i> 'eggplant' (<i>Solanum melongena</i>), one of the most widely cultivated and eaten vegetables. Several indigenous cultivars are cultivated.
DSC00238			.jpg	<i>Khalangzi</i> 'Ethiopian eggplant' (<i>Solanum aethiopicum</i>), also a very common local vegetable, with bitter fruits.
DSC00237			.jpg	<i>Chak</i> 'taro' (<i>Colocasia esculenta</i>), stolon (underground tender shoots) can be eaten fresh or dried, tubers eaten boiled with ash.
DSC01289			.jpg	<i>Khachammaq chak</i> 'mud taro' (<i>Colocasia lihengiae</i>), wild variety of taro found in open marshy areas, can be eaten if properly cooked.
SAM_1959			.jpg	<i>Solu okhyak waar</i> 'dried red chilies' on a <i>shangkor</i> 'winnowing tray'
DSC04953			.jpg	<i>Gong</i> 'fence' surrounding <i>sorchur</i> 'vegetable garden'.