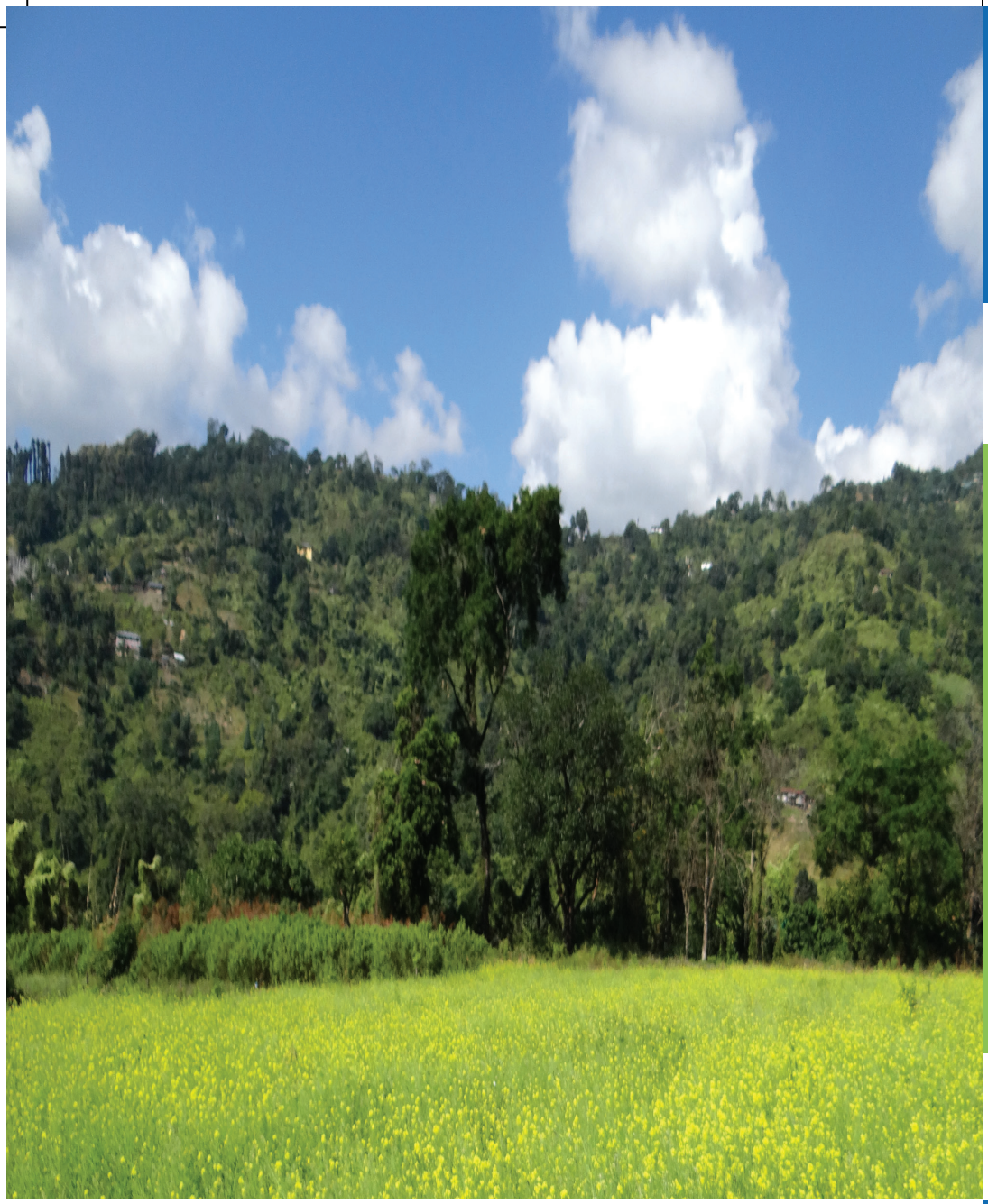


THE BIODIVERSITY

Dru-Na-Gu

(Nine Cereals)

Of Dewathang and Orong Gewogs, Samdrup Jongkhar

LHOMON SOCIETY

The Samdrup Jongkhar Initiative

About SJI

The Samdrup Jongkhar Initiative (SJI) is a community-based organization that operates under the auspices of the Lhomon Society; a registered Civil Society Organization (CSO) in Bhutan.SJI promotes the principles of Gross National Happiness (GNH) in harmony with Government goals at a grassroots level. SJI upholds trust and confidence, valuing and enhancing local potential through partnership with local government and government institutions.

1. Organic Agriculture

We work for a wholly organic agriculture by rescuing traditional practices and enhancing best organic agriculture practices through training, awareness raising and expert support to the local community.

2. Zero Waste

We work for a behavioral change in relation to waste management by introducing and cultivating awareness on sustainable practices. We aim at zero waste society by reducing waste at the source.

3. Menchari GNH Model Village

We work to build genuine GNH villages by implementing the holistic and sustainable practices that constitute the core of SJI in two initial projects: the currently isolated and destitute community of Menchari, Samdrup Jongkhar district, and a new SJI|GNH Village to accommodate SJI's central office, current and projected activities.

4. Lhomon Education

We work for an authentic GNH-based education by developing exploratory thematic units at Chokyi Gyatso Institute, some of which are mindfulness and value-based education that can be replicated nationwide. We work for an education that empowers and reverse contemporary knowledge and traditional wisdom by embedding self-reflexive education components in our initiatives.

5. Youth Engagement

We actively work to provide training and local opportunities for youth by introducing and supporting initiatives that enhance self-confidence and entrepreneurship, thus empowering new generations to find purpose and dignity in labor.

Dru-Na-Gu

(Nine Cereals)

Of Dewathang and Orong Gewogs, Samdrup Jongkhar

(First Edition: 2018)

ལྷོ་སྨོན་མི་སྡེ་ཚོགས་པ།

LHOMON SOCIETY

The Samdrup Jongkhar Initiative

Photo Courtesy; The Samdrup Jongkhar Initiative
Tshering Phuntsho (National coordinator, GEF Small Grants Programme)

Working Team:

Karma Dema, Program Officer, SJI

Yang Gyeltshen, Lead Teacher, SJI

Cheku Dorji, Program Director, SJI

gef SGP The GEF Small Grants Programme UNDP Empowered lives. Resilient nations. LHOMON SOCIETY

Table of Content

Preface

Blessed with lush subtropical vegetation and climate, Samdrup Jongkhar is one Dzongkhag where almost all the food grains can be grown. Since enhancing household food self sufficiency is one of the focus of Samdrup Jongkhar Initiative, this book is published with a purpose to provide a general sense of *Dru-Na-Gu* and their varieties grown in Orong and Dewathang Gewogs.

Most of the information presented here is based on information collected through interaction with elderly farmers from these two gewogs.

This book is published with a hope to inform and educate our readers about the cultural significance of these crops and help gain knowledge about how the names of some of these grains were determined by its appearances. While different communities share their own stories on the origin and history of crops, production methods, nutritional value, and usage however have remained the same in all the communities.

Most importantly, the book can be an invaluable source of knowledge and information for our younger generation to understand culture and tradition associated to crops. Passage of such idigenous knowledge, it is hoped, would enable children from the future to fully understand and value, the native crops and see how our ancestors held these food in reverence, as the lifeline to human life.

Acknowledgement

The Samdrup Jongkhar Initiative would like to thank Tirtha Bdr Katwal Specialist II (Maize), Ministry of Agriculture and Forests and Rinchen Dorji (Senior BS of National Biodiversity Center) for their invaluable technical input and continued support. Our deep appreciation to Ngawang Chojey and Pema Chophel, final year students of College of Natural Resources and Phurba T Tshering, another final year student of Royal Thimphu College for soliciting information from the villages as part of their college internship program. All the farmers of Orong and Dewathang, this book is a reflection of your cooperation and efforts every one of you accorded to preserve your native crops.

We also would like to thank GEF-UNDP Small Grants Programme, Bhutan for funding "Sustaining Local Agro biodiversity for Food security and a Resilient Future " and making our projects successful. Thank you, again.

Introduction

Before certain crops such as rice, potato, and chilli began to dominate markets commercially, almost all Bhutanese villagers living in favorable temperate zones cultivated minimum of nine food crops locally known as *Dru-Na-Gu*, (Nine Cereals) namely: Rice (*Bja or rey*), Maize (G*ayza*), Wheat (*Ka*), Barley (*Nah*), Buckwheat (*Bjo or Jarey*), Millets (*Memja or Cham*), Pulses (*Sem*), Oil seeds (*Peka*), and Amaranths (*Zimtse*). If any record of early history of agriculture in Bhutan exists, it is in Bhutanese astrology, indicating the existence of agricultural practices since time immemorial (Dorji, Tamang, Vernoy, 2015). Dru-Na-Gu, rich in vitamins and high value mineral contents happened to be not only staple diets for Bhutanese people, it has cultural and religious significances too, the backbone of Bhutanese society. People living in those regions where all dru-na-gu can be cultivated were considered blessed and prosperous. Current outlook for such prosperous places would be none other than major city towns.

Agriculture contributes 33% of Gross Domestic Product (GDP) of Bhutan's economy, employing over 69% of the population with the cultivated agriculture area of 2.93% as of 2013 according to Bhutan RNR Statistics (2015). With the growth of commercial markets and prefered food choice, the demand for specially rice, potato, and chilli increased drastically. Because of its commercial value, these crops started replacing the under utilized ones such buckwheat, millets, and barley. For example, as noted by commoners and researchers alike, like NBC (2014), buckwheat and barley, once prominent crops in Bumthang got replaced by potato cultivation. Such change in agricultural practice pattern is

not only harmful for whole, naturally balanced diets; it places a grave danger for the biodiversity such as mustard, millet, barley or wheat specifically required for performing *Lochoe* (Annual Ritual) and other *Rimdo* (rituals).

Therefore, one of the plans of the Samdrup Jongkhar Initiative is not only to revive the cultivation of *Dru-Na-Gu*, but also to make Samdrup Jongkhar a food self-sufficient Dzongkhag. Moreover, Samdrup Jongkhar is one such Dzongkhag where all *Dru-Na-Gu* and many more crops can be grown if people are trained adequately and supported with proper marketing, and awareness programs.

The variety of food crops published in this handbook are from Orong and Dewathang. Most of the information provided here is based on the project official's interaction with elderly farmers of Orong and Dewathang. As far as the nutritional values are concerned, it is based on the biodiversity international book titled—*Released and promising Crop Verities for Mountain Agriculture in Nepal*. This book was published in 2016, but the research had begun since 1959. This particular book was used as reference for nutritional information since it not only shared same food crop varieties but also because were grown under similar landscape, altitude, and climatic conditions. Moreover, no such study on nutritional value of food crops in Bhutan has been conducted, yet.

1. Buckwheat - Guntsung/Khala

Description: There are two types of buckwheat, sweet Buckwheat (*Guntsung/Bremo*) and Bitter Buckwheat (*Khala*). *Bremo* is sweet and the other buckwheat is bitter and that is why it's called *khala,* meaning bitter. The grains of *bremo* is triangular and are bigger than the *khala* seeds whereas the bitter buckwheat seed is oval.

Types	Local Name	Common Name
1	*Bremo/Guntsung*	Sweet Buckwheat
2	*Khala*	Bitter Buckwheat

Nutritional Value		
1	Carbohydrate	65.1%
2	Protein	10.3%
3	Fats	2.4%
4	Fiber	8.6%
5	Minerals	2.3%

Sweet Buckwheat Plant & Seed

Bitter Buckwheat Plant & Seed

Sweet Buckwheat		Bitter Buckwheat	
Common Name:	Sweet Buckwheat	**Common Name:**	Bitter Buckwheat
Dzongkha:	*Jarey*	**Dzongkha:**	*Bjo*
Sharchopkha:	*Guntsung/Bremo*	**Sharchopkha:**	*Khala*
Scientific Name:	*Fagopyrum esculentum*	**Scientific Name:**	*Fagopyrum tataricum.*

Traditional/Local Knowledge

Buckwheat is one of the important components of nine traditional cereals in Bhutan. In two gewogs, 65.6% of the respondents claimed that they used to cultivate buckwheat about 20 years back, but today, only 37.4% of them cultivate buckwheat, only by those living on a gentle slope and hilly areas. Following are some of the reasons why buckwheat production has reduced: Labor shortage, low production, human wildlife conflict, and lack of market.

Usage: *Bremo* flour is consumed either as *Bokpi* (steamed dough) or *putang* (noodles). Whereas *khala* flour is usually used for making *khuli* (pancake).When *bremo* and *khala* shoots are young and tender, their plants are consumed as curry. Some even grow these crereals as vegetable. After harvest, the dried *bremo* and *khala* hay are fed to the cattle. The hull from the grounded flour are used as feed for the livestock.

Pancake

Puta

Tokoray

Flour

2. **Barley** - Femong

Description: There are two type of Barley grown in locality known as Femong shophu (Awned Barley). *Femong* and *shophu* are quite similar in nature. The only distinction is hull. *Shophu* is bit furry compared to *femong*.

Nutritional Value		
1	Carbohydrate	69.6%
2	Protein	11.5%
3	Fats	1.3%
4	Fiber	3.9 %
5	Minerals	1.2%

Barley Plant and Seed

Common Name: Barley
Dzongkha: *Nay*
Sharchopkha: *Femong*
Scientific Name: *Hordeum vulgare L*

Traditional/Local Knowledge

Barley is also one of the important crereals of *Dru-Na-Gu* and was widely cultivated in Orong than in Dewathang probably because of the altitude differernces. Today, rice and maize has taken over and barley is rarely grown. Lately, Brongteri vegetable group in Dewathang is reviving the barley cultivation.

Usage: Like buckwheat, barley is grounded and consumed as diet like *bokpi*. Barley grains are also used to brew alcohol. But unlike buckwheat, barley cultivation is still continued since it's required in ceremonial rituals.

3. Wheat - Bong

Description: Cultivation of wheat which was done in large quantities before is almost non-existent now because of preference to grow other popular crops. Only one variety of wheat is grown in the locality.

Wheat is usually grown in winter in dry land. There is not much information on its origin and history. According to an old man from Reshore village in Dewathang, he has seen wheat in the area as long as he can remember. Wheat was grown widely in and around Dewathang up until 20 years ago. Decline in wheat cultivation is attributed to unavailability of advanced farming techniques and lack of knowledge to grow other cash crops back then.

Nutritional Value		
1	Carbohydrate	71.2%
2	Protein	11.85%
3	Fats	1.5%
4	Fiber	1.2%
5	Minerals	1.5%

Wheat Plant

Wheat Seed

Common Name: Wheat

Dzongkha: *Kar*

Sharchopkha: *Bong*

Scientific Name: *Triticum aestivium*

Traditional/Local Knowledge

Usage: Known by the Bhutanese as *kapchi (*roasted wheat flour), and *tsampa* in Tibet, roasted and blended wheat flour is a staple diet for highlanders like the Tibetans. Wheat and barley are the only two staple crops that grow at such extremely cold altitude. This could be one the reasons as to why wheat is considered holy grain and used in rituals.

In warmer places where wheat is grown in abundance, it is most preferred material for home brewed local wine, *Ara*. It also makes an excellent cattle feed.

4. Millet - Yangra

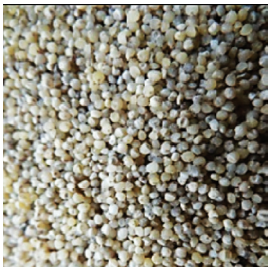
4.1. **Foxtail Millet** – Danishampi Yangra

Description: There are several kinds of y*angra*, such as, *khuchanglu yangra*, *danishampi yangra*, and *rongshong yangra* in the locality. *Khuchanglu yangra* is quite dark. Foxtail Millet grows like a cat's tail and is called *danishampi yangra. Rongshong yangra* also looks like *danishampi yangra,* except that it is longer resembling a rope and hence known as *rongshong yangra*.

Nutritional Value		
1	Carbohydrate	69.9%
2	Protein	12.3%
3	Fats	4.3%
4	Fiber	3.9 %
5	Minerals	3.3%

Foxtail Millet Plant

Seed



Hulled seed

Common Name: Foxtail Millet
Sharchopkha: *Yangra*
Scientific Name: *Setaria italica*

Traditional/Local Knowledge

Yangra (གཡང་རྩ) literally means source of wealth or precious. This is because yangra ripens between months of off season and harvest of paddy and maize, ensuring food security during the lean cultivation season, when much of the stored grains would be exhausted. This however isn't relevant today when food is available in the market throughout the year. Millet cultivated in dry land, mostly through shifting cultivation.

Usage: *Yangra* is one of the grains which can be reserved for years without fungal infection. For example, a villager Dotu still has a pot of y*angra* from his grandparent's time, preserved as an heirloom. This could be the other reason why *yangra* has its place in *Dru-na-gu*.

Yangra is often offered as *Tshog* (spiritual offering) during religious ceremonies. It is also consumed as food and is known for its delicate texture. Another diet yangra is famed for is porridge. It is also used for making home brewed alcohol, *Ara* (wine) and *Sinchang* (beer).

4.2**. Little Millet -** Chera

Description: *Chera tsalu* and *chera balingmin* are the two types of little millet found in the locality. Both are name after their colors. Grains of *chera tsalu* is red (*tsalu* means red) while seeds of *chera balingmin* is white. One distinct characterictics of little millet is its smooth and slippery grains, which makes husking difficult. This is why people prefer foxtail millet over little millet for cultivation though *chera* is softer than *yangra* when consumed.

Type	Local Name	Common Name
1	*Chera Tsalu*	Millet
2	*Chera Balingmin*	Millet

Little Millet Plant

Chera Tsalu

Chera Balingmin

Common Name: Little Millet
Sharchopkha: *Chera*
Scientific Name: *Panicium Miliaceum*

Traditional/Local Knowledge

Millet in general is part of *Dru-Na-Gu*, but this specific millet *chera* is not considered holy, as it is believed to have been smuggled into Bhutan by a woman hidden inside her genital. For this very reason the name *chera* is derived from the word *Cherang* which means urine—millet got mixed with urine inside the lady's genital. People believe *chera* resembles clitoris, and

have that soft characteristics. Thus, *Chera* is not used for any kind of religious offerings though it is consumed as diet.

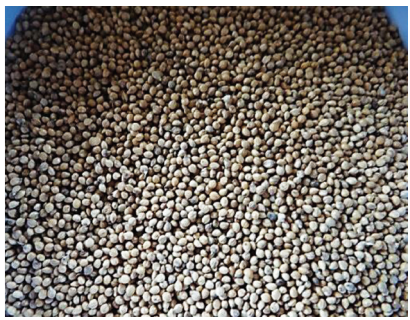
Usage: *Chera* is consumed like rice and *Kharang* (maize groats) as staple diet either mixed with other grains or by itself. *Chera* is usually mixed with rice and *Kharang* as it blends well with these grains. *Chera* is softer than the foxtail millet.

4.3. **Pearl Millet** – Ngera Yangra

Description: Except of its bigger grains and plant, *ngera yangra* has a similar usage with that of the foxtail millet.

Nutritional Value		
1	Carbohydrate	73%
2	Protein	11%
3	Fats	4%

Pearl Millet Plant



Seed

Common Name: Pearl Millet
Sharchopkha: *Ngera Yangra*
Scientific Name: *Pennisetum typhoides*

Traditional/Local Knowledge

Pearl Millet was brought to Bhutan from India through trade. And hence the name, *ngera yangra*, meaning Indian millet.

Usage: Pearls millet is mostly used for brewing local alcohol *Ara* and *Bangchang*. Other than that it used as food, like rice and maize.

4.4. **Finger Millet & Fist Millet -** Kongpu

Description: Locals call this millet, *kongpu***.** Of the two types, one looks like loose fingers and the other looks like a tied fist, and hence the name *Shamsham Kongpu* and *mutuma kongpo.* Plants and seeds of these are quite alike and both grow in dryland. In terms of yield, *mutuma kongpu* is believed to be higher than that of *shamsham kongpu* and Dewathangpas grow more of it, whereas, Orongpas grow more *shamsham kongpu.*

Types	Local Name	Common Name
1	*Mutoma Kongpu*	Finger Millet
2	*Shamsham Kongpu*	Fist Millet

Nutritional Value		
1	Carbohydrate	72%
2	Protein	7.3%
3	Fats	1.3%
4	Fiber	3.6%
5	Minerals	2.7%

Finger Millet Plant

Fist Millet Plant

Millet Seeds

Common Name: Finger Millet
Dzongkha: *Mamja*
Sharchokkha: *Kongpo*
Scientific Name: *Eleusine coracana*

Traditional/Local Knowledge

Besides being the source of food grains, these millet varieties are key ingredients to brew local wine and beer.

Usage: Fresh straws of millets make an excellent fodder for cattle in winters after harvest. Steamed dough from these millets mixed with rice makes good *Changkey* (fermented beer) and *Ara*.

4.5. **Sorghum -** Khubara

Description: *Sorghum* grows 4 to 5 meters tall resembling a maize plant. Only one variety of *khubara* (white) is found here. According to plant genetic resources of Bhutan volume 1 (2008), "Availability of *Sorghum* has been reported only from Tersheri and Pheluma villages in Orong though it is seen grown in small clumps in Tashigang, Mongar and Thimphu Dzongkhags."

Nutritional Value		
1	Carbohydrate	24%
2	Protein	22%
3	Fats	5%

Sorghum Seed

Sorghum Plant

Popped *Sorghum*

Common Name: Sorghum
Sharchopkha: *Khubara*
Scientific Name: *Sorghum bicolor*

Traditional/Local Knowledge

Other than its popcorn, *sorghum* is not talked about much in the locality.

Usage: *Sorghum* can be consumed as staple diet or is cooked for popcorn. Besides that it is used to brew alcohol or fed to animals.

5. Rice – Bara

Description: *Paddy* is known as *bara*. It is classified according to how it is cultivated. *Ketsala bara*, *burkamja*, and *zhung bara* are some of the wetland paddy varieties grown in the area. Not so common are the upland paddy (*pang bara*): *sam bara*, *zayBara,* and *betpa bara*.

The grains of *sam bara* are short and red. It is found only in Pheluma, Morong, and Menchari at present. *Betpa* in Sharchopkha means early. *Betpa bara* which matures earlier than the rest is somehow not found in the area any more. *Ketsala bara* is still cultivated in some areas but thinly. It is known by this name *ketsala* because of its red edges (*ke* means edge and *tsala means* red).

SN	Local Names and Varieties	Common Name
1	**Bara** { *Ketsala Bara*, *Burkamja*, *Zhung Bara*	Wetland Paddy
2	**Pang Bara** { *Sam Bara*, *Zay Bara*, *Betpa Bara*	Upland Paddy

Nutritional Value		
1	Carbohydrate	78.2%
2	Protein	6.8%
3	Fats	0.5%
4	Fiber	0.2%
5	Minerals	0.6%


Upland Paddy

Common Name: Upland paddy
Dzongkha: *Rey/Bja*
Sharchopkha: *Pang Bara*
Scientific Name: *Oryza sativa*


Irrigated Paddy

Common Name: Irrigated paddy
Dzongkha: *Rey/bja*
Sharchopkha: *Bara*
Scientific Name: *Oryza sativa*

Traditional/Local Knowledge

By and large, rice is the staple food for Bhutan with an exception to some small pockets where paddy cannot be grown. Next to their local substitutes like wheat, barley, maize, buckwheats, and millets, most Bhutanese would grow enough rice. However, the study revealed that paddy cultivation in general, both upland and wetland have reduced over the years in the region. According to the respondents, about 20 years ago, 63.4% of them used to grow paddy in the locality. Today, only 24.4% of them cultivate paddy. One of the key reasons for decline in paddy cultivation is because of the availability of cheaper rice from accross the border.

Types of paddy on the decline are the upland paddy varities such as *sam bara* and *zay bara.* As mentioned above, *betpa bara* seems to be extinct. Traditionally, slash-and-burn method was used to grow upland rice, which is no longer permissible under the environmental laws. And the decline in cultivation of upland rice is also partly attributed to stringent laws. However, *Bhur Kamja* or the *zhung bara* has gained popularity in Dewathang because its made available by the government and are high yield varieties.

Usage: Going by its popularity, various kinds of food and dishes can be prepared out of rice such as steamed rice fried rice, *Zaow* (popped rice)*, Thukpa* (porridge)*, Desi* (traditional fried rice), *Mekhu* (pappad)*, Khu-tengma* (rice cornflake)*, Changkey* and *Ara.* For spiritual purposes rice is not only offered as *Tshog,* Lamas use rice as *Tashi-khu* to sprinkle for purification or to bless. Rice is also used to make rice cakes for rituals. And the hay and husk are usually stored as fodder for the lean season.

6. Legumes - Gagpu and Oray

From the family of *Fabaceae*, legumes are the most diverse, agriculturally grown grain seeds primarily for consumption in the area. Not necessarily on large scale, but almost every household in the area would have two or more varieties of legumes grown in their kitchen garden.

Type	Local Names and Varieties		Common Name
Ground Spread	*Shakpu/Gagpu*	*Green Gagpu* *Red Gagpu* *Black Gagpu* *Saengji Daza* *Saengji Barma* *Saengji Katang* *Gasa Saengji*	
Climber	*Jog Oray*	*Brokche Oray* *Oray Balingmin* *Oray Serbu* *Khartshing Oray* *Oray Changlu* *Ngera Oray* *Martshala Oray* *Neynga Oray* *Patang Oray*	
Dwarf	*Choktor Oray*	*Oray Tsalu* *Oray Serbu* *Brokche Oray*	

6.1. **Lentil** - Gagpu

Description: Three types of *gagpu*, red, green, and black are found in the area.

Green *Red* *Black*

Common Name: Mung Beans
Dzongkha: *Senm*
Sharchopkha: *Shagpu/Gagpu*
Scientific Name: *Vigna radiata*

Traditional/Local Knowledge

Gagpu is one of the popular lentils grown widely in most parts of Dewathang. Earlier *gagpu* was known as *shakpu.* Here is the story how *shakpu* came to be known as *gagpu.*

Once a poor frail woman in Dewathang was in hunt for a crop that could be grown easily without much labour and hardship. She knew there would be plenty of such crops across the border in India. So one day, she set out to find such crop in exchange of sweet buckwheat. Across the border, the first person she came across was a guard. She offered the guard sweet buckwheat in exchange of one such crop that could be grown without much care and attention. The guard took the sweet buckwheat and gave the woman a lentil in return.

Excited, the woman immediately sowed the seeds as soon as she was home. Few months later she was blessed with bountiful of grains. Then she named the pulse, *shagpu*, meaning Security Guard to honour the guard.

Everyone in the village who came to the woman's place liked the taste of *shakpu*, which she served either mixed with rice or as a porridge. She also offered as *Tshog*. But the locals later gave their own name to *shagpu* and was famed as *gagpu*.

Uses: *Gagpu* has become one of the important ingredients for Bhutanese dishes during the social events. Porridge from *gagpu* seasoned with garlic and ginger is a special food. Grown organically, *gagpu* has become one of the main *Tshog* offering items. Rice or *Kharang*, mixed with *gagpu* enhances its taste. During the large gatherings, people of Dewathang and Orong prepare special dish from *gagpu,* similar to Indian *Dhal.* People of Rekhay also use its plant as green manure in their field.

6.2. **Lentil**- Saengji

Description: *Saengji* has a similar morphological features like *gagpu* except of its size, which is bit bigger. There are many types of *saengji* in various sizes and colors.

Saengji Brokche (purple)

Saengji Brokche (brown)

Nangmay

Gasa Saengji

Common Name: Adzuki beans
Sharshopkha: *Saengje*
Scientific Name: *Vigna angularis*

Local Knowledge and Usage

Locals cultivate *saengji* for the same purposes and usage as *gagpu*.

6.3. **Climber Bean** - *Jog Oray*

Oray Balingmin

Oray Tsalo

Oray Serbu

Oray Changlu

Kharshing Oray

Ngera Oray

Oray Tokili

Brokche Oray

Brokche Oray

Chaema Oray

Common Name: Climber Beans
Sharchopkha: *Jog Oray*
Scientific Name: *Phaseolus vulgaris*

Description: The common *jog oray* found in Dewathang and Orong are *brokche oray*, *martshala oray*, *khachi/patang oray*, *neynga oray*, and so on. Some of their names are called by their appearance and some are called by the names of the place of its origin. For example, *brokche oray* got its name from the red streak on its grains. In Sharchopkha, *Brokche* stands for streaked and *oray* for beans. The bean that originated from a place called *Martshala* is known as *martshala oray.* The bean which looks like a traditional Bhutanese Machete is known as *patang oray*. The bean that came from India is called *ngera oray,* Indian bean.

Local Knowledge and Usage

Beans are mostly grown for curry constituting as an important vegetable in the locality. Dried beans are also consumed like *saengji* and *gagpu* by mashing.

6.4. **Dwarf beans** - Choktor Oray

Description: *Choktor* here means squat or dwarf, the bean plant that does not grow tall and need stakes to support.

Brokche Oray

Choktor Oray Balingmin

Oray Tsalu

Oray Balingmin

Common Name: Dwarf Beans
Sharchopkha: *Choktor Oray*
Scientific Name: *Phaseolus vulgaris*

Local Knowledges and Usage

These beans are grown widely because of its market value, which are in huge demand. It's also grown for grains which when dried are also consumed mixed with rice and *Kharang* as a staple diet. Boiled beans are offered as *Tshog*, too.

6.5. **Soybean -** Laybee

Description: Known as *laybee, soybean* has been quite popular in the area earlier, and was consumed in different ways. Unfortunately, its cultivation has declined over the last two decades or so. There were about three or more varieties of soybean with different sizes and colors of grains. Today only two of its kind exists in the area—black and whitish grey.

Common Name: Soya Beans
Dzongkha: *Senm*
Sharchopkha: *Laybee*
Scientific name: *Glycine max*

Traditional Knowledge and Usage

Soybean has been an essential part of Bhutanese diet once, especially in the eastern region. The most popular one is *laybee yithpa*. *Laybee Yithpa* stands for fermented soybean, which is used as substitute for cheese in curry. The fermentation process only takes storing soybean in a tight container, which gradually starts seasoning by becoming mushy. *Yithpa* when added in curry adds flavour and tenderises the dish. Soybean is also roasted and consumed as *Muka* (roasted soybean). When soybean *muka* is mixed with traditional popcorn, it is known to produce a unique delicacy. Serving a steamed soybean with its pod is also a popular food in the area.

6.6. **Pea –** Brechangma

Brechangma despite being a good diet wasn't popular in the area. *Brechangma* is believed to have been brought to Bhutan from India only in recent memory. Though almost every household grew *brechangma*, it was consumed as side dish of sort mostly by steaming the bean. Like beans, dried peas are also offered as *Tshog*. *Brechangma* is slowly gaining popularity as many have learned more about its usage and have become aware of its valuable nutrients.

Dried Brechangma

Brechangma Plant

Green Brechangma

Common Name: Pea
Dzongkha: *Boa senm*
Sharchopkha: *Brachangma*
Scientific Name: *Pisumsativum*

7. Maize - Asham

Description: Basically**,** four types of *asham* (maize)—*tshig sampa asham, zerpa asham, yangtsepa asham,* and *baipa asham*—existed in Dewathang. *Tshig* literarily means the node on the stalk. *Tshig Sampa Asham* seems to translate the maize with three distinct nodes, which is fairly small in size. Its seeds are yellowish and small and most suitable for popcorn. That is why it is used for making popcorn. *Zerpa asham* and *baipa ssham* plants are much taller and bigger. Lately, another variety known

as *yangtsepa asham,* which hails from a place called Yangtse is also mostly grown in the area.

SN	Local Name	Common Name
1	*Tshig Sampa Asham*	Maize
2	*Zerpa Asham*	
3	*Baipa Asham*	
4	*Yangtsepa Asham*	

Nutritional Value		
1	Carbohydrate	66.3%
2	Protein	11.1%
3	Fats	3.6%
4	Fiber	2.7%
5	Minerals	1.5%



Asham

Common Name: Maize
Dzongkha: *Gayza*
Sharchopkha: *Asham*
Scientific Name: *Zea mays*

Traditional/Local Knowledge

Maize seems to have been a staple diet for hundreds of years and long before other crops came into being in this area, becoming one of the importants crops in *Dru-Na-Gu.*

After the Ministry of Agriculture introduced *yangtsepa asham,* the other varieties in the area have declined significantly. The obvious reason as it appears is because of its high yield that most people prefer to cultivate. Nevertheless, some of the local variety such as *tshig sampa* is still being cultivated in some quantity because of faster growth rate or shorter harvest time.

Usage: *Maize* is one of the sources of staple diet for the people of the eastern dzongkhags. Among many food maize is used to produce, *Tengma*, produced by pounding fried maize, which shares similarities to cornflakes, is the most popular one. People in villages and Bhutanese trekking long distances carry *Tengma* in their pockets and munch on to beat the boredom and gain energy. Today *Tengma* has also become a treasured gift for friends and family living in towns. Otherwise, maize is stored for consumption while stalk goes as fodder.

Maize is also grounded into flour and consumed as *bokpi* (steamed dough), which is also one of the staple diets in the eastern Dzongkhags. Alcohol like *Ara*, *Bangchang*, and *Singchang* are also brewed from maize.

8. Mustard - Memba

Description: Mustard is known as *memba* in Sharchopkha. Two types of mustard are found here, namely, *memba serbu* (Yellow Mustard) and *memba tsalu* (Red Mustard).

Common Name: Mustard

Nutritional Value		
1	Carbohydrate	21%
2	Protein	46%
3	Fats	121%




Yellow Mustard *Red Mustard*

Dzongkha: Peka
Sharchopkha: *Memba*
Scientific Name: *Brassica campestris*

Traditional Knowledge

There is no information on how the name *memba was* derived for mustard. But for generations, *memba* has been an important source of nourishment and light for people in Dewathang. Mustard was used as cooking oil, to lit up homes, and offer butter lamps. Earlier *memba* was sown right after the paddy harvest. But today its cultivation has declined drastically because of availability of cooking oil from the market.

Usage: Besides human consumption, mustard cake is also used in processing animal feed. Jersey cow owners in Dewathang have increasingly reported improved milk production from mustard cake.

Mustard is also used for various religious purposes. Other than offering butter lamps, it is used as *Dhuezay* (incense used as inhaler) and *Bumzay* or *Bumter*, a treasure vase owned by every Bhutanese in their shrine.

9. Amaranthus - Mo

Description: *Lhaso Mo* is generally roasted and consumed with *Suja* (butter tea) in social gatherings. It's also used as ingredient in dishes. *Lhaso mo* otherwise isn't used much.

9.1 Amaranth - Lhaso Mo

Two types of *Lhaso Mo* are found in the locality*: Lhaso Mo Tsalu* (red) and *lhaso mo balinmbin* (white).

Nutritional Value		
1	Carbohydrate	6%
2	Protein	7%
3	Magnesium	16%
4	Iron	11%
5	Vitamin B-6	5%
6	Calcium	4%

Lhaso Mo

Common Name: Amaranth
Dzongkha Name: *Zimtse*
Sharchopkha: *Lhaso Mo*
Scientific Name: *Amaranthus*

Usage: *Lhaso Mo* is roasted and consumed as snacks with butter tea usually in social gatherings. It also makes it as ingredients in some dishes. Besides that, it isn't used much here.

9.2**. Amaranth -** *Sharang Mo*

Sharang Mo

Common Name: Amaranth
Sharchopkha: *Sharang Mo*
Scientific Name: *Chenopodium Quinoa*

Traditional Knowledge

Today farmers grow *sharang mo* only in small quantities to preserve seeds.

Usage*:* *Sharang Mo* is cooked and served as staple diet like the rice. It is also consumed as flour.

9.3. Perilla - Nam

Two kinds of Perilla, *nam changlu* (black perilla) and *nam balingmin* (white perilla) are found in Dewathang and neighboring villages. Their colors however aren't complete black and white, while *nam changlu* is greyish, *nam balingmin* is blueish dark.

Type	Local Name	Common Name
1	*Nam Changlu*	Black Perilla
2	*Nam Balingmin*	White Perilla

Nam Plant

Nam Changlu

Nam Balingmin

Common Name: Perilla
Dzongkha: *Silam*
Sharchopkha: *Nam*
Scientific Name: *Perilla Frutescens*

Traditional Knowledge

What everyone reminisces about *nam* is the flavour of its grains in salads, curry, and butter tea. Here's an interesting story about how Perilla got its name *nam*.

There once lived an old couple in an unknown village. In one of the lean seasons, they were running out of options to cook curry. The old woman kept asking the old man, "What shall I cook?" The old man had no answer as they did not have much vegetables left. At that moment, one of the goats nearby bleated, "mulay… laeblaeb! mulay…laeblaeb" *Mulay* means radish, and *laeb* means slice. As prompted by the goat's bleat, the old man ran to their store to get some radish from the only stock they were left with. He then sliced the radish and started preparing the curry.

But radish doesn't taste good without cheese or meat and old man's curry surely didn't. The couple had neither cheese nor meat to enhance the curry. And the old couple weren't really enjoying the curry at all. Just then came in their cat meowing, "Na …am… Na…am. Ah… ha exclaimed the old man and said, "We have Nam."

The old man without wasting any more time reached out to his old bamboo container and took out some *nam* grains. He then roasted and grounded the grains and seasoned his curry, which turned to a total delicacy. Thereafter, *nam n*ot only became an enhancer replacing cheese and butter in curry but was thoroughly used in salads*, azey,* pickles, and butter tea.

References

Chettri, G.B., Dorji, T.Y., Ghimiray. M., Katwal, T.B., Dukpa. W., Chhetri. M., Dorji. S., and Dorji. R. 2008. *Plant Genetic Resources of Bhutan*. National Biodiversity Centre, Serbithang. Ministry of Agriculture and Forests. Thimphu, Bhutan

Dorji, T. Y., Tamang, M, Vernoy, R. (2015). *The history of the introduction and adoption of important food crops in Bhutan*. National Biodiversity Centre, Serbithang. Ministry of Agriculture and Forests. Thimphu, Bhutan

Joshi, B.K., Bhatta, M. R., Ghimiri, K. H., Khanal, M., Gurung, S. B., Dhakal, R., and Sthapit, B. R. 2017. *Released and Promising Crop Varieties of Mountain Agriculture in Nepal (1959-2016)*.LB-BIRD, Pokhara; NARC, Katmandu and Biodiversity International, Pokhara, Nepal.

National cereals conservation strategic action plan. 2016. National Biodiversity Centre, Serbithang. Ministry of Agriculture and Forests. Thimphu, Bhutan

Glossary

Ara	Home brewed wine
Azey	Bhutanese salad
Balingmin	White
Bangchang	Home brewed beer
Betpa	Early
Bokpi	Flour
Brema/Gungtsung	Buckwheat
Brokche	Streaked
Changkey	Fermented beer
Changlu	Black
Chera	Little/Common Millet
Chewog	Cluster of villages
Choktor	Dwarf
Dhal	Lentil
Danishampi	Cat-tail
Dhuezay	Traditional incense inhaler
Dru-Na-Gu	Nine Cereal
Dzongkhag	District
Femong	Barley
Gagpu	Pulses
Gewog	Block
Gho	National dress for men
Jog	Stalk
Kapchi	Roasted wheat flour
Karmi	Butter lamp
Khala	Bitter
Kharang	Grits
Khatche/Patang	Traditional Machete
Khu/Bara	Rice
Khuchanglu	Black Rice

Khuli	Pancake
Laeb	Slice
Laybee	Soya bean
Lhasomo	Amaranthus
Lochoe	Annual ritual
Martshala	One of the Gewog under Samdrup Jongkhar Dzongkhag
Muka	Roast
Mulay	Radish
Mutoma	Fist
Nam	Perilla
Ngera	Indian
Oray	Bean
Putang	Noodle
Rimdo	Rituals performed to diminish various sickness
Rongshong	Rope
Saengji	Pulse
Serbu	Yellow
Sh	Sharchopkha/Tshanglakha
Shamsham	Straight
Sharang mo	Amaranths
Shophu	Wheat
Suja	Butter tea
Tengma	Cornflake
Thukpa	Porridge
Tokaray	Triangular shaped food made from buckwheat dough
Tsalu	Red
Tshigsampa	Three-node
Tshog	Religious offering
Yang	Fortune
Yangra	Millet
Yithpa	Fermented
Zhung	Government