



**The Proceedings of the International Workshop on
Forest Ecological Resources Security for Next Generation:
Development and Routine Utilization of Forest Ecological Resource
and their Domestication**

Co-Supported by

"Rehabilitation of Degraded Peat Swamp Ecosystem Services and Construction of Implementation System on REDD+ Safeguard" Fund; Environment Research and Technology Development Fund (4-1506) of the Environmental Restoration and Conservation Agency

"Study on the Vernacularity of Forest Ecological Resources and Global Domestication" (15H02590) Fund: Scientific Research (A) 15H02590 Period: FY2015-2017

"Interregional Comparative Study on the Incentive and Safeguard for Local Inhabitants under REDD+" Fund: Environmental Fund of Mitsui Bussan (R14-0030)

"Integrated MRV System for SDGs" Peatland Restoration Agency (BRG) and Japan International Cooperation Agency (JICA)"

**Edited by Satomi Shiodera, Masayuki Fujita, Shigeo Kobayashi
(Center for Southeast Asian Studies, Kyoto University)
2018 March**

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Secretariat of the International Workshop on Forest Ecological Resources Security for Next Generation: Development and Routine Utilization of Forest Ecological Resources and their Domestication (Shigeo Kobayashi, Satomi Shiodera, Masayuki Fujita, Midori Hirai, Yuriko Arakawa: Center for Southeast Asian Studies, Kyoto University)

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Research Note of *Sokshing* in Eastern Bhutan: Agro-ecosystem and Its Sustainable Use in Bhutan

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Abstract

The forest, locally called *Sokshing*, plays an important role for agriculture and livelihood in Bhutan. *Sokshing* provide materials of farm yard manure (FYM) for their traditional organic farming. The use of FYM has been promoted by the government regarding with the Bhutanese development concept called “Gross National Happiness”. Besides, the land tenure system of *Sokshing* is a hot issue under the strict policy of forest resources management of the government. This study was conducted in Trashigang District located in eastern part of Bhutan to understand the relation between *Sokshing* and farming. Further, *Sokshing*-use and its origin was discussed hypothetically from the comparative view in western part of Arunachal Pradesh, India. The study showed that deciduous or evergreen oak leaves were used for maintaining soil fertility for upland crop cultivation in the villages of Trashigang District. On the other hand, the Monpa settled in western part of Arunachal Pradesh uses dry leaves only for mulching the soil after planting upland crop, especially corn. It indicates that use of technology varies significantly from one place to another having regional diversity. Hence, difference of introducing the permanent cultivation at both the places even though the people settled in both the places speaks the same language.

Introduction

When we enter into Mongar District on road from Thimphu (Fig.1), we can see huge fallen oak (*Quercus* spp.) leaf on the road side in March (Photo 1). This forest is locally called

“*Sokshing*”. *Sokshing* is usually located near the village settlement or along the road side. The floor of this leaf fallen



Fig. 1 Bhutan Road Map

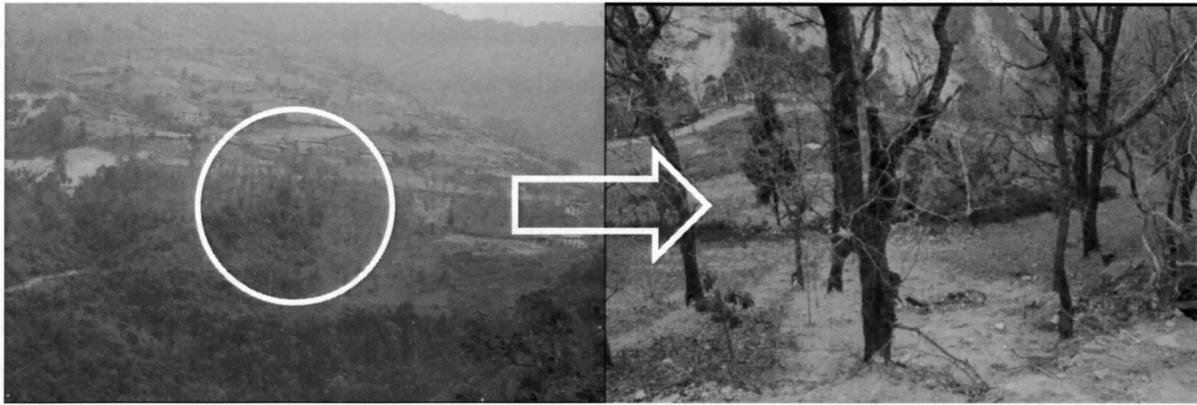


Photo1 *Sokshing* Forest near village settlements
in early March, near Mongar, 2016

Photo 2 Clean floor of *Sokshing* Forest

oak forest is cleaned (Photo 2). According to Sanga (2001:1-44), blue pine (*Pinus wallichiana*) forest is also used as *Sokshing* forest. *Sokshing* is very essential resources for maiming soil fertility for crop cultivation and collecting fire wood in rural Bhutan. *Sokshing* was traditionally private property. The most of the forest, however, has been declared as the state-owned property in accordance of establishing the modern state system through development of legal systems. *Sokshing* was not an exception, but *Sokshing* has been considered as an essential property like a farm land. The forest resource is now strictly controlled by the government as state policy and thus, at the moment, the tenure system of *Sokshing* is a hot issue in Bhutan.

Therefore, *Sokshing* has been studied from the viewpoint of land tenure or social management in the village (Sonam 2010, Sangay 2001). In relation to the villagers' objective to manage *Sokshing*, it may be noticed that the role of *Sokshing* in farming activities must be highlighted to be studied. Bhutan government has declared that the organic farming must be promoted by 2020 (Department of Agriculture Ministry of Agriculture, Bhutan 2006: 9-10). *Sokshing* is important as the resources to support the materials of organic manure (Mai Kobayashi et all 2015). Accordingly, we have conducted the field work to present the priority to the relationship between *Sokshing* and cropping system in the villages of the eastern Bhutan to collect the primary data.

The contents of this paper are the followings;

- 1.Justification: GNH, Promotion of Organic Farming, What is *Sokshing*?, Agro- and Cultural ecology of *Sokshing*
- 2.Objective: To understand the relation between *Sokshing* and Farming as the initial study.
- 3.Methodology: Field Work in Three Villages of Trashingang District, Eastern Bhutan.
- 4.Result : Records of *Sokshing* in Study Villages
- 5.Discussion: Hypnotica of the origin using dry fallen oak leaves of *Sokshing* in comparison with Monpa's Farming in Arunachal Pradesh in India

The forest like *Sokshing* in Bhutan exists in Dirang Monpa's villages in the western Arunachal Pradesh, India. Therefore, we have discussed from the comparative view on *Sokshing*-use and its origin as a cultivation technology hypothetically.

1. Justification of the study

The justification of the study comes to be clarified from the two major views such as "GNH and Organic Farming in Bhutan" and "Promotion of Organic Farming by the Government" by quoting the published papers has been given in the followings;

GNH and Organic Farming in Bhutan (Quoted from Sonam Tashi 2015:12-13)

Bhutan joined the OA movement with the formal launch of organic farming in 2003. Organic farming, which espouses socio-economic and ecological soundness and sustainability, blends well with the developmental policy objective and philosophy of Bhutan, which in 1972 initiated and embraced the Gross National Happiness (GNH) concept as opposed to the Gross Domestic Production (GDP) as a measure of growth, well-being and prosperity. The GNH concept, coined by the Fourth King of Bhutan, and institutionalized in 2008 (Powdyel 2004; Braun 2009), is a "multidimensional development approach that seeks to achieve a harmonious balance between material well-being and the spiritual, emotional and cultural needs of the society" (Powdyel 2004). The GNH concept hinges on four pillars, namely good governance, sustainable socio-economic development, cultural preservation and environmental conservation (Tideman 2011; Ura et al. 2012). These four pillars are likened to the four Principles of OA (Tshomo 2014). The four GNH pillars are classified into nine domains with 33 indicators and 124 sub-indicators to emphasize, understand and measure different aspects of wellbeing, happiness and growth (PPD 2010; Ura et al. 2012).

Promotion of Organic Farming by the Government (Quoted from Department of Agriculture, Ministry of Agriculture, The Royal Government of Bhutan 2006:9-10)

In Bhutan, agricultural development was given high priority in terms of policy support and resource allocation with the introduction of the planned development from the 1960s. The Government of Bhutan (RGOB) adopted sustainable development as a policy during the Seventh five-year plan (1992-1997), which laid the foundation for the development and implementation of Integrated Pest Management (IPM). The IPM strategy was geared towards safe and efficient use of pesticides and safeguarding the environment from pollution due to indiscriminate use of pesticides. Since then, there has been a decline in use of pesticides with the removal of subsidies on pesticides and the banning of several hazardous chemicals from the market for environmental reasons.

Bhutan possesses vast tracts of forest producing abundant biomass and other natural resources that

are not fully utilized due to the country's conservation policy. The vision 2020 states that Bhutan will maintain 60% of the total area of the country under forest at all times to come.

Farming in Bhutan is still very traditional with little or no use of external inputs. In 2000 only 1,800 MT of fertilizers was used, by only 30% of the country's households - mainly for crops. During the same period farmers used a total of 139,000 MT of FYM (RNR census, 2000). Given the support for creating infrastructures for the production of vermin-compost, compost, farm yard manure (FYM), and assistance in the form of seed, planting material, local breeds of cows, FYM pits etc, and the country could become self-reliant and also export organic products to neighbouring countries.

Emphasis on biodiversity, the environment, forest cover maintenance, integrated pest and nutrient management approaches in existing policies favour organic farming. The Nature Conservation Act and Biodiversity Act, also supports the principles of organic farming. This gives the Ministry of Agriculture a very sound base from which to go from IPM to organic farming. However, currently there are no policies that directly deal with organic farming and organic standards in Bhutan need to be developed.

According to the above references, the organic farming in Bhutan has developed on the basis of sustainable agriculture and IPM and the concept of Organic Farming is quite fit to GNH approach. Therefore, the organic farming become one of main agricultural policies.

What is Sokshing? (controlled by Forest Act) (Quoted from Sonam Kinga 2010)

Sokshing (woodlots) and tsamdros (pastures) from private and community land registers called lagthrams. These lagthrams are the records of categories and sizes of landholdings owned by Bhutanese families or communities. Records of sokshing and tsamdros owned by peasants are also reflected in these lagthrams.

In case of sokshing, it argued that lagthram-holders were only granted the 'right' to collect leaf litter for use as organic manure in agricultural fields. That is why it reasoned that peasants were not required to pay taxes for sokshing, whereas they pay taxes for other categories of their landholdings. They were also not allowed to cut down trees.

Hence, it would have been a strategic move to re-gain ownership that translates not only to rights for leaf-litter collection but for felling trees and conversion to cultivable lands. It is also evident that there were two categories of sokshing, (one for leaf-litter collection and one for fuel wood-collection purposes) which modern law does not recognize. During one of my visits to Trashigang, I found out in some gewogs that people use sokshing not for leaf-litter collection but to meet fuel wood requirements.

Sokshing exists all over the country in Bhutan

Table 1 indicates Sokshing existing all over the country. Among this distribution, our study district,

Trashigang District is most concentrated area of *Sokshing*.

Table 1 District (Dzongkhag) wise distribution of *Sokshing*

Dzongkhag	Acres of <i>Sokshing</i>				No. of holders	Total area of <i>Sokshing</i>	% of <i>Sokshing</i> distribution
	0-5	5-50	50-100	Above 100			
Bumthang	318	31	0	3	352	1567.43	7.38
Chhukha	196	11	0	1	208	507.60	2.39
Dagana	227	4	1	1	233	425.03	2.00
Gasa	142	2	0	1	145	398.17	1.88
Haa	174	56	1	3	234	1585.72	7.47
Lhuntse	1217	81	1	0	1299	1870.56	8.81
Mongar	2701	22	1	0	2724	1752.26	8.25
Paro	105	127	0	0	232	378.76	1.78
Pemagatshel	1474	4	1	0	1479	858.13	4.04
Punakha	592	29	3	1	625	1553.61	7.32
Samdrup Jongkhar	347	1	0	0	348	201.70	0.95
Samtse	6	0	0	0	6	8.31	0.04
Sarpang	1	0	0	0	1	0.15	0.00
Thimphu	383	24	1	2	410	507.6	2.39
Trashigang	3297	59	3	0	3359	3523.28	16.59
Trongsa	475	14	0	1	490	962.51	4.53
Tsirang	394	2	0	0	396	233.54	1.10
Wangdue Phodrang	928	70	4	7	1009	3247.46	15.29
Tashiyangtse	2308	8	0	0	2316	1448.96	6.82
Zhemgang	273	2	0	0	275	203.32	0.96
Total	15558	547	16	20	16141	21234.1	100.00
Number of <i>Thram</i> * Holders	96.39%	3.39%	0.10%	0.12%	100%		

*According to the land act of Bhutan 2007, *Thram* is the sole authoritative document that shall record and establish the legitimacy of title to land of a person in the country. *Lagthram* is issued by the commission secretariat or its authorized agency to the *Thram* holder as copy and evidence of his land in the *Thram* (Royal Government of Bhutan 2007). The term *Lagthram* and *Thram* in this table may be used in the same meaning.

2. Objective

The paper addresses the issue to understand the relation between *Sokshing* and Farming on farm of the villagers. The paper then briefly examines importance to sustain “ traditional farming” as an organic

farming. The study centered to collect the primary data through field work for the initial requirement.

3. Methodologies

The field work has been conducted in four Gewogs (lowest local government or administrative village) of Trashigang District, Eastern Bhutan; the Gewogs of Khaling, Radi, Bartsam and Sakteng. The duration of the field work was 7-10 days each in March 2014, March 2016, March 2017 and December 2017. The methodologies such as observations, interviews with the villagers and the government officials and collecting the Gewog level statistics and maps were employed in the study villages and the Gewog Administration Office and Extension Office. The Sherubtse College Students and traveling guides have translated from local language to English. The publications related to *Sokshing* and Organic Farmings in Bhutan have been reviewed as and where necessary.

4.Result

Khaling Gewog:

The leaf litter of leaf fell oak was collected and mixed with cow dung in the cow shed. This compost was applied uniformly in the upland crop field. The farmers mixed it with soil. In the field, corn was seeded manually by the women. The upland crop field is dominant in the villages of Khaling Gewog and therefore, the compost from *Sokshing* oak leaf is very beneficial to corn production.



Photo 3 The compost in the upland field, Khaling, Mar.21, 2014



Photo 4 Mixing the compost with soil, field, Khaling, Mar.21, 2014



Photo 5 Corn seeds were sawn,
Khaling,



Photo 6 Corn seeds, Khaling,
Mar. 9, 2017

Joengkar village, Sakteng Gewog:

The villagers of this village are originally Brokpa people or pasturing people. Therefore, their livelihood depends both the livestock and crop cultivation. The altitude of the village is more than 2000m and topographically the irrigated rice cultivation is not possible. The upland crop cultivation is most popular. The compost making is common. *Sokshing* is located very near the village houses and thus, we could observe the *Sokshing* carefully. The farmer also showed the method of collecting the dry fallen leaves with twigs of tree. The remarkable observation is to be taken a photograph that a cow was given the fodder of the leaves with braches of evergreen oak. The fodder was just collected from the evergreen oak. This is very common practice in the eastern Bhutan and also western Arunachal Pradesh where Monpa lives.



Photo 7 *Sokshing* in Joengkar, Mar. 10,
2016



Photo 8 Dry leaves of deciduous Oaks of
Sokshing, Joengkar, Mar. 10, 2016



Photo 9 Compost making shed, Joengkar, Mar. 10, 2016



Photo 10 Dry leaves and fruits of deciduous Oaks of *Sokshing*, Joengkar, Mar. 10, 2016



Photo 11 The collected fodder for cows, Joengkar, Mar. 10, 2016



Photo 12 Evergreen oak, Joengkar, Mar. 10, 2016

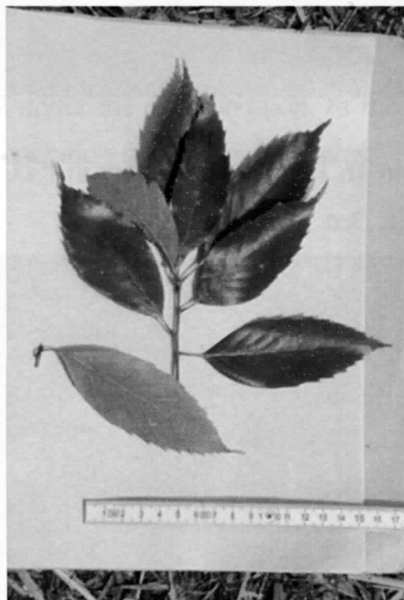


Photo 13 Leaves of evergreen oak, Joengkar, Mar. 10, 2016

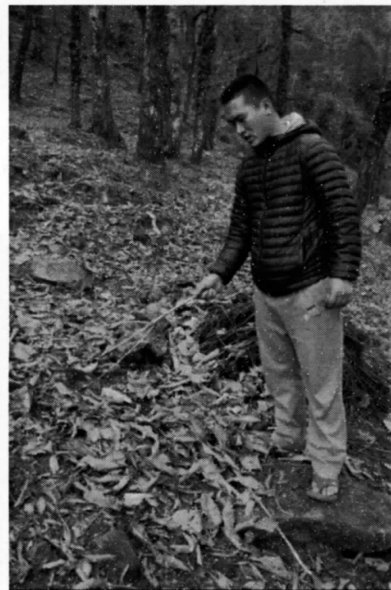


Photo 14 Tool (branch of tree) for collecting fallen leaves, Joengkar, Mar. 10, 2016

Radhi Gewog:

The villages of Radhi Gewog is famous for rice terrace farming. From the bottom to the up, the rice terraces are spreading. About half of the farm land is wet rice land. *Sokshing* is located far from the house settlement and also the crop fields. Here the compost from *Sokshing* is not so popular among the farmers. After harvest of rice and other upland crop such as corn, cows are kept in the field and fed the rice straw before the start of the next crop season, e.g. April and May.

The Mangumi or deputy representative of the Gewog administration informed us the followings in Dec.2017 at his office.

All the *Sokshing* land is owned by the government at the present. The villagers can lease the *Sokshing* land for 30 years but nobody has done in the gewog. The leaf litter collection is usually done by the original owner of the *Sokshing* land before taking by the government. Any person can cut the tree for collecting the firewood against payment with the permission of the forest office and the Mangui. The charge for the firewood is cheap and usually the original owner collect the firewood.



Photo 15 Rice terraces, Radhi, Mar.10, 2016



Photo 16 Feeding Rice Straw in Rice terraces, Radhi, Dec. 16, 2017



Photo 17 Corn and soybean mixed cropping, Radhi, Sep., 2015



Photo 18 Cows in Rice terraces after harvest, Radhi, Dec. 16, 2017



Photo 19 Cows in upland field after harvest,
Radhi, Mar. 2016



Photo 20 Firewood from *Sokshing*, Radhi, Dec.
16, 2017

Bartsham Gewog:

The distribution pattern of the crop field, houses, *Sokshing* is a typical pattern in the eastern Bhutan. The house is located at the ridge of the mountain. The crop field is located at the slope of the ridges. *Sokshing* is located along road sides or near the houses. In March, 2016, we have firstly observed the collected fallen leaves were directly spreaded to the terrace fields. This practice has been observed only in the villages of Bartsham Gewog up to Dec.,2017. We observed that the compost were made on the ground floor of the traditional house. The leaves were also collected. We could see the compost is applied only for vegetable cultivation. According to a young farmer, the directed given fallen leaves are collected in January and applied in March for rice field and April for corn. The farmers mix the leaves into soil under the dry condition. In the irrigated rice terrace, irrigated water is much required after mixing operation for rotting dry leaves.



Photo 21 Landscape of Bartsham, Mar. 12, 2016



Photo 22 Fallen dry leaves in rice
terrace,,Bartsham,, Mar. 12, 2016



Photo 23 Collected fallen dry leaves, Bartsham,,
Mar. 12, 2016



Photo 24 Dry leaves in the bed of cowshed,
Bartsham,, Mar. 12, 2016

Discussion

The fallen oak leaves are used for farming in Monpa of the western Arunachal Pradesh. The Monpa uses the dry leaves only for mulching the soil after establishment of corn plant in May. The Monpa does not make manure from the dry leaves in Dirang Circle, West Kameng District, Arunachal Pradesh. They also keep the cows in the fields after harvest and keep grazing before starting of next crop season. Why have the different practices appeared among the very similar cultural people is a crucial question. Monpa in Dirang Circle and Kalactan Circle has the same language of the eastern people of Bhutan, so called Sharchopa and also both of these group may be originally shifting cultivator. It leads one hypothesis that the difference of the operation may indicate the difference of introducing the permanent cultivation at both the places.

Acknowledgement

The authors are expressing our sincere thanks for the leadership of Prof. Shigeo Kobayashi, the representative of JSPS KAKENHI Grant Number JP15H02590 Project and its financial support for us to conduct the field work in Bhutan, and also our thanks must go to our counterparts in Sherubtse College, Royal University of Bhutan, Adorable Bhutan Travel Agent and the villagers in the study villages in the eastern Bhutan.

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